



OPCW

Technical Secretariat

S/1319/2015
29 October 2015
Original: ENGLISH

NOTE BY THE TECHNICAL SECRETARIAT

**REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA REGARDING
ALLEGED INCIDENTS IN THE IDLIB GOVERNORATE OF THE SYRIAN ARAB
REPUBLIC BETWEEN 16 MARCH AND 20 MAY 2015**

1. On 1 May 2015, the Director-General mandated the OPCW Fact-Finding Mission (FFM) in Syria to conduct an investigation into incidents of the alleged use of toxic chemicals, particularly chlorine, as a weapon in the Idlib Governorate of the Syrian Arab Republic from 16 March 2015 onwards, as reported in the media.
2. The report of the FFM is hereby circulated to the States Parties (Annex 2). It provides a detailed account of the work undertaken by the FFM and the process leading to the findings presented therein. The FFM has presented its conclusions that several incidents that occurred in the Idlib Governorate of the Syrian Arab Republic between 16 March 2015 and 20 May 2015 likely involved the use of one or more toxic chemicals—probably containing the element chlorine—as a weapon.
3. The work of the FFM has remained consistent with its mandate, which did not include the question of attributing responsibility for the alleged use.

Annexes:

- Annex 1: Cover Note by the Head of the OPCW Fact-Finding Mission in Syria
Annex 2: Report of the OPCW Fact-Finding Mission in Syria Regarding Alleged Incidents in the Idlib Governorate of the Syrian Arab Republic between 16 March and 20 May 2015



Annex 1

**COVER NOTE BY THE HEAD
OF THE OPCW FACT-FINDING MISSION IN SYRIA**

20 October 2015

Director-General,

In accordance with the mandate of the Fact-Finding Mission (FFM) (mission code FFM/005/15, dated 1 May 2015), I submit herewith the report of the findings of the FFM.

Leonard Phillips
Head of the FFM-Alpha

Annex 2

**REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA
REGARDING ALLEGED INCIDENTS IN THE IDLIB GOVERNORATE
OF THE SYRIAN ARAB REPUBLIC
BETWEEN 16 MARCH AND 20 MAY 2015**

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1. SUMMARY

1. Open-source media were examined and cross-referenced with other sources of information, including that obtained from non-governmental organisations (NGOs). This provided a credible basis for investigation, which resulted in a Fact-Finding Mission (FFM) being mandated (Appendix 1) to gather facts regarding incidents of alleged use of toxic chemicals as a weapon in the Idlib Governorate of the Syrian Arab Republic from 16 March 2015 onwards.
2. The FFM was led by and predominantly comprised inspectors, with support from various other divisions and branches within the Technical Secretariat (hereinafter “the Secretariat”). Interpreters were embedded in the team and were critical to the effective functioning of the mission. Furthermore, medical expertise was provided through the secondment of an external medical doctor to the team (Appendix 2).
3. The conclusions were derived from interviews and supplementary material submitted during the interview process. Additional input included media content and samples, which were used to corroborate each other as well as the information given in the interviews.
4. The inability of the team to, inter alia, visit the location shortly after the incident, review original records in situ, take its own samples, and totally control the selection of interviewees detracts from the strength of the conclusions that can be made by the FFM. However, sufficient facts were collected to conclude that incidents in the Syrian Arab Republic likely involved the use of one or more toxic chemicals—probably containing the element chlorine—as a weapon.

2. METHODOLOGY

Methodological considerations

- 2.1 The three main driving principles in development of the team's fact- and data-gathering methodology were to ensure that:
- (a) a validated methodology is used for the acquisition and analysis of evidence to the maximum extent possible under the conditions of the mission;
 - (b) the personnel conducting the investigation have the appropriate skill sets and training; and
 - (c) the appropriate chain of custody procedures are applied to the collection of all evidence.

METHODOLOGY FOR THE ACQUISITION AND ANALYSIS OF EVIDENCE

- 2.2 In conducting its work, the FFM complied with the current OPCW guidelines and procedures for the conduct of an investigation of alleged use (IAU) of chemical weapons (see Appendix 4).
- 2.3 The FFM also adhered to the most stringent protocols available, using both objective criteria and standard questionnaires for such an investigation, as set out in the relevant quality measurement system documents (QDOCs). As these questionnaires were specifically designed for IAUs, occasionally slight modifications were required. Authority for such flexibility to make modifications is expressly provided for in the OPCW procedures. Additionally, any modifications were minor and were carried out in consultation with the Office of the Legal Adviser and the Office of the Director-General.
- 2.4 The major challenges of the investigation centred predominantly on the open nature of the allegations in technical, geographical and chronological terms, and on evidential sources in terms of relevance, validity, and authenticity.
- 2.5 The prioritisation of evidence was based on relevance in accordance with the guidance provided in the OPCW procedures, and re-evaluated according to the degree of separation in the chain of custody between the source and receipt by the team. Types of evidence were then defined as primary, secondary, or tertiary, in descending order of value.
- 2.6 The most relevant methods for collecting and evaluating the credibility of information included the following, inter alia: research into the incidents and existing reports; the assessment and corroboration of background information; the conduct of interviews with relevant witnesses, responders, medical treatment providers, and alleged victims; the review of documentation and records provided by interviewees; the assessment of the symptoms of victims as reported by interviewees; the receipt of environmental samples for subsequent analysis; and the documentation and analysis of the alleged subcomponents of munitions received by the team.

- 2.7 In accordance with the OPCW procedures, the FFM considered the following: first-hand testimony from interviews as primary evidence; documentation, photographs, and video and audio recordings presented by the interviewees as secondary evidence; and samples provided by the interviewees, in addition to open-source information, as supporting information. The ascribed values take into consideration the consistent corroboration between interviewee testimony, open-source research, documents and other records as provided by interviewees, and the characteristics of the samples provided. No metadata forensic analysis was carried out on the electronic records provided by the witnesses.
- 2.8 During the preparatory phase, the team engaged in extensive open-source research concerning the allegations (see Appendix 5). The majority of sources included news media, blogs, and websites of various NGOs, including civil defence units. While there were many different alleged incidents indicated by these sources, there was a concentration of events from mid- to late March 2015 in the area to the east of Idlib City, particularly in the villages of Sarmin, Qmenas, Binnish, and Al-Nerab, as well as in Idlib City itself. For this reason, the team focused on this area in both its ongoing open-source preparations and in identifying suitable organisations and bodies with which to work.
- 2.9 During consultations in March and May, and later again in July 2015 (letters L/ODG/1972239/15 dated 7 April 2015 and L/ODG/197860/15 dated 13 May 2015), the Secretariat also requested that the Syrian Arab Republic provide any information it might have that could be relevant to the investigation. Representatives of the Syrian Arab Republic indicated during the first two meetings that, at that time, they were not in a position to be able to provide significant evidence regarding the allegations, but that they categorically refuted them. However, during the July consultations, the representatives of the Syrian Arab Republic indicated that a number of displaced individuals from the area were available to be interviewed and that the representatives would facilitate the interviews in Damascus. The Syrian Arab Republic forwarded Note Verbale 56 containing Letter No. 158 (classified OPCW Protected) to the Secretariat on 27 July 2015 with more information. It was decided within the Secretariat that the testimonies of these individuals would be taken by the FFM-Bravo team, a concurrent FFM team already deploying to Damascus to investigate separate incidents, and whose mandate would be amended to reflect this (NV/ODG/199375/15, dated 30 July 2015).

Access to relevant geographic locations

- 2.10 In the conduct of an investigation, complete, direct, and immediate access to the scene of alleged events provides the greatest opportunity to collect higher value evidence. Taking into account various constraints, such as the available time, geographical distribution, and security concerns, the FFM considered three main factors in deciding whether to conduct on-site visits, including interviews:
- (a) the scientific and probative value of an on-site visit;
 - (b) the risk assessment of conducting such visits in the midst of the ongoing armed conflict in the Syrian Arab Republic; and

- (c) whether the victims and witnesses were able as an alternative to cross the confrontation lines or national borders and meet the FFM team.
- 2.11 In the best case during an investigation, potential interviewees would be identified by one of two means: 1) through the investigation team canvassing the area of the alleged incident to identify witnesses; and 2) through the identification of potential interviewees as possible leads by another source deemed reliable by virtue of proximity or involvement.
- 2.12 Due to security concerns in the region of interest and the time frame of events, and considering the very fluid circumstances of the ongoing conflict, including movements of people out of areas of interest, it was determined that, despite the potential gains in terms of primary evidence (although possibly somewhat reduced due to the passage of time), the risk for the team to visit these areas was prohibitive. Therefore, the team could not directly observe, assess, and record locations of alleged incidents, could not canvass directly for witnesses and affected persons, and could not directly collect samples, records, and other evidence from their sources.
- 2.13 It should also be noted that such canvassing in the desired location might enable the identification of:
- (a) a larger proportion of people willing to be interviewed, as travel would not be required, resulting in a greater selection pool for the team;
 - (b) people from unaffected parts of the village who may not have been aware of incidents at the time, thus lending credibility or otherwise to interviewees, given their location; and
 - (c) people, if any, with noticeably differing versions of events, validating or otherwise the input from interviewees.
- 2.14 In this context, the ability to verify the sequence of incidents through interviews, to access evidence, and to verify its chain of custody became primary considerations in the fact-finding process. To this end, the FFM conducted off-site interviews with relevant witnesses and affected persons, and performed the off-site receipt of samples, records and documentation, as collected by others. Therefore, within the limits of persons potentially available to the team, careful consideration was given to the process of identifying potential interviewees, arranging secure access to the interviewees, and maximising the value of output from the interviews, as well as for the treatment of evidence, once received.

Selection of interviewees

- 2.15 Extensive discussions took place between elements of the Secretariat and various civilian entities from the Idlib Governorate, including NGOs and civil defence representatives, as well as with representatives of a neighbouring State Party (hereinafter referred to as “Country X”), which hosted and provided logistical support to the field activities of the team. The ultimate purpose was to establish an agreement on working practices, coordinate logistics and movements, and identify interviewees

and arrange for their authorisation to visit Country X for interviews. These discussions were complemented by pre-deployment visits to Country X.

- 2.16 While there were several different NGOs with access to potential interviewees, only one, the Chemical Violations Documentation Center of Syria (CVDCS¹), appeared to have access to the means of arranging their transport from the Idlib Governorate and their accommodation in Country X. Through this interaction, the team received a list from the CVDCS of approximately 150 individuals who may have had information about the alleged incidents to the east of Idlib City in mid- to late March. CVDCS identified 50 such individuals who would be willing to be interviewed in relation to the incidents. From these, the team selected 30 for interviews, after giving consideration to the factors of age, gender, relation to the incident (casualty, eyewitness, first responder, nurse, and treating physician), number of incidents, and geographical location, while giving emphasis to the priority indicated in QDOC/INS/WI/IAU05.

Interview process

- 2.17 In order to optimise the output from the interviews, a suitable location for the safe, accessible, and comfortable conduct of interviews was chosen in conjunction with officials from Country X. This neutral location was surveyed and prepared for facilitation of the interviews, including facilities for rest and hospitality, with separate rooms for private interviews.
- 2.18 Interviewees were transported to the interview site in subgroups of approximately four on a daily basis. Upon arrival, the interviewees were greeted by the field team and given a thorough explanation of the team's mandate, background and process, with interpretation into Arabic. The discussions included, among other things, confidentiality aspects and consent. Efforts were made by the team to make this process as relaxed and informal as possible.
- 2.19 The interview methods were based on the free recall technique, tailored with follow-on questions relevant to this investigation and adapted from the standard operating procedures (see Appendix 4), based both on the information obtained from preparatory research and on the interviews themselves.
- 2.20 The FFM was divided into two interview teams that conducted concurrent interviews in two separate rooms (except for the last group of interviewees, for which the team was divided into three interview teams in three separate rooms). Each interview sub-team was comprised of cross-functional skill sets (see paragraph 2.45) in order to maximise the extraction of information from multiple perspectives.
- 2.21 At the beginning of each individual interview, all interviewees were given a review of the procedure. Once the process was mutually agreed between the interview team and each interviewee, the recording devices were switched on. Both audio-visual and audio-only recording were used. A consent form for the respective interview was prepared using the personal details of the interviewees and their identification papers.

¹

An NGO supporting the FFM by providing access to documents, samples, and witnesses.

This was followed by the signing of the consent forms. Many interviewees expressed concern that their personal details coupled with the information they were giving would be disseminated outside of the OPCW without their knowledge, with the potential impact this would have on their security. All interviewees were assured that they would remain anonymous.

- 2.22 The initial portion of the recorded interview followed a standard procedure of an introduction of all present in the room, an explanation of the aims of the interview, and confirmation of consent. Subsequently, the interviewees delivered their statements on the incident(s). With a view to obtaining a full account of what was witnessed and experienced by the interviewees, follow-up questions were posed by the interview team, including a review of regional maps for identification of key locations, when possible, and Internet searches. All review processes on the computer were video recorded. Furthermore, any additional evidence provided by the interviewees in the form of documents, photographs, and videos was reviewed. The testimonies and evidence were secured.
- 2.23 In conducting the interviews, full consideration was given to the privacy and protection of participants. All information was kept confidential and the identity of victims and witnesses protected at all times. An identity number was assigned to each interviewee and only this number was used for the processing of data. The master list with the names of the witnesses was kept secure with the FFM. Throughout its work, the FFM made all efforts to respect cultural and religious values and norms, national customs, and the personal pressures and traumas associated with exposure to conflict.
- 2.24 At the end of each day, the team held a debriefing session and shared its findings. This was followed by the securing of all data and documents collected that day.
- 2.25 The same procedures were used by the FFM-Bravo team in the conduct of interviews in Damascus, with two similarly structured interview teams working simultaneously.

Epidemiological methodology

- 2.26 Epidemiological determination of cause and effect was established according to the following criteria:
- (a) there must be a biologically plausible link between the exposure and the outcome;
 - (b) there must be a temporal relationship between the exposure and the outcome; and
 - (c) there must not be any likely alternative explanations for the symptoms.
- 2.27 An epidemiological investigation should under best circumstances include a review of all documentation related to an alleged incident, an epidemiological description of the incident, interviews with presenting witnesses, health care workers and first responders, first-hand interviews with casualties, and on-site assessments of symptoms and signs, including assessments of the clinical severity of their syndromes. Further information regarding the treatment and outcomes of persons

exposed should be retrieved from medical files relating to the time of incident and further interviews with treating clinicians. The epidemiological investigation should yield information about the scale of each event and provide contextual and geographical information that should subsequently be cross-checked and corroborated by the environmental sampling teams.

2.28 However, as mentioned previously, the FFM was not able to physically visit the locations of the alleged incidents, and therefore did not have the opportunity to:

- (a) assess the geography of the locations of the alleged incidents;
- (b) visit the field hospitals where the casualties were treated and make assessments of the available facilities;
- (c) access hospital records, including patient registers, medical files, treatment records, radiographs, laboratory reports, etc.; and
- (d) conduct the on-site collection of testimonies and clinical examinations and, as appropriate, the collection of biomedical samples.

2.29 The FFM could not rely on clinical examinations, as the medical symptoms caused in those exposed to the toxic substances had been resolved either through treatment or otherwise resolved over the intervening period.

2.30 The epidemiological investigation was therefore focused on collecting the testimonies of the interviewees (witnesses, persons exposed, and those providing medical care), together with collecting and examining relevant documentary evidence that they might offer.

Sampling and analytical procedures

2.31 Under optimal circumstances, samples from an incident would be collected by the investigating team immediately after the incident, using approved procedures and equipment, including full documentation of the chain of custody of the samples. As noted above, the team was constrained due to the inability to directly access the sites of the alleged incidents and the amount of time that had passed between the alleged incidents and receipt of samples by the team (approximately 3 to 10 weeks). As a result, the team was unable to:

- (a) assess the geography and conditions of the locations of the alleged incidents;
- (b) directly select sampling points and items;
- (c) conduct on-site collection of samples; and
- (d) implement a verifiable cradle-to-grave chain of custody of samples.

2.32 Given the elapsed time since the alleged events and the nature of chlorine, as well as the unknown nature of other possible innumerable toxic chemicals (such as volatility, vapour density, prevalence of naturally occurring markers, or degradation products and rates, etc.), any selection of samples from those offered to the team and the

subsequent analyses of such samples required careful consideration. With such a broad range of unknowns, the team considered and accepted a broad array of sample types, to be subjected to an equally broad array of analyses.

- 2.33 The FFM used an OPCW designated laboratory for the analysis of the samples received. Designated laboratories are accredited by the OPCW for the analysis of authentic samples in accordance with the relevant decisions taken by the States Parties to the Chemical Weapons Convention (hereinafter “the Convention”).
- 2.34 The OPCW designated laboratories must meet the following criteria:
- (a) they have established an internationally recognised quality assurance system in accordance with relevant standards (ISO/IEC² 17025:2005 or equivalent);
 - (b) they have obtained accreditation by an internationally recognised accreditation body for the analysis of chemical-warfare agents and related compounds in various types of samples; and
 - (c) they regularly and successfully perform in the OPCW’s proficiency testing programme.
- 2.35 The OPCW proficiency tests are based on qualitative analysis of test samples with unknown sample composition to determine the presence of any number of possible chemicals relevant to the Convention.
- 2.36 The significant features of the test demonstrate it to be one of the most challenging proficiency tests, requiring highly competent analytical skills and stringent quality control. Among these features, the test:
- (a) covers a diverse nature of chemicals
 - (b) involves blind testing for an almost infinite number of chemicals in complex matrices;
 - (c) does not prescribe a method;
 - (d) requires detailed reporting of results;
 - (e) allows for only a short timeline;
 - (f) involves a zero tolerance for false positives; and
 - (g) involves a performance rating.
- 2.37 The methods used by the designated laboratory for the analysis of the environmental samples handed over to the FFM are validated during OPCW proficiency testing, and in the accreditation of the laboratory as described above. The selected laboratory

²

ISO/IEC = of the International Organization for Standardization and the International Electrotechnical Commission.

followed its standard operating procedures for sample preparation (extraction, derivatisation, concentration, etc.), followed by analysis using gas chromatography-electron impact mass spectrometry/dual flame photometry detection (GC-EI-MS/dFPD), liquid chromatography-high-resolution mass spectrometry (LC-HRMS) and nuclear magnetic resonance (NMR) spectroscopy for the identification of organic compounds.

- 2.38 Inorganic species were analysed using inductively coupled plasma mass spectrometry (ICP-MS), inductively coupled plasma optical emission spectrometry (ICP-OES), ion chromatography (IC) and X-ray fluorescence (XRF, qualitative results). Fourier transform infrared spectroscopy (FTIR) and differential scanning calorimetry (DSC) were used for material testing.

Biomedical samples

- 2.39 The methods used by laboratories for the analysis of the biomedical samples received by the FFM are currently being evaluated through biomedical testing exercises for the analysis of such samples.
- 2.40 For the analysis of biomedical samples, the FFM intended to use laboratories involved in the OPCW biomedical testing exercises. However, due to the low concentration of analytes, analysis would need to be targeted to the expected chemical and/or its metabolites. Targeted analysis is normally based on observed symptoms in patients, bearing in mind that symptoms can be unspecific.
- 2.41 In this case, chlorine would not have yielded any relevant metabolites, given the lack of specific biomarkers. Considering the large number of other potential chemicals, based on the signs and symptoms, additional information would be needed to analyse biomedical samples.

Analysis of delivery and dispersion mechanism(s) and impact events

- 2.42 As with other evidence, visits to the scene of alleged incidents and collection of evidence at the scene (in this case remnants of munitions) would have provided the most valuable input, particularly if this collection could have been done very close to the time of the alleged incident. As this was not possible, the team based its assessment on open-source information, predominantly from the Internet; testimony given during interviews; videos, pictures, and documents submitted by interviewees; and samples of munition remnants, indicated by interviewees as relating to specific incidents.
- 2.43 Further means of validation would ideally be provided by comparing observations from interviewees to the expected behaviour of a known device or theoretical design. Given the uncertainty around the unknown potential chemical and how industrial chemicals in particular might behave under unknown energetic and mechanical dispersion conditions, it would not be possible to compare the theoretical dispersion of chemicals and fragments to that described by interviewees and shown in photographs and videos.

- 2.44 The team carried out some basic plume modelling of potential industrial chemicals. Given the same uncertainties described above and the inherent inaccuracies of plume modelling, this is of very limited value to the process.

PERSONNEL SELECTION, SKILL SETS, AND TRAINING

- 2.45 Team members were selected based on their specific skill sets across a broad range of mission requirements. The skill sets included knowledge and expertise in the following fields:
- (a) chemical weapons;
 - (b) munitions;
 - (c) analytical chemistry;
 - (d) medical/health, including epidemiology and first response;
 - (e) industrial chemicals and technology;
 - (f) interview and negotiation;
 - (g) contingency operations experience, including previous experience with fact-finding missions and other missions to the Syrian Arab Republic;
 - (h) operations control;
 - (i) communications;
 - (j) logistics; and
 - (k) security.
- 2.46 Prior to deployment, staff received training (including refresher training), which was documented in the various subtopics essential for the performance of safe, effective, and efficient inspections, including:
- (a) interviewing and investigative techniques/considerations;
 - (b) evidence collection and handling;
 - (c) proficiency with equipment;
 - (d) confidentiality procedures;
 - (e) operational security; and
 - (f) crisis management.
- 2.47 The training included lectures, field training, table-top exercises, activity rehearsals, and practice. Particular emphasis in training and preparation was placed on interviewing and evidence handling. Much training, particularly in the latter two areas and field security, was provided by experts from a number of States Parties.

Regular security briefings were also given. Further information is included in Appendix 3.

- 2.48 Equipment needs were identified and equipment was sourced while movements and logistics were arranged. New equipment was procured and team proficiency established. Expert advice and consultation was also coordinated with resources from the Secretariat, particularly with regard to health and safety, security matters, and the legal aspects of the process.
- 2.49 The above preparations ensured that sample receipt, interviews, and all other evidence collection were performed by fully trained and qualified inspectors.

CHAIN OF CUSTODY AND EVIDENCE COLLECTION AND HANDLING

- 2.50 This FFM collected the evidence in the form of witness interviews/statements (taken as audio and/or video recordings) and documents/photos/videos handed over by witnesses. The team additionally received environmental samples and fragments of alleged munitions collected by witnesses and/or representatives of the CVDCS.
- 2.51 The following procedures, aimed in particular at ensuring the chain of custody from moment of receipt, were applied during the mission:
- (a) All witness statements/interviews were video and/or audio recorded and the recordings were documented as evidence.
 - (b) All electronic files or paper documents handed over by interviewees were registered in the evidence logbook.
 - (c) Electronic data storage devices were viewed only via a universal serial bus (USB) bridge, and secure digital (SD) ultra-small flash memory cards were locked prior to viewing in order to not alter the metadata of the files.
 - (d) Files on original electronic storage devices were copied to provide best evidence, and working copies were made so as to not compromise original information during data handling.
 - (e) The receipt, packaging, and sealing of the provided samples were supported by photographs and appropriate paper documentation.
 - (f) The received samples were in the possession of at least one team member and under OPCW seal from the time of receipt until arrival at the FFM on-site office.
 - (g) At the FFM on-site office, the samples were fully documented, packaged, sealed and packed appropriately for safe transport.
 - (h) The integrity of the samples was ensured through their physical possession by an FFM member and/or through tamper-proof seals.
 - (i) All seals and accompanying documentation were confirmed correct/intact prior to the issuance of handover/takeover receipts.

- 2.52 Some samples were accompanied by partial documentation of the chain of custody prior to delivery to the FFM. Although this documentation provided some degree of confidence, the entire chain of custody could not be verified, thus the possibility of cross-contamination could not be ruled out. Therefore, although such samples would be considered as primary evidence under optimal circumstances, given the constraints as described, the FFM regarded the samples as tertiary evidence. As such, the results from such analyses were treated more as supporting information than of significant evidential value. Therefore, it was decided that the splitting of samples for analysis at a second laboratory did not warrant the efforts, including cost, and the impact on the designated laboratory and on OPCW staff.
- 2.53 However, the FFM followed procedures to ensure a strict chain of custody from the time of receipt through delivery to the OPCW Laboratory in Rijswijk, the Netherlands, by the procedures described earlier. Additionally, similar stringent procedures were applied when transferring the samples to a selected designated laboratory where activities were conducted using standardised procedures (including quality assurance and quality control checks) for receiving, storing, preparing and analysing samples. The results were then communicated to the FFM team for review. Each transfer of material was accompanied by documentation of the transfer.

DEPLOYMENT DETAILS AND CHRONOLOGY

- 2.54 From 1 to 4 May 2015, a single interview team deployed and conducted one interview with a medical professional who had reported managing casualties of alleged chemical attacks in the Idlib Governorate on multiple occasions. The team was composed of a mission leader, interview leader, two other interviewers, and an interpreter. The composition of the team was designed to incorporate a broad range of expertise and specialist fields, including munitions, medical, chemical technology, and language.
- 2.55 A larger team deployed from 19 May to 6 June 2015 to conduct the remainder of the planned interviews, and to collect samples for analysis. The team consisted of interview teams, plus command post elements to support critical operational needs such as logistics, movements, communications, security, confidentiality, evidence collection and handling, and command. During this deployment, the team conducted interviews, collected documents, images and videos, as well as identified and collected samples for potential analysis.
- 2.56 Concurrent with the team's activities, the CVDCS provided accommodation for the interviewees as well as transport to and from the border and between their place of accommodation and the interview location. The schedule was planned such that the interviewees would arrive in three different batches. The pattern for each batch was as follows:
- (a) travel from current home location to border;
 - (b) cross the border;
 - (c) travel to accommodation;

- (d) rest period between the journey and the start of the interview process;
 - (e) interviews over several days; and
 - (f) return and arrival of next batch.
- 2.57 The original plan was that the three batches would include 11, 9 and 10 interviewees respectively. However, the first batch additionally included the doctor who was originally interviewed from 1 to 4 May. He passed on additional data, including photographs and video footage, but was not re-interviewed. Furthermore, the CVDCS encountered funding issues which resulted in the last batch being reduced from 10 to 3 interviewees. In consultation with the CVDCS, the team selected interviewees based on anticipated breadth of knowledge of incidents, coupled with their status in the communities and the potential influence for future continuation of FFM activities.
- 2.58 A final deployment took place from 21 to 24 July 2015, when a small team met on the border with Syrian nationals who provided additional samples for potential analysis.
- 2.59 In addition to the above, the FFM-Bravo team, while deployed to Damascus to conduct a separate mission, conducted 20 interviews with 18 persons presented by the Syrian Arab Republic as having testimony relevant to this report. These interviews were conducted from 4 to 7 August 2015 and are discussed in Section 4.
- 2.60 A breakdown of timelines is provided in Appendix 3.

3. INCIDENT SUMMARIES AND ANALYSIS

INCIDENT SUMMARIES

- 3.1 The following sections outline events that occurred in a particular area. The narratives in the following sections given for each incident are derived from interviews. Unless otherwise stated, all weather conditions indicated are taken from <http://www.wunderground.com>.
- 3.2 There are many references to the Syrian Civil Defense (SCD) in the narratives. The SCD's website (<http://syriacivildefense.org/>) states as follows: "We, the Syrian Civil Defense teams and team members, act neutrally, impartially and are humanitarians. We do not to pledge allegiance to any political party or group. We serve all the people of Syria – we are from the people and we for the people ... Our mission is to save the greatest number of lives in the shortest possible time and to minimise further injury to people and damage to property." Many of the first responders claimed to be members of the SCD and tend to respond to incidents as a function of that membership. Some interviewees presented documentation to confirm their membership in the SCD.
- 3.3 Paragraphs 3.4 to 3.130 below refer to alleged incidents in Qmenas, Sarmin, Binnish, Idlib City, Al-Nerab, Saraqib, and Kurin. Figures 1 to 4 below show the relative geographic locations of Qmenas, located 6 km south-east of Idlib City; Sarmin, located 5 km north-east of Qmenas; Al-Nerab, located 3 km south of Sarmin; Binnish, located 6 km in a northerly direction from Sarmin; Saraqib, located 17 km east-south-east from Idlib City; and Kurin, 10 km south-west of Idlib City.

