



Syria’s Use of Incendiary Weapons
Memorandum to Convention on Conventional Weapons Delegates
November 2013

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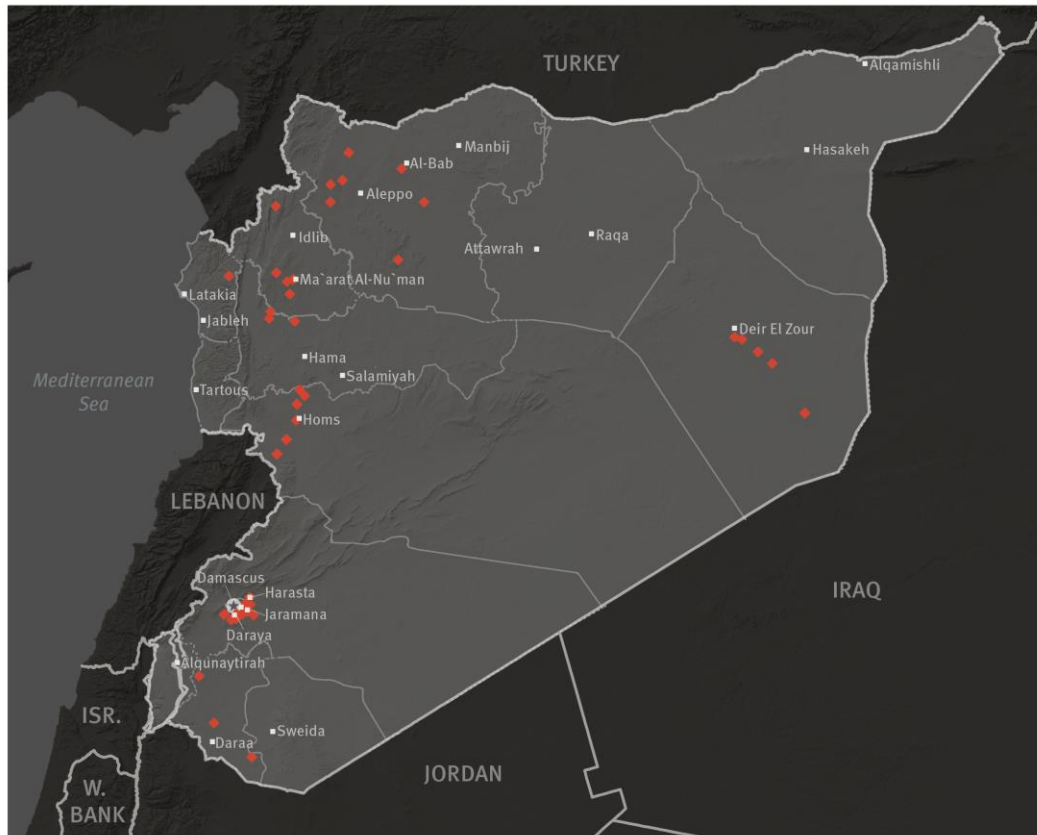
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Map

LOCATIONS OF RECORDED INCENDIARY WEAPONS ATTACKS ACROSS SYRIA
FROM NOVEMBER 2012 THROUGH SEPTEMBER 2013



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INCIDENT DATA: HUMAN RIGHTS WATCH
REFERENCE DATA: NASA, USGS, ESRI, GOOGLE, OPEN STREET MAPS

Summary

Incendiary weapons produce heat and fire through the chemical reaction of a flammable substance. These weapons cause extremely painful burns that are difficult to treat, and also start fires that can destroy objects and infrastructure. Field investigations, witness accounts, and videos and photos reviewed by Human Rights Watch indicate that the Syrian Air Force carried out at least 56 incendiary weapons attacks from November 2012 through September 2013. Human Rights Watch and the Violations Documentation Center in Syria have documented four separate incendiary weapons attacks that resulted in the deaths of at least 41 civilians and the wounding of 71 others.

Syria is not party to the 1980 Convention on Conventional Weapons (CCW) or its Protocol III banning the use of air-delivered incendiary weapons in areas with “concentrations of civilians.”¹ Given the international standard represented by CCW Protocol III on incendiary weapons, Human Rights Watch opposes any use of incendiary weapons in populated areas by any party at any time. Human Rights Watch considers Syria’s air strikes using incendiary weapons in or near civilian population centers to violate international humanitarian law, or the laws of war, because they are inherently indiscriminate. Deliberate or reckless indiscriminate attacks are war crimes.

One year ago, Human Rights Watch renewed its call for a review of the 30-year-old CCW protocol on incendiary weapons, which has not been examined since its adoption.² Human Rights Watch noted that in the previous two years, an increasing number of governments had raised concerns in letters and in statements at CCW meetings about the dangers posed by incendiary weapons and the inadequacy of the protocol.³

Yet on November 16, 2012, the final day of the annual meeting of CCW states parties, countries did not agree to take up work on incendiary weapons. That same day, in the Damascus suburb of Daraya, one of the first attacks in Syria involving an incendiary weapon was recorded. Syria has continued to use incendiary weapons through the first

¹ The full title of the CCW is the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects.

² Steve Goose, Human Rights Watch, “Statement on the CCW’s Protocol III on Incendiary Weapons,” Geneva, November 15, 2012, <http://www.hrw.org/news/2012/11/15/statement-ccws-protocol-iii-incendiary-weapons>.

³ A total of 25 states made statements or wrote letters expressing a willingness to take up the issue, and representatives of other states had articulated similar positions in private conversations. See: Human Rights Watch and Harvard Law School’s International Human Rights Clinic (IHRC), *Memorandum to the Convention on Conventional Weapons (CCW) Delegates: Government Positions on Protocol III on Incendiary Weapons*, November 12, 2013. <http://www.hrw.org/news/2012/11/12/government-positions-protocol-iii-incendiary-weapons>; Human Rights Watch, *Napalm, White Phosphorus & the Case to Ban Incendiary Weapons*, video November 2012. <http://youtu.be/iUP6RwTtGqc>.

nine months of 2013, inflicting civilian casualties, but there has been little international outcry and no diplomatic efforts on these weapons.

