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REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA REGARDING ALLEGED INCIDENTS IN MAREA, SYRIAN ARAB REPUBLIC AUGUST 2015

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REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA REGARDING ALLEGED INCIDENTS IN MAREA, SYRIAN ARAB REPUBLIC AUGUST 2015

1. SUMMARY

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, resulting in a team being deployed primarily to interview patients and obtain biomedical samples. Through the biomedical samples and interviews with patients and medical staff, the team was able to confirm with the utmost confidence that at least two people were exposed to sulfur mustard and were in the process of recovering from the exposure. It is additionally very likely that the effects of sulfur mustard resulted in the death of a baby.

2. METHODOLOGY

Methodological considerations

2.1 The three main driving principles in the 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 OPCW Fact-Finding Mission (FFM) in Syria (Appendix 1) complied with the current OPCW guidelines and procedures for the conduct of an investigation of alleged use (IAU) of chemical weapons.

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 Appendix 3. As these questionnaires were specifically designed for IAUs, slight modifications were occasionally 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 most relevant methods for collecting and evaluating the credibility of information included the following, inter alia: research into incidents and existing reports; the assessment and corroboration of background information; the conduct of interviews with relevant medical treatment providers and with alleged victims; the review of documentation and records provided by interviewees; the assessment of the symptoms of victims as reported by interviewees; and the collection of biomedical samples for subsequent analysis.

2.5 During the preparatory phase, the team engaged in open-source research concerning the allegations (Appendix 4). The majority of sources included news media, blogs, and the websites of various NGOs. The team managed contact with the casualties and other interviewees through the same NGOs that were engaged in the previous FFM-Alpha mission.

Access to relevant geographic locations

2.6 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, 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 in a location considered at that moment as front line; and

(c) whether some victims and/or witnesses had been able to cross the national borders for treatment and were willing to meet the FFM team.

2.7 In the best case during an investigation, potential interviewees would be identified by one of two means: the first through the investigation team canvassing the area of the alleged incident to identify witnesses; and the second through the identification of potential interviewees as possible leads by another source deemed reliable by virtue of proximity or involvement.

2.8 Due to security concerns in the region of the alleged incident, the time frame of events, and the fact that the victims had been transferred to a more secure location in a neighbouring State Party (hereinafter "Country X") for treatment (which also provided potential access to medical records and for collecting biomedical samples), it was determined that the risk for the team to visit the incident area was prohibitive. Therefore, the team could not directly observe, assess, and record locations of alleged incidents, could not canvass directly for other witnesses and affected persons, and could not collect environmental samples and/or remnants of the alleged munitions.

Selection of interviewees

2.9 Extensive discussions took place between elements of the Technical Secretariat (hereinafter "the Secretariat") with representatives of the Government of Country X, and with the Chemical Violations Documentation Center Syria (CVDCS). The ultimate purpose was to coordinate logistics and movements, identify the victims' hospital location, and arrange for authorisation for them to be visited by the team for interviews. These discussions were initiated prior to deployment and completed during the first days of deployment in Country X.

2.10 Through this interaction, the team received from CVDCS the names and location of one family whose members had been exposed to the toxic chemical. This family was composed of two parents and two children, both minors. The team contacted the parents from this family, the treating doctors, and the manager of the hospital where the parents were located at the time of the interviews, and secured permission to conduct interviews in the hospital with the casualties and the treating doctors. Later on, during the mission deployment, the team was informed about a second family that had also been exposed. The team was not able to meet with this second family.

Interview process

2.11 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 the toxic

chemical and with the health condition of the victims. Therefore, the team conducted a detailed interview with the treating physician while the duration of the interviews with the victims was kept as short as possible, due to their condition at the time of the interview.

2.12 The interview methods were based on the free recall technique, tailored with follow-on questions relevant to this investigation and adapted from standard operating procedures (QDOC/INS/WI/IAU05). The FFM conducted the interviews with the treating physician, the mother, and the father in separate rooms. The interview with the doctor was held in French, translated into the local language, and the interview with the casualties was held in Arabic.