FIGURE 1: IDLIB CITY AND THE AREA TO THE EAST

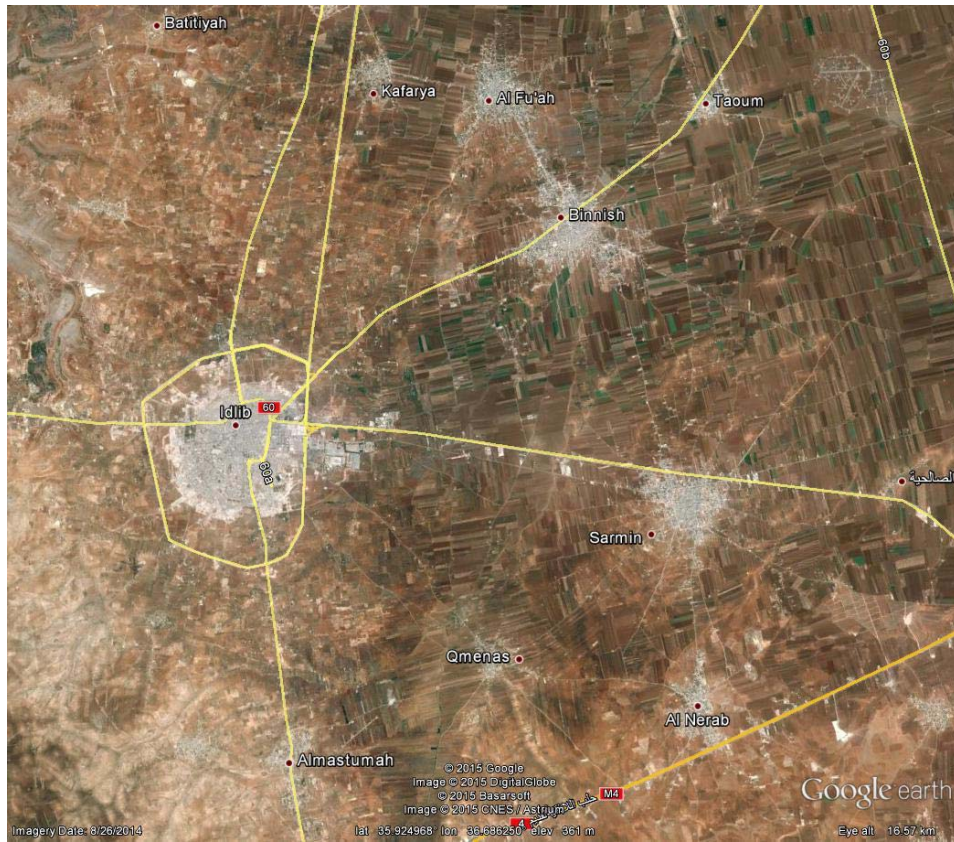


FIGURE 2: BINNISH AND THE AREA TO THE NORTH

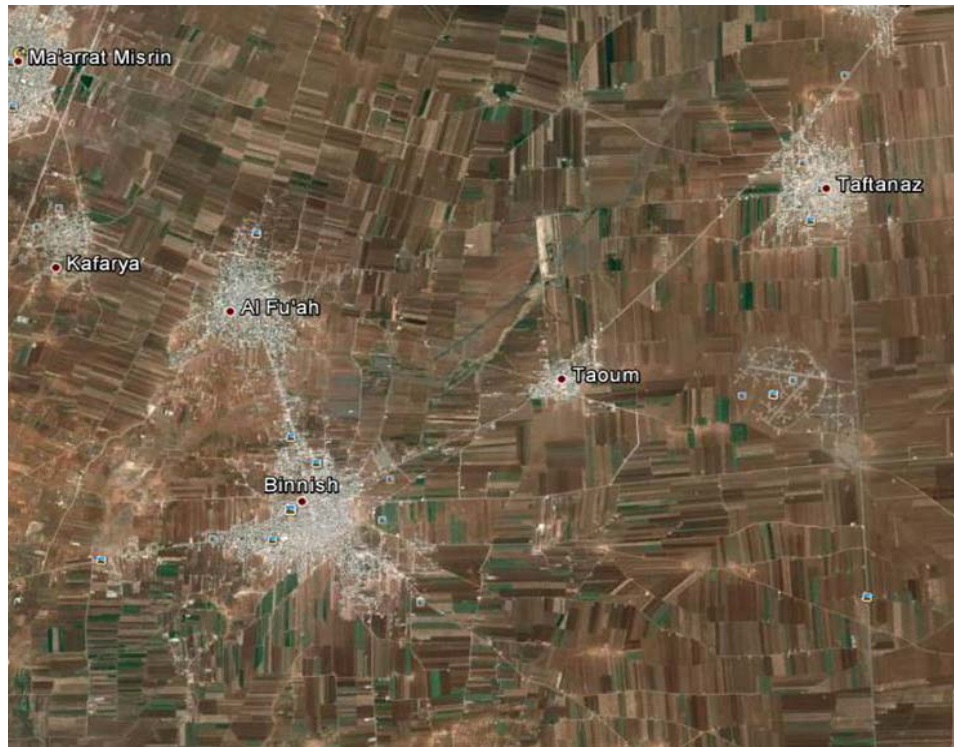


FIGURE 3: THE AREA TO THE SOUTH OF IDLIB CITY

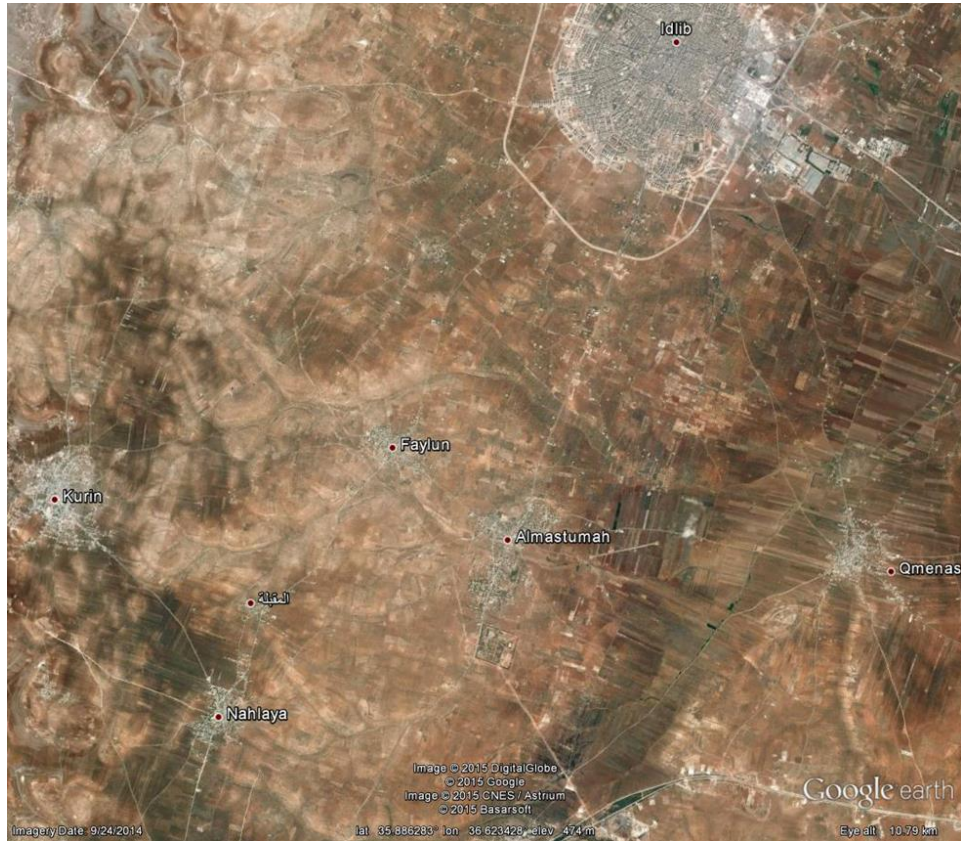
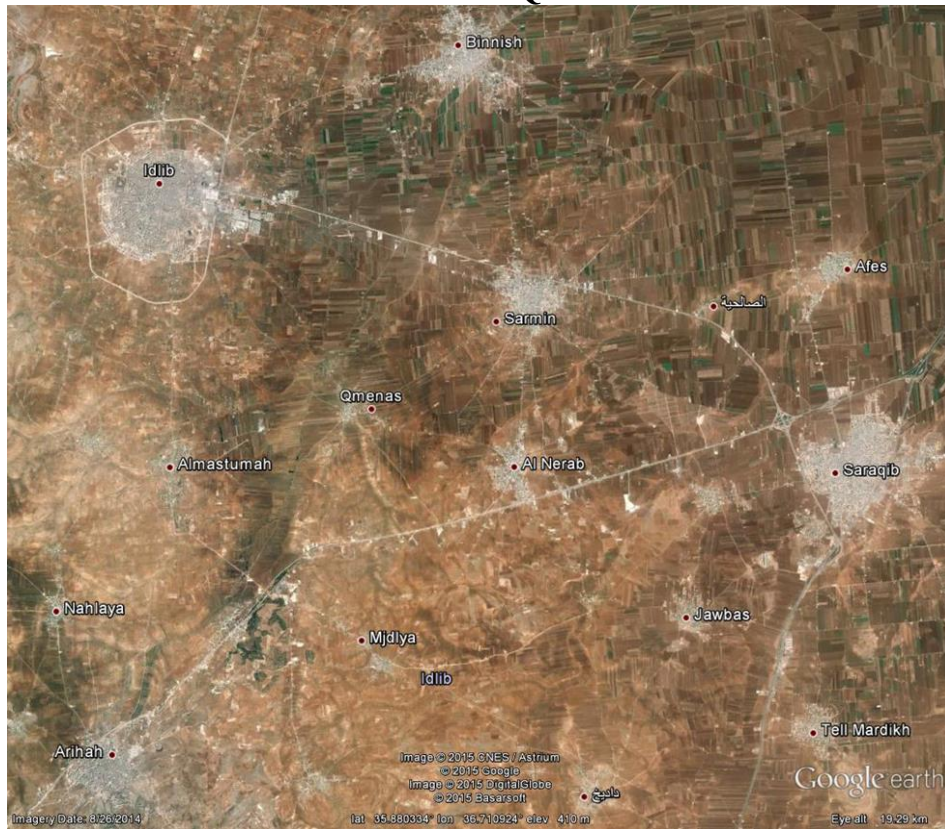


FIGURE 4: IDLIB CITY AND SARAQIB



Qmenas

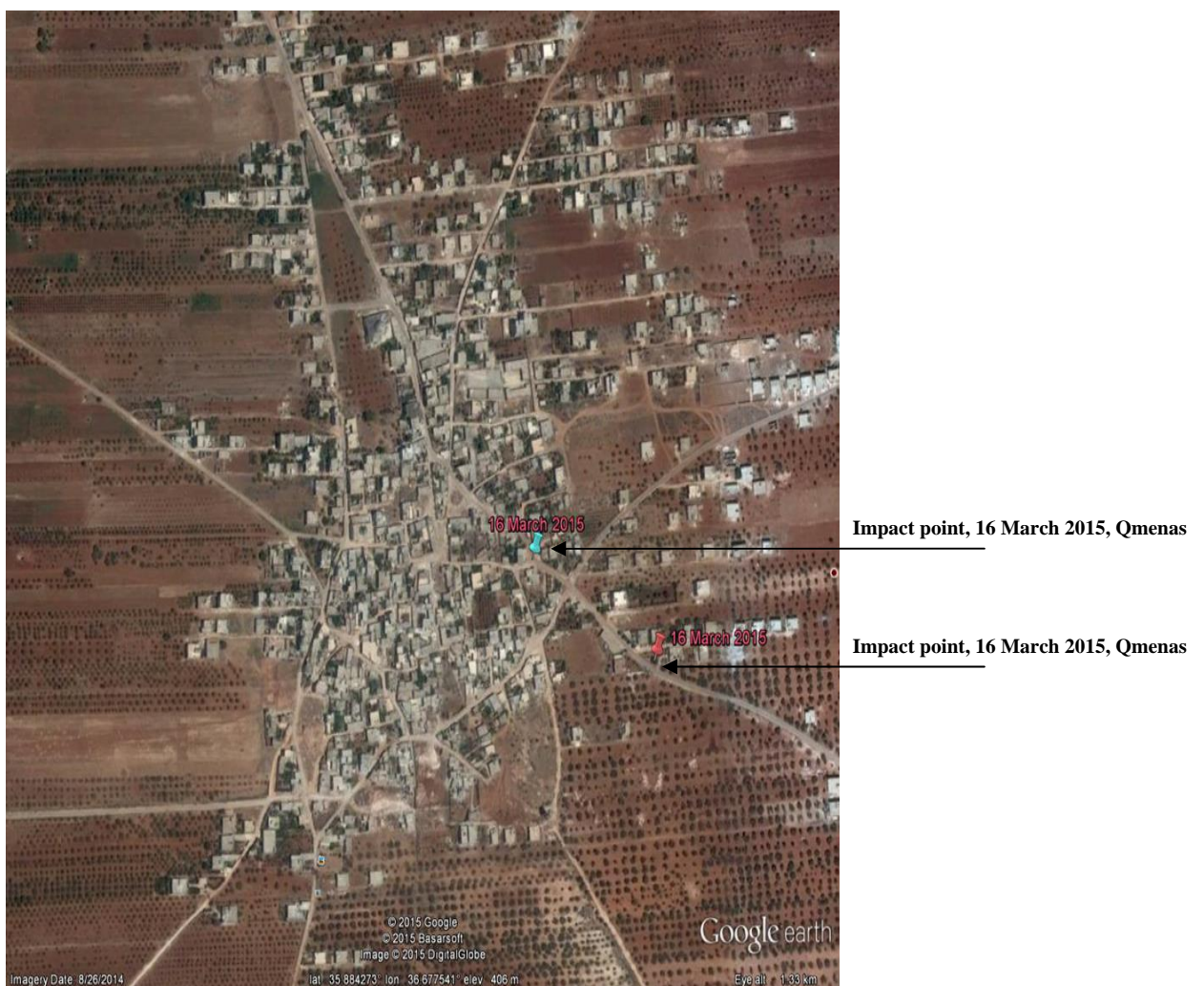
- 3.4 Qmenas is a village in the Idlib Governorate of the Syrian Arab Republic.
- 3.5 Between 3 May and 5 June 2015, the FFM interviewed 17 individuals including treating physicians, nurses, first responders, casualties, and witnesses who provided accounts and information regarding the alleged incident of 16 March 2015.

TABLE 1: INFORMATION ON REPORTED INCIDENTS IN QMENAS

Date	Approximate time	Weather conditions
16 March 2015	20:30 – 21:00	Temperatures around 14°C with 48% to 51% humidity. The wind direction was SW WSW at 3 to 4 metres per second (m/s).

- 3.6 Figure 5 below shows the approximate alleged impact points of the devices, as derived from interviewees.

FIGURE 5: QMENAS AND THE SURROUNDING AREA



Narratives

- 3.7 Qmenas was not under the control of the Government in March 2015 and the front line was at around 2 km from the village outskirts. Prior to conflict in this area, the population of the village was approximately 2,000 people.
- 3.8 Interviewees claimed that on the night of 16 March 2015 between 20:00 and 21:00, a helicopter had been passing above Qmenas. The helicopter was flying east out of Qmenas and dropped two items in and very close to the edge of a military zone.
- 3.9 According to one of the witnesses interviewed by the FFM team, both items (“barrel bombs”) hit the ground inside the military zone; one of the items was very close to a residential area. The witnesses from Qmenas described the sound of the explosion as muted compared to the sound of conventional weapons. It was assumed by witnesses that the bomb failed to explode. A few minutes later, the occupants of the houses situated in the eastern and north-eastern part of the village, relatively close to the impact point, smelled an odour similar to chlorine-based household cleaning agents, but much more intense. Some witnesses mentioned specific brand names of cleaning agents and some specifically mentioned chlorine, which may be the chemical chlorine or may be the trade name of a chlorine-based household cleaning agent. The residents of the area who were exposed to the alleged gas began tearing and coughing and had difficulty breathing. Shortly thereafter, as there was no mobile telephone coverage in this village at the time, the population was informed through other early-warning methods, including the use of hand-held radios and the loudspeakers on the mosques’ minarets. The announcements, for example, stated “careful a chemical attack on Qmenas”. The witnesses described a scene of panic in the village after the announcement of the message.
- 3.10 Approximately 60 exposed persons were transported by volunteers, who used their personal cars or vans, from Qmenas to the Sarmin field hospital. Two ambulances were sent from the Saraqib SCD unit to Qmenas, but they reached the village after the evacuation of exposed persons was complete.
- 3.11 All persons transferred from Qmenas to Sarmin field hospital as exposed cases were decontaminated by flushing with water near the entrance of the hospital. One of the treating physicians was in charge of prioritising the cases (triage) and sending them to the appropriate channel for treatment.
- 3.12 From the 60 or so individuals who arrived from Qmenas to the Sarmin field hospital on 16 March 2015, 40 cases had clinical signs of anxiety, six cases were considered as secondary exposure (one treating physician and five first responders), and 14 patients were considered as directly exposed.
- 3.13 The roughly 60 individuals who were transported to the Sarmin field hospital were all civilians. The FFM team asked if any military personnel had also been treated. One interviewee confirmed that some, without giving a number, had been exposed to the alleged chemical(s). He also indicated that those cases had been treated in their military unit.

3.14 Most of the witnesses from Qmenas who were interviewed by the FFM team and had visited the alleged incident location reported seeing one item only; two witnesses confirmed seeing a second item, from a distance due to the restriction of access (military area). Witnesses described seeing:

- (a) a metallic cylinder or barrel/drum;
- (b) a number of exploded refrigerant gas cylinders, the inner side of which were yellowish and the outer side of which were green;
- (c) soil that had changed colour to reddish pink; and
- (d) plastic bottles.

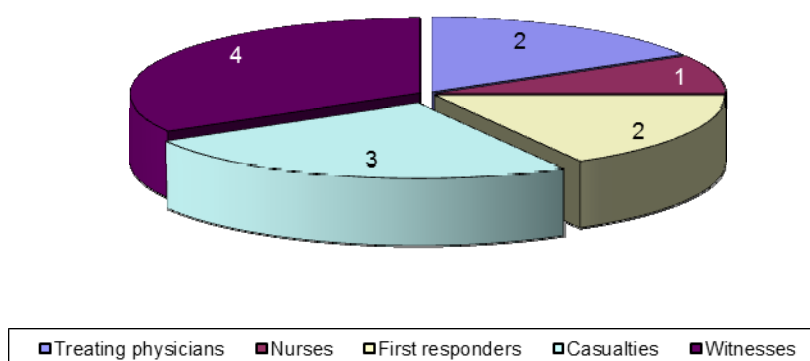
Epidemiological analysis

3.15 Between 3 May and 5 June 2015, the FFM interviewed and collected the testimonies of 17 individuals including treating physicians, nurses, first responders, casualties, and witnesses, including 12 who provided epidemiological evidence. The details of those 12 interviewees are given in table below:

TABLE 2: RELATION TO THE INCIDENT IN QMENAS AND GENDER DISTRIBUTION OF INTERVIEWEES

	Interviewee	Male	Female
Treating physicians	2	2	
Nurses	1	1	
First responders	2	2	
Exposed persons	3	2	1
Witnesses	4	4	
Total	12	11	1

FIGURE 6: DISTRIBUTION OF INTERVIEWEES IN RELATION TO THE INCIDENT IN QMENAS

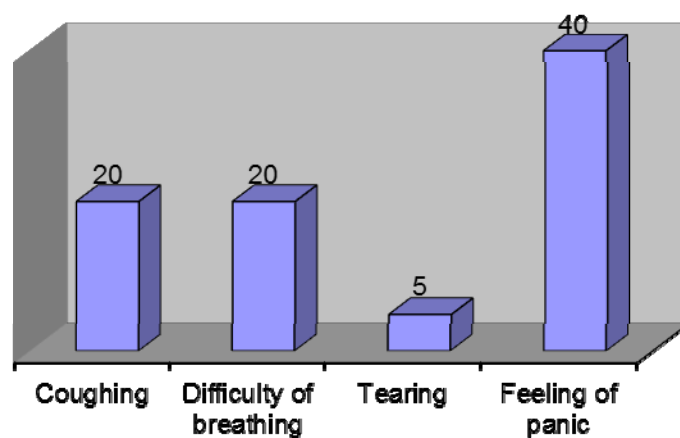


- 3.16 The village of Qmenas has no field hospital; for emergencies the population uses the nearest hospital, which is located in Sarmin. Qmenas was allegedly attacked with a suspected chemical or chemicals on 16 March 2015. The individuals who were interviewed described this attack as indicated above.
- 3.17 The Sarmin field hospital received approximately 60 patients on 16 March 2015. The decontamination of patients was performed in all cases, including washing of the exposed area of skin. This decontamination was performed outside of the emergency room. The clinical examination, signs, and symptoms, as observed by the treating physician included coughing, difficulty of breathing, and tearing.

TABLE 3: SIGNS AND SYMPTOMS IN QMENAS, 16 MARCH 2015

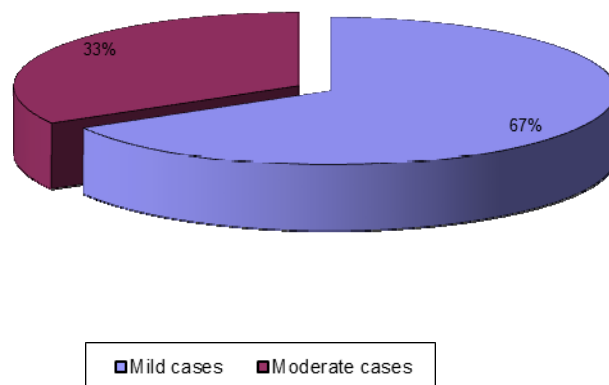
Symptom	Number of cases (approximately)
Coughing	20
Difficulty of breathing	20
Tearing	5
Feeling of panic	40
Total cases	60

FIGURE 7: SIGNS AND SYMPTOMS IN QMENAS, 16 MARCH 2015



- 3.18 Forty patients were considered as mild cases and 20 as moderate. None of the affected individuals in the described attack had any signs of physical trauma on their bodies, but only suffered from the effects of the suspected toxic chemical(s).

FIGURE 8: SEVERITY OF CASES IN QMENAS, 16 MARCH 2015

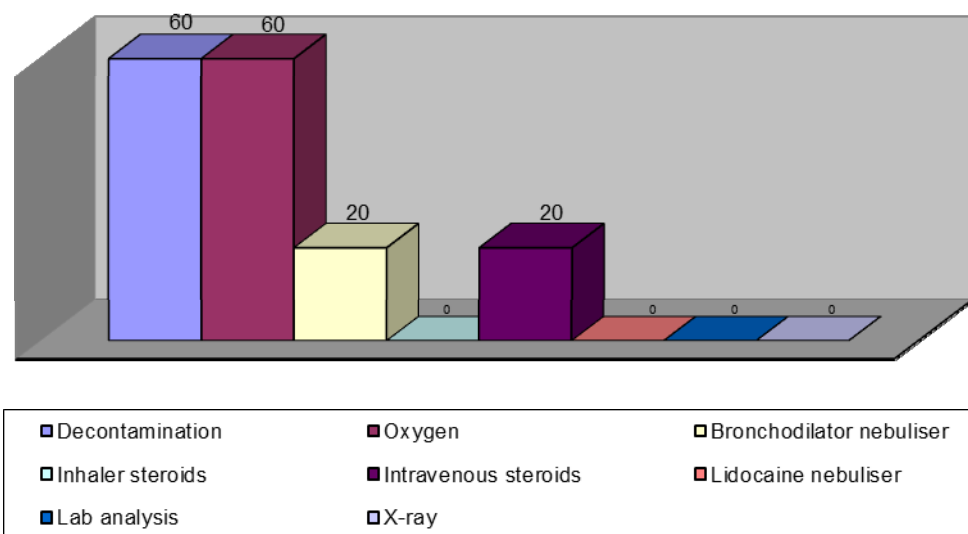


- 3.19 The mild cases responded well to the administration of oxygen. Those with moderate symptoms also benefitted from nebulisation with the bronchodilator salbutamol and the intravenous steroids hydrocortisone or dexamethasone. No severe cases were reported.
- 3.20 No laboratory examinations and no X-rays needed to be requested for these cases. All of these individuals were discharged from the hospital after a maximum of one hour.

TABLE 4: TREATMENT OF CASES IN QMENAS, 16 MARCH 2015

Decontamination	60
Oxygen	60
Bronchodilator nebuliser	20
Inhaler steroids	0
Intravenous steroids	20
Lidocaine nebuliser	0
Lab analysis	0
X-ray	0

FIGURE 9: TREATMENT OF CASES IN QMENAS, 16 MARCH 2015



3.21 The hospital staff registered the names of patients. The FFM requested copies of the patient registration book and medical files, but was not provided with these documents.

Biomedical samples

3.22 No biomedical samples were taken from the patients involved in the alleged incident in Qmenas on 16 March 2015, neither by the FFM team nor by the medical staff at the Sarmin field hospital.

Environmental samples

3.23 No environmental sample was collected or received by the FFM team related to the alleged incident in Qmenas on 16 March 2015.

Sarmin

3.24 The village of Sarmin is one of the villages of the Idlib Governorate of the Syrian Arab Republic.

3.25 Between 3 May and 5 June 2015 the FFM team interviewed 21 individuals who provided accounts and information regarding incidents of alleged use of toxic chemicals as a weapon in and close to this village on 16 March, 23 March, and 26 March 2015, and 16 May 2015. The interviewees were treating physicians, nurses, first responders, casualties, and witnesses.

3.26 The description of all of the allegations was similar and indicated that the incident happened during the night. Although the people said they were unable to see the helicopters, they heard the sound. The witnesses described the sound of impact as muted compared to the explosive sound previously encountered with the impact of explosive devices and weapons. In the first incidents, it was commonly assumed that

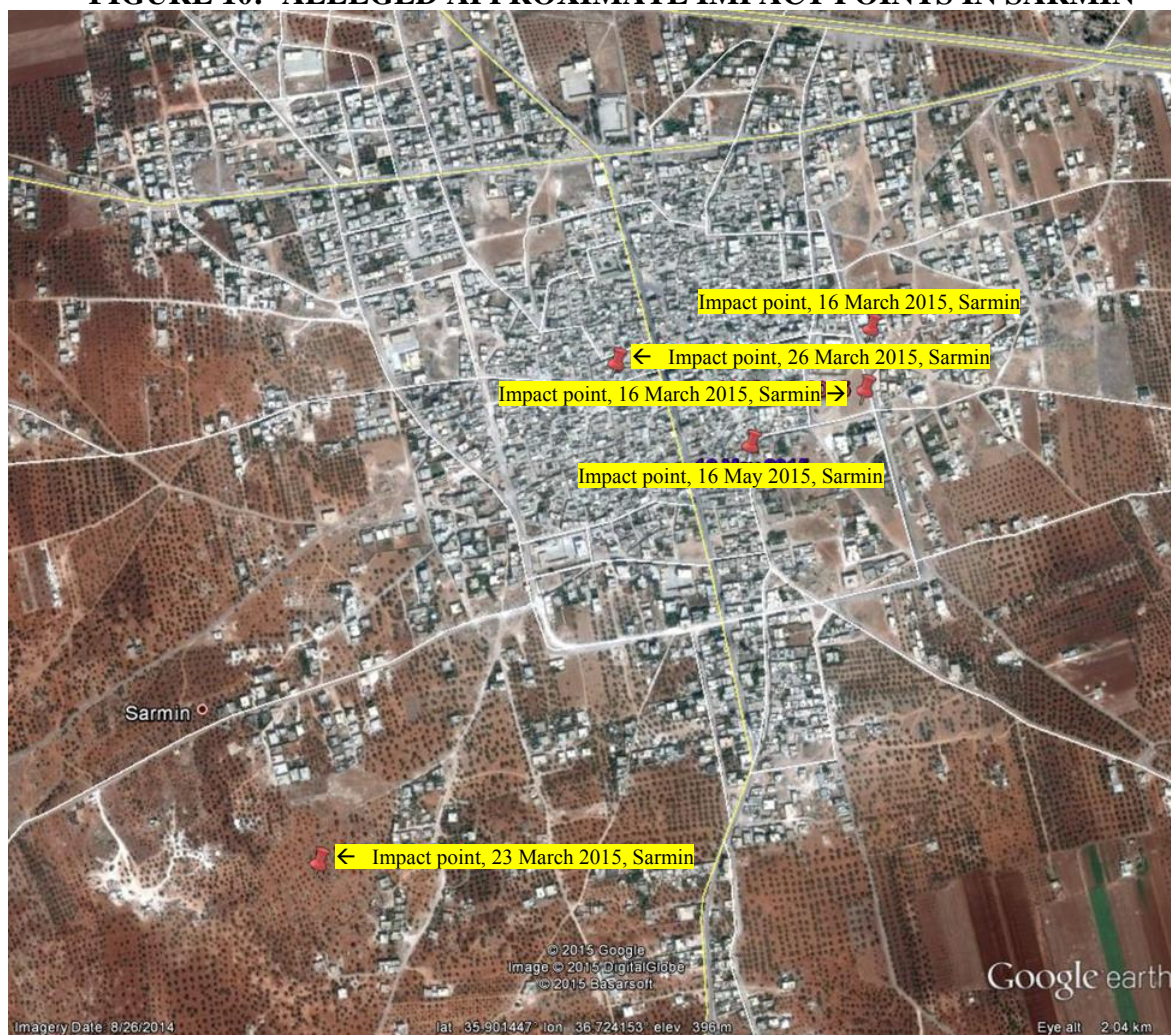
the bomb had failed to explode. This was followed minutes later by warnings on hand-held radios about impact points and the release of chemicals. Some people who lived close to the impact points and who were exposed described smelling the typical odour of chlorine immediately after the impact and tried to escape. They described the smell as irritating, similar to chlorine used as a household cleaning agent but much more intense. The interviewees informed the FFM team that over a period of time since the beginning of the crisis they had been educated by local emergency response committees on what to do in case of an attack involving toxic chemicals. People were advised to escape upwind of the point of impact and to higher elevations.

TABLE 5: CHRONOLOGY AND ASSOCIATED WEATHER CONDITIONS IN RELATION TO INCIDENTS IN SARMIN

Incident	Date	Approximate time	Weather conditions
First	16 March 2015	22:30 – 23:00	Stable temperatures at 14 to 15°C between 19:00 and midnight, with 48% to 51% humidity. The wind direction was SW WSW at 3 to 4 m/s
Second	16 March 2015	22:30 – 23:00	
Third	23 March 2015	01:00 – 03:00	Stable temperatures at 10°C between midnight and 7:00, with 62% to 67% humidity. The wind direction was variable, predominantly W to WNW at 6 to 7 m/s
Fourth	26 March 2015	22:00 – 23:00	Temperature was dropping down from 16 to 12°C between 19:00 and midnight with increasing humidity from 68% to 94% for the same period of time. The wind direction was variable, predominantly NE at 1 to 3 m/s
Fifth	16 May 2015	03:00 – 04:00	The temperature was stable at 18°C from midnight to 6:00. The wind direction was variable, with no fixed direction and the velocity was wavering between 2 and 6 m/s

3.27 Figure 10 below shows the approximate impact points of the devices, as derived from interviewees.

FIGURE 10: ALLEGED APPROXIMATE IMPACT POINTS IN SARMIN



Narratives

3.28 In March 2015, the village was under the control of opposition groups. The normal population was estimated to be around 20,000 and less than 5,000 at the time of the incident.

16 March 2015

3.29 Interviewees claimed that on the night of 16 March 2015 between 22:30 and 23:00 a helicopter was heard passing above Sarmin, flying from west-south-west to east-north-east, and that helicopter dropped the first item. A few minutes later the same helicopter dropped a second item nearby in the same eastern neighbourhood of Sarmin.

3.30 The interviewees affirmed that they had heard the sound of the falling items from the helicopter “sound similar to a diving fighter jet” followed by a soft explosion, “not a strong explosion sound”. Initially, they had assumed that the item failed to explode. A few minutes later, a message was conveyed to the residents of Sarmin that they

were chemical items. The message had been broadcast through the local walkie-talkie network and the loudspeakers on the minarets of the mosques.

- 3.31 Some interviewees who lived close to the impact points and who were exposed described smelling the typical odour of chlorine immediately after the explosion of the first item.
- 3.32 A number of SCD members responded to the request for help from the population on the basis of receiving information through the local communication system, and also responded to incidents on their own initiative as part of their voluntary role. The SCD members interviewed by the FFM team indicated that an odour similar to chlorine could be smelled a hundred metres away from the impact point.
- 3.33 Alleged casualties were evacuated to two hospitals, the Sarmin field hospital and the Saraqib field hospital. Testimonies of the treating physicians indicated that a total of 42 patients were received in both field hospitals as directly exposed individuals. These 42 cases were classified as moderate to severe. Sarmin field hospital treated 31 patients and 11 were received at the Saraqib field hospital. Among the 31 patients treated at the Sarmin field hospital on the night of 16 March 2015, 14 patients had been received from Qmenas. These 14 patients were those previously indicated as having been directly exposed in the alleged incident that occurred in Qmenas on the same evening (see paragraphs 3.8 and 3.9), approximately two hours before the incident in Sarmin. One of the treating physicians claimed that the hospital had also treated some 20 SCD members who had suffered secondary exposure and mild symptoms.
- 3.34 The total number of fatalities related to these incidents in Sarmin was six people, all of them members of one family (mother, father, their three children, and the children's grandmother). Three of those six had reached the hospital alive: the mother, the father, and the oldest child. The remaining three family members (the grandmother and the two daughters) were dead when they arrived at the field hospital in Sarmin.
- 3.35 According to the interviewees' statements, the six family members lived in the same house at the time of the incident. The house had two separate levels underground and had a rectangular vertical ventilation shaft with an approximate dimension of 3 m x 1.5 m. The ventilation shaft was open at ground level and descended through the two floors, allowing the ventilation of the two underground floors. The interviewees described that the chemical item fell through the ventilation shaft and exploded inside the house. It was not totally clear where it had exploded, whether towards the top of the shaft, the bottom, or in between. However, it was estimated to have exploded in the second underground level (-2) where the family had been taking refuge. Furthermore, at some point during the incident, there was an impact with a water tank. The father, the mother, and the oldest (male) child managed to escape to the open air, and were transported by the SCD to the hospital where they were decontaminated with water and then received medical attention. The father informed the SCD rescuers that the two daughters and grandmother were trapped in the second underground level. The rescuers managed to extract the grandmother and the two daughters 30 minutes later and also transferred them to the hospital. Delays in the

rescue were caused by the inability to access the basement due to the strong pungent chemical smell. The interviewees confirmed that the grandmother and the two daughters were dead on arrival at the hospital. The FFM team tried to clarify if those three casualties were alive during the transport phase, or whether they had died at the house. It was impossible to further clarify this issue.

3.36 Witnesses and first responders who were interviewed by the FFM team and had visited the family house after the alleged incident reported observing the following:

- (a) a strong smell of chlorine;
- (b) a metallic cylinder with an approximate diameter of 1 m to 1.5 m; they described it as “double the size of an oil barrel”;
- (c) a number of exploded green refrigerant gas cylinders; and
- (d) the presence of a red/purple liquid on the floor and part of the walls.

23 March 2015

3.37 Interviewees claimed that on 23 March 2015, during the early morning hours between 1:00 and 3:00, a helicopter had been heard passing above Sarmin and that the helicopter dropped one item. The interviewees stated that they heard a whistling sound coming from the falling item, followed by a weak explosion sound.

3.38 A few minutes later, a man conveyed a message, through the local walkie-talkies, that “he has smelled toxic substances in the air” in the south-west of Sarmin. Based on that message, the local emergency system broadcasted an order of evacuation to the residents of that part of the village. Some witness affirmed that they smelled chlorine 3 to 4 km away in Al-Nerab (to the south) and in part of the Qmenas neighbourhood.

3.39 The medical specialist interviewed by the FFM team affirmed that the number of exposed persons was five, all suffering from mild symptoms.

3.40 Witnesses interviewed by the FFM team and who had visited the location of the alleged impact site reported observing the following:

- (a) a metallic cylinder;
- (b) a number of exploded green refrigerant gas cylinders;
- (c) plastic bottles;
- (d) soil that had changed colour to reddish pink; and
- (e) leaves on the trees that had turned yellow.

26 March 2015

3.41 Interviewees claimed that on 26 March 2015 in the early morning hours between 1:45 and 2:30, a helicopter was heard passing above Sarmin after broadcasts on radios

warned of the helicopter passing over Qmenas eastward towards Sarmin. The helicopter dropped one item. A few minutes later, a man radioed a message of a “strong smell at 50 m from the market” in Sarmin.

- 3.42 The alleged item fell into an uninhabited house at approximately 100 m west of one of the main streets of Sarmin, “Market Street”.
- 3.43 The medical specialist interviewed by the FFM team affirmed that the number of exposed persons was six, all suffering from mild symptoms.

16 May 2015

- 3.44 Interviewees claimed that in the early morning hours of 16 May 2015 around 2:00, a helicopter was heard passing above Sarmin. The helicopter dropped one item which fell into the entrance of a residence set in an underground cave.
- 3.45 The medical specialist interviewed by the FFM team mentioned four exposed persons (one male, one female, and two children), three of whom had mild symptoms, and one (the male) whose case was considered as moderate.
- 3.46 Witnesses who were interviewed by the FFM team and had visited the alleged incident location reported observing the following:
- (a) the metallic outer casing of a cylinder; and
 - (b) changed colour on the walls, described as the “walls looked burned”.

