



HUMAN
RIGHTS
WATCH

Hunted From Above

Russia's Use of Drones to Attack Civilians
in Kherson, Ukraine



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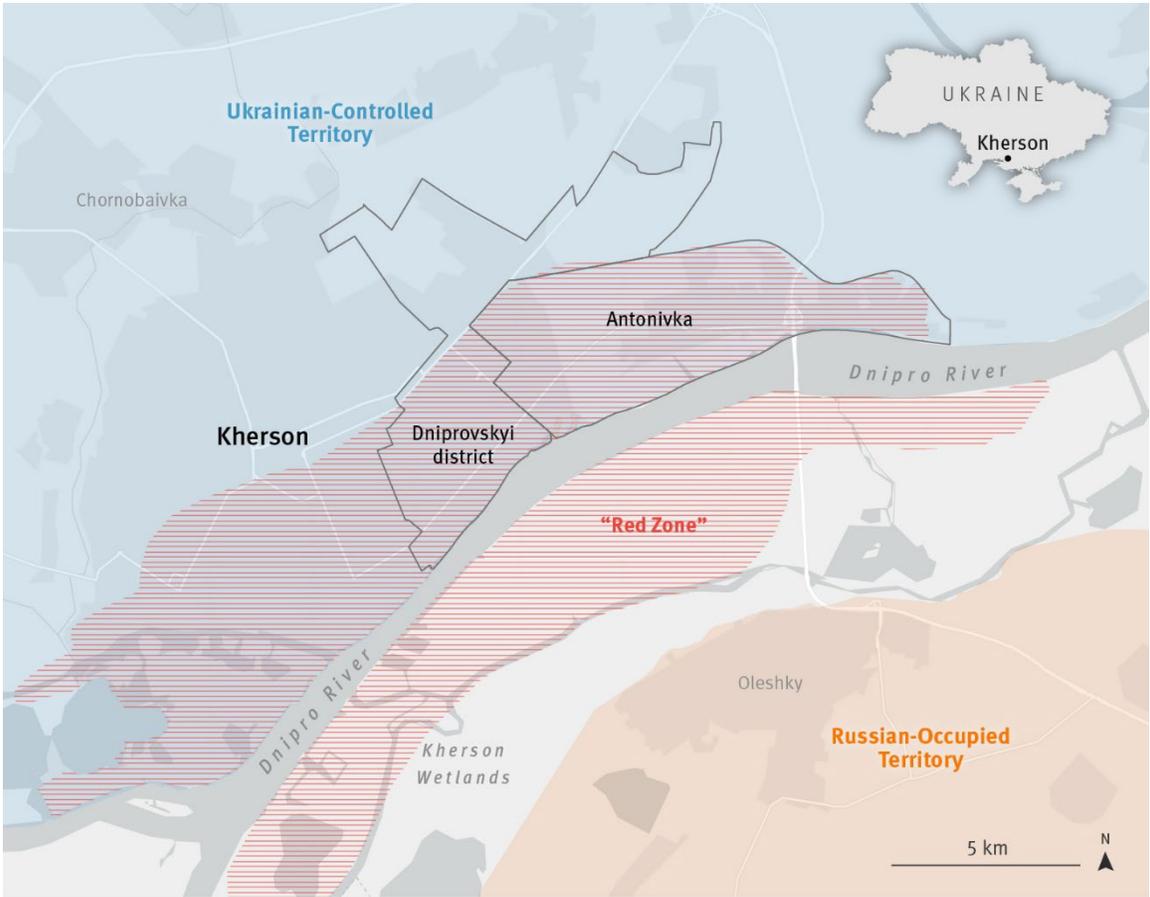


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Russia’s Use of Drones to Attack Civilians in Kherson, Ukraine

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Summary

On September 28, 2024, Anastasia Pavlenko, a 23-year-old mother of two, was cycling to an appointment in the city of Kherson in southern Ukraine, near the front line with Russian forces, when she saw a drone take off from the roof of a house and start to follow her. The drone tracked Pavlenko for nearly 300 meters. As she approached the Antonivka Bridge, the drone dropped a munition, which struck the ground nearby and exploded, injuring her in the neck, leg, and rib. In shock, Pavlenko continued on her bike toward the underpass, covered in blood and with flat tires, she later recalled.

Human Rights Watch verified two videos, uploaded to Russian military-affiliated Telegram channels, with footage recorded by the drone used to attack Pavlenko. In one video, Pavlenko can be seen on her bicycle, swerving on the road as the drone follows her for at least 13 seconds. Approximately 50 meters before the bridge underpass, the drone drops a munition that detonates a couple of meters to her left. Pavlenko, still on her bicycle—at this point injured, as it later became known—continues toward the underpass, and the video cuts a few seconds later.

Pavlenko said she received first aid before being taken to a hospital in the neighboring Mykolaivska region, where doctors operated on her broken leg. When Human Rights Watch spoke to Pavlenko in late November, she still had a metal fragment in her neck that surgeons could not remove. She has not been back to Kherson since the attack. “If not for the drones, I would still live there,” she said.

The attack on Pavlenko is just one of several hundred attacks on civilians and civilian objects in Kherson since June 2024, carried out by Russian forces using small, easily maneuverable quadcopter drones armed with explosive weapons, including grenades and antipersonnel landmines, as well as incendiary weapons. The drones send live video feeds back to their operators, who control the drones’ flight and use of weapons with deadly precision from up to 25 kilometers away.

The city of Kherson is located in the south of Ukraine, on the right (northern) bank of the Dnipro River, which has served as a topographical divide between Ukrainian and Russian

forces in the area. The city district of Dniproviskyi and the adjacent suburb of Antonivka both sit on the Dnipro River's right bank.

In March 2022, Russian forces captured Kherson and occupied it until November 2022, when Ukrainian forces retook control of the city and parts of the Khersonska region. During the occupation, Russian forces perpetrated abuses against the civilian population in Kherson. Since Russian forces were forced out of Kherson city, they have maintained positions a few kilometers south on the left (southern) bank of the Dnipro, from where they have continued to fire artillery and launch airstrikes into the city.

Ukrainian forces are positioned throughout Kherson, including in Antonivka and Dniproviskyi. From their positions they fire upon Russian forces, including Russian drones that fly into the city. The Ukrainian military also assist police and rescue workers in areas most prone to drone attacks, aiding in the evacuation of civilians and demining operations.

Human Rights Watch documented at least 45 drone strikes by Russian forces in Antonivka and Dniproviskyi that appeared to deliberately target civilians and civilian objects including infrastructure. In eight cases, Human Rights Watch corroborated witness accounts with videos of drone attacks posted to Russian military-affiliated Telegram channels. The videos of these and other attacks on civilians and civilian objects show that the nature of the target was known to the drone operator, indicating a deliberate attack.

The drone attacks detailed in this report were all carried out using quadcopter drones. Unlike larger drones previously used in conflict zones, quadcopter drones are more maneuverable, with a significantly shorter range, but relatively inexpensive and often commercially available. Quadcopter drones can take off and land vertically, follow speeding vehicles, and fit between narrow spaces, all while carrying small munitions. Many of the quadcopter drones mentioned in this report measure less than 40 centimeters diagonally and can be operated using a smartphone or a handheld-controller. Their range is typically between 5 and 25 kilometers.

Starting in June 2024, Russian forces increasingly used quadcopter drones to attack civilians and civilian objects in Kherson. Between May 1 and December 16, 2024, drone

attacks in Kherson resulted in at least 30 civilians killed and another 483 injured according to the Kherson City Council Executive Committee. The attacks continue at time of writing.

Russian forces have attacked civilians using quadcopter drones while they were out cycling like Pavlenko, while walking, driving, taking public transport to and from work, and in their homes. They also targeted healthcare facilities, ambulances and their personnel, including rescue workers responding to previous drone attacks on civilians. Russian forces also carried out drone attacks on grocery stores and vehicles delivering produce to stores, forcing nearly all stores in the affected areas to close. Drone attacks on gas, water, and electrical infrastructure—and on municipal workers attempting to repair the damage—have further limited residents' access to basic services. These attacks have also hampered efforts to clear landmines and other explosive remnants of war.

The attacks have caused deaths and injuries to civilians and widespread fear among Kherson's population, and caused residents to flee to districts further from the front line and deeper into the city of Kherson. Those who remain—mostly older people and those unable to easily evacuate—are afraid to leave their homes. They say that when they do, they are constantly listening for the buzzing sound of drones overhead, scanning the area around them for potential hiding spots under trees, and looking out for landmines on the nearby ground that may have been dropped during previous drone attacks.

International humanitarian law, also known as the laws of war, prohibits attacks intentionally targeting civilians and civilian objects. Nevertheless, Russian forces using drones have frequently made individual civilians and civilian property and infrastructure in Kherson the targets of attacks. Russian drones have been armed with banned antipersonnel landmines and been used to carry out attacks with incendiary weapons in populated areas, which is unlawful. Such attacks, when viewed individually, are violations of the laws of war that when committed with criminal intent constitute war crimes. Examined in their totality and over time, the pattern of attacks appears to be part of an apparent Russian strategy whose primary purpose has been to spread terror among the civilian population.

Human Rights Watch also found that Russian forces committed apparent crimes against humanity in Kherson by attacking civilians using quadcopter drones. Those attacks resulting in murder or intentionally causing serious bodily or mental or physical health

injuries, were carried out as part of a widespread attack on the civilian population in Kherson, and appear to have been in furtherance of a Russian policy behind that attack.

The ability of Russian forces to arm relatively inexpensive and commercially available drones to carry out illegal attacks underscores the urgency of identifying effective ways to enforce respect for international humanitarian law, including through prosecutions of war crimes. Governments should also work with commercial drone companies to develop and implement safeguards to prevent or minimize drones being used for unlawful combat purposes.

Human Rights Watch’s findings are based on interviews with 59 people, most in person in Kherson, Ukraine in November 2024 and others remotely between October 2024 and March 2025. This includes 36 survivors of and witnesses to Russian drone attacks. Human Rights Watch also analyzed 83 videos of drone attacks uploaded to Russian military-affiliated Telegram channels as well as videos and photographs taken by witnesses and shared with researchers. In April 2025, Human Rights Watch sent a letter with a summary of its findings and questions to the Russian government. It had not received a response at the time of finalizing this research for publication.

Human Rights Watch identified quadcopter drones manufactured by three different entities used by Russian forces in attacks on civilians in Kherson: two China-based commercial drone companies, DJI and Autel, and one model made by a Russian entity named Sudoplatov, which describes itself as a “volunteer organization.” Responding to letters from Human Rights Watch, both DJI and Autel acknowledged reports that their drones were being used by Russian forces for combat purposes, stressed that such use was incompatible with the policies of their companies, and provided information on steps they take to avoid their drones potentially being used for such purposes.

In mid-2024, Telegram channels apparently affiliated with or supportive of the Russian military and specific Russian military units increasingly posted videos of drone attacks on vehicles and people in Kherson. Also posted were maps in which areas—including Antonivka and Dniprovskiy where many civilians were still living—were marked in red. The posts stated that these “red zones” were areas within which Russian forces would target any moving vehicle and should therefore be considered unsafe for civilians. Such posts do not constitute lawful warnings as they falsely imply civilians can legitimately be targeted.

Civilians in areas of hostilities remain fully protected from attack, and attacking forces must still take all feasible precautions to avoid loss of civilian life and property. This includes canceling an attack when it becomes apparent that the target is civilian.

Russian use of armed quadcopter drones in Antonivka and Dniprovsykyi has hindered civilian access to essential goods and services such as food, medical, and rescue services. Residents told Human Rights Watch that, starting in June 2024, Russian drone attacks on grocery stores in Antonivka and Dniprovsykyi caused them to shut down. By November, most had closed or relocated to safer areas, forcing residents to travel long distances, including through the “red zone,” to purchase basic goods and obtain other basic services, putting them at greater risk from drone strikes or shelling.

Medical and ambulance staff said these attacks have had severe effects on people’s ability to access health care, including those injured in Russian attacks. Russian forces have also used drones to attack rescue vehicles and fire trucks responding to fires and other emergencies in these areas.

Russian drone attacks have also targeted public buses, damaging them and injuring drivers. One resident said that as of October 2024, buses no longer traveled into much of Antonivka due to the risk of being attacked.

The Kherson City Council Executive Committee told Human Rights Watch that between May and mid-December, there were at least 24 Russian drone attacks on gas, water, and electrical infrastructure sites. During the same period, Russian drone attacks killed or injured at least five municipal workers as they attempted to repair damaged water infrastructure sites. Altogether, the attacks prevented municipal workers from repairing 37 such sites, the committee said.

Some residents have decided not to drive anymore but say not using cars is also risky. Nastya, an ambulance medic who lives in Antonivka, said:

I am taking the bicycle and don’t drive the car because all my neighbors’ cars have been damaged... But the drones are hunting cyclists as well... People are limiting their visits to the shops. Where I live, there are no shops, and [there is] no way of getting goods delivered there.

To minimize the risk of being harmed, many residents said they reduce the time they spend outside their homes. But even if they do not hear drones overhead, they are at risk of stepping on landmines dropped by drones, they said.

Residents said the attacks and threat of drones have affected their mental health. Husband and wife Valeriy Sukhenko and Anastasia Rusol were injured in a drone attack on their home on November 17. Both said they were deeply psychologically affected by the attack. Sukhenko said he was suffering from nightmares. Rusol said, “I start doing something and then I just stop. I am disoriented and lost.”

The overwhelming effect of these drone attacks and the resulting conditions has been to force civilians to leave the area. Between May and December 2024, Antonivka’s population decreased from 4,570 residents to 2,300, according to the Kherson City Council Executive Committee. Most of the depopulation occurred in November and December, when 1,700 residents of the 4,000 who remained fled for other locales.

Russian forces should immediately cease all unlawful drone attacks on civilians and civilian objects, including those using unlawful munitions. States have an obligation to investigate individuals within their forces or on their territory implicated in war crimes and appropriately prosecute those responsible. Human Rights Watch is not aware of any efforts by the Russian government to credibly investigate or stop attacks on civilians and civilian objects.

Recommendations

To Russia

- Abide fully by international humanitarian law, including the prohibitions on attacks that are directed against civilians and civilian objects; that do not distinguish between civilians and military objectives; or are expected to cause civilian harm disproportionate to the anticipated military advantage;
- As required under international humanitarian law, take all feasible precautions to minimize harm to civilians and civilian objects, including giving effective advance warnings of attacks when possible;
- Ensure all drone operators are adequately trained in international humanitarian law and are aware of the sanctions for those that violate the law;
- Do not use internationally prohibited weapons in drone attacks, including antipersonnel landmines, and join the 1997 Mine Ban Treaty;
- Ensure that all units deploying drones maintain flight logs and make them accessible to any oversight bodies within the military or the broader government that has a mandate to investigate the lawfulness of attacks;
- Support independent and impartial investigations into credible allegations of laws-of-war violations, including the incidents detailed in this report;
- Make information public regarding the intended military targets of strikes that resulted in civilian casualties, and those that directly or indirectly damaged civilian infrastructure and other protected objects;
- Make public the findings of investigations into attacks resulting in civilian casualties, and take disciplinary action or pursue criminal prosecution as appropriate where violations are found;
- Provide prompt and appropriate compensation to civilians and their families for deaths, injuries, and property damage resulting from unlawful strikes. Consider providing “ex gratia” payments to civilians who suffered harm from strikes without regard to possible wrongdoing.

To Ukraine

- Ensure emergency personnel, volunteers, and other civilian professions working in areas prone to Russian drone attacks have access to personal protective equipment that is clearly distinguishable from Ukrainian military gear;
- If using civilian vehicles for military purposes in populated areas prone to Russian drone attacks take measures to distinguish those vehicles from other civilian vehicles;
- Abide fully by international humanitarian law in any use of drones. In the event that Ukrainian forces use drones for armed attacks, do not use internationally prohibited weapons, such as antipersonnel landmines, in such attacks.

To All States

- Consider targeted sanctions against senior officials and commanders credibly implicated in serious violations of international humanitarian and human rights law;
- Support foreign and domestic investigations and prosecutions under the principle of universal jurisdiction, as relevant and appropriate, of those credibly implicated in serious crimes in Ukraine;
- Publicly support the work of the International Criminal Court in its ongoing Ukraine investigation. Uphold the court's independence and publicly condemn and counter efforts to intimidate or interfere with its work, officials, and those cooperating with the institution;
- Contribute to efforts to secure justice and compensation for victims through reparations, including through the work of the International Claims Commission set up at the Council of Europe;
- Reject amnesty for serious crimes under international law, including war crimes and crimes against humanity, in any peace negotiations;
- Support authorities in areas where drones attacks are being carried out, to ensure they have systems in place to clear and destroy drone remnants safely, including unexploded ordnance and when the drone fails to return to the location of the operator;
- Maintain comprehensive flight logs of drones used in military operations and ensure these records are accessible to oversight bodies within the military or broader governmental entities authorized to examine the legality of such operations;

- Allow investigators access to drone logs when attacks are investigated;
- Continue supporting Ukraine’s mine clearance and risk education work and efforts to evacuate the civilian population from areas affected by hostilities, as well as providing medical, social, and other assistance to civilians injured as a result of the hostilities and ensuring their basic humanitarian needs are met.

To Commercial Drone Companies

- Have in place a process by which the public can share with the company allegations of use of the drones in armed attacks, in particular use in alleged unlawful attacks;
- Share allegations of use of drones in combat, in particular unlawful attacks, with authorized retailers and require authorized retailers, as part of contractual agreements, to respond to allegations of use of the drones in unlawful armed attacks by their clients, including by engaging with clients about how such use violates the terms of use or sale, and restricting any future sales to prevent risk of further use in unlawful attacks;
- Comply with requests from national, regional or international judicial authorities to assist in interpreting drone logs or other technical questions arising in the course of investigations into potentially unlawful attacks using drones;
- Cooperate with and provide technical information to governments developing future norms around the use of drones adapted to deliver weapons.

Methodology

Human Rights Watch interviewed 59 people for this report, most in person in Kherson, Ukraine in November 2024, and others remotely between November 2024 and March 2025. This includes 36 survivors of and witnesses to Russian drone attacks. Human Rights Watch also spoke to rescue workers and medical staff who treated drone attack victims; municipal workers; officials from the city districts affected by the attacks; local journalists; and Ukrainian regional authorities.

Interviews were primarily conducted in Ukrainian with the assistance of interpreters, and in English.

Researchers informed all interviewees about the purpose and voluntary nature of the interviews, and the ways in which Human Rights Watch would use the information. We obtained consent from all interviewees, who understood they would receive no compensation for their participation. The names of some interviewees have been disguised with first names and surname initials which do not reflect their real names, in the interest of their privacy.

On April 14, 2025, Human Rights Watch sent a letter with a summary of its findings and questions to the Russian government and followed up in May, but it had not received a response at the time of finalizing this research for publication.

From November 2024 to April 2025, Human Rights Watch sent letters to various Ukrainian authorities with questions related to the attacks. Two responses were received, and relevant information is reflected throughout the report

Human Rights Watch sent letters to two China-based commercial drone companies, DJI and Autel, and one Russian entity, Sudoplatov, whose products were identified in attacks on civilians. DJI and Autel both responded in April to Human Rights Watch and their correspondence is included in full in the appendix, and reflected in the report. Human Rights Watch had not received a response from Sudoplatov at the time of finalizing this report for publication.

Human Rights Watch analyzed 83 videos of drone attacks uploaded to Russian military-affiliated Telegram channels. We analyzed 60 videos and photographs taken by witnesses and shared with researchers. We also analyzed 21 photographs and 7 videos posted to social media platforms. As per our standard methodology, each video and photograph analyzed by open-source researchers at Human Rights Watch was then reviewed by members of staff with visual verification expertise. To determine the location of each video and photograph, researchers matched landmarks with available satellite imagery, street-level photographs, or other visual material. Where possible, Human Rights Watch used the position of the sun and any resulting shadows visible in videos and photographs to estimate the time the content was recorded. Researchers also confirmed that each piece of content had not appeared online prior to the date it was posted, using various reverse search image engines.

Human Rights Watch has adopted specific terminology to distinguish between audiovisual content that we have analyzed and audiovisual content that we have also verified. In the report, Human Rights Watch uses the term “reviewed” for content that has been seen but has not gone through several verification checks. We use the term “analyzed” for content that has been reviewed and appears authentic, but for which we have confirmed some but not all temporal, geographic, or contextual aspects. We use the term “verified” for videos or photographs where we were able to confirm the location, timeframe, and context in which they were taken.

Human Rights Watch has preserved the photographs and videos referenced in the report. Where possible, Human Rights Watch has included direct links to social media posts in the relevant footnotes. Human Rights Watch did not include links to online content that might pose a security risk for the people seen in the content or the person posting it. Human Rights Watch also did not include links to content deemed too distressing to maintain the dignity of those shown and minimize readers' exposure to violent and distressing content.

Researchers examined a variety of Russian military-affiliated Telegram channels with a particular focus on Russian military operations in Kherson. For Russian units participating in the war, Telegram is the predominant method for sharing uncensored videos and photos. From these channels, researchers selected videos that appeared, based on specific criteria related to buildings and landscape, to have been filmed in the city, and not

other parts of the region. Most videos that researchers found of Russian drone strikes in Kherson were posted to the Telegram channels listed below.

Human Rights Watch categorized the videos it reviewed based on whether the attacks they showed were on people, vehicles, houses, or services. We did not research drone attacks on distinct military targets. In many cases, we could not determine if civilian objects targeted in the attacks such as vehicles or houses were being used by civilians. This was often because the video lacked contextual information such as people and their attire or the video was of poor quality.

When possible, Human Rights Watch identified the type of drone involved in each video documented in this report. Researchers matched elements on the drone’s interface—such as the mini-map, typeface, and other textual components—with known examples provided by the drone manufacturer on their websites or on their social media accounts.

Russian Military-Affiliated Telegram Channels

Most of the videos of drone attacks reviewed by Human Rights Watch were uploaded to the following Telegram channels. Human Rights Watch could not confirm the identity of the person or persons behind the following channels.

“From Mariupol to the Carpathians” Telegram Channel

The “From Mariupol to the Carpathians” channel is a Russian military-affiliated Telegram channel created on or around June 5, 2022. The person or people behind the account began posting about the Russian occupation of Kherson the same month. The account, which had more than 50,000 followers at time of writing, routinely posts about Russian military operations in the city and the region. It has run fundraising campaigns to provide military equipment, in particular drones, to specific Russian units operating in the Khersonska region. The channel has been the primary source sharing many of the drone attack videos originating from Kherson.

“Dnepr” Telegram Channel

The “Dnepr” Telegram channel is a Russian military-affiliated Telegram channel created on November 19, 2021, with more than 35,000 followers at time of writing. The channel’s description says it is the official channel for Russia’s “Dnepr” forces. These forces were

reportedly established in 2023 and are responsible for the Russian military's operations in the Khersonska region.

“Habr” Telegram Channel

The “Habr” channel was a Russian military-affiliated Telegram channel created on September 6, 2024, with more than 13,000 followers at time of writing. Posts published to the channel claimed it was run by a Russian Armed Forces drone operator belonging to a drone unit also called Habr, which the channel claims was established in May 2024, under the command of the 18th Combined Arms Army. In early March 2025, the channel changed its name from “Habr” to “Sueta” and at the same time a second Telegram channel was established under the Habr username. Those behind both channels have posted numerous drone videos showing Russian attacks in Kherson.

“Moses” Telegram Channel

The “Moses” Telegram channel is a Russian military-affiliated Telegram channel created on September 10, 2022, with more than 66,000 followers at time of writing. It is associated with Russian military drone operations and the person or people behind the account have been posting about Kherson since the channel was created.

Background

On March 2, 2022, Russian forces captured the city of Kherson, which sits on the right (northern) bank of the Dnipro River.¹ They occupied the city, which prior to Russia's full-scale invasion 10 days earlier was home to roughly 280,000 people, until November 2022, when Ukrainian forces retook control of it.² During the period of occupation, Russian forces perpetrated a range of abuses against the civilian population, including arbitrary detention, torture, and looting, including of cultural institutions.³

Since November 2022, Russian forces have maintained positions across the Dnipro River, a few kilometers south of the city, from where they continue to fire explosive weapons into the city, killing and injuring civilians. These attacks also damaged the city's water, electricity, and telecommunications infrastructure, restricting residents' access to these services.⁴

The areas of Antonivka and Dniprovskiyi are located in the eastern part of Kherson, adjacent to each other, and extending to the Dnipro River. Ukrainian forces are positioned throughout Kherson, including in Antonivka and Dniprovskiyi. From their positions they fire upon Russian forces, including Russian drones that fly into the city. The Ukrainian military also assist police and rescue workers in areas most prone to drone attacks, aiding in the evacuation of civilians and demining operations.

¹ Yaroslav Lukov, "Kherson: 'Heavy fighting' as Ukraine seeks to retake Russian-held region," BBC, August 31, 2022, <https://www.bbc.com/news/world-europe-62730439> (accessed February 3, 2025); Ukraine Media Center, "80% of the population left Kherson – press officer of Kherson," February 1, 2023, <https://mediacenter.org.ua/strong-80-of-the-population-left-kherson-press-officer-of-kherson-strong/?form=MGoAV3> (accessed February 3, 2025).

² Peter Beaumont, Luke Harding, Pjotr Sauer, Isobel Koshiw, "Ukraine troops enter centre of Kherson as Russians retreat in chaos," *The Guardian*, November 11, 2022, <https://www.theguardian.com/world/2022/nov/11/reports-of-wounded-soldiers-being-abandoned-as-russia-retreats-from-kherson-city> (accessed February 3, 2025).

