

Video 3 - Thiqa Agency

# CHEMICAL STRIKES ON AL-LATAMINAH

## MARCH 25 & 30, 2017

**A STUDENT-LED OPEN SOURCE  
INVESTIGATION**

## **Authors**

Anna Banchik  
Leenah Bassouni  
Michael Elsanadi  
Hannah Ellis  
Sonia Hamilton  
Natalia Krapiva  
Danny Lee  
Aarefah Mosavi  
Andrea Trewinnard

## **Support**

### **Translation:**

Sammy Mehtar

### **Analysis & Technical Guidance:**

Elise Baker  
Hadi Al-Khatib  
Marci Hoffman  
Alexa Koenig  
Felim McMahan

### **Editing:**

Christian Chessman

### **Technical Assistance & Production:**

Niko, Syrian Archive  
Tom Trewinnard, Meedan

Research compiled and completed October - December 2017.

# CONTENTS

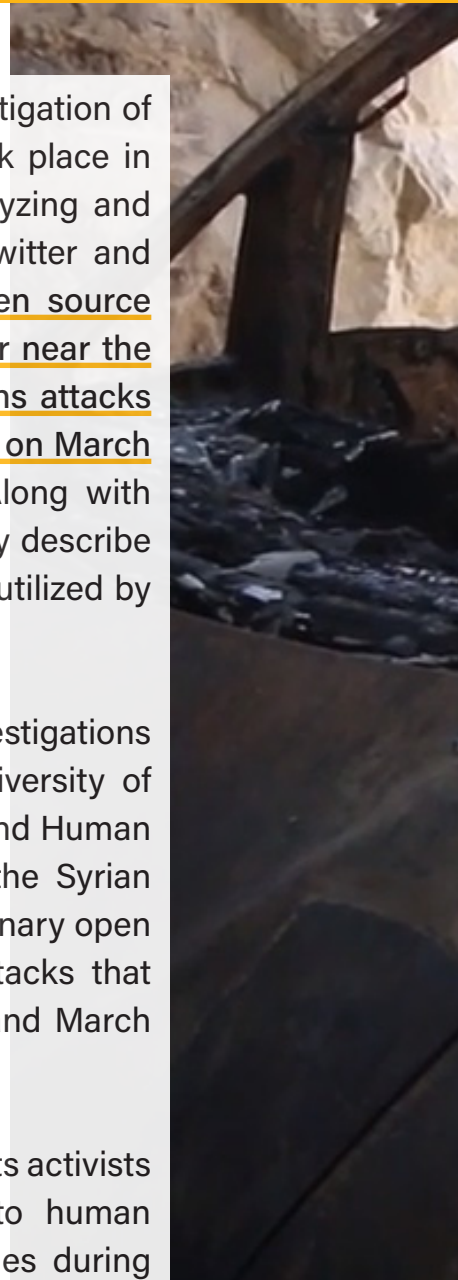
INTRODUCTION	4
AL-LATAMINAH (BACKGROUND)	9
METHODOLOGY	10
LEGAL ANALYSIS	14
MARCH 25 SOCIAL MEDIA CONTENT	16
- MARCH 25 GEOLOCATION	18
MARCH 30 SOCIAL MEDIA CONTENT	20
- MARCH 30 GEOLOCATION	22
- MARCH 25 & 30 MUNITIONS	26
- MARCH 25 & 30 AIRCRAFT	28

# Introduction

This report summarizes findings from a student-led investigation of open source information regarding two attacks that took place in al-Lataminah, Syria in March 2017. After collecting, analyzing and verifying videos and photos uploaded onto YouTube, Twitter and Facebook, the report concludes that findings from open source visual content strongly suggest that targets located in or near the town of al-Lataminah, Syria, sustained chemical weapons attacks on March 25, 2017 and March 30, 2017. Moreover, attacks on March 25, 2017, appear to have targeted a medical facility. Along with summarizing relevant findings, this report hopes to briefly describe some of the innovative methodologies and technologies utilized by students in conducting this open source investigation.

The report was written by students at the Human Rights Investigations Lab ("HRC Lab"), launched in 2016 as part of the University of California, Berkeley Human Rights Center's Technology and Human Rights Program.<sup>1</sup> With mentorship and guidance from the Syrian Archive<sup>2</sup>, students from the HRC Lab conducted a preliminary open source investigation into alleged chemical weapons attacks that targeted the town of al-Lataminah, Syria, on March 25 and March 30, 2017.

The Syrian Archive is a Syrian-led collective of human rights activists dedicated to curating visual documentation relating to human rights violations and other crimes committed by all sides during







Video 3 - Thiqa Agency







## CHEMICAL STRIKES ON AL-LATAMINAH

the conflict in Syria. Through collecting, verifying, curating and investigating visual content, the Syrian Archive aims to preserve data as a digital memory to establish a database of human rights violations, and to act as a tool for legally implementing justice and accountability efforts as concept and practice in Syria. Since its founding in 2014, the Syrian Archive have collaborated with organizations including Human Rights Watch, Amnesty International, UC Berkeley, and Essex University, WITNESS, Bellingcat and various agencies of the United Nations, including the Independent International Commission of Inquiry on the Syrian Arab Republic.<sup>3</sup>

The Human Rights Investigations Lab ("HRC Lab") trains and supports UC Berkeley undergraduate and graduate students from a range of backgrounds in verifying open source documentation for human rights investigations. The Lab, launched in partnership with Amnesty International in 2016, provides support for Amnesty International's Digital Verification Corps and works to support human rights researchers, investigators and lawyers at the Syrian Archive, the Center for Justice and Accountability, Bellingcat, ProPublica and the UC Berkeley International Human Rights Law Clinic. Under the guidance of HRC Directors, Eric Stover and Dr. Alexa Koenig, the HRC Lab seeks to contribute to the development of protocols, establishing international standards for the collection, preservation and use of open source information for legal investigations and international criminal cases.<sup>4</sup>









# **Al-Lataminah**

## **اللطامنة**

### **Hama Governorate, Syria**

*Al-Latamenah is a village in the district of Mahardah, within the Hama Governorate of the Syrian Arab Republic. It is located approximately 40 km northwest of Hama City, 70 km south of Idlib City and roughly 15 km to the south of Khan Shaykhun. Prior to the conflict (based on figures from the 2004 census), the population of the village and the surrounding area was approximately 16,000. In March 2017, at the time of the allegations, the town was not under government control.*

- OPCW-UN JIM Report, Doc. No. S/2017/937, paras. 5.6-5.7 <sup>5</sup>

# Methodology

This project required students to work collaboratively on discovery, verification, geolocation and reporting, which included experimenting with new methodologies and technologies.