2.13 The initial portion of the recorded interview was a standard process used by the FFM team, including an explanation of the aims of the interview, and confirmation of consent. Subsequently, the interviewee delivered his or her statement regarding the incident. 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.

2.14 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, the treating doctor, and the director of Marea hospital 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 victims and the doctors was kept secure with the FFM team.

2.15 At the end of each day, the FFM held a debriefing session and shared its findings. This was followed by the securing of all data and documents collected that day.

Epidemiological methodology

2.16 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 explanation for the symptoms.

2.17 An epidemiological investigation should ideally include a review of all the 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 survivors; 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 from interviews with the 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.

2.18 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 previous hospitals and clinics where the casualties were treated and make assessments of the available facilities;

(c) gain access to records, including patient registers, medical files, treatment records, radiographs, laboratory reports, etc., from those previous treatment facilities; and

(d) conduct on-site collection of testimonies and clinical examination.

2.19 The FFM could nonetheless rely on clinical examinations at the hospital in which the casualties were located at the time of the team's deployment. The epidemiological investigation was therefore focused on collecting the testimonies of the casualties and those providing medical care at that time, together with collecting and examining relevant documentary evidence that they might offer.

Biomedical samples

2.20 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. For the analysis of biomedical samples, the FFM used laboratories involved in the OPCW biomedical testing exercises for biomedical samples.

PERSONNEL SELECTION, SKILL SETS AND TRAINING

2.21 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) analytical chemistry;

(b) medical/health, including epidemiology and first response;

(c) industrial chemicals and technology;

(d) interview and negotiation; and

(e) contingency operations experience, including previous experience with fact-finding missions and other missions to the Syrian Arab Republic.

2.22 Equipment needs were identified and equipment was sourced while movements and logistics were arranged. 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.

2.23 The above preparations ensured that sample receipt, interviews, and all other evidence collection was performed by fully trained and qualified inspectors.

CHAIN OF CUSTODY, EVIDENCE COLLECTION AND HANDLING

2.24 This FFM collected evidence in the form of witness interviews/statements (taken as audio and/or video recordings), two medical records, one certificate of death, 13 photographs, and four biomedical (blood and urine) samples from victims. The following procedures, aimed in particular at ensuring the chain of custody from the 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 FFM 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.

3. INCIDENT SUMMARIES AND ANALYSIS

3.1 Marea is a village in the Aleppo Governorate of the Syrian Arab Republic. It is located 35 km north of Aleppo City and 25 km south of the Turkish border. In August 2015, the village was not under government control.

3.2 Information from the interviewees and from open-source media indicates that three incidents involving the alleged use of chemical weapons occurred in Marea on 21 August, 1 September, and 4 September 2015.

3.3 This investigation focused on the alleged incident of 21 August 2015. The FFM did not have direct access to individuals who were involved in the other incidents and only undertook an indirect interview with the director of Marea hospital (a nurse) via audio conference call. The identity of the interviewee was not confirmed by the FFM through documentation or identification. However, it was clear to the FFM through the context of the interview that he had a medical background and knowledge.

3.4 Between 5 and 9 September 2015 (see Appendix 2 for timelines), the FFM interviewed and collected the testimonies of four individuals: the treating physician, the director of a hospital (as above), and two casualties.

3.5 Three interviews were carried out in person.

Testimony derived from interviews with the two casualties, the treating physician, and the Marea hospital director

3.6 These testimonies only contained information relevant to the incident of 21 August 2015.

3.7 Over the course of approximately one hour and a half, from around 10:00 to 11:30, Marea was bombarded by around 50 projectiles.

3.8 One projectile fell inside one of the rooms of a house. A family of four was in the house: a 31-year-old father, 24-year-old mother, and two children. The projectile created a crater of roughly 1 m diameter, and smoke. Three members of the family were in the room and one of the children (the three-year-old) was on the patio. Initially they did not have any symptoms. They washed themselves for decontamination. Approximately one hour later, they started vomiting, and their eyes and skin started to turn red and became painful. A few hours later, they had difficulty swallowing and experienced visual disturbances.