³ "Ukraine: Russians Pillage Kherson Cultural Institutions," *Human Rights Watch* news release, December 20, 2022, <https://www.hrw.org/news/2022/12/20/ukraine-russians-pillage-kherson-cultural-institutions>; "Ukraine: Russian Torture Center in Kherson," *Human Rights Watch* news release, April 13, 2023, <https://www.hrw.org/news/2023/04/13/ukraine-russian-torture-center-kherson>; "Ukraine: Torture, Disappearances in Occupied South," *Human Rights Watch* news release, July 22, 2022, <https://www.hrw.org/news/2022/07/22/ukraine-torture-disappearances-occupied-south>.

⁴ Dinara Khalilova, "Governor: Russian shelling leaves 70% of Kherson without electricity," *The Kyiv Independent*, December 27, 2023, <https://kyivindependent.com/governor-russian-shelling-leaves-70-of-kherson-without-electricity/> (accessed March 19, 2025); Natalia Liubchenkova, "In pictures: Kherson residents speak about life under constant shelling," *Euro News*, March 4, 2023, <https://www.euronews.com/2023/04/03/in-pictures-kherson-residents-speak-about-life-under-constant-shelling> (accessed March 19, 2025); Maria Tril, "Kherson completely without electricity due to ongoing Russian shelling," *Euromaidan Press*, October 16, 2024, <https://euromaidanpress.com/2024/10/16/kherson-completely-without-electricity-due-to-ongoing-russian-shelling/> (accessed March 19, 2025).

In June 2024, Telegram channels apparently affiliated with the Russian military and specific Russian military units began posting videos of drone attacks on people and vehicles in Kherson. They also shared maps of the city showing Antonivka and Dniprovskiy marked in red, calling them “red zones,” where Russian forces would target any moving vehicle, and which should therefore be considered unsafe for civilians. Many of these videos were posted with the message:

Any movement of motor vehicles will be considered a legitimate target.
All critical infrastructure facilities are a legitimate target. Civilians should be extremely attentive and careful. Limit your movements, leave the area if possible.⁵

Such warnings are unlawful because civilians remain fully protected from attack, and attacking forces cannot designate areas “civilian free zones.” They must still take all feasible precautions to avoid loss of civilian life and property. This includes canceling an attack when it becomes apparent that the target is civilian.

⁵ Human Rights Watch reviewed more than 40 Telegram posts with this message. See, for example, Группировка войск “ДНЕПР” (@voiska_Dnepr) post to Telegram channel, December 21, 2024, https://t.me/voiska_Dnepr/100 (accessed March 7, 2025).

Attacks on Civilians in Kherson

Residents of Kherson told Human Rights Watch that Russian drone attacks on the areas closest to the Dnipro riverbank in Dniprovskiy and Antonivka became more intense in June 2024.⁶ They described attacks taking place on civilians who were walking, cycling, or driving in their neighborhoods, and when they were in their homes.⁷ Some recounted how they tried to hide or evade a drone that followed them for several minutes, including by driving evasively or hiding under trees.⁸ Others said they had seen drones sitting stationary, which conserves battery life, on rooftops in the city before operators dispatched them to fly and attack.⁹ Human Rights Watch also spoke to residents in Antonivka who said that in August 2024, drones began scattering antipersonnel landmines in their neighborhoods, which injured civilians and damaged civilian objects.

Between May 1 and December 16, 2024, drone attacks in Kherson resulted in at least 30 civilians killed and another 483 injured according to the Kherson City Council Executive Committee.¹⁰ The drone attacks continued at time of writing. Drone attacks accounted for 70 percent of civilian casualties recorded in Kherson in January 2025 by the United Nations Human Rights Monitoring Mission in Ukraine (HRMMU).¹¹

⁶ Human Rights Watch phone interview with A.K., November 25, 2024; Human Rights Watch interview with Larissa, Kherson, November 27, 2024; Human Rights Watch interview with A.T., Kherson, November 27, 2024; Human Rights Watch interview with Mikola, Kherson, November 27, 2024.

⁷ Human Rights Watch interview with Valeriy Sukhenko, November 26, 2024; Human Rights Watch interview with Andrii Loukin, November 29, 2024; Human Rights Watch interview with Tetiana Kravchuk, November 28, 2024; Human Rights Watch interview with Anastasia Pavlenko, November 28, 2024.

⁸ Human Rights Watch interview with Artem, Kherson, November 26, 2024; Human Rights Watch interview with Tetiana Kravchuk, November 28, 2024; Human Rights Watch phone interview with Viktor Kolisnyk, November 25, 2024.

⁹ Human Rights Watch interview with Volodymyr Mikhin, Kherson, November 25, 2024; Human Rights Watch phone interview with Nastya, December 9, 2024; Human Rights Watch interview with Anastasia Pavlenko, November 28, 2024; Human Rights Watch interview with Svitlana Valinkevich, Kherson, November 26, 2024; Human Rights Watch interview with Vladislav Konratov, Kherson, November 27, 2024.

¹⁰ Letter from the Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.

¹¹ Protection of Civilians in Armed Conflict — January 2025 summary, *United Nations OHCHR*, Ukraine, webpage, <https://ukraine.ohchr.org/en/Protection-of-Civilians-in-Armed-Conflict-January-2025> (accessed March 19, 2025);



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Attacks on Civilians Walking and Bicycling

Human Rights Watch interviewed three civilians ages between 22 and 56 who were injured in Russian drone attacks while walking or cycling on streets in Antonivka. All of them described how drones followed them for several hundred meters or hovered over them before and after attacking.¹²

Protection of Civilians in Armed Conflict — January 2025 summary, *United Nations OHCHR*, Ukraine, webpage, <https://ukraine.ohchr.org/en/Protection-of-Civilians-in-Armed-Conflict-January-2025>

¹² Human Rights Watch interview with Anastasia Pavlenko, November 28, 2024; Human Rights Watch interview with Andrii Loukin, November 29, 2024; Human Rights Watch interview with Tetiana Kravchuk, November 28, 2024.

Anastasia Pavlenko, 23, is a mother of two who used to live in Antonivka and worked at a coffee shop in Kherson.¹³ She moved to Lviv during the Russian occupation of Kherson in 2022 and returned to Antonivka after the de-occupation to bury her father.

On September 27, Pavlenko was followed by a drone while walking but managed to escape unharmed. The next day, she was cycling along the main road between Antonivka and Kherson. “Suddenly,” she said, “I saw a drone take off from a roof and start to chase me.” The drone followed Pavlenko for nearly 300 meters. She said she was still on her bicycle and less than 100 meters from the Antonivka bridge when “the drone dropped a grenade. I was injured in my neck, left leg, and under the rib.” In shock, Pavlenko continued toward the underpass. “I was still biking, covered in blood and with flat tires,” she recollected.¹⁴

The same day, a video showing the attack on Pavlenko was uploaded to a Russian military-affiliated telegram channel.¹⁵ The three-second verified video of a handheld recording of a still drone image on a computer screen shows a person on a bicycle. It is captioned:

Ukrainian Armed Forces soldiers ride bicycles. This character was accurately eliminated... [Medical] Evacuation is not allowed to approach.

Twelve days later, on October 9, a Russian military-affiliated Telegram channel uploaded a longer video of the same drone feed that Human Rights Watch verified.¹⁶ The video shows a drone with the camera pointing straight down, tracking Pavlenko on her bicycle. Researchers matched the video with the still image in the video described above, and Pavlenko confirmed to Human Rights Watch that both videos showed the drone attack on her.¹⁷ In the second video, Pavlenko can be seen on her bicycle, swerving on the road as the drone follows her for at least 13 seconds. Approximately 50 meters before the bridge underpass, the drone drops a munition that detonates a couple of meters to her left. Pavlenko, still on her bicycle, continues towards the underpass and the video cuts a few seconds later.

¹³ Human Rights Watch interview with Anastasia Pavlenko, November 28, 2024.

¹⁴ Ibid.

¹⁵ Мойсей | БА | СпН (@gefestwar) post to Telegram channel, September 28, 2024, <https://t.me/gefestwar/3339> (accessed February 3, 2025).

¹⁶ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 9, 2024, https://t.me/osvedomitell_alex/21472 (accessed February 3, 2025).

¹⁷ Human Rights Watch interview with Anastasia Pavlenko, November 28, 2024.



Screengrab of a drone video uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” on October 9, 2024, showing Anastasia Pavlenko continuing to ride her bicycle after a drone dropped a munition next to her.

Pavlenko said she received first aid at a military checkpoint in the underpass from military personnel, after which she was taken to a hospital in the neighboring Mykolaivska region, where doctors operated on her broken leg.¹⁸ When Human Rights Watch spoke to Pavlenko in late November, she had moved to a different city, and said she still had a metal fragment in her neck that surgeons could not remove due to its position.¹⁹ Pavlenko spent seven days in the hospital. She has not been back to Kherson since. “If not for the drones, I would still live there,” she said.²⁰

Tetiana Kravchuk, a lawyer from Antonivka, said she left home on foot on October 30, 2024, at 6:30 a.m., to go feed her neighbor’s dog.²¹ Her son’s car had been damaged the previous day when he drove it over a landmine. Kravchuk checked the street for landmines, as she feared a drone might have emplaced some overnight. As she was returning to her house, she heard a drone. Kravchuk said:

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Human Rights Watch interview with Tetiana Kravchuk, November 28, 2024.

It was behind me, chasing me. I tried to hide between the trees. I heard the drone circling the tree, coming closer and closer. The drone was four meters above me. Then there was an explosion.

Kravchuk said, “I called my son and told him that a drone had attacked me, and my leg was injured.” Seven minutes later, Kravchuk’s son arrived and took her to the hospital in Kherson, where she underwent surgery and spent six days. When Human Rights Watch interviewed Kravchuk in late November, she was still being treated, after which she was to begin six months of rehabilitation.

Andrii Loukin, 22, is from Antonivka and works as a car mechanic in the suburb.²² One day in late September, Loukin was cycling home from work when, he said:

I heard the drone. It sounded like a swarm of bees. It was chasing me. I tried to escape, but I was unsuccessful. I saw the drone—it dropped a grenade on me. I fell off the bicycle because both tires were punctured. The drone hovered over me for several minutes before leaving.

The attack wounded Loukin with metal fragments in his left hand, chest, and right leg. “Luckily, they were not deep,” he said of his wounds.

In addition to the previously described attacks, Human Rights Watch analyzed 10 drone videos posted to Russian Telegram channels between August 2024 and January 2025 showing drone attacks on people in civilian clothes and apparently unarmed walking or cycling in Dniproviskyi and Antonivka.²³ Researchers corroborated three attacks seen in videos using media articles and statements from local officials and organizations.

One verified video uploaded to a Russian military-affiliated Telegram channel on October 9 shows a drone attack on two individuals on a street in Dniproviskyi District.²⁴ Human Rights Watch analyzed shadows visible in the video that suggest the drone attack happened

²² Human Rights Watch interview with Andrii Loukin, November 29, 2024.

²³ See, for example, От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, September 20, 2024, https://t.me/osvedomitell_alex/20944 (accessed February 3, 2025).

²⁴ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 9, 2024, https://t.me/osvedomitell_alex/21468 (accessed February 3, 2025).

around midday. The footage shows a drone flying towards two pedestrians; both appear to be civilian and unarmed. As a cyclist, also in civilian clothes, passes by, the drone drops a munition that lands just a meter to the right of one of the pedestrians. Both pedestrians collapse to the ground, clutching their legs, apparently injured. The drone hovers above the two individuals for 15 seconds before flying away as the video ends. Part of the video's caption says:

Civilians should be extremely attentive and careful. Limit your movements, leave the area if possible.

Roman Mrochko, head of the Kherson City Military Administration, posted to his Telegram channel that on October 9, at around 1 p.m., two men, ages 40 and 46, received injuries to their legs from a Russian drone attack in Dniprovskiy District.²⁵



Screengrab of a drone video uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” on October 9, 2024, showing two people walking on the street before the drone drops a munition.

²⁵ Роман Мрочко (@roman_mrochko) post to Telegram channel, October 9, 2024, https://t.me/roman_mrochko/11826 (accessed February 3, 2025); Херсонська ОДА (ОВА) (@khersonskaODA) post to Telegram channel, October 9, 2024, <https://t.me/khersonskaODA/25639> (accessed February 3, 2025).

One analyzed drone video uploaded to a Russian military-affiliated telegram channel on November 18 shows a drone attack on two apparently unarmed individuals in civilian attire standing next to each other on a small road in Antonivka.²⁶ The footage starts with a drone hovering above the two people. They see the drone and begin running away from it. The drone follows them for a few meters and then releases a munition. One person falls to the ground, stretches out an arm, and then goes motionless. A day prior, on November 17, the same Telegram channel posted a screenshot from the same drone video.²⁷

Attacks on Civilian Vehicles

Human Rights Watch interviewed 15 survivors or witnesses of drone attacks that took place as people were driving or immediately after they had parked, or attacks on stationary vehicles, in which two people were killed and four were injured. The victims ranged in age from 27 to 75. Residents recounted how drones followed their cars for several minutes, as they tried to speed away and change direction.²⁸ In cases where they were unable to evade the drone, it eventually dropped munitions directly on or beside their vehicle, causing death and injury.²⁹

Nataliia, 25, previously lived in Antonivka but moved to another part of Kherson in 2022 for work.³⁰ Her father, Petro, 67, together with his wife and Nataliia's mother, Tetiana, owned "Natali," a grocery store on Khersonska Street in Antonivka named after their daughter. Tetiana ran the store and Petro drove her to work every morning and picked her up in the late afternoon.

"August 26 [2024] was a normal day," Nataliia said. "We talked on the phone. He [Petro] had just taken my mom to work and was returning home in our white Mercedes Sprinter minivan. This van was the family's breadwinner."

²⁶ От Мариуполя до Карпат (@osvedomitell_alex) post Telegram channel, November 18, 2024, https://t.me/osvedomitell_alex/22363 (accessed February 3, 2025).

²⁷ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 17, 2024, https://t.me/osvedomitell_alex/22324 (accessed February 3, 2025).

²⁸ Human Rights Watch interview with Artem, Kherson, November 26, 2024; Human Rights Watch phone interview with Viktor Kolisnyk, November 25, 2024.

²⁹ Ibid.

³⁰ Human Rights Watch remote interview with Nataliya, December 11, 2024.

Every morning around 7 a.m., Petro would drop off Tetiana, near the Salut shopping center, from where she would walk the remaining distance to her work. Petro did not want to risk being targeted by drones by driving any further. He would pick her up at the same location at around 4 or 5 p.m. On this day, however, he decided to pick her up closer to her work. Around 6 p.m., Nataliia’s mom called her. Nataliia said:

I heard “Hello,” followed by an explosion. Then the line went dead. I immediately knew something had happened. I rushed out, called 103 [Ukraine’s ambulance hotline], and begged them to help, explaining that an explosion had occurred near Salut [shopping center].³¹

Nataliia shared a drone video, which researchers verified, that had been posted to a Russian military-affiliated Telegram channel on August 26 at 8:44 p.m.³² The video shows a drone following and then attacking her parents as they drive in their Mercedes Sprinter van. It starts with a drone flying over houses in Antonivka and a white Sprinter driving approximately a hundred meters in front of the drone. An analysis of the direction of the shadows indicates the video was filmed in the late afternoon. The drone catches up with the van and follows the vehicle for 500 meters. As the van enters the roundabout near Salut shopping center, the drone drops a munition that hits the roof of the van above the driver’s seat and detonates. The vehicle continues straight for a few meters before crashing into an object on the side of the roundabout.

Nataliia went to the O.S. Luchanskyi Kherson City Clinical Hospital on her husband’s suggestion, where she found her mother being treated for a fracture in her left arm. “When I arrived, my mom was sitting there, covered in blood, holding one of my dad’s sneakers close to her heart,” she said. “I didn’t see my dad.”

³¹ Ibid.

³² От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 26, 2024. On file with Human Rights Watch.



Screengrab of a drone video uploaded to the “From Mariupol to the Carpathians” Telegram channel on August 26, 2024, showing Petro’s car moving along the road moments before the strike.

When Tetiana was taken for an X-ray, an anesthesiologist who knew Nataliia and used to shop in “Natali” approached her. Nataliia said:

She grabbed my shoulder and said, “Your dad is gone.” Then I saw my mom coming out of the X-ray room. They had been together for 32 years, and now I had to tell her that my dad was gone.

The anesthesiologist told Nataliia that the explosion had shattered her father’s skull. Although he was alive on admission to the hospital, Nataliia was told there had been no neurosurgeons in the hospital to treat his severe head injury.³³

Nataliia went to recover her father’s van from the site of the attack several weeks later. “When we retrieved the van, it started raining as we worked [to remove the vehicle],” she said. “It felt like a sign from my dad, protecting us from the drones.”

³³ Human Rights Watch remote interview with Nataliia, December 11, 2024.



Screengrabs of a video showing residents pushing Petro's damaged van at the Salut roundabout after the drone attack. © 2024 Nataliia

Rain affects drones' flying capabilities and residents told Human Rights Watch that drone attacks were less frequent on rainy days.³⁴

Olga Rudchenko, 75, said she was in her apartment building's backyard disposing of garbage on August 2 at around noon, when she saw her neighbor Serhii Dobrovolskiy, 54, the commercial director of a window company, arrive home and park his car under a tree.³⁵ Seconds later, Rudchenko said she spotted and heard a drone as it flew over the roof of the nine-story building. She yelled out to warn Dobrovolskiy about the drone. Both dashed toward a nearby tree, hoping it would provide cover from the drone. Dobrovolskiy overtook Rudchenko, who uses a walking cane and cannot run due to a physical disability.

Moments later, she heard an explosion. The drone had dropped a munition on one of the cars parked near the building and detonated.³⁶ Both Dobrovolskiy and Rudchenko were struck by metal fragments. "I was injured and started to bleed," Rudchenko said. "I looked over to Serhii and saw him lying on the ground, dead. The ambulance came and I was

³⁴ Human Rights Watch interview A.T., Kherson, November 27, 2024; Human Rights Watch interview with Anastasia Pavlenko, November 28, 2024.

³⁵ Human Rights Watch remote interview with Olga Vasilivna Rudchenko, November 25, 2024.

³⁶ Ibid.

evacuated, but they left him.” Rudchenko says she was hit in the back, just below the shoulder blade.³⁷

Dobrovolskiy’s wife, Angelica Dobrovolska, said her husband was pronounced dead at the scene. A metal fragment from the munition had pierced his heart.³⁸ Dobrovolska showed researchers a photograph of Dobrovolskiy on the ground, in grey shorts and a blood-stained t-shirt.

This was not the first time cars parked outside of the apartment building had been targeted by drones. Dobrovolska said she and her husband had also witnessed an attack on a parked car on July 24. She did not know if the Ukrainian military had been operating in the vicinity of the apartment building during either attack.³⁹

Vitaliy lived in Antonivka before moving to another part of Kherson in January 2025.⁴⁰ On October 31, 2024, at around 8 a.m., Vitaliy was driving along the main road in Antonivka, near Molodizhnyi Pliazh, on his way to the Kherson Regional Oncology Center where his mother was undergoing chemotherapy. He said, “While I was driving, a drone caught up with me. I did not hear anything ... suddenly the drone hit me, and that was it.”

A verified drone video uploaded to a Russian military-affiliated Telegram channel on October 31 shows the attack on Vitaliy’s car.⁴¹ The video shows a quadcopter drone flying along the main road in Antonivka, traveling approximately 1.2 kilometers before striking the rear of Vitaliy’s car. The video is captioned:

Kherson. Red zone. Antonivka. Footage of equipment being destroyed on the right bank this morning. Once again.

Any vehicle in the area is a target.

³⁷ Ibid.

³⁸ Human Rights Watch interview with Angelica Dobrovolska, November 25, 2024.

³⁹ Ibid.

⁴⁰ Human Rights Watch phone interview with Vitaliy, February 1, 2025.

⁴¹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 31, 2024, https://t.me/osvedomitell_alex/21961 (accessed February 3, 2025).



Screengrab of a drone video uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” on October 31, 2024 showing the moment before Vitaliy’s car is struck by the quadcopter drone.

Vitaliy confirmed to researchers that the video showed the attack on his car.⁴² He said the drone hit the ground under the fuel tank, smashing the back of the car and completely tearing off the back right wheel.⁴³ Vitaliy said, “I immediately got out of the car, fearing a second drone might follow and target me. But there was none. I walked away and went to the hospital to see my mother on foot.” Vitaliy said he sustained a concussion in the attack. He shared pictures of his damaged car with Human Rights Watch.

⁴² Human Rights Watch phone interview with Vitaliy, February 1, 2025.

⁴³ Ibid.



Vitaliy's damaged car after it was struck by a quadcopter drone. © 2024 Vitaliy

Since Kherson was re-taken by Ukrainian forces in November 2022, Volodymyr Mikhin, 48, has been supporting local communities by driving to various areas in the Khersonska region to deliver donated items including food and clothing.⁴⁴ He said he has been the victim of drone attacks on three occasions. The first time was in late November 2023, when he was driving his car, a silver Mercedes van, to Antonivka from Sadove town, approximately five kilometers to the east.

The second attack happened on October 1, 2024, at 11:20 a.m. Mikhin said he had finished a delivery and was standing with a friend smoking a cigarette next to the car, parked under a tree next to a building, when he heard a drone overhead. First, the drone dropped a munition on the roof of the building, damaging the roof. Then it dropped a second munition into the tree. The munition exploded, damaging the tree and the roof of his car.

⁴⁴ Human Rights Watch interview with Volodymyr Mikhin, Kherson, November 25, 2024.

The third attack happened on the morning of October 15, when Mikhin was driving from his home. Before he left home, his neighbors told him they had not seen or heard any drones that morning. Mikhin said:

As I got to the main street, intuitively I felt something was coming. I stopped to see if there were any other cars around and suddenly there was a big blast about five meters in front of my car. If I had not stopped, it would have hit my roof, and I would have been finished.

Mikhin said his right hand was lacerated by metal fragments and that by the time he reached the hospital, where he drove himself, his driver's seat was stained with blood. Mikhin said he had seen no Ukrainian military presence in the direct vicinity at the time of the three incidents and had not heard any outgoing Ukrainian fire right before the incidents. He shared pictures of his damaged car with Human Rights Watch.

Viktor Kolisnyk, 58, is a gynecologist at O.S. Luchanskyi Kherson City Clinical Hospital in Dniprovskyi District.⁴⁵ He was the victim of a drone attack on September 18 at around 4 p.m., when driving to his home in Dniprovskyi with his wife. "I saw and heard the drone," Kolisnyk said. "It was in front of me. I began to speed and swerve, changing directions to avoid it." After several minutes of attempting to escape the drone, there was an explosion near the front of the left side of the vehicle. The car began to smoke and rolled for 100 meters before Kolisnyk and his wife got out. Kolisnyk's leg was injured by metal fragments in four places. His wife was unharmed, which he said was "a miracle."

Viktoria Fomina, 47, works as a taxi driver in Kherson.⁴⁶ On August 18, 2024, at around 8 a.m., she said she was driving to a home in Antonivka when there was an explosion to the left of her car. She said:

I didn't understand what was going on. I jumped out of the car and saw the wheels were damaged, and fuel was leaking out. I saw there was damage to the bumper as well. Within minutes, [the Russians] dropped another explosive onto the roof of the car, while I was standing next to it. Luckily, I heard the second drone and ran away right before the car was hit.

⁴⁵ Human Rights Watch phone interview with Viktor Kolisnyk, November 25, 2024.

⁴⁶ Human Rights Watch interview with Viktoria Fomina, November 25, 2024.

Fomina said she could not drive away as her car tires had been damaged. A towing service refused to help move her car, saying the area was too dangerous. A friend then collected Fomina and towed the car to a garage. Fomina said the mechanics found small screws embedded in one of the car's wheels that may have been inside the munitions dropped by the drone.⁴⁷ Fomina shared pictures of her damaged car.

Olha Chernishova, 38, lives by the river in Dniproviskyi and runs a supermarket in Suvorovskiyi district, one block north of the river.⁴⁸ On September 9 around 4 p.m., she had parked her white Renault van outside her home and was unloading groceries, when she heard a sound that she identified as a drone and ran toward her house. As she reached the door, there was an explosion that propelled her into the house. Her van had been hit and there was a hole above the passenger side. Chernishova shared pictures of the damage to her car and unexploded ordnance she said she found next to it and in her garden after the attack.

Vadim Litvynenko, 46, an entrepreneur, was the victim of a drone attack on September 26 while driving his car in Dniproviskyi District. The attack left Litvynenko with a concussion and damaged his car.⁴⁹

Human Rights Watch also analyzed 42 videos of other individual drone attacks in Kherson on civilian vehicles posted to Russian military-affiliated Telegram channels between August 2024 and January 2025.⁵⁰ The videos were frequently captioned with the meaningless warning: "Any movement of motor vehicles will be considered a legitimate target ... Civilians should be extremely attentive and careful. Limit your movements, leave the area if possible."

In most of the drone attack videos, it was not possible to reach a definitive conclusion on whether the vehicle attacked was being used by civilians or by the Ukrainian armed forces, which has used civilian vehicles for military purposes.⁵¹ In three cases, researchers

⁴⁷ Ibid.

⁴⁸ Human Rights Watch interview with Olha Chernishova, Kherson, November 26, 2024.

⁴⁹ Human Rights Watch interview with Vadim Litvynenko, Kherson, November 25, 2024.

⁵⁰ See, for example, От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, September 8, 2024, https://t.me/osvedomitell_alex/20611 (accessed May 12, 2025).