All governments that care about the protection of civilians should urge Syria to cease its use of incendiary weapons immediately and should work to universalize and strengthen Protocol III of the Convention on Conventional Weapons.

Recommendations

To the government of Syria

- Immediately stop using incendiary weapons and destroy any stockpiled incendiary weapons.
- Publicly declare a policy not to use incendiary weapons.
- Become a party to the Convention on Conventional Weapons, including Protocol III on incendiary weapons, and implement its provisions.

To Convention on Conventional Weapons states parties

- Publicly condemn Syria's use of incendiary weapons and urge the Syrian government to join the Convention on Conventional Weapons and its Protocol III on incendiary weapons.
- Agree to a mandate to review the text of Protocol III and amend the provisions to address more comprehensively the negative humanitarian impact of incendiary weapons:
 - A complete ban would have the most humanitarian benefits and provide the strongest protections for civilians. If that is not possible at this point, then states parties should prohibit the use of all incendiary weapons within or near concentrations of civilians under all circumstances, regardless of whether the weapons are dropped from the air or launched from the ground.
 - States parties should also amend Protocol III to adopt an effects-based definition of incendiary weapons that encompasses multipurpose munitions, including white phosphorus, based on their substantial incendiary effects and not the purpose for which they are primarily designed.

I. Overview of Use

Field investigations, witness accounts, and a review of videos and photos indicate that the Syrian Air Force has carried out at least 56 attacks using incendiary weapons since November 2012 in 8 of the country's 14 governorates.⁴

Human Rights Watch has reviewed 88 videos that provide a range of evidence of these 56 attacks involving one or more incendiary weapons, including flaming incendiary submunitions dispersing in the air and/or burning on the ground, remnants of the bombs and canisters that carried the submunitions, scenes of the aftermath of attacks, and casualties consistent with the use of incendiary weapons. It is likely that more incendiary weapon attacks have occurred, but have not been documented.

Human Rights Watch identified the specific type of incendiary weapon in 47 of the 56 attacks. The majority (44) showed evidence of ZAB-2.5 incendiary submunitions from RBK-250 ZAB-2.5M bombs, while two attacks involved the use of ZAB-500 unitary incendiary bombs, and one involved ZAB-100-105 bombs.

One of the first documented attacks in Syria involving the use of an incendiary weapon occurred on November 16, 2012 in the Damascus suburb of Daraya, which had been bombarded by Syrian forces in the preceding weeks. An anti-government activist told Human Rights Watch that he filmed several videos showing ZAB-2.5 incendiary submunitions being dropped on Daraya:

Warplanes began bombing Daraya with these flammable bombs on November 16 – that was the first time we saw these bombs. I saw MiG warplanes releasing small bombs that would catch fire while they were still in the air and keep on releasing some kind of gas [smoke] after it comes in contact with a building or ground. The gas-like material it produces has a very bad smell, like an acidic, metallic smell.

The activist described another attack on Daraya on December 1, 2012 involving the use of ZAB-2.5 submunitions:

On December 1 at around 10 a.m., I was with other activists in the media center when we heard a MiG warplane circling above us. When we went outside, we saw the warplane releasing a very big bomb, which produced an explosion, and then the bomb released things like fireballs producing smaller explosions. I

⁴ The attacks were recorded in the governorates of Damascus (16), Homs (11), Deir ez-Zour (8), Aleppo (7), Idlib (5), Daraa (4), Hama (4), and Latakia (1).

saw four of these fireballs. One of the fireballs hit the street right next to the media center, just 50 meters away. The destruction wasn't very big as it hit the street, but it did cause a hole to burn in the street.

A video of the "fireball" that fell next to the media center on December 1 clearly shows the remains of a ZAB-2.5 submunition.⁵

Anti-government activists have recorded and uploaded videos showing the government's use of incendiary weapons every month from November 2012 to September 2013, except July 2013. The most videos in a month appear to have been recorded in December 2012, when this method of warfare was still relatively novel in the conflict. The most recent incident of use that this review covers was at Da'el in Daraa on September 14, 2013.

The incendiary weapons used by the Syrian government have sometimes been confused by media and others for chemical weapons, but they are not chemical weapons. Incendiary weapons contain a flammable substance, while chemical weapons release chemicals that kill and incapacitate by their toxic properties. The incendiary weapons used in Syria have also been described as cluster munitions, but they are not cluster munitions, as the ZAB-2.5 submunitions contain substances that ignite, whereas cluster munitions contain explosive submunitions that detonate. Human Rights Watch has separately documented the use of cluster munitions and chemical weapons in Syria.

II. Types of Incendiary Weapons used in Syria

Syria is not known to produce or export incendiary weapons. The size of its stockpile of incendiary weapons is not known, but appears to be of Soviet origin, based on the types of weapons used to date. Human Rights Watch has not been able to establish how or when Syria acquired the incendiary weapons.

The majority of witness accounts collected by Human Right Watch and video evidence indicate that fixed-wing jet aircraft and helicopters operated by the Syrian Air Force are being used to deliver incendiary weapons.⁶ There has been one isolated incident of the

⁵ "[Dangerous – a shell containing sulfur compounds – Daraya – December 2, 2012]," video clip, YouTube, December 4, 2012, <http://www.youtube.com/watch?v=mO7vijKQeXE> (accessed November 7, 2013).

⁶ "Syria: Regime Helicopter Dropping a Zab Cluster Bomb On Albu Amar 12/6/12," video clip, YouTube, December 6, 2012, <http://www.youtube.com/watch?v=qxV8Xae2ERQ> (accessed October 28, 2013).

use of surface-launched incendiary weapons.⁷ Little is known about Syria's stockpiles of surface-launched incendiary weapons, such as mortar bombs and rocket warheads.