3.9 At around 16:00 to 17:00, Marea hospital received the family. According to the director of the hospital:

(a) “The father was suffering from a runny nose and teary eyes, skin burns (especially in the upper limb, neck) and headache;

(b) the mother was suffering from breathing difficulty, eyes redness and tearing;

(c) the three-year-old child was only suffering from nausea and vomiting; and

(d) the five-day-old new born (who died on Sunday, 6 September) was suffering from effort breathing and wheezing".

3.10 The family was referred to Tal Refaat hospital, then to Seju Hospital in the Syrian Arab Republic, then referred directly to a hospital in Country X.

3.11 On 22 August, the family members were transferred to three separate hospitals, designated for the purposes of this report as hospitals 1, 2, and 3, respectively. The father and the mother were referred to the intensive care unit (ICU) of hospital 1 in Country X; on the same day, the three-year-old child was referred to hospital 2; and the five-day-old baby was referred to hospital 3. The FFM did not have any clear information about the reason as to why the family members were dispatched to different hospitals.

3.12 Hospital 2 released the patient after a few days. In accordance with OPCW protocols, the FFM did not interview her in the absence of the parents, who were in hospital 1 at that time.

3.13 Hospital 3 issued a death certificate related to the baby.

3.14 According to the treating physician in hospital 1 and the medical files received from the hospital:

(a) **Patient, male, 31 years old:** The medical examination demonstrated eyelid oedema, redness of eyes, throat lesions, several burn lesions in different parts of the body with several blisters in the dorsal area (with a non-infected fluid), skin itching, and photophobia. The other medical examinations, including cardiovascular, pulmonary, and abdominal, were normal.

(b) **Patient, female, 24 years old:** The medical examination demonstrated eyelid oedema, redness of eyes, throat lesions, several burn lesions in most parts of the body with several blisters in the dorsal area (with a non-infected fluid) and skin itching. In addition, she had a urinary infection and pneumonia. The other medical examinations, including cardiovascular and abdominal, were normal.

3.15 The laboratory investigation (blood and urine) demonstrated an inflammatory syndrome but no specific chemical agent analysis has been done.

3.16 The treatment for both patients was symptomatic with a clear improvement day by day.

Additional testimony from the director of Marea hospital

3.17 The director of Marea hospital gave an account of an alleged incident with a number of casualties, including a different family from the one mentioned above. His account is provided below:

> "Another example of severe cases: Five persons from one family (a father, his wife, two daughters and the cousin of the father) were treated first of all in Tal Refaat. They consulted Marea hospital on the 25th of August. Symptoms

and signs were: the adult male had a skin redness, swollen eyelids; the wife had difficulty breathing; one of the kids had skin redness; the cousin of the father was suffering from tearing, swollen eyelids, nausea, and vomiting."

3.18 On 26 August, they were referred to a hospital in Country X.

3.19 In total over four days, 85 patients were managed in Marea hospital. Twenty percent of the cases were severe cases and 80% of the cases were mild and moderate. The following treatment was given for the cases:

(a) intravenous infusion;

(b) antibiotics;

(c) antiseptic (Povidon);

(d) steroids; and

(e) burn ointment.

3.20 The following tables and figures show the gender and age distributions for those alleged to have been exposed to chemical(s) and are based on the testimony of the director of Marea hospital.

FIGURE 1: DISTRIBUTION OF EXPOSED PERSONS BY GENDER AS REGISTERED IN THE MEDICAL REGISTER OF MAREA HOSPITAL FROM 21 TO 26 AUGUST 2015