To initiate the investigation, the Syrian Archive provided a team of HRC Lab students with nine open source videos. These nine videos appear to have been uploaded onto social media platforms by Syrian journalists and civilians, before being scraped and preserved by the Syrian Archive. All nine videos purported to show chemical weapons attacks on al-Lataminah from March 2017. For the project, HRC Lab students were tasked with:

**First**, discovery and preservation: Students will look for other pieces of open source information regarding possible chemical weapons attack in al-Lataminah in March 2017.

**Second**, collaborative verification: Students will work together to corroborate, clarify and/or debunk information presented by the open source pieces of media collected. This will include the application of open source geolocation methodologies when possible, requiring student analysts to identify distinct features in the videos and photos uploaded to social media platforms, and then attempting to map and match a multitude of these distinct features with visual content from satellite imagery.

**Third**, reporting: Students will distill their most important findings from visual content analysis of the open source information into a short report.

## Discovery and Preservation

A critically important initial step of open source investigations, the “discovery and preservation” of open source information requires searching for visual content uploaded onto social media platforms with regards to a specific incident and its aftermath. Information “discovered” through this process is immediately preserved by HRC Lab students using a tool called “Keep” to prevent the information from being lost due to systematic takedowns.<sup>6</sup> Increasingly, international journalists and human rights groups recognize the value that finding, preserving and verifying visual content from social media platforms can have for both advocacy and legal accountability purposes.<sup>7</sup>

Discovery does not follow a strict methodology. It requires experimentation and trial and error. For discovery techniques, HRC Lab students relied heavily on an October 2017 article from Bellingcat’s Aric Toler entitled, “How to Conduct Comprehensive Video Collection.”<sup>8</sup> Because searching on Facebook is difficult, HRC Lab students used Google site-specific searches (i.e. `site:facebook.com` followed by a “search term”). Also, students found that using TweetDeck and clicking on hashtags or retweets revealed useful additional information.

Furthermore, important social media from Syria is most often shared using the Arabic language, either in Arabic script or through non-standardized, English transliteration. HRC Lab students found it important to use both English and Arabic search terms, utilizing both the Arabic script and a variety of English transliterations. For



example, searching “al-Lataminah”, does not reveal all relevant information. The name of this town can also be transliterated as “Latamnah” or “Latamneh”. Searching using the original Arabic script for the town, “اللطامنة,” reveals the most important first-hand accounts. Using alternate names and translations, as well as playing around with search times was often a time-consuming process, but patience produced the team’s best results.

## Collaborative Verification

In their immediate aftermath, the March 25 and March 30, 2017, chemical weapons attacks on al-Lataminah received relatively little coverage from major international media outlets. However, Physicians for Human Rights and the Human Rights Watch, along with numerous Syrian media organizations and human rights groups reported on the attacks in publications in April and May of 2017.<sup>9</sup> In September 2017, representatives from the UN Independent International Commission of Inquiry on Syria reported to UN Human Rights

Councils and released an accompanying report to the public regarding, “unthinkable crimes against civilians, including the use of chemical weapons by Government forces.”<sup>10</sup> This report from UN Independent International Commission of Inquiry on Syria specifically highlights the March 25 and March 30, 2017, attacks on al-Lataminah, which are identified as tragic examples of a larger March and April 2017 heightened aerial campaign on Kafr Zeita, Murek and al-Lataminah.

Several human rights groups have worked on verifying open-source information regarding attacks on al-Lataminah in March 2017. For example, when students at the HRC Lab initiated their al-Lataminah investigation in October 2017, the team at Bellingcat also began working on investigating open source information regarding these attacks HRC Lab students analyzed findings from Bellingcat and other reports as they were published to look for consistency and when possible, question assumptions regarding visual content analysis made by any investigative team, including our own HRC Lab team. As much as possible, HRC Lab students tried to remain cautious about confirmation bias and dedicated to findings based on our own visual content analysis.

## Geolocation

Applying “geolocation methodologies” to open source information requires analysts to:

1. identify distinct features in videos and photos uploaded to social media platforms





2. then, attempt to map and match these distinct features with visual content from satellite imagery.

One of the goals of HRC Lab students on the al-Lataminah project was to pinpoint, when possible and appropriate, any specific coordinates from satellite imagery that matched distinct imagery from open source videos and photos. This required identifying and mapping landmarks from the town of al-Lataminah, and looking to other corroborating media for suggestions regarding possible satellite coordinates to search.

The project team carefully reviewed the nine videos originally provided by the Syrian Archive, along with dozens of videos and photos found during initial discovery processes. When reviewing videos and photos from social media platforms, HRC lab students first looked for landmarks such as mosques and Minarets, town squares, large unusual buildings, signs, trees, and roads. These landmarks helped the team gain an understanding of the locations featured in the media. Students then looked to cross reference distinct imagery among the videos and photos collected from social media platforms in an attempt to find similarities that could help with the geolocation of the footage. Once HRC Lab students obtained any important clues from the social media with regards to where it may have captured, they used satellite imagery on Google Maps, Google Earth and Wikimapia to help identify and record any important similarities between satellite imagery and the videos and photos collected from social media platforms.



# Legal Analysis

The HRC Lab strives to be particularly restrained about legal conclusions from any initial investigative findings.<sup>12</sup> After watching dozens of videos regarding these two March attacks on al-Lataminah, however, members of the HRC Lab al-Lataminah project felt that failing to provide at least a brief international legal contextualization for these two incidents would be a disservice to the reader.

The visual information gathered from the HRC Lab's open source investigation, consistent with numerous reports published by well-respected human rights organizations, strongly suggests that:

1. The March 25 attack on al-Lataminah targeted a medical facility and;
2. The March 25 and March 30 attacks on al-Lataminah utilized chemical weapons - chlorine on March 25 and sarin on March 30.

By targeting a medical facility in one attack and utilizing chemical weapons in both attacks, the perpetrators of these attacks have likely violated international humanitarian law and international criminal law, as well as a number of domestic laws and international treaties.

## Targeting Medical Facilities

The systematic targeting of medical facilities has been a profoundly tragic and pervasive hallmark of the Syrian conflict.<sup>13</sup> The Fourth Geneva Convention, which applies to

international conflicts, contains provisions that protect medical facilities and those employed by medical facilities. Article 18 states that "civilian hospitals organized to give care to the wounded and sick, the infirm and maternity cases, may in no circumstances be the object of attack, but shall at all times be respected and protected by the Parties to the conflict." Furthermore, Article 20 states that "persons regularly and solely engaged in the operation and administration of civilian hospitals, including the personnel engaged in the search for, removal and transporting of and caring for wounded and sick civilians . . . shall be respected and protected." Consistent with the Fourth Geneva Convention, Rule 35 from the International Committee of the Red Cross prohibits directing attacks against zones established to shelter the wounded, the sick, and civilians from the effects of hostilities.