⁵¹ Bethany Dawson, "Meet the international team of volunteers who are retrofitting civilian Fords and Toyotas into battle trucks for the Ukrainian forces," *Insider*, June 12, 2022, <https://archive.ph/rh2gx> (accessed on *Archived*, March 19, 2025); James Cheyne, "The pick-ups 'saving lives on the front line' in Ukraine," *BBC*, November 2, 2024,

corroborated attacks seen in videos using media articles and statements from local officials and organizations. This cross-referencing indicated that the attacks seen in the videos were attacks on residents or people working in Kherson.

One verified drone video uploaded on September 2 to a Russian military-affiliated Telegram channel shows a drone attack on a silver SUV driving in Antonivka.⁵² The drone tracks the car as it turns onto Molodizhna Street, following it for approximately 200 meters before dropping a munition that hits the left side of the windshield. The car comes to a stop. The video caption warns: “Any movement in the red zone is a trigger for a strike. Any. Assume that your vehicle is a potential target.”⁵³ An analysis of the shadows visible in the video indicates the attack took place at about 1 p.m.

On the same day, media and local authorities reported that a drone attack killed a recently retired doctor from the Kherson Regional Oncology Center as he and his wife were driving home at about 1 p.m.⁵⁴ His wife was injured in the attack.

Another analyzed drone video uploaded to a Russian military-affiliated telegram channel on October 4 shows a drone dropping a munition on a white car being driven along Molodizhna Street in Antonivka.⁵⁵ The munition impacts the ground less than a meter to the left of the car. Flames shoot out briefly from underneath the car and as the car slows down. The video ends a few seconds later.

On the same day, Roman Mrochko, head of the Kherson City Military Administration, reported on his Telegram channel that on October 3 a drone attack on a taxi, which appears to be the same vehicle in the drone video, had injured the driver.⁵⁶ The post

<https://www.bbc.com/news/articles/cwy1glxe2zxo> (accessed March 19, 2025); Anna Neplii, “Why Ukraine Needs So Many Cars on the Frontline,” *Kyiv Post*, April 11, 2023, <https://www.kyivpost.com/post/15681> (accessed March 19, 2025).

⁵² On file with Human Rights Watch.

⁵³ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 12, 2024, https://t.me/osvedomitell_alex/19787 (accessed February 3, 2025).

⁵⁴ Катерина Белякова, “Внаслідок російської атаки загинув лікар Херсонського обласного онкодиспансеру,” *Суспільне Херсон*, September 3, 2024, <https://susplne.media/kherson/827909-vnaslidok-rosijskoi-ataki-zaginuiv-likar-hersonskogo-oblasnogo-onkodispenseru/> (accessed February 3, 2025); Херсонська ОДА (ОВА) (@khersonskaODA) post to Telegram channel, September 4, 2024, <https://t.me/khersonskaODA/24042> (accessed February 3, 2025).

⁵⁵ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 4, 2024, https://t.me/osvedomitell_alex/21331 (accessed March 19, 2025).

⁵⁶ Роман Мрочко (@roman_mrochko) post to Telegram channel, October 4, 2024, https://t.me/roman_mrochko/11728 (accessed March 19, 2025).

includes a video with several clips. The first one shows a scorched white car of similar dimensions located approximately 230 meters from where the drone attack on the white car in the previous video was. The second clip shows a man speaking from a hospital bed who identifies himself as the driver and describes the injuries he sustained during the attack. He shows a photo of the scorched white car from his phone.

Human Rights Watch analyzed two videos of drone attacks on individuals who were exiting or approaching civilian vehicles in Antonivka, but it was not possible to determine if the people targeted were civilian or military. Drone attacks on military targets are legitimate under international humanitarian law, but the obligation is on the attacking force to take appropriate measures to determine whether the target is military or a protected civilian object. One analyzed video shows two men wearing mostly civilian clothing (one is dressed in camouflage pants) exiting a civilian vehicle after a drone drops a munition near the vehicle.⁵⁷ One man pulls an assault rifle from the back of the car and aims it at the drone before the video ends. A second analyzed video shows a drone dropping a munition on a man approaching a civilian vehicle wearing civilian clothing and beige-colored body armor, matching the color of body armor Ukrainian armed forces wear.⁵⁸ He runs away, removing his body armor, as the drone follows him. In both cases the targets may have been military, and so Human Rights Watch has not included either case in its accounting of drone attacks on civilians.

Attacks on Civilians in Their Homes

Human Rights Watch interviewed four civilians who were victims of a drone attack while in their homes in Antonivka.

Valeriy Sukhenko, a mechanic, 33, and his wife Anastasia Rusol, currently unemployed, 39, lived in a single-story home in Antonivka.⁵⁹

⁵⁷ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 24, 2024, https://t.me/osvedomitell_alex/20166 (accessed February 3, 2025).

⁵⁸ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 4, 2024, https://t.me/osvedomitell_alex/21347 (accessed February 3, 2025).

⁵⁹ Human Rights Watch interview with Valeriy Sukhenko and Anastasia Rusol, Kherson, November 26, 2024.

On November 17 at about 4 p.m., Sukhenko was outside when he heard a drone overhead.⁶⁰ He ran inside and within seconds of closing the door, a drone hit the roof and detonated, causing it to collapse and starting a fire. Sukhenko, who was not injured, got a fire extinguisher from his garage. About 10 minutes later, as he and a neighbor were still trying to extinguish the fire, there was another explosion. Sukhenko said:

I saw flames and an explosion and then I don't remember anything. Then I came to, maybe five seconds later, and saw a second drone fly through the hole the first one had made. I was lying on the ground and understood that I was alive, but also realized blood was pouring down my face. I ran to find my wife.

Rusol was in the kitchen at the time of the attack, with their new chihuahua puppy tucked into the front of her coat, when she heard a smashing noise. She said:

At first, I didn't understand what was going on, and then I heard my husband calling for me. There was darkness in front of my eyes. I was still standing, somehow shut off from the world. I was so strongly affected by first explosion, that I don't even remember the second one.⁶¹

She opened her coat only to find her dog dead, right in front of her heart, where she had been holding it. A metal fragment had pierced the dog's body. "Our little dog saved my life," Rusol said.

Sukhenko's right leg was wounded in the attack, leaving the bone in his lower thigh exposed.⁶² His head, shoulders, back, and arm were also injured, and he suffered third degree hearing loss. Sukhenko said their area had no cell phone reception after a Kyivstar cellular phone tower was damaged in an attack months earlier. A neighbor ran to the nearby church, which had a phone connection, and called the police to take the couple to hospital in an armored vehicle, as it was too dangerous for an ambulance to get them without risking coming under drone attack. It took the police one hour to reach them.

⁶⁰ Human Rights Watch interview with Valeriy Sukhenko, Kherson, November 26, 2024.

⁶¹ Human Rights Watch interview with Anastasia Rusol, Kherson, November 26, 2024.

⁶² Human Rights Watch interview with Valeriy Sukhenko, Kherson, November 26, 2024.

Rusol also has third degree hearing loss as a result of the explosions. She sustained a concussion and suffered deep cuts from metal fragments to her arm, with one part of the muscle above her elbow severed, as well as her left knee and left hand. A fragment also cut off part of her nose.⁶³

Later that night, while the couple were still in the hospital, their neighbors told them another drone had dropped a munition on their house after they left, destroying it.⁶⁴ “We lost our home. Everything was there. Everything burned down,” Sukhenko said, showing researchers images of the burned out remains of the house.

Sukhenko and Rusol said there were no Ukrainian military positions next to their home, and that they had not heard any outgoing fire before the attack. They said that one week before the attack on their home, there was a drone attack on their neighbor’s home in which a dropped munition killed the neighbor’s dog.

On October 7, Volodymyr Mikhin was standing over the boot of his car outside his garage at home in Dniprovskiy District after a morning of humanitarian aid deliveries.⁶⁵ He said he did not hear the drone approaching as he had left the engine running. Suddenly, there was an explosion as a drone released a munition that hit his front gate, damaging it. He heard a popping sound and then the sound of wood and metal splintering. Immediately afterwards, he heard the drone as it dropped lower and ran into his garage as a second explosion hit the front of his home: “The blast wave was strong, I felt like I had been hit by a boxer.” The explosions left Mikhin with a concussion.

Svitlana Valinkevich, 50, lives close to the riverbank in Dniprovskiy District.⁶⁶ She said her dog had become accustomed to hiding from drones. On November 17, her dog ran into the house and Valinkevich looked out of the window to see if there was a drone. She heard a thump and saw a munition that had failed to detonate in her garden next to her Christmas tree. The military came a day later and took the unexploded munition away. Valinkevich shared pictures of the item with researchers. She said the same thing had happened on the property of other neighbors.

⁶³ Human Rights Watch interview with Anastasia Rusol, Kherson, November 26, 2024.

⁶⁴ Ibid.

⁶⁵ Human Rights Watch interview with Volodymyr Mikhin, Kherson, November 25, 2024.

⁶⁶ Human Rights Watch interview with Svitlana Valinkevich, November 26, 2024.



Remnants of a drone-dropped munition lying on the ground in Svitlana Valinkevich's garden. © 2024 Svitlana Valinkevich

Three other residents of Antonivka told Human Rights Watch researchers their houses were targeted and damaged in drone attacks while they were not home. In two cases, the residents were in hospital at the time being treated for injuries sustained in other drone attacks.⁶⁷ In each case, the resident said a neighbor had witnessed the attack and the resident shared pictures of the damaged homes with researchers.

Human Rights Watch analyzed six drone videos posted to Russian military-affiliated Telegram channels showing drone strikes on houses and apartment buildings between August and January 2025. There were no indicators in any of the videos or reporting that showed the house was being used by Ukrainian forces.

One drone video uploaded to a Russian military-affiliated Telegram channel on October 27 shows a quadcopter drone attacking a person in civilian clothing in an apartment building.⁶⁸ The video consists of four clips. In the first, a drone crashes into the balcony on the eastern side of a multi-story apartment building in Antonivka. A person in civilian clothing sitting on the balcony stands up. The video pauses before impact and then shows a picture of a pig's head overlaid onto the person's head. Two other clips show other drones striking the same building, while the fourth clip shows the building on fire.

Drones Emplacing Antipersonnel Landmines

In August 2024, Kherson's authorities started issuing warnings through their Telegram channels and by distributing printed information posters in Antonivka, Dniproviskyi, and

⁶⁷ Human Rights Watch interview with Andrii Loukin, November 29, 2024; November 28, 2024; Human Rights Watch remote interview with Illya Shiriayev, November 28, 2024; Human Rights Watch interview with Anastasia Pavlenko, November 28, 2024.

⁶⁸ СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, October 27, 2024, https://t.me/sueta_bpla/320 (accessed February 5, 2025).

other affected areas of the city to warn residents about the danger posed by PFM antipersonnel landmines, some emplaced by drones.⁶⁹

Both Russian and Ukrainian forces possess PFM antipersonnel landmines and have used them in the current conflict.⁷⁰ PFM antipersonnel mines, also called “petal” or “butterfly” mines, are small plastic blast mines that are delivered by rocket, helicopter, specialized ground vehicles, drones or other means. The mine contains a toxic liquid explosive filling and detonates when pressure is applied to the body of the mine, for example when someone steps on, handles or otherwise disturbs it.⁷¹ One variant of the PFM antipersonnel mine has a self-destruct mechanism that randomly detonates the mine up to 40 hours later.



A landmine warning sign in Kherson’s Shevchenko Park, posted to the Telegram account of the head of the Kherson City Military Administration. © 2024 Roman Mrochko via Telegram

Andrii Kovanyi, head of the Communications Department of the National Police of Ukraine in Khersonska region, told Human Rights Watch that Russian drones had been dropping

⁶⁹ Роман Мрочко (@roman_mrochko) post to telegram channel, October 8, 2024, https://t.me/roman_mrochko/11792 (accessed February 4, 2025); Роман Мрочко (@roman_mrochko) post to Telegram channel, October 3, 2024, https://t.me/roman_mrochko/11705 (accessed February 4, 2025); Поліція Херсонської області (@khersonpolice) post to Telegram channel, August 10, 2024, <https://t.me/khersonpolice/10902> (accessed February 4, 2025); Роман Мрочко (@roman_mrochko) post to telegram channel, October 23, 2024, https://t.me/roman_mrochko/12079 (accessed February 4, 2025); https://t.me/roman_mrochko/12026 (accessed February 4, 2025).

⁷⁰ See International Campaign to Ban Landmines, “Russia - Landmine Monitor ban policy profile,” <https://www.the-monitor.org/country-profile/russian-federation/mine-ban-policy?year=2023>; and International Campaign to Ban Landmines, Ukraine Landmine Monitor ban policy profile, <https://www.the-monitor.org/country-profile/ukraine/mine-ban-policy?year=2023> (accessed March 29, 2025)

⁷¹ Mary Wareham, “Landmine Stockpiles and Their Destruction,” in UN Office for Disarmament Affairs, “The Anti-Personnel Mine Ban Convention: 20 Years of Saving Lives and Preventing Indiscriminate Harm,” Occasional Paper No. 34, November 2019, <https://disarmament.unoda.org/publications/occasionalpapers/unoda-occasional-papers-no-34-november-2019> (accessed May 4, 2025).

PFM antipersonnel mines in the city. He said that police staff, including the head of demining operations, had been injured by the mines.⁷²

Valeriy Sukhenko, who along with his wife was injured in a drone attack on their home in Antonivka in November, said drones began to emplace PFM antipersonnel mines in the area near their house in September.⁷³ He said sometimes the drones would drop plastic bags containing the mines, in a possible effort to disguise them and perhaps encourage people to pick them up. When the mines—green or brown in color—landed among leaves, they were difficult to spot. Sukhenko said Ukrainian deminers had stopped coming to the area because it had become unsafe and because Russian drones were targeting vehicles. So, Sukhenko and his neighbor had taken it upon himself to destroy landmines they found using a long stick and gunfire.⁷⁴

Ambulance medical worker Nastya, 46, said that on October 8, she and an ambulance driver responded to a call at the eastern edge of Antonivka, where a man had stepped on a mine.⁷⁵ Upon arriving at the location, Nastya saw that both of his legs had been partially traumatically amputated by the explosion. Three PFM antipersonnel mines lay around him. Nastya approached the man and placed a stretcher under him and applied tourniquets around his injured legs.

Human Rights Watch verified a drone video uploaded to a Russian military-affiliated Telegram channel on October 8 showing a drone recording the ambulance and the injured man lying on a soft stretcher.⁷⁶

Nastya confirmed that the video shows the victim and incident described above.⁷⁷ Due to drone attacks and artillery shelling, Nastya said she was unable to continue to treat or evacuate the injured man. Nastya telephoned the ambulance call center to request that

⁷² Human Rights Watch interview with Andrii Kovanyi, Kherson, November 25, 2024.

⁷³ Human Rights Watch interview with Valeriy Sukhenko, November 26, 2024.

⁷⁴ Ibid.

⁷⁵ Human Rights Watch phone interview with Nastya, December 9, 2024.

⁷⁶ СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to the Telegram channel, October 9, 2024, https://t.me/sueta_bpla/207 (accessed February 4, 2025).

⁷⁷ Human Rights Watch phone interview with Nastya, December 9, 2024.



Picture posted to a Russian military-affiliated “Habr” Telegram channel showing four PFM antipersonnel landmines attached to the underside of a DJI drone along with the caption “Today someone’s legs will get shorter.” “Habr” Telegram channel, March 1, 2025.

police or military evacuate the injured man. Nastya later learned that the injured man’s legs had been amputated above the knee.⁷⁸

A video shared by Serhii Ivashchenko, 39, a community leader of Antonivka, shows a drone releasing five small munitions—which Ivashchenko says were PFM antipersonnel landmines—that land on a street in Antonivka.⁷⁹ The person filming was a resident who was taking cover at a bus stop and filmed the drone as it came to a stop and hovered above the street, releasing the munitions, which landed on the main road in Antonivka.

Human Rights Watch analyzed four photos and videos shared on Russian military-affiliated Telegram channels, which show PFM antipersonnel mines being fitted onto drones with a mechanism to drop these landmines. One

video shows a drone being fitted with four PFM mines.⁸⁰ A comment with a picture underneath the post shows another container holding at least 27 PFM mines.⁸¹ The PFM mines are packaged in twos or fours in a similar fashion to the mines shown being fitted onto the drone.

Human Rights Watch analyzed one drone video posted to a Russian military-affiliated Telegram channel on October 24 that shows a car driving out of Antonivka on the main road towards Sadove.⁸² The drone follows the vehicle as it nears a set of train tracks. There

⁷⁸ Ibid.

⁷⁹ On file with Human Rights Watch.

⁸⁰ СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, October 6, 2024, https://t.me/sueta_bpla/182 (accessed February 4, 2025).

⁸¹ СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, October 6, 2024, https://t.me/sueta_bpla/182?comment=2001 (accessed February 3, 2025).

⁸² СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, October 24, 2024, https://t.me/sueta_bpla/302 (accessed February 3, 2025).

are two small explosions one after the other on either side of the car that seem to originate from each wheel. The car veers off the main road and two more explosions occur on the right side of the vehicle. It is not clear if the driver was injured. The post is captioned: “Results of our Habr [the name of drone unit] operators, night mining...”

Researchers interviewed two residents from the towns of Sadove and Dniprovske, who were injured by emplaced PFM antipersonnel mines in November 2024.⁸³ In neither case could Human Rights Watch confirm whether the mines had been placed by drones or by other means.

Olena Seminikhina, 45, is a community leader of Sadove town, located approximately five kilometers east of Antonivka.⁸⁴ She said that on November 13, she and two colleagues left their office on foot to go help municipal workers who called her saying they had been injured in a drone attack. On the way, Seminikhina stepped on a PFM antipersonnel mine, sustaining a severe leg injury. She said she was taken to the O.S. Luchanskyi Kherson City Clinical Hospital in Kherson in a municipal car, where doctors amputated her leg. Later, her colleagues found three PFM antipersonnel mines at the location where she was injured. Seminikhina shared pictures of the landmines with researchers.

Serhii Dolhov, 50, is a tractor driver who lives in Dniprovske, a town located approximately eight kilometers west of Kherson.⁸⁵ On November 3, he was walking near his apartment building, when he stepped on a PFM antipersonnel mine that exploded. His left foot was almost completely severed by the blast and his right leg was injured by plastic fragments. Dolhov said, “I walked in this area a lot, so the mine must have appeared there maybe two or three days earlier. I am always looking up for drones, I wasn’t looking down for mines.”

The United Nations Human Rights Monitoring Mission in Ukraine (HRMMU) shared information with Human Rights Watch about three civilians in Dniprovskyi and Antonivka injured by landmines between June and December 2024.⁸⁶ The HRMMU did not specify the type of mines or if they were dropped by drones.

⁸³ Human Rights Watch phone interview with Olena Seminichina, November 28, 2024; Human Rights Watch interview with Serhii Dolhov, Mykolaiv, November 24, 2024.

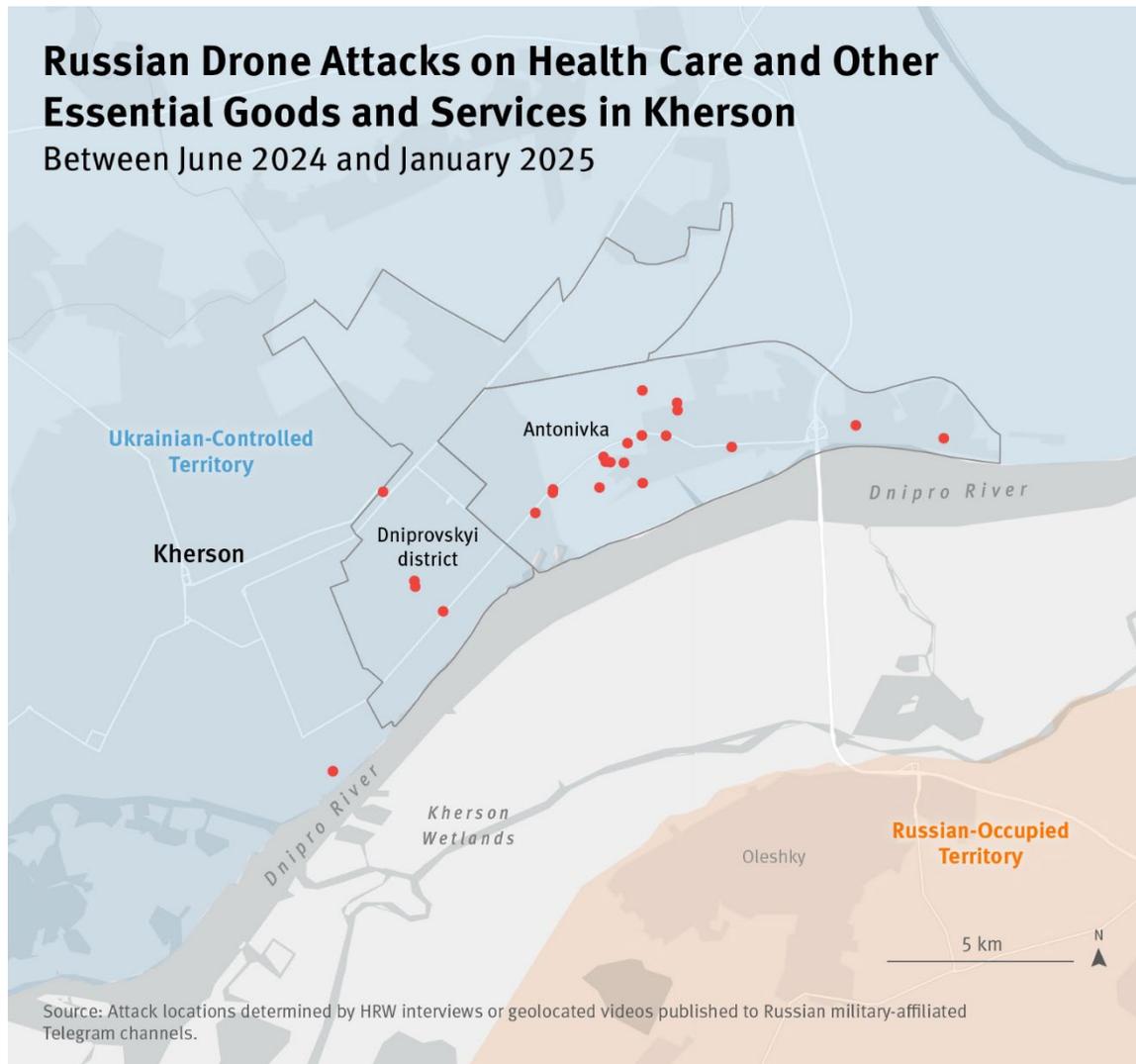
⁸⁴ Human Rights Watch phone interview with Olena Seminikhina, November 28, 2024.

⁸⁵ Human Rights Watch interview with Serhii Dolhov, Mykolaiv, November 24, 2024.

⁸⁶ United Nations Human Rights Monitoring Mission to Ukraine correspondence with Human Rights Watch, March 18, 2025.

Attacks on Health Care, Other Essential Goods and Services

The Russian drone attacks in Antonivka and Dniprovskiyi have prevented or hindered residents from accessing essential goods and services including food and health care, medical and rescue services, as well as other services such as public transportation. Human Rights Watch analyzed 20 videos showing drones carrying out attacks of this nature in Antonivka and Dniprovskiyi.⁸⁷



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⁸⁷ See, for example, От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 8, 2024, https://t.me/osvedomitell_alex/21444 (accessed May 12, 2025).

Human Rights Watch interviewed medical and ambulance staff who said they had witnessed or responded to Russian drone attacks on ambulances, medical staff, and healthcare facilities in both Antonivka and Dniproviskyi. Staff told researchers that the attacks had severely affected people’s ability to access health care, including when wounded in Russian attacks.⁸⁸

In two instances, Human Rights Watch corroborated witness accounts with Russian drone footage that showed drones targeting ambulances and killing and injuring ambulance personnel as they arrived at locations in response to civilian casualties from previous drone attacks.⁸⁹ The head of the Dniproviskyi District Council, Vladislav Kondratov, told researchers that the presence of Russian drones delayed emergency and medical staff responding to the impacts of attacks, sometimes for hours.⁹⁰

Two residents told Human Rights Watch that in June 2024, drones began attacking grocery stores in Antonivka and Dniproviskyi, as well as vehicles delivering food and other goods to the stores.⁹¹ Over the next few months, stores closed, forcing residents to travel further to procure basic goods and putting them at greater risk of being hit by drone attacks or artillery shelling.⁹² In Antonivka, one resident told us the four or five stores in her area had all closed.⁹³ Human Rights Watch was able to corroborate witness accounts with video of one attack on a grocery store.⁹⁴

⁸⁸ Human Rights Watch interview with Iryna Sokur, Kherson, November 26, 2024; Human Rights Watch interview with Viacheslav Khlopov, ambulance driver, Kherson, November 26, 2024; Human Rights Watch interview with Viktoriya Zhoha, medical assistant, Kherson, November 27, 2024.

⁸⁹ Human Rights Watch interview with Viacheslav Khlopov, ambulance driver, Kherson, November 26, 2024; От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 24, 2024. On file with Human Rights Watch; Human Rights Watch interview with Viktoriya Zhoha, medical assistant, Kherson, November 27, 2024; Human Rights Watch interview with Pavlyuk Volodymyr, ambulance driver, Kherson, November 26, 2024; От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 29, 2024, https://t.me/osvedomitell_alex/21910 (accessed February 3, 2025).

⁹⁰ Human Rights Watch interview with Vladislav Kondratov, Kherson, November 27, 2024.

⁹¹ Human Rights Watch remote interview with Nataliya, December 11, 2024.; Human Rights Watch interview with Ivan Motresku, Kherson, November 24, 2024.