From photographs and videos of remnants, witness accounts, and other evidence, Human Rights Watch has identified at least three types of air-dropped incendiary weapons used by Syrian government forces, all ZAB-series (*Zazhigatel'naya Aviatsionnaya Bomba*)⁸ incendiary aircraft bombs manufactured by the Soviet Union:

- RBK-250 ZAB-2.5 bomb containing 48 ZAB-2.5 submunitions.
- ZAB-500 unitary bomb.
- ZAB-100-105 containing nine cylindrical incendiary cartridges.⁹

Forty-four of 47 attacks recorded on video where the specific type of incendiary weapon could be identified showed evidence of ZAB-2.5 submunitions, while two incidents involved the use of a ZAB-500 unitary bomb and one involved a ZAB-100-105.

Human Rights Watch reviewed the markings on the bombs and the submunitions/cartridges contained inside them, and compared them with Soviet weapons manuals, and determined that the incendiary weapons were manufactured in the 1970s and early 1980s at state munitions factories in the Soviet Union.

While the Soviet Union and Russia manufactured other types of incendiary weapons, Human Rights Watch has not found any evidence of their use in Syria.¹⁰

Incendiary Submunitions

Human Rights Watch has documented extensive use in Syria of the RBK-250 ZAB-2.5M incendiary bomb and its ZAB-2.5 submunitions, including in a strike on a school in Quseir in Homs governorate on December 3, 2012.

The RBK-250 bomb is a 250-kilogram Soviet-made aerial bomb first manufactured in 1955.¹¹ The RBK-250 ZAB-2.5M contains 48 ZAB-2.5 submunitions that are 60mm in

⁷ N. R. Jenzen-Jones, "Likely Evidence of White Phosphorus use in Syria," post to The Rogue Adventurer (blog), December 17, 2012, http://rogueadventurer.com/2012/12/17/likely-evidence-of-white-phosphorus-use-in-syria/wp_syria_2012-ariel-schalit/ (accessed October 28, 2013).

⁸ "Zazhigatel'naya Aviatsionnaya Bomba" translates to "incendiary aerial bomb."

⁹ The term "cartridge" is used to distinguish the content of the ZAB-100-105 bomb from the submunitions in the RBK-250 ZAB-2.5M. It appears that the cartridges ignite upon impact, while the incendiary submunitions ignite upon release.

¹⁰ RBK-500 ZAB-2.5 bomb containing 51 ZAB-2.5 submunitions, RBK-500 ZAB-2.5SM bomb containing 54 ZAB-2.5SM submunitions, and the ZAB-250-200 unitary bomb containing 68 kilograms of an unspecified incendiary agent. While there is no evidence that these types have been used in Syria, Russia also produces two types of "fire bombs" called ZB-500GD and ZB-500SHM, reportedly filled with an unspecified incendiary gel loaded into the bomb through a fill plug. Standard international reference books state that these weapons are comparable to the napalm bombs used by US forces in Southeast Asia in the 1970s.

diameter and 244-249mm in length.¹² According to independent arms expert, Nic Jenzen-Jones, the ZAB-2.5 submunitions ignite upon ejection from the RBK-250 ZAB-2.5M bomb and burn as they fall to the ground.

According to Jenzen-Jones' technical analysis, each RBK-250 ZAB-2.5M bomb contains a payload of 16 each of three types of ZAB-2.5 submunitions containing the flammable substance thermite:¹³

- Type 1: a 2.3 kilogram submunition that appears to contain only thermite that burns for approximately 150 to 180 seconds.
- Type 2: a 2.5 kilogram submunition that also appears to contain thermite that burns for approximately 20 to 180 seconds (probably depending on the bursting charges) and a high-explosive bursting charge—the explosive pentaerythritol tetranitrate (PETN)—possibly intended to prevent people from extinguishing the fire caused by the thermite.¹⁴
- Type 3: a 2.2 kilogram submunition that appears to contain thermite mixed with a “jellied fuel mixture” that burns for a period of 3 to 9 minutes.¹⁵ Russian sources describe this as a type of “sticky or viscous fuel mixture,” which may indicate a napalm-like substance.¹⁶ This claim is supported by Jenzen-Jones' finding that this variant disperses a “napalm-like filler” over a wide area.¹⁷ This variant also contains the explosive PETN, which most likely functions as a bursting charge.

Thermite is used as an incendiary material to burn objects and in demolition. In warfare, thermite generally used as a weapon for its incendiary effect and not for marking, signaling, obscuring, illuminating, or other purposes.

¹¹ “РБК-250 ЗАБ-2,5 - разовая бомбовая кассета с зажигательными БЭ,” post to “Russian Military Technology Forum” (“Российская военная техника”) (forum), April 6, 2013, <http://russianarms.mybb.ru/viewtopic.php?id=2651> (accessed October 9, 2013).

¹² Nikolai Spassky, ed., *Russia's Arms Catalog* (Moscow: Military Parade, 1996), p. 298; and N. R. Jenzen-Jones, “ZAB 2.5 Poster,” *The Rogue Adventurer*, April 8, 2013, http://rogueadventurer.files.wordpress.com/2013/04/zab-2-5_poster.png (accessed October 11, 2013).

¹³ Unless noted, all the information in this section on the RBK-250 ZAB-2.5M bomb is from: N. R. Jenzen-Jones, “ZAB 2.5 Poster,” *The Rogue Adventurer*, April 8, 2013, http://rogueadventurer.files.wordpress.com/2013/04/zab-2-5_poster.png (accessed October 11, 2013); N.R. Jenzen-Jones, “Update: Cluster Munitions in Syria (ZAB-2.5 incendiary submunitions),” post to *The Rogue Adventurer*, <http://rogueadventurer.com/2012/11/27/update-cluster-munitions-in-syria-zab-2-5-incendiary-submunitions/>

¹⁴ “РБК-250 ЗАБ-2,5 - разовая бомбовая кассета с зажигательными БЭ,” post to “Russian Military Technology Forum” (“Российская военная техника”) (forum), April 6, 2013, <http://russianarms.mybb.ru/viewtopic.php?id=2651> (accessed October 9, 2013).

¹⁵ *Ibid.*

¹⁶ *Ibid.*

¹⁷ N. R. Jenzen-Jones, “ZAB 2.5 Poster,” post to “The Rogue Adventurer” (blog), April 8, 2013, http://rogueadventurer.files.wordpress.com/2013/04/zab-2-5_poster.png (accessed October 11, 2013).