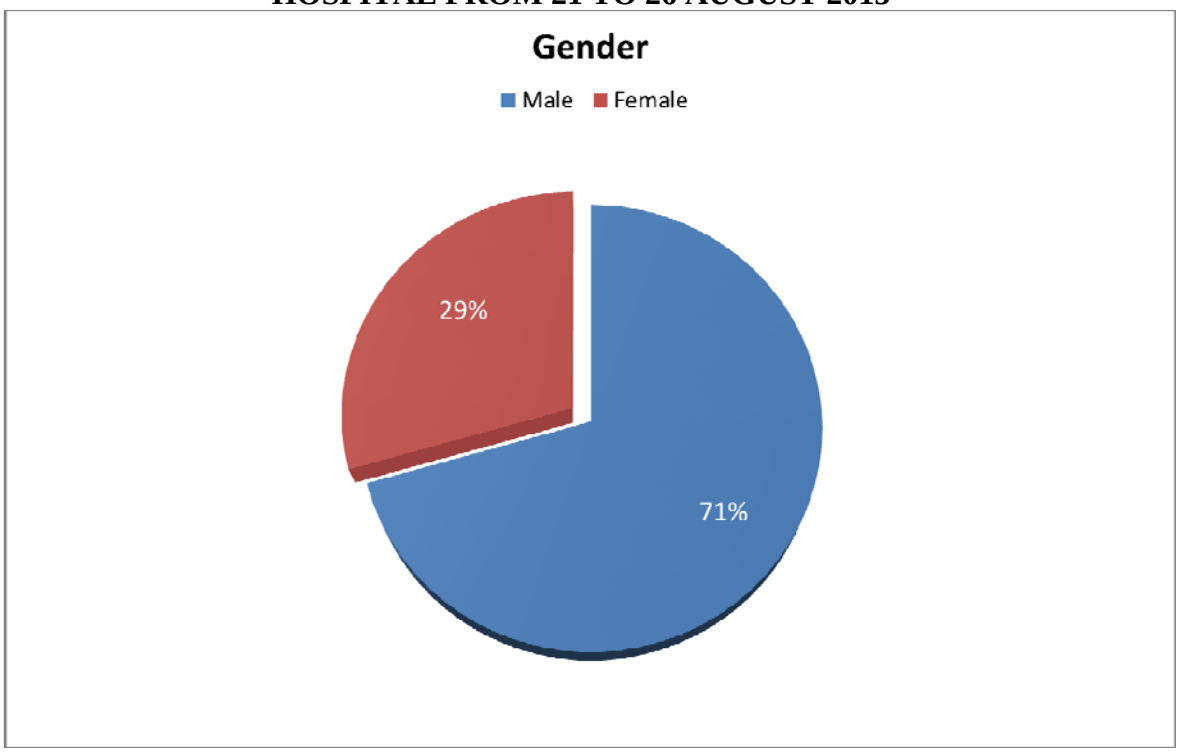


TABLE 1: DISTRIBUTION OF EXPOSED PERSONS BY AGE AS REGISTERED IN THE MEDICAL REGISTER OF MAREA HOSPITAL FROM 21 TO 26 AUGUST 2015

	Under 16	16 to 19	20 to 29	30 to 39	40 to 49	50 and above	Total
Male	3	5	13	5	1	2	29
Female	4	4	4	0	2	0	14
Total	**7**	**9**	**17**	**5**	**3**	**2**	**43**

FIGURE 2: FIGURE 2: DISTRIBUTION OF EXPOSED PERSONS BY AGE AS REGISTERED IN THE MEDICAL REGISTER OF MAREA HOSPITAL FROM 21 TO 26 AUGUST 2015