⁹² Human Rights Watch remote interview with Olha Chernishova, December 11, 2024, Human Rights Watch interview with Nastya, Kherson, November 26, 2024.

⁹³ Human Rights Watch remote interview with Nataliya, December 11, 2024.

⁹⁴ Human Rights Watch interview with Ivan Motresku, Kherson, November 24, 2024; От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 20, 2024, https://t.me/osvedomitell_alex/22427 (accessed February 5, 2025).

The Kherson City Council Executive Committee told Human Rights Watch that Russian drone attacks have hit buses, injuring two drivers and damaging 22 vehicles.⁹⁵ The committee said some bus routes were regularly targeted by drones so buses at times ran less frequently.⁹⁶ Human Rights Watch analyzed five videos of five separate incidents of drones dropping munitions on buses in Antonivka and Dniproviskyi.⁹⁷

Attacks on Health Care

Russian drones have been used to attack medical staff and property in Antonivka and Dniproviskyi on several occasions.⁹⁸ Human Rights Watch interviewed one staff member of the Kherson Regional Oncology Center and six ambulance personnel who had witnessed Russian drone attacks. In a letter to Human Rights Watch, Kherson's City Council Executive Committee stated that Russian drone attacks had injured 21 medical staff in Kherson between May and December 2024.⁹⁹ Human Rights Watch could not confirm if those staff were injured in attacks that occurred when the medical personnel were on duty. Human Rights Watch analyzed seven videos showing Russian drone attacks on health care facilities, ambulances, and medical personnel.¹⁰⁰

Mykola, a State Emergency Service of Ukraine (SESU) rescue worker, said:

⁹⁵ Letter from the Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.

⁹⁶ Letter from the Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.

⁹⁷ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 8, 2024, https://t.me/osvedomitell_alex/21444 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, September 22, 2024, https://t.me/osvedomitell_alex/20986 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, September 14, 2024, https://t.me/osvedomitell_alex/20787 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 19, 2024, https://t.me/osvedomitell_alex/22413 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, January 4, 2025, https://t.me/osvedomitell_alex/23486 (accessed May 7, 2025).

⁹⁸ Human Rights Watch interview with Iryna Sokur, Kherson, November 26, 2024; Human Rights Watch interview with Artem, Kherson, November 26, 2024.

⁹⁹ Letter from Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.

¹⁰⁰ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 15, 2024, https://t.me/osvedomitell_alex/19850 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 27, 2024, https://t.me/osvedomitell_alex/22638 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 20, 2024, https://t.me/osvedomitell_alex/22418 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 8, 2024, https://t.me/osvedomitell_alex/22378 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 28, 2024, https://t.me/osvedomitell_alex/20344 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 29, 2024, https://t.me/osvedomitell_alex/21910 (accessed February 5, 2025).

We can't safely respond to emergencies. When we get emergency calls, we contact the military to see if there are any drones in the area before we dispatch. Even if they give us the all-clear though, a drone can show up within five minutes of us arriving.¹⁰¹

Attacks on Ambulances

Human Rights Watch interviewed six ambulance personnel who had been victims of drone attacks while on duty and traveling in marked ambulance vehicles in five separate incidents that took place between August and October 2024. The attacks killed one ambulance doctor and injured eight ambulance personnel. In two incidents, researchers matched witness accounts with videos of drone attacks published to Russian military-affiliated Telegram channels. In three attacks, ambulance teams were responding to calls from civilians injured in previous drone attacks.¹⁰²

In an incident on October 28 at 8 p.m., the team of ambulance driver Volodymyr Pavlyuk, 64, and a doctor and medical assistant, responded to a call from two people with leg injuries from a drone-dropped munition near the riverbank in Antonivka.¹⁰³ Upon arrival, Pavlyuk shone a flashlight to guide the doctor, Serhiy Kuchirenko, 64, and medical assistant Viktoriya Zhogha, 40, to the victims lying on the ground about three meters from the ambulance and then went to retrieve the stretcher from the back of the ambulance.

Zhogha said she and Dr. Kuchirenko were by the open door on the right-hand side of the ambulance when she heard a drone.¹⁰⁴ She yelled out, "Drone! Drone!" to try to warn the others. "I started calling the doctor and tried to hide, but I didn't know where [to hide]," Zhogha said. "It was too dark. We were panicking. At the last second, I tried to enter the ambulance." The explosion happened at that moment.

Pavlyuk found both Zhogha and Dr. Kuchirenko injured. "There was a puddle of blood around Serhiy [Dr. Kuchirenko] and he was silent," Pavlyuk recalled. "He was sort of half

¹⁰¹ Human Rights Watch interview with Mykola, November 27, 2024.

¹⁰² Human Rights Watch interview with Viacheslav Khlopov, ambulance driver, Kherson, November 26, 2024; Human Rights Watch interview with Viktoriya Zhogha, medical assistant, Kherson, November 27, 2024; Human Rights Watch interview with Pavlyuk Volodymyr, ambulance driver, Kherson, November 26, 2024; Human Rights Watch interview with Yuriy Ivannikov, Kherson, November 26, 2024.

¹⁰³ Human Rights Watch interview with Volodymyr Pavlyuk, ambulance driver, Kherson, November 26, 2024.

¹⁰⁴ Human Rights Watch interview with Volodymyr Pavlyuk, ambulance driver, Kherson, November 26, 2024.

sitting and half lying on the ground. Vika [Zhogha] had wounds to her leg.”¹⁰⁵ The blast wave gave Pavlyuk a concussion and significantly damaged his hearing.

Pavlyuk said the explosion damaged the front wheel, blew off the side mirror, and perforated the right side of the ambulance.¹⁰⁶

Pavlyuk quickly put his colleagues both into the back of the ambulance together with one of the people injured in the attack the team had been responding to. He put the second injured civilian in the passenger seat. He sped away from the site, ignoring the punctured wheel to find a place under a tree to park and wait for another ambulance to come to their rescue. As the new team came and loaded the patients into their ambulance, Pavlyuk said, he could not tell if Dr. Kuchirenko was still alive. He was pronounced dead at the hospital.



Screengrab of a drone video uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” on October 29, 2024, showing at least five people around the ambulance before it was struck by a drone-dropped munition. The cyrillic text visible on the screen is a derogatory Russian phrase against Ukrainians.

¹⁰⁵ Human Rights Watch interview with Volodymyr Pavlyuk, ambulance driver, Kherson, November 26, 2024.

¹⁰⁶ Ibid.

“This is the worst incident I have ever experienced in my career,” Pavlyuk said. “It is the first time in my career that I went out on a call with a doctor and the doctor was killed while responding to the emergency.”¹⁰⁷

Zhogha suffered fragmentation injuries to both legs, her right hip, and stomach. “When I have recovered, I would like to return [to work],” Zhogha said, about a month after the attack. “I love working, but time will tell.”¹⁰⁸

Pavlyuk said that prior to this, he had not heard any outgoing fire by Ukrainian forces or seen any Ukrainian military in the immediate vicinity.

Human Rights Watch verified one drone video posted to a Russian military-affiliated Telegram channel that shows the attack that killed Dr. Kuchirenko and injured Zhogha and Pavlyuk. The video consists of two clips showing a drone filming with a thermal camera.¹⁰⁹ The first clip appears to show the attack that injured the two people Pavlyuk and his team were responding to. The clip starts with a drone flying and then hovering above a tree near some houses. After the drone drops a munition which detonates on the ground, a dog runs away, and the silhouette of a person can be seen lying on the ground. In the second clip, a drone is flying to the same location. As it arrives at the same location, the drone hovers over the ambulance. At least five people are moving around the area. Three individuals are positioned around the ambulance where Zhogha and Pavlyuk recounted they and Dr. Kuchirenko stood. A munition is visible falling toward the group of people for a few frames before an explosion occurs near the front right side of the vehicle.

Viacheslav Khlopov, a 46-year-old ambulance driver, said that on August 27, he, together with a doctor and a medical assistant, responded to an emergency call at about 5 p.m. to collect and transport two people injured in a drone attack in Antonivka.¹¹⁰ When the ambulance approached the roundabout near Salut shopping center, Khlopov said he saw a drone start to follow it. As they approached the location they had been called to, the drone attacked the ambulance.

¹⁰⁷ Ibid.

¹⁰⁸ Human Rights Watch interview with Viktoriya Zhogha, medical assistant, Kherson, November 27, 2024.

¹⁰⁹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 29, 2024, https://t.me/osvedomitell_alex/21910 (accessed May 20, 2025).

¹¹⁰ Human Rights Watch interview with Viacheslav Khlopov, ambulance driver, Kherson, November 26, 2024.

Human Rights Watch verified one drone video posted to a Russian military-affiliated Telegram channel on August 28 that shows the attack on Khlopov’s ambulance, 300 meters north of the roundabout.¹¹¹ The video begins with a drone following the ambulance. As the ambulance slows down, the drone drops a munition that lands in front of it. Shortly after, three people dash from the ambulance into a nearby building. Khlopov confirmed to researchers that this video shows the attack on him and his colleagues.¹¹²

Khlopov said he, the doctor, and the medical assistant all sustained concussions in the explosion.¹¹³ The explosion severely damaged the bottom of the ambulance, all four tires, and the fuel tank. “If the explosion had hit the front of the car, we would all have been dead,” Khlopov said. The team called the police for backup, and the police evacuated them and the injured men they had been going to pick up to the hospital in their vehicle, as the ambulance was no longer useable.



Screengrab of a drone video uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” on August 28, 2024, showing Viacheslav Khlopov and his colleagues next to the ambulance after it was struck by a drone-dropped munition. The Cyrillic text visible on the screen is a notification displayed on the drone control interface.

¹¹¹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 28, 2024, https://t.me/osvedomitell_alex/20344 (accessed February 5, 2025).

¹¹² Human Rights Watch interview via text message with Viacheslav Khlopov, ambulance driver, January 21, 2025.

¹¹³ Human Rights Watch interview with Viacheslav Khlopov, ambulance driver, Kherson, November 26, 2024.

Human Rights Watch verified a second video uploaded to the Ukraine Patrol Police’s Facebook page on August 28 showing police officers evacuating at least three individuals from the attack.¹¹⁴ Two have been bandaged across the torso, while a third appears dressed in an ambulance staffer’s uniform and body armor.¹¹⁵ Two verified photographs uploaded to a Ukrainian-language Telegram channel show three individuals in civilian clothing and beige body armor changing the tires of the ambulance.¹¹⁶

Ambulance driver Yuriy Ivannikov, 57, said that on August 3, he and his colleague responded to a call about a man injured in a drone attack in Antonivka.¹¹⁷ When the team arrived at the location, the injured man pointed to the sky and said there were more drones. Ivannikov spotted a small black drone above. The injured man got into the ambulance and Ivannikov began driving away. As they pulled onto the main road in Antonivka, two other people also injured in another drone attack shouted out for help. Ivannikov stopped the ambulance and let them jump in. At that moment, he said a munition exploded near the ambulance, shattering all the windows. Ivannikov quickly drove away. Ivannikov and his colleague both sustained concussions as a result of the attack.¹¹⁸

On October 21 at around 9 p.m., ambulance assistant Yevgen Selivanov, 46, and his team were responding to a stroke victim in an apartment building in Dniproviskyi District. As Selivanov and two medical assistants walked towards the entrance of the building, a drone dropped a munition, injuring all three of them. Selivanov did not see or hear the drone prior to the attack. Later at the hospital, the doctor treating Selivanov removed a small round metal fragment from his shoe and explained that it was typical of drone attacks.

Unrelated to this incident, researchers spoke to a surgeon at Luchansky Hospital in Dniproviskyi District, who described similarly shaped metal fragments he said he found in drone attack injuries.¹¹⁹ Human Rights Watch analyzed three photographs posted to a Russian military-affiliated Telegram channel showing scrap metal fragments wrapped

¹¹⁴ Патрульна поліція України, “Олексій Білошицький: У Херсоні ми надали допомогу медикам, які потрапили під удар дрону,” August 28, 2024, video clip, Facebook, <https://www.facebook.com/watch/?v=403087046126801> (accessed February 5, 2025).

¹¹⁵ Ukrainian medical and emergency personnel on duty in areas near the front line, like Kherson, frequently wear body armor.

¹¹⁶ Хуевый Херсон (@hueviyherson) post to Telegram channel, August 28, 2024, <https://t.me/hueviyherson/61279> (accessed February 5, 2025).

¹¹⁷ Human Rights Watch interview with Yuriy Ivannikov, Kherson, November 26, 2024.

¹¹⁸ Human Rights Watch interview with Yevgen Selivanov, Kherson, November 26, 2024.

¹¹⁹ Human Rights Watch phone interview with Kirillo Chumarin, November 25, 2024.

around a small explosive charge, which appear to correspond with the fragments described by Selivanov and the surgeon.¹²⁰

Attacks on the Kherson Regional Oncology Center

Director Iryna Sokur of the Kherson Regional Oncology Center, a hospital in Antonivka, said drones started attacking the hospital and its grounds in July 2024, using explosive weapons.¹²¹ Sokur said the drones initially targeted the cars of patients who parked outside the hospital. Some patients arriving for treatment were injured in these attacks, and the hospital set up an emergency surgical room on the first floor to treat them.¹²² Drone attacks also injured a nurse who worked at the hospital. She suffered a concussion and fragmentation injuries when a drone dropped a munition near the entrance.¹²³



Screengrab of a drone video uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” on November 15, 2024, showing one of two generators at the Oncology Center smoldering after it was struck by a drone-dropped munition.

¹²⁰ СУЕТА НА ФРОНТЕ | БПЛА (@ sueta_bpla) post to Telegram channel, September 17, 2024, https://t.me/sueta_bpla/38 (accessed February 5, 2025); СУЕТА НА ФРОНТЕ | БПЛА (@ sueta_bpla) post to Telegram channel, September 12, 2024, https://t.me/sueta_bpla/5 (accessed February 5, 2025); СУЕТА НА ФРОНТЕ | БПЛА (@ sueta_bpla) post to Telegram channel, September 8, 2024, https://t.me/sueta_bpla/103 (accessed February 5, 2025).

¹²¹ Human Rights Watch interview with Iryna Sokur, Kherson, November 26, 2024.

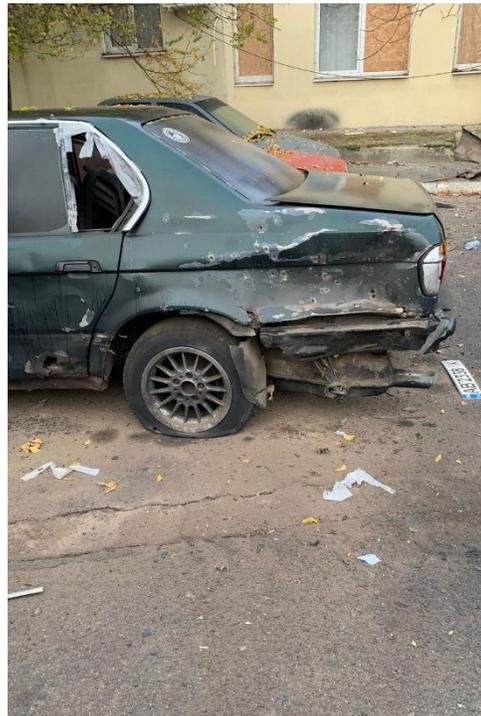
¹²² Ibid.

¹²³ Ibid.

Sokur said businesses supplying the hospital with medical equipment, medication, and food suspended deliveries when drones started attacking vehicles in Antonivka.¹²⁴ The hospital began using its two cars to drive to the north of Kherson to pick up supplies and transport them back to the hospital.

Sokur said drones also dropped munitions that damaged two large generators that powered the facility after the neighborhood lost electricity. Human Rights Watch analyzed two drone videos uploaded to a Russian military-affiliated Telegram channel on August 15 showing two attacks on generators at the Oncology Center. In both videos, a drone hovers above a generator for several seconds before dropping a munition.¹²⁵

Artem, 27, a driver and guard working at the center, described two separate attacks in which his two personal cars were damaged.¹²⁶ On the night of November 19, Artem was in the oncology center's basement when he heard a big explosion. When he went out the next morning, he found that a quadcopter drone had hit his car, which was parked directly outside the hospital. Artem said he found the remnants of the drone engine inside his car. That same morning, a drone dropped a munition on and damaged his second car, which he had also parked outside the hospital, Artem said. He shared with researchers pictures he took of the vehicles after the attack which showed hexagonal incendiary capsules from 122mm Grad incendiary rockets. Human Rights Watch verified one video uploaded to a Russian military-affiliated Telegram channel on November 20 that shows a drone hitting a parked vehicle at the center.¹²⁷ Artem confirmed with researchers that this video shows the attack



Artem's second car after it was damaged in a drone attack. © 2024 Artem

¹²⁴ Ibid.

¹²⁵ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 15, 2024, https://t.me/osvedomitell_alex/19850 (accessed February 5, 2025).

¹²⁶ Human Rights Watch interview with Artem, Kherson, November 26, 2024.

¹²⁷ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 20, 2024, https://t.me/osvedomitell_alex/22418 (accessed March 19, 2025).

on his car.¹²⁸ Artem said he knew of no Ukrainian military in the area and had not heard outgoing fire immediately prior to the attack.

Human Rights Watch analyzed three other drone videos showing attacks on vehicles including ambulances parked on the Oncology Center grounds.¹²⁹ One drone video uploaded to a Russian military-affiliated Telegram channel on November 18 consists of three clips. A



Photograph of two destroyed ambulances parked on the Oncology Center grounds. © 2024 Kherson Prosecution Office

drone is hovering above two vehicles parked next to one of the hospital buildings. The two first clips show the drone dropping two improvised incendiary weapons on the vehicles.¹³⁰

The video then cuts to a drone later filming at the same location as flames engulf both vehicles. Human Rights Watch analyzed a photo published to the Kherson Prosecutor's Office Telegram channel that same day showing two destroyed ambulances at the same location of the attack in the drone video.¹³¹ Both ambulances show extensive blast, fragmentation, and fire damage that is consistent with drone-dropped munitions.

¹²⁸ Human Rights Watch interview via text messages with Artem, February 10, 2024.

¹²⁹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 27, 2024, https://t.me/osvedomitell_alex/22638 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 20, 2024, https://t.me/osvedomitell_alex/22418 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 18, 2024, https://t.me/osvedomitell_alex/22378 (accessed February 5, 2025).

¹³⁰ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 18, 2024, https://t.me/osvedomitell_alex/22378 (accessed February 5, 2025).

¹³¹ Херсонська обласна прокуратура (@phogovua) post to Telegram channel, November 18, 2024, <https://t.me/phogovua/5541> (accessed February 5, 2025).

Both Russian and Ukrainian forces possess incendiary weapons and have developed and used armed drones to deliver incendiary munitions on the battlefield in Ukraine since 2022. Incendiary weapons cause excruciating burns and other injuries that can result in lifelong suffering. They also set fires that can destroy homes, civilian infrastructure, and agricultural areas.¹³²

Another drone video that Human Rights Watch analyzed, uploaded on November 27, shows a drone hovering above a car parked adjacent to a building within the center's grounds. The drone releases a munition, which hits the hood of the car.¹³³

Rescue Workers

In a letter to Human Rights Watch, the Kherson regional unit of the State Emergency Service of Ukraine (SESU) said Russian drone attacks injured five rescue workers and damaged five fire and rescue vehicles in Kherson between May and December 2024.¹³⁴ Human Rights Watch interviewed one rescue worker who survived two drone attacks while on duty and was injured in one of them. The attacks also injured two other civilians.¹³⁵

Mykola, a rescue worker with the SESU in Kherson, said that, as of late November, SESU staff and vehicles were coming under attack on a regular basis. He estimated that drones followed their vehicles in about 50 percent of instances where they were deployed.¹³⁶ Mykola did not have permission to share the specific locations where he was attacked.

The first time Mykola came under attack during a rescue mission was late in the morning on April 25. He said the team responded to a fire at a house on the outskirts of the city, using a black armored SUV bearing the SESU logo. About 15 minutes after they had arrived and were working to put out the fire, Mykola said he heard a drone speeding towards them from across the river:

¹³² Human Rights Watch, "Beyond Burning: The Ripple Effects of Incendiary Weapons and Increasing Calls for International Action," November 7, 2024, <https://www.hrw.org/report/2024/11/07/beyond-burning/ripple-effects-incendiary-weapons-and-increasing-calls>.

¹³³ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 27, 2024, https://t.me/osvedomitell_alex/22638 (accessed February 5, 2025).

¹³⁴ Letter from the State Emergency Service of Ukraine to Human Rights Watch, December 20, 2024.

¹³⁵ Human Rights Watch interview with Mykola, November 27, 2024.

¹³⁶ Ibid.

I was taking shelter in the building and yelled at everyone to shelter. We all hid inside the house even though it was on fire, to protect ourselves from the drone. We watched as the drone circled around the yard to see if it could find any people, and then it dropped a munition onto our vehicle, setting the car on fire.¹³⁷

A woman who he estimated was in her 60s was injured by metal fragments to her hand and stomach in the attack, he said. Mykola later realized that the car had been hit by a total of three munitions dropped on the hood and roof. The car was so heavily damaged that the team had to push it under a nearby tree and picked it up a day later.

On around July 10, Mykola and his colleagues responded to a fire caused by an artillery attack on some homes. The team arrived in a black SUV and a red fire truck. As one rescue worker was disembarking from the fire truck a few minutes after they had arrived at the scene, a drone appeared overhead and dropped a munition onto the truck. The rescue worker sustained a metal fragment wound to his hip. A pedestrian was also wounded by a metal fragment to their right foot. The explosion also damaged the wheel and roof of the fire truck.



Two photographs of the damaged fire truck after being hit by a drone-dropped munition. © 2024 State Emergency Service of the Kherson Region

¹³⁷ Ibid.

On July 11, SESU uploaded four photographs to their Telegram channel, accompanied by a statement indicating Russian operated drones attacked rescue workers who were combating fires in Bilozersky, a suburb eight kilometers west of Kherson.¹³⁸ Mykola shared the same photographs with Human Rights Watch.

Human Rights Watch verified one drone video uploaded to a Russian military-affiliated Telegram channel on October 31 showing a different attack on a fire truck in Antonivka.¹³⁹ The drone video contains 16 clips edited together, showing a building in Antonivka being targeted by drone-dropped munitions in 12 separate instances. One clip shows the building in flames, followed by a clip showing a fire truck on the street where the building is located. In the last clip, a drone drops an explosive on the truck in front of the building on fire. Satellite analysis showing damage to buildings confirms the attack happened between June 26 and July 9.

Shops, Grocery Delivery Vans

Russian drone attacks in Antonivka and Dniprosvkyi have forced shops to close or relocate further north, away from the river. As a result, people who remain in the neighborhood near the riverbank struggle to access food or are forced to travel greater distances at an increased risk of drone attacks or shelling.¹⁴⁰ Human Rights Watch documented a drone attack on a shop and another on a delivery van.

Shopkeeper Petro, 67, was killed, and his wife, Tetiana, 60, was injured in the August 26 drone attack on his delivery van on Khersonska Street in Antonivka. His daughter Nataliia told researchers, “When he was killed, we immediately closed the store. We were the second to last grocery store to close in the area. Previously, there were four or five functioning grocery shops.” The store was located on Khersonska Street, just a kilometer from where Petro was killed. Nataliia said the last store in Antonivka closed in November. “Now there is nothing,” she said. “How can older people walk seven kilometers to Tavriyskiy supermarket [a supermarket in Suvorovskiy district, northwest of Antonivka]?”¹⁴¹

¹³⁸ ДСНС Херсон (@dsns_kherson) post to Telegram channel, July 11, 2024, https://t.me/dsns_kherson/5486 (accessed May 12, 2025).

¹³⁹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 31, 2024, https://t.me/osvedomitell_alex/21965 (accessed February 5, 2025).

¹⁴⁰ Human Rights Watch remote interview with Olha Chernishova, December 11, 2024, Human Rights Watch interview with Nastya, Kherson, November 26, 2024.

¹⁴¹ Human Rights Watch remote interview with Nataliya, December 11, 2024.

Delivery driver Ivan Motresku, 27, had pulled up to a grocery store at the roundabout near Salut shopping center on November 19 at about 3 p.m.¹⁴² He parked his minivan and was unloading meat from the back when he heard a drone buzzing overhead and ran into the shop. Motresku said:

Just moments after I closed the shop door, there was an explosion. Everything shattered, and I suddenly felt pain. A metal fragment sliced the soft tissue in my upper right thigh. The shopkeeper wasn't injured. I grabbed her and evacuated her in my car. I made it home though I was bleeding, and then my wife drove me to the hospital.

The shopkeeper told Motresku that, 20 minutes before Motresku arrived, a drone had dropped a munition onto the street just outside the store. After Motresku and the shopkeeper fled the scene, Motresku said a third explosion started a fire that burned down the store according to neighbors.

Human Rights Watch verified a drone video posted to a Russian military-affiliated Telegram channel on November 20 that shows a drone hovering above the store before dropping a small bottle-shaped munition through a hole in the roof and into the store, resulting in a fire.¹⁴³ Motresku also shared photos of the destroyed shop with researchers. It was not possible for Human Rights Watch to identify the specific munition used in the attack, but it appeared to contain an improvised incendiary weapon comprised of a flammable liquid that was dispersed and ignited by a small explosive charge.



Picture of the shop near Salut roundabout after it was destroyed in a drone attack.

© 2024 Private

¹⁴² Human Rights Watch interview with Ivan Motresku, Kherson, November 24, 2024.

¹⁴³ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 20, 2024, https://t.me/osvedomitell_alex/22427 (accessed February 5, 2025).