Information and/or evidence of intentional attacks on medical facilities may be critical to future cases seeking to hold individuals responsible for war crimes and crimes against humanity under international criminal law during the Syrian Conflict. The Rome Statute of the International Criminal Court specifically criminalizes attacks on hospitals. Article 8(2)(b) (ix) and (e)(iv) states that "intentionally directing attacks against . . . hospitals and places where the sick and wounded are collected, provided they are not military objectives," constitutes a war crime in both international and non-international conflicts.<sup>14</sup>

## Use of Chemical Weapons

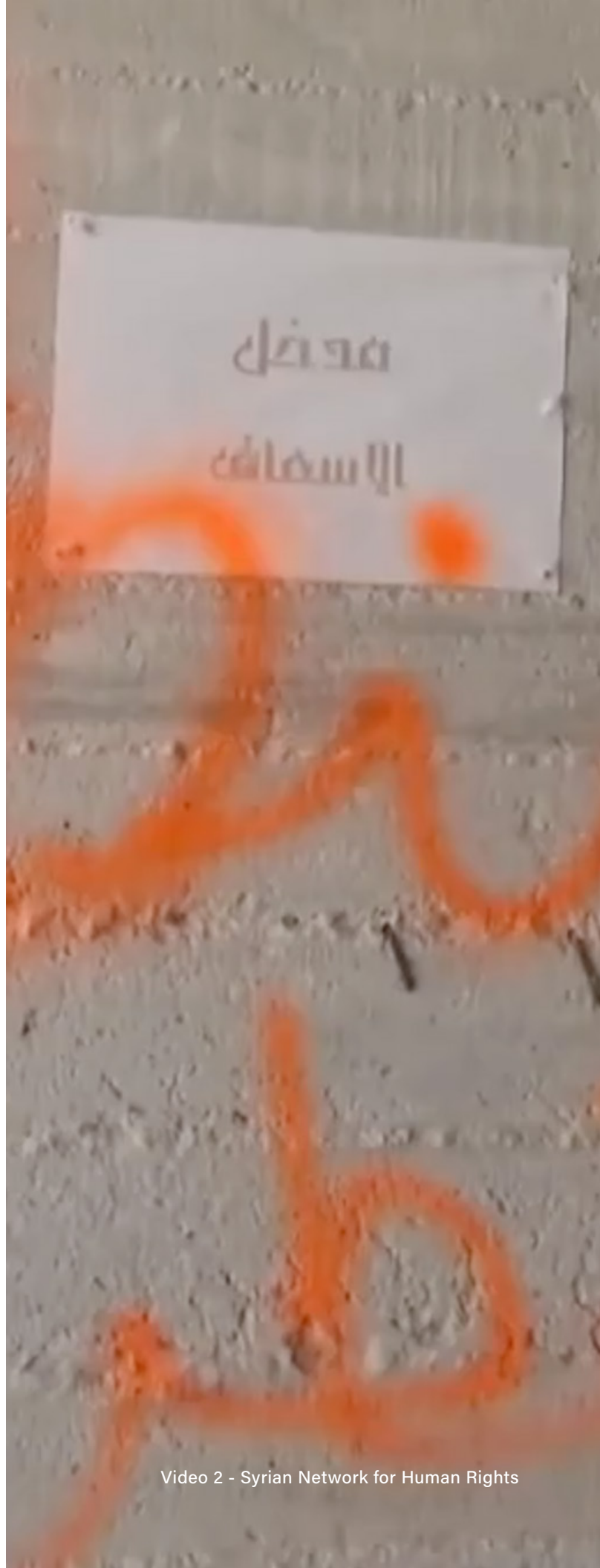
The suspected use of chlorine in March 25, 2017 hospital attack and sarin on March 30, 2017



similarly suggest violations of international humanitarian law and international criminal law, along with a number of international treaties and domestic laws.

Firstly, international humanitarian law prohibits indiscriminate attacks even when a military objective is present. Article 51(4) and Additional Protocol I of the Geneva Conventions, as well as ICRC Rules 11, 12, and 71 prohibit the use of weapons which strike military objectives and civilians or civilian objects without distinction.<sup>15</sup> Article 35(2) of the Optional Protocol I also prohibits employing weapons, projectiles and methods of warfare that cause superfluous injury or unnecessary suffering, often used in reference to chemical weapons attacks.<sup>16</sup> ICRC Rule 71 defines chemical weapons as those that are inherently indiscriminate because their effects are often uncontrollable and unpredictable.<sup>17</sup>

Any evidence of chemical weapons also may be critical in cases seeking to hold individuals responsible for war crimes and crimes against humanity under international criminal law. The International Criminal Court's Rome Statute suggests that the use of chemical weapons may constitute a war crime under Article 8.<sup>18</sup> Furthermore, Article 8 prohibits the use of poison, poisoned weapons, as well as employment of asphyxiating, poisonous or other gases, and all analogous liquids, materials, or devices in both international and non-international armed conflicts. Lastly, Rule 156 from the International Committee of the Red Cross suggests that the use of prohibited weapons may constitute a war crime even in non-international armed conflicts.<sup>19</sup>



# March 25

## Social Media Content

According to a May 2017 Human Rights Watch report, on March 25, 2017, a Syrian air force helicopter dropped a chlorine-filled munition on Latamna Surgical Hospital in al-Lataminah, Hama, Syria.<sup>20</sup> The report specifies that “[o]ne barrel with explosives fell about fifty meters from the hospital, the other hit the roof of the hospital.” Witnesses’ descriptions of the incident are consistent with match that of chlorine attacks. The White Helmets and the Hama Health Directorate corroborate the allegations, citing the “dumping of barrels laden with chlorine gas.” Reports offer different approximations of when the attack occurred, but most place it in the late afternoon. Reports also give clues as to the location and outside appearance of the hospital, consistent with the HRC Lab’s initial findings. For example, the May 2017 Human Rights Watch report describes it as a “makeshift [...] building outside the village” that has a “roof with steel covered by soil.” Syria Direct claims the hospital is “located in a cave roughly 2km outside the town of Latamna.”<sup>21</sup>

Many of the visual and descriptive findings in these reports appear consistent with the HRC Lab’s findings from content analysis conducted during our preliminary open source investigation of social media from the March 2017 al-Lataminah attacks. Our findings for the March 25 attack are presented below.



Video 2 - Syrian Network for Human Rights

### GEOLOCATION

#### INCIDENT TARGET:

al-Lataminah Surgical Hospital

#### INCIDENT COORDINATES:

35.30882222, 36.62138889

#### SOURCE VIDEO 1: [Check](#) - [YouTube](#)

Source YouTube account has over 2M views and posts regularly on the Syrian conflict. Posted March 26, 2017. This video corroborates allegations of chlorine gas attacks because it shows the interior of the hospital and the remains of a chlorine munition in it.