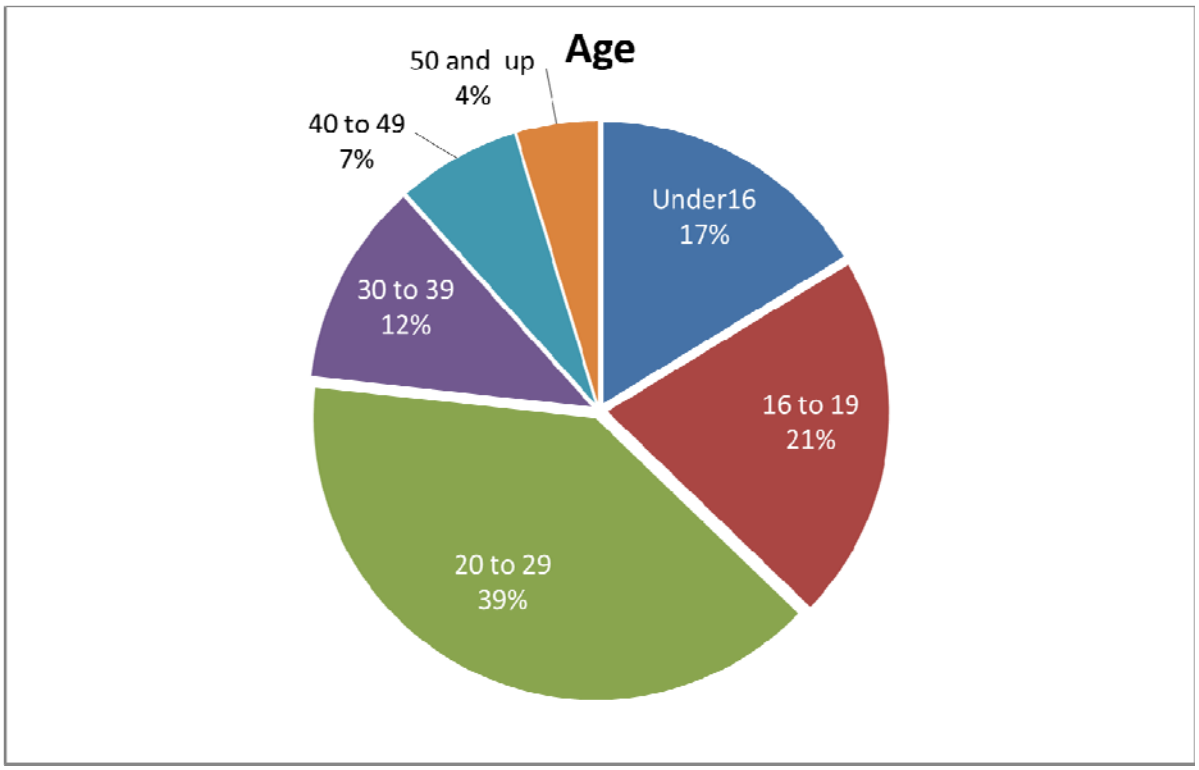
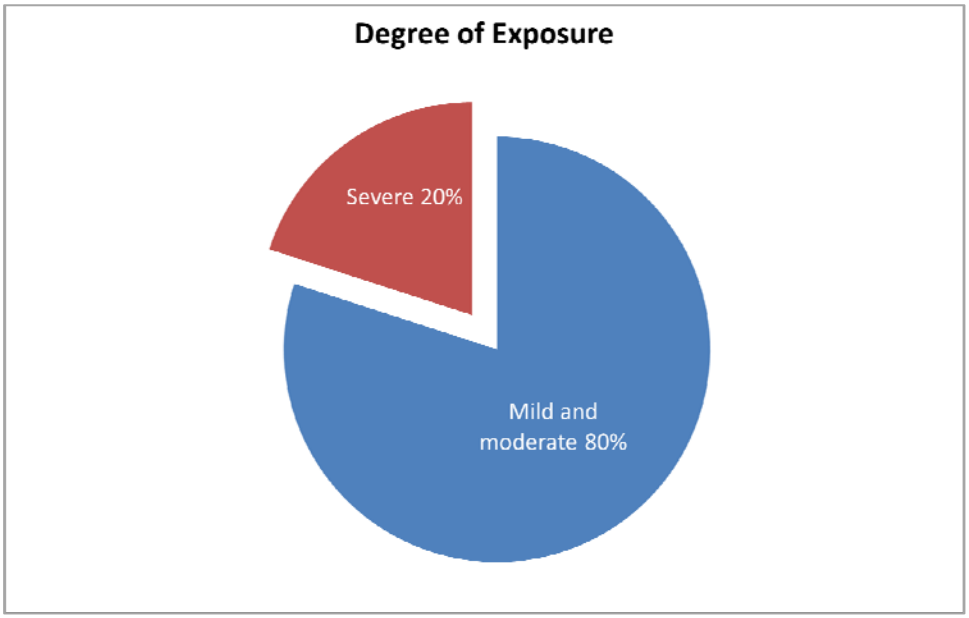


TABLE 2: DISTRIBUTION OF PATIENTS BY SYMPTOMS OF EXPOSURE

	Exposed
Mild and moderate	80 %
Severe	20%

FIGURE 3: DISTRIBUTION OF PATIENTS BY SYMPTOMS OF EXPOSURE



3.21 The following paragraphs outline other incidents described by the director of Marea hospital, but which fell outside the dates of the mandate.