Incendiary Bombs

Human Rights Watch has documented the use of ZAB-500 bombs—a 500-kilogram (1,102-pound) unitary bomb—in an attack on Urm al-Kubra in Aleppo on August 26, 2013, and in an attack on Haysh in Idlib around February 15, 2013.

Four ZAB-100-105 bombs—a 100-kilogram (220-pound) bomb—were used in al-Bab in Aleppo, each containing nine cylindrical incendiary cartridges.

The items contained in the ZAB-100-105 bomb—described here as “cartridges”—appear to function on impact, while the ZAB-2.5 incendiary submunitions appear to ignite as soon as they are released from the RBK-250 ZAB-2.5 bomb.

There is a large degree of uncertainty regarding the nature and composition of the incendiary fillings in both the ZAB-100-105 and ZAB-500 bombs. Some sources assert that the filling is a jellied fuel mixture, similar to napalm in its composition and effects. Other sources are more vague and circumspect about the type of incendiary filling. It appears that for the ZAB-500 bomb, a small central explosive charge bursts the weapon upon impact and a small initiating charge of white phosphorus ignites the rest of the incendiary fill.

Little information is publicly available on air-dropped Soviet-era incendiary weapons. Additional technical data that would clarify the terms and functions of these weapons is needed.¹⁸

III. Civilian Harm from Syria’s Use of Incendiary Weapons

Incendiary weapons cause burns that are difficult to treat, especially in conflict areas lacking adequate medical facilities, and the treatment itself can be excruciating.¹⁹

Incendiary weapons also cause fires that can destroy civilian infrastructure. Their wide-area effect means they are prone to being indiscriminate when used in populated areas.

¹⁸ In particular, Human Rights Watch would welcome more technical information regarding the function of the fuzing system, bursting mechanism, the method used to achieve ignition, and the exact composition of the incendiary compounds contained in each type of munition.

¹⁹ For more information on the harm caused by incendiary weapons, see Human Rights Watch and Harvard Law School’s International Human Rights Clinic, *Memorandum to Convention on Conventional Weapons Delegates: The Human Suffering Caused by Incendiary Munitions* (New York: Human Rights Watch, 2011), http://www.hrw.org/sites/default/files/related_material/2011_arms_incendiariespastharmanduse.pdf.

It is not possible to comprehensively document the harm that Syria's use of incendiary weapons has caused civilians, but this memorandum presents case studies of four incendiary weapon attacks in Syria since November 2012 that have harmed civilians:

- Al-Bab, Aleppo on November 29, 2012
- Quseir, Homs on December 3, 2012
- Urm al-Kubra, Aleppo on August 26, 2013
- Da'el, Daraa on September 14, 2013

Two case studies are based on previous Human Rights Watch publications. One is drawn from an October 2013 report by the Violations Documentation Center (VDC) in Syria, a network of Syrian opposition activists that is working to document human rights violations in the ongoing conflict.²⁰ The VDC report corroborates other evidence that Human Rights Watch has collected, including the account of Dr. Saleyha Ahsan, a British emergency medicine doctor, who provided a detailed statement on the attack on Urm al-Kubra.

The four attacks resulted in a total of at least 41 dead and 71 wounded, all civilians. They include attacks on two schools (Ghaleb Radi School in Quseir and Iqraa Institute in Urm al-Kubra) and residential neighborhoods.

Attack on al-Bab, Aleppo

Around noon on November 29, 2012, a jet dropped four incendiary bombs on an industrial area on the southwest outskirts of the town of al-Bab in Aleppo governorate.²¹ Many civilians were present and at least six were wounded in the attack.

According to witnesses, the bombs bounced off the roof and walls of a warehouse and landed in an adjacent courtyard and garden. Findings during a Human Rights Watch visit to the site on December 14, 2012 were consistent with this account.

Witnesses said that one of the bombs failed to ignite. Human Rights Watch examined the unexploded bomb, which local Free Syrian Army (FSA) opposition forces had disarmed, and confirmed by the markings on the bomb that it was a ZAB-100-105. A local munitions expert showed Human Rights Watch nine cylindrical cartridges that he said he had found inside the bomb. These cylinders, which contain the incendiary

²⁰ Violations Documentation Center in Syria, *A Special Report on the Use of Incendiary Bombs In Aleppo and Dara'a Governorates* (VDC, 2013), <http://www.vdc-sy.info/pdf/reports/1382274490-English.pdf>.

²¹ Unless noted all information in this case study is from: Human Rights Watch, *Death from the Skies* (New York: Human Rights Watch, 2013), <http://www.hrw.org/node/114726/section/10>.

material, are another identifying feature of the ZAB-100-105 bomb. A video posted on YouTube on November 29, 2012, also shows the unexploded munition.²²

At the time of the attack, several hundred people were lining up to get bread outside a bakery located next to the warehouse, according to workers in the bakery. During the site visit on December 14, Human Rights Watch established that one incendiary bomb had ignited just over a concrete wall from the crowd of people. During the site visit, which took place around 2 p.m., several hundred people again were standing in line waiting for bread. One of the workers in the bakery told Human Rights Watch:

These bombs were different from other bombs. The explosion was smaller, but there was a lot of smoke. The smoke lasted for perhaps 15 minutes. Four or six people were injured by fragments, as they waited in line for bread. There were a lot of people outside. More than now.²³

During the visit by Human Rights Watch, there were about a dozen Free Syrian Army fighters on the street and in the courtyard of the warehouse. Human Rights Watch was not able to identify the contents of the warehouse.

Attack on Quseir, Homs

According to two local activists and video footage, an incendiary weapon attack on a school and neighboring homes in the center of the town of Quseir in Homs governorate wounded approximately 20 civilians on December 3, 2012.²⁴

A video uploaded on December 3 from Quseir shows what appears to be an airstrike involving incendiary submunitions filmed from a distance,²⁵ while another video uploaded that same day shows burning ZAB-2.5 submunitions on the grounds of Ghaleb Radi School in the center of Quseir.²⁶ Using satellite imagery, Human Rights Watch located the school shown in the video.