#### SOURCE VIDEO 2: [Check](#) - [YouTube](#)

Montage of clips which purport to show the aftermath of the March 25 attack on Lataminah Surgical Hospital. Posted March 31, 2017 by Syrian Network for Human Rights. Shows the interior and exterior of hospital clearly, including details which suggest it depicts the aftermath of the March 25 incident.

#### FACEBOOK 1: [Check](#) - [Facebook](#)



## MUNITIONS

### VISIBLE AT SCENE:

Large yellow metal canister, with some damage.

### SOURCES:

**VIDEO 1:** [Check](#) - [YouTube](#)

Posted March 26, 2017 -

**VIDEO 3:** [Check](#) - [YouTube](#)

Posted March 26, 2017 - 11:00 UTC

**VIDEO 4:** [Check](#) - [YouTube](#)

Posted April 2 - 14:36 UTC

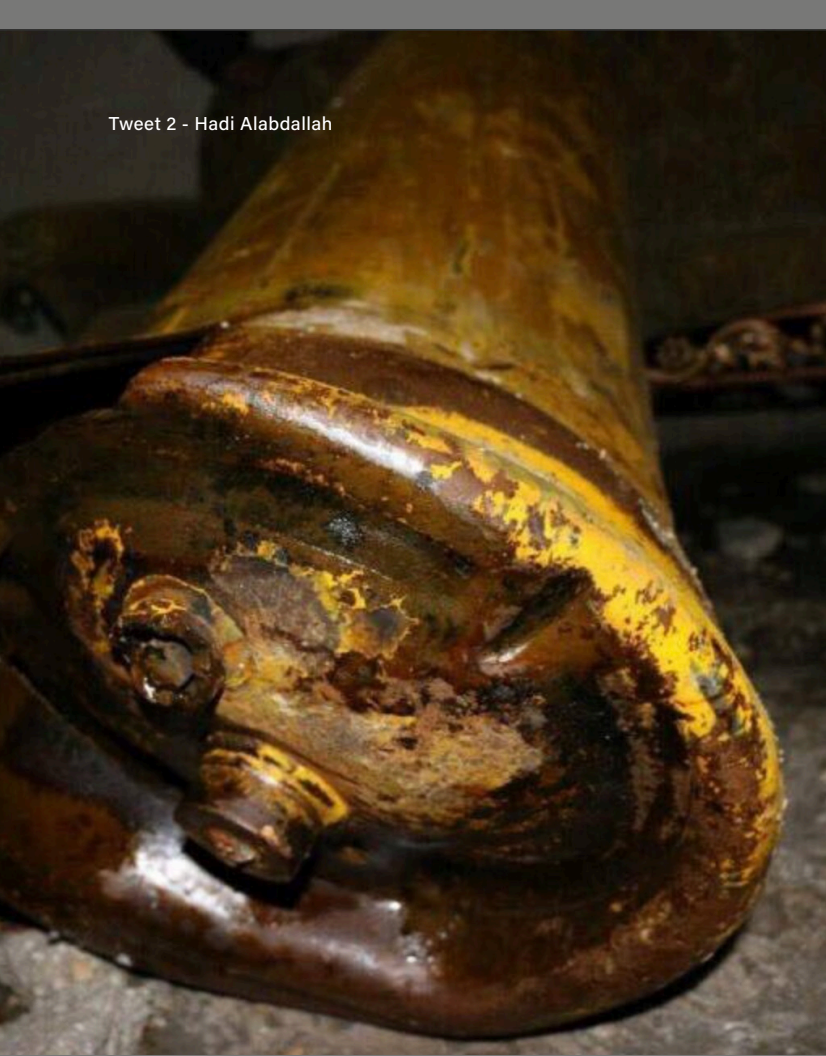
**TWEET 1:** [Check](#) - [Twitter](#)

Posted March 25 - 20:12 UTC

**TWEET 2:** [Check](#) - [Twitter](#)

Posted March 26 - 21:55 UTC

Tweet 2 - Hadi Alabdallah



## AIRCRAFT

**SUSPECTED AIRCRAFT:**MIL-MI8/17

**SOURCE VIDEO 3:** [Check](#) - [YouTube](#)

Posted March 26, 2017 - 11:00 UTC

**SOURCE VIDEO 2:** [Check](#) - [YouTube](#)

Posted March 26, 2017 - 19:01 UTC



Video 3 - Thiqa Agency

There are three key details from Videos 1 & 2 that suggest they show al-Lataminah Surgical Hospital, located south of al-Lataminah, after the March 25 chemical attack:

- **First:** Video 2 shows a sign in Arabic, which reads “al-Lataminah Surgical Hospital” and orange graffiti in Arabic, which reads “March 25, 2017 - Dangerous Area, Chemicals”. The graffiti is not visible in Video 1, which we believe was filmed earlier due to the presence of the munition and the amount of rubble visible (see Figure 1).
- **Second:** The footage of the exterior of the hospital matches reports’ descriptions of the hospital. The video from the entrance of the hospital shows elevated surrounding hills, which suggests the hospital is underground or in a cave, as Syria Direct claims.<sup>22</sup> It shows dirt and hills but no structures, which matches descriptions of the hospital being outside the village. The White Helmets posted photos of the exterior of the hospital to Facebook that matched the video, which shows elevated light-colored soil outside the hospital topped with grass and a long light-colored road running parallel to the entrance. Satellite imagery of the location at our coordinates shows a small entrance in a hill surrounded by tall hills with greenery on top and a light-colored road parallel to the entrance. We searched a topographical map of this location, which shows the geolocated area is at a lower elevation than the surrounding hills, matching the video and descriptions of the hospital.
- **Third:** Videos 1 and 2 show a large hole in the roof, which matches independent reports of the March 25 attack.

Corroborating reports of this geolocation were found by Bellingcat.<sup>23</sup>



## CHEMICAL STRIKES ON AL-LATAMINAH

Video 1 - Ibrahim al-Shimali



Video 2 - Syrian Network for Human Rights



Videos 1 and 2 show the al-Lataminah surgical hospital - among other common features you can see identical markings in the entryways visible in both videos. Graffiti declaring the area dangerous as of March 25 is also visible.