Incident of 1 September 2015 (Source: interview with the director of Marea hospital)

"Over the course of approximately one hour (around 12:00), Marea was bombarded by around 20 projectiles. Most of the population had already left the village after the first incident. From 1 to 3 September 2015, the hospital received 52 cases. All of them were affected by secondary contamination. Most of them were mild cases (difficulty breathing, redness of skin), except for two cases that were moderate, who in addition had itchy and red skin as well as blisters.

In general the treatment consisted of an intravenous infusion, antibiotics, antiseptic, steroids, and burn ointment.

After the first incident, the health team in the hospital started a strategy of decontamination in the pre-hospital."

Incident of 4 September 2015 (Source: interview with the director of Marea hospital)

"The hospital received four cases (Free Syrian Army fighters): three from Marea and one from Homs. All of them were mild cases. A bad odour was detected on the clothes. The treatment was antiseptic, steroids and Larfine (to relieve allergy symptoms).

No noticeable water and/or food contamination."

End of the interview with the director of Marea hospital.

3.22 The following tables and charts are based on information that the FFM received from the director of Marea hospital.

TABLE 3: DISTRIBUTION OF THE EXPOSED PERSONS BY GENDER AND AGE AS REGISTERED IN THE MEDICAL REGISTER OF MAREA HOSPITAL FROM 3 TO 5 SEPTEMBER 2015

3 September 2015							
	Under 16	**16 to 19**	**20 to 29**	**30 to 39**	**40 to 49**	**50 and above**	**Total**
Male	3	1	7	7	2	1	21
Female	0	0	0	0	0	1	1
Total	**3**	**1**	**7**	**7**	**2**	**2**	**22**
4 September 2015							
Male	1	1	5	4	2	3	16
Female	0	0	0	0	0	0	0
Total	**1**	**1**	**5**	**4**	**2**	**3**	**16**
5 September 2015							
Male	5	0	0	4	0	0	9
Female	2	0	0	2	0	0	4
Total	**7**	**0**	**0**	**6**	**0**	**0**	**13**
Total of the three days							
Male	9	2	12	15	4	4	46
Female	2	0	0	2	0	1	5
Total	**11**	**2**	**12**	**17**	**4**	**5**	**51**