An activist from Qusair told Human Rights Watch that the strike injured at least 19 civilians, and the incendiary submunitions severely burned at least eight homes.

²² “[al-Bab: one of the death barrels after shelling],” video clip, YouTube, November 29, 2012, <http://youtu.be/KfllwP9O9ko> (accessed February 1, 2013).

²³ Human Rights Watch interview, al-Bab, December 12, 2012.

²⁴ Unless noted all information in this case study is from: “Syria: Incendiary Weapons Used in Populated Areas,” Human Rights Watch news release, December 12, 2012, <https://www.hrw.org/news/2012/12/12/syria-incendiary-weapons-used-populated-areas>.

²⁵ “[Qusair bomb by MIG warplane onto city December 3, 2012],” video clip, YouTube, December 3, 2012, <http://www.youtube.com/watch?v=GrwZPF6Nn9M>.

²⁶ “[Qusair warplane bombs the city with strange type of shells],” video clip, YouTube, December 3, 2013, <http://www.youtube.com/watch?v=d5wx7j0Of3w>.

Another local activist in Quseir told Human Rights Watch:

The bombs hit a school called Ghaleb Radi on Al Rifiyat [street] and several residential buildings next to it. The bombs were different from the cluster bombs. They caught fire as they were going down from the MiG warplane. I heard a big explosion and several smaller ones. We saw smoke in the air and when we arrived on Al Rifiyat Street, I saw at least nine houses on fire.

Then when I reached the school, I saw at least seven bombs burning on the playground and releasing white smoke that had a terrible smell. People were helping the families in the buildings that were on fire. When I went to the field hospital there were at least 20 wounded people—that included women and children. I saw at least three of them severely burned, like I have never seen before.

The houses of Al Drisse, Ismael, and Rahmet were burnt. Members of the families I listed were among the injured people. I saw three of them burnt. I am sure that there was much more but I clearly remember I saw a 17-year-old boy with burn on his back, an older man with burn on his left leg and his chest, but from the right side. The third case was also a man, but I don't clearly remember where his injuries were. The three of them were from one of the families.

According to the activist, the Free Syrian Army armed opposition group was not active in the school, a single-story building.

Attack on Urm al-Kubra, Aleppo

Around midday on August 26, 2013, Syrian government forces used incendiary weapons in an attack on a school in the town of Urm al-Kubra in northern Aleppo governorate, 15 kilometers southwest of the city of Aleppo. According to the Violations Documentation Center in Syria, at least 37 civilians—mostly teenagers—were killed and at least 44 wounded in the attack.²⁷

Dr. Saleyha Ahsan, a British emergency medicine doctor who was volunteering at Altarib Hospital at the time and treated many of the victims, gave an account of the attack via email.²⁸ She visited the scene of the attack two days later where she talked to a student from the school who witnessed the attack, as well as to the school headmaster, Mr. Mohammed Abu Omar. The headmaster and his brother Ahmed

²⁷ Violations Documentation Center in Syria, *A Special Report on the Use of Incendiary Bombs In Aleppo and Dara'a Governorates* (VDC, 2013), <http://www.vdc-sy.info/pdf/reports/1382274490-English.pdf>, p. 8-12.

²⁸ Dr. Saleyha Ahsan, email message to author, November 4, 2013.

sustained minor burns on their hands when they attempted to put out the flames on the students with their own hands.

The school, the Iqraa Institute, served intermediate and secondary students, including displaced people from other towns. The school was a single-story building located on a street with large homes and multi-story buildings. When the attack occurred students were preparing for their secondary exams and some teachers were present.

Witnesses reported seeing a plane “roaming in the skies” during the attack.²⁹ They described the aircraft as a MiG fighter jet, possibly a MiG-23.

Dr. Ahsan wrote to Human Rights Watch in an email:

Some people had spotted a MiG in the sky circling. Whilst the students were in class, they heard a very loud bang. The MiG had dropped a bomb onto a building 50 meters up the road. It had hit a three-story building and penetrated two floors, coming to rest on the floor accommodated by the family of the first patient I received at the hospital—the 8-month-old baby who was the only patient from the first bomb.

Eyewitnesses told Dr Ahsan that the MiG circled and dropped a second bomb outside the window of one of the classrooms. The worst injured patients were those who had been in that classroom and in the courtyard outside, she said.

The eyewitness described fire falling like rain. He described a bomb falling, hitting the ground and then plumes of flame rising up and then falling back down like rain drops, burning everything it landed on.

A female student who witnessed the attack confirmed that the plane had dropped two bombs. She told NBC News: “As we were going inside the classroom, it hit again. I didn't hear anything. We just saw people burning.... My classmates were burning. It felt like Judgment Day.”³⁰

Video footage filmed after the attack appears to show how an incendiary bomb penetrated the roof of an apartment building and fell through to the first floor.³¹ Videos and photos also show the remnants of an incendiary bomb in the courtyard outside the

²⁹ Human Rights Watch Skype interview with local activist, October 24, 2013.

³⁰ Elizabeth Chuck, “Doctor: Napalm-like attack on Syrian schoolkids was 'apocalyptic'” *NBC News*, August 30, 2013, http://worldnews.nbcnews.com/_news/2013/08/30/20262021-doctor-napalm-like-attack-on-syrian-schoolkids-was-apocalyptic.

³¹ “[Has humanity died? Banan Art Production],” video clip, YouTube, August 27, 2013, <http://www.youtube.com/watch?v=5XUovx03UPM>. At 0:40-0:58, the video shows the damage caused to the structure caused by the bomb.

school building. Based on the remnants and other evidence from the scene, as well as the types of casualties, Human Rights Watch and the BBC identified the munitions as ZAB-500.

Dr. Ahsan described the scene in the emergency department at Altarib Hospital shortly after the attack:

Initially there had been concern that this was a chemical attack because of the white powder covering all of the patients. Hospital staff started to wear face masks. Patients were then being hosed down in the courtyard before being allowed into the hospital—as per the cleaning process had this been a chemical attack—but this was also of benefit to their burns anyway.