Video 2 - Syrian Network for Human Rights



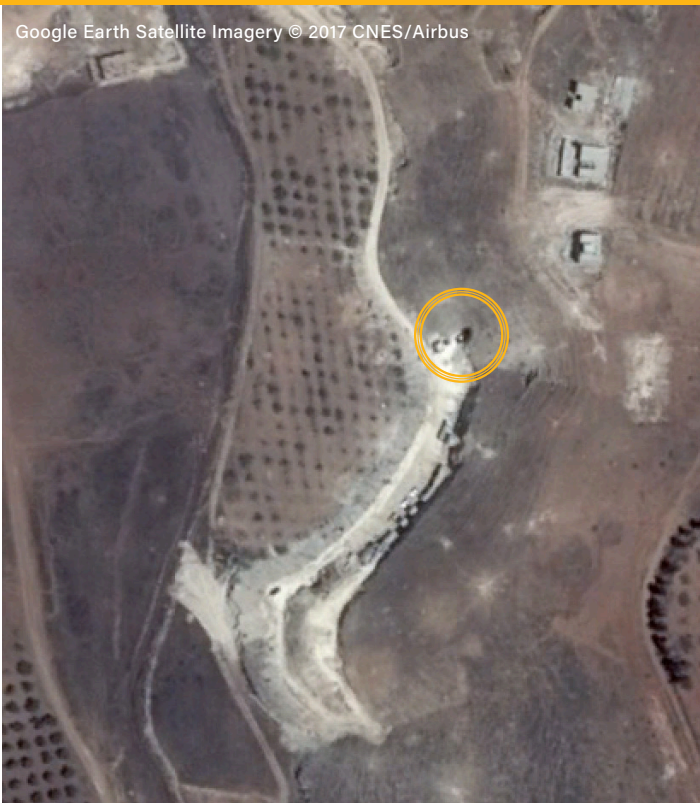
Video 2 - Syrian Network for Human Rights



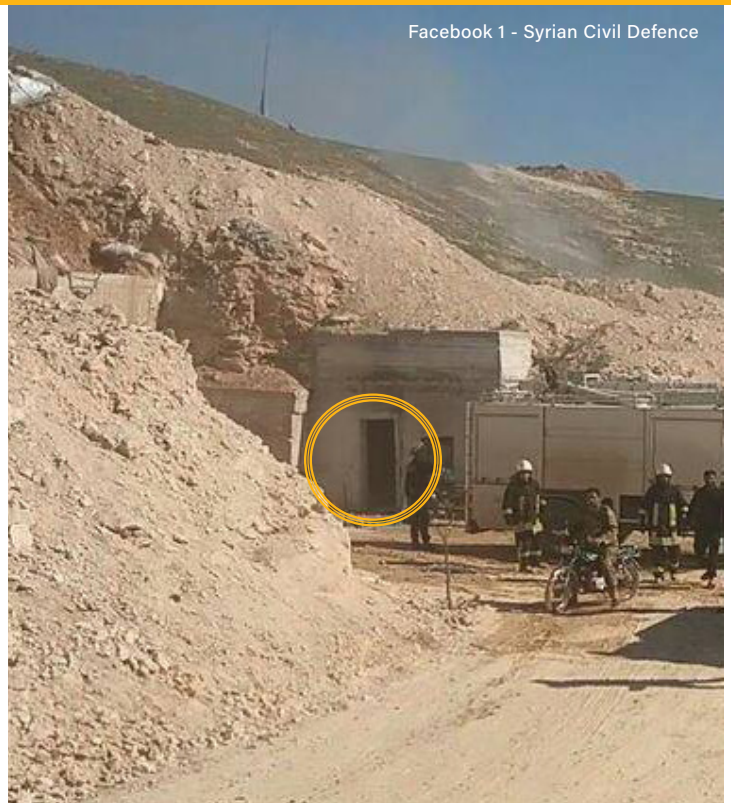
Top: Video 2 shows the scene in clearer light, featuring a hole in the roof of the building, and a sign reading: "al-Lataminah Surgical Hospital - created and founded by Jaysh al-Ezza."

Bottom: Using imagery posted of the exterior of the hospital, coupled with supporting descriptions of the hospital and its location, we were able to find a likely location.

Google Earth Satellite Imagery © 2017 CNES/Airbus



Facebook 1 - Syrian Civil Defence



# March 30

## Social Media Content

The OPCW Fact-Finding Mission in Syria consists of a team from Organisation for the Prohibition of Chemical Weapons reporting on chemical weapons usage in Syria. Their September 2017 press release, details findings from the March 30, 2017 chemical weapons attack on al-Lataminah:

*"On 30 March 2017 at approximately 06:00, witnesses reported, roughly 500 metres from the town of Ltamenah in the southern outskirts, the sound of a jet aeroplane followed by the sounds from four air delivered munitions. Witnesses describe being in nearby caves at the time of the passing plane and subsequent detonations. None of the witnesses interviewed saw the planes drop munitions in their area. The third detonation had a different, quieter, characteristic than the other three, with no odour and associated smoke being unlike other attacks. At the time of the incident this location was near the confrontation lines. Witnesses describe that upon exiting caves, people were shouting and "falling down". Casualties were shaking, shivering, foaming and becoming increasingly unresponsive. Attempts were made to rescue and evacuate casualties by witnesses and by others."*<sup>24</sup>

The September 2017 report from the UN Commission of Inquiry also describes with detail the March 30, 2017 attacks:

*"At around 6.30 a.m. on 30 March... an unidentified warplane dropped two bombs in an agricultural field south of Al-Latamneh village. Interviewees recalled how the first bomb made almost no sound but released a "toxic material" absent any particular smell, while the second bomb caused a loud explosion. As a result of the former, at least 85 people suffered from respiratory difficulties, loss of consciousness, red eyes and impaired vision. Among the injured were 12 male farmers located 300 metres away from the impact point, 2 of them minors. Nine medical personnel who treated patients without protection also fell ill."*<sup>25</sup>

Many of the visual and descriptive findings in these reports appear consistent with the HRC Lab's findings from content analysis conducted during our preliminary open source investigation of social media for the March 2017 al-Lataminah attacks. Our findings for the March 30 attacks are presented below.



# GEOLOCATION

## SITE:

Countryside south of al-Lataminah

## INCIDENT COORDINATES:

35.3057, 36.6202

**SOURCE VIDEO 5:** [Check](#) - [YouTube](#)  
Posted March 30 - 16:36 UTC

**SOURCE VIDEO 6:** [Check](#) - [YouTube](#)  
Posted March 30 - 20:29 UTC

**SOURCE VIDEO 7:** [Check](#) - [YouTube](#)  
Posted March 31 - 13:54 UTC

**SOURCE VIDEO 8:** [Check](#) - [YouTube](#)  
Posted March 30 - 04:17 UTC

Video 5 - Mohamed el-Hammawi



# MUNITIONS

## VISIBLE AT SCENE:

Large yellow metal canister, with some damage.

**SOURCE VIDEO 5:** [Check](#) - [YouTube](#)  
Posted March 30 - 16:36 UTC

Video 7 - Smart News Agency

Key details from Videos 5, 6, 7 & 8 suggest these videos show the aftermath of part of the March 30, 2017 chemical attacks on al-Lataminah. Information gathered through geolocation suggests that these attacks targeted the countryside just south of al-Lataminah.