Epidemiological analysis

- 3.47 Sarmin has one field hospital, which is located in one of the buildings in the city and is intended specifically for the medical needs of this village, including the treatment of traumatic war injuries. There is also one private clinic and one primary health centre, the latter being dedicated exclusively for vaccinations. The field hospital is staffed by two doctors specialising in the fields of radiology and psychiatry, in addition to a resident specialising in pneumology. The medical doctor of the private clinic, who is an anaesthetist, supports the team if needed (as was the case for the several incidents), as well as 25 other staff from the field hospital, most of them field-trained nurses.
- 3.48 The hospital staff members do not have formal training in the management of injuries resulting from chemical incidents. The structure of the hospital has been augmented continuously since its establishment. The resources available at the hospital include a radiology department, one operation theatre, an emergency room with a total of eight inpatient beds, and some oxygen cylinders and nebulisers. All individuals who present to this field hospital for routine illnesses and war injuries are registered, and all medical records are maintained.
- 3.49 It was reported that Sarmin was attacked with suspected toxic chemicals on several occasions.

3.50 The FFM interviewed and collected the testimonies of 21 individuals including treating physicians, nurses, first responders, exposed persons, and witnesses who provided accounts and information regarding incidents of alleged use of toxic chemicals as a weapon. Of these 21 individuals, 20 provided epidemiological evidence. The details of these interviewees are given in Table 6 below.

TABLE 6: RELATION TO THE INCIDENT IN SARMIN AND GENDER DISTRIBUTION OF INTERVIEWEES

	Interviewee	Male	Female
Treating physicians	3	3	
Nurses	1	1	
First responders	3	3	
Paramedics	2	2	
Casualty	6	5	1
Witnesses	5	5	
Total	20	19	1

FIGURE 11: DISTRIBUTION OF INTERVIEWEES IN RELATION TO THE INCIDENT IN SARMIN, 16 MARCH 2015

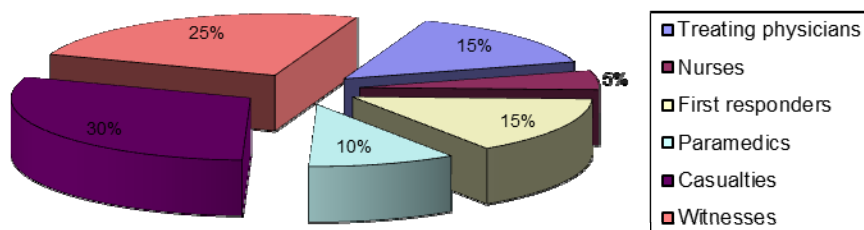


TABLE 7: CHRONOLOGY OF INCIDENTS IN SARMIN

Incident	Date	Approximate time	No. of patients	Deaths
First	16 March	22:30 – 23:00	26	0
Second	16 March	22:30 – 23:00	6	6
Third	23 March	Late at night	5	0
Fourth	26 March	22:00 – 23:00	6	0
Fifth	16 May	15:30 – 16:00	4	0

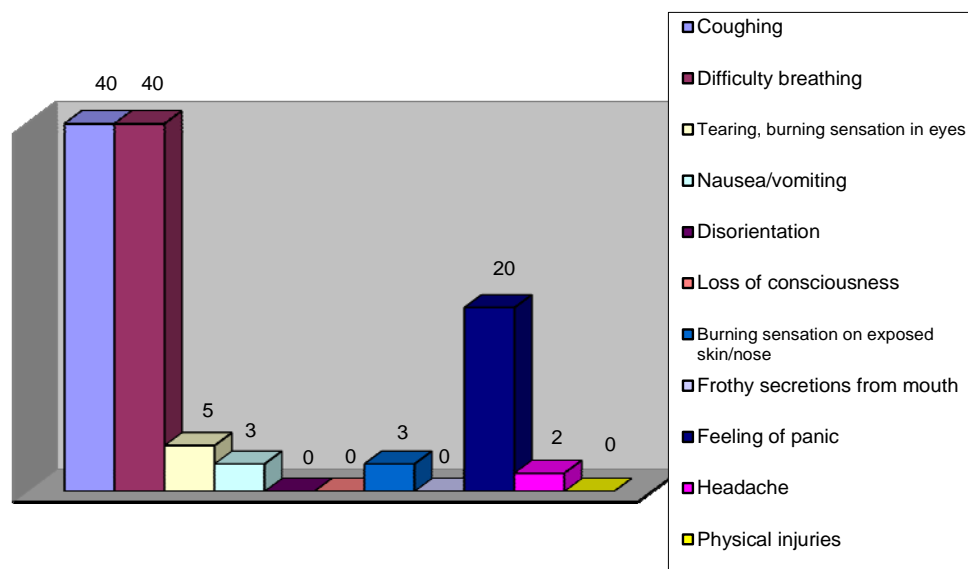
3.51 Witnesses who were close to the impact points and who were exposed described smelling the typical odour of chlorine immediately after the impact and tried to escape. They described the smell as irritating, similar to chlorine used as a household cleaning agent but much more intense.

- 3.52 This odour immediately induced coughing and a feeling of suffocation among all who were exposed. Some of the first responders who managed the exposed persons were also cross-contaminated from the casualties and suffered symptoms of exposure.
- 3.53 The FFM was informed that after the chemical incidents were reported, ambulances attached to Sarmin field hospital were dispatched to rescue those who had been exposed.
- 3.54 Simultaneously, volunteers from the neighbourhood used their private vehicles to evacuate people to the Sarmin field hospital. During the incidents of 16 March 2015, because of the load and the previous incident in Qmenas village, some of the patients were evacuated to both the Sarmin and Saraqib field hospitals.
- 3.55 From the testimonies collected, the FFM found that the predominant symptoms among those who were exposed were coughing and shortness of breath. Only a few of the exposed persons reported a burning sensation on exposed skin and a mild burning sensation/tearing of the eyes.
- 3.56 The clinical examination, signs, and symptoms as observed included coughing, difficulty breathing, and tearing.

TABLE 8: SUMMARY OF THE SIGNS AND SYMPTOMS REPORTED BY THE TREATING PHYSICIANS

Symptom	16 March		16 March	23 March	26 March	16 May
	Sarmin	Saraqib				
Coughing	29	11	2	5	6	4
Difficulty breathing	29	11	2	5	6	4
Tearing, burning sensation in eyes	5	0	0	0	0	1
Nausea/vomiting	3	0	0	0	0	0
Disorientation	0	0	3	0	0	0
Loss of consciousness	0	0	3	0	0	0
Burning sensation on exposed skin/nose	3	0	0	0	0	0
Frothy secretions from mouth	0	0	1	0	0	0
Feeling of panic	20	0	0	0	0	0
Headache	2	0	0	0	0	0
Physical injuries	0	0	0	0	0	0
Death	0	0	6	0	0	0
Total cases	29	11	6	5	6	4

FIGURE 12: SIGNS AND SYMPTOMS RELATING TO THE FIRST INCIDENT IN SARMIN, 16 MARCH 2015



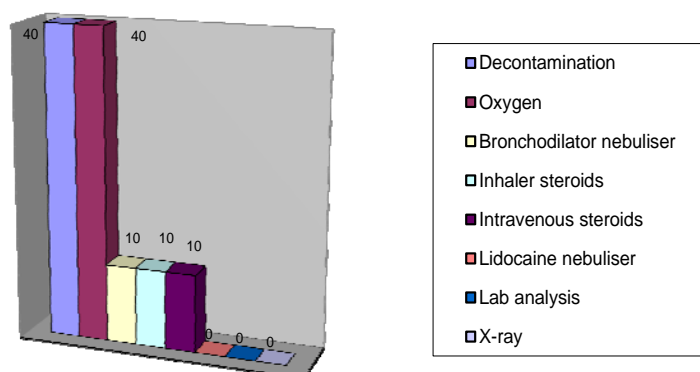
- 3.57 On arrival at both hospitals, most patients were decontaminated by washing the exposed area(s) of skin with water. Some interviewees reported a chlorine-like odour emanating from the casualties as well as a red/pink colouration of the rinse water.
- 3.58 One of the treating physicians informed the FFM that a large number of individuals who sought medical aid had no adverse clinical signs other than anxiety. Because they were in a state of panic, the first aid provided was mostly decontamination, moving to fresh air, oxygen therapy, and giving reassurance. The treatment provided to those who were exhibiting clinical signs included the administration of oxygen, nebulisation with the bronchodilator salbutamol, and the intravenous steroids hydrocortisone and dexamethasone, along with intravenous fluids. The treatment provided was effective and the patients' medical status improved quickly.
- 3.59 The FFM was informed that the ambulance drivers and first responders who had participated in the rescue and evacuation of people to the hospital were also affected, some of them requiring the administration of oxygen.
- 3.60 Twenty patients were considered as mild cases, four as moderate, three as severe, and three arrived to the hospital dead. None of the affected individuals in the described attack had any signs of physical trauma on their bodies, but only suffered from the effects of the suspected toxic chemical.
- 3.61 The mild cases responded well to the administration of oxygen. Those with moderate symptoms also benefitted from nebulisation with the bronchodilator salbutamol and the intravenous steroids hydrocortisone or dexamethasone. For the severe cases, because the initial response to treatment was poor, treating physicians attempted intubation.

- 3.62 Neither a lab exam nor an X-ray was requested by the treating physicians for any of the cases.
- 3.63 In total, six severe cases did not survive the exposure. All of the other cases were discharged from the hospital after a maximum of three hours.

TABLE 9: TABLE OF TREATMENT OF CASUALTIES IN SARMIN, 16 MARCH 2015

Decontamination	29 + 11
Oxygen	29 + 11
Bronchodilator nebuliser	10
Inhaler steroids	10
Intravenous steroids	10
Lidocaine nebuliser	0
Lab analysis	0
X-ray	0

FIGURE 13: MANAGEMENT OF CASES IN SARMIN, 16 MARCH 2015



- 3.64 The hospital staff registered the names of the patients. The FFM requested copies of the patient registration book or medical files, but was not provided with them.
- 3.65 However, a number of videos of incidents recorded on different dates by the interviewees themselves were provided to the FFM. These videos show people suffering, and being decontaminated and treated. The interviewed treating physicians and other interviewees can be seen in these videos.
- 3.66 The FFM teams asked the interviewees who had been exposed about their current medical status. None of the interviewees had any remaining symptoms from the time of exposure, and all were in good physical health at the time of the interviews.


Biomedical samples



- 3.67 For all of the alleged incidents that occurred in Sarmin as reported above, only two biomedical samples were taken on 16 March 2015.
- 3.68 One health worker, who was in Sarmin hospital on 16 March 2015, informed the FFM team that biomedical samples had been taken from the victims by a treating physician. The samples were blood and hair taken from one of the dead casualties, and were sent elsewhere for analysis. The FFM team was given access neither to the analysis results nor to the samples to conduct their own analysis.


Environmental samples

- 3.69 Samples, which included environmental samples and remnants of devices, were received by the FFM team on two different dates. The first group of samples was received by the team on 22 May 2015; the second group on 23 July 2015. According to the interviewees' statements, the samples were originally collected by the interviewees and were held in a different location within Sarmin.
- 3.70 Some samples were accompanied by partial documentation of the chain of custody prior to delivery to the FFM. Although this documentation provided some degree of confidence-building, the entire chain of custody could not be verified and, therefore, the possibility of cross-contamination could not be ruled out. Accordingly, as already explained in Section 2 above, the FFM regarded the samples as tertiary evidence.
- 3.71 A total of 17 samples were delivered to the FFM team. Six samples (05SDS, 07SDS, 08SDS, 09SDS, 11SDS, and 12SDS) were collected by the witnesses in relation to different alleged incidents. Eleven samples (13SDS, 14SDS, 15SDS, 16SDS, 17SDS, 18SDS, 19SDS, 20SLS, 21SDS, 22SDS, and 23SDS) were collected from the house of the deceased victims of the alleged incident of 16 March 2015.
- 3.72 Sample 24SLS was actually two subsamples of soil from Sarmin. The FFM team requested that these be taken one day prior the delivery date and that they should be collected at a distance of 100 m and 200 m, respectively, from the impact point of the first incident of 16 March 2015. Those two samples were a background reference for the team.



TABLE 10: ENVIRONMENTAL SAMPLES ANALYSIS RESULTS



Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
22/05/2015 20150522102805 05SDS	Empty HCFC container 	Extraction of 1.4 g of debris from outside surface of container with 2 mL dichloromethane-d2	GC-EI-MS/dFPD	<ul style="list-style-type: none"> - High conc. of Trinitrotoluene (TNT) - Oxidation products of butylated hydroxytoluene (BHT) - Polycyclic aromatic hydrocarbons (PAHs)
		Extraction of inside surface of container with 10 mL n-hexane	GC-EI-MS/dFPD	<ul style="list-style-type: none"> - Trinitrotoluene (TNT) - Oxidation products of butylated hydroxytoluene (BHT) - Polychlorinated aromatic hydrocarbons (PCHAHs)
		Extraction of inside surface of container with 10 mL deuterium oxide	ICP-MS ICP-OES IC	<ul style="list-style-type: none"> - Fe [mg/L extract]: 1260 (ICP-OES) - Zn [mg/L extract]: 380 (ICP-OES) - K [mg/L extract]: 60 (ICP-MS) - Mn [mg/L extract]: 50 (ICP-MS) - Bromide [mg/L extract]: 3 (IC) - Chloride [mg/L extract]: 3700 (IC)
		Extraction of 160 mg of debris from outside surface of container with 20 mL water	ICP-MS ICP-OES IC	<ul style="list-style-type: none"> - K [mg/kg debris]: 14200 (ICP-MS) - Mn [mg/kg debris]: 2 (ICP-MS) - Bromide [mg/kg debris]: 40 (IC) - Chloride [mg/kg debris]: 25100 (IC)
22/05/2015 20150522102807 07SDS	Black brown plastic container	Cutting piece of plastic container and cleaning of surface	FTIR spectroscopy and Differential Scanning Calorimetry (DSC)	Polymer identified as PET (Polyethylene terephthalate)



Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
				
22/05/2015 20150522102808 08SDS	Ruptured HCFC + plastic containers 	None	XRF spectroscopy on outside surface of CFC container	<ul style="list-style-type: none"> - K [%]: 0.3 - Mn [%]: 1.3 - Cl [%]: 1.0
		None	XRF spectroscopy on inside surface of HCFC container	<ul style="list-style-type: none"> - K [%]: 0.2 - Mn [%]: 0.9 - Cl [%]: 1.0
		Sanding off debris on the metal surface of HCFC container	XRF spectroscopy on cleaned metal surface	<ul style="list-style-type: none"> - Fe [%]: > 99
		Extraction of 100 mg debris from outside surface of HCFC container with 2 mL dichloromethane-d2	GC-EI-MS/dFPD	<ul style="list-style-type: none"> - High conc. of Trinitrotoluene (TNT) - Oxidation products of butylated hydroxytoluene (BHT) - PAHs - PCAHs
		Extraction of 100 mg debris from inside surface of HCFC container with 2 mL dichloromethane-d2	GC-EI-MS/dFPD	<ul style="list-style-type: none"> - Trinitrotoluene (TNT) - Oxidation products of butylated hydroxytoluene (BHT) - PAHs - PCAHs
		Extraction of 100 mg debris from rust-coloured area on outside surface of HCFC container with 20 mL water	ICP-MS IC	<ul style="list-style-type: none"> - K [mg/kg debris]: 2600 (ICP-MS) - Mn [mg/kg debris]: <10 (ICP-MS) - Bromide [mg/kg debris]: 500 (IC) - Chloride [mg/kg debris]: 55000 (IC)



Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		Extraction of 100 mg debris from inside surface (area 1) of HCFC container with 20 mL water	ICP-MS IC	- K [mg/kg debris]: 4200 (ICP-MS) - Mn [mg/kg debris]: 140 (ICP-MS) - Bromide [mg/kg debris]: 20 (IC) - Chloride [mg/kg debris]: 8800 (IC)
		Extraction of 100mg debris from inside surface (area 2) of HCFC container with 20 mL water	ICP-MS IC	- K [mg/kg debris]: 3200 (ICP-MS) - Mn [mg/kg debris]: 170 (ICP-MS) - Bromide [mg/kg debris]: 20 (IC) - Chloride [mg/kg debris]: 9700 (IC)
		Extraction of 70 mg debris from area around hole on top of outside surface of HCFC container with 20mL water	ICP-MS IC	- K [mg/kg debris]: 1400 (ICP-MS) - Mn [mg/kg debris]: <10 (ICP-MS) - Bromide [mg/kg debris]: <10 (IC) - Chloride [mg/kg debris]: 3300 (IC)
22/05/2015 20150522102809 09SDS	Clothes from a victim ³ 			
22/05/2015 20150522102811	Ruptured HCFC container	None	XRF spectroscopy on outside surface	- K [%]: 0.3 - Mn [%]: 2.9 - Cl [%]: 7.8


³ The victim was not severely exposed to the chemical; therefore the laboratory was tasked with preserving this sample for a specific tracer if the environmental samples results did not offer any specific chemical or degradation product.

Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
11SDS		None		- Ti [%]: 3.0
		Sanding off debris on the metal surface	XRF spectroscopy on inside surface	- K [%]: 0.4 - Mn [%]: 0.6 - Cl [%]: 0.2
		Sanding off debris on the metal surface	XRF spectroscopy on cleaned metal surface	- Fe [%]: > 99
22/05/2015 20150522102812 12SDS	Ruptured HCFC + plastic containers 	None	XRF spectroscopy on outside surface of HCFC container	- K [%]: 1.4 - Mn [%]: 2.8 - Cl [%]: 4.6
		None	XRF spectroscopy on inside surface of HCFC container	- K [%]: 1.8 - Mn [%]: 1.4 - Cl [%]: 4.4
		Sanding off debris on the metal surface of HCFC container	XRF spectroscopy on cleaned metal surface	- Fe [%]: > 99
		Extraction of 200 mg of debris from plastic container with 2 mL dichloro-methane-d2	GC-EI-MS/dFPD	- High conc. of Trinitrotoluene (TNT) - Oxidation products of butylated hydroxytoluene (BHT) - PAHs
		Extraction of 200 mg of debris from HCFC container with 2 mL dichloro-methane-d2	GC-EI-MS/dFPD	- High conc. of Trinitrotoluene (TNT) - Oxidation products of butylated hydroxytoluene (BHT) - PAHs - PCAHs
23/07/2015 20150723100801 13SDS	Key	None	XRF spectroscopy on surface	- K [mg/kg]: < LOD - Mn [mg/kg]: 3500
		Extraction of 17.2 mg of corrosion debris from key with 2mL dichloromethane-d2.	GC-EI-MS/dFPD GC-AED	- Oxidation products of BHT


Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		<p>Extraction of 18.9 mg of corrosion debris from key with 3 mL deuterium oxide. Dilution of 1 mL of extract with 20 mL water.</p> <p>Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1 mL of extract with 20 mL water.</p>	<p>ICP-MS ICP-OES IC</p>	<p>- Fe [mg/kg debris]: 2000 (OES) - K [mg/kg debris]: 350 (OES) - Mn [mg/kg debris]: 25 (MS) - Chloride [mg/kg debris]: 1700 (IC)</p> <p>- Fe [mg/kg debris]: 180000 (OES) - K [mg/kg debris]: 200 (OES) - Mn [mg/kg debris]: 1100 (MS)</p>
	<p>Teaspoon</p> 	<p>XRF spectroscopy on surface</p> <p>Extraction of 8.7 mg of corrosion debris from teaspoon with 2 mL dichloromethane-d2.</p> <p>Extraction of 7.5 mg of corrosion debris from teaspoon with 3 mL deuterium oxide. Dilution of 1mL of extract with 20 mL water.</p> <p>Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water.</p>	<p>XRF spectroscopy on surface</p> <p>GC-EI-MS/dFPD GC-AED</p> <p>ICP-MS ICP-OES IC</p>	<p>- K [mg/kg]: < LOD - Mn [mg/kg]: 2'500</p> <p>- Oxidation products of BHT</p> <p>- Fe [mg/kg debris]: 1500 (OES) - K [mg/kg debris]: 2500 (OES) - Mn [mg/kg debris]: 300 (MS) - Chloride [mg/kg debris]: 6000 (IC)</p> <p>- Fe [mg/kg debris]: 9000 (OES) - K [mg/kg debris]: 1000 (OES) - Mn [mg/kg debris]: 400 (MS)</p>
<p>23/07/2015 20150723100802 14SDS</p>	<p>Metal Rod from level float of water tank</p>	<p>None</p> <p>Extraction of 98.7 mg of corrosion debris from metal rod</p>	<p>XRF spectroscopy on surface</p> <p>GC-EI-MS/dFPD GC-AED</p>	<p>- K [mg/kg]: < LOD - Mn [mg/kg]: 3000 - S [mg/kg]: 75000</p>



Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		of level float with 2 mL dichloromethane-d2.		
		Extraction of 99.7 mg of corrosion debris from metal rod of level float with 3 mL deuterium oxide. Dilution of 1 mL of extract with 20 mL water. Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1 mL of extract with 20 mL water.	ICP-MS ICP-OES IC	<ul style="list-style-type: none"> - Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: < LOD (OES) - Mn [mg/kg debris]: < LOD (MS) - Chloride [mg/kg debris]: 800 (IC) - Fe [mg/kg debris]: 50000 (OES) - K [mg/kg debris]: < LOD (OES) - Mn [mg/kg debris]: 400 (MS)
	Floater from level float of water tank	None	XRF spectroscopy on surface	<ul style="list-style-type: none"> - K [mg/kg]: < LOD - Mn [mg/kg]: 16'000
		Rinsing of floater with 5 mL acetonitrile-d3.	GC-EI-MS/dFPD GC-AED	<ul style="list-style-type: none"> - Diazinon - Oxidation products of BHT - PAHs
23/07/2015 20150723100803	Electrical light bulb	None	XRF spectroscopy on surface	<ul style="list-style-type: none"> - K [mg/kg]: < LOD - Mn [mg/kg]: 20000
		Extraction of 11.3 mg of debris	GC-EI-MS/dFPD	- TNT


Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
15SDS		<p>from light bulb (luminous element and thread) with 2 mL dichloromethane-d2.</p> <p>Extraction of 8.7 mg of debris from light bulb with 3 mL deuterium oxide. Dilution of 1 mL of extract with 20 mL water.</p> <p>Re-extraction of debris with 3mL 10% hydrochloric acid. Dilution of 1 mL of extract with 20 mL water.</p>	<p>GC-AED</p> <p>ICP-MS ICP-OES IC</p>	<p>- Oxidation products of BHT</p> <p>- Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: 33000 (OES) - Mn [mg/kg debris]: < LOD (MS) - Chloride [mg/kg debris]: 37000 (IC)</p> <p>- Fe [mg/kg debris]: 7500 (OES) - K [mg/kg debris]: 13000 (OES) - Mn [mg/kg debris]: 32000 (MS)</p>
23/07/2015 20150723100804 16SDS	<p>Two pieces of construction material (piece #2 with dark coloured debris on surface used for analysis)</p> 	<p>None</p> <p>Extraction of 45.7 mg of debris from dark coloured surface with 2 mL dichloromethane-d2.</p> <p>Extraction of 51.2mg of debris from dark coloured surface with 3mL deuterium oxide. Dilution of 1mL of extract with 20mL water.</p>	<p>XRF spectroscopy on surface (piece 1)</p> <p>XRF spectroscopy on surface (piece 2)</p> <p>GC-EI-MS/dFPD GC-AED</p> <p>ICP-MS ICP-OES IC</p>	<p>- K [mg/kg]: 1200 - Mn [mg/kg]: 11000</p> <p>- K [mg/kg]: 6200 - Mn [mg/kg]: 36000</p> <p>- Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: 33000 (OES) - Mn [mg/kg debris]: < LOD (MS) - Chloride [mg/kg debris]: 37'000 (IC)</p> <p>- Fe [mg/kg debris]: 7500 (OES) - K [mg/kg debris]: 13000 (OES)</p>



Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water.		- Mn [mg/kg debris]: 32000 (MS)
23/07/2015 20150723100805 17SDS	Part of an exploded HCFC gas cylinder 	None	XRF spectroscopy on inside surface of HCFC container (different spots)	- K [mg/kg]: < LOD - Mn [mg/kg]: 2000-6000
		Extraction of 55.7 mg of corrosion debris from inside surface of HCFC container with 2 mL dichloromethane-d2 (spot #1).	GC-EI-MS/dFPD GC-AED	
		Extraction of 46.1 mg of corrosion debris from inside surface of HCFC container with 2 mL dichloromethane-d2 (spot #2).	GC-EI-MS/dFPD GC-AED	
		Extraction of 99.0 mg of corrosion debris from inside surface of HCFC container with 2 mL dichloromethane-d2 (spot #3).	GC-EI-MS/dFPD GC-AED	
		Extraction of 50.2 mg of corrosion debris from inside surface of HCFC container with 3 mL deuterium oxide (spot #1). Dilution of 1 mL of extract with 20 mL water.	ICP-MS ICP-OES IC	- Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: 150 (OES) - Mn [mg/kg debris]: < LOD (MS) - Chloride [mg/kg debris]: 1200 (IC) - Fe [mg/kg debris]: 60000 (OES)


Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water.		- K [mg/kg debris]: 150 (OES) - Mn [mg/kg debris]: 300 (MS)
		Extraction of 48.8 mg of corrosion debris from inside surface of HCFC container with 3 mL deuterium oxide (spot #2). Dilution of 1 mL of extract with 20 mL water.	ICP-MS ICP-OES IC	- Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: 200 (OES) - Mn [mg/kg debris]: < LOD (MS) - Chloride [mg/kg debris]: 400 (IC) - Fe [mg/kg debris]: 120000 (OES) - K [mg/kg debris]: 100 (OES) - Mn [mg/kg debris]: 300 (MS)
		Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water. Extraction of 99.0 mg of corrosion debris from inside surface of HCFC container with 3mL deuterium oxide (spot #3). Dilution of 1 mL of extract with 20 mL water. Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water.	ICP-MS ICP-OES IC	- Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: 700 (OES) - Mn [mg/kg debris]: < LOD (MS) - Chloride [mg/kg debris]: 1400 (IC) - Fe [mg/kg debris]: 7000 (OES) - K [mg/kg debris]: 1000 (OES) - Mn [mg/kg debris]: 1'100 (MS)
23/07/2015	Part of an exploded HCFC gas cylinder	None	XRF spectroscopy on outside surface of	- K [mg/kg]: < LOD - Mn [mg/kg]: 40'000

Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
20150723100806 18SDS			HCFC container	
		Extraction of 100.1 mg of corrosion debris from out-side surface of HCFC container with 2 mL dichloro-methane-d2.	GC-EI-MS/dFPD GC-AED	
		Extraction of 100.6 mg of corrosion debris from out-side surface of HCFC container with 3mL deuterium oxide. Dilution of 1mL of extract with 20 mL water. Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water.	ICP-MS ICP-OES IC	<ul style="list-style-type: none"> - Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: 400 (OES) - Mn [mg/kg debris]: < LOD (MS) - Chloride [mg/kg debris]: 300 (IC) - Fe [mg/kg debris]: 60000 (OES) - K [mg/kg debris]: 1400 (OES) - Mn [mg/kg debris]: 8500 (MS)
		None	XRF spectroscopy on inside surface of HCFC container	<ul style="list-style-type: none"> - K [mg/kg]: < LOD - Mn [mg/kg]: 2500
		Extraction of 96.5 mg of corrosion debris from inside surface of HCFC container with 2 mL dichloromethane-d2.	GC-EI-MS/dFPD GC-AED	<ul style="list-style-type: none"> - Oxidation products of BHT - PAHs
		Extraction of 81.9 mg of corrosion debris from inside surface of HCFC container with 3 mL deuterium oxide. Dilution of 1 mL of extract with 20 mL water.	ICP-MS ICP-OES IC	<ul style="list-style-type: none"> - Fe [mg/kg debris]: < LOD (OES) - K [mg/kg debris]: 600 (OES) - Mn [mg/kg debris]: 40 (MS) - Chloride [mg/kg debris]: 1500 (IC) - Fe [mg/kg debris]: 90000 (OES)

Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water.		- K [mg/kg debris]: 500 (OES) - Mn [mg/kg debris]: 4000 (MS)
23/07/2015 20150723100807 19SDS	One piece of wood (dark coloured debris on surface used for analysis) 	None	XRF spectroscopy on surface	- K [mg/kg]: 32000 - Mn [mg/kg]: 11000
		Extraction of 21.2 mg of debris from wood piece with 2 mL dichloromethane-d2.	GC-EI-MS/dFPD GC-AED	- Diazinon - Oxidation products of BHT
		Extraction of 21.2 mg of debris from wood piece with 3 mL deuterium oxide. Dilution of 1mL of extract with 20mL water. Re-extraction of debris with 3 mL 10% hydrochloric acid. Dilution of 1mL of extract with 20 mL water.	ICP-MS ICP-OES IC	- K [mg/kg debris]: 5000 (OES) - Mn [mg/kg debris]: 250 (MS) - Chloride [mg/kg debris]: 4600 (IC) - K [mg/kg debris]: 3000 (OES) - Mn [mg/kg debris]: 30000 (MS)
23/07/2015 20150723100808 20SLS	Soil sample (sand and stones) 	Transfer of sample in XRF cup.	XRF spectroscopy on soil surface	- K [mg/kg]: 50000 - Mn [mg/kg]: 60000 (stoichiometric ratio K / Mn ~1:1)
		Extraction of 5 g soil with 5 mL dichloromethane-d2.	GC-EI-MS/dFPD GC-AED	- TNT - Oxidation products of BHT - PAHs - PCAHs
		Extraction of 5 g soil with 5 mL deuterium oxide. Dilution of 1mL of extract with 20 mL water.	ICP-MS ICP-OES IC	- K [mg/kg]: 14000 (OES, 1:100) - Mn [mg/kg]: 25 (MS) - Chloride [mg/kg]: 21000 (IC)

Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		Re-dilution of 0.1 mL of extract with 10 mL water for ICP-OES analysis.		
23/07/2015 20150723100809 21SDS	Pieces of wood (+plastic container) 	None	XRF spectroscopy on surface (container)	- K [mg/kg]: 18000 - Mn [mg/kg]: 24000 (stoichiometric ratio K / Mn ~1:1)
		Extraction of 2.0 g of splinters of wood with 5 mL dichloromethane-d2.	XRF spectroscopy on surface (wood pieces)	- K [mg/kg]: 28000 - Mn [mg/kg]: 18000
		Extraction of 2.0 g of splinters of wood with 5 mL deuterium oxide. Dilution of 1 mL of extract with 20 mL water. Re-extraction of splinters of wood with 5 mL 10% hydrochloric acid. Dilution of 1 mL of extract with 20 mL water.	GC-EI-MS/dFPD GC-AED	- α -Pinene and bornyl chloride (bornyl chloride is a reaction product of α -pinene with chlorinating agents) - TNT - PCAHs
23/07/2015 20150723100810 22SDS	Plastic containers	None	XRF spectroscopy on surface	- K [mg/kg]: 70000 - Mn [mg/kg]: 90000 (stoichiometric ratio K / Mn ~1:1)
		Cutting piece of plastic container and cleaning of	FTIR spectroscopy	- Polymer identified as PET (polyethylene terephthalate)

Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
		<p>surface.</p> <p>Cutting piece (280 mg) of plastic container and extraction with 2 mL dichloromethane-d2.</p> <p>Cutting piece (280 mg) of plastic container and extraction with 3 mL deuterium oxide. Dilution of 1 mL of extract with 20 mL water.</p> <p>Re-extraction of container piece with 3 mL 10% hydrochloric acid. Dilution of 1 mL of extract with 20 mL water.</p>	<p>GC-EI-MS/dFPD GC-AED</p> <p>ICP-MS ICP-OES IC</p>	<p>- TNT</p> <p>- Oxidation products of BHT</p> <p>- PAHs</p> <p>- PCAHs</p> <p>- K [mg/kg]: 4500 (OES)</p> <p>- Mn [mg/kg]: < LOD (MS)</p> <p>- Chloride [mg/kg debris]: 3500 (IC)</p> <p>- K [mg/kg]: 1600 (OES)</p> <p>- Mn [mg/kg]: 3700 (MS)</p>
<p>23/07/2015 20150723100811 23SDS</p>	<p>Jacket of a victim</p> 	<p>None</p> <p>Cutting piece of jacket (950 mg) and extraction with 5 mL acetonitrile-d3.</p> <p>Cutting piece of jacket (920 mg) and extraction with 3 mL deuterium oxide. Dilution of 1 mL of extract with 20 mL water.</p> <p>Re-extraction of jacket piece with 3 mL 10% hydro-chloric acid. Dilution of 1 mL of extract with 20 mL water.</p>	<p>XRF spectroscopy on sleeve surface</p> <p>GC-EI-MS/dFPD GC-AED</p> <p>ICP-MS ICP-OES IC</p>	<p>- K [mg/kg]: 11000</p> <p>- Mn [mg/kg]: 5000</p> <p>- PAHs</p> <p>- K [mg/kg]: 4000 (OES)</p> <p>- Mn [mg/kg]: 1200 (MS)</p> <p>- Chloride [mg/kg]: 13000 (IC)</p> <p>- K [mg/kg]: 2100 (OES)</p> <p>- Mn [mg/kg]: 2300 (MS)</p>

Date of receipt; OPCW evidence reference number; and sample code	Sample description	Sample preparation	Technique	Result
23/07/2015 20150723100812 24SLS	2 Soil samples taken from Sarmin as background sample (blank sample) from two locations (Location 1 and location 2) 	Transfer of sample in XRF cup.	XRF spectroscopy on soil surface (location 1)	- K [mg/kg]: 15000 - Mn [mg/kg]: 350
			XRF spectroscopy on soil surface (location 2)	- K [mg/kg]: 9000 - Mn [mg/kg]: 350
		Extraction of 5 g soil with 5 mL dichloromethane-d2.	GC-EI-MS/dFPD GC-AED (location 1)	- PAHs
			GC-EI-MS/dFPD GC-AED (location 2)	- Oxidation products of BHT - PAHs
		Extraction of 5 g soil with 5mL to 7 ml deuterium oxide. Dilution of 1 mL of extract with 20 mL water.	ICP-MS ICP-OES IC (location 1)	- K [mg/kg]: 500 (OES) - Mn [mg/kg]: < LOD (MS) - Chloride [mg/kg]: 300 (IC)
			ICP-MS ICP-OES IC (location 2)	- K [mg/kg]: < LOD (OES) - Mn [mg/kg]: < LOD (MS) - Chloride [mg/kg]: 30 (IC)

BHT: Butylated hydroxytoluene, **HCFC:** hydrochlorofluorocarbon, **Cl:** Chloride, **Fe:** Iron, **FTIR:** Fourier Transform Infrared Spectroscopy, **GC-EI-MS/dFPD:** Gas Chromatography – Mass Spectrometry / dual Flame Photometry Detection, **IC:** Ion Chromatography, **ICP-MS:** Inductively Coupled Plasma Mass Spectrometry, **ICP-OES:** Inductively Coupled Plasma Optical Emission Spectrometry, **K:** Potassium, **LOD:** Limit of Detection, **Mn:** Manganese, **NMR:** Nuclear Magnetic Resonance Spectroscopy, **PAHs:** Polycyclic aromatic hydrocarbons, **PCAHs:** Polychlorinated aromatic hydrocarbons, **PET:** Polyethylene terephthalate, **S:** Sulfur, **TNT:** Trinitrotoluene, **XRF:** X-ray Fluorescence.