Cold-water therapy was being applied to all the patients but there were no adequate facilities to stop them from becoming too cold with the application of cold water and they were shivering. Bags of saline solution were being ripped open and poured onto the casualties as they sat on the floor of the hospital reception room.

A white cream, I believe was Flamazine was also being applied to the patients. I was securing intravenous access, administering analgesia, antibiotics and fluids. Due to the extent of burns it was difficult to gain access easily - there were no intraosseus needles available [to provide fluid and medication that cannot be effectively delivered intravenously].

Three bodies were in a pick-up truck outside in the hospital courtyard. They were the bodies of three female students but were unrecognizable due to the severity of the burns. It was also impossible to tell that they were in fact female but I was informed by hospital staff that they were. They had been in the direct hit area of the bomb.

Dr. Ahsan described treating five boys in a room upstairs at the hospital, including 15-year-old Anas Said Ali, who had been waiting outside to pick up his sister when the school was attacked. His sister survived unharmed, but Ali was severely burned.

According to Dr. Ahsan:

The hair on his head almost melted to his head and he had ... fragments stuck to the side of his face and hair. His face was swollen and it was difficult for him to open his eyes. He did not appear to have circumferential burns on his neck, legs or arms. He kept saying “I want to sleep” and was crying out in pain.

Anas Said Ali was taken to a hospital in Turkey. He had 70 percent burns and suffered infections. He died two weeks later from complications caused by the severe burns.

The majority of male patients Dr. Ahsan treated had between 40 to 70 percent of their bodies covered in second- to third- degree burns.

Dr. Ahsan said that “a heavy, acidic, burning smell hung over the patients.” When she visited the school two days later “the ground directly hit by the bomb was still smoking and the area hot ... The same acidic, acrid smell hung over the school and in the rubble where the bomb had hit.”

In its online database, the Violations Documentation Center in Syria lists 37 “martyrs” or dead from the attack, using statistics provided by Altarib Hospital: 15 boys, 14 men, 6 girls, and 2 women. Where the ages were recorded, all the children killed were between 14 and 18 years except for a 6-year-old boy. (See Appendix 1)

A representative of Al Altarib Hospital informed the VDC that the hospital received about 50 victims of the attack with second- or third-degree burns, as well as “10 charred bodies,” and said the final total was 40 dead. According to the VDC, at least five injured children died at the Syrian border with Turkey “due to the delay of ambulances.”³²

A BBC crew filming in the hospital at the time of the attack captured the devastating injuries in a piece that was broadcast on August 29, 2013.³³ In a follow-up piece broadcast a month later, the BBC visited some of the victims receiving treatment in Turkey.³⁴

One of the young women seen in the BBC film screaming in pain with burns covering her face and neck was 18-year-old Siham Kanbari. According to Dr. Ahsan, Kanbari suffered second- and third-degree burns over 70 percent of her body. She died in a hospital in Turkey on October 20.

A September 16, 2013 statement by the head of the Independent International Commission of Inquiry on Syria cited the attack and stated, “There is no evidence of

³² Violations Documentation Center in Syria, *A Special Report on the Use of Incendiary Bombs In Aleppo and Dara'a Governorates* (VDC, 2013), <http://www.vdc-sy.info/pdf/reports/1382274490-English.pdf>.

³³ “Syria crisis: Incendiary bomb victims ‘like the walking dead,’” *BBC News*, August 29, 2013, <http://www.bbc.co.uk/news/world-23892594>.

³⁴ “Syria: Agony of victims of ‘napalm-like’ school bombing,” *BBC News*, September 29, 2013, <http://www.bbc.co.uk/news/world-24288698>.

any opposition fighters or lawful targets near the school.”³⁵ After visiting the site of the attack, Dr. Ahsan concluded that the school was in a residential neighborhood and it abutted agricultural fields, and “there was no evidence of fighters, check points or buildings used as barracks for fighters.”

A local activist told Human Rights Watch that at the time of the attack, Free Syrian Army fighters were not active in the area and had not clashed with government forces near Urm al-Kubra.³⁶ Another activist interviewed by Human Rights Watch said that there were “no FSA vehicles, offices or any presence next to the school” and the “closest military front” was 15 kilometers to the east, at Khan Assal.³⁷

Attack on Da’el, Daraa

The Violations Documentation Center in Syria documented the government’s use of an apparent incendiary bomb that fell on a house in Da’el, a town in southern Daraa, on September 14, 2013, killing four of its occupants and severely burning a 10-year-old girl, who survived.³⁸

According to the VDC, at 10:55 a.m. on September 14, a Syrian Air Force MiG fighter jet dropped a bomb on a residential part of Da’el that contained “very flammable incendiary materials” of a “‘sticky’ napalm” substance.

A relative of the people who were killed witnessed the bombing, and told the VDC:

When I heard the explosion, I was standing behind the door. I was thrown three meters inside the house and one of the inflamed splinters hit me in the head. I stood up again and rushed outside to see the targeted house burning. It was extremely hot and the fire came on and melted everything. Even the frames of the windows were melted because of the high temperature. When we entered the house, we found four charred bodies and a little girl with burns all over her body. ... We tried to put out the fire using water, but it was just getting bigger and bigger.

The VDC identified the survivor as 10-year-old Yomna Muhannad Nasir. The nurse who provided initial treatment said that 70 percent of Yomna’s body was covered with first-

³⁵ Statement by Mr. Paulo Sérgio Pinheiro, Chair of the Independent International Commission of Inquiry on the Syrian Arab Republic, to the United Nations Human Rights Council 24th Session, September 16, 2013, <http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=13733&LangID=E>.

³⁶ Human Rights Watch Skype interview with local activist, October 24, 2013.

³⁷ Human Rights Watch Skype interview with local activist, October 24, 2013.