FIGURE 4: DISTRIBUTION OF EXPOSED CASUALTIES, BY AGE

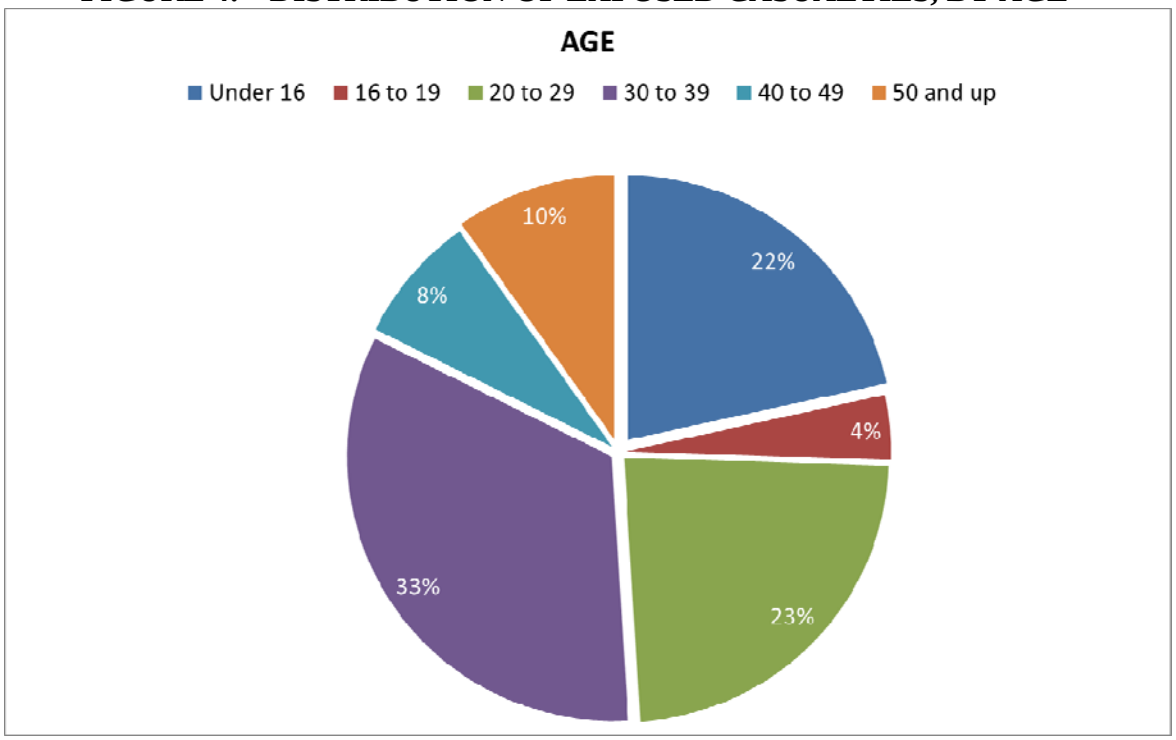
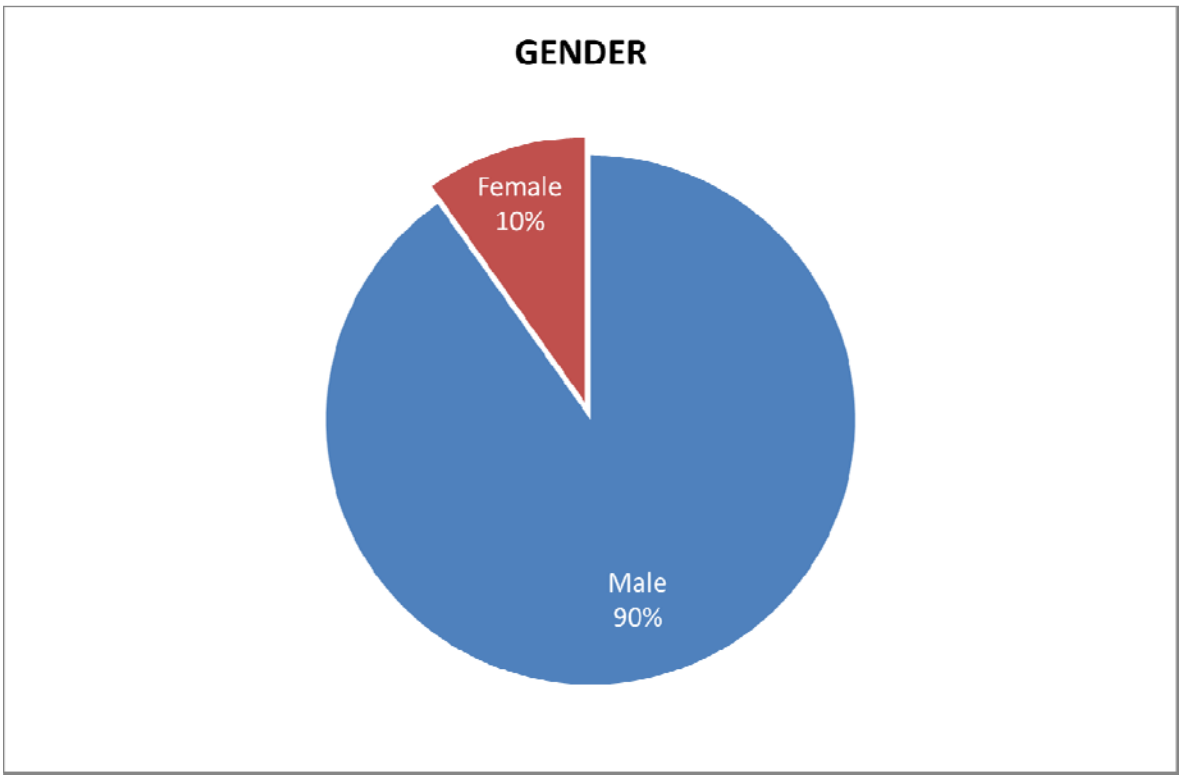