In videos 5, 6 and 7, HRC Lab students identified two lines of trees at particular elevations on a distinct, uneven mountainous terrain. HRC lab students initially identified these distinctive geographic features by watching and matching landmarks from numerous social media videos purporting to show the aftermath of the March 30, 2017. The landmarks identified in the videos include two distinct lines of trees, recognizable hills and slopes, a faint city landscape, and curved road. These findings led HRC Lab students to Google Earth satellite imagery from southern al-Lataminah depicting distinctly similar geographic features, including the lines of trees and relevant hills and slopes.



## CHEMICAL STRIKES ON AL-LATAMINAH



By analyzing the site of two white vehicles (marked 1 and 2, bottom right image) observable in Video 6, we were able to locate the video (which claims to show the sites of the March 30 strikes) and corroborate that location using Google Earth's terrain map feature (see comparison above). The town of al-Lataminah, to the north, is just visible on the horizon.





Video 8 - SOURCE

ماضون في ثورتنا  
رف حماه اللطامنة



Satellite Imagery: Mapbox

# March 30: Geolocation

Video 8 was posted on March 30th, 2017, by the YouTube account belonging to Mahmoud Al Hamawi. HRC lab students noticed some sort of tower in the distance to the left of the plume. Students then researched towers in Lataminah and using satellite imagery from Wikimapia, found two water towers just south of al-Lataminah that were visually consistent with the tower spotted in Video 8, and the suspected site of the incident.

Video 8 was also referenced by Bellingcat in their report of the March 30th attack, citing Forensic Architecture analysis: “based on the imagery the smoke visible was approximately 3.3 kilometers away from the camera”<sup>26</sup> With that information in mind, HRC Lab students used satellite imagery from Google Earth to create a radius within which Video 8 was most likely captured. The vantage point where the video was filmed appears to be at a higher elevation relative to the elevation of where the bomb with smoke plumes was dropped. Furthermore, HRC lab students spotted distinctive hills in the background of video, suggesting that the video was shot captured by a videographer facing south.

Geolocating this video was important, as it was posted shortly after the attack and features audio of a jet plane, and likely thus corroborates witness statements that the March 30 attack was carried out by plane rather than helicopter.

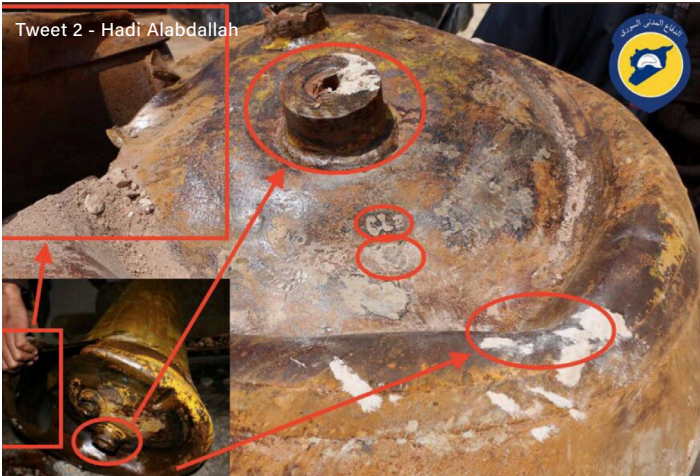
In many of the videos and photos posted to social media covering the aftermath of the March 25 and March 30 attacks, there features imagery of a large, yellow gas cylinder-like munition.

Notable is that in all the imagery from the various videos and tweets from March 25, the damage pattern on the munition is the same: a large tear in the casing at one end of the bomb. Imagery of the munition from March 30 shows a different damage pattern. In both munitions there feature casing markings which include "CL<sub>2</sub>" - possibly a reference to the chlorine content, although it is believed sarin was used in the attacks on March 30. Other matching markings are also visible.

In February 2017, Human Rights Watch identified matching improvised munitions as being used in five chlorine attacks in Aleppo in November and December 2016.<sup>27</sup>



## CHEMICAL STRIKES ON AL-LATAMINAH



Imagery from March 25, 2017, including annotated imagery shared via Twitter by Syrian Civil Defence.



Imagery from March 30, 2017. This munition features a clearly distinct damage pattern.



Imagery from March 25, 2017.



Imagery from March 30, 2017, including case markings matching the March 25 imagery shared by Syrian Civil Defence (Tweet 2).

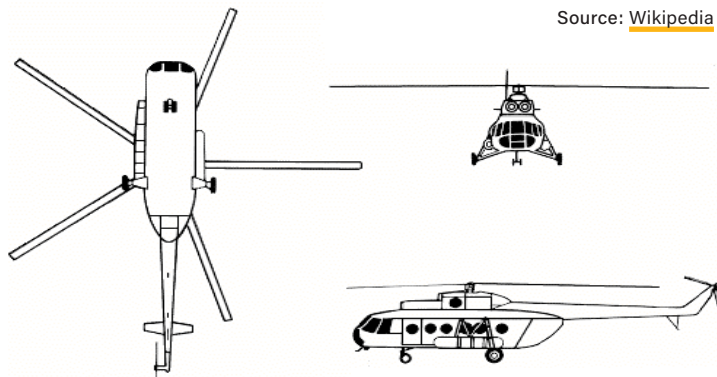






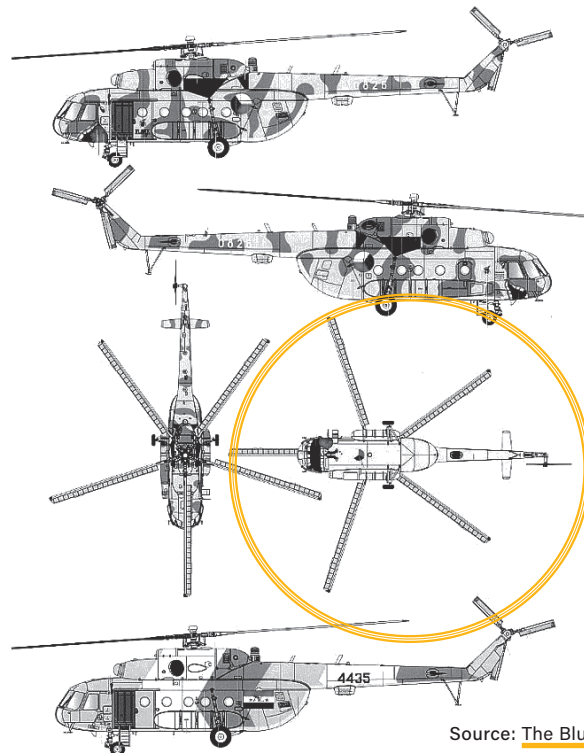
Helicopters visible in two of the videos we analyzed (Videos 2 and 5).