When Motresku spoke to Human Rights Watch researchers, he was still in the hospital being treated for his injury.¹⁴⁴ He walked with a limp and said he did not know whether it would be permanent. Motresku said he would continue to work in food delivery after recovering, though he would no longer deliver to the shops at the roundabout where he was attacked.

Olha Chernishova, who lives by the riverbank in Dniprovskiy District and runs a shop in Suvorovskiy District, one block north of the river, told researchers in December that, while there used to be small shops every three or four blocks in the area, only one was still open.¹⁴⁵ This store used to be closer to the river, but when staff began finding it difficult to reach the store, because of being followed by drones, they moved four blocks north, away from the river. But the extra distance to the store made it difficult for some customers to reach it. Chernishova said:

A lot of people, especially older ones, cannot walk that far. Small shops are desperately needed for those who have stayed. Drone attacks directly affect people. Among those who stayed, the majority are older people. It's problematic for them to walk far to the shop. They can't [go to] buy groceries every few days, so they ask me to buy things for them.¹⁴⁶

Water and Electricity Services

Residents and municipal workers told Human Rights Watch that the Russian drone attacks also disrupted the already limited supply of water and electricity to civilians.

The Kherson City Council Executive Committee told Human Rights Watch that between May 1 and December 16, there were at least 24 drone attacks on gas, water, and electrical infrastructure sites.¹⁴⁷ During the same period, drone attacks prevented municipal workers from repairing 37 damaged water infrastructure sites and at least five municipal workers were injured or killed while attempting the repairs.¹⁴⁸

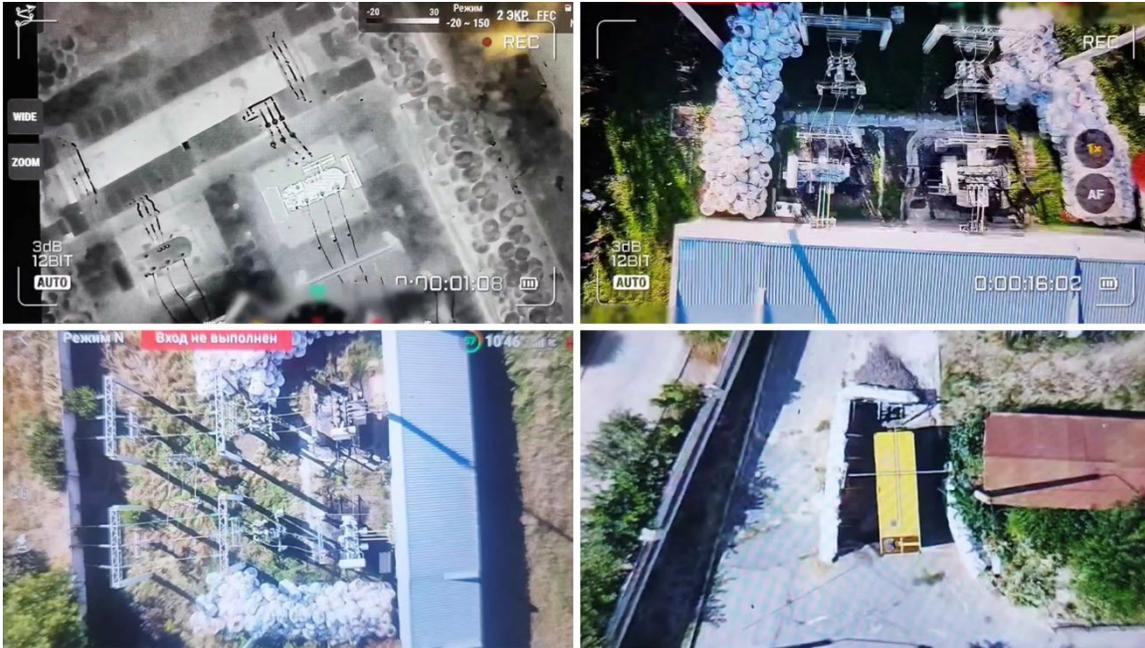
¹⁴⁴ Human Rights Watch interview with Ivan Motresku, Kherson, November 24, 2024.

¹⁴⁵ Human Rights Watch remote interview with Olha Chernishova, December 11, 2024.

¹⁴⁶ Human Rights Watch remote interview with Olha Chernishova, December 11, 2024.

¹⁴⁷ Letter from Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.

¹⁴⁸ Letter from Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.



Collage of screengrabs of geolocated drone videos uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” showing attacks on substations and generators.

Human Rights Watch analyzed five drone videos uploaded between August 2024 and January 2025 showing attacks on electrical substations and generators in Kherson.¹⁴⁹ In one video uploaded to a Russian military-affiliated Telegram channel on August 19, a drone drops a munition on a substation in Dniprovskiy District along with the caption, “Kherson. Electricians also go on vacation.”¹⁵⁰

¹⁴⁹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 19, 2024, https://t.me/osvedomitell_alex/20072 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 15, 2024, https://t.me/osvedomitell_alex/19851 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 29, 2024, https://t.me/osvedomitell_alex/21908 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 18, 2024, https://t.me/osvedomitell_alex/22343 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 27, 2024, https://t.me/osvedomitell_alex/20319 (accessed May 7, 2025).

¹⁵⁰ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, August 19, 2024, https://t.me/osvedomitell_alex/20072 (accessed February 5, 2025).

Drone attacks have targeted workers delivering water. In one analyzed drone video uploaded to a Russian military-affiliated Telegram channel on August 14, 2024, a drone drops a munition on a white truck with a cylindrical tank on the back.¹⁵¹ A white car is parked next to the truck. The munition impacts the roof of the truck and the video ends shortly after. In the same post, a picture taken at an unknown time later shows a man in civilian clothing and what appears to be body armor lying on the ground between the two vehicles, with what seems to be blood seeping out from underneath him.

The next day Roman Mrochko, head of the Kherson City Military Administration, posted to Telegram that two volunteers from the International Blue Crescent (IBC), a Turkish humanitarian organization, who were bringing water to residents in the Antonivka area, were killed in a drone attack.¹⁵² The IBC published a statement on August 16 condemning the attack and shared photographs of the same truck and car, damaged at the same location, and said there were multiple drone attacks on the same vehicles.¹⁵³ The photographs clearly show both vehicles marked with large stickers that say “IBC,” which are also visible in the drone feed.¹⁵⁴ Volunteer and emergency staff operating in areas near the frontline in Ukraine commonly wear recognizable personal protective equipment, such as body armor, that in many instances is beige or green colored.¹⁵⁵

¹⁵¹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 2, 2024. On file with Human Rights Watch.

¹⁵² Роман Мрочко (@roman_mrochko) post to Telegram channel, August 15, 2024, http://t.me/roman_mrochko/10603 (accessed February 3, 2025).

¹⁵³ “Two Aid Workers Lost Their Lives, Many Were Injured In A Drone Attack By Russia On The International Blue Crescent Foundation’s Team In Kherson, Ukraine,” *The International Blue Crescent Relief and Development Foundation (IBC)*, August 8, 2024, <https://ibc.org.tr/TR/1812/uluslararasi-mavi-hilal-vakfi-nin-ukrayna-kherson-daki-ekibine-rusya-tarafindan-duzenlenen-drone-saldirisinda-iki-yardim-gorevlisi-hayatini-kaybetti-cok-sayida-kisi-yaralandi> (accessed February 3, 2025).

¹⁵⁴ “Two Aid Workers Lost Their Lives, Many Were Injured In A Drone Attack By Russia On The International Blue Crescent Foundation’s Team In Kherson, Ukraine,” *The International Blue Crescent Relief and Development Foundation (IBC)*, August 8, 2024, <https://ibc.org.tr/TR/1812/uluslararasi-mavi-hilal-vakfi-nin-ukrayna-kherson-daki-ekibine-rusya-tarafindan-duzenlenen-drone-saldirisinda-iki-yardim-gorevlisi-hayatini-kaybetti-cok-sayida-kisi-yaralandi> (accessed February 3, 2025).

¹⁵⁵ Human Rights Watch interview with Vika Zhogha, Kherson, November 27, 2024; “Community Protection: Lending a Hand, Lending a Bulletproof Vest,” *Nonviolent Peaceforce*, May 24, 2023, <https://nonviolentpeaceforce.org/community-protection-lending-a-hand-lending-a-bulletproof-vest/> (accessed March 19, 2025).



Screengrab of a drone video uploaded to the Russian military-affiliated Telegram channel “From Mariupol to the Carpathians” on October 2, 2024, showing a white truck with a cylindrical tank on the back. The munition dropped by the drone impacted the truck’s roof.



Damaged water tank belonging to International Blue Crescent (IBC). The damage on the roof of the truck is consistent with the damage sustained by the white truck in the drone video. © 2024 International Blue Crescent

Public Transport

Drone attacks on buses in Kherson have led to significant disruptions in public transport, particularly in Antonivka and Dniproviskyi. These attacks have also resulted in casualties, with reports of deaths and injuries. Human Rights Watch analyzed five drone videos showing drone attacks on buses in Kherson but was unable to determine who was inside the buses at the time of the attacks.¹⁵⁶ Four of the attacks happened in Antonivka, east of the roundabout near Salut shopping center and one west of the roundabout. The fifth attack took place in Dniproviskyi District.

The Kherson City Council Executive Committee told Human Rights Watch that Russian drone attacks injured at least two bus drivers in Kherson and damaged 22 buses between May and December 16, 2024.¹⁵⁷ It also stated that public transport to the city's coastal areas had been severely restricted.

The Telegram channel of the Kherson Prosecutor's Office posted a photo of the interior of a bus with damage to the roof and blood stains on the side of the bus and the floor, with a caption that a drone attack on December 1 killed three people and injured eight.¹⁵⁸ Likely due to its graphic nature, much of the picture has been deliberately blurred which meant researchers could not confirm the location.

Residents said Russian drone attacks on buses have significantly reduced public transport options in Kherson, in particular in Antonivka and Dniproviskyi.¹⁵⁹

Svitlana, a community leader in Dniproviskiy District, said bus routes 5, 16, and 38 used to go to the Kindiyka area in Antonivka but did not anymore.¹⁶⁰ "It is now considered very

¹⁵⁶ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 8, 2024, https://t.me/osvedomitell_alex/21444 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, September 22, 2024, https://t.me/osvedomitell_alex/20986 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, September 14, 2024, https://t.me/osvedomitell_alex/20787 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 19, 2024, https://t.me/osvedomitell_alex/22413 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, January 4, 2025, https://t.me/osvedomitell_alex/23486 (accessed May 7, 2025).

¹⁵⁷ Letter from the Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.

¹⁵⁸ Херсонська обласна прокуратура (@phogovua) post to Telegram channel, December 1, 2024, <https://t.me/phogofftheovua/5608> (accessed February 5, 2025).

¹⁵⁹ Human Rights Watch remote interview with Olha Chernishova, December 11, 2024.

¹⁶⁰ Human Rights Watch remote interview with Svitlana, December 13, 2024.

risky,” she said. “Even taxis do not go there. If someone lives in Kindiyka, they must walk at least three kilometers to catch a bus.”

Sokur of the Kherson Region Oncology Center said staff were using hospital cars to pick up patients from their homes and drop them off after appointments, because the public transport system in Antonivka was suspended due to drone attacks.¹⁶¹

Olha Chernishova, who was the victim of a drone attack as she was unloading groceries from her car at her house in Dniprovskiy, told researchers that a trolleybus used to run along Perekopska Street, the district’s main street, in some places just a few hundred meters from the riverbank.¹⁶² She said:

The [trolleybus] wires have been cut, and pieces of wire now hang like tinsel, about a meter and a half from the ground. You can even run into them. Trolleybuses don’t run anymore, obviously. Nothing goes to that part of the city—no ambulance, no firefighters, no repair workers. We call Perekopska Street “the road of death.”¹⁶³

Other Services

The disruption of services due to Russian drone attacks in Kherson also includes mortuary, funeral, and demining services. Dniprovskiy District council head Vladislav Kondratov said, “The number of drones in the air doesn’t let us retrieve the corpses.”¹⁶⁴ When Svitlana’s neighbor died in an artillery attack, their body was trapped beneath a wall. She said a mortuary services staffer told her, “Extract the person yourself and bring the body to the Perekopska Street. We will not [come to you].”¹⁶⁵

¹⁶¹ Human Rights Watch interview with Iryna Sokur, Kherson, November 26, 2024.

¹⁶² Human Rights Watch remote interview with Olha Chernishova, December 11, 2024.

¹⁶³ Human Rights Watch remote interview with Olha Chernishova, December 11, 2024.

¹⁶⁴ Human Rights Watch interview with Vladislav Kondratov, Kherson, November 27, 2024.

¹⁶⁵ Human Rights Watch remote interview with Svitlana, December 13, 2024.

Human Rights Watch analyzed two drone videos uploaded to a Russian military-affiliated Telegram channel showing drone attacks on civilian cars at a funeral home in a cemetery in Antonivka.¹⁶⁶

Viktoria Orlova, head of a division within the Municipal Economy Department of Kherson City Council, told researchers in late November that drone attacks had injured five council employees in less than a month.¹⁶⁷ She said, “It’s impossible to work now... One woman lost her eye. Another man is in critical condition. Another was killed.”

One drone video uploaded to a Russian military-affiliated Telegram channel on December 3 shows a drone hovering above two individuals in bright green outfits and a blue truck, while a third individual stands nearby.¹⁶⁸ The drone drops a munition as the three individuals run away from beneath the drone. The munition lands a few meters from the truck. Orlova said the individuals and the vehicle looked as though they were with the Parks of Kherson, a municipal enterprise.¹⁶⁹

The drone attacks have also hindered efforts to clear landmines and explosive remnants of war from the streets of Kherson. In Antonivka, one resident said deminers stopped responding to requests in October due to the threat of drones.¹⁷⁰ Another resident in Dniproviskyi said it had taken authorities two weeks to respond to her neighbor’s request to clear unexploded ordnance from their property.¹⁷¹

¹⁶⁶ От Мариуполя до Карпат (@osvedomitell_alex) post Telegram channel, September 2 2024, https://t.me/osvedomitell_alex/20458 (accessed February 5, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, September 5, 2024, https://t.me/osvedomitell_alex/20530 (accessed February 5, 2025).

¹⁶⁷ Human Rights Watch remote interview with Victoria Orlova, November 28, 2024.

¹⁶⁸ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, December 1, 2024, https://t.me/osvedomitell_alex/22762 (accessed February 5, 2025).

¹⁶⁹ Human Right Watch interview via text message with Victoria Orlova, January 27, 2025.

¹⁷⁰ Human Rights Watch interview with A.T., Kherson, November 27, 2024.

¹⁷¹ Human Rights Watch interview with Svitlana Valinkevich, Kherson, November 26, 2024.

Impact of Attacks on Civilians in Kherson's Neighborhoods

The widespread targeting of civilians in Kherson has forced residents of Antonivka and Dniprovskiy to contend with increasingly limited access to health care, including medical services, food, water, electricity, public transport, and other services. Residents said Russia's drone attacks and lack of access to goods and services forced them and others to leave their homes more frequently and travel further in order to try to secure these, putting their lives at even greater risk.¹⁷²

Those who remain have had to reduce time outside their homes in order to minimize the risk of being killed, but they are also fearful of being attacked in their homes. Residents said the drone attacks and lack of access to goods and services forced them and others to leave their homes.¹⁷³

As a result of the drone attacks, residents who remain in the area have had to adapt their daily behavior. Nastya, who works as an ambulance medic, said:

It has become hard to go to and from work. I bicycle now instead of driving, because all my neighbors' cars have been damaged... But the drones are hunting cyclists as well...

People are limiting their visits to shops. Where I live, there are no shops and there is no way of getting goods delivered there. There is just one shop on the street corner and that only sells vodka and cigarettes. But it is protected by concrete blocks, so if my neighbors and I are leaving the neighborhood, we run and hide there, then run onwards from there.

¹⁷² Human Rights Watch remote interview with Olha Chernishova, December 11, 2024, December 16, 2024; Human Rights Watch interview with Nataliia, Human Rights Watch interview with Andrii Loukin, November 29, 2024; Human Rights Watch phone interview with Angelica Dobrovalska, January 31, 2025.

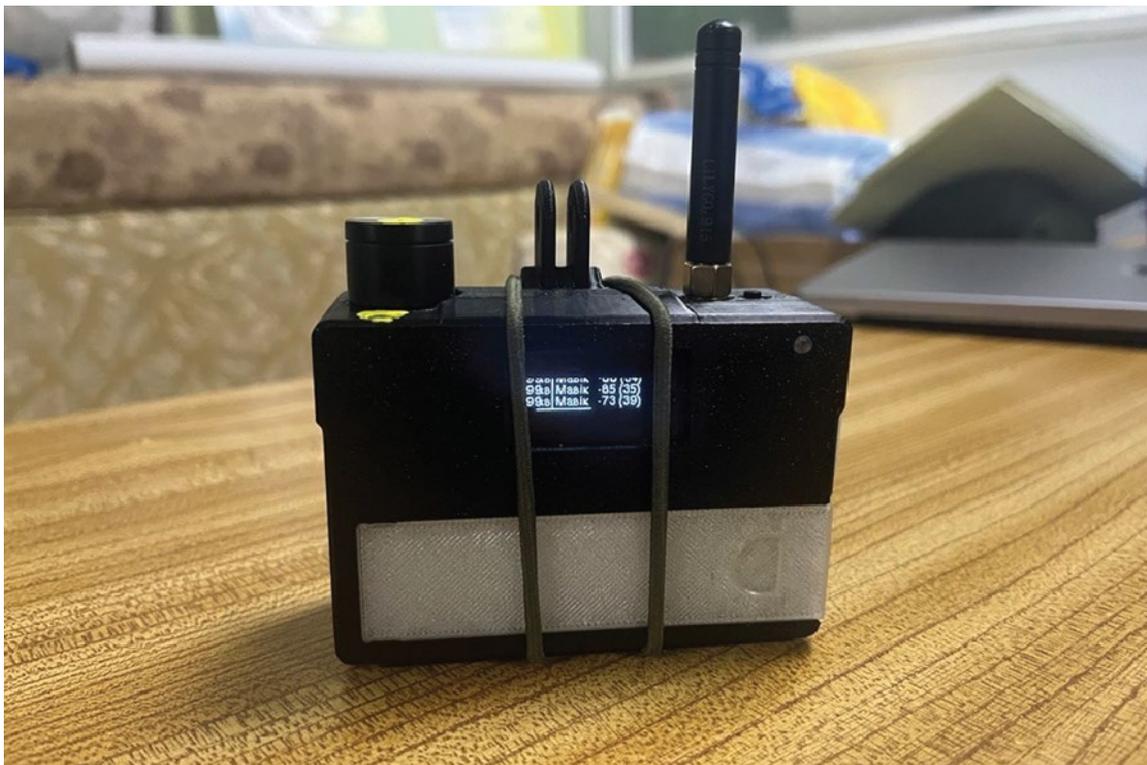
¹⁷³ Human Rights Watch interview with Andrii Loukin, November 29, 2024; Human Rights Watch interview with Tetiana Kravchuk, November 28, 2024; Human Rights Watch phone interview with Angelica Dobrovalska, January 31, 2025.

The reason I have stayed at home is because I have a large dog, and we have nowhere to go. Now we can't even walk the dog for longer than 10 or 15 minutes around the block.

Others, like businessman Vadym Lytvynenko, continue driving, as they do not see a safer alternative. Every day, Lytvynenko drives his mother to and from work at a medical company on Perekopska Street in Dniprovskiy District.¹⁷⁴ He said:

If you go there by car, it's practically a suicide mission, but it is not necessarily safer to walk... You drive at 80 or 100 kilometers [per hour] and that's your only savior. I take her every day back and forth and each time before I get into the car, I pray, and then I go.

One local authority said people have also started using handheld drone detectors with a screen that informs them if a drone is nearby, the model, and how far away it is.¹⁷⁵ This helps people determine when it is safe to go outside and when they need to run.



Photograph of a handheld drone detector. © 2024 Human Rights Watch

¹⁷⁴ Human Rights Watch interview with Vadym Lytvynenko, Kherson, November 25, 2024.

¹⁷⁵ Human Rights Watch interview with Vladislav Kondratov, Kherson, November 27, 2024.

People who escape drone attacks are still at risk of stepping on or driving over PFM antipersonnel mines. One city employee described the situation to researchers as, “when you are moving around [the area], you don’t know where to look to protect yourself, up at the sky for drones, or at your feet, for the mines they dropped.”¹⁷⁶

One major effect of these conditions has been depopulation. Between May and December 13, 2024, the population in Antonivka decreased from 4,570 residents to 2,300.¹⁷⁷ Of those who left, 1,700 left between the start of November and December 13. The Kherson City Council Executive Committee did not provide statistics about the population of Dniprovskiy District. Vladislav Kondratov, head of the Dniprovskiy District Council, told researchers in November he estimated that between 65 and 80 percent of the remaining population in Dniprovskiy and Antonivka consisted of older people.¹⁷⁸

Kherson Oncology Center Director Iryna Sokur told Human Rights Watch in November:

The drone attacks are causing panic and are the reason why some of our staff don’t want to come to work anymore and have gone on long-term leave. Some have children and told me they don’t want to leave their children with dead parents.¹⁷⁹

Tetiana Kravchuk, 55, left Antonivka after she was badly injured in a drone attack. She said:

People started to leave because life there has become impossible. It is one thing to live without communications, but different when you have someone dropping explosives on you and when it is happening constantly.¹⁸⁰

Some former residents told Human Rights Watch that in addition to the fear of being killed, the lack of electricity and heating were decisive factors in their decision to leave.¹⁸¹

¹⁷⁶ Human Rights Watch interview with A.T., Kherson, November 27, 2024.

¹⁷⁷ Letter from Kherson City Council Executive Committee to Human Rights Watch, December 26, 2024.

¹⁷⁸ Human Rights Watch interview with Vladislav Kondratov, Kherson, November 27, 2024.

¹⁷⁹ Human Rights Watch interview with Iryna Sokur, Kherson, November 26, 2024.

¹⁸⁰ Human Rights Watch interview with Tetiana Kravchuk, November 28, 2024.

¹⁸¹ Human Rights Watch interview via message exchange with Angelica Dobrovolska, December 11, 2024.

Angelica Dobrovolska, whose husband was killed in a drone attack on August 2, was forced to leave her apartment in Antonivka in December after another drone attack on a vehicle outside her building shattered her apartment windows.¹⁸² She said, “It is impossible to live there. There is no communication, no heating, and emergency services cannot reach you. So, I had to leave for civilization.”¹⁸³

Andrii Loukin, the car mechanic who was injured when he was the victim of a drone attack while cycling in late September, then left Antonivka. “It was not possible to stay without gas, electricity, or water,” he said. “There was only drones and artillery shelling. We had water from wells, but then the generators [used to pump the water] were destroyed by drones. The gas pipes were also damaged.”¹⁸⁴

Residents said they took precautions to avoid being targeted by drones, including limiting their movements outdoors.¹⁸⁵ A city employee told Human Rights Watch in November that in Antonivka:

A few neighbors risk their lives once every four days or once a week to drive their car out of the area to go to the store and come back, to buy goods for everyone in the community.¹⁸⁶

Husband and wife Valeriy Sukhenko and Anastasia Rusol left Antonivka after they were injured in the drone attacks on their home on November 17.¹⁸⁷ Sukhenko said their departure has impacted others in the community. Before they left, he used to help older people and people with disabilities by taking their cars to the gas station to fill them up. Now others in the community need to do this. He said he and a few other people in the neighborhood would collect lists of items those with limited mobility needed from the shops once a week and then take turns running the gauntlet to get what was needed and bring it back.

¹⁸² Ibid.

¹⁸³ Human Rights Watch phone interview with Angelica Dobrovolska, January 31, 2025.

¹⁸⁴ Human Rights Watch interview with Andrii Loukin, November 29, 2024.

¹⁸⁵ Human Rights Watch interview with AT., Kherson, November 27, 2024.

¹⁸⁶ Ibid.

¹⁸⁷ Human Rights Watch interview with Valeriy Sukhenko and Anastasia Rusol, Kherson, November 26, 2024.



Burned interior of Valeriy Sukhenko and Anastasia Rusol's home after multiple drone attacks. © 2024 Valeriy Sukhenko and Anastasia Rusol

Russia's drone attacks have impacted residents' mental health. Human Rights Watch spoke with Sukhenko and Rusol nine days after they were attacked. Both said they were deeply psychologically affected by the attack. Sukhenko said he was suffering from nightmares. Rusol said, "I start doing something and then I just stop. I am disoriented and lost." The couple no longer live in Antonivka because, they said, their hearing loss means they would be unable to hear incoming drones and try to protect themselves. In any case, their home was completely destroyed, they said, and so they had nowhere to live.

Volodymyr Mikhin, who distributes aid and has come under attack several times, described the effect the drones have had on his mental health and well-being.¹⁸⁸ He said he listens for the sound of drones for 15 minutes before leaving the house. On the road, he drives quickly, pausing under each tree to listen again. "There is no such thing as 'worry' anymore." Mikhin said he was always anxious and jittery, and had trouble falling asleep, usually collapsing from fatigue at around 2 or 3 a.m. Mikhin said living in this reality had drained his passion for life and that the stress was affecting his physical health as well.

¹⁸⁸ Human Rights Watch interview with Volodymyr Mikhin, Kherson, November 25, 2024.