³⁸ Unless noted all information in this case study is from: Violations Documentation Center in Syria, *A Special Report on the Use of Incendiary Bombs In Aleppo and Dara'a Governorates* (VDC, 2013), <http://www.vdc-sy.info/pdf/reports/1382274490-English.pdf>.

or second-degree burns, including her face. Yomna lost family members in the attack, including her pregnant aunt, and 8-year-old sister, Yamama Muhannad Nasir, and 2-year-old brother, Alaa Muhannad Nasir.³⁹

According to the VDC, the bomb landed in an area with “no military presence” at the time of attack. A local witness told the VDC that “there was not a Free Army, nor any rebel battalions in the district; not even a military location; all the residents were civilians.”

IV. International Law

Human Rights Watch considers the Syrian government’s air strikes using incendiary weapons in or near civilian population centers to be inherently indiscriminate in violation of international humanitarian law, or the laws of war. Customary international humanitarian law during non-international armed conflicts, such as in Syria, prohibits attacks that are indiscriminate—that is, attacks that do not or cannot distinguish between civilians and combatants.⁴⁰ Individuals who deliberately or recklessly conduct indiscriminate attacks are responsible for war crimes.⁴¹

The Syrian government’s use of incendiary weapons shows the urgent need to universalize the international instrument that deals explicitly with incendiary weapons—Protocol III on Prohibitions or Restrictions on the Use of Incendiary Weapons to the 1980 Convention on Conventional Weapons (CCW). It also demonstrates the need to ensure that the protocol is strong enough to prohibit states parties from committing such attacks and to stigmatize the munitions so that states not party hesitate to use them in the future.

Syria has not agreed to be bound by the Convention on Conventional Weapons or its Protocol III. As of October 25, 2013, a total of 107 states—including all five permanent members of the UN Security Council—were party to the protocol.⁴²

States adopted Protocol III “in order to assure complete protection of civilians from incendiary weapons.”⁴³ However, loopholes and inconsistent restrictions have limited

³⁹ Facebook post, September 14, 2013, <https://www.facebook.com/photo.php?fbid=738130839547388&l=fd5f259c7>.

⁴⁰ See International Committee of the Red Cross, *Customary International Humanitarian Law*, (Cambridge: Cambridge Univ. Press, 2005), rule 12, citing First Additional Protocol of 1977 to the Geneva Conventions of 1949, art 51(4)(a).

⁴¹ *Ibid.*, rule 156, p. 599.

⁴² See the annex for the list of 107 states parties to CCW Protocol III. Ten CCW states parties have not consented to be bound by Protocol III: Burundi, Cameroon, Dominican Republic, Israel, Monaco, Morocco, South Korea, Turkey, Turkmenistan, and Zambia.

⁴³ Letter from Valentin Zellweger, Director for International Law, Swiss Federal Department of Foreign Affairs, to Human Rights Watch, March 22, 2011.

its effectiveness. Syria was among many states that voiced disappointment with the weakness of Protocol III when it was adopted in 1980, due the protocol's lack of adequate protections for combatants.⁴⁴

Protocol III's restrictions on the use of incendiary weapons are insufficiently rigorous. Article 2 bans the use of air-delivered incendiary weapons in areas with "concentrations of civilians." It prohibits the use of ground-launched incendiary weapons in concentrations of civilians under certain circumstances, but the provision contains exceptions. These inconsistent rules fail to recognize that incendiary weapons, whether air- or ground-delivered, can have the same harmful impacts, especially when used in populated areas. Article 2 could thus permit attacks that endanger and cause cruel injuries to civilians.

Since 2010, Human Rights Watch has called on countries to strengthen the incendiary weapons protocol in order to better protect civilians.⁴⁵ States should reduce the harm incendiary weapons cause by imposing a ban, or at least stronger restrictions, on their use. A total prohibition on the use of these weapons would maximize the protection of civilians. If such a prohibition is not possible within the CCW forum at this point, states should, at the very least, adopt measures to prohibit use of all incendiary weapons in civilian areas, regardless of whether they are air-dropped or ground-launched.

The protocol's definition of "incendiary weapon" should also be amended, because it is too narrow and does not clearly cover multipurpose munitions, most notably those containing white phosphorus. Article 1 of Protocol III provides a loophole for such munitions in two ways: it encompasses only munitions "primarily designed" to set fires or cause burn injuries, and it creates exceptions for munitions with incendiary effects that are "incidental." This definition allows multipurpose and widely used incendiary munitions, such as those containing white phosphorus, to escape regulation because their classification is based on the discretion of the manufacturer or the user instead of on their incendiary effects.

By adopting a more comprehensive definition of incendiary weapons, states can ensure that Protocol III covers all such weapons that are likely to cause excessively injurious or indiscriminate incendiary effects. Expanding the definition is key to

⁴⁴ Statement of the Syrian Arab Republic, UN Conference on Prohibitions or Restrictions of the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, Second Session, Committee of the Whole, Summary Record of the 15th Meeting, Geneva, October 8, 1980, U.N. Doc. A/CONF.95/CW/SR.15 (October 21, 1980), para. 5.

⁴⁵ Unless otherwise noted, all information in this section is from Human Rights Watch and the Harvard Law School International Human Rights Clinic, *Memorandum to Convention on Conventional Weapons Delegates: The Need to Re-Visit Protocol III on Incendiary Weapons* (New York: Human Rights Watch, 2010) <http://www.hrw.org/en/news/2010/11/22/memorandum-ccw-delegates>.

bringing de facto incendiary weapons, such as munitions containing white phosphorus, within the ambit of the CCW.

In October 2013, the Violations Documentation Center in Syria warned that “there is a growing fear” that the government’s use of incendiary weapons “becomes an ordinary occurrence” if states do not swiftly act to enforce international law on the weapons. All governments that care about the protection of civilians should urge Syria to cease its use of incendiary weapons immediately and work to universalize and strengthen Protocol III of the Convention on Conventional Weapons.