Source: [Wikipedia](#)



Top: Mil Mi-8

Bottom: Mil mi-17



Source: [The Blueprints](#)



# March 25 & 30: Aircraft

While we were unable to confirm with certainty that the helicopters featured at the opening of Videos 5 are the aircraft that carried out the March 25 attack, we were able to identify the helicopter featured in Videos 2 and 5 as likely being Mil-Mi8/17 helicopters. This is based on research on Syrian Air Force aircraft, and comparing schematics with the undersides of the aircraft visible in the videos: five-blade propellers with protruding rear landing wheels and appropriate relative blade length.

Witness reports from the March 30 attacks indicate that a warplane was used in the attack. While we were unable to find visual confirmation of warplane activity, audio heard in Video 8 (which claims to show the moment of the strike, and was geolocated to al-Lataminah as described previously) clearly indicates jet-plane activity.

# Endnotes

- 1 For further information see: <https://www.law.berkeley.edu/research/human-rights-center/programs/technology/>
- 2 For further information see: <https://syrianarchive.org>
- 3 For further information about the Syrian Archive's collaborations and methodology see: [https://syrianarchive.org/en/tools\\_methods/methodology/](https://syrianarchive.org/en/tools_methods/methodology/)
- 4 For further information about the work of the HRC and the development of international protocols for open source information see: <https://medium.com/humanrightscenter/harnessing-social-media-as-evidence-of-grave-international-crimes-d7f3e86240d>
- 5 Organisation for the Prohibition of Chemical Weapons. (2017). *Report of the Organisation for the Prohibition of Chemical Weapons Fact-Finding Mission in the Syrian Arab Republic regarding an alleged incident in Lataminah, Syrian Arab Republic, 30 March 2017* (No. S/2017/931). United Nations Security Council.
- 6 For further information about Keep see: <https://www.rightslab.org/keep/>; For further information about the importance of preservation of open source information, see: Deeb, S. E. (2017, September 13). *History of Syria's war at risk as YouTube reins in content*. Retrieved from [https://www.washingtonpost.com/world/middle\\_east/history-of-syrias-war-at-risk-as-youtube-reins-in-content/2017/09/13/dc43b87c-9879-11e7-af6a-6555caaeb8dc\\_story.html](https://www.washingtonpost.com/world/middle_east/history-of-syrias-war-at-risk-as-youtube-reins-in-content/2017/09/13/dc43b87c-9879-11e7-af6a-6555caaeb8dc_story.html)
- 7 Koettl, C. (2016, January 27). *Citizen Media Research and Verification: An Analytical Framework for Human Rights Practitioners*. Retrieved September 16, 2017, from [https://www.repository.cam.ac.uk/bitstream/handle/1810/253508/Koettl\\_Citizen%20Media%20Research%20and%20Verification\\_FINAL%20%281%29.pdf](https://www.repository.cam.ac.uk/bitstream/handle/1810/253508/Koettl_Citizen%20Media%20Research%20and%20Verification_FINAL%20%281%29.pdf).
- 8 Toler, A. (2017, October 17). *How to Conduct Comprehensive Video Collection*. Retrieved January 3, 2018, from <https://www.bellingcat.com/resources/how-tos/2017/10/17/conduct-comprehensive-video-collection/>.
- 9 Human Rights Watch. (2017, May 1). *The Syrian Government's Widespread and Systematic Use of Chemical Weapons*. Retrieved January 3, 2018, from <https://www.hrw.org/report/2017/05/01/death-chemicals/syrian-governments-widespread-and-systematic-use-chemical-weapons>

Syria Direct. (2016, March 26). *Surgeon killed, dozens injured in suspected north Hama "chlorine gas" attack*. Retrieved January 3, 2018, from <http://syriadirect.org/news/surgeon-killed-dozens-injured-in-suspected-north-hama-%e2%80%98chlorine-gas%e2%80%99-attack/>.

10 Independent International Commission of Inquiry on the Syrian Arab Republic. (2017). *Report of the Independent International Commission of Inquiry on the Syrian Arab Republic* (No. A/HRC/36/55). United Nations General Assembly.

11 For further information see: <https://meedan.com/en/check>

12 For further information about some of the issues regarding using open source information as evidence see: Aronson, J. (2017). *Preserving Human Rights Media for Justice, Accountability, and Historical Clarification*. *Genocide Studies and Prevention: An International Journal*, 11(1). <http://doi.org/10.5038/1911-9933.11.1.1441>.

13 Human Rights Watch. (2017, May 1). *The Syrian Government's Widespread and Systematic Use of Chemical Weapons*. Retrieved January 3, 2018, from <https://www.hrw.org/report/2017/05/01/death-chemicals/syrian-governments-widespread-and-systematic-use-chemical-weapons>

14 United Nations General Assembly. (1998, July 17). *Rome Statute of the International Criminal Court* (last amended 2010). United Nations General Assembly.

15 *Protocols Additional to the Geneva Conventions of 12 August 1949*. (1994, March 1). International Committee of the Red Cross.

16 *ibid.*

17 *Rules of International Humanitarian Law and Other Rules Relating to the Conduct of Hostilities*. (n.d.). Retrieved January 1, 2018, from <https://shop.icrc.org/droit-international-regissant-la-conduite-des-hostilites-collection-des-conventions-de-la-haye-et-de-certains-autres-traites-2636.html>

18 United Nations General Assembly. (1998, July 17). *Rome Statute of the International Criminal Court* (last amended 2010). United Nations General Assembly.

- 19 *Rules of International Humanitarian Law and Other Rules Relating to the Conduct of Hostilities*. (n.d.). Retrieved January 1, 2018, from <https://shop.icrc.org/droit-international-regissant-la-conduite-des-hostilites-collection-des-conventions-de-la-haye-et-de-certaines-autres-traites-2636.html>
- 20 Human Rights Watch. (2017, May 1). *The Syrian Government's Widespread and Systematic Use of Chemical Weapons*. Retrieved January 3, 2018, from <https://www.hrw.org/report/2017/05/01/death-chemicals/syrian-governments-widespread-and-systematic-use-chemical-weapons>
- 21 Syria Direct. (2016, March 26). *Surgeon killed, dozens injured in suspected north Hama "chlorine gas" attack*. Retrieved January 3, 2018, from <http://syriadirect.org/news/surgeon-killed-dozens-injured-in-suspected-north-hama-%e2%80%99chlorine-gas%e2%80%99-attack/>
- 22 *ibid.*
- 23 Bellingcat. (2017, October 9). *Summary of Open Source Evidence from the March 25th 2017 Chlorine Attack in Al-Lataminah, Hama*. Retrieved January 3, 2018, from <https://www.bellingcat.com/news/mena/2017/10/09/summary-open-source-evidence-march-25th-2017-chlorine-attack-al-lataminah-hama/>
- 24 Organisation for the Prohibition of Chemical Weapons. (2017). *Report of the Organisation for the Prohibition of Chemical Weapons Fact-Finding Mission in the Syrian Arab Republic regarding an alleged incident in Lataminah, Syrian Arab Republic, 30 March 2017* (No. S/2017/931). United Nations Security Council.
- 25 Independent International Commission of Inquiry on the Syrian Arab Republic. (2017). *Report of the Independent International Commission of Inquiry on the Syrian Arab Republic* (No. A/HRC/36/55). United Nations General Assembly.
- 26 Bellingcat. (October 2017). *Investigating the March 30, 2017 Sarin Attack in Al-Lataminah*. Retrieved January 3, 2018, from <https://www.bellingcat.com/news/mena/2017/10/26/investigating-march-30-2017-sarin-attack-al-lataminah/>
- 27 Human Rights Watch. (2017, February 13). *Syria: Coordinated Chemical Attacks on Aleppo*. Retrieved from <https://www.hrw.org/news/2017/02/13/syria-coordinated-chemical-attacks-aleppo>