Quadcopter Drones Used by Russia in Kherson

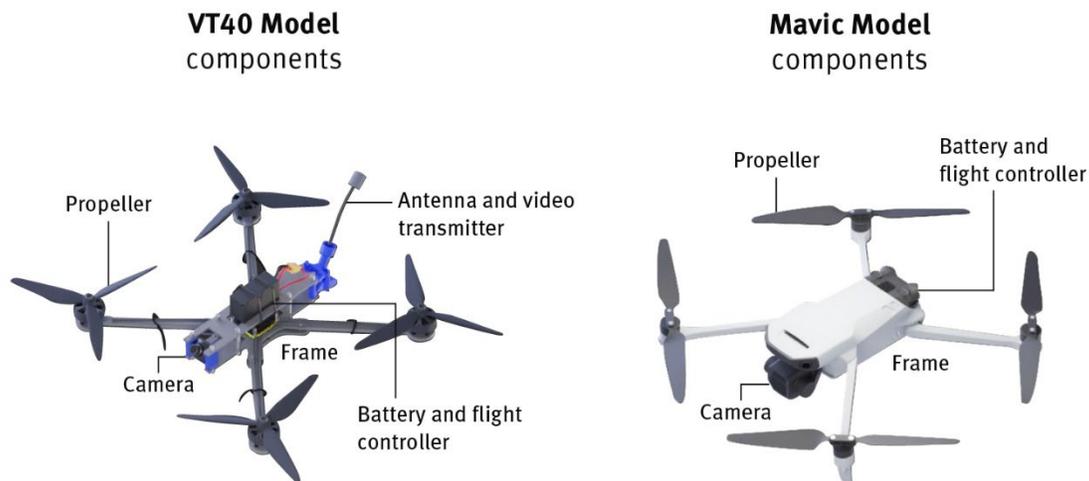
“The most dangerous thing about the drones is that they are so precise.”

—Andrii Kovanyi, Head of the Communications Department of the National Police of Ukraine in Khersonska region, November 2024.¹⁸⁹

Key Characteristics

The drones described in this report are quadcopter drones that are small in size and extremely agile, with the ability to hover, fly horizontally or vertically, loop around corners, slip through open windows and doors, maneuver between narrow spaces, and follow people and moving vehicles. Quadcopter drones have four motors and are equipped with at least one propeller, for lift and propulsion. The propellers and motors sit on a frame which also holds the battery, camera, control system, power cables, and video transmitter. These are the essential components required for the drone to fly effectively.

Quadcopter Drones Used by Russian Forces in Kherson



Models of a VT-40 (left) and a DJI Mavic (right) and their components. © 2025 Human Rights Watch

¹⁸⁹ Human Rights Watch interview with Andrii Kovanyi, Kherson, November 25, 2024.

Quadcopter drones have a short range, typically between 5 and 25 kilometers. Payload, wind, and extreme temperatures can significantly reduce a drone's battery life and range.¹⁹⁰

The drones are often equipped with high-resolution cameras that send a detailed live video feed to the operator. Some are equipped with a thermal camera that allows the drones to capture pictures in total darkness.¹⁹¹ The camera and the maneuverability of the drones enable the operator to conduct strikes beyond their line of sight.

Many of the quadcopter drones mentioned in this report measure less than 40 centimeters (less than 16 inches) diagonally. Operators can control them using a smartphone or a handheld-controller. Such drones typically cost between a few hundred and two thousand dollars.

Most of the quadcopter drones the Russian forces use in Kherson are commercially available products and not intentionally built for warfare. Russian forces or their suppliers equip these drones with additional components to carry or drop munitions.

The attacks detailed in this report demonstrate two methods of armed drone use in Kherson. The drone either releases one or more munitions while hovering above or chasing its target, or it flies directly into the target and detonates the munition it is carrying upon impact, destroying itself in the process.

Using quadcopter drones in this manner represents a paradigm shift on the battlefield. These drones are able to carry out attacks with relatively high accuracy and at a low cost in comparison to other types of guided munitions.

¹⁹⁰ Mitali Rajawat, "Weather Conditions and Its Effects On UAS," International Research Journal of Modernization in Engineering Technology and Science, Volume:03 Issue:12, December 2021, e-ISSN: 2582-5208, https://www.irjmets.com/uploadedfiles/paper/volume_3/issue_12_december_2021/17501/final/fin_irjmets1638987636.pdf (accessed February 26, 2025); Fabrizio Carippo, Arthur Fung, Edward Hunt, Valentina Lo Passo, Sam Marsland, Alberto Preti, Paul Ravenhill, Clémence Routaboul. "Unmanned Aircraft Systems integration into European airspace and operation over populated areas," Policy Department for Structural and Cohesion Policies Directorate-General for Internal Policies, May 2023, [https://www.europarl.europa.eu/RegData/etudes/STUD/2023/733124/IPOL_STU\(2023\)733124_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2023/733124/IPOL_STU(2023)733124_EN.pdf) (accessed February 26, 2025).

¹⁹¹ A thermal camera detects variations in heat and translates them into images, where colder objects appear darker and hotter objects appear lighter. Unlike traditional cameras that rely on light, thermal cameras can capture pictures in total darkness.

Munitions Used in Drone Attacks in Kherson

Human Rights Watch documented several types of munitions used by Russian quadcopter drones in attacks in Kherson. These munitions produce blast, fragmentation, or incendiary effects. Some of the drones are used to emplace antipersonnel and anti-vehicle landmines.

Many images and videos of these munitions reviewed by Human Rights Watch were posted to Russian military-affiliated Telegram channels and show a large variety of weapons. People who witnessed drone attacks also shared photos of the remnants of the drones and munitions with Human Rights Watch. How the drone carries, maneuvers, arms, and releases its payload is apparently not standardized.



Photograph posted to the Russian military-affiliated Telegram channel “Habr” on September 28, 2024 showing multiple types of drone-dropped munitions.



A photograph posted to the Russian military-affiliated Telegram channel “Habr” on September 30, 2024 showing a quadcopter drone with a munition taped to its airframe.

The munitions dropped by drones include antipersonnel mines, grenades, mortar projectiles, and individual explosive submunitions that have been removed from their original container. The munitions are then modified with improvised exterior elements, such as stabilization fins, to improve accuracy of the dropped munitions. A mechanism to carry and release the munition from the drone is modified onto the drone. Other types of drones are directed onto the target by the operator, causing the payload to detonate upon impact and destroying the drone in the process.

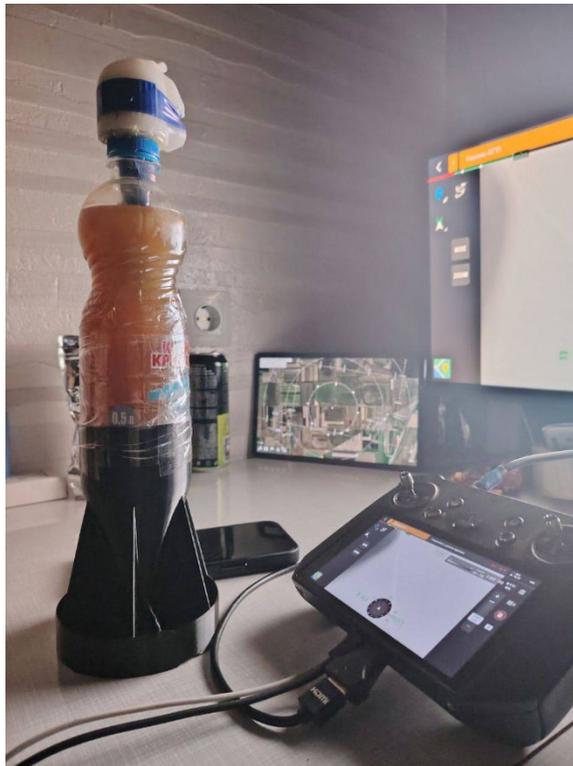
Munitions used in the drone attacks detailed in this report include weapons designed to explode on impact and produce blast or fragmentation effects. They include so-called dual-purpose munitions that have blast or fragmentation effect and also contain a shaped charge designed to damage or destroy materiel or vehicles.

Videos posted to Russian military-affiliated Telegram channels show the use of drones to emplace landmines. Soviet-era PFM-series antipersonnel mines and PTM-series anti-vehicle mines are often shown in these videos. Both types require some modification of the mine to account for the difference between mines that await a target to initiate them and munitions initiated by impact. Additionally, both types of mine can be equipped with a self-destruction device that could cause the mine to explode at random times after arming.

Armed drones are also being used to deliver improvised incendiary weapons in attacks in Kherson. These include small plastic bottles filled with a flammable liquid functioning akin to a Molotov cocktail.



A photograph posted to the Russian military-affiliated Telegram channel “Habr” on September 24, 2024 showing PTM-series anti-vehicle mines modified for delivery by quadcopter drones.



A photograph posted to the Russian military-affiliated Telegram channel “Habr” on September 8, 2024 showing an improvised incendiary device delivered by drone.

Types of Quadcopter Drones Used by Russian Forces in Kherson

Human Rights Watch analyzed Russian military-affiliated Telegram channels that shared pictures of drones used in attacks and then matched the drone interfaces seen in analyzed videos by comparing them to manuals that the manufacturers have made public, or details listed on their websites and communication channels. One Russian drone manufacturer reshared videos of drone attacks claiming that Russian forces used their drones in Kherson.

Human Rights Watch concluded that Russian forces used quadcopter drones manufactured by at least three different entities in Kherson. Two of those companies, DJI and Autel, are China-based commercial drone companies. Human Rights Watch wrote to both companies on April 17, 2025 with questions relating to the companies' knowledge of their drones being used for military purposes by Russian forces in Ukraine and their response to such use.

DJI Drones

Human Rights Watch confirmed the use of DJI drones in 27 attacks documented in this report by analyzing videos of attacks uploaded to Russian military-affiliated Telegram channels. Researchers also analyzed photos and videos uploaded to the same Telegram channels showing DJI drones being rigged with explosives, taking off, drone operators using DJI drone controllers, or screens showing drone footage matching DJI interfaces.¹⁹²

Between August 17 and December 2, the Telegram channel *From Mariupol to the Carpathians* shared or reposted photos of 103 DJI drones still in their original packaging that the Telegram channel said had been donated to Russian units operating in Khersonska region, without identifying the donor. These included models such as DJI Mavic 3, Mavic 3 Pro, and Mavic T. All three drones weigh between 899 and 958 grams and measure approximately 38 centimeters diagonally. All models have high-resolution

¹⁹² СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, September 12, 2024, https://t.me/sueta_bpla/3 (accessed February 5, 2025); СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, September 17, 2024, https://t.me/sueta_bpla/35 (accessed February 5, 2025); СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, October 3, 2024, https://t.me/sueta_bpla/119 (accessed February 5, 2025); СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bpla) post to Telegram channel, October 14, 2024, https://t.me/sueta_bpla/245 (accessed February 5, 2025).

cameras and various digital or optical zoom capabilities.¹⁹³ In addition, the DJI Mavic 3T has a thermal camera.¹⁹⁴

Human Rights Watch sent a letter to DJI on April 17, 2025 and on April 25, 2025 received an emailed response from DJI enclosing a letter dated April 17.¹⁹⁵

DJI acknowledged that its drones have been used in combat in Ukraine but stressed that such use goes against “long-standing policy that its products should not be sold or used for combat purposes.” DJI referred to its “Terms of Sale” agreement, which states that, “DJI products are designed, developed and manufactured for civil use, you may not, either directly or indirectly, use DJI products for combat use or other purposes prohibited by applicable laws.”¹⁹⁶ DJI’s response letter also said that it “has unequivocally opposed attempts to attach weapons to our products and we refused to customize or enable modifications that would enable our products for combat use.”

The DJI Products Terms of Use also say that by purchasing the drone, users “further agree not to: Attempt to ‘hack’, ‘crack’, reverse engineer or modify the Product or the DJI Apps, or discover, download or publish source code, bypass or circumvent measures employed to prevent or limit access to any area, content or code of the Product.”¹⁹⁷

The company said, “it will not do business with entities that signal an intention to use its products for such purposes. ... No matter which country it is, purchasing DJI products for use in combat purpose is against our anti-combat principle.”

¹⁹³ DJI Official website support page, <https://www.dji.com/support/product/mavic-3> (accessed February 26, 2025); DJI Official Website Support for DJI Mavic 3 Enterprise Series, <https://www.dji.com/support/product/mavic-3-pro> (accessed February 26, 2025); DJI Official Website Support for DJI Mavic 3 Enterprise Series, <https://www.dji.com/support/product/mavic-3-enterprise> (accessed February 26, 2025).

¹⁹⁴ DJI Official Website Support for DJI Mavic 3 Enterprise Series <https://www.dji.com/support/product/mavic-3-enterprise> (accessed February 26, 2025).

¹⁹⁵ Human Rights Watch has included the full response from DJI as an Annex in this report.

¹⁹⁶ Under the “Export and Sanctions Compliance Requirements” section, the Terms of Sale states that “DJI products are designed, developed and manufactured for civil use, you may not, either directly or indirectly, use DJI products for combat use or other purposes prohibited by applicable laws.” DJI Online Store Terms of Sale, www.dji.com (accessed May 6, 2025).

¹⁹⁷ DJI’s Terms of Use is only accessible through the checkout system when purchasing a product and does not exist elsewhere on their website.



A screengrab posted to the Russian military-affiliated Telegram channel “ogni126” on August 8 2024, showing a DJI Mavic drone hovering while an individual attaches a munition to its airframe.

DJI linked to its “statement on military use of drones” published on April 21, 2022, three months after Russia’s full-scale invasion of Ukraine, which said “DJI is internally reassessing compliance requirements in various jurisdictions.¹⁹⁸ Pending the current review, DJI will temporarily suspend all business activities in Russia and Ukraine.” The April 2025 letter to Human Rights Watch states that: “DJI has suspend[sic] all business in Russia and Ukraine since April 26, 2022, including the termination of product sale and the provision of services. DJI is still sticking to this policy.” The letter continues, “We are also aware of reports indicating that Ukraine's defense forces have purchased DJI products. No matter which country it is, purchasing DJI products for use in combat purpose is against our anti-combat principle.”

In its inquiry to DJI, Human Rights Watch noted that Telegram channels supporting the Russian military have shared receipts of DJI drone purchases, indicating that they were

¹⁹⁸ DJI Statement On Military Use of Drones, DJI Official Statement, April 21, 2022, <https://www.dji.com/hk-en/newsroom/news/dji-statement-on-military-use-of-drones> (accessed May 12, 2025).

bought from DJI authorized resellers in Russia.¹⁹⁹ In addition, there are stores in Moscow that assert they are authorized resellers selling DJI drones.²⁰⁰ In response, the company said: “DJI provides open market, off-the-shelf products. It primarily distributes its products through third-party commercial resellers, including e-commerce platforms such as Amazon and Alibaba. Any company may encounter situations where entities falsely claim to be its authorized resellers. The companies listed in the links that claim to be our authorized resellers are not, in fact, authorized by DJI.”

DJI’s response lists steps the company has taken to encourage responsible use of its drones. Most hinge on the responsibility of the user and authorized reseller to adhere to the company policy of no sale or support to combat use. The company explains that it removed the flight control software for consumer-grade products from the App Store in Russia and Ukraine. Consequently, “users in Russia and Ukraine can no longer download the relevant DJI Apps from the App Store.”

According to the response, DJI “has [made] its best efforts to ensure its compliance and prevent its products from being used for improper purposes.” It says that “throughout the years, DJI has repeatedly emphasized the compliance requirements to our distribution network, especially that they must block any sale or maintenance to customers that may try to use our drones to cause harm.”

Human Rights Watch sought clarity from DJI on how it monitors use of its products and any practical steps that could, for example, render the product inoperable if it detects user modifications to a product’s software. Its response said, “DJI does not track its users out of privacy concerns. DJI did not have knowledge of how its end users make use of its products and it is impractical for DJI to collect such information. ... We cannot decide how our drones are being used once they leave our control. DJI products do not have any functions or features that allow DJI to monitor usage of the products or to remotely control or disable the products; such monitoring by DJI would also be contrary to legitimate privacy expectations.”

¹⁹⁹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 29, 2024, https://t.me/osvedomitell_alex/21918 (accessed April 10, 2025).

²⁰⁰ For example, see: <https://www.djimsk.ru/> and <https://4vision.ru/>.

Autel

Autel’s drones have been used by both parties in Ukraine.²⁰¹ Human Rights Watch confirmed the use of Autel drones in two attacks documented in this report by analyzing videos of attacks uploaded to Russian military-affiliated Telegram channels. One picture shared to the Habr Telegram channel and analyzed by Human Rights Watch shows an Autel EVO II Series drone.²⁰² Human Rights Watch analyzed two drone videos of Autel used in attacks in Kherson.²⁰³

On February 25, 2022, Autel published a statement to its website strongly denouncing the use of any of its drone products to harm people or property.²⁰⁴ On November 18, 2024, Autel published a statement declaring itself an “international enterprise...dedicated to the field of civil drones.” The statement said, “Autel Robotics firmly opposes and refrains from participating in or supporting any form of war or conflict, as well as any provocative activities.” It also stated:

As a civil enterprise, Autel Robotics’ products are clearly defined and exclusively designed for civilian purposes. We conduct thorough due diligence and blacklist screenings on all partners and have signed all necessary compliance documents to ensure the legality and safety of product end-use. Autel Robotics strictly opposes and prohibits any modification of its products for purposes related to weapons of mass destruction or endangering human lives. This commitment underscores Autel Robotics’ unwavering dedication to global peace and security.²⁰⁵

²⁰¹ “Russia and Ukraine are fighting the first full-scale drone war,” *The Washington Post*, December 2, 2002, <https://www.washingtonpost.com/world/2022/12/02/drones-russia-ukraine-air-war/> (accessed February 26, 2025); Sam Biddle, “Drones from Company that “Strongly Opposes” Military Use Marketed With Bombs Activated,” *The Intercept*, January 6, 2024, <https://theintercept.com/2024/01/06/autel-chinese-drones-bombs-weapons/>.

²⁰² СУЕТА НА ФРОНТЕ | БПЛА (@sueta_bppla) post to Telegram channel, September 19, 2024, https://t.me/sueta_bppla/50 (accessed February 5, 2025).

²⁰³ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 29, 2024, https://t.me/osvedomitell_alex/21910 (accessed May 7, 2025); От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, November 18, 2024, https://t.me/osvedomitell_alex/22378 (accessed May 7, 2025).

²⁰⁴ “Response to Media Claims of Harmful Use of Drones in Ukraine,” *Autel Robotics News*, February 25, 2022, <https://www.autelrobotics.com/news/807/> (accessed March 20, 2025).

²⁰⁵ Autel Robotics Official Statement, November 18, 2024, <https://www.autelrobotics.com/news/20241118/> (accessed May 12, 2025).

Human Rights Watch sent a letter to Autel on April 17, 2025, and Autel responded on April 30, 2025. Both letters are provided in full in the annex to this report.

Autel acknowledged that its drones have been used in combat in Ukraine, but said: “Beyond publicly available media reports, we have no independent knowledge of how either side may have used Autel drones in Ukraine.” According to Autel, “Since February 2022, we have not conducted any transactions with Russian clients.”

Autel added: “We absolutely prohibit the use of our products for military purposes, especially in armed conflicts.” Autel says it requires “all customers” to sign a commitment “affirming that the products will not be used for military purposes and that the end users are not military organizations.”

In its response to Human Rights Watch, Autel outlined measures it has taken “to prevent misuse of Autel drones.” Autel’s user agreements and product manuals “explicitly prohibit the use of Autel drones for military purposes.” Autel’s customers must in writing, “1) agree not to sell items to “Sanctioned and Embargoed Countries,” which includes, among others, Russia; and 2) confirm that it is not a military end-user, it is not engaged in any actions or functions that are intended to support military end user, and it will not sell, supply, transfer, use, or permit any other person or entity to use any of the products supplied by Autel in any such military end-use.”

Unlike DJI, Autel says it has implemented geofencing restrictions “to prevent the operation” of its drones “in Russia, Ukraine, and other embargoed regions.”

Internally, Autel has established a “Compliance Management Leadership Working Group” overseen by the chair of its Board. It has a “mechanism” in place to “reward employees who demonstrate good awareness of their compliance obligations and penalise, through strict disciplinary measures, employees who violate compliance policies.”

Autel says it operates “a customer and distributor blacklist system” that terminates “all business relations” with “customers or distributors” that “are found violating our distribution agreements or company sales policies by diverting products to sensitive regions, or if they are implicated in negative media reports.”

Finally, Autel says it:

provides multiple contact channels through our website and customer service centers where the public can report allegations or concerns regarding the misuse of our drones, including their potential involvement in armed conflicts. We treat such reports seriously and investigate them thoroughly.

Sudoplatov Drones

The third manufacturer whose drones Human Rights Watch identified as having been used by Russian forces in Kherson is a Russian entity called Sudoplatov.²⁰⁶ Sudoplatov produces several types of custom-built drones for the Russian military.²⁰⁷ Human Rights Watch confirmed that Russian forces used Sudoplatov's VT-40 drones in one attack on a civilian documented in this report by analyzing videos of attacks uploaded to Russian military-affiliated Telegram channels. According to the Sudoplatov Telegram channel, these drones are capable of carrying a payload of approximately 1.3-3 kilograms and cover a range of 7-10 kilometers.²⁰⁸ On August 3, 2024, the Sudoplatov Telegram channel reposted several videos claiming to show its VT-40 drone being used in attacks in Kherson.²⁰⁹ Human Rights Watch sent a letter to Sudoplatov on May 9, 2025 and had not received a response at the time of finalizing this report for publication.

²⁰⁶ David Hambling, "Russian Volunteer Group Claims To Make 1,000 FPV Kamikaze Drones A Day," *Forbes*, December 5, 2023, <https://www.forbes.com/sites/davidhambling/2023/12/05/russian-volunteer-group-making-a-thousand-fpv-kamikaze-drones-each-day/> (accessed February 26, 2025).

²⁰⁷ See also, Anna Holishevskya, Darya, Sofia Kuzmina, Maksymiv, "Game-changing drones: who manufactures Russian FPV drones," *Trap Aggressor*, April 3, 2025, <https://trap.org.ua/en/publications/game-changing-drones-who-manufactures-russian-fpv-drones/>.

²⁰⁸ Судоплатов @sudoplatov_official) post to Telegram, August 11, 2023, https://t.me/sudoplatov_official/261 (accessed February 26, 2025).

²⁰⁹ Судоплатов @sudoplatov_official) post to Telegram, August 3, 2024, https://t.me/sudoplatov_official/2326 (accessed February 26, 2025).



A photograph posted to the Russian military-affiliated Telegram channel *Sudoplatov_official* on August 8, 2024 showing two VT-40 drones with a munition taped to each of the airframes.

Alleged Ukrainian Use of Armed Quadcopter Drones in Khersonska Region

Ukrainian forces have also armed commercial quadcopter drones and used them against Russian military targets during the war.²¹⁰ Russian officials, media outlets, and Telegram channels have alleged that Ukrainian forces have used armed quadcopter drones to attack civilians and civilian objects in the occupied parts of the Khersonska region and elsewhere. Human Rights Watch reviewed images and allegations that the Russian-installed governor of the occupied area of the Khersonska region, Vladimir Saldo, posted in December 2023 and in November and December 2024, which alleged Ukrainian drones had targeted civilian vehicles in occupied parts of the region.²¹¹ Human Rights Watch was not able to verify the images or identify and safely interview any victims or witnesses to the

²¹⁰ See, for example, CJ Chivers, “How Suicide Drones Transformed the Front Lines in Ukraine,” *The New York Times Magazine*, December 31, 2024, <https://www.nytimes.com/2024/12/31/magazine/drones-weapons-ukraine-war.html>.

²¹¹ Владимир Сальдо (@SALDO_VGA) post to Telegram channel, December 26, 2023, https://t.me/SALDO_VGA/1677 (accessed February 26, 2025); Владимир Сальдо (@SALDO_VGA) post to Telegram channel, November 25, 2024, https://t.me/SALDO_VGA/5045 (accessed February 26, 2025); Владимир Сальдо (@SALDO_VGA) post to Telegram channel, December 13, 2024, https://t.me/SALDO_VGA/5255 (accessed February 26, 2025).

incidents. In at least one post, the damage pattern of the vehicle depicted in the photographs appears consistent with the drone attacks against civilian objects detailed in this report.

Applicable International Law

International Humanitarian Law

The war between Russia and Ukraine is an international armed conflict under international humanitarian law, known also as the laws of war. It is governed primarily by the four Geneva Conventions of 1949 and the First Additional Protocol of 1977 (Protocol I), and the Hague Conventions of 1907, as well as the rules of customary international humanitarian law.²¹²

The laws of war provide protections to civilians and other noncombatants, including those no longer taking part in hostilities, from the hazards of armed conflict. They also address the conduct of hostilities—the means and methods of warfare—by all parties to a conflict. Foremost is the rule that warring parties must distinguish at all times between combatants and civilians.²¹³ Civilians and civilian objects may never be the deliberate target of attacks. Parties are also prohibited from conducting attacks that fail to discriminate between combatants and civilians, or would cause disproportionate harm to the civilian population compared to the anticipated military advantage.²¹⁴

Parties must take all feasible precautions to protect civilians under their control from the effects of attack and when carrying out attacks, minimize harm to civilian life and property.²¹⁵

Individuals who commit serious violations of the laws of war with criminal intent can be held liable for war crimes.²¹⁶ Commanders who knew or should have known about abuses

²¹² Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, adopted August 12, 1949, 75 U.N.T.S. 31, entered into force October 21, 1950; Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, adopted August 12, 1949, 75 U.N.T.S. 85, entered into force October 21, 1950; Geneva Convention relative to the Treatment of Prisoners of War, adopted August 12, 1949, 75 U.N.T.S. 135, entered into force October 21, 1950; Geneva Convention relative to the Protection of Civilian Persons in Time of War, adopted August 12, 1949, 75 U.N.T.S. 287, entered into force October 21, 1950; Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), adopted June 8, 1977, 1125 U.N.T.S. 3, entered into force December 7, 1978; Convention (IV) Respecting the Laws and Customs of War on Land and the Annexed Regulations Concerning the Laws and Customs of War on Land of 18 October 1907 (Hague Regulations), 3 Martens Nouveau Recueil (ser. 3) 461, 187 Consol. T.S. 227, entered into force January 26, 1910; See International Committee of the Red Cross (ICRC), *Customary International Humanitarian Law* (Cambridge Univ. Press, 2005).