Annex 1: List of deaths, Urm al-Kubra Attack⁴⁶

Mr. Muhammad al-Ahmad, 28
Mr. Muhammad Assi, 18
Ms. Qamar Abdulltaif, 18
Ms. Soubheih Bouzgha, 20
Mr. Abdulqader Abboud, 6
Mr. Abdulfattah Ibrahim, 14
Mr. Housein al-Khateeb, 14
Mr. Muhammad Abdullatif, 15
Mr. Anas Said Ali, 15
Mr. Loutfee Asee, 15
Mr. Ahmad Darwish, 15
Mr. Muhammad Mestow, 15
Mr. Omar Moustafa, 15
Mr. Mohammad Abdalnaser Hakhoury, 15⁴⁷
Mr. Husam Jaddoua, 16
Mr. Muhammad Moustafa, 16
Mr. Omar Mestow, 17
Mr. Ahmad al-Saleh, 17
Mr. Ramadan Ezzadin, 17
Ms. Dareen Araaour, 15
Ms. Bayn Khansa, 15
Ms. Fatma Gharraf, 17
Ms. Siham Kanbari, 18⁴⁸
Ms. Walaa al-Ali, 17
12 unidentified males of unknown age, but listed as “adult”
One unidentified female, 17

A witness told Human Rights Watch that one of the dead was identified as Mohamad Feda Khenass, 15 years old.⁴⁹

⁴⁶ “Latest Martyrs,” Violation Documentation Center in Syria, <http://www.vdc-sy.info/index.php/en/martyrs/1/c29ydGJ5PWEua2lsbGVkX2RhdGV8c29ydGRpcj1ERVNDfGFwcHJvdmVkdXZpc2libGV8ZXhocmFkaXNwbGF5PTB8cHJvdmluY2U9Nnxjb2RNdWxoToxM3xoaGlzRGFoZToyMDEzLTA4LTI2fDU9TmFwYWxtfA==>.

⁴⁷ The VDC does not list his age, but a witness told Human Rights Watch that he was identified as Mohamad Abdel Naser Fakhoury, age 15. Human Rights Watch interview with local activist, October 24, 2013.

⁴⁸ The VDC recorded this student’s name and age slight differently from Dr. Ahsan, as: Siham Qandaree, 17.

⁴⁹ Human Rights Watch Skype interview with local activist, October 24, 2013.

Annex 2: Convention on Conventional Weapons Protocol III and its Status

Convention on Conventional Weapons Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III), adopted October 10, 1980, 1342 U.N.T.S. 171, entered into force December 2, 1983.

Article 1

Definitions

For the purpose of this Protocol:

1. "Incendiary weapon" means any weapon or munition which is primarily designed to set fire to objects or to cause burn injury to persons through the action of flame, heat, or combination thereof, produced by a chemical reaction of a substance delivered on the target.
 - (a) Incendiary weapons can take the form of, for example, flame throwers, fougasses, shells, rockets, grenades, mines, bombs and other containers of incendiary substances.
 - (b) Incendiary weapons do not include
 - (i) Munitions which may have incidental incendiary effects, such as illuminants, tracers, smoke or signalling systems
 - (ii) Munitions designed to combine penetration, blast or fragmentation effects with an additional incendiary effect, such as armour-piercing projectiles, fragmentation shells, explosive bombs and similar combined-effects munitions in which the incendiary effect is not specifically designed to cause burn injury to persons, but to be used against military objectives, such as armoured vehicles, aircraft and installations or facilities.
2. "Concentration of civilians" means any concentration of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or as in camps or columns of refugees or evacuees, or groups of nomads.
3. "Military objective" means, so far as objects are concerned, any object which by its nature, location, purpose or use makes an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.

4. "Civilian objects" are all objects which are not military objectives as defined in paragraph 3.
5. "Feasible precautions" are those precautions which are practicable or practically possible taking into account all circumstances ruling at the time, including humanitarian and military considerations.

Article 2

Protection of civilians and civilian objects

1. It is prohibited in all circumstances to make the civilian population as such, individual civilians or civilian objects the object of attack by incendiary weapons.
2. It is prohibited in all circumstances to make any military objective located within a concentration of civilians the object of attack by air-delivered incendiary weapons.
3. It is further prohibited to make any military objective located within a concentration of civilians the object of attack by means of incendiary weapons other than air-delivered incendiary weapons, except when such military objective is clearly separated from the concentration of civilians and all feasible precautions are taken with a view to limiting the incendiary effects to the military objective and to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects.
4. It is prohibited to make forests or other kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives.

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Status of Protocol III

There were 107 states parties to Protocol III as of October 31, 2013:⁵⁹

Albania

Antigua and Barbuda

Argentina

Australia

Austria

Bangladesh

⁵⁹ "CCW States parties and signatories," United Nations Office at Geneva, September 30, 2013, http://www.unog.ch/__80256ee600585943.nsf/%28httpPages%29/3ce7cfcoaa4a7548c12571c00039cboc?OpenDocument&ExpandSection=1#_Section1.

Belarus
Belgium
Benin
Bolivia
Bosnia and Herzegovina
Brazil
Bulgaria
Burkina Faso
Cambodia
Canada
Cape Verde
Chile
China
Colombia
Costa Rica
Croatia
Cuba
Cyprus
Czech Republic
Denmark
Djibouti
Ecuador
El Salvador
Estonia
Finland
France
Gabon
Georgia
Germany
Greece
Guatemala
Guinea-Bissau
Holy See
Honduras
Hungary
Iceland
India
Ireland
Italy
Jamaica
Japan
Jordan

Kazakhstan
Lao PDR
Latvia
Lesotho
Liberia
Liechtenstein
Lithuania
Luxembourg
Macedonia FYR
Madagascar
Maldives
Mali
Malta
Mauritius
Mexico
Mongolia
Montenegro
Nauru
Netherlands
New Zealand
Nicaragua
Niger
Norway
Pakistan
Panama
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Republic of Moldova
Romania
Russia
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Slovakia
Slovenia
Saint Vincent and the Grenadines

South Africa
South Korea
Spain
Sri Lanka
Sweden
Switzerland
Tajikistan
Togo
Tunisia
Uganda
Ukraine
United Arab Emirates
United Kingdom
United States
Uruguay
Uzbekistan
Venezuela