# Bibliography

Aronson, J. (2017). *Preserving Human Rights Media for Justice, Accountability, and Historical Clarification*. *Genocide Studies and Prevention: An International Journal*, 11(1). <http://doi.org/10.5038/1911-9933.11.1.1441>

Bellingcat. (2017, October 9). *Summary of Open Source Evidence from the March 25th 2017 Chlorine Attack in Al-Lataminah, Hama*. Retrieved January 3, 2018, from <https://www.bellingcat.com/news/mena/2017/10/09/summary-open-source-evidence-march-25th-2017-chlorine-attack-al-lataminah-hama/>

Bellingcat. (n.d.). *Investigating the March 30, 2017 Sarin Attack in Al-Lataminah*. Retrieved January 3, 2018, from <https://www.bellingcat.com/news/mena/2017/10/26/investigating-march-30-2017-sarin-attack-al-lataminah/>

CBS/AP. (2018, January 3). *Nuke watchdog reveals another chemical attack in Syria*. Retrieved January 3, 2018, from <https://www.cbsnews.com/news/syria-sarin-chemical-weapons-opcw-khan-sheikhoun-another-attack-ltamenah/>

Deeb, S. E. (2017, September 13). *History of Syria's war at risk as YouTube reins in content*. Retrieved from [https://www.washingtonpost.com/world/middle\\_east/history-of-syrias-war-at-risk-as-youtube-reins-in-content/2017/09/13/dc43b87c-9879-11e7-af6a-6555caaeb8dc\\_story.html](https://www.washingtonpost.com/world/middle_east/history-of-syrias-war-at-risk-as-youtube-reins-in-content/2017/09/13/dc43b87c-9879-11e7-af6a-6555caaeb8dc_story.html)

Groome, D. (2011). *The Handbook of Human Rights Investigations* (Second Edition).

Gutman, R., & Rieff, D. (1999). *Crimes of war : what the public should know*. New York : W.W. Norton & Company, c1999.

Human Rights Watch. (2017, February 13). *Syria: Coordinated Chemical Attacks on Aleppo*. Retrieved from <https://www.hrw.org/news/2017/02/13/syria-coordinated-chemical-attacks-aleppo>

Human Rights Watch. (2017, May 1). *The Syrian Government's Widespread and Systematic Use of Chemical Weapons*. Retrieved January 3, 2018, from <https://www.hrw.org/report/2017/05/01/death-chemicals/syrian-governments-widespread-and-systematic-use-chemical-weapons>

Independent International Commission of Inquiry on the Syrian Arab Republic. (2017). *Report of the Independent International Commission of Inquiry on the Syrian Arab Republic* (No. A/

HRC/36/55). United Nations General Assembly.

International Committee of the Red Cross. (2016, October 19). *10 things the rules of war do*. Retrieved from <https://www.icrc.org/en/document/10-things-rules-of-war-Geneva-Conventions>

Koettl, C. (2016, January 27). *Citizen Media Research and Verification: An Analytical Framework for Human Rights Practitioners*. Retrieved September 16, 2017, from [https://www.repository.cam.ac.uk/bitstream/handle/1810/253508/Koettl\\_Citizen%20Media%20Research%20and%20Verifcation\\_FINAL%20%281%29.pdf](https://www.repository.cam.ac.uk/bitstream/handle/1810/253508/Koettl_Citizen%20Media%20Research%20and%20Verifcation_FINAL%20%281%29.pdf)

Organisation for the Prohibition of Chemical Weapons. (2017). *Report of the Organisation for the Prohibition of Chemical Weapons Fact-Finding Mission in the Syrian Arab Republic regarding an alleged incident in Lataminah, Syrian Arab Republic, 30 March 2017* (No. S/2017/931). United Nations Security Council.

Pederson, E., & Hohler, B. (2017, September 16). *The Syria Mechanism: Bridge to Prosecutions or Evidentiary Limbo?* Retrieved September 16, 2017, from <http://www.e-ir.info/2017/05/26/the-syria-mechanism-bridge-to-prosecutions-or-evidentiary-limbo/>

Price, Megan, & Ball, Patrick. (2014, January 23). *Data Collection and Documentation for Truth-Seeking and Accountability*. Syria Justice and Accountability Centre. Retrieved from <https://hrdag.org/wp-content/uploads/2015/07/SJAC-Data-Collection-Documentation-Truth-seeking-Accountability.pdf>

*Protocols Additional to the Geneva Conventions of 12 August 1949*. (1994, March 1). International Committee of the Red Cross.

Rights, P. for H. (2017, April 6). *Hama's Medical Facilities Under Attack*. Retrieved January 3, 2018, from <https://medium.com/@PHR/hamas-medical-facilities-under-attack-b17e0e9ee795>

Schwartz, J. M., & Cook, T. (2002). *Archives, records, and power: The making of modern memory*. Archival Science, 2(1-2), 1-19. <https://doi.org/10.1007/BF02435628>

Syria Direct. (2016, March 26). *Surgeon killed, dozens injured in suspected north Hama "chlorine gas" attack*. Retrieved January 3, 2018, from <http://syriadirect.org/news/surgeon-killed-dozens-injured-in-suspected-north-hama-%e2%80%99chlorine-gas%e2%80%99-attack/>

Syria Justice and Accountability Center. (2017, September 16). *7 Complex Legal Issues SJAC Has Addressed in its Data Analysis*. Retrieved September 16, 2017, from <http://syriaaccountability.org>

org/updates/2017/06/01/7-complex-legal-issues-sjac-has-addressed-in-its-data-analysis/

Toler, A. (2017, October 17). *How to Conduct Comprehensive Video Collection*. Retrieved January 3, 2018, from <https://www.bellingcat.com/resources/how-tos/2017/10/17/conduct-comprehensive-video-collection/>

United Nations General Assembly. (1998, July 17). *Rome Statute of the International Criminal Court (last amended 2010)*. United Nations General Assembly.