²¹³ Protocol I, arts. 48, 51(2) and 52(2).

²¹⁴ Protocol I, art. 51(4); Protocol I, arts. 51(5)(b) and 57.

²¹⁵ Protocol I, art. 57(1).

²¹⁶ See ICRC, *Customary International Humanitarian Law*, rule 156.

by their forces and failed to stop them or punish those responsible can be prosecuted as a matter of command responsibility.²¹⁷

Unlawful Attacks on Civilians and Civilian Objects

The laws of war prohibit deliberate, indiscriminate and disproportionate attacks against civilians and against civilian objects.

Civilians may not be deliberately attacked unless and for such time they are directly participating in the hostilities. For an individual's act to constitute direct participation in hostilities, the person must imminently be capable of causing harm to opposing forces and carried out to support a party to the conflict.²¹⁸

Civilian objects include, among others, homes, shops, markets, schools, hospitals, houses of worship, farms, and factories, unless they are being used for a military purpose or are otherwise a lawful military objective.²¹⁹

Only military objectives may be attacked. Military objectives are anything that by their nature, location, purpose, or use provides enemy forces a definite military advantage in the circumstances prevailing at the time.²²⁰ Combatants, weapons, ammunition, and materiel are military objectives. Even though a residential home is presumed to be a civilian object, for example, its use by opposing soldiers to deploy or to store weaponry renders it a military objective and subject to attack for the duration of that use. Hospitals and other medical facilities have special additional protections from attack.

International humanitarian law also specifically prohibits attacking, destroying, removing, or rendering useless objects that are indispensable to the civilian population, such as food stores or drinking water installations intended for civilians.²²¹

Indiscriminate attacks are those that strike military objectives and civilians or civilian objects without distinction. Examples of indiscriminate attacks are attacks that are not

²¹⁷ Protocol I, art. 86(2).

²¹⁸ Protocol I, arts. 48, 51(2) and 52(2).

²¹⁹ Protocol I, art. 52.

²²⁰ Protocol I, art. 52(2).

²²¹ See ICRC, *Customary International Humanitarian Law*, rule 54.

directed at a specific military objective or that use weapons that cannot be directed at a specific military target.

Attacks that violate the principle of proportionality are also prohibited. An attack is disproportionate if it may be expected to cause incidental loss of civilian life or damage to civilian objects that would be excessive in relation to the concrete and direct military advantage anticipated at the time of the attack.

Armed Conflict in Populated Areas

The laws of war do not prohibit fighting in urban areas, although the presence of many civilians places greater responsibilities on parties to the conflict to take steps to minimize harm to civilians. Warring parties must take constant care during military operations to spare the civilian population and to take “all feasible precautions” to avoid or minimize the incidental loss of civilian life and damage to civilian objects. These precautions include doing everything feasible to verify that the objects of attack are military objectives and not civilians or civilian objects, and giving “effective advance warning” of attacks when circumstances permit. Parties must seek to cancel or suspend an attack should they determine the target is not a military objective or would cause disproportionate civilian harm.

Effective Advance Warnings

Warring parties are obligated to give “effective advance warning” of attacks that may affect the civilian population “so long as circumstances permit.”²²² What constitutes an “effective” warning depends on the circumstances. Such an assessment would take into account the timing of the warning, the ability to reach the relevant population, and the ability of the civilians to leave the area. A warning that does not give civilians adequate time to leave for a safer area would not be considered “effective.”

Civilians who do not evacuate following warnings are still fully protected by the laws of war. Otherwise, warring parties could use warnings to cause forced displacement, threatening civilians with deliberate harm if they did not heed the warnings. Moreover, some civilians are unable to heed a warning to evacuate, for reasons of health or disability, fear, or lack of a safe place to go. So even after warnings have been given,

²²² Protocol I, art. 57(2)(c).

attacking forces must still take all feasible precautions to avoid loss of civilian life and property. This includes canceling an attack when it becomes apparent that the target is civilian.

Spreading Terror Among Civilian Population

The laws of war prohibit “acts or threats of violence the primary purpose of which is to spread terror among the civilian population.”²²³ This prohibition does not attempt to address the effects of lawful attacks, which ordinarily cause fear, but rather those threats or attacks on civilians that have this specific purpose. Such attacks or threats must be carried out without offering substantial military advantage.²²⁴

“Primary purpose” signifies that the intent must be to instill terror, and not be an act of recklessness. Those responsible would need to understand the likelihood that terror²²⁵ would result from the illegal acts and intend this result.²²⁶

Quadcopter Drone Strikes in Kherson Under International Law

Armed quadcopter drones are not inherently unlawful or indiscriminate weapons systems. They carry various payloads that can be used for precision strikes in accordance with international legal standards and minimize civilian harm. Instead, their lawful use depends on the operator, the technology used for targeting, and the payload.

Quadcopter drones offer a distinctive capability that sets them apart from drones previously used in combat and from other weapons delivery systems. They are highly maneuverable and provide the operator with real-time high resolution video feed, features

²²³ Protocol I, art. 51(2).

²²⁴ ICRC, *Commentary on the Additional Protocols* (1987), para. 1940.

²²⁵ The ICTY in *Milošević* provided testimony that sought to provide an explanation of terror: “Terror is ... the intentional deprivation of a sense of security. It’s been [sic] the primal fear that people feel when they see someone in front of them gunned down and that moment of panic when they try and run to help the victim, waiting for the next shots to come, and you’ve had ample evidence about that. And it’s not just ... the fear that comes from being nearby the combat. This is a fear calculated to demoralise, to disrupt, to take away any sense of security from a body of people who have nothing ... to do with the combat.” *Prosecutor v. Milošević*, judgment, paras. 885-86.

²²⁶ In *Prosecutor v. Galić*, the ICTY Trial Chamber stated: “Primary purpose” signifies the mens rea of the crime of terror. It is to be understood as excluding dolus eventualis or recklessness from the intentional state specific to terror. Thus, the Prosecution is required to prove not only that the Accused accepted the likelihood that terror would result from the illegal acts – or, in other words, that he was aware of the possibility that terror would result – but that that was the result which he specifically intended. The crime of terror is a specific-intent crime.” Para. 136.

that provide the operators the ability to identify with extreme specificity the individual or object they target. They allow the operator to determine whether the presumptive target is a civilian or a combatant, without putting the operator at risk. That specificity also indicates that when attacks strike civilians, they were unlawfully deliberate.

Human Rights Watch research found that Russian forces carried out numerous drone strikes in Kherson that were deliberate attacks on civilians in violation of the laws of war. Human Rights Watch also documented numerous Russian drone attacks that deliberately targeted civilian objects, including civilian vehicles, healthcare facilities and ambulances, civilian businesses including grocery stores, and public transport. Also attacked were gas, water, and electrical infrastructure that appear to have been used for civilian purposes.²²⁷

Messages posted on Russian Telegram marking parts of Kherson in red and warning that, “Any movement of motor vehicles will be considered a legitimate target,” also demonstrates the intent to deliberately attack vehicles that were civilian, whether or not they were being used for military purposes, putting civilians at grave risk.

Human Rights Watch also found that the numerous deliberate Russian drone strikes on individual civilians and civilian vehicles were an apparent strategy whose primary purpose was to spread terror among the civilian population.²²⁸

While Russia carried out drone strikes against military targets in Kherson, the vast majority of posted videos that Human Rights Watch analyzed involved attacks on civilians – unarmed individuals in civilian clothing – or civilian objects such as parked cars.²²⁹ The drone attacks on civilians did not demonstrate a lawful military intent. In the International

²²⁷ Others have reached this conclusion with respect to the use of drones in Kherson: “The evidence shows numerous acts of violence committed by Russian FPV drone operators against Ukrainian civilians. Because the drones had high-definition cameras onboard, the Russian operators knew who and what they were targeting. In addition, the videos show drone strikes during the day and in high-visibility situations (i.e., clear skies, no clouds, minimal foliage coverage, etc.)” Gavin Logan & Kevin S. Coble, “Ukraine Symposium – Terrorizing Civilians and the Law of Armed Conflict,” *Articles of War Blog*, March 4, 2025. <https://lieber.westpoint.edu/terrorizing-civilians-law-armed-conflict/> (accessed May 12, 2025).

²²⁸ Additional Protocol I, to which both Russia and Ukraine are parties prohibits “[a]cts or threats of violence the primary purpose of which is to spread terror among the civilian population.” Article 51(2).

²²⁹ The trial chamber of the International Criminal Tribunal for the former Yugoslavia (ICTY) in *Prosecutor v. Karadžić* stated: acts or threats of violence directed against the civilian population or individual civilians not taking direct part in hostilities. As such, it is similar to the *actus reus* of unlawful attacks on civilians. Accordingly, as is the case with unlawful attacks on civilians, the acts or threats of violence constituting terror need not be limited to direct attacks on civilians or threats thereof, but may include indiscriminate or disproportionate attacks (*Karadžić*, para. 460).

Criminal Tribunal for the former Yugoslavia judgment in the *Milosevic* case, the court said that evidence of specific intent “can be inferred from the circumstances of the acts or threats of violence, that is, from their nature, manner, timing, and duration.”²³⁰

Commentators note that the ICTY’s reference to a “protracted campaign” of violence in the *Galic* case is significant because it also “suggests that the frequency and duration of actions ... could help determine that the attacker intended to spread terror” because of the attacker’s pattern of conduct over time.²³¹

Quadcopter Drones and Banned and Inherently Indiscriminate Weapons

Humanitarian disarmament seeks to reduce arms-inflicted human suffering and environmental harm, including by banning weapons that are inherently indiscriminate or cause needless suffering.²³² While quadcopter drones are lawful, military forces in Kherson have armed them with weapons, notably antipersonnel landmines, which are prohibited by an international treaty, and incendiary weapons, which are inherently indiscriminate when used in populated areas.

Antipersonnel Landmines

The use of antipersonnel mines violates international humanitarian law because the weapon cannot discriminate between civilians and combatants. Uncleared landmines drive displacement, hinder the delivery of humanitarian aid, and prevent agricultural activities. The 1997 Mine Ban Treaty explicitly prohibits the use, stockpiling, production, and transfer of antipersonnel mines by any actor under any circumstances.²³³

A total of 165 countries have ratified the Mine Ban Treaty, including Ukraine.²³⁴ The treaty comprehensively prohibits antipersonnel mines also known as victim-activated explosive

²³⁰ *Prosecutor v. Milošević*, judgment, para. 881.

²³¹ See Logan & Coble, “Ukraine Symposium – Terrorizing Civilians and the Law of Armed Conflict,” *Articles of War Blog*, March 4, 2025, citing ICTY, *Galic*, Opinion and Judgment, paras. 108-109, <https://lieber.westpoint.edu/terrorizing-civilians-law-armed-conflict/>.

²³² Humanitarian Disarmament: Seeking to prevent and remediate arms-inflicted human suffering and environmental harm, Official Website, <https://humanitariandisarmament.org/about/> (accessed May 15, 2025).

²³³ Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, adopted September 18, 1997, <https://www.apminebanconvention.org/en/the-convention/introduction>.

²³⁴ Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, adopted September 18, 1997. <https://www.apminebanconvention.org/en/>.

devices, regardless of whether they were manufactured in a factory or improvised from locally available materials. The mode of delivery also doesn't affect how the Mine Ban Treaty applies. PFM antipersonnel mines, also known as "petal" or "butterfly" mines, are typically scattered by aircraft, rockets, and artillery, or fired from specialized vehicles or launchers. Their delivery from quadcopter drones is a new development, but antipersonnel mines dropped from the air by drones, including PFM mines, still fall under the treaty prohibition.

Russia is not a party to the Mine Ban Treaty, but it has ratified the 1980 Convention on Conventional Weapons (CCW) Amended Protocol II on Landmines.²³⁵ That protocol contains much weaker restrictions on antipersonnel mine use but Russia's mine use fails to follow even its requirement to take "feasible precautions" or steps to effectively exclude civilians from the mined areas such as fencing, signs, warnings, and monitoring.

At a CCW meeting in November 2024, Ukraine provided a joint statement on behalf of itself and 45 countries that expressed grave concern at "Russia's failure to comply with its obligations" under the CCW "and its protocols." The statement said, "We are alarmed by reports that Russia's forces are using drones to air drop deadly PFM-1 antipersonnel mines and other antipersonnel mines in areas densely populated by civilians." The statement said that "[t]hese and other actions only intensify civilian suffering caused by Russia's repeated attacks, which have destroyed hospitals and medical facilities, schools, energy infrastructure and water supply systems."²³⁶

Russia's attacks in which drones have dropped antipersonnel mines in Kherson represent indiscriminate attacks in violation of international law.

²³⁵ Convention on Conventional Weapons, Amended Protocol II on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, as amended on May 3, 1996.

²³⁶ Statement delivered by Ukraine on behalf of Albania, Austria, Australia, Belgium, Bulgaria, Canada, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Georgia, Greece, Hungary, Iceland, Ireland, Italy, Japan, Republic of Korea, Latvia, Lithuania, Liechtenstein, Luxembourg, Malta, Republic of Moldova, Monaco, Montenegro, Netherlands, New Zealand, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, the United States, and the European Union, Convention on Conventional Weapons Meeting of High Contracting Parties, Geneva, November 14, 2024. Notes by Human Rights Watch.

Incendiary Weapons

The use of incendiary weapons is governed by Protocol III of the 1980 Convention on Conventional Weapons (CCW), which 117 countries have ratified including Russia and Ukraine.²³⁷ Protocol III prohibits the use of air-dropped incendiary weapons in populated areas (“concentrations of civilians”).²³⁸

Protocol III on Incendiary Weapons defines incendiary weapon as a weapon that “is primarily designed to set fire to objects or to cause burn injury to persons.”²³⁹ While negotiated before drones came into existence, Protocol III’s definition notes that incendiary weapons can take different forms, including “containers of incendiary substances.” For these reasons, the use of incendiary weapons dropped from drones on concentrations of civilians in Kherson seemingly would violate Protocol III.

In addition to regulating use in concentrations of civilians, Protocol III prohibits using incendiary weapons in attacks on individual civilians or civilian objects in all circumstances.

Therefore, both Russia’s and Ukraine’s use of drones to deliver incendiary munitions on the battlefield raises serious concerns. The design and components of this capability have been shown in production and demonstrated in attacks captured visually and posted to social media.²⁴⁰

²³⁷ Convention on Conventional Weapons (CCW) Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III), Geneva, adopted October 10, 1980, entered into force December 2, 1983.

²³⁸ *Ibid.*, art. 2. The use of ground-launched versions of incendiary weapons is permitted in civilian areas under certain circumstances. This distinction should be eliminated given that incendiary weapons cause the same kind of harm regardless of how they are delivered. Human Rights Watch, “Beyond Burning: The Ripple Effects of Incendiary Weapons and Increasing Calls for International Action,” November 7, 2024, <https://www.hrw.org/report/2024/11/07/beyond-burning/ripple-effects-incendiary-weapons-and-increasing-calls>

²³⁹ Convention on Conventional Weapons (CCW) Protocol III on Incendiary Weapons (Protocol III), Geneva, adopted October 10, 1980, entered into force December 2, 1983, <https://ihl-databases.icrc.org/en/ihl-treaties/ccw-protocol-iii-1980/article-1>.

²⁴⁰ Sergii “Goodwin” (@goodwin81), post to Telegram channel, September 2, 2024, <https://t.me/goodwin81/3769> (accessed October 11, 2024); Marc Santora, “Rise of the Dragons: Fire-Breathing Drones Duel in Ukraine,” *New York Times*, October 12, 2024, <https://www.nytimes.com/2024/10/12/world/europe/ukraine-russia-dragon-drones.html> (accessed October 12, 2024).

International Criminal Law

War Crimes

Serious violations of international humanitarian law that are committed with criminal intent—that is deliberately or recklessly—are war crimes. War crimes, listed in the “grave breaches” provisions of the Geneva Conventions and as customary law, include a wide array of offenses, including deliberate, indiscriminate, and disproportionate attacks harming civilians and civilian objects, torture and other ill-treatment, hostage-taking, and using human shields, among others. Individuals also may be held criminally liable for attempting to commit a war crime, as well as assisting in, facilitating, and aiding or abetting a war crime.

The Russian drone attacks in Kherson have been used to commit numerous war crimes including willful killing; intentionally directing attacks against civilian objects; and intentionally directing attacks against hospitals and other medical facilities. Human Rights Watch also found that the numerous deliberate Russian drone strikes on individual civilians and civilian vehicles were an apparent strategy whose primary purpose was to spread terror among the civilian population. Those involved in the drone operations might also be subject to prosecution for aiding and abetting unlawful attacks.

Crimes Against Humanity

When committed as part of a “widespread or systematic attack directed against a civilian population,” certain crimes can amount to crimes against humanity. These crimes include murder and other inhumane acts intentionally causing great suffering or serious injury to the body or to mental or physical health.²⁴¹ The Rome Statute of the International Criminal Court (ICC) defines such an “attack” as a course of conduct involving the multiple commission of acts listed as crimes against humanity, pursuant to or in furtherance of state or organizational policy to commit such an “attack”.²⁴² A policy could be demonstrated by the state or organization actively promoting or encouraging such an attack, or in certain situations, its deliberate failure to take action.

²⁴¹ Rome Statute of the International Criminal Court, 2187 UNTS 3, article 7 (1) 9a) and (k).

²⁴² Rome Statute, op. cit., article 7 (2) (a).

Human Rights Watch found that Russian drone attacks against civilians in Kherson constituted murder or intentionally caused serious bodily or mental or physical health injuries. These acts are being carried out as part of a widespread attack on the civilian population in parts of Kherson, and apparently in furtherance of Russian policy to commit such an attack. Numerous Russian forces' drone attacks against civilians in Kherson therefore constitute apparent crimes against humanity.

Criminal Responsibility and Obligations of States to Investigate and Prosecute

Criminal responsibility may fall on persons responsible for war crimes or crimes against humanity, including those planning or instigating or assisting the commission of the crimes. In addition, commanders and civilian leaders may be prosecuted for war crimes or crimes against humanity as a matter of command responsibility when they knew or should have known about the commission of war crimes or crimes against humanity by persons within their chain of command and took insufficient measures to prevent them or punish those responsible.

All states have an obligation to investigate and fairly prosecute individuals within their territory implicated in war crimes or crimes against humanity.

Human Rights Watch is unaware of any efforts by the Russian government to credibly investigate or stop the unlawful attacks on civilians and civilian objects or infrastructure documented in this report or provide compensation to those harmed.

In March 2022, the International Criminal Court (ICC) prosecutor opened an investigation into the situation in Ukraine following a request to do so by a group of ICC member states. The court has since issued a number of arrest warrants against Russian officials for serious crimes committed in Ukraine, including for President Vladimir Putin.

In addition to the ICC prosecutor's investigation, Ukrainian judicial authorities are also conducting their own criminal investigations, backed by evidentiary, technical, and operational assistance provided by other governments. Judicial authorities in other countries have also opened criminal investigations related to serious crimes committed in Ukraine.

Companies' Human Rights Responsibilities

Companies have human rights responsibilities that have been spelled out in the United Nations Guiding Principles on Business and Human Rights, endorsed by the UN Human Rights Council in 2011. Under the Guiding Principles, companies are expected to take proactive steps to ensure they do not cause or contribute to adverse human rights impacts within their global operations, and to respond to such impacts when they occur.²⁴³ Companies must also seek to mitigate or prevent any adverse impacts directly linked to their operations, products and services through their business relationships.²⁴⁴

Although non-binding, the Guiding Principles provide important and widely accepted guidance on businesses' human rights responsibilities.²⁴⁵ The Guiding Principles provide that companies should put in place human rights due diligence—that is, a process to identify, prevent, mitigate, and account for companies' impacts on human rights. Businesses should monitor their human rights impact on an ongoing basis and have processes in place to remediate adverse human rights impacts they cause or to which they contribute.²⁴⁶

²⁴³ United Nations Human Rights Council, "Guiding Principles on Business and Human Rights: Implementing the United Nations 'Protect, Respect and Remedy' Framework," 2011, principle 13 (a), http://www.ohchr.org/documents/publications/GuidingprinciplesBusinesshr_en.pdf (accessed January 12, 2025).

²⁴⁴ UN Human Rights Council, "Guiding Principles," art. 13 (b).

²⁴⁵ United Nations Office of the High Commissioner, "Frequently Asked Questions about the Guiding Principles on Business and Human Rights," https://www.ohchr.org/sites/default/files/Documents/Publications/FAQ_PrinciplesBussinessHR.pdf (accessed January 12, 2025).

²⁴⁶ UN Human Rights Council, "Guiding Principles," arts. 13-24.

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Annex I: Human Rights Watch Letter to Russian Government



HRW.org

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Defence Minister of the Russian Federation
Ministry of Defence of the Russia Federation
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press@mil.ru

Sergei Lavrov
Minister of Foreign Affairs of the Russian Federation
Ministry of Foreign Affairs of the Russian Federation
Smolenskaya-Sennaya Square, 32/34
Moscow 119200
press@mid.ru

April 14, 2025

Re: Drone Attacks in Kherson, Ukraine

Dear Ministers Belousov and Lavrov,

I am writing on behalf of Human Rights Watch to share our research findings into numerous attacks by Russian-operated drones targeting civilians and civilian objects in Kherson, Ukraine. I have included a list of questions attached to this letter and kindly ask for a response by April 28.

As you may recall, Human Rights Watch is an international, nongovernmental human rights advocacy organization whose work involves investigating and documenting violations of international human rights and humanitarian law in over 100 countries around the world.

Human Rights Watch has been researching Russian forces' targeting of civilians and civilian objects using quadcopter drones in the Antonivka and Dniprovskiy areas of the city of Kherson since May 2024. Our research found that Russian forces have used drones to attack civilians including medical, emergency and rescue workers, killing and injuring dozens. Russian forces have also used drones to attack shops, public buses, electricity generators, and other civilian infrastructure.

Human Rights Watch has documented dozens of attacks on civilians and essential services that occurred between May and November 2024. We investigated these attacks through interviews with 36 survivors of and witnesses to Russian drone attacks, as well as additional interviews with first responders and medical staff who treated drone attack victims, city workers, officials from the city districts affected by the attacks, local journalists, and Ukrainian regional authorities. We also analyzed 78 videos of drone attacks uploaded to Russian military-affiliated Telegram channels showing drones targeting civilians and civilian objects in Kherson. These videos show drones maintained by Russian forces dropping explosive weapons, including antipersonnel landmines, on civilians and civilian-populated areas.

We have a number of questions related to the findings described above, which are listed below. We would be grateful if you could respond to our findings and questions by April 28, 2025, to allow us to reflect your response in our upcoming reporting.

Thank you for your attention to these important matters. Please share your response with my colleague Mary Wareham at [REDACTED] or [REDACTED].

Sincerely,

[REDACTED]

Ida Sawyer
Director, Crisis, Conflict and Arms Division
Human Rights Watch
Email: [REDACTED]
Phone: [REDACTED]

Questions Relating to Russian Drone Attacks in the City of Kherson

To further our research, we would be grateful if you could answer the following questions:

1. Are the Russian Federation Armed Forces using armed quadcopter drones in Kherson? Can you share operational instructions issued to those in charge of the armed quadcopter drones in particular in relation to targeting?
2. Telegram channels claiming to be affiliated with the Russian Armed Forces (RAF) and with specific units of the Russian Armed Forces have shared maps of the city showing the Kherson's areas of Dniproviskyi and Antonivka marked in red, calling them "red zones," where the RAF would target any moving vehicle and that should therefore be considered unsafe for civilians. Can you confirm the RAF has designated the Kherson's areas of Dniproviskyi and Antonivka as areas in which RAF have the military authority to target any person or vehicle? If yes, can you share the RAF's justification for this designation?
3. Does the RAF keep track of civilian deaths and other civilian casualties and harm resulting from attacks using armed quadcopter drones? If so, how many civilian deaths and civilian casualties has the RAF recorded as a result of attacks it has conducted with armed quadcopter drones in Kherson's areas of Dniproviskyi and Antonivka?
4. What process does the RAF use to ensure compliance with its obligations to minimize civilian harm before conducting a drone attack in civilian populated areas?
5. Are there any particular rules of engagement in place for the RAF before conducting a drone attack in Ukraine?
6. Under what circumstances do RAF protocols allow for an unarmed person in civilian clothing to be targeted for attack by armed quadcopter drones?

7. Under what circumstances do RAF protocols allow for persons acting as medical and rescue workers wearing protective personal equipment to be targeted for attack by armed quadcopter drones?
8. Under what circumstances do RAF protocols allow a civilian vehicle to be attacked?
9. How does the RAF assess military advantage when attacking critical infrastructure facilities in areas still inhabited by civilians, such as electricity substations and generators?
10. Are there any plans to review or modify the RAF's use of armed quadcopter drones to minimize civilian harm?
11. Can the Russian Federation confirm that it is attaching antipersonnel landmines to drones used in attacks in Kherson?
12. Has the RAF conducted any investigations into potentially unlawful drone attacks by its forces in Kherson since May 2024? If yes, can you share the details of these investigations with us?
13. Does the RAF have regulations in place requiring units that use drones to carry out attacks to maintain the drone logs and preserve them as evidence for potential investigations into the lawfulness of a given attack?