** All photographs from samples received on 23/07/2015, courtesy of Spiez Laboratories**

Binnish

- 3.73 Binnish is a small city in the Idlib Governorate of the Syrian Arab Republic. Other villages close to Binnish include Al-Fu'ah village at 2 km NWN and Taoum village at 4 km ENE.
- 3.74 The FFM interviewed and collected the testimony of a treating physician about the alleged incident of 23 March 2015.

TABLE 11: INFORMATION ON THE ALLEGED INCIDENT IN BINNISH

Date	Approximate time	Weather conditions
23 March 2015	19:00 – 20:00	Stable temperatures around 14°C between 19:00 and midnight, with 55% to 72% humidity. The wind direction was variable at 1 to 5 m/s.

- 3.75 Figure 14 below shows the approximate alleged impact point of the device, as derived from the interviewee.

FIGURE 14: APPROXIMATE ALLEGED IMPACT POINT OF THE DEVICE



Narrative

- 3.76 The FFM team interviewed only one person from Binnish, who was a treating physician at the time of the alleged incident.
- 3.77 At the time of the incident, the city was not under the control of the government. The interviewee reported frequent airborne, artillery, and mortar attacks. A large number of families were displaced from the village and were located elsewhere. The population of the city before the crisis was approximately 40,000. By March 2015, the population was reduced to around 5,000 due to its close proximity to the front line 7 km to the west of the city.
- 3.78 On 23 March 2015 at around 19:00, one item was dropped on the city in the south-eastern area of the village in agricultural land. The physician was in the field hospital; he did not hear any explosion and was informed of the incident through the local early-warning methods, including the use of hand-held radios. There was no mobile telephone coverage in this village at the time of the incident.
- 3.79 Binnish field hospital registered 21 patients related to the incident on 23 March. Out of these 21, 10 were mild cases, 10 were moderate cases, and one was identified as a severe case. No deaths were reported to the FFM team.
- 3.80 The decontamination of patients, including washing of the exposed area of skin, was done for all cases. This decontamination was conducted using water outside the hospital, five to 10 m from the emergency room. The physician did not smell chlorine odour emanating from the clothing but was informed of the smell by the patients.
- 3.81 Twenty-four hours later, the interviewee visited the place where the item allegedly hit the ground. He did not see any remnants of the item and reported: *"I saw that there was a wheat field and the wheat turned yellow on an area of about 50 metres, all yellow. The yellow colour was clearly visible"*.

Epidemiological analysis

- 3.82 Binnish has one field hospital, which is in one of the buildings in the village and is intended specifically for the medical needs of this village, including the treatment of traumatic war injuries. There are also four private clinics (none of them are known to have received cases from the alleged chemical incidents). The hospital has a staff of eight doctors specialised in the fields of general surgery, urology, orthopaedics, internal medicine, dermatology, and gynaecology, as well as 15 other staff including seven certified nurses and eight field-trained nurses. The hospital staff members do not have formal training in the management of injuries resulting from chemical incidents. Furthermore, the structure of the hospital has been augmented continuously since its establishment. The resources available at the hospital include a laboratory, radiology department, pharmacy, two operating theatres, a delivery room, emergency room with a total of eight in-patient beds, four oxygen cylinders, and eight nebulisers. All individuals who present to this field

hospital for routine illness, diseases, and war injuries are registered, and all medical records are maintained.

- 3.83 The field hospital received all of the approximately 21 patients from the alleged chemical incident. The physician informed the FFM that the hospital staff were able to register most, but not all, of the names. A copy of a list of patients with the stamp of the hospital (but not the patient registration book, and no medical files) was provided showing the name, age, and gender. The age distribution of the 21 patients recorded as having been treated at the field hospital is provided in the table below:

TABLE 12: PATIENT DISTRIBUTION ACCORDING TO AGE GROUP

Age group	Total	Males	Females
0 to 5 years	3	2	1
6 to 10 years	0	0	0
11 to 15 years	2	1	1
16 to 20 years	6	4	2
21 to 30 years	5	3	2
31 to 40 years	2		2
41 to 50 years	2	1	1
51 to 60 years	1		1
Total	21	11	10

FIGURE 15: DISTRIBUTION OF CASES BY GENDER

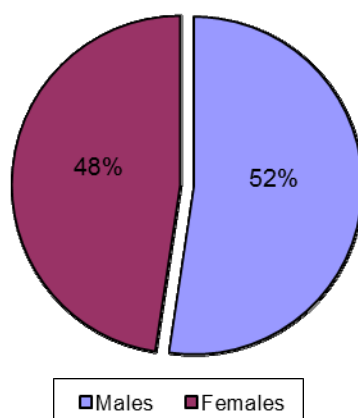
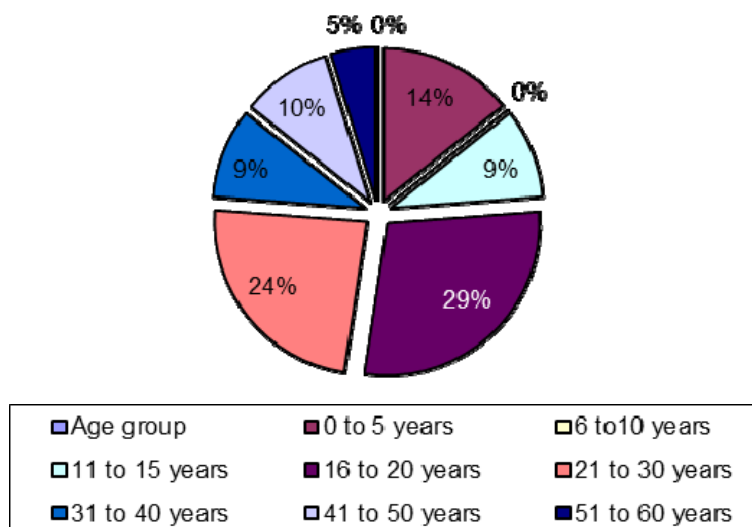


FIGURE 16: DISTRIBUTION OF CASES BY AGE

3.84 The clinical examination demonstrated that most of the cases presented with the following symptoms: coughing, difficulty breathing, and drowsiness. Some of the signs were due to anxiety and psychosomatic stress. The dyspnoea in the moderate cases was grade 1. The physician classified the dyspnoea in four grades:

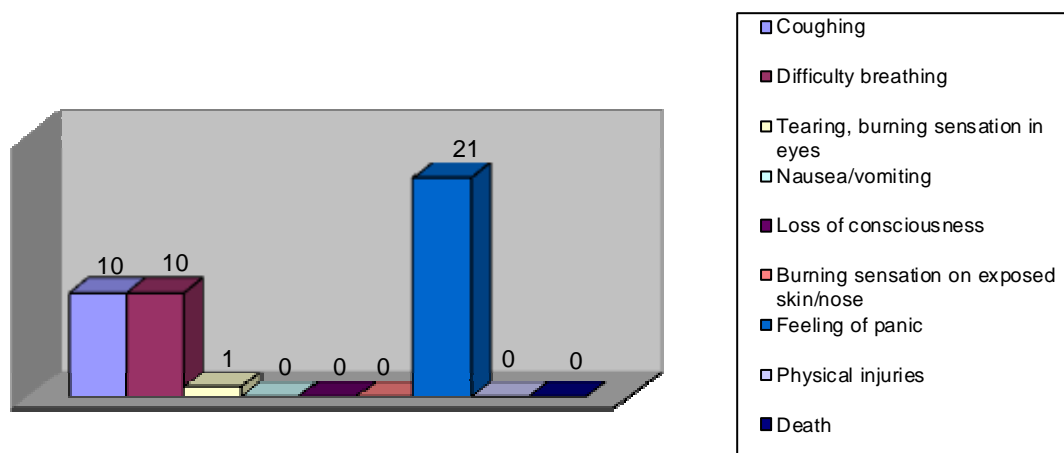
- Grade 1: provoked by severe exercise;
- Grade 2: provoked by moderate exercise;
- Grade 3: provoked by mild exercise; and
- Grade 4: at rest.

3.85 The one severe case presented with severe anxiety, severe coughing and resistance, difficulty breathing, shortness of breath, severe wheezing, mild eye irritation. The spread of symptoms is indicated in the table below.

TABLE 13: SYMPTOMS RELATING TO THE INCIDENT IN BINNISH

Symptom	Binnish
Coughing	10
Difficulty breathing	10
Tearing, burning sensation in eyes	1
Nausea/vomiting	0
Loss of consciousness	0
Burning sensation on exposed skin/nose	0
Feeling of panic	21
Physical injuries	0
Death	0
Total	21

FIGURE 17: SIGNS AND SYMPTOMS RELATING TO THE INCIDENT IN BINNISH

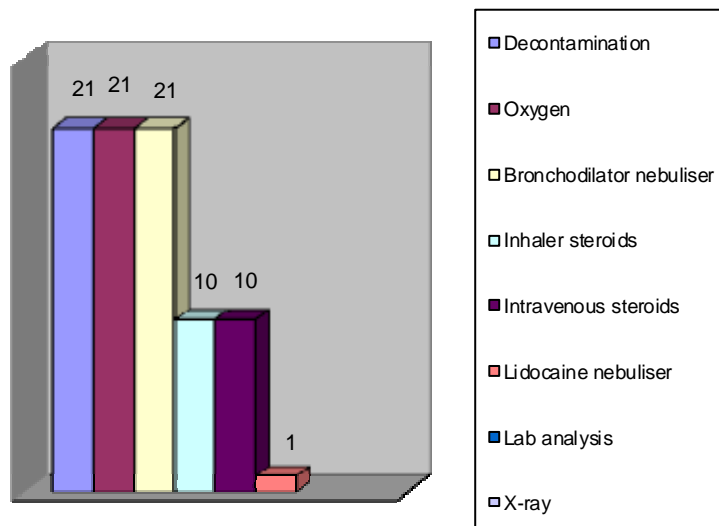


- 3.86 No cutaneous or severe ophthalmologic signs or hypoxemia were reported. All of these individuals responded well to the administration of oxygen (five litres per minute) and nebulisation with the bronchodilator salbutamol. Those with moderate symptoms also benefitted from inhaler steroids or intravenous steroids, hydrocortisone, or dexamethasone.
- 3.87 The severe case was managed with oxygen (seven litres per minute) nebulisation with the bronchodilator salbutamol, inhaler steroids, and lidocaine nebuliser for the cough.
- 3.88 Neither a laboratory exam nor an X-ray was requested by the treating physicians for any of the cases as all of these individuals were discharged from the hospital after three hours. None of the individuals affected in the incident had any signs of physical trauma on their bodies, but only suffered from the effects of a toxic chemical. The physician presented these cases as possibly to be due to chlorine but not confirmed as such.

TABLE 14: TREATMENT OF CASUALTIES IN BINNISH

Decontamination	21
Oxygen	21
Bronchodilator nebuliser	21
Inhaler steroids	10
Intravenous steroids	10
Lidocaine nebuliser	1
Laboratory analysis	0
X-ray	0

FIGURE 18: MANAGEMENT OF CASES IN BINNISH



Biomedical samples

- 3.89 No biomedical samples were taken from the patients, neither by the FFM team nor by the medical staff at the Binnish field hospital.

Environmental samples

- 3.90 No environmental samples were collected or received by the FFM team.

Idlib City

- 3.91 Idlib City is the principal city of the Idlib Governorate of the Syrian Arab Republic.
- 3.92 Between 3 May and 5 June, the FFM team interviewed six individuals in the context of incidents of alleged use of toxic chemicals as a weapon in Idlib City. The interviewees were treating physicians, nurses, and first responders. Three incidents had been reported by the interviewees to the FFM team. The first incident happened on 31 March, the second was on 16 April 2015, and the third was on 20 May 2015. Out of the three reported incidents, the interviewees recalled more information in relation to the first incident. The information about the second and the third incident was limited to the date of the event, the location, and number of cases.

TABLE 15: CHRONOLOGY OF INCIDENTS IN IDLIB CITY

Incident	Date	Approximate Time	Weather Conditions
First	31 March 2015	11:00 – 12:00 and 13:00 – 14:00	The temperature was 18°C to 20°C, humidity 60% and the wind velocity 10 to 12 m/s mainly SSW.
Second	16 April 2015	00:30 – 01:00	The temperature was around 16°C; wind direction was variable at 1 to 2 m/s and humidity of 50%.
Third	20 May 2015	03:00 – 04:00	In the early morning of 20 May 2015, the temperature was stable around 20°C and the humidity was 50%. The wind direction was variable, mainly NW with a velocity of 2 m/s.

3.93 The figure below shows the approximate alleged impact points of the devices, as derived from the interviewees.

FIGURE 19: APPROXIMATE ALLEGED IMPACT POINTS IN IDLIB CITY



Narrative

3.94 On the days of the incidents the city was not under the control of the government.

31 March 2015

3.95 On 31 March 2015 at around noon, a helicopter was heard passing above Idlib and was seen to have dropped one item. One eyewitness started to video record after detonation of the munition and provided the recording to the FFM team. The video showed a drifting yellow-green cloud. A few minutes later, a message was broadcast that the helicopter had dropped a chlorine item close by the governorate administrative building (HQ). One hour later, a second alleged item was dropped on “Al-Mahreb roundabout” close by the museum.

3.96 Interviewees, in particular the first responders, described smelling the typical odour of chlorine as they approached the impact point.

3.97 On the same day two to three hours before the first incident, the national hospital in Idlib had been attacked. Therefore, people who had indications of exposure were transported to either Sarmin field hospital or Binnish field hospital for treatment and care. Sarmin field hospital registered six patients and Binnish field hospital registered 32 patients. All patients were considered by the medical specialists to be mild cases.

16 April 2015

- 3.98 Interviewees claimed that, on 16 April 2015 at around midnight, one item was dropped in Idlib City. The first responders interviewed reported smelling the typical odour of chlorine as they approached the impact point. Approximately 20 people had signs of exposure and were transported to either Sarmin field hospital or Binnish field hospital for treatment and care.

20 May 2015

- 3.99 The FFM team was not able to obtain any significant information, other than the approximate time and location for this incident.

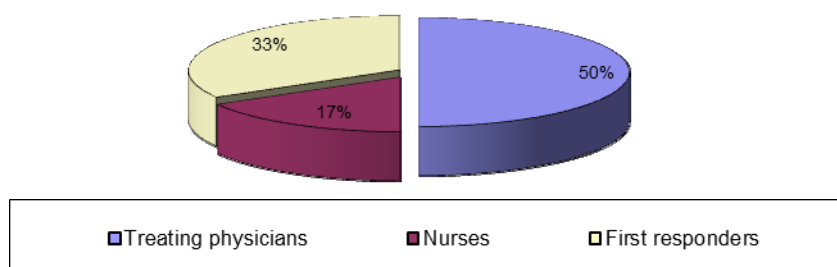
Epidemiological analysis

- 3.100 The FFM team interviewed and collected the testimonies of six individuals in the context of the investigation of incidents of alleged use of toxic chemicals as a weapon. The interviewees were treating physicians, nurses, and first responders. The results presented below are mainly related to the incident of 31 March 2015.

TABLE 16: RELATION TO THE INCIDENTS IN IDLIB CITY AND GENDER DISTRIBUTION OF INTERVIEWEES

	Interviewee	Male	Female
Treating physicians	3	3	0
Nurses	1	1	0
First responders	2	2	0
Casualties	0	0	0
Witnesses	0	0	0
Total	6	6	0

FIGURE 20: DISTRIBUTION OF INTERVIEWEES IN RELATION TO THE INCIDENTS IN IDLIB CITY



- 3.101 Idlib City had no functional hospitals at that time. Therefore, for emergencies the population used the nearest hospitals such as those in Sarmin and Binnish. The patients were transported by volunteers in their personal cars or vans.

Sarmin field hospital received approximately six patients and Binnish field hospital received 32 patients. All patients were decontaminated, which included washing the exposed area of skin with water. This decontamination was conducted outside the emergency room. Upon clinical examination, the signs and symptoms observed included coughing, difficulty breathing, and tearing.

TABLE 17: SYMPTOMS OF CASES IN IDLIB CITY

Symptom	
Coughing	38
Difficulty breathing	38
Total cases	38

3.102 All patients were considered to be mild cases. None of the affected individuals in the attack had any signs of physical trauma on their bodies, but only suffered from the effects of the suspected toxic chemical. All cases responded well to the administration of oxygen. No moderate or severe cases were reported. Neither a laboratory exam nor an X-ray was requested by the treating physicians for the cases. The patients were discharged after a maximum of one hour.

TABLE 18: TREATMENT OF CASES IN IDLIB CITY

Decontamination	38
Oxygen	38
Bronchodilator nebuliser	0
Inhaler steroids	0
Intravenous steroids	0
Lidocaine nebuliser	0
Laboratory analysis	0
X-ray	0

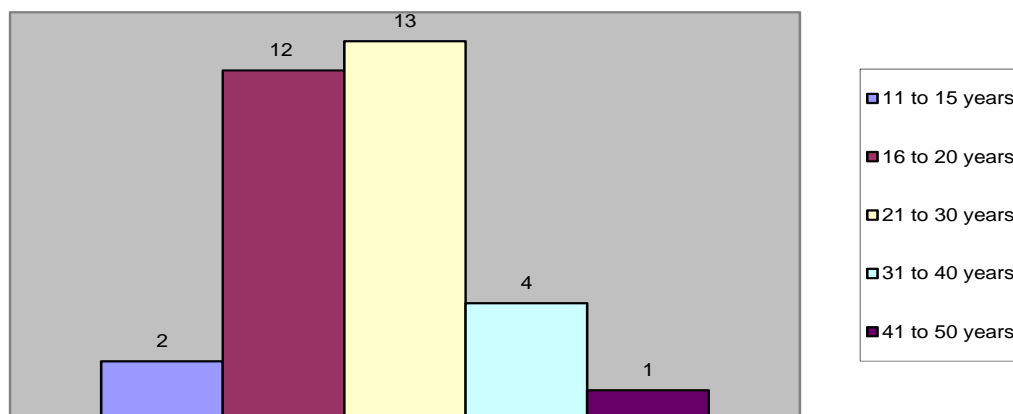
3.103 Even though the hospital staff were able to register the names of the patients in both hospitals, no copy of the patient registration book or medical files was provided to the FFM, although these were requested. The FFM received a copy of a list of patients with the stamp of Binnish hospital showing the name, age and gender. The age distribution of the 32 patients treated at the Binnish field hospital is provided in table below.

TABLE 19: PATIENT DISTRIBUTION ACCORDING TO AGE GROUP, IDLIB CITY

Age group	Total	Males	Females
0 to 5 years	0	0	0
6 to 10 years	0	0	0
11 to 15 years	2	2	0
16 to 20 years	12	12	0
21 to 30 years	13	13	0

Age group	Total	Males	Females
31 to 40 years	4	4	0
41 to 50 years	1	1	0
51 to 60 years	0	0	0
Total	32	32	0

FIGURE 21: DISTRIBUTION OF CASES IN IDLIB CITY BY AGE



Al-Nerab

- 3.104 Al-Nerab is a village in the Idlib Governorate of the Syrian Arab Republic.
- 3.105 The FFM interviewed eight individuals in relation to alleged incidents in Al-Nerab; six of the interviewees were first responders, one of whom claimed that he had been exposed and two of whom visited the impact point few days after the incidents. The six interviewees who participated in the rescue operation were first responders from Sarmin, located in Sarmin at the time of the incidents. As the information provided to the FFM team was not from direct witnesses, the team was not able to build the sequence of events from the moment of the incidents until the beginning of the rescue operation.
- 3.106 Three dates of three incidents had been mentioned to the FFM, namely, 27 April 2015, 1 May 2015, and 2 May 2015.

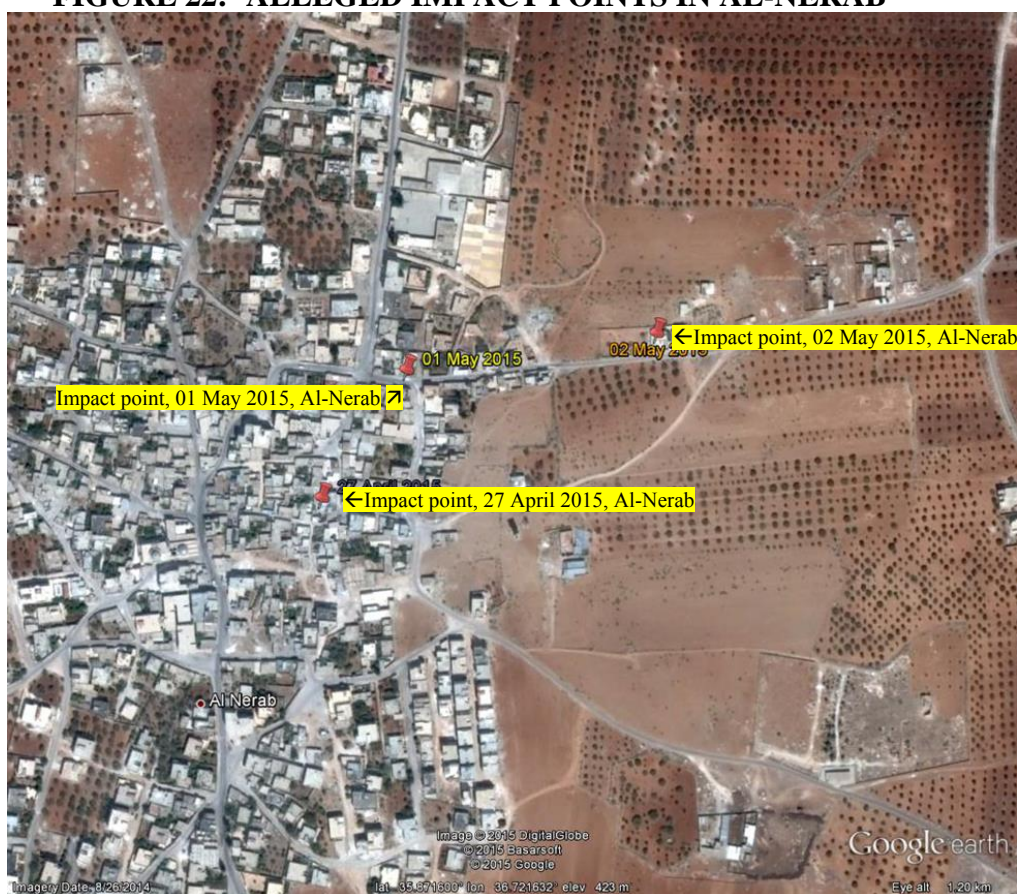
TABLE 20: CHRONOLOGY AND ASSOCIATED WEATHER CONDITIONS IN RELATION TO THE INCIDENTS IN AL-NERAB

Date	Approximate time	Weather conditions
27 April 2015	Morning (no accurate indication of time)	Temperatures were rising from 12°C to 21°C; humidity was dropping from 98% to 48%. The wind direction was variable at 2 to 7 m/s.

Date	Approximate time	Weather conditions
1 May 2015	Evening before midnight (no accurate indication of time)	Temperature was around 18°C with 64% to 77% humidity. The wind direction was changing between WSW and SSW at 8 to 3 m/s.
2 May 2015	Around 04:30	The temperature was around 15°C; humidity was 80%. In the early morning, the wind direction was SW with a velocity of 4 m/s.

3.107 The figure below shows the approximate alleged impact points of the devices, as derived from the interviewees.

FIGURE 22: ALLEGED IMPACT POINTS IN AL-NERAB



Narrative

3.108 Al-Nerab was not under the control of the government in April and May 2015.

3.109 Although there were no direct witnesses to the actual events among the interviewees, the FFM team was able to collect information from the first responders regarding some of the casualties, including two fatalities from the

alleged incident of 2 May. One responder who visited the 2 May site after transporting victims to the Sarmin field hospital, and two witnesses who visited the impact point a few days later, had given information about the munition, which reportedly impacted in front of the residence of the two casualties who died. These interviewees described barrel fragments, light-green-coloured refrigerant cylinders, and plastic bottles among the remnants, as well as a strong smell of chlorine, discolouration of nearby vegetation, and burn marks on the outside wall of the house.

- 3.110 The alleged incidents of 27 April and 1 May were also reported to have occurred in residential neighbourhoods. Responders similarly reported smelling a strong odour of chlorine and seeing remnants similar to those described above. One witness reported that he poured water over one of the plastic bottle remnants and that the water turned red.

Epidemiological analysis

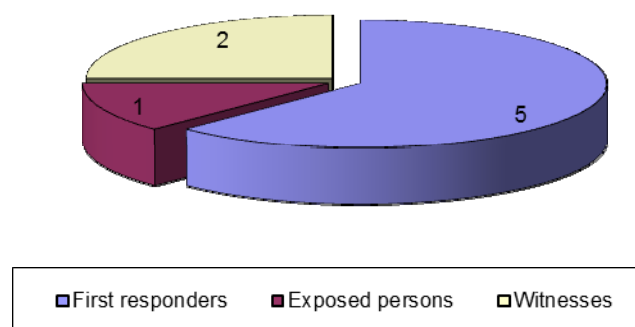
- 3.111 Between 23 May and 5 June 2015, the FFM interviewed eight individuals; six of the interviewees were first responders, one of whom claimed that he was exposed, and two interviewees had visited the impact point a few days after the incidents. As the individuals who were interviewed were in fact in Sarmin during the attack, the information received about the incident was not first hand.

- 3.112 The details of these interviewees are given in the table below.

TABLE 21: RELATION TO THE INCIDENT IN AL-NERAB AND GENDER DISTRIBUTION OF INTERVIEWEES

	Interviewee	Male	Female
First responders	5	5	0
Exposed person	1	1	0
Witnesses	2	2	0
Total	8	8	0

FIGURE 23: DISTRIBUTION OF INTERVIEWEES IN RELATION TO THE INCIDENT IN AL-NERAB



- 3.113 The information reported 12 casualties resulting from all three alleged incidents, including two cases of death: a father and his baby from the incident on 2 May 2015. It was reported that the baby was found dead at the scene, and the father died a few days later in a hospital near the border. The signs observed by the first responder included coughing, difficulty breathing, and tearing.

Biomedical samples

- 3.114 For all alleged incidents in Al-Nerab reported above, only two biomedical samples had been taken. The samples were blood and hair taken from the dead baby.
- 3.115 The FFM team received the sample (blood and hair) from the CVDCS on 22 May 2015. The quantity of blood and hair was not enough to perform a screening analysis; therefore, the laboratory was tasked with screening the environmental samples first and preserving the biomedical sample for a specific tracer in the light of the results. The environmental sample analysis result did not offer any lead with respect to an organic or/and inorganic tracer or their metabolites that could be specific and not naturally occurring in the human body. Therefore, no analysis was conducted on these two samples.

Environmental samples

- 3.116 No environmental samples were collected or received by the FFM team related to the alleged incidents in Al-Nerab.

Saraqib

- 3.117 Saraqib is a city in the Idlib Governorate of the Syrian Arab Republic.
- 3.118 Between 23 May and 5 June 2015, the FFM interviewed six individuals who provided information in relation to the alleged incidents in Saraqib, five of whom were first responders and one an eyewitness (local media) with respect to the alleged munition remnants; all were male.
- 3.119 Figure 24 below indicates the approximate alleged impact points of the devices, as derived from the interviewees.

FIGURE 24: IMPACT POINT OF ALLEGED INCIDENT IN SARAQIB**TABLE 22: DETAILS OF THE INCIDENT IN SARAQIB**

Date	Approximate time	Weather conditions
2 May 2015	Around 4:30	In the early morning of 2 May 2015, the temperature in Saraqib was around 15°C, humidity was 80%, and the wind direction was south-west with a velocity of 4 m/s.

Narrative

- 3.120 Saraqib was not under the control of the government in May 2015.
- 3.121 The alleged incident in Saraqib with suspected toxic chemicals was on 2 May 2015. The individuals who were interviewed by the FFM team were in fact in Sarmin during the incident. The interviewees reported to the FFM team an approximate number of 70 chemical casualties. The signs observed by the first responder during the rescue operation were coughing, difficulty breathing, and tearing.

3.122 The information received about the incident was not first hand and the FFM team could not cross-check this information from different sources such as medical professionals, victims, casualties and direct witnesses.

3.123 One interviewee visited the scene approximately 20 minutes after the incident. He reported a strong chemical smell, barrel remnants, refrigerant cylinders, plastic bottles, and some chemical burning and discolouration of vegetation.

Biomedical samples

3.124 No biomedical samples were taken from the patients in relation to the alleged incident in Saraqib on 2 May 2015.

Environmental samples

3.125 No environmental samples were collected or received in relation to the alleged incident in Saraqib on 2 May 2015.

Kurin

3.126 Kurin is a village in the Idlib Governorate of the Syrian Arab Republic.

3.127 Only one interviewee made reference to an incident in Kurin; the interviewee could not recall the date of the incident, but was able to give information about the incident location.

3.128 Figure 25 below indicates the alleged approximate impact points of the devices, as derived from the interviewees.

FIGURE 25: APPROXIMATE ALLEGED IMPACT POINT OF DEVICE IN KURIN



Narrative

3.129 The interviewee claimed that in mid-April 2015 in the evening between 18:30 and 20:00, shortly after sunset, he was with five friends riding in a pick-up truck close to Kurin. He heard a helicopter in the air, so the six of them took cover. A moment later they heard the sound of something falling through the air, followed by a light explosion. A few minutes later they continued moving in the pick-up. As soon as they arrived in an area in Kurin, they smelled “[c]hlorine. It was clear from its taste it was chlorine. It stuck to our mouths.” They left the village quickly and washed their faces and mouths with water.

3.130 The FFM team could not cross check this information from other sources.

MUNITIONS

3.131 The FFM team collected information regarding the alleged chemical item or munition during the interviews. The interviewees referred to the alleged items/munitions as “barrel bombs”. Several of the interviewees described the remnant of the munition and some of them also provided pictures. The FFM team also received parts of the munitions as samples. Additionally, the team also found many pictures of alleged items/munitions in open sources, which bore resemblance to descriptions provided by interviewees.

3.132 Initially, the team studied the media footprints where the improvised chemical munitions were reportedly used. As interviews progressed, more information

was obtained from a number of persons who were interviewed in their different capacities as victims, witnesses, first responders, and medical personnel. Their testimonies were correlated with the various types of evidences provided to the team by the interviewees, with the social media videos and pictures, with the samples handed over to the team and with the information collected from various other open sources.

3.133 Based on the information collected by the FFM team, samples, pictures, and descriptions of the items by the witnesses, the following are key common features:

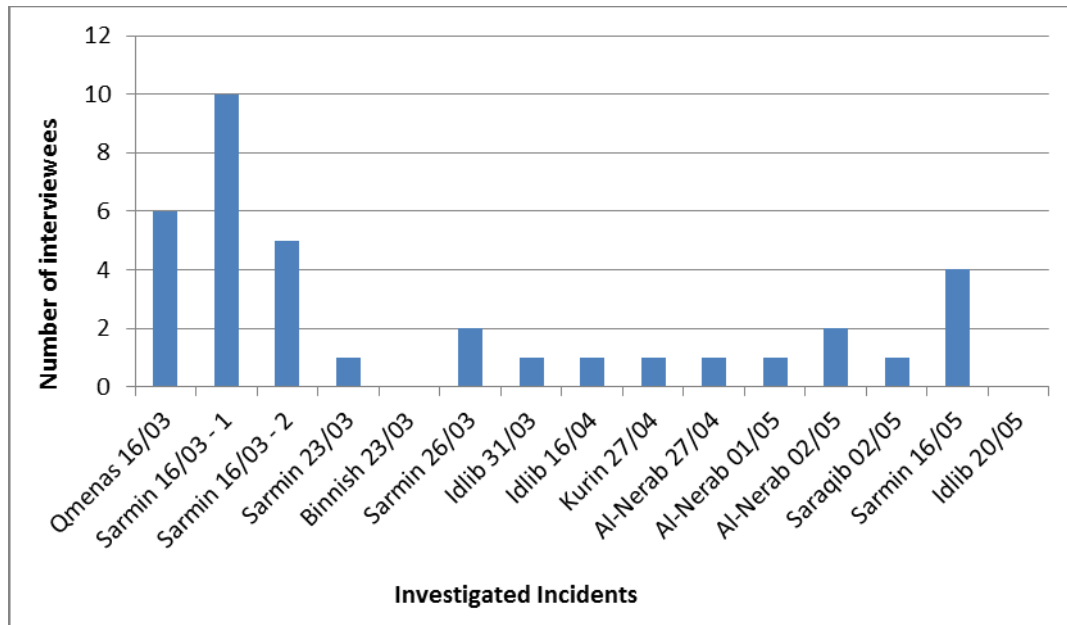
- (a) an outer shell (barrel) designed to contain a number of metallic and plastic cylinders;
- (b) a number of metallic cylinders of various shapes and sizes that could be filled with chemical compounds;
- (c) multiple plastic bottles;
- (d) detonation cord or an explosive mixture;
- (e) ordinary time fuse; and
- (f) multiple and various connectors that hold the components together.

FIGURE 26: ALLEGED REMNANTS OF CHEMICAL MUNITIONS, DERIVED FROM DIFFERENT SOURCES



3.134 From the 24 interviewees, 16 interviewees offered relevant data regarding the remnants of improvised chemical bombs allegedly used during the investigated incidents. Figure 27 below shows the distribution of interviewees with respect to the different incidents.

FIGURE 27: DISTRIBUTION OF INTERVIEWEES WITH RESPECT TO THE ALLEGED INCIDENTS



OVERALL ANALYSIS OF THE INFORMATION COLLECTED

Epidemiological analysis of the incidents

3.135 For logistical and security considerations, the interviewees were transported to the interview location in Country X in three groups:

- (a) The first group totalled 11 interviewees, all of whom were interviewed.
- (b) The second group totalled nine interviewees, all of whom were interviewed.
- (c) The third group totalled 10 interviewees, of whom only three were interviewed (30%).

3.136 Seven interviewees from the original selection were unable to join the group.

TABLE 23: DISTRIBUTION OF THE INTERVIEWEES BY AGE AND GENDER

Age group	Male	Female	Total
20 years	2		2
21 to 30 years	11	1	12
31 to 40 years	6		6
41 to 50 years	2	1	3
51 to 60 years	1		1
Total	22	2	24

FIGURE 28: DISTRIBUTION OF INTERVIEWEES BY AGE

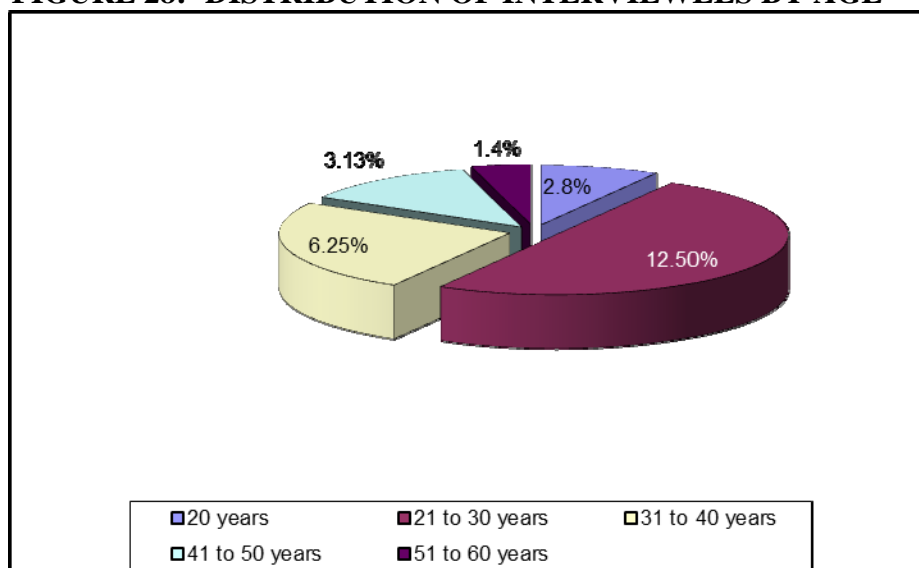


FIGURE 29: DISTRIBUTION OF INTERVIEWEES BY GENDER

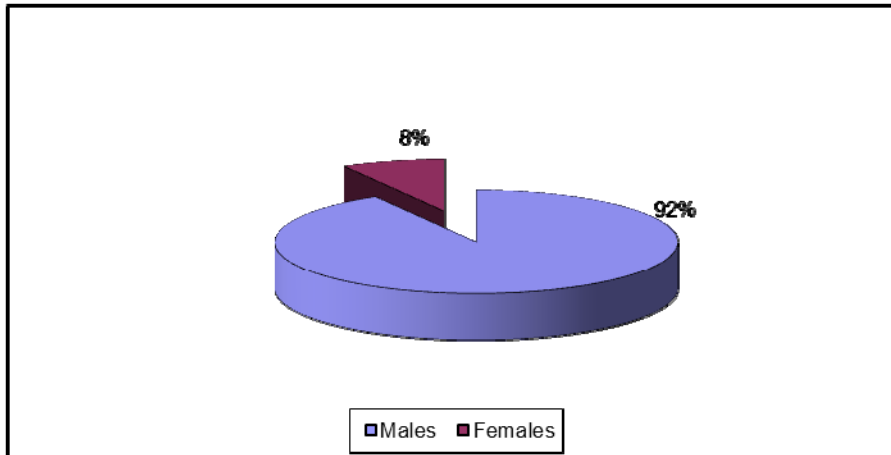
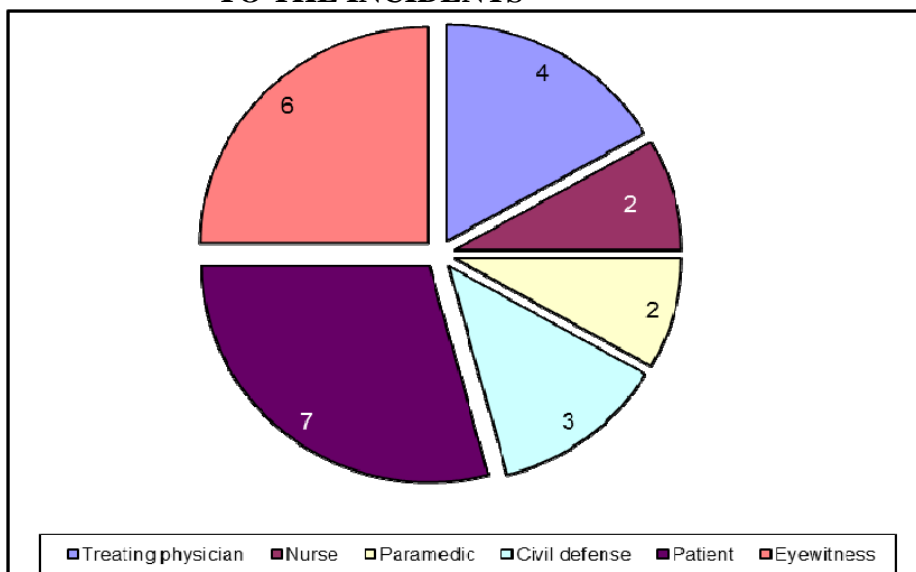


TABLE 24: DISTRIBUTION OF INTERVIEWEES IN RELATION TO THE INCIDENTS

Relation to the incident	Number
Treating physician	4
Nurse	2
Paramedic	2
Civil defence	3
Patient	7
Eyewitness	6
Total	24

FIGURE 30: DISTRIBUTION OF INTERVIEWEES IN RELATION TO THE INCIDENTS



3.137 In carrying out the analysis, the team noted the following in particular:

- (a) The FFM compiled data that emerged from the testimonies of interviewees.
- (b) The relation of the interviewees to the incidents was frequently interchangeable; some first responders and medical personnel were considered as having been exposed and some of the interviewees were present at more than one incident.
- (c) Of a total of 24 interviewees, 21 described smelling an odour during the course of one or more of the alleged incidents. Eighteen of these described smelling the distinctive odour of a chlorine-like substance, similar to cleaning products but much stronger; three described a strong and repulsive odour.
- (d) All medical staff, from ambulance drivers to treating physicians, mentioned a large number of patients documented in different hospitals at which they sought medical aid.
- (e) When transporting patients or providing aid to them, some of the medical staff and first responders suffered from some symptoms of exposure.
- (f) A few were affected by the intense smell of chlorine emanating from the clothes of people who were exposed during an incident. It should be noted that patients were decontaminated with water or soap and water before being brought inside the hospital.

Medical signs, symptoms, and treatment

3.138 The symptoms of exposure, the signs observed by the treating physicians, and the treatment that was provided to patients, in addition to the symptoms based on interviewees' testimonies, are discussed below.

3.139 All interviewees who declared having been exposed to toxic chemicals are reported here. These include the seven patients and five first responders / nurses exposed (a total of 12 individuals exposed).

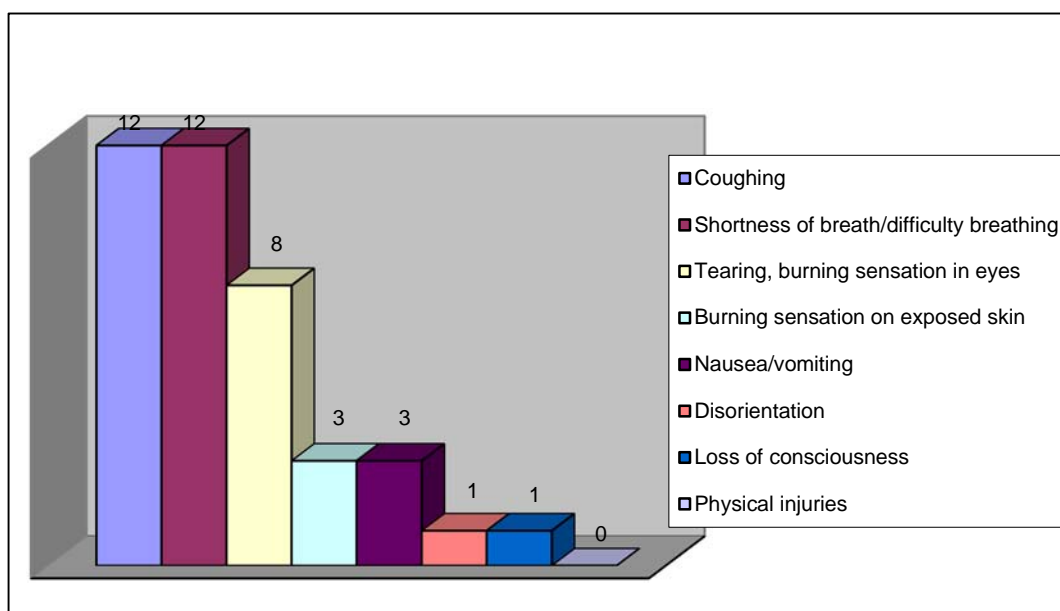
3.140 Some symptoms are grouped together. The range experienced by the patients as a result of suspected exposure to toxic chemicals included coughing, shortness of breath, tearing and burning sensation in the eyes, burning sensation on exposed skin, nausea/vomiting, disorientation, and loss of consciousness.

3.141 The clinical examination reported by the treating physician included coughing, difficulty breathing, and tearing.

3.142 The severity of symptoms varied and depended on the duration of exposure and the age of the patient.

TABLE 25: FREQUENCY DISTRIBUTION OF THE REPORTED SYMPTOMS BY THE CASUALTIES WHO PROVIDED THEIR TESTIMONY

Symptom	Frequency of Occurrence
Coughing	12
Shortness of breath/difficulty breathing	12
Tearing, burning sensation in eyes	8
Burning sensation on exposed skin	3
Nausea/vomiting	3
Disorientation	1
Loss of consciousness	1
Physical injuries	0
Total	12

FIGURE 31: FREQUENCY OF OCCURRENCE OF SIGNS AND SYMPTOMS

3.143 Cumulatively, 12 of 12 experienced coughing, 12 of 12 had shortness of breath, 8 of 12 experienced burning in the eyes and tearing, 3 of 12 experienced a burning sensation on exposed skin, 1 of 12 had nausea or vomiting, and 1 of 12 lost consciousness.

3.144 There is no discordance between the two sources of information because for the patients the main symptoms were difficulty breathing and severe coughing. The other symptoms were reported as secondary, mild symptoms, but nonetheless are recorded in this document.

- 3.145 The respiratory symptoms among patients appeared almost immediately after exposure to the suspected toxic chemicals and persisted for a few hours or, in some cases, for a few days. The cough was non-productive in the majority of cases, which is a result of irritation of the upper respiratory tract and the constitution of bronchospasm. No cases of productive cough or haemoptysis were observed.
- 3.146 As reported by the treating physicians, a large number of patients presented in a state of panic. This could be attributed to the psychological effects of living in a conflict area.
- 3.147 The treatment provided included oxygen therapy, application of intravenous fluids, and steroid therapy.
- 3.148 The mainstay of treatment provided was oxygen, which provided relief to patients within minutes. Oxygen relieves hypoxia in exposed patients and calms those who are in state of panic, thus bringing immediate relief.
- 3.149 The use of bronchodilators relaxes constricted airways, thus improving oxygenation and relieving symptoms. The efficacy of steroids is not proven.
- 3.150 The use of intravenous fluids is of more value in providing quick access to the peripheral vessels for intravenous drug administration. Moreover, in cases of pulmonary oedema, administration of fluids has to be carefully justified and weighed.
- 3.151 The outcome of exposure was fatal in six cases in Sarmin and two in Al-Nerab. In the alleged incident in Sarmin, three died immediately and three later on the same night in Sarmin hospital. All these individuals were from the same family and very close to the impact site. In the Al-Nerab incident, one died at the scene of impact and the other three days later.
- 3.152 The hospitals at all locations in question are equipped with minimal medical equipment, thus the treating physicians did not take any blood tests, perform radiographs, etc.

Evaluation of Samples

- 3.153 None of the samples were collected by the FFM team. A total of 24 samples were handed over to the FFM team by the CVDCS. The samples were received by the FFM team on two different dates; the first set of samples was received by the team on 22 May 2015 and the second set of samples was received on 23 July 2015. According to interviewees' statements, the samples were originally collected by the interviewees and were held in a separate location within Sarmin, then handed over to the CVDCS.
- 3.154 The OPCW FFM team ensured the chain of custody of these samples from the moment of receipt by following the procedure described in the methodology section (Section 2) of the current report. The described procedure was applied

for all samples starting from the moment of receipt to the handover of these samples to the OPCW designated laboratory.

- 3.155 Some of the received samples were accompanied by partial documentation of the chain of custody prior to delivery to the FFM. Although this documentation provided some degree of confidence, the entire chain of custody could not be verified, thus the possibility of cross-contamination could not be ruled out. Therefore, although such samples would be considered as primary evidence under optimal circumstances, given the constraints as described, the FFM regarded the samples as tertiary evidence. As such, the results from such analyses were treated more as supporting information than as having significant evidential value. Therefore, it was decided that the splitting of samples for analysis at a second laboratory did not warrant the efforts, including cost, and impact on the designated laboratory as well as on OPCW staff.

TABLE 26: LIST OF SAMPLES

Date	OPCW evidence reference number	OPCW sample code	Sample description	Location
22/05/2015	20150522102801	01SLS	Soil sample collected from the impact point of a barrel bomb ⁴	Kafr Zita
22/05/2015	20150522102802	02SLS	Soil sample collected from the impact point of a barrel bomb, ³ the soil was coloured purple after the attack, ³ 48 hours later the colour had returned to normal	Kafr Zita
22/05/2015	20150522102803	03AQS	Purple aqueous solution	Kafr Zita
22/05/2015	20150522102804	04SDS	Empty HCFC container	Kafr Zita
22/05/2015	20150522102805	05SDS	Empty HCFC container	Sarmin
22/05/2015	20150522102806	06SDS	Black/brown plastic container + dark red powder	Kafr Zita
22/05/2015	20150522102807	07SDS	Black/brown plastic container	Sarmin

⁴

Terminology is as provided by interviewees.

Date	OPCW evidence reference number	OPCW sample code	Sample description	Location
22/05/2015	20150522102808	08SDS	Ruptured HCFC container	Sarmin
22/05/2015	20150522102809	09SDS	Clothes from a victim	Sarmin
22/05/2015	20150522102810	N/A	Blood and hair sample	Al-Nerab
22/05/2015	20150522102811	11SDS	Ruptured HCFC container	Sarmin
22/05/2015	20150522102812	12SDS	Ruptured HCFC container	Sarmin
23/07/2015	20150723100801	13SDS	One key and one teaspoon	Sarmin
23/07/2015	20150723100802	14SDS	Level float for water tank	Sarmin
23/07/2015	20150723100803	15SDS	Electrical light bulb	Sarmin
23/07/2015	20150723100804	16SDS	Two pieces of construction material	Sarmin
23/07/2015	20150723100805	17SDS	Part of an exploded HCFC gas cylinder	Sarmin
23/07/2015	20150723100806	18SDS	Part of an exploded HCFC gas cylinder	Sarmin
23/07/2015	20150723100807	19SDS	Piece of wood	Sarmin
23/07/2015	20150723100808	20SLS	Soil sample (sand and stones)	Sarmin
23/07/2015	20150723100809	21SDS	Pieces of wood (and plastic container)	Sarmin
23/07/2015	20150723100810	22SDS	Plastic containers	Sarmin
23/07/2015	20150723100811	23SDS	Jacket of a victim	Sarmin
23/07/2015	20150723100812	24SLS	Two soil samples (sand and stones) Taken from two locations in Sarmin as background samples (blank samples)	Sarmin

- 3.156 After receiving the samples and the documentation, it became apparent that five samples had been collected in Kafr Zita which is a city within the Hama Governorate in the Syrian Arab Republic. As the current mandate is restricted to the Idlib Governorate in the Syrian Arab Republic, in this report the team will not include the analysis results of the following samples; 01SLS, 02SLS, 03AQS, 04SDS, and 06SDS. The FFM team will retain the analysis results within the Secretariat, pending potential investigation of incidents outside this mandate.
- 3.157 Considering the uncertainty around the potential chemical allegedly used and how it might behave under unknown energetic conditions, and an indeterminate period of time in uncontrolled environment, the FFM team requested from the OPCW designated laboratory a large screening of organic and inorganic chemical compounds and / or elements, not limited to scheduled chemicals.
- 3.158 In this report, the results of 19 samples were considered:
- (a) eleven samples (13SDS, 14SDS, 15SDS, 16SDS, 17SDS, 18SDS, 19SDS, 20SLS, 21SDS, 22SDS, and 23SDS) related to samples collected from the house of the six dead victims of the alleged incident of 16 March 2015 in Sarmin;
 - (b) six samples (05SDS, 07SDS, 08SDS, 09SDS, 11SDS and 12SDS) related to different undefined alleged incidents in Sarmin other than above-mentioned incident;
 - (c) one biomedical sample collected from the deceased child from the alleged incident of Al-Nerab on 2 May 2015; and
 - (d) one background soil sample from Sarmin (consisting of two subsamples from slightly different locations).
- 3.159 The 19 samples mentioned above may be categorised as follows:
- (a) remnants of the alleged item or munition:
 - (i) metallic remnant: 05SDS, 08SDS, 11SDS, 12SDS, 17SDS and 18SDS; and
 - (ii) plastic remnant: 07SDS and 22SDS;
 - (b) environmental samples:
 - (i) soil, stones and construction materials: 13SDS, 14SDS, 15SDS, 16SDS, 19SDS, 20SDS, 21SDS and 24SLS; and
 - (ii) textiles and leather products: 07SDS and 23SDS; and

- (c) biomedical samples: blood and hair evidence number: 20150522102810.

Chemical analysis results of the remnants of the alleged munition

Metallic material:

- 3.160 All the metallic parts of the remnants of the alleged munition received by the FFM team consisted of a part or whole metallic cylinder. The cylinder bore the markings for the refrigerant R22, a hydrochlorofluorocarbon (HCFC) and liquefied gas, and was comparable to those commercially available.
- 3.161 A screening of the residual organic compound was performed by the OPCW designated laboratory. The analysis was conducted on the external and the inner side of the exploded or ruptured R22 cylinder for the following samples: 05SDS, 08SDS, 12SDS, 17SDS, and 18SDS. No organic compounds were reported for the sample 17SDS. However, different concentrations of trinitrotoluene (TNT) on the rest of samples clearly indicate the contamination and /or the exposure of those samples to high-explosive materials.
- 3.162 In addition to the explosives footprint on those samples, different concentrations of polyaromatic hydrocarbons (PAHs) were found in the samples. Moreover, polychlorinated hydrocarbons (PCAHs, hexachlorobenzene, octachloronaphthalene, and others) were detected in some of those samples. It is possible that these chemicals were formed during the combustion of organic material in presence of chlorine-containing chemicals.
- 3.163 The screening for inorganic compounds (including elements) reveals that potassium and/or manganese were identified in all samples at different concentrations and that the concentration of chloride was significantly higher than normal in samples 05SDS, 08SDS, 17SDS, and 18SDS.
- 3.164 The concentration of chloride in the debris from the inside surface of the R22 container 18SDS (aliquot 18SDS-E2SI) was five times higher compared to the outside surface (aliquot 18SDS-E2SO).

Plastic material:

- 3.165 The plastic material was identified as polyethylene terephthalate. The organic compounds identified were the same as on the metallic remnants of the munition.
- 3.166 Potassium and manganese were detected in both samples analysed in high concentration; 1:1 stoichiometric ratios of potassium and manganese were observed.

Chemical analysis results of the environmental samples

The screening for organic compounds shows the following:

- 3.167 Differing concentrations of TNT were found in the environmental samples. Also, different concentrations of polyaromatic hydrocarbons (PAHs) were detected. In addition, PCAHs (hexachlorobenzene, octachloronaphthalene, and others) were detected in some samples. It is possible these chemicals were formed during the combustion of organic chemicals in the presence of chlorine-containing chemicals. Also, different plasticisers and oxidation products of the antioxidant butylated hydroxytoluene (BHT) were identified.
- 3.168 Bornyl chloride was identified in wood sample 21SDS. According to the literature,⁵ bornyl chloride is a reaction product of hydrogen chloride with the terpene-based wood ingredient α -pinene. In order to show that bornyl chloride is not naturally occurring, wood chips from a fir tree were extracted with n-hexane. After analysis with GC-MS and GC-AED, α -pinene but no bornyl chloride was detected. In a further experiment, some fir tree chips were exposed to (a) hydrogen chloride gas (HCl) and (b) chlorine gas (Cl₂). After extraction with n-hexane and analysis, significant amounts of bornyl chloride were present in both extracts from experiments (a) and (b).
- 3.169 Consequently, the detected bornyl chloride in wood sample 21SDS is most likely not of natural origin.

The screening for inorganics

- 3.170 Different concentrations of potassium and/or manganese (potassium permanganate (KMnO₄), manganese oxide (MnO₂)) were identified in all samples. High concentrations of manganese were found in the dark coloured debris on the electrical light bulb 15SDS, on the construction material piece 16SDS, and on the wood piece 19SDS. Using XRF analysis, almost stoichiometric 1:1 ratios of potassium and manganese were found in the soil sample 20SLS and the plastic containers 21SDS and 22SDS. This is consistent with derivation from potassium permanganate (KMnO₄).
- 3.171 High concentrations of chloride were identified in all samples. The concentration of chloride in the extract of the soil sample 20SLS (aliquot 20SLS-E2) was between 70 and 700 times higher than the two soil samples 24SLS (aliquots 24SLS-E2A / 24SLS-E2B). Considering that sample 24SLS is a background soil sample and it was taken more than three months after the incident in Sarmin, there is strong evidence that sample 20SLS was exposed to or contaminated by chloride.

⁵

Information supplied by the designated laboratory.

Biomedical samples

- 3.172 The biomedical samples received by the FFM team were approximately 1 to 1.5 ml of blood taken from the dead child in the Al-Nerab incident and a hair sample taken from the same victim after decontamination. The quantity of samples was not enough to perform a screening analysis; therefore, the laboratory was tasked with screening the environmental samples first and preserving the biomedical sample for specific tracer(s) in light of the results for the environmental samples.
- 3.173 The environmental sample analysis result did not offer any lead with respect to an organic and/or inorganic tracer or their metabolites that could be specific and not occurring naturally in the human body. Therefore, no analysis was conducted on these two samples.

Review of information on the munitions

- 3.174 Multiple open sources, videos, and media reports indicate that in the conflict, conventional weapons have been supplemented with improvised weapons derived from low cost containers filled with explosive, fuel, irregular shaped steel fragments that have been referred to as “barrel bombs”. More recently, reports have referred to barrel bombs containing chemicals.
- 3.175 The interest of the investigation team was focused on those improvised ordnance that produced casualties by intoxication with an unknown chemical that were allegedly used in Idlib region in the Syrian Arab Republic between March and May 2015.
- 3.176 The testimonies of interviewees were correlated with the various types of evidence provided to the team by the interviewees, with social media videos and pictures, with the samples handed over to the team, and with the information collected from various other open sources. Based on these inputs, the following components have been determined:
- (a) an outer shell (barrel) designed to hold inside a various number of components including chemical cylinders;
 - (b) a number of cylinders potentially of various shapes and sizes filled with chemical compounds (which are most probably gases or liquids);
 - (c) multiple plastic bottles filled with potassium permanganate;
 - (d) detonation cord or an explosive mixture designed to rupture the gas cylinders and the plastic bottles;
 - (e) an ordinary time fuse consisting of a blasting cap and a time-calculated fuse wick (fuse cord); and
 - (f) multiple and various connectors that hold the components together.

- 3.177 By piecing together these inputs, the modus operandi is that the barrel bomb releases the toxic chemical compound(s) by using the detonation cord or an explosive mixture to rupture the gas cylinders filled with toxic chemical, the plastic bottles, and the outer shell. Improvised chemical barrel-bomb designs that are observed through social media demonstrate that there is an evolution of their manufacture, likely driven by trial and error. Open sources indicate three generic constructions of the chemical barrel bomb. However, based on all the inputs related to the mandate, only one type appears to have been used in the Idlib region between March and May 2015.
- 3.178 Figure 32 below depicts this generic construction.
- 3.179 Figure 33 shows some of the evidence received by the team which helped build the picture of the munition indicated in Figure 32.

FIGURE 32: DEPICTION OF AN IMPROVISED CHEMICAL MUNITION, ALLEGED TO HAVE BEEN USED IN THE IDLIB GOVERNORATE BETWEEN MARCH AND MAY 2015

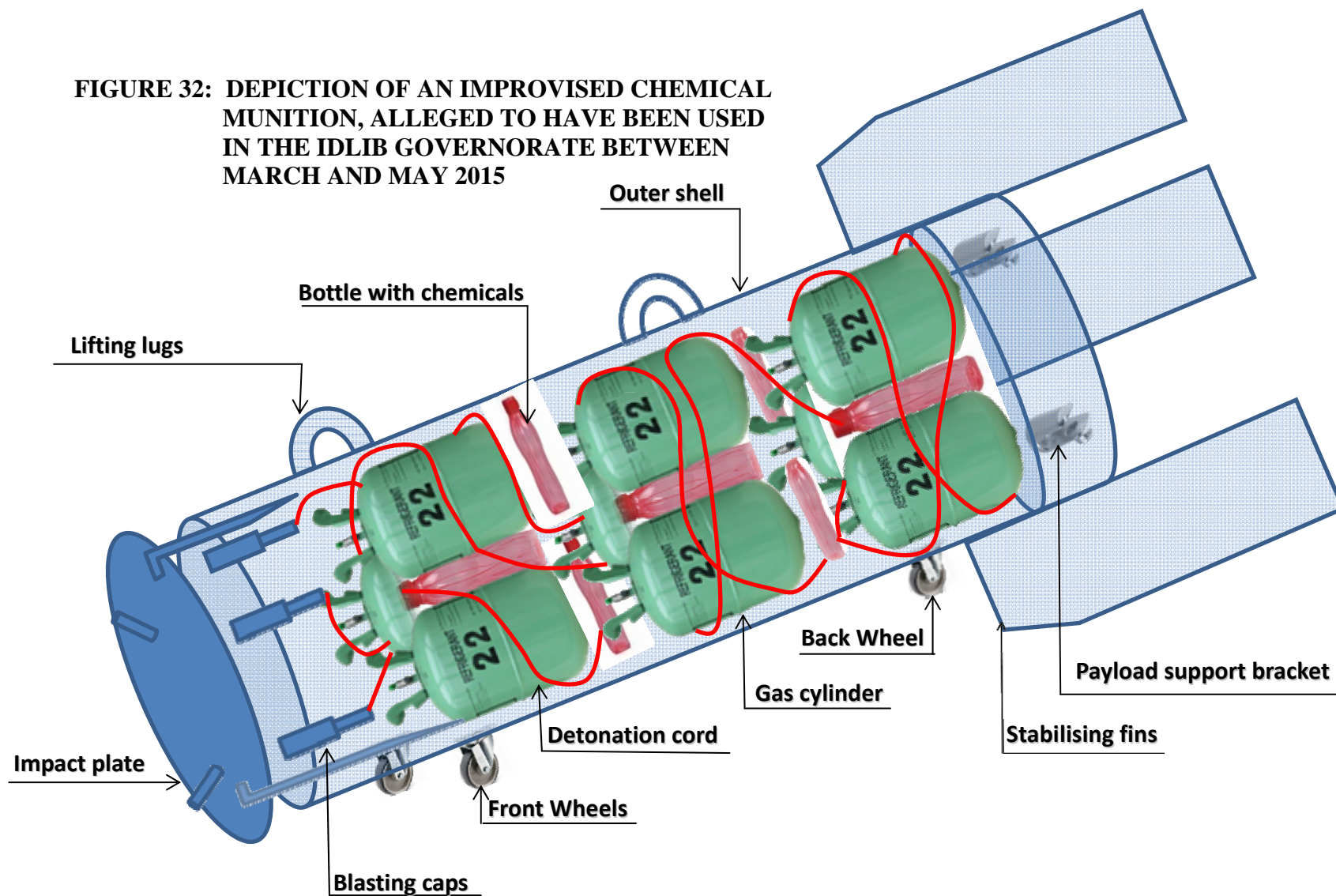


FIGURE 33: EVIDENCE AND INFORMATION RECEIVED BY THE FFM TO ENABLE DEPICTION OF THE DEVICE

The central diagram shows a cylindrical device with the following labeled components:

- Bottles with chemicals**: Four green cylindrical containers labeled '22' are mounted inside the device.
- Stabilising fins**: Four blue, rectangular fins are attached to the side of the device.
- Payload support bracket**: A blue bracket structure is positioned at the rear of the device.
- Detonation cord**: A red cord is connected to the front of the device.
- Blasting caps**: Two caps are shown at the front of the device.
- Wheels**: Two wheels are visible at the bottom of the device.
- Impact plate**: A circular plate is located at the front of the device.
- Lifting lugs**: Two lugs are attached to the top of the device.
- Gas cylinders**: Two blue cylinders are visible inside the device.
- Outer shell**: The outer casing of the device is shown in a separate image.

Surrounding evidence photos include:

- Image provided by interviewee 1021**: Shows a hand holding a measuring tape next to a cylindrical object.
- OPCW received sample**: Shows a clear plastic bottle containing a liquid sample.
- OPCW received sample**: Shows a sample being measured against a ruler.
- Media, 16 March 2015, Sarmin**: Shows a person in a brown jacket near a red circle on the ground.
- Media, 2 May 2015, Saraqib**: Shows a large, rusted metal object.
- Image provided by interviewee 1021**: Shows a person measuring a large metal object.
- OPCW received sample**: Shows several pieces of brown, irregular samples.
- Media**: Shows a green metal cylinder with a blue cap.
- Media, 17 March 2015, Sarmin**: Shows a person in a black and white uniform standing next to a motorcycle and a large metal object.
- Image provided by interviewee 1021, 23 March 2015**: Shows a large, rusted metal object with red circles highlighting specific areas.
- Media, 17 March 2015, Sarmin**: Shows a person in a black and white uniform handling a large metal object.
- Image provided by interviewee 1011, 16 March 2015**: Shows a large, rusted metal object with red circles highlighting specific areas.
- Image provided by interviewee 1021**: Shows a large, rusted metal object with a red circle highlighting a specific area.
- Media**: Shows a large, rusted metal object with a red circle highlighting a specific area.
- Image provided by interviewee 1011, 16 March 2015**: Shows a large, rusted metal object with red circles highlighting specific areas.
- Media**: Shows a large, rusted metal object with a red circle highlighting a specific area.
- Media**: Shows a large, rusted metal object with a red circle highlighting a specific area.
- Image provided by interviewee 1011, 16 March 2015**: Shows a large, rusted metal object with a red circle highlighting a specific area.
- Media**: Shows a large, rusted metal object with a red circle highlighting a specific area.
- Image provided by interviewee 1011, 16 March 2015**: Shows a large, rusted metal object with a red circle highlighting a specific area.
- Media**: Shows a large, rusted metal object with a red circle highlighting a specific area.

- 3.180 The remnants of the chemical improvised explosive devices show the characteristics and design of air bombs. Almost all of the remaining outer shells have three big metallic stabilising fins welded on the back. In more conventional weaponry, the role of the fins is to stabilise the entire ensemble during its flight/dive from the launching moment until it reaches the target by keeping the bomb nose-down during its descent. The process of stabilisation is necessary for improving the accuracy of the targeting process and to decrease the rate of fail. Without stabilising fins, bombs would tumble through the air and thus increase the probability of the fuse not hitting the ground and thus decrease the likelihood of detonation. Typically, conventional bombs are designed with at least four stabilising fins. The improvised ones, however, appeared to have only three.
- 3.181 Figure 34 below is from an open source and depicts the different appearances of improvised bombs versus more conventional types, particularly with respect to the number of fins. These are merely used to indicate these differences, with no implication of their being at all chemical in nature.

FIGURE 34: CONVENTIONAL (LEFT) AND IMPROVISED AIR BOMBS (RIGHT) FINS DESIGN



- 3.182 It is hypothesised that the rationale behind three stabilising fins and no more could derive from practicality of deployment, as follows. For easier transport, the improvised chemical air bombs were designed with a transport train comprising two wheels in the front and one on the back of the bomb. These wheels would facilitate the conveyance of an improvised device in transportation that may not be designed for such purposes. The three stabilising fins provide a relatively low-cost technical solution that facilitates both the use of the wheels and provides stabilisation. Furthermore, some of the social media sources show improvised bombs loaded into a helicopter. The internal design of helicopter and the launching procedures shown on social media create practical difficulties in handling a bomb designed with four fins. See Figure 35 below.

FIGURE 35: PICTURE FROM SOCIAL MEDIA SHOWING TWO IMPROVISED BOMBS FITTED INTO A HELICOPTER



3.183 Further evidence of the improvised bombs being dropped from a height is the deformation of the outer shell. In almost all cases that the team studied, the impact damage can be seen in the front part of the bomb or on the side. The deformation indicates that the device was launched from a height and the impact was frontal (when stabilised by fins) or on the side (without stabilisation). Both cases suggest that the object followed a free-fall trajectory.

3.184 In no cases did remnants suggest the presence of the following:

- (a) an engine, as in the case of a land-launched projectile; or
- (b) an energetic component that would usually be used to transport the projectile from the launching system to the target.

3.185 Furthermore, it is estimated that the size of the improvised chemical bomb would be too great to be launched from a terrestrial artillery type of weapon.

3.186 A comparison of aerial and terrestrial projectiles and rockets can be seen in Figure 36 below.

FIGURE 36: PICTURES FROM MEDIA SHOWING THE DEFORMATION AND REMNANTS OF AIR BOMBS AND ROCKETS



Media: Air Bomb Deformation

Image by Interviewee 1011: Qmenas 16 March 2015

Media: Barrel Bomb Projectile in Launching Position

Media: Barrel Bomb Projectile

- 3.187 The impact point (the crater) and the fact that the outer shell and internal components can be clearly visible (large pieces of remnants) confirm that impacts of the improvised air bombs in the alleged incidents did not involve a large amount of high explosive. If so filled, the bomb would have fragmented all the bomb components into very small pieces. That is not the case in the incidents assessed, where the most of the bomb components were found in large pieces. Similarly, the crater produced by a high-explosive bomb would have been bigger in diameter and deeper. For comparison, see Figure 37 below.

FIGURE 37: PICTURES FROM OPEN-SOURCE MEDIA (LEFT) AND PROVIDED BY AN INTERVIEWEE (RIGHT) SHOWING THE CRATER FORMED FOLLOWING THE DETONATION OF A HIGH EXPLOSIVE IMPROVISED BOMB AND AN IMPROVISED CHEMICAL BOMB



Media: Barrel Bomb High Explosive Crater



Image by Interviewee 1011: Qmenas, 16 March 2015

- 3.188 In principle, a bomb designed to be used as chemical bomb is designed such that the explosive train should only crack the walls of containers containing toxic chemicals. A greater quantity of explosive would destroy the toxic chemical by burning it. In addition, the use of a greater quantity of explosive to spread the toxic chemicals would decrease the concentration on the targeted area and potentially render the effects harmless.
- 3.189 In addition to the indications of these being chemical devices, there is also evidence indicating that they are a binary type, where two chemicals react to produce what would be a more effective chemical weapon. Within the outer container (“barrel”), there are two different smaller types of container, one being designed to hold a liquefied gas (R22), the other being a plastic bottle, typical of the type that would hold drinks. The presence of a detonation cord wrapped around these two smaller containers would rupture the containers, allowing the mixing and subsequent reaction of the different chemical components.
- 3.190 In almost all of the cases there is a visible metallic brim and two large bolts on the rear side of the outer shell, suggesting an improvised device designed to hold in place the inner containers during both transport and deployment. In case of a binary chemical bomb, without this system, on impact, the inner

containers loaded inside the barrel bomb would be thrown outside due to inertial forces before the chemicals could be released, enabling them to mix and react. In the case of an improvised bomb filled with containers containing one single toxic chemical, on impact the barrels will be pushed outside and spread around the target, without the need to contain them in order to facilitate a reaction.

4. WITNESSES IDENTIFIED BY THE SYRIAN ARAB REPUBLIC

- 4.1 During meetings held from 21 to 23 March 2015, representatives from the Secretariat requested that the Syrian Government share any information possible within its purview related to the recent alleged incidents in the Idlib Governorate. In letters dated 7 April and 13 May 2015, the Director-General reiterated these requests. During meetings that took place from 12 to 15 July 2015, the Syrian authorities stated that some persons who had been displaced from northern regions of the Syrian Arab Republic were willing and available to be interviewed, and that the Syrian Government could facilitate the interviews. On 31 July 2015, the FFM-Bravo mandate was amended accordingly, and the said interviews were conducted from 4 to 7 August 2015. Twenty interviews were conducted with 18 interviewees.
- 4.2 The overall details of the interviewees are provided below.

FIGURE 38: AGE OF INTERVIEWEES (FFM-BRAVO, AUGUST 2015)

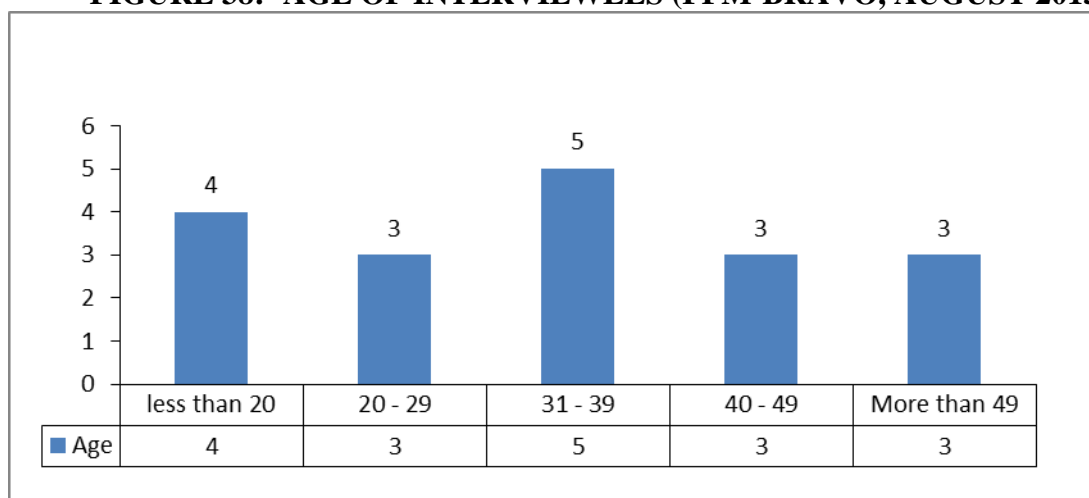


FIGURE 39: GENDER OF INTERVIEWEES (FFM-BRAVO, AUGUST 2015)

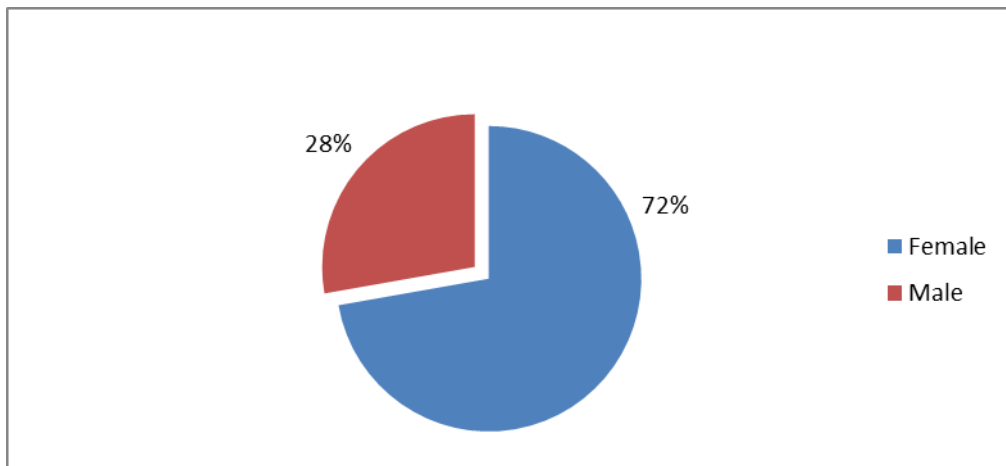
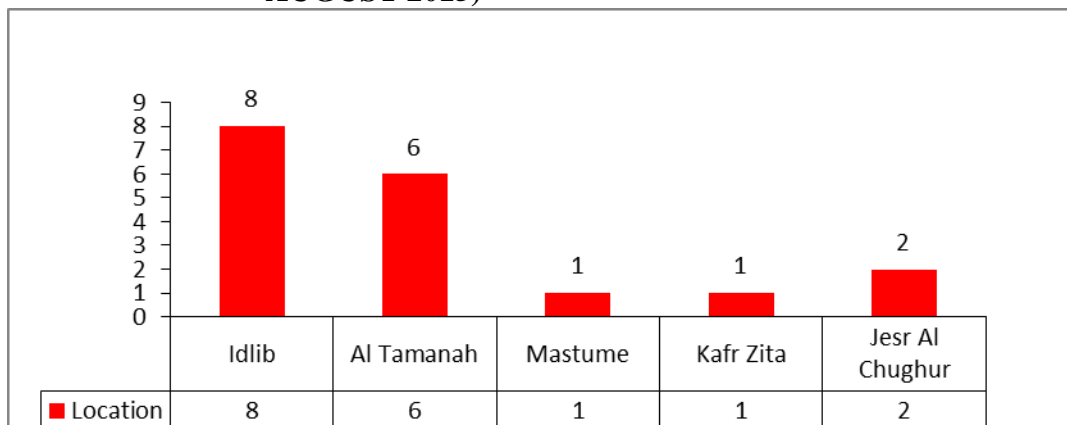


FIGURE 40: RESIDENCE AREA OF INTERVIEWEES (FFM-BRAVO, AUGUST 2015)



- 4.3 The overall summary of the relevant information is as follows.
- 4.4 Seventy-eight percent (14 of 18) of the interviewees reported having no awareness of any incident related to the suspected use of toxic chemicals as a weapon having occurred in their area of residence.
- 4.5 Twenty-two percent (4 interviewees) informed the FFM about suspected cases of chemical incidents. All reported cases of difficulty of breathing, coughing, and ophthalmic signs. However, one was geographically and chronologically outside the scope of the FFM mandate (Hama Governorate in 2014), two were chronologically outside the scope of the mandate (referring to incidents in 2014), and one, based on the interviewee's testimony, was deemed unlikely to be the result of the use of toxic chemicals as a weapon.
- 4.6 As mentioned, one of the interviewees was from the Hama Governorate and was not in the Idlib Governorate during the period in question. Therefore, the testimony of this interviewee was deemed to be irrelevant to this particular investigation. The statement of this interviewee indicated their having

witnessed an incident in Kafr Zita (Hama Governorate) in March or April 2014 or at the end of summer 2014, as described below.

- 4.7 Six more interviewees were from Al-Tamanah, Idlib Governorate. This location is approximately 55 km south of the area described where the alleged incidents were reported to have taken place by witnesses heard during the interviews conducted by FFM-Alpha in May and June 2015. Therefore, their testimony had little impact on the investigation of those particular incidents, as none of the six interviewed by FFM-Bravo in August 2015 were in that locale at the time. There were, however, alleged incidents in their area (Al-Tamanah) in April and May 2014, and in April and June 2015, which were reported in open sources. The alleged incidents in 2014 are outside the current mandate. Nonetheless, the six interviewees who volunteered information on the subject reported no knowledge of any chemical incidents. One reported having received warnings to evacuate due to impending chemical attack around April or May of 2014, but after returning home the next day, observed no evidence of a chemical attack.
- 4.8 The alleged incidents of April and June 2015 in Al-Tamanah, however, are within the mandate. None of these interviewees reported any information related to these alleged incidents, and none of those interviewed by FFM-Alpha were within 50 km of Al-Tamanah at that time. The team therefore has insufficient information to make an assessment of these alleged incidents.
- 4.9 Two of the interviewees were from the village of Jesr Al-Chughur. This location is approximately 40 km southwest of Idlib City, within the Idlib Governorate. They reported no knowledge of any of the alleged incidents described in the interviews conducted by FFM-Alpha in May and June 2015. Similarly, they did not offer any information with regard to potential incidents in Jesr Al-Chughur, alleged in open sources to have occurred in May 2015. Furthermore, none of those interviewed by FFM-Alpha were within 40 km of Jesr Al-Chughur at that time. The team therefore has insufficient information to make an assessment of the alleged incidents in Jesr Al-Chughur.
- 4.10 The 11 remaining interviewees came from areas that were between approximately 4.5 and 7 km from the areas of the nearest impacts reported during the interviews conducted by FFM-Alpha in May and June 2015. As such, their testimony was deemed potentially relevant to those incidents under the FFM-Alpha mandate and was further analysed. Out of these 11 interviewees:
 - (a) Eight (73%) reported no knowledge of any incident involving chemicals. However, one of these eight reported having received warnings to evacuate due to impending chemical attack around April of 2015, but after returning home three days later, observed no evidence of a chemical attack.
 - (b) One (9%) reported a suspected incident in Idlib City at approximately 12:00 on 28 March 2015, as described below. The incident was

determined by the team to be not likely involving the use of toxic chemicals as a weapon.

- (c) Two (18%) reported a suspected incident of the use of toxic chemicals as a weapon in Idlib in 2014, as described below. According to their testimony, these same two vacated Idlib City after 16 March 2015 and prior to the reported dates of the alleged incidents in Idlib City, so were not in the area at the time. The departure of these two interviewees reduces to nine the number of potential witnesses in the area of the reported incidents during the time period of concern.

- 4.11 The narratives given for each incident in the following paragraphs is derived from interviews.

Kafr Zita, spring or summer 2014

- 4.12 Armed men fired a mortar canon as a helicopter passed overhead. Shortly afterward, the interviewee and her family saw yellow and white smoke, experienced difficulty breathing, and smelled a bad odour that they had not experienced before. At hospital, they saw one casualty, a three-year-old girl exhibiting laboured breathing, secretions, and cyanosis. The interviewee described witnessing approximately one month later men in civilian clothes and full-face respirators releasing gas from cylinders shortly after hearing an announcement from a mosque minaret that a chemical attack was impending. Further, the interviewee describes being taken to a base and witnessing men filling cylinders with white powder. All of these incidents are outside the scope of the mandate, however.

Idlib City, 28 March 2015

- 4.13 The interviewee reported an attack involving a nearby explosion in their neighbourhood (Al-Thawra neighbourhood of Idlib City), estimated to be approximately 30 m from their home. The explosion reportedly resulted in structural damage and broken windows in all the buildings throughout the neighbourhood, and generated a large volume of red dust and an unpleasant odour. Immediately following exposure to the dust, the witness and their family members experienced choking, coughing, eye irritation, and dizziness. The witness was unable to associate the odour with any familiar odour. Further questioning indicated the colour of the dust to be closer to light orange and possibly similar to the local soil. Later during the interview, the witness indicated that they witnessed no incidents related to chemical attacks, but had observed reportedly strange behaviour from some neighbours on the day of the described incident, in the form of gathering for discussions. Further information that was given of a pre-existing prevalence of medical conditions within the family, including asthma among others, could indicate that the described symptoms were the result of a combination of the pre-existing medical conditions being affected by a high volume of dust and psychological trauma.

Idlib City, August 2014

- 4.14 Two interviewees reported that a projectile exploded in the Al-Amaliyeh neighbourhood of Idlib City, approximately 10 m outside the bedroom of the eldest daughter, who was most affected. Both interviewees described a powerful explosion that shook the house, followed by a bad odour which they could not associate with a familiar odour. They described symptoms of the eldest daughter including coughing, a feeling of suffocating, tearing and irritation of eyes, runny nose, drooling, and unconsciousness. She was treated by her parents (both medical/emergency response professionals) with resuscitation and a bronchodilator. Two other family members experienced moderate coughing and throat irritation. Three other family members present did not experience symptoms. Another daughter was wounded by shrapnel. The residence incurred significant physical damage.
- 4.15 The testimony indicates the possibility of a chemical incident. However, the incident described occurred between 8 and 20 August 2014, which is outside the scope of the mandate.

5. CONCLUSIONS AND RECOMMENDATIONS

- 5.1 Much of the methodology section describes the manner in which the investigation would have been carried out, had there been ideal circumstances in which to do so. The inability of the team to visit the scene due to significant security issues, however, created several deviations from the ideal. Thus, the team could neither identify their own witnesses nor take their own samples. Furthermore, the supportive value of correlating physical reality, such as visible infrastructure, original records, and impact sites with information supplied by interviewees was also not possible. The team therefore had to rely on open-source information, interviewees identified and supplied by other entities, samples (lacking full certainty of chain of custody) as made available by the interviewees, and limited medical records.
- 5.2 It was in this context that the team had to glean the most benefit from available sources and make an assessment of credibility.
- 5.3 Open-source media are by their very nature prone to the influences and motivations of their authors, owners, and sponsors. While it is recognised that some media sources may be more reliable than others, it can also not be discounted that their source of information may have their own motivation. Furthermore, it was not possible to ascertain how many separate independent sources there may have been for the numerous similar stories in the media. What was clear, however, was that from social media such as Twitter, Facebook, and YouTube through to major international news media, there were strong indications of events occurring in the Idlib Governorate that involved the use of chemicals as a weapon.
- 5.4 In the preparatory phase, through contact with various NGOs, the FFM was able to discuss events with individuals who not only had second-hand knowledge of events, but also some who claimed first-hand experience. While there was not the opportunity to interview these at the time, this lent sufficient credibility to media reports to warrant additional investigation by the FFM.
- 5.5 The team explored a variety of means by which additional information and evidence could be obtained. Due to the complexity of the situation in the Idlib Governorate it was not possible to engender an environment that would be permissive enough to allow even a small team to visit any of the locations. Further liaison with NGOs revealed that only one had the capability to facilitate the transportation of interviewees and samples to a mutually convenient location.
- 5.6 The interview process used free recall. Amongst the advantages of this process is that information has to come from the interviewees themselves. This is followed by questioning and focusing on layers of specific details, including context. It then becomes significantly more difficult for individuals to give a coached story, without evidence of coaching being very apparent. From a collective point of view, versions of the same events from different interviewees can be cross-checked against each other for broad consistency. It is worth recognising that recall of an event from different interviewees will

naturally contain variations and discrepancies, particularly given the time lag, unless the interviewees are coached to give an identical version of events. The FFM team has then to make that assessment as to whether these discrepancies amount to individually fabricated versions of events or are typical of the failings of human recall. Both interview teams included personnel with significant previous interview experience. Furthermore, the interview teams with a cross-functional skill set enabled a deeper assessment of information. Details could therefore be assessed by team members with expertise in particular areas and discussed together. Regular breaks in the interview process facilitated these discussions and enabled a targeted approach in the continuation of the interview.

- 5.7 The fact that testimony included that given by medical staff, who were located remotely from the incidents, placed a good degree of credibility on the medical signs and symptoms reported both by casualties and first responders. Such testimony could not determine which chemical may have been responsible. However, the signs and symptoms are consistent with the effects caused by chemicals, in addition to other potential causes, which primarily irritate tissue such as eyes, nose, throat, and lungs.
- 5.8 It can therefore be concluded that the evidence received throughout the interview process gave the team a reasonable degree of confidence that a chemical had affected people in various locations in the Idlib Governorate.
- 5.9 Interviewees confirmed the availability of samples and the CVDCS confirmed their receipt from the interviewees. The remnants of the alleged munitions are consistent with those shown in open-source media, depicted in electronic media received independently from NGOs, as well as the interviewees themselves.
- 5.10 The results from chemical analysis indicate the presence of:
 - (a) chemicals, expected to be present due to the constituents of the containers, for example iron (from the refrigerant container) and PET (polyethylene terephthalate, from the plastic containers);
 - (b) chemicals related to the presence of explosives; and
 - (c) unexpected chemicals, the logical presence of which could only be explained by their addition to the explosive device/explosive remnants.
- 5.11 The elements / chemical ions identified in category (c) above are manganese, potassium, chloride, and bromide.
- 5.12 The ratio of potassium to manganese, coupled to the purple-red colour referred to in open-source media and interviews, as well as visible in photographs and videos, is consistent with the presence of potassium permanganate, which is an oxidising agent.
- 5.13 In the raw material for the production of chlorine, bromide is an expected contaminant which is not always removed in the production process. This

bromine/bromide is often present in downstream products and therefore could be expected to be present, at significantly lower concentrations, whenever chlorine/chloride is detected. It is therefore reasonable to assume that if chloride is detected as being present, the presence of bromide may be linked to the chloride rather than other sources.

- 5.14 The volatility and reactivity of molecular chlorine (Cl_2) are such that unless the appropriate sampling and analytical equipment were used at the time of an incident, detection of Cl_2 is not possible some time later. The analyses of some of the samples indicated the presence of chloride at levels considerably higher than should be normally expected in such samples, unless added through the incorporation of a chlorine-containing chemical to the original material, or by contamination after the incident.
- 5.15 The container for R22 is designed such that its pressure rating and materials of construction are fit for purpose. The vapour pressure of R22 is similar enough to that of certain other industrial chemicals, inter alia chlorine, anhydrous hydrogen chloride, and anhydrous ammonia, such that the refilling of R22 containers with other chemicals for use in an improvised bomb would be feasible, recognising that such use would not need to meet the same stringent requirements for commercial use of these containers.
- 5.16 Taken purely at face value, the samples and their analysis indicate the presence of potassium permanganate and a chlorine/chloride-containing chemical. Unfortunately, the chain of custody for the samples reduced the value of samples as strong stand-alone evidence. The results therefore need to be seen in light of supporting other evidence, in particular supporting the testimony of interviewees.
- 5.17 Given the oxidising nature of potassium permanganate, it is conceivable that it might be used to oxidise a chlorine containing compound, resulting in the production of Cl_2 , thus giving rise to the 'bleach like' smell described by interviewees.
- 5.18 The description of the alleged chemical weapon and its deployment derives from several inputs, as previously described. The features of the improvised chemical bomb are consistent with its being designed for deployment from a height. As most incidents happened during darkness, it is not surprising that no interviewees claimed to have seen the means of deployment. The deformation of the remnants is consistent with mechanical impact and explosive rupture, rather than explosion causing deflagration. Witnesses also reported a lesser explosive sound than for other more conventional types of bombs. Moreover, casualties' signs and symptoms do not include physical injuries that would be expected from the deployment of an explosive device. The craters which have been claimed to have been caused by the device are also consistent with its being dropped from a height with lesser explosive power. It is therefore reasonable to assume that the devices were not designed to cause mechanical injury through explosive force but rather to rupture and release their contents.

- 5.19 In itself, no one source of information or evidence would lend particularly strong weighting as to whether there was an event that had used a toxic chemical as a weapon. However, taken in their entirety, sufficient facts were collected to conclude that incidents in the Syrian Arab Republic likely involved the use of a toxic chemical as a weapon. There is insufficient evidence to come to any firm conclusions as to the identification of the chemical, although there are factors indicating that the chemical probably contained the element chlorine.

Appendix 1

MANDATE OF THE OPCW FACT-FINDING MISSION

The following is a declassified version of the FFM team's mandate:

- To:** Phillips, Leonard Arthur, OPCW Fact-Finding Mission (FFM) Team Leader
- From:** The Director-General of the Organisation for the Prohibition of Chemical Weapons
- Subject:** Mandate for investigation of incidents of alleged use of toxic chemicals, particularly chlorine, as a weapon in Idlib Governorate, the Syrian Arab Republic from 16 March 2015 onwards as reported in the media and determined by the Director-General to provide a credible basis for investigation.

In accordance with preambular paragraph 8 and operative paragraphs 5 and 6 of OPCW Executive Council decision EC-M-48/DEC.1, dated 4 February 2015 and other relevant decisions of the Executive Council and in line with my authority to seek to uphold at all times the object and purpose of the Convention as reinforced by the United Nations Security Council resolutions 2118 (2013) and 2209 (2015), as applicable to the investigation referred to in the subject, I hereby mandate and instruct an inspection team under your leadership to conduct an investigation of incidents of alleged use of toxic chemicals, particularly chlorine, as a weapon, in accordance with the modalities specified below:

1. FFM activities to be conducted in: Country X and any other relevant locations,
2. Site for the FFM: Country X and, any other relevant locations, if deemed necessary by the Director-General.
3. Names of inspectors assigned to your team:
See Appendix 2 (names redacted)
4. The inspection equipment which the inspection team has been authorised to carry will be selected from the list of approved equipment (Ref. C-1/DEC.71). Any additional equipment which might be necessary will be notified in advance to the State Party.
5. The deployment and all movements of the FFM team while in-country will be fully coordinated with all relevant authorities. No deployment or movement shall take place without all necessary authorizations. No such authorization shall be provided unless all suitable conditions, in particular a safe and enabling environment exist for the OPCW team, including no crossing of confrontation lines. The FFM team shall ensure that their whereabouts will be

known at all times by designated personnel from the Operations Planning Branch.

6. FFM aims:

6.1 Gather facts regarding the incidents of alleged use of toxic chemicals, particularly chlorine, as a weapon, in Idlib Governorate, the Syrian Arab Republic, from 16 March 2015 onwards as reported in the media and determined by the Director-General to provide a credible basis for investigation, mindful that the task of the FFM does not include the question of attributing responsibility for the alleged use; and

6.2 Report to the Director-General upon conclusion of FFM activities.

7. Operational instructions:

7.1 Review and analyse all available information pertaining to reported incidents of alleged use of toxic chemicals, particularly chlorine, as a weapon;

7.2 Collect testimonies from persons alleged to have been affected by the use of toxic chemicals, particularly chlorine, as a weapon, including those who underwent treatment, eye witnesses of the alleged use of toxic chemicals, particularly chlorine, medical personnel and other persons who have been treated or come into contact with persons who may have been affected by the alleged use of toxic chemicals, particularly chlorine;

7.3 Where possible, and deemed necessary, carry out medical examinations, including autopsies, and collect biomedical samples of those alleged to have been affected;

7.4 If possible, visit the hospitals and other locations as deemed relevant to the conduct its investigations;

7.5 Examine and, if possible, collect copies of, the hospital records including patient registers, treatment records, and any other relevant records, as deemed necessary;

7.6 Examine, and, if possible, collect copies of any other documentation and records deemed necessary;

7.7 Take photographs and examine, and if possible collect copies of video and telephone records;

7.8 If possible, and deemed necessary, physically examine and take samples from remnants of cylinders, containers, etc., alleged to have been used during the incidents under investigation;

7.9 If possible, and deemed necessary, collect environmental samples at or from the alleged points of incidents and surrounding areas;

7.10 Cooperate fully with the relevant authorities with regard to all aspects of the Mission; and

7.11 All activities of the FFM will be undertaken in accordance with the relevant Secretariat procedures relating to the conduct of inspections during contingency operations, as applicable.

Appendix 2

FFM TEAM MEMBERS

Name	Role(s)	Speciality
Inspector 0	Team Leader	Chemical production technologist (CPT)
Inspector 1	Deputy Team Leader. Interview team 1 support and continuity. Interview team 3 point of contact. Sample handling.	Analytical chemist (AC)
Inspector 2	Interview team 1 point of contact.	CPT
Inspector 3	Interview team 1	Health and safety specialist (HSS)
Inspector 4	Interview team 1. Security liaison.	Chemical weapons/ munitions specialist (CWMS)
Inspector 5	Interview team 2 point of contract. Logistics, security liaison, training coordinator.	CWMS
Inspector 6	Interview team 2	CPT
Inspector 7	Interview team 2. Logistics	HSS
Inspector 8	Interview team 2 support and continuity. Interview team 3.	Medical doctor
Inspector 9	Logistics, communications, command post support. Replacement on Interview team 1.	CWMS
Inspector 10	Evidence handling, sample handling.	AC
Inspector 11	Evidence handling, command post support	CPT
Inspector 12	Security liaison, command post.	CWMS
Inspector 13	Based at OPCW Headquarters (HQ), general support function.	CPT
Interpreter 1	Interpretation	Interpreter
Interpreter 2	Interpretation	Interpreter
Mission Planner 1	HQ-based operational and planning support	Mission planning coordinator (MPC)

Appendix 3

TIMELINES

Dates (all 2015)	Activity	Location
23 March to 2 April	Team forming and building. Gathering information about the chemical incidents from open sources.	Headquarters (HQ)
3 April	First meeting with the CVDCS.	The Hague
7 to 8 April	Training session on interview techniques provided by the United Kingdom of Great Britain and Northern Ireland.	HQ
9 April	In house training session on how to deal with traumatised interviewees provided by the Health and Safety Branch (HSB).	HQ
10 to 13 April	First coordination meetings in Country X. Points of contact established with relevant authorities in Country X and several NGOs.	Country X
13 to 14 April	Training session on interview techniques provided by the United Kingdom of Great Britain and Northern Ireland	HQ
16 April	In-house training session on how to deal with traumatised interviewees provided by HSB.	HQ
17 April	Second meeting with the CVDCS. Request made for the names of injured persons, doctors, first responders, and witnesses willing to speak to the OPCW.	Brussels
19 to 24 April	Safe and Secure Approaches in Field Environments (SSAFE) training	Germany
20 April	Evidence management training provided by the Netherlands Forensic Institute (NFI).	HQ
29 and 30 April	Team received the list of names from the CVDCS. Selection of potential interviewees and communication to the CVDCS.	HQ
1 to 4 May	First interview	Country X
4 May	The list of interviewees' names handed over to the authorities of Country X.	HQ
4 to 8 May	In-house practical training on interview techniques	HQ
10 to 13 May	Second coordination meeting with the authorities of Country X.	Country X
14 May	The deployment plan given to relevant authorities and NGOs.	HQ
19 to 21 May	Main deployment. Set up of interview location and team office.	Country X

Dates (all 2015)	Activity	Location
22 May	Receipt of samples. Arrival of first batch of interviewees.	Country X
23 May to 5 June	Interviews	Country X
5 to 6 June	Equipment packing and return to HQ	Country X
7 to 14 June	Rest and recuperation. Administrative tasks, equipment return, evidence collation.	HQ
15 June to date	Team size reduction, interview transcription, evidence review, report writing.	HQ
21 to 24 July	Collection of second set of samples	Country X
4 to 7 August	Interviews carried out by Bravo	Syrian Arab Republic

Appendix 4

REFERENCE DOCUMENTATION

1.	QDOC/INS/SOP/IAU01	Standard Operating Procedure for Evidence Collection, Documentation, Chain-of-Custody and Preservation During an Investigation of Alleged Use of Chemical Weapons
2.	QDOC/INS/WI/IAU05	Work Instruction for Conducting Interviews During an Investigation of Alleged Use
3.	QDOC/INS/SOP/IAU02	Standard Operating Procedure Investigation of Alleged Use (IAU) Operations
4.	QDOC/INS/WI/IAU01	Work Instruction for Command Post Operations During an Investigation of Alleged Use of Chemical Weapons
5.	QDOC/INS/SOP/GG011	Standard Operating Procedure for Managing Inspection Laptops and Other Confidentiality Support Materials
6.	QDOC/LAB/SOP/OSA2	Standard Operating Procedure for Off-Site Analysis of Authentic Samples
7.	QDOC/LAB/WI/CS01	Work Instruction for Handling of Authentic Samples from Inspection Sites and Packing Off-Site Samples at the OPCW Laboratory
8.	QDOC/LAB/WI/CS03	Work Instruction for Documentation, Chain of Custody and Confidentiality for Handling Off-Site Samples at the OPCW Laboratory
9.	QDOC/LAB/WI/OSA3	Work Instruction for Chain of Custody and Documentation for OPCW Samples On-Site
10.	QDOC/LAB/WI/OSA4	Work Instruction for Packing of Off-Site Samples

Appendix 5

OPEN-SOURCE REFERENCES AND INFORMATION

Date of Incident	Location	Source/link(s)
16/03/2015	Qmenas	https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war
16/03/2015	Qmenas and Sarmin – 20:45	<p>https://youtu.be/f6qBHWgPf7Q, https://youtu.be/ZgWP_QprOP4, https://youtu.be/XAORzTza7rg, https://youtu.be/nQg1B0k5Zkk, https://youtu.be/JUSH7rHBQsc, https://youtu.be/yzGcHdR2AVs, https://youtu.be/j96W2l_oqgo, https://youtu.be/W8eZkU6jnTE, https://youtu.be/FAhzdWWKbHA, https://youtu.be/Zj2fgROPFJA, https://youtu.be/2m17JnGFYdc, https://youtu.be/6bTrpHYMEDY, https://youtu.be/ujb9ROoQaZY, https://youtu.be/ovPKtOjOx7g, https://youtu.be/Gx2h3_jXGzc, https://youtu.be/MmNBLUtP3hw, https://youtu.be/Vc9cuH1icHo, https://youtu.be/SMVkfIIY5II, https://youtu.be/oZoAwJUyqTY, https://youtu.be/gPa_6CoYD_o, https://youtu.be/ja_Osq_RTqU, https://youtu.be/JIIBRb2aFzo, https://youtu.be/4Kg4qSo40S0, https://youtu.be/m_zeRoX_L7s, https://youtu.be/21K2g_LkSts, https://youtu.be/qnp00TocRSY, https://youtu.be/nvwonr_QqGo, https://youtu.be/N84aC1z0bjw, https://youtu.be/k7TtwicGkTdo, https://youtu.be/J6c6A1Qnbbw, https://twitter.com/ughxughx111/status/577548098806915072, https://twitter.com/sweet_hart1165/status/577549747143196672, https://twitter.com/aboyosha3homs/status/577550356374159360, https://twitter.com/anastracey/status/577552436975501312, https://twitter.com/omar_3lwan/status/577552527912267776, https://twitter.com/hassanalhesen/status/577553118914863104, https://twitter.com/SarmeenCoordina/status/577556117657661440, https://twitter.com/anasanas84/status/577556934624210944, https://twitter.com/news76696251/status/577604460974907392</p>
16/03/2015	Qmenas and Sarmin – 22:15	<p>https://youtu.be/f6qBHWgPf7Q, https://youtu.be/ZgWP_QprOP4, https://youtu.be/XAORzTza7rg, https://youtu.be/nQg1B0k5Zkk, https://youtu.be/JUSH7rHBQsc, https://youtu.be/yzGcHdR2AVs, https://youtu.be/j96W2l_oqgo, https://youtu.be/W8eZkU6jnTE, https://youtu.be/FAhzdWWKbHA, https://youtu.be/Zj2fgROPFJA, https://youtu.be/2m17JnGFYdc, https://youtu.be/6bTrpHYMEDY, https://youtu.be/ujb9ROoQaZY, https://youtu.be/ovPKtOjOx7g, https://youtu.be/Gx2h3_jXGzc, https://youtu.be/MmNBLUtP3hw, https://youtu.be/Vc9cuH1icHo, https://youtu.be/SMVkfIIY5II, https://youtu.be/oZoAwJUyqTY, https://youtu.be/gPa_6CoYD_o, https://youtu.be/ja_Osq_RTqU, https://youtu.be/JIIBRb2aFzo, https://youtu.be/4Kg4qSo40S0, https://youtu.be/m_zeRoX_L7s, https://youtu.be/21K2g_LkSts, https://youtu.be/qnp00TocRSY, https://youtu.be/nvwonr_QqGo, https://youtu.be/N84aC1z0bjw, https://youtu.be/k7TtwicGkTdo, https://youtu.be/J6c6A1Qnbbw, https://twitter.com/ughxughx111/status/577548098806915072, https://twitter.com/sweet_hart1165/status/577549747143196672, https://twitter.com/aboyosha3homs/status/577550356374159360, https://twitter.com/anastracey/status/577552436975501312, https://twitter.com/omar_3lwan/status/577552527912267776, https://twitter.com/hassanalhesen/status/577553118914863104, https://twitter.com/SarmeenCoordina/status/577556117657661440, https://twitter.com/anasanas84/status/577556934624210944, https://twitter.com/news76696251/status/577604460974907392 https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war</p>

Date of Incident	Location	Source/link(s)
23/03/2015	Qmenas	https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/233/attachments/original/1429904920/2015.04.24_SNC_2139_letter_-_Qatar.pdf?1429904920
23/03/2015	Binnish	https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war
23/03/2015	Sarmin	https://twitter.com/bellall0088/status/579797897304281090 , https://twitter.com/opaidaaa/status/579797943991066626 , https://twitter.com/binnishFree2012/status/579798112887291904 , https://twitter.com/SarmeenCoordina/status/579800424447909888 , https://www.facebook.com/photo.php?fbid=464014523746647 , https://twitter.com/Syria_Breaking/status/579804520529694720 , http://www.youtube.com/watch?v=jS90Di0jOk4 , http://www.youtube.com/watch?v=g0lbjiVBOw , http://www.youtube.com/watch?v=1ebkWL6RMCQ , http://www.youtube.com/watch?v=cqISzgLRIO , http://www.youtube.com/watch?v=89MqnbBGNy4
24/03/2015	Binnish	https://twitter.com/alasiAgency/status/580397065659924480 , https://www.facebook.com/press.siraj/posts/672579012868917 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/233/attachments/original/1429904920/2015.04.24_SNC_2139_letter_-_Qatar.pdf?1429904920 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/233/attachments/original/1429904920/2015.04.24_SNC_2139_letter_-_Qatar.pdf?1429904920 , https://twitter.com/tajhoran1/status/580417521926451200 , https://twitter.com/thuwwar/status/580421626199732226 , https://www.facebook.com/binnish.freemen.sy/posts/715904655197889 , https://youtu.be/WnT4oxdE1ZU , https://youtu.be/-IDI7tNgiVE https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war
24/03/2015	Qmenas	https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war
25/03/2015	Sarmin	https://www.facebook.com/binnish.today/posts/455588234604519 , https://twitter.com/khaledkhalaf87/status/580882316412751872 , https://twitter.com/shaamnews/status/580887031368290305 , https://youtu.be/kTL7c4AsrJQ , https://twitter.com/gazaelsyria111/status/580991276679479296 , http://www.youtube.com/watch?v=T8ZwykZG-U0 , http://www.youtube.com/watch?v=sdbWff2__nk , http://www.youtube.com/watch?v=66JEoYI7pTc , http://www.youtube.com/watch?v=6-qRi69NDcU , https://www.facebook.com/permalink.php?story_fbid=749176561848069&id=469192429846485
26/03/2015	Sarmin	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf , https://twitter.com/sahabaturiah/status/581296538216845312 , http://www.mei.edu/content/article/atrocities-syria-who-will-be-left-speak-me
29/03/2015	Idlib	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf

Date of Incident	Location	Source/link(s)
30/03/2015	Idlib, Mehrab round-about & Matahen	https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/233/attachments/original/1429904920/2015.04.24_SNC_2139_letter_-_Qatar.pdf?1429904920
31/03/2015	Idlib	https://twitter.com/abunaeem711/status/582868192969781248 , https://twitter.com/anasanas84/status/582868731140956162 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/233/attachments/original/1429904920/2015.04.24_SNC_2139_letter_-_Qatar.pdf?1429904920 , https://twitter.com/bathn_allaah/status/582872952749707265 , https://twitter.com/DinSyr/status/582874307509886976 , https://www.facebook.com/3mar.shamali/posts/1614794892070367 , https://youtu.be/HI56SVU_ph8 , http://www.youtube.com/watch?v=ww6uEez7b8s , http://www.youtube.com/watch?v=P4luSoQLpsw ,
10/04/2015	Al-Tamanah	https://twitter.com/Step_Agency/status/586509472455090177 , https://twitter.com/mohamadsalomala/status/586515905552715777 , http://www.qasionnews.com/ar/node/26371%23sthash.bVZNRWEf.dpbs , https://twitter.com/alxceszorba/status/586524484678615040 , http://www.youtube.com/watch?v=RxF0JBu1ie8 , http://www.youtube.com/watch?v=2dmb7Bo1iyM , http://www.youtube.com/watch?v=OFjOG4P9oJo , http://www.youtube.com/watch?v=Cb2TfJesDM0 , http://www.youtube.com/watch?v=PbckiaHbpk https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war
16/04/2015	Idlib (Al Dbeyt area)	https://twitter.com/_looaee/status/588792040374329344 , https://twitter.com/AmmaRooV_11/status/588793074454757376 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146 , http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf , https://twitter.com/ameeralhalabi/status/588793306684981251 , https://www.facebook.com/permalink.php?story_fbid=454989451331265&id=100004606429043 , https://twitter.com/anasanas84/status/588795732020330496 , https://twitter.com/WalidKilani888/status/588795944872898561 , https://twitter.com/Mohamed_sbeh/status/588796536907296770 , https://twitter.com/tahaasi1/status/58879666590978048 , https://www.facebook.com/aboo.kazem.9/posts/491692234311443 , https://twitter.com/abaadnan2/status/588800979866427392 , https://twitter.com/salqin/status/588801047944155136 , https://www.facebook.com/Banias.M.O1/posts/842243752508452 , https://twitter.com/aboalbraaalarab/status/588805461140447232 , https://www.facebook.com/SRGC.Mediaa/posts/949529428414129 , https://twitter.com/SRGCCommission/status/588810640648699904 , https://twitter.com/SYR_REV_NEWS/status/588811629409669121 , https://twitter.com/HalabTodayTV/status/588813443785961475 , http://din-sy.net/ar/Media/Subjects16221/ , https://twitter.com/hadialbahra/status/588823928283537410 , https://twitter.com/radwan0001/status/588835215176572929 , http://www.youtube.com/watch?v=8HztVAfSyys , http://www.youtube.com/watch?v=y4Dt95Tv7v4 , http://www.youtube.com/watch?v=PVpoTbOptgQ , http://www.youtube.com/watch?v=wMfpJpvhnX0 ,

Date of Incident	Location	Source/link(s)
		http://www.youtube.com/watch?v=GN7aTPu6eJw , http://www.youtube.com/watch?v=yJJUMofu4Vo
16/04/2015	Kurin	https://twitter.com/paradoxy13/status/588829707161960449 , https://d3n8a8pro7vhm.cloudfront.net/etilaf/pages/233/attachments/original/1429904920/2015.04.24_SNC_2139_letter_-_Qatar.pdf?1429904920 , https://twitter.com/search?q=korin%20chlorine&src=typd http://www.worldbulletin.net/haberler/158019/assad-regime-drops-chemical-barrel-bombs-on-idlib?utm_medium=twitter&utm_source=twitterfeed
16/04/2015	Sarmin	http://www.mei.edu/content/article/atrocities-syria-who-will-be-left-speak-me , https://d3n8a8pro7vhm.cloudfront.net/etilaf/pages/233/attachments/original/1429904920/2015.04.24_SNC_2139_letter_-_Qatar.pdf?1429904920
17/04/2015	Idlib, Tamanah, Kafr Najd	http://en.etilaf.org/date/2015/4/17.html?catid=16
25/04/2015	Nayrab	https://twitter.com/SarmeenCoordina/status/591754319260721153 , https://twitter.com/FreeSyrianTaem/status/591764896980799488 , https://twitter.com/asaadalasaad191/status/591892289842188290 , https://twitter.com/Step_Agency/status/591902653963247616 , https://twitter.com/mostafasy636/status/591853893694296064 , https://www.youtube.com/watch?v=_lfs5GkagQA
26/04/2015	Jabal Zawiyeh	http://www.middleeasteye.net/news/syrian-rebel-seize-military-base-idlib-province-2134817759
26/04/2015	Kafr Uwayd	https://twitter.com/m3tz_39/status/592412137848381441 , https://twitter.com/m3tz_39/status/592413029418934272 , https://twitter.com/a7madati9/status/592413092824354817 , https://twitter.com/yamama_sh22/status/592413458181816320 , https://twitter.com/alidddd99/status/592414486813876224 , https://twitter.com/abooslah/status/592415469388353536 , https://twitter.com/mohamadsalomala/status/592415513994784768 , https://twitter.com/aboalaa_ahmadxd/status/592417771713142784 , https://twitter.com/shaamnews/status/592417717526929409 , http://din-sy.net/ar/Media/Subjects16997/ , https://twitter.com/SyrianArwad/status/592418923976462336 , https://twitter.com/asimzedan/status/592432005956112384/photo/1 , https://www.facebook.com/permalink.php?story_fbid=765316066900785&id=469192429846485 , https://www.youtube.com/watch?v=A2GNP5n4gzY , https://www.youtube.com/watch?v=BmNOwUxP8Wk , http://www.youtube.com/watch?v=hpLYUTNVDLQ , https://www.youtube.com/watch?v=fhITM_56tC0 https://www.facebook.com/permalink.php?story_fbid=847670258638283&id=844879298917379 http://www.gettyimages.nl/detail/video/syrians-including-children-receive-treatment-at-a-local-nieuwsfootage/471545080

Date of Incident	Location	Source/link(s)
		https://twitter.com/search?q=%22kafr%20owaid%22%20since%3A2015 04 26%20until%3A2015 04 27&src=typd
26/04/2015	Nayrab	https://twitter.com/m_aboalyman/status/592435256973721600 , https://twitter.com/FreeSrmeen/status/592436912725569536 , http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf , https://twitter.com/ughxughx111/status/592444596883423232 , https://twitter.com/abooslah/status/592462672379179008 , https://www.youtube.com/watch?v=c5GrGcg8N7c , https://www.facebook.com/permalink.php?story_fbid=368351930038543&id=232634920276912
27/04/2015	An Nayrab	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf
28/04/2015	Kansafrah and kurasa'ah (Qursa'a)	https://twitter.com/aljisrtv/status/593065386163249153 , https://twitter.com/SyrianArwad/status/593073217109159938 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146 , https://www.facebook.com/SASNEWSAGENCY/photos/a.733987789978579.1073741828.731915533519138/964651626912193/?type=1&permPage=1 , https://www.facebook.com/photo.php?fbid=836813786405330 , https://twitter.com/Ayavetch/status/593072355737481218/photo/1 , http://www.youtube.com/watch?v=K7Yf0n3wNnY , https://www.facebook.com/permalink.php?story_fbid=766305273468531&id=469192429846485 , http://www.youtube.com/watch?v=oqQVBfAOkwM
29/04/2015	Saraqeb	https://twitter.com/ahmadokla94/status/593405675415416832 , https://www.facebook.com/photo.php?fbid=957904474243291 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146 , https://twitter.com/alEtihad_Press/status/593410465906176000 , https://www.facebook.com/photo.php?fbid=352535254942895 , https://twitter.com/zyadalfares/status/593421993732612096 , https://www.facebook.com/photo.php?fbid=371813673003469 , http://www.youtube.com/watch?v=CUVrIUeztQQ , http://www.youtube.com/watch?v=sPkJXt81gK8
01/05/2015	Qulaydin Village, Ghab plain	https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146
01/05/2015	Saraqeb	http://www.ibtimes.co.uk/syria-assad-regime-accused-chlorine-gas-attack-idib-1499463 , https://twitter.com/snhr/status/594362194663464960 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146 , http://www.aljazeera.com/news/2015/05/fresh-claims-chlorine-gas-attacks-syria-150502235313185.html
02/05/2015	Nayrab	https://twitter.com/Ahmedbakour/status/594266428708134913 , https://twitter.com/marbaleet/status/594266734581932032 , https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146 , https://www.hrw.org/news/2015/06/03/syria-new-chemical-attacks-idlib , https://twitter.com/811Syria/status/594268952504696833 , https://twitter.com/m_aboalyman/status/594278996243800064 ,

Date of Incident	Location	Source/link(s)
		<p>https://twitter.com/a243681bd8b24a6/status/594286189819129856, https://www.facebook.com/AlmshfyAlmydanyFyMdyntSrmyn/posts/766389830149251, https://www.facebook.com/photo.php?fbid=588685461271428&set=a.117169015089744.18522.100003899395594&type=1&permPage=1, https://www.facebook.com/1641082869457113/photos/a.1644272782471455.1073741829.1641082869457113/1656146387950761/?type=1&permPage=1, https://twitter.com/syriia24/status/594392541077839872/photo/1, https://twitter.com/khaha81/status/594392983165865984, https://www.facebook.com/AlmshfyAlmydanyFyMdyntSrmyn/photos/a.394312727356965.1073741828.394196807368557/766617340126500/?type=1, https://twitter.com/mnaw7/status/594551673755832320/photo/1, http://www.youtube.com/watch?v=IKITTE7_TR8, http://www.youtube.com/watch?v=kjwkiWxQg4o, http://www.youtube.com/watch?v=Ahl-eHebnyk, http://www.youtube.com/watch?v=nGTP9_sPYHQ http://www.youtube.com/watch?v=17SbpDo4jvc</p>
02/05/2015	Saraqeb	<p>https://twitter.com/811Syria/status/594284771120914433, https://twitter.com/ughxughx111/status/594293131505487872, http://www.hrw.org/news/2015/06/03/syria-new-chemical-attacks-idlib, https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146,https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146 https://twitter.com/FreeSrmeen/status/594294386780930048, https://twitter.com/m_aboalyman/status/594295177478610948, https://twitter.com/zyadalfares/status/594297270549504000, https://twitter.com/ughxughx111/status/594305097477267456, https://twitter.com/asimzedan/status/594309601446731776/photo/1, https://twitter.com/asimzedan/status/594310099650351105/photo/1, https://twitter.com/SyrianSmurf/status/594314700361457665, https://twitter.com/wassem19772000/status/594332276055498753, https://twitter.com/smatel/status/594339464354373632, https://www.facebook.com/photo.php?fbid=653833924750746, https://twitter.com/ananas84/status/594395930641694720, https://youtu.be/PI8INppOSM4, https://youtu.be/Qbo_8-qypP0, https://youtu.be/x9fTFqWS9f8, https://youtu.be/HOw7bxV1Xhw, https://youtu.be/FufDVwORaO4, https://youtu.be/f3Euba8FAWg, https://youtu.be/SSosJv8Gp0U, https://youtu.be/pqHMaR3_Jel, https://youtu.be/wrrXyhkLctk, https://youtu.be/KGTLsvy6UPc, https://youtu.be/MRkOTRM1Lg8 https://youtu.be/1FKwhoQxysY https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war</p>
03/05/2015	Kan safra	<p>http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf</p>
03/05/2015	Ibleen	<p>http://english.alarabiya.net/en/News/middle_east/2015/05/14/White_House_says_concerned_about_Syria_chemical_weapons_allegations.html, https://d3n8a8pro7vhmx.cloudfront.net/etilaf/pages/235/attachments/original/1431012146/2015.5.5_SNC_Syria_CW_letter_-_UK.pdf?1431012146</p>
03/05/2015	Jabal az	<p>https://instagram.com/p/2ODf7TjF9e/, http://www.youtube.com/watch?v=MJsxNxpPyQo, http://www.youtube.com/watch?v=WPeesAPSAM</p>

Date of Incident	Location	Source/link(s)
	Zawiyan	http://www.youtube.com/watch?v=2kazwCWuEpU http://www.youtube.com/watch?v=oBV8JOZRXXU http://www.youtube.com/watch?v=Mxjdh45O_yY http://www.youtube.com/watch?v=eCxhJhtiAGM https://twitter.com/wassem19772000/status/594824525214265344 https://twitter.com/ammr_alabdo/status/594824861169627138 https://twitter.com/ammr_alabdo/status/594830782893535232 https://twitter.com/hassan_adlib/status/594830984425541635 https://twitter.com/Step_Agency/status/594831840780910592 https://twitter.com/mhamad_hamod/status/594832257283727360 https://twitter.com/SMARTNewsAgency/status/594833059993628672 https://twitter.com/ahmadokla94/status/594835890129805313 https://www.facebook.com/photo.php?fbid=486986388120776 http://eldorar.com/node/75628 https://twitter.com/syrianman85/status/594841390237888512/photo/1 https://twitter.com/MasarPressNet/status/594845249643610112 https://www.facebook.com/ArihaTodayNews/photos/a.1607046429508675.1073741828.1606743406205644/1623842261162425/?type=1&permPage=1 https://www.facebook.com/ArihaTodayNews/posts/1623842367829081 https://twitter.com/asimzedan/status/594857005514412033/photo/1 https://twitter.com/HadiAlabdallah/status/594858297557135360/photo/1 https://twitter.com/HadiAlabdallah/status/594860194120728576/photo/1 http://slnews.co/?p=22844 https://twitter.com/HadiAlabdallah/status/594861717567512576/photo/1 https://youtu.be/CILRhsiGTKY https://youtu.be/MJsxNxpPyQo https://youtu.be/n_3-NMpenys https://www.facebook.com/ArihaTodayNews/photos/a.1607046429508675.1073741828.1606743406205644/1623973694482615/?type=1
03/05/2015	Juzif	http://english.aawsat.com/2015/05/article55343347/syrian-activists-report-new-chlorine-attacks-in-idlib
04/05/2015	Kansafrah	http://www.la-croix.com/Actualite/Monde/Affaibli-le-regime-syrien-multiplie-les-attaques-au-chlore-2015-05-05-1309422 https://www.google.nl/maps/place/Kansafra,+Syria/@35.6605554,36.4752994,15z/data=!3m1!4b1!4m2!3m1!1s0x15245a63e8e13a45:0xe6b22342480b5694
06/05/2015	Al Bashiria	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf

Date of Incident	Location	Source/link(s)
06/05/2015	Jisr al Shughur	https://www.facebook.com/Jisralshughour/posts/824287530960090 https://www.facebook.com/permalink.php?story_fbid=770961536336238&id=469192429846485 http://syrianpc.com/2015/05/07/%D8%A8%D8%A7%D9%84%D8%B5%D9%88%D8%B1-%D8%B4%D9%87%D9%8A%D8%AF-%D9%88%D8%A3%D9%83%D8%AB%D8%B1-%D9%85%D9%86-50-%D8%A5%D8%B5%D8%A7%D8%A8%D8%A9-%D8%A8%D8%A7%D9%84%D8%BA%D8%A7%D8%B2%D8%A7%D8%AA-%D8%A7/ , https://twitter.com/skoraham/status/596087800010645505 , https://twitter.com/abohamzaislam/status/596088252655915008 , https://twitter.com/jesrNEWS/status/596091195450728449 , https://twitter.com/0000mmmm1/status/596220856725934080 , https://twitter.com/alEtihad_Press/status/596229951638077440
06/05/2015	Kafr Batikh	https://www.facebook.com/permalink.php?story_fbid=770832469682478&id=469192429846485 , https://youtu.be/p61MxkAkR8w , https://twitter.com/khaledkhalaf87/status/59607684549891584 , https://twitter.com/abokazemm1/status/596081491161063425 , https://twitter.com/zyadalfares/status/596082873469374467 , https://twitter.com/811Syria/status/596083197433098240 , https://www.facebook.com/1SyriaNewsAgency/posts/399141236940813 , http://smartnews-agency.com/news/51179?utm_source=dlvr.it&utm_medium=twitter&utm_campaign=smartnewsagency ,
07/05/2015	Janouidieh	http://www.haaretz.com/news/middle-east/middle-east-updates/1.655537 , http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf http://www.theguardian.com/world/2015/may/08/new-suspected-chemical-attacks-reported-in-syria-dozens-injured http://english.alarabiya.net/en/News/middle-east/2015/05/08/Syrian-activists-report-new-chlorine-attacks-in-Idlib.html http://bigstory.ap.org/article/c2aee8cea6d1424dbe03dd6efc93960e/syrian-troops-hezbollah-allies-take-more-areas-near-lebanon
07/05/2015	Kafr Batikh	http://www.haaretz.com/news/middle-east/middle-east-updates/1.655537 , http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf http://www.theguardian.com/world/2015/may/08/new-suspected-chemical-attacks-reported-in-syria-dozens-injured http://english.alarabiya.net/en/News/middle-east/2015/05/08/Syrian-activists-report-new-chlorine-attacks-in-Idlib.html http://bigstory.ap.org/article/c2aee8cea6d1424dbe03dd6efc93960e/syrian-troops-hezbollah-allies-take-more-areas-near-lebanon
07/05/2015	Hizareen	https://twitter.com/search?q=hizareen&src=typd
07/05/2015	Kansafrah	http://www.ibtimes.co.uk/syria-assad-chlorine-attack-reported-idlib-province-rebels-gain-ground-1500358 http://www.independent.co.uk/news/world/middle-east/syria-chlorine-attacks-dozens-reported-suffocated-as-regime-drops-chemical-barrel-bombs-on-idlib-10234798.html , https://twitter.com/salqin/status/596292316664635393 , https://youtube.com/watch?v=E12spT_iM58 ,

Date of Incident	Location	Source/link(s)
		https://www.facebook.com/photo.php?fbid=1104202679596828 https://twitter.com/hassan_adlib/status/596259500463493121/photo/1, https://twitter.com/kefranbil/status/596231204233314304, https://twitter.com/hassan_adlib/status/596231587525570561, https://twitter.com/abooslah/status/596239195817017344, https://twitter.com/AbdulRazzAlkhal/status/596242059876524032, https://twitter.com/SharefSarmada/status/596300146423570432/photo/1
10/05/2015	Al Bashariyah	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf
14/05/2015	Jisr al Shughur	https://www.youtube.com/watch?v=VE0G1Kesc7E https://www.google.nl/maps/place/Jisr+Ash-Shugur,+Syri%C3%AB/@35.8150919,36.3123962,15z/data=!4m2!3m1!1s0x1524496330940beb:0xba47f0808c645a96
15/05/2015	Mashmashan	http://www.youtube.com/watch?v=u4nADXs6mNQ, http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf https://www.facebook.com/photo.php?fbid=437599189747412 https://twitter.com/jesrNEWS/status/599123585039368192 https://www.facebook.com/Jisralshughour2/posts/452114968297826 https://www.facebook.com/1SyriaNewsAgency/posts/402171506637786 https://twitter.com/yamama_sh22/status/599158576637026304 https://www.facebook.com/video.php?v=1143688635648573
16/05/2015	Sarmin	https://www.facebook.com/srmeen11/posts/1655765634639756, https://youtu.be/vFj-gtbPBqo, http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf https://www.facebook.com/srmeen11/posts/1655753824640937, https://www.facebook.com/Radio.Alkul/posts/862972507115119, https://twitter.com/abo47130008/status/599485630372978689, https://www.facebook.com/srmeen11/posts/1655896734626646
17/05/2015	Al Kostan, Jisr al Shughur	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf
17/05/2015	Mashmashan	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf

Date of Incident	Location	Source/link(s)
17/05/2015	Jisr al Shughur	https://twitter.com/radwanalbasha/status/599732752569618433 , https://twitter.com/akhbar/status/599735332872019970 , https://www.facebook.com/permalink.php?story_fbid=997445036932268&id=867873686556071 , https://www.facebook.com/permalink.php?story_fbid=774683829297342&id=469192429846485 , https://www.facebook.com/ENN16/posts/335869946623231 , https://twitter.com/jesrNEWS/status/600200294937403392 ,
18/05/2015	Jisr al Shughur	http://syrianobserver.com/EN/News/29184/Chlorine_Attack_Jisr_Shughour_Kills_Children_Monitoring_Group
19/05/2015	Idlib City	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf
19/05/2015	Jisr al Shughur, Mashmashan	https://www.facebook.com/hashemalabdullah89/posts/618392771629348 , http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf https://twitter.com/mlak012301/status/600553347427344384/photo/1 , https://www.facebook.com/permalink.php?story_fbid=775607335871658&id=469192429846485 , http://www.youtube.com/watch?v=yiqLLmuAA6Y , http://www.youtube.com/watch?v=UaLma_hDtI0 , http://www.youtube.com/watch?v=jYTzvAE8-QQ
19/05/2015	Al bashiria	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf
02/06/2015	Binnish	https://twitter.com/Louangie/status/605942256290258946
07/06/2015	Al Kastan	https://malcolmxtrreme.wordpress.com/2015/06/07/672015/ (4th para), http://www.hrw.org/news/2015/06/03/syria-new-chemical-attacks-idlib , https://www.facebook.com/photo.php?fbid=1163419717018496 , http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf http://sn4hr.org/blog/2015/06/07/7744/
08/06/2015	Saraqeb	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf , https://twitter.com/Paradoxy13/status/608154356249161728
08/06/2015	Al Janoudiah	http://www.la-croix.com/Actualite/Monde/Syrie-pres-de-50-civils-tues-dans-des-raids-du-regime-sur-un-village-d-Idleb-2015-06-08-1320977 , https://twitter.com/Paradoxy13/status/607813476090806272 http://www.lorientlejour.com/article/928701/une-famille-tuee-dans-un-raid-de-la-coalition-sur-alep.html https://www.youtube.com/watch?t=12&v=7SNB3hjHyvl https://www.facebook.com/ANAPRESS.EN/photos/a.632910876784282.1073741828.625139430894760/870264986382202/?type=1 https://www.google.nl/maps/place/Al+Janoudiyah,+Syria/@35.8820778,36.2819625,15z/data=!3m1!4b1!4m2!3m1!1s0x15244ab6b61fed37:0x34cf4ed740c21d36
08/06/2015	Kansafrah	https://www.youtube.com/watch?t=1&v=QG_r8yylMuE , https://twitter.com/Paradoxy13/status/607813476090806272 http://din-sy.net/ar/Documentary/Subjects20081/

Date of Incident	Location	Source/link(s)
09/06/2015	Bashiriyah and Safahun	https://twitter.com/tarikabdalahak/status/608167250311409665/photo/1 , http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf https://twitter.com/thesyrianmirror/status/608195724040392704/photo/1 https://twitter.com/ramiswidfree/status/608078030112702464 , https://twitter.com/SharefSarmada/status/608090572092506112 , https://twitter.com/MasarPressNet/status/608173008851726336 , https://twitter.com/AboD7ak/status/608193197097951232 https://www.facebook.com/permalink.php?story_fbid=1626133587629246&id=1387572298152044
09/06/2015	Saraqeb	http://docs.house.gov/meetings/FA/FA00/20150617/103638/HHRG-114-FA00-Wstate-TennariM-20150617.pdf
17/06/2015	Al-Tamanah	https://www.youtube.com/watch?v=oql6bxoJTCo
28/08/2015	Jisr al Shughur	https://twitter.com/Bivi_17/status/638790571398688768
29/08/2015	Al-Tamanah	https://www.youtube.com/watch?v=udIW6i0f-S0

Note:

Open-source information is an evolving process, therefore the list of links may no longer be valid since they were originally identified. This list is also not an exhaustive list of links to specific incidents, but rather an indication of the information that might be available.

Appendix 6

EVIDENCE FOUND AND COLLECTED BY THE INVESTIGATION TEAM

6.1 Summary of Physical Evidence

Entry number	Item description	Evidence reference number	Where the evidence was found/collected	Date and time handed over	By whom was found/collected
1.	µSD 64 GB Transcend - Folders and files	2015-05-25-1021-03	Handed over by 1021	25/05/2015 17:45	Interview Team 1
2.	Drawing, impact point of barrel bomb	2015-05-25-1018-03	Drawn by 1018	25/05/2015 11:26	Interview Team 1
3.	Drawing, family house in relation to events on 16/03/15	2015-05-25-1018-04	Drawn by 1018	25/05/2015	Interview Team 1
4.	µSD 64 GB Transcend - Images Qmenas 16/03/15	2015-05-25-1011-04	Handed over by 1011	24/05/2015 13:50	Interview Team 1
5.	µSD 64 GB Transcend - Images, videos Sarmin	2015-05-29-1012-03	Copied from 1012's USB stick	29/05/2015 12:51	Interview Team 1
6.	µSD 64 GB Transcend - Attack on Qmenas filmed by mobile phone	2015-05-29-1016-03	Copied from 1016's mobile phone	29/05/2015 15:46	Interview Team 1
7.	Map Sarmin, A3, marking of house location	2015-05-03-1000-03	Marked by 1000	03/05/2015 16:54	Interview Team 1

Entry number	Item description	Evidence reference number	Where the evidence was found/collected	Date and time handed over	By whom was found/collected
8.	μSD S/N TP2K113080026 - Videos, photos, PDFs, Word files	2015-05-03-1000-04	Handed over by 1000	03/05/2015 17:35	Interview Team 1
9.	μSD S/N TM6KA4B124A11 - Images, files	2015-06-05-1024-03	Handed over by 1024	05/06/2015 13:10	Interview Team 1
10.	Drawing	2015-05-24-1017-01	Drawn by 1017	24/05/2015 16:27	Interview Team 2
11.	SD card with folder "Chlorine" 25 pdf files, Idlib Province	2015-05-24-1007-03	Handed over by 1007	24/05/2015 09:39	Interview Team 2
12.	USB stick with Word files, Idlib Province	2015-05-23-1007-01	Handed over by 1007	23/05/2015 18:22	Interview Team 2
13.	Drawing, description of barrel bomb	2015-05-25-1014-03	Drawn by 1014	25/05/2015 10:45	Interview Team 2
14.	Drawing, villages with helicopter flight path	2015-05-25-1023-01	Drawn by 1023	25/05/2015	Interview Team 2
15.	Drawing, layout home, spotter room	2015-05-25-1023-02	Drawn by 1023	25/05/2015	Interview Team 2

Entry number	Item description	Evidence reference number	Where the evidence was found/collected	Date and time handed over	By whom was found/collected
16.	Drawing, location of site of impact of 2nd bomb	2015-05-25-1023-03	Drawn by 1023	25/05/2015	Interview Team 2
17.	List of incidents 16/03/15 - 19/05/15, Idlib Province	2015-05-25-1023-04	Handed over by 1023	25/05/2015	Interview Team 2
18.	µSD card, videos, images	2015-05-25-1023-05	Handed over by 1023	25/05/2015	Interview Team 2
19.	Drawing, area of eastern Sarmin where bomb fell 16/03/15	2015-05-28-1020-03	Drawn by 1020	28/05/2015 16:58	Interview Team 2
20.	Drawing	2015-05-29-1026-03	Drawn by 1026	29/05/2015	Interview Team 2
21.	USB stick OPCW seal 523133 - Folders, images, videos	2015-05-30-1032-03	Handed over by 1032	30/05/2015 16:48	Interview Team 2
22.	µSD card, backup of entry # 12 - Folders, images, videos	2015-05-30-1032-04	Copied from 1032's laptop	30/05/2015 16:47	Interview Team 2
23.	01SLS	2015-05-22-1028-01	Handed over by CVDCS	22/05/2015 14:35	FFM-Alpha
24.	02SLS	2015-05-22-1028-02	Handed over by CVDCS	22/05/2015 14:40	FFM-Alpha

Entry number	Item description	Evidence reference number	Where the evidence was found/collected	Date and time handed over	By whom was found/collected
25.	03AQS	2015-05-22-1028-03	Handed over by CVDCS	22/05/2015 14:47	FFM-Alpha
26.	04SDS	2015-05-22-1028-04	Handed over by CVDCS	22/05/2015 14:54	FFM-Alpha
27.	05SDS	2015-05-22-1028-05	Handed over by CVDCS	22/05/2015 15:00	FFM-Alpha
28.	06SDS	2015-05-22-1028-06	Handed over by CVDCS	22/05/2015 15:02	FFM-Alpha
29.	07SDS	2015-05-22-1028-07	Handed over by CVDCS	22/05/2015 15:05	FFM-Alpha
30.	08SDS	2015-05-22-1028-08	Handed over by CVDCS	22/05/2015 15:07	FFM-Alpha
31.	09SDS	2015-05-22-1028-09	Handed over by CVDCS	22/05/2015 15:08	FFM-Alpha
32.	10	2015-05-22-1028-10	Handed over by CVDCS	22/05/2015 15:11	FFM-Alpha
33.	11SDS	2015-05-22-1028-11	Handed over by CVDCS	22/05/2015 15:11	FFM-Alpha

Entry number	Item description	Evidence reference number	Where the evidence was found/collected	Date and time handed over	By whom was found/collected
34.	12SDS	2015-05-22-1028-12	Handed over by CVDCS	22/05/2015 15:16	FFM-Alpha
35.	13SDS	2015-07-23-1008-01	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
36.	14SDS	2015-07-23-1008-02	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
37.	15SDS	2015-07-23-1008-03	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
38.	16SDS	2015-07-23-1008-04	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
39.	17SDS	2015-07-23-1008-05	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
40.	18SDS	2015-07-23-1008-06	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
41.	19SDS	2015-07-23-1008-07	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
42.	20SLS	2015-07-23-1008-08	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha

Entry number	Item description	Evidence reference number	Where the evidence was found/collected	Date and time handed over	By whom was found/collected
43.	21SDS	2015-07-23-1008-09	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
44.	22SDS	2015-07-23-1008-10	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
45.	23SDS	2015-07-23-1008-11	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha
46.	24SLS	2015-07-23-1008-12	Handed over by CVDCS	23/07/2015 14:25	FFM-Alpha

6.2 Electronic files collected by the investigation team

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
1006	No electronic evidence was handed over to the team			
1011	16 March 2015\Qmenas	16 March 2015\Qmenas	IMG_7516	IMG_7516
			IMG_7517	IMG_7517
			IMG_7518	IMG_7518
			IMG_7519	IMG_7519
			IMG_7520	IMG_7520
			IMG_7521	IMG_7521
			IMG_7522	IMG_7522

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			IMG_7523	IMG_7523
			IMG_7524	IMG_7524
			IMG_7525	IMG_7525
			IMG_7526	IMG_7526
	16 March 2015\Sarmin	16 March 2015\Sarmin	IMG_7527	IMG_7527
			IMG_7528	IMG_7528
			IMG_7529	IMG_7529
			IMG_7530	IMG_7530
			IMG_7531	IMG_7531
			IMG_7532	IMG_7532
			IMG_7533	IMG_7533
			IMG_7534	IMG_7534
	16 May 2015	16 May 2015	IMG_9156	IMG_9156
			IMG_9157	IMG_9157
			IMG_9158	IMG_9158
			IMG_9159	IMG_9159
	20 May 2015	20 May 2015	IMG_9161	IMG_9161
			MVI_9228	MVI_9228
			MVI_9229	MVI_9229
			IMG_9230	IMG_9230
			IMG_9231	IMG_9231
1019	No electronic evidence was handed over to the team			

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
1018	No electronic evidence was handed over to the team			
1021	16-5-2015 سرمين	Sarmin 16-5-2015	SAM_1478	SAM_1478
			SAM_1479	SAM_1479
			SAM_1483	SAM_1483
	23-3-2015 سرمين	Sarmin 23-3-2015	HDV_0179	HDV_0179
			SAM_0221	SAM_0221
			SAM_0223	SAM_0223
			SAM_0224	SAM_0224
			SAM_0225	SAM_0225
			SAM_0226	SAM_0226
			SAM_0227	SAM_0227
			SAM_0228	SAM_0228
			SAM_0229	SAM_0229
			SAM_0230	SAM_0230
	2015-4-16 ادلب كلور	Idlib chlorine 16-4-2015	SAM_0792	SAM_0792
			SAM_0793	SAM_0793
			SAM_0794	SAM_0794
			SAM_0797	SAM_0797
			SAM_0798	SAM_0798
			SAM_0799	SAM_0799
			SAM_0802	SAM_0802
		SAM_0803	SAM_0803	

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			SAM_0804	SAM_0804
			SAM_0805	SAM_0805
			SAM_0806	SAM_0806
			SAM_0807	SAM_0807
			SAM_0808	SAM_0808
			ادلب كلور 2015-4-16	Idlib chlorine 16-4-2015
	النيرب 2015-5-2	Nayrab 2-5-2015	SAM_1044	SAM_1044
			SAM_1045	SAM_1045
			SAM_1046	SAM_1046
			SAM_1047	SAM_1047
			SAM_1048	SAM_1048
			SAM_1049	SAM_1049
			SAM_1050	SAM_1050
			SAM_1051	SAM_1051
			SAM_1052	SAM_1052
			SAM_1053	SAM_1053
			SAM_1054	SAM_1054
			SAM_1055	SAM_1055
			SAM_1056	SAM_1056
			SAM_1057	SAM_1057
SAM_1058	SAM_1058			

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			SAM_1059	SAM_1059
			SAM_1060	SAM_1060
			SAM_1061	SAM_1061
			SAM_1062	SAM_1062
			SAM_1063	SAM_1063
			SAM_1064	SAM_1064
			SAM_1066	SAM_1066
			SAM_1067	SAM_1067
			SAM_1068	SAM_1068
			SAM_1069	SAM_1069
			SAM_1070	SAM_1070
			SAM_1071	SAM_1071
			SAM_1072	SAM_1072
			SAM_1073	SAM_1073
			SAM_1074	SAM_1074
	SAM_1075	SAM_1075		
	تسجيل	Recording	voice 005	voice 005
			voice 007	voice 007
	جمع عينات	Collecting samples	IMG_7516	IMG_7516
			IMG_7517	IMG_7517
IMG_7518			IMG_7518	
IMG_7519			IMG_7519	

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			IMG_7520	IMG_7520
			IMG_7521	IMG_7521
			IMG_7522	IMG_7522
			IMG_7523	IMG_7523
			IMG_7524	IMG_7524
			IMG_7525	IMG_7525
			IMG_7526	IMG_7526
			IMG_7527	IMG_7527
			IMG_7528	IMG_7528
			IMG_7529	IMG_7529
			IMG_7530	IMG_7530
			IMG_7531	IMG_7531
			IMG_7532	IMG_7532
			IMG_7533	IMG_7533
			IMG_7534	IMG_7534
	IMG_7535	IMG_7535		
	عينات	Samples	1	1
			2	2
			3	3
			4	4
5			5	
6			6	

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			7	7
			8	8
			9	9
			10	10
			11	11
			SAM_1484	SAM_1484
			SAM_1486	SAM_1486
			SAM_1487	SAM_1487
			SAM_1488	SAM_1488
			SAM_1489	SAM_1489
			SAM_1490	SAM_1490
			SAM_1491	SAM_1491
			SAM_1492	SAM_1492
			SAM_1493	SAM_1493
			SAM_1494	SAM_1494
			SAM_1495	SAM_1495
			SAM_1496	SAM_1496
			SAM_1497	SAM_1497
			SAM_1498	SAM_1498
	قياس عينات	Samples measure	IMG-20150430-WA0021	IMG-20150430-WA0021
		IMG-20150510-WA0009	IMG-20150510-	

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
				WA0009
			IMG-20150510-WA0010	IMG-20150510-WA0010
			IMG-20150510-WA0011	IMG-20150510-WA0011
			IMG-20150510-WA0012	IMG-20150510-WA0012
			IMG-20150510-WA0013	IMG-20150510-WA0013
			IMG-20150510-WA0014	IMG-20150510-WA0014
			IMG-20150510-WA0016	IMG-20150510-WA0016
			IMG-20150510-WA0017	IMG-20150510-WA0017
	مجزرة الكلور في سرمين 16-3	Chlorine massacre Sarmin 16-3	٢٠١٥٠٣١٦ ٢١٢٤٣٤	20150316_212434
			٢٠١٥٠٣١٦ ٢١٣١٤٧	20150316_213147
			IMG_7440	IMG_7440
			IMG_7459	IMG_7459
			IMG_7460	IMG_7460
			IMG_7466	IMG_7466
			IMG_7472	IMG_7472
			IMG_7485	IMG_7485

Interview Number	Folders		Files		
	Original name	Name translated to English	Original name	Name translated to English	
			MVI_7457	MVI_7457	
			MVI_7462	MVI_7462	
			SAM_0098	SAM_0098	
			SAM-0113	SAM-0113	
			اصابة احد عناصر الدفاع المدني	Wounding a member of the civil defense	
	لقاء مهم	Important meeting			
				٢٠١٥٠٣١٦_٢١٢٤٣٤	20150316_212434
				٢٠١٥٠٣١٦_٢١٣١٤٧	20150316_213147
				٢٠١٥٠٣١٧_٠٢٠٦٤٥	20150217_020645
				SAM_0117	SAM_0117
SAM_0140				SAM_0140	
1013	No electronic evidence was handed over to the team				
1015	No electronic evidence was handed over to the team				
1012	توثيق الكلور ادلب سرمين 2015-3-16	Chlorine Idlib Sarmin documentation	صور لاحدا اصابات سرمين (1)	Photos of one of the injuries Sarmin (1)	
			صور لاحدا اصابات سرمين (1)	Photos of one of the injuries Sarmin (1)	
			صور لاحدا اصابات سرمين (59048449)	Photos of one of the injuries Sarmin (59048449)	

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			صور لاحدا اصابات سرمين (59048450)	Photos of one of the injuries Sarmin (59048450)
			فديوو اسعاف احد الاطفال للمشفى	Video ambulance transporting one child to the hospital
	توثيق الكلور إدلب بلدة النيرب 2105-5-2	Chlorine documenting the town of Idlib Neirab 05/02/2105	أحد اصابات الاطفال بمادة الكلور في بلدة النيرب	A children's injuries chlorine in the town of Neirab
			احد اصابات الغازات	One injured gases
			احد اصابات غ	One injured gas
			احد شباب الدفاع المدني وبيده عينات عن مادة الكلور الذي استهدف بلدة النيرب	One young civil defense has in hand samples for chlorine, which targeted the town of Neirab
			احدا الاصابات من غاز الكلور بلدة النيرب	One casualty of chlorine gas from the Neirab town
			الشهيد الطفل مصطفى حاج علي الذي استشهد متأثرا بغاز الكلور الذي بقي على البلدة النيرب 5-2-2015	Child Martyr Mustafa Haj Ali, who died from chlorine gas, who was on the town Neirab 05/02/2015

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			تواجد عناصر دفاع المدني مكان التنفيذ بلدة النيرب	The civil defense elements in the place of execution town Neirab
			صور الشهيد الطفل مصطفى الذي استشهد متأثرا بغازات الكلور النيرب 2015-5-2 (1)	Photos of the child Mustafa martyr who died from chlorine gases Neirab 02.05.2015 (1)
			صور الشهيد الطفل مصطفى الذي استشهد متأثرا بغازات الكلور النيرب 2015-5-2 (1)	Photos of the child Mustafa martyr who died from chlorine gases Neirab 02.05.2015 (1)
			صور الشهيد الطفل مصطفى الذي استشهد متأثرا بغازات الكلور النيرب 2015-5-2 (42861057)	Photos of the child Mustafa martyr who died from chlorine gases Neirab 02.05.2015 (42861057)
			صور الشهيد الطفل مصطفى الذي استشهد متأثرا بغازات الكلور النيرب 2015-5-2 (42861058)	Photos of the child Mustafa martyr who died from chlorine gases Neirab 02.05.2015 (42861058)

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			صور الشهيد الطفل مصطفى الذي استشهد متأثراً بغازات الكلور النيرب 2015-5-2 (42861059)	Photos of the child Mustafa martyr who died from chlorine gases Neirab 02.05.2015 (42861059)
			صورة للعينات الذي استهدفا بلدة النيرب	Image samples that targeted the town of Neirab
			صورة للعينات الذي استهدفا بلدة النيرب 2	Image samples that targeted the town of Neirab 2
	توثيق الكلور إدلب مدينة سراقب 2-5-2105	Chlorine documenting the city of Idlib Sracb 05/02/2105	صور لاصابات في مدينة سراقب 2015-5_2 (1)	Photos for injuries in Sracb 2_5-20215 (1)
			صور لاصابات في مدينة سراقب 2015-5_2 (1)	Photos for injuries in Sracb 2_5-20215 (1)
			صور لاصابات في مدينة سراقب 2015-5_2 (42861057)	Photos for injuries in Sracb 2_5-20215 (42861057)
			صور لاصابات في مدينة سراقب 2015-5_2 (42861058)	Photos for injuries in Sracb 2_5-20215 (42861058)
			صور لاصابات في مدينة سراقب 2015-5_2 (42861059)	Photos for injuries in Sracb 2_5-20215 (42861059)

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
1016			MVI_8145	MVI_8145
1024	20150605102503	20150605102503	20150428_204550	20150428_204550
			20150428_211156	20150428_211156
			IMG-20150605-WA0000	IMG-20150605-WA0000
			IMG-20150605-WA0001	IMG-20150605-WA0001
			IMG-20150605-WA0002	IMG-20150605-WA0002
			IMG-20150605-WA0003	IMG-20150605-WA0003
			IMG-20150605-WA0004	IMG-20150605-WA0004
			IMG-20150605-WA0005	IMG-20150605-WA0005
			IMG-20150605-WA0006	IMG-20150605-WA0006
			IMG-20150605-WA0007	IMG-20150605-WA0007
			IMG-20150605-WA0008	IMG-20150605-WA0008
IMG-20150605-WA0009	IMG-20150605-WA0009			
1037	No electronic evidence was handed over to the team			
1005	No electronic evidence was handed over to the team			

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
1007	USB handover 20150523100701\كلور\Report\Photos\Where the family killed	USB handover 20150523100701\Chlorine\Report\Photos\Where the family killed	Place of chemical (1)	Place of chemical (1)
			Place of chemical (340904029)	Place of chemical (340904029)
			Place of chemical (340904031)	Place of chemical (340904031)
	USB handover 20150523100701\كلور\Report\Photos	USB handover 20150523100701\Chlorine\Report\Photos	IMG_8732	IMG_8732
			IMG_8734	IMG_8734
			IMG_8739	IMG_8739
			IMG-20150317-WA0005	IMG-20150317-WA0005
			IMG-20150317-WA0006	IMG-20150317-WA0006
			Oldman (1)	Oldman (1)
			Oldman (1)	Oldman (1)
	USB handover 20150523100701\كلور\Report	USB handover 20150523100701\Chlorine\Report	تقرير	Report

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
	USB handover 20150523100701\صور و\كلور\New folder	USB handover 20150523100701\Chlorine\Photos and video Chlorine\New Folder	IMG_7304	IMG_7304
			IMG_7309	IMG_7309
			IMG_7310	IMG_7310
			IMG_7436	IMG_7436
			IMG_7444	IMG_7444
			IMG_7470	IMG_7470
			IMG_7484	IMG_7484
			IMG_7485	IMG_7485
			IMG_7452	IMG_7452
			SAM_0100	SAM_0100
			SAM_0101	SAM_0101
			SAM_0102	SAM_0102
			SAM_0106	SAM_0106
			SAM_0110	SAM_0110
			SAM_0111	SAM_0111
			SAM_0112	SAM_0112
			SAM_0119	SAM_0119
			SAM_0120	SAM_0120
	SAM_0122	SAM_0122		
	SAM_0128	SAM_0128		

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			SAM_0137	SAM_0137
			SAM_0140	SAM_0140
			SAM_0143	SAM_0143
			SAM_0155	SAM_0155
	USB handover 20150523100701\صور واكلور فيديوها ت كلور	USB handover 20150523100701\Chlorine\Photos and video Chlorine	IMG_7304	IMG_7304
			IMG_7309	IMG_7309
			IMG_7310	IMG_7310
			IMG_7436	IMG_7436
			IMG_7444	IMG_7444
			IMG_7470	IMG_7470
			IMG_7484	IMG_7484
			IMG_7485	IMG_7485
			MVI_7434	MVI_7434
			MVI_7449	MVI_7449
			MVI_7452	MVI_7452
			MVI_7457	MVI_7457
			MVI_7462	MVI_7462
			MVI_74491	MVI_74491
			MVI_74521	MVI_74521
SAM_0099	SAM_0099			

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			SAM_0100	SAM_0100
			SAM_0101	SAM_0101
			SAM_0102	SAM_0102
			SAM_0106	SAM_0106
			SAM_0110	SAM_0110
			SAM_0111	SAM_0111
			SAM_0112	SAM_0112
			SAM_0119	SAM_0119
			SAM_0120	SAM_0120
			SAM_0122	SAM_0122
			SAM_0128	SAM_0128
			SAM_0137	SAM_0137
			SAM_0140	SAM_0140
			SAM_0142	SAM_0142
			SAM_0143	SAM_0143
	SAM_0155	SAM_0155		
	USB handover 20150523100701\كلور حماه\كلور	USB handover 20150523100701\Chlorine\Chlorine Hama	M2U00088	M2U00088
			M2U00090	M2U00090
			M2U00091	M2U00091
			M2U00092	M2U00092

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
	USB handover 20150523100701\1 صور واكلور فيديوهات كلور	USB handover 20150523100701\Chlorine 1\Chlorine videos and photos	M2U00093	M2U00093
			Idlib map new draft	Idlib map new draft
			IMG_7304	IMG_7304
			IMG_7309	IMG_7309
			IMG_7310	IMG_7310
			IMG_7436	IMG_7436
			IMG_7444	IMG_7444
			IMG_7470	IMG_7470
			IMG_7484	IMG_7484
			IMG_7485	IMG_7485
			IMG-20150318-WA0001	IMG-20150318-WA0001
			IMG-20150318-WA0011	IMG-20150318-WA0011
			IMG-20150318-WA0012	IMG-20150318-WA0012
			IMG-20150318-WA0013	IMG-20150318-WA0013
			IMG-20150318-WA0014	IMG-20150318-WA0014
IMG-20150318-WA0015	IMG-20150318-WA0015			

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			IMG-20150417-WA0008	IMG-20150417-WA0008
			IMG-20150417-WA0009	IMG-20150417-WA0009
			MVI_7434	MVI_7434
			MVI_7449	MVI_7449
			MVI_7452	MVI_7452
			MVI_7457	MVI_7457
			MVI_7462	MVI_7462
			MVI_74491	MVI_74491
			MVI_74521	MVI_74521
			SAM_0099	SAM_0099
			SAM_0100	SAM_0100
			SAM_0101	SAM_0101
			SAM_0102	SAM_0102
			SAM_0106	SAM_0106
			SAM_0110	SAM_0110
			SAM_0111	SAM_0111
			SAM_0112	SAM_0112
			SAM_0119	SAM_0119
			SAM_0120	SAM_0120
			SAM_0122	SAM_0122

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			SAM_0128	SAM_0128
			SAM_0137	SAM_0137
			SAM_0140	SAM_0140
			SAM_0142	SAM_0142
			SAM_0143	SAM_0143
			SAM_0155	SAM_0155
	USB handover 20150523100701\1 كلور	USB handover 20150523100701\Chlorine 1	Sarmin chlorine attacks 16 march 2015	Sarmin chlorine attacks 16 march 2015
			استهداف بنش بالكيمياوي	Binnish Chemical attack
			استهداف قميناس بالغازات	Qmenas gas attack
			الكيمياوي سرمين 2	Chemical Sarmin 2
			الكيمياوي سرمين تقرير	Chemical Sarmin Report
	USB handover 20150523100701	USB handover 20150523100701	1 استهداف الكلور اجمالي	1 chlorine attack total
			IMG_5130	IMG_5130
			IMG_5131	IMG_5131
			IMG_5132	IMG_5132
			IMG_5133	IMG_5133
	uSD Pdf handover 20150524100703	uSD Pdf handover 20150524100703	استهداف بلدة مشمشان بغاز الكلور 19-5-2015 - - نسخة	Chlorine attack on Michmach town 19-5- 2015- - Copy

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			استهداف بلدة البشيريةبغاز الكلور 19-5-2015 -	Chlorine attack on El Bechir town 19-5-2015
			استهداف مدينةالذلب بغاز الكلور 19-5-2015 -	Chlorine attack on Idlib City 19-5-2015
			استهداف بلدة مشمشان بغاز الكلور 17-5-2015 - نسخة	Chlorine attack on Michmach town 17-5-2015- Copy
			استهداف بلدة الجانودية بالكلور 2015- 5-7	Chlorine attack on EL Jadhoudya town 7-5-2015
			استهداف بلدة الكستن بغاز الكلور 17-5-2015	Chlorine attack on EL Kesten town 17-5-2015
			1 استهداف الكلور اجمالي	1 chlorine attack total
			2 استهداف بلدة النيرب بالكلور - 5	Chlorine attack on EL Nirab town - 2 5
			2النيرب كلور 27-4-2015	Chlorine attack on EL Nirab town -27-4-2015
			استهداف بلدة البشيرية بالكلور 6-2015-5	Chlorine attack on El Bechir town 6-5-2015
			استهداف بلدة البشيرية بالكلور 2015-5-10	Chlorine attack on El Bechir town 10-5-

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
				2015
			استهداف بلدة مشمشان بغاز الكلور 2015-5-15	Chlorine attack on Michmach town 15-5-2015
			استهداف بنش بالكيمائي 24-3-2015	Chlorine attack on Binnish 24-3-2015
			استهداف سراقب بالكلور 2-5-2015	Chlorine attack on Saraqeb 2-5-2015
			استهداف سراقب بالكلور 26-4-2015	Chlorine attack on Saraqeb 26-4-2015
			استهداف سرمين بالكيمائي يوم 26-3-2015	Chlorine attack on Sarmin 26-3-2015
			استهداف قميناس بالغازات 24-3-2015	Chlorine attack on Qaminas 24-3-2015
			استهداف كنصفرة بالكلور 03-05-2015	Chlorine attack on Kansaqra 03-05-2015
			استهداف كنصفرة بالكلور 2015-5-7	Chlorine attack on Kansaqra 7-5-2015
			استهداف مدينة ادلب 16-5-2015	Attack on Idlib city 16-5-2015
			استهداف مدينة سرمين بغاز الكلور 2015-5-16	Attack on Sarmin city 16-5-2015

Interview Number	Folders		Files			
	Original name	Name translated to English	Original name	Name translated to English		
			الكيمائي سرمين 2015-3-23	Chemicals Sarmin 23-3-2015		
			الكيمائي سرمين تقرير 3-16-2015	Chemicals Sarmin Report 13-3-2015		
			كفر عويد بالكلور 2015-4-26	Chlorine Kafer Awid 26-4-2015		
			كنصفرة 2015-05-03 الاسماء لمصابين بالكلور	Kansaqra 03-05-2015 names of chlorine victims		
			Video 20150523100702	Video 20150523100702	MAH00011	MAH00011
					MAH00012	MAH00012
1009	No electronic evidence was handed over to the team					
1017	No electronic evidence was handed over to the team					
1014	No electronic evidence was handed over to the team					
1023			DSC_0630	DSC_0630		
			FB_IMG_1431760728837	FB_IMG_1431760728837		
			FB_IMG_1431760732808	FB_IMG_1431760732808		
			IMG_39138753519733	IMG_39138753519733		
			SAM_1478	SAM_1478		
1035	No electronic evidence was handed over to the team					
1020	No electronic evidence was handed over to the team					

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
1027	No electronic evidence was handed over to the team			
1022	No electronic evidence was handed over to the team			
1026	No electronic evidence was handed over to the team			
1032	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32_________	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32_________		
			DSC00101	DSC00101
			DSC00102	DSC00102
			DSC00103	DSC00103
			DSC00104	DSC00104
			DSC00105	DSC00105

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			DSC00106	DSC00106
			DSC00107	DSC00107
			DSC00108	DSC00108
			DSC00109	DSC00109
			DSC00110	DSC00110
			DSC00111	DSC00111
			DSC00112	DSC00112
			DSC00113	DSC00113
			DSC00114	DSC00114
			DSC00115	DSC00115
			DSC00116	DSC00116
			DSC00117	DSC00117
			DSC00118	DSC00118
			DSC00119	DSC00119
			DSC00120	DSC00120
			DSC00121	DSC00121
			DSC00122	DSC00122
			DSC00123	DSC00123
			DSC00124	DSC00124

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32_________	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32_________	IMG_7516	IMG_7516
			IMG_7517	IMG_7517
			IMG_7518	IMG_7518
			IMG_7519	IMG_7519
			IMG_7520	IMG_7520
			IMG_7522	IMG_7522
			IMG_7523	IMG_7523
			IMG_7524	IMG_7524
			IMG_7525	IMG_7525
			IMG_7526	IMG_7526
			IMG_7527	IMG_7527
			IMG_7528	IMG_7528
			IMG_7529	IMG_7529
			IMG_7530	IMG_7530
			IMG_7531	IMG_7531
			IMG_7532	IMG_7532
			IMG_7533	IMG_7533
	IMG_7534	IMG_7534		
	IMG_7535	IMG_7535		

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32_____	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32_____	#MG_8408	#MG_8408
			#VI_7566	#VI_7566
			_____	_____
			_____	_____
			_____	_____
			24-3-2015	24-3-2015
			IMG_7286	IMG_7286
			IMG_7287	IMG_7287
			IMG_7288	IMG_7288
			IMG_7289	IMG_7289
			IMG_7290	IMG_7290
			IMG_7291	IMG_7291
			IMG_7292	IMG_7292
			IMG_7293	IMG_7293
			IMG_7295	IMG_7295
	IMG_7296	IMG_7296		
	IMG_7298	IMG_7298		

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			IMG_7302	IMG_7302
			IMG_7303	IMG_7303
			IMG_7304	IMG_7304
			IMG_7307	IMG_7307
			IMG_7308	IMG_7308
			IMG_7309	IMG_7309
			IMG_7310	IMG_7310
			IMG_7311	IMG_7311
			IMG_7312	IMG_7312
			IMG_7313	IMG_7313
			IMG_7314	IMG_7314
			IMG_7315	IMG_7315
			IMG_7465	IMG_7465
			IMG_7466	IMG_7466
			IMG_7467	IMG_7467
			IMG_7468	IMG_7468
			IMG_7470	IMG_7470
			IMG_7471	IMG_7471
			IMG_7472	IMG_7472
			IMG_7473	IMG_7473
			IMG_7475	IMG_7475
			IMG_7478	IMG_7478

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
			IMG_7479	IMG_7479
			IMG_7482	IMG_7482
			IMG_7483	IMG_7483
			IMG_7484	IMG_7484
			IMG_7485	IMG_7485
			IMG_7486	IMG_7486
			MVI_7285	MVI_7285
			MVI_7297	MVI_7297
			MVI_7299	MVI_7299
			MVI_7300	MVI_7300
			MVI_7426	MVI_7426
			MVI_7430	MVI_7430
			MVI_7431	MVI_7431
			MVI_7464	MVI_7464
			MVI_7480	MVI_7480
MVI_7481	MVI_7481			
	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32\Raw Files\JPEG Graphics file	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32\Raw Files\JPEG Graphics file	Canon EOS 1100D000	Canon EOS 1100D000

Interview Number	Folders		Files	
	Original name	Name translated to English	Original name	Name translated to English
	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32\Raw Files\MP4 Multimedia file	Recovered Files 09_06_2015 20_20\Recovered data 06-09-2015 at 20_33_04\FAT32\Raw Files\MP4 Multimedia file	FILE000	FILE000
			FILE001	FILE001
			FILE002	FILE002
			FILE003	FILE003
			FILE004	FILE004
1000	No electronic evidence was handed over to the team			
1029	No electronic evidence was handed over to the team			

Appendix 7

**LOCATIONS IN ARABIC,
WITH EQUIVALENT SPELLING IN LATIN SCRIPT**

Arabic	English	Alternative(s)
الجانودية	Al Janoudiyeh	El Janoudiye/ Janoudiyeh/ Al Janoudiya
الكستن	Al Kastan	El Kastane
التمانة	Al Tamanah	Al-Tamanaa
المسطومة	Mastume	Al Mastoumi / Al-Mastumah
النيرب	Al Nerab	Al-Nayrab / Al-Nairab/ Al-Neirab
أريحا	Ariha	Arihah
البشيرية	Bashiriyeh	Bachiriyeh/ Al-Bashiriyeh
بنش	Binnish	Binich/ Benesh/ Benech
دمشق	Damascus	
حماة	Hama	
ادلب	Idlib	Edleb/ Edlib
جسر الشغور	Jisr ash-shugur	Jisr Al Shughour/ Jisr El Shoughour
كفر عويد	Kafar Oueid	Kafr Oueid
كفر زيتا	Kfar Zita	Kafar Zita/ Kafr Zeita
كفر بطيخ	Kafr Battikh	Kafar Battikh/ Kafar Batikh
كنصفرة	Kansafra	Qansafra
معرة مصرين	Ma'arrat Misrin	Maarat Misrin
مشمشان	Meshmshan	Mechmchen/ Mechmchan/ Meshmshen
قميناس	Qminas	Qmenas
سراقب	Saraqib	Sarakeb/ Saraqeb/ Sarakib
سرمين	Sarmin	Sarmine/ Sarmeen