FIGURE 5: DISTRIBUTION OF EXPOSED CASUALTIES BY GENDER



Analysis of the incident of 21 August 2015

3.23 Four interviews were completed. The details of these interviewees are provided in table below.

TABLE 4: INTERVIEWEE DETAILS

	Interviewee	Male	Female
Treating physician from hospital 1	1	1	0
Director of Marea hospital/nurse *	1	1	0
Exposed persons	2	1	1
Total	**4**	**3**	**1**

* Done by audio conference call.

FIGURE 6: INTERVIEWEES AND THEIR RELATION TO THE INCIDENT

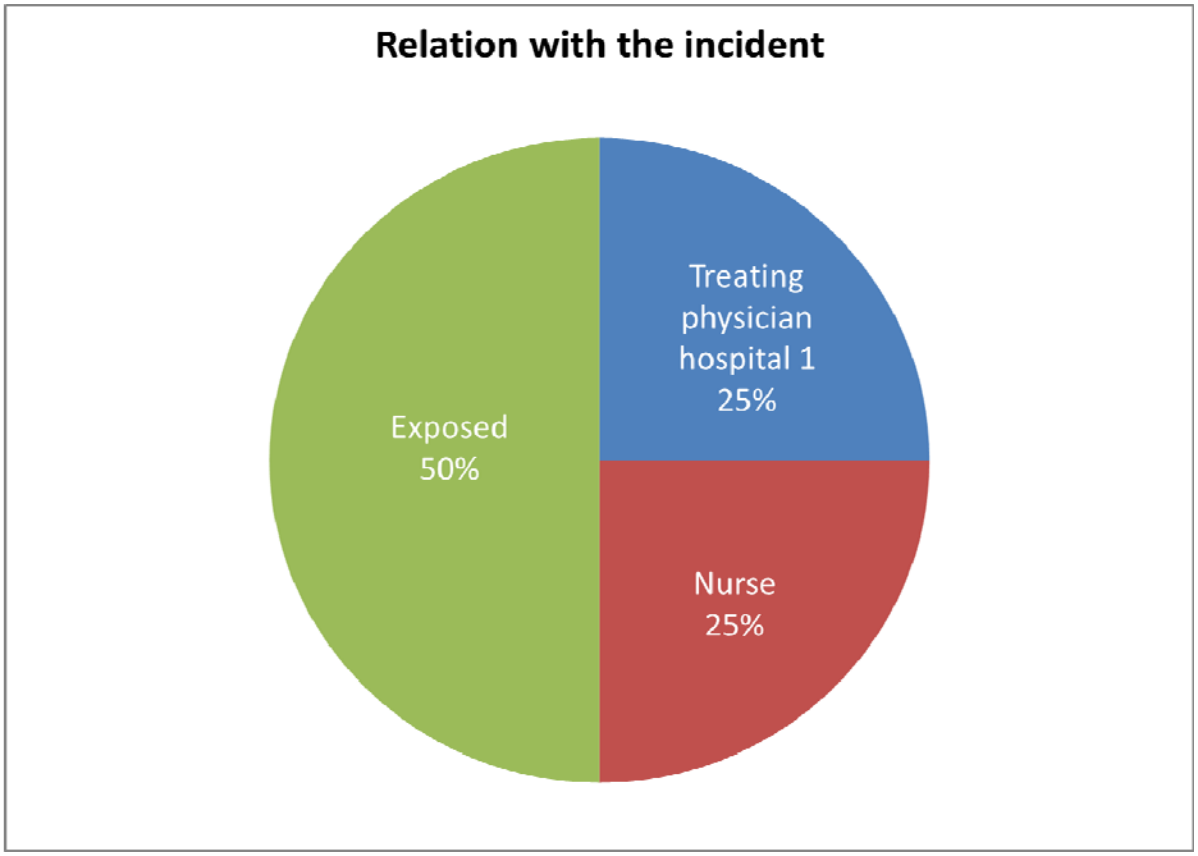