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Андрею Белоусову
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press@mid.ru

14 апреля 2025 года

Тема: Атаки с использованием дронов в Херсоне (Украина)

Уважаемые господа министры!

Я обращаюсь к вам от имени Human Rights Watch, чтобы поделиться с вами выводами нашего расследования многочисленных случаев атак на гражданских лиц и гражданские объекты в городе Херсон (Украина) дронов, управляемых российскими военнослужащими. Я прилагаю к настоящему письму список наших вопросов и прошу вас ответить на них не позже 28 апреля.

Как вы, возможно, помните, Human Rights Watch — это международная неправительственная организация, которая отслеживает и документирует нарушения гарантируемых международным правом прав человека и норм гуманитарного права в более чем 100 странах мира.



HRW.org

Human Rights Watch расследовала случаи атак российских вооруженных сил на гражданских лиц и гражданские объекты с использованием дронов-квадрокоптеров в районах Антоновка и Днепровский города Херсон начиная с мая 2024 года. Наше исследование показало, что российские военнослужащие используют дроны для нападений на гражданских лиц, включая медиков, сотрудников аварийных служб и спасателей, десятки из которых были убиты и ранены. Российские вооруженные силы также используют дроны для атак на магазины, рейсовые автобусы, электрогенераторы и другие объекты гражданской инфраструктуры.

Human Rights Watch удалось задокументировать десятки атак на гражданских лиц и системы жизнеобеспечения, произошедших с мая по ноябрь 2024 года. Мы расследовали эти случаи, проведя интервью с 36 лицами, пережившими эти атаки, и их очевидцами, а также дополнительные интервью с сотрудниками служб экстренного реагирования и медиками, оказывавшими помощь пострадавшим от атак дронов, сотрудниками городских коммунальных служб, представителями администраций районов, пострадавших от атак, и областных органов власти, а также с местными журналистами. Кроме того, мы проанализировали 78 видео с атаками дронов, размещенных на связанных с российскими вооруженными силами телеграм-каналах, где показаны прицельные нападения с помощью дронов на гражданских лиц и гражданские объекты в Херсоне. На видео показаны дроны, управляемые российскими военнослужащими, которые сбрасывают боеприпасы взрывного действия, в том числе противопехотные мины, на гражданских лиц и на территории их проживания.

У нас есть ряд вопросов, связанных с вышеописанными выводами, — они прилагаются к настоящему письму. Мы были бы признательны, если бы вы направили свои ответы на наши выводы и вопросы не позднее 28 апреля 2025 года, с тем чтобы мы смогли отразить эти ответы в готовящемся к публикации докладе.

Благодарю вас за внимание, уделенное этим важным вопросам. Ответы могут быть направлены моей коллеге Мэри Уэрем (Mary Wareham) по адресу [REDACTED] или по телефону: [REDACTED].

С уважением,



Ида Сойер

Директор по вопросам кризисов, конфликтов и вооружений

Human Rights Watch

Эл. почта:

Тел.:

Вопросы, касающиеся атак российских дронов в городе Херсон

В целях проведения более полного исследования мы были бы признательны вам за ответы на следующие вопросы:

1. Используют ли Вооруженные силы Российской Федерации ударные дроны-квадрокоптеры в Херсоне? Можете ли вы поделиться боевыми задачами, которые ставятся перед операторами дронов-квадрокоптеров — в частности, в том, что касается определения целей?
2. В телеграм-каналах, связанных, по словам их владельцев, с российскими Вооруженными силами РФ и их отдельными подразделениями, публиковались карты города, на которых районы Антоновка и Днепровский отмечены красным цветом и названы «красными зонами», в пределах которых ВС РФ считают законной целью любой движущийся автомобиль и которые по этой причине должны считаться небезопасными для гражданских лиц. Можете ли вы подтвердить, что ВС РФ считают Днепровский район и Антоновку территориями, на которых ВС РФ разрешено атаковать любое лицо или транспортное средство? Если это так, то можете ли вы назвать основания, по которым ВС РФ считают эти районы такими территориями?
3. Ведут ли ВС РФ учет случаев гибели и других потерь среди гражданских лиц, а также случаев ущерба, вызванных атаками с использованием ударных дронов-

квадрокоптеров? Если ведут, то сколько случаев гибели и других потерь среди гражданских лиц зафиксировали ВС РФ в результате атак, осуществленных ими в районах Антоновка и Днепровский города Херсон?

4. Какая процедура используется в ВС РФ для обеспечения соблюдения их обязательств минимизировать ущерб для гражданских лиц перед проведением атаки с использованием дронов на территориях, населенных гражданскими лицами?
5. Существуют ли в ВС РФ какие-либо особые правила боевых действий, которые должны применяться перед проведением атаки с использованием дронов на территории Украины?
6. При каких обстоятельствах применяемые ВС РФ инструкции разрешают атаковать невооруженное лицо в гражданской одежде с использованием ударных дронов-квадрокоптеров?
7. При каких обстоятельствах применяемые ВС РФ инструкции разрешают атаковать лиц, выполняющих функции медиков и спасателей и использующих средства индивидуальной защиты, с использованием ударных дронов-квадрокоптеров?
8. При каких обстоятельствах применяемые ВС РФ инструкции разрешают атаковать гражданское транспортное средство?
9. Как ВС РФ оценивают военные преимущества при атаках на объекты критической инфраструктуры на территориях, на которых продолжают оставаться гражданские лица, — такие как электрические подстанции и генераторы?
10. Существуют ли какие-либо планы по пересмотру или изменению использования ВС РФ ударных дронов-квадрокоптеров в целях минимизации ущерба для гражданских лиц?

11. Может ли Российская Федерация подтвердить, что она снаряжает дроны, используемые для атак в Херсоне, противопехотными минами?
12. Проводили ли ВС РФ какие-либо расследования потенциально незаконных атак с использованием дронов, осуществлявшихся их военнослужащими в Херсоне начиная с мая 2024 года? Если да, то можете ли вы поделиться с нами подробностями таких расследований?
13. Существуют ли в ВС РФ инструкции, требующие от использующих дроны подразделений вести журналы использования дронов и обеспечивать их сохранность в целях использования в качестве доказательств при потенциальных расследованиях, касающихся вопроса о законности той или иной атаки?

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Masa Yanagisawa
Andrew Zolli

Annex II: Human Rights Watch Letter to Autel Robotics



[HRW.org](https://www.hrw.org)

Frank Li
Chairman of Autel Robotics Co., Ltd.

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Nanshan District, Shenzhen
Guangdong, 518055
China

April 17, 2025

Re: Apparent Use of Autel Drones by Russian forces in Kherson, Ukraine

Dear Mr. Li,

I am writing on behalf of Human Rights Watch to share findings on the use of Autel Robotics drones by Russian forces in Kherson, Ukraine.

Human Rights Watch is an international nongovernmental human rights research and advocacy organization whose work involves investigating and documenting human rights abuses in over 100 countries across the world.

We have just completed a new research project examining the use of drones by Russian forces to drop munitions on civilians and civilian objects in the Ukrainian city of Kherson. Russian forces positioned outside the city, on the other side of the Dnipro River, have used

drones to kill and injure dozens of civilians, as well as targeted civilian objects, destroying homes, cars, ambulances, shops, and generators. Russian forces have used these drones to deliver munitions, including incendiary and antipersonnel landmines. During our research, we have come across several videos indicating that some of the drones Russian forces have adapted for use in these attacks are Autel drones.

We appreciate Autel’s commitment to advocating for peaceful and creative uses of drone technology and the steps you said you have taken to address concerns around the use of Autel drones by the warring parties in Ukraine. We note your statement on February 25, 2022, acknowledging “media reports that drones have been employed for violent attacks on people and property in areas in or near to Ukraine.” According to that statement, Autel Robotics **“strongly deplores the use of any drone product to harm people or property, and we do not manufacture any product designed for such applications.”**²⁴⁸ We also note Autel published a set of principles including the principle of 'Prohibition of Improper Product Use,' which states: “... Autel Robotics strictly opposes and prohibits any modification of its products for purposes related to weapons of mass destruction or endangering human lives...”²⁴⁹

We would be grateful if you could reply to the following questions by May 1, 2025, so we can incorporate your response in our upcoming publications:

1. What do you know about Russian forces’ use of Autel drones in Ukraine?
2. What steps has Autel taken to prevent its drones from being adapted and used in ways counter to the company’s terms of service, in particular in armed attacks and with prohibited weapons such as antipersonnel landmines?
3. Does Autel have a mechanism in place in which the public can share allegations of use of Autel drones in armed attacks with the company?

²⁴⁸ “Response to Media Claims of Harmful Use of Drones in Ukraine,” *Autel Robotics News*, February 25, 2022, <https://www.autelrobotics.com/news/807/> (accessed March 20, 2025).

²⁴⁹ Autel Robotics Company Statement, November 18, 2024, <https://www.autelrobotics.com/news/20241118/> (accessed April 16, 2025).

4. Has Autel put in place any measures to geofence areas of Ukraine and Russia that are affected by the armed conflict? If yes, can you share more about which areas you have included and the criteria used to include these areas?
5. Are you aware whether users have succeeded in remapping certain built-in functions, such as the lamp function, to use as a control mechanism for dropping ordinances? What steps have Autel taken to prevent this type of remapping?
6. Have users modified the software for Autel's products, including through the use of software vulnerabilities to gain root access (known as "jailbreaking"), to allow users to replace or modify Autel software?
7. How does Autel monitor for this type of misuse of their products? Have you taken any steps to address this issue? If yes, what are they?
8. Does Autel have the ability to render a product inoperable if it detects user modifications to a product's software?
9. Could you provide insights on the challenges faced when addressing issues related to user modification of the software on Autel products?
10. How does Autel evaluate what third-party applications can be used with Autel drones and software? How does Autel vet or analyse third-party applications that can be used with Autel products? Does Autel allow users to sideload their own applications onto Autel products?
11. Does Autel allow third-party applications with autonomous tracking or targeting capabilities?
12. Are there other measures Autel is taking in order to minimize the risk that its drones are used in armed attacks? If yes, please share with us anything you can about these measures.
13. Has Autel been contacted by international investigators or national law enforcement officers investigating apparent laws of war violations that its drones may have been used in? If yes, please share with us anything you can about the company's position around engaging with such agencies.

Thank you for considering our request, and we hope to hear from you soon so that we can consider how to reflect your response in our reporting. Please note that we may publish your responses at our discretion and when appropriate, either in full or in part. We would welcome a virtual meeting with you and/or members of your team and researchers from Human Rights Watch who have been documenting the use of Autel drones to further

discuss our findings. You can reach us at [REDACTED] or through the contact details below.



Sincerely,

Ida Sawyer
Director, Crisis, Conflict and Arms Division
Human Rights Watch
Email: [REDACTED]
Phone: [REDACTED]

Annex III: Response Letter from Autel Robotics to Human Rights Watch

Thank you very much for your letter and for reaching out to us regarding this important matter.

Human Rights Watch is a highly influential international NGO, and we highly value the work of Human Rights Watch and the critical issues you raise.

Please find below our responses:

1. Knowledge of Russian Forces' Use of Autel Drones

Since February 2022, we have not conducted any transactions with Russian clients. We absolutely prohibit the use of our products for military purposes, especially in armed conflicts. Beyond publicly available media reports, we have no independent knowledge of how either side may have used Autel drones in Ukraine.

2. Steps Taken to Prevent Misuse of Autel Drones

Autel Robotics has established a comprehensive compliance management system, benchmarked against international best practices, to prevent our products from being diverted to embargoed regions (including Russia) and from being used for military purposes. Specifically:

- We require all customers to sign the Compliance Commitment Letter and the End-User Statement in each Order, affirming that the products will not be used for military purposes and that the end users are not military organizations. The Compliance Commitment Letter includes an Annex on end-user certification and end-user restrictions, which explicitly requires the customers: (1) to agree not to sell items to “Sanctioned and Embargoed Countries”, which includes, among others, Russia; and (2) to confirm that, it is not a military end-user, it is not engaged in any actions or functions that are intended to support military end user, and it will not sell, supply, transfer, use, or permit any other person or entity to use any of the products supplied by Autel in any such military end-use. The End-User Statement requires disclosure and certification of the intended end-user, intended end-use and ultimate destination of Autel’s items.
- Our User Agreements and Product Manuals explicitly prohibit the use of Autel drones for military purposes.

- We have implemented geofencing restrictions to prevent the operation of our drones in Russia, Ukraine, and other embargoed regions.
 - We have established a Compliance Management Leadership Working Group. This is overseen by the Chairman of the Board, further highlighting the importance that Autel places on compliance as it ensures that oversight over corporate compliance activities has the direct attention of the most senior stakeholder in the Company. Additionally, we have introduced the “Compliance Reward and Penalty Mechanism” which is designed to reward employees who demonstrate good awareness of their compliance obligations and penalise, through strict disciplinary measures, employees who violate compliance policies.
 - We have established a customer and distributor blacklist system. If any customers or distributors are found violating our distribution agreements or company sales policies by diverting products to sensitive regions, or if they are implicated in negative media reports, they are blacklisted and all business relations are terminated.
3. Mechanism for Public Reporting
- Currently, Autel provides multiple contact channels through our website and customer service centers where the public can report allegations or concerns regarding the misuse of our drones, including their potential involvement in armed conflicts. We treat such reports seriously and investigate them thoroughly.

Thank you once again for your attention to this matter. We appreciate the opportunity to engage with Human Rights Watch on these important topics.

Sincerely,

Betty Yee

Compliance Department

Autel Robotics Co., Ltd.

Federico Borello, Executive Director (Acting), Chief Programs Officer

Senior Leadership

Lama Fakih, (acting) Program Director
Lauren Camilli, General Counsel
Angela Deane, Chief Development Officer
Mei Fong, Chief Communications Officer
Abir Ghattas, Chief Information Officer
Marusya Lazo, Chief Financial Officer
James Ross, Legal and Policy Director
Bruno Stagno Ugarte, Chief Advocacy Officer
Minjon Tholen, Global Head of Diversity, Equity, and Inclusion

Division and Program Directors

Balkees Jarrah, (acting) Middle East & North Africa
Juanita Goebertus, Americas
Tanya Greene, United States
Elaine Pearson, Asia
Mausi Segun, Africa
Hugh Williamson, Europe and Central Asia

Sam Dubberley, Technology, Rights and Investigations

Elizabeth Evenson, International Justice
Bill Frelick, Refugee and Migrant Rights
Arvind Ganesan, Economic Justice and Rights
Elizabeth Kamundia, Disability Rights
Zama Neff, Children's Rights
Richard Pearshouse, Environment and Human Rights
Macarena Sáez, Women's Rights
Ida Sawyer, Crisis, Conflict and Arms

Advocacy Directors

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Farida Deif, Canada
Kanae Doi, Japan
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Bénédicte Jeannerod, France
Iskra Kirova, Europe and Central Asia
(incoming), Germany
Måns Molander, Nordic
Cesar Munoz, Brazil
Allan Ngari, Africa
Hilary Power, United Nations, Geneva
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Masa Yanagisawa
Andrew Zolli

Annex IV: Human Rights Watch Letter to DJI Technology



HRW.org

Frank Wang
Chief Executive Officer of SZ Da-Jiang Innovation
Technology (DJI)

DJI
West Wing Skyworth Semiconductor Design Building
No. 18 Gaoxin South 4th Avenue
Nanshan District
Shenzhen, 518057
China

April 17, 2025

**Re: Apparent Use of DJI Drones by Russian forces in Kherson,
Ukraine**

Dear Mr. Wang,

I am writing on behalf of Human Rights Watch to share findings on the use of DJI drones by Russian Forces in Kherson, Ukraine.

Human Rights Watch is an international nongovernmental human rights research and advocacy organization whose work involves investigating and documenting human rights abuses in over 100 countries across the world.

We wrote to you in August 2024 and shared links to social media posts showing DJI drones being used in the conflict in Sudan. We appreciated your prompt email reply, which emphasized that DJI has a “longstanding policy” ... “that no one should use DJI products for combat purposes.”

We have just completed a new research project examining the use of drones by Russian forces to drop munitions on civilians and civilian objects in the Ukrainian city of Kherson. Russian forces positioned outside the city, on the other side of the Dnipro River, have used drones to kill and injure dozens of civilians, as well as targeted civilian objects, destroying homes, cars, ambulances, shops, and generators. Russian forces have used these drones to deliver munitions, including incendiary and antipersonnel landmines. During our research, we have come across dozens of videos indicating that some of the drones Russian forces have adapted for use in these attacks are DJI drones.

We note DJI's statement from April 26, 2022, stating that it would temporarily suspend all business activities in Russia and Ukraine.²⁵⁰ We also note that Telegram channels supporting the Russian military have shared receipts of DJI drone purchases, indicating that they were bought from DJI authorized resellers in Russia.²⁵¹ In addition, there are stores in Moscow that assert they are authorized resellers selling DJI drones.²⁵²

We would be grateful if you could reply to the following questions by May 1, 2025 so we can incorporate your response in our upcoming publications:

1. What do you know about Russian forces' use of DJI drones in Ukraine?
2. What steps has DJI taken to prevent its drones from being adapted and used in ways counter to the company's terms of service, in particular in armed attacks and with prohibited weapons such as antipersonnel landmines?
3. Does DJI have mechanisms in place to enable the public to share allegations of use of DJI drones in armed attacks with the company?
4. Following its April 26, 2022, statement, what steps has DJI taken to temporarily suspend business activities in Russia and Ukraine? How do you explain then that there are companies that claim to be authorized DJI resellers in Russia?
5. Has DJI rolled back any of the suspensions since then?
6. Has DJI put in place any measures to geofence areas of Ukraine and Russia that are affected by the armed conflict? If yes, can you share more about which areas you have included and the criteria used to include these areas?

²⁵⁰ "DJI Reassesses Sales Compliance Efforts in Light of Current Hostilities," *DJI News*, April 26, 2024, <https://www.dji.com/newsroom/news/dji-statement-on-sales-compliance-efforts> (accessed March 20, 2025).

²⁵¹ От Мариуполя до Карпат (@osvedomitell_alex) post to Telegram channel, October 29, 2024, https://t.me/osvedomitell_alex/21918 (accessed April 10, 2025).

²⁵² For example, see: <https://www.djimsk.ru/> and <https://4vision.ru/>.

7. Are you aware of users remapping certain built-in functions, such as the lamp function, to use as a control mechanism for dropping ordnances? Has DJI taken steps to prevent this type of remapping?
8. Are you aware of users modifying the software for DJI's products, including through the use of software vulnerabilities to gain root access—known as "jailbreaking"—which then allows users to replace or modify DJI software?
9. How does DJI monitor for this type of misuse of their products? Have you taken any steps to address this issue? If yes, what are they?
10. Does DJI have the ability to render a product inoperable if it detects user modifications to a product's software?
11. Could you provide insights on the challenges faced when addressing issues related to user modification of the software on DJI products?
12. How does DJI evaluate what third-party applications can be used with DJI drones and software?
13. Does DJI allow third-party applications with autonomous tracking or targeting capabilities?
14. Are there any other measures that DJI is contemplating taking in order to minimize the risk that its drones are used in armed attacks? If yes, please share with us anything you can about these planned measures.
15. Has DJI been contacted by international investigators or national law enforcement officers investigating apparent laws of war violations that its drones may have been used in? If yes, please share with us anything you can about the company's position around engaging with such agencies.

Thank you for considering our request, and we hope to hear from you by May 1, 2025, so that we can consider how to reflect your response in our reporting. Please note that we may publish your responses at our discretion and when appropriate, either in full or in part. We would welcome a virtual meeting with you and/or members of your team and researchers from Human Rights Watch who have been documenting the use of DJI drones to further discuss our findings. You can reach us at [REDACTED], or through the contact details below.

Sincerely,



Ida Sawyer
Director, Crisis, Conflict and Arms Division
Human Rights Watch

Email: [REDACTED]

Phone: [REDACTED]

Annex V: Response Letter from DJI Technology to Human Rights Watch

SZ DJI Technology Co., Ltd.
No. 53 Xianyuan Road
Nanshan District, Shenzhen, China

April 17, 2025

Ida Sawyer
Director, Crisis, Conflict and Arms Division
Human Rights Watch

Re: HRW Letter Dated April 17, 2025

Dear Ms. Sawyer,

We are writing to respond to your letter dated April 17, 2025 delivered to legal@dji.com and dji-pr@dji.com. Thank you for your notification and inquiry.

It is DJI's long-standing policy that its products should not be sold or used for combat purposes, and it will not do business with entities that signal an intention to use its products for such purposes. DJI has suspend all business in Russia and Ukraine since April 26, 2022, including the termination of product sale and the provision of services. DJI is still sticking to this policy.

DJI has unequivocally opposed attempts to attach weapons to our products and we refused to customize or enable modifications that would enable our products for combat use.¹ We are also aware of reports indicating that Ukraine's defense forces have purchased DJI products. No matter which country it is, purchasing DJI products for use in combat purpose is against our anti-combat principle.

DJI provides open market, off-the-shelf products. It primarily distributes its products through third-party commercial resellers, including e-commerce platforms such as Amazon and Alibaba. Any company may encounter situations where entities falsely claim to be its authorized resellers. The companies listed in the links that claim to be our authorized resellers are not, in fact, authorized by DJI.

DJI does not track its users out of privacy concerns. DJI did not have knowledge of how its end users make use of its products and it is impractical for DJI to collect such information. DJI UAVs do not need to connect to the internet to operate. Following initial activation, DJI UAVs can be used entirely offline in “airplane mode.” DJI also offers a “local data mode” that prevents any data from being transmitted to or from DJI’s flight apps and servers, while allowing users to access the internet for particular purposes like map services. We cannot decide how our drones are being used once they leave our control. DJI products do not have any functions or features that allow DJI to monitor usage of the products or to remotely control or disable the products; such monitoring by DJI would also be contrary to legitimate privacy expectations.

DJI has made its best efforts to ensure its compliance and prevent its products from being used for improper purposes. DJI conducts due diligence against all its dealers before contracting. DJI requires all its dealers and authorized resellers to sign Export Control and Sanction Compliance Commitment Letter in which they have to warrant that they will use, and require their resellers, customers or end-users of DJI products to use DJI products for civil purposes only and never directly or indirectly use DJI products for the purposes of, with, or related to, combat use. DJI conducts sanctions screening against its dealers, authorized resellers as well as its direct customers through DJI’s online shops to ensure that it does not engage in any sales to any persons listed on the sanction Lists, comprehensive sanctioned countries, or any transactions that would violate the sanction laws and regulations, especially the sanction compliance requirements in UN, U.S., EU and CN. DJI’s compliance team implements periodic trainings regarding sanctions compliance for its internal employees and also prepares compliance training materials for its cooperating third-parties. In 2023, DJI removed the flight control software for consumer-grade products from the App Store in Russia and Ukraine. Consequently, users in Russia and Ukraine can no longer download the relevant DJI Apps from the App Store.

Throughout the years, DJI has repeatedly emphasized the compliance requirements to our

distribution network, especially that they must block any sale or maintenance to customers that may try to use our drones to cause harm. DJI has also made it clear to direct customers in the Terms of Sale that “DJI products are designed, developed and manufactured for civil use, you may not, either directly or indirectly, use DJI products for combat use or other purposes prohibited by applicable laws.” We have posted our contact information on the official website, and the public can reach us at any time. As a privately owned and operated company, DJI focuses on its vision, supporting creative, commercial, and nonprofit applications of our technology. Thank you for your attention on this matter.

Respectfully,

SZ DJI Technology Co., Ltd.

¹ See DJI Statement On Military Use Of Drones, published on April 21, 2022, <https://www.dji.com/hk-en/newsroom/news/dji-statement-on-military-use-of-drones?workspace=a16ad55f-1348-4ca9-9ec0-b6bd67e22129>

Hunted From Above

Russia's Use of Drones to Attack Civilians in Kherson, Ukraine

Starting in mid-2024, Russian forces increasingly used armed quadcopter drones to attack civilians and civilian objects in the Ukrainian city of Kherson, killing dozens and injuring hundreds, including many who were targeted by the drones while walking, biking, or driving through the city.

The Russian drone use has particularly impacted the two riverbank areas of Antonivka and Dniproviskyi, where residents are now unable to move around safely. The drone attacks have hindered residents' access to goods and essential services such as food, water, heating, medical and rescue services, and other services such as public transportation. The attacks have also limited efforts to clear landmines and explosive remnants of war.

The overwhelming impact of these conditions has been to spread terror among the civilian population and force them to leave the areas.

Hunted From Above is based on interviews with 36 survivors of and witnesses to Russian drone attacks and an analysis of 83 videos of drone attacks uploaded to Russian military-affiliated Telegram channels as well as videos and photographs taken by witnesses and shared with researchers. It documents at least 45 drone strikes by Russian forces in Antonivka and Dniproviskyi that appeared to deliberately target civilians and civilian objects.

The report finds that the attacks are serious violations of the laws of war that appear to be committed with deliberate or reckless intent and so constitute war crimes and are conducted as part of an attack against the civilian population in Kherson and so also constitute crimes against humanity.

Russia's misuse of inexpensive commercial short-range drones –armed with munitions including antipersonnel landmines and delivering incendiary weapons in populated areas – to target civilians has implications beyond Ukraine. Unless states take firm action to enforce international humanitarian law as it applies to use of drones, civilians elsewhere in the world will risk similar horror.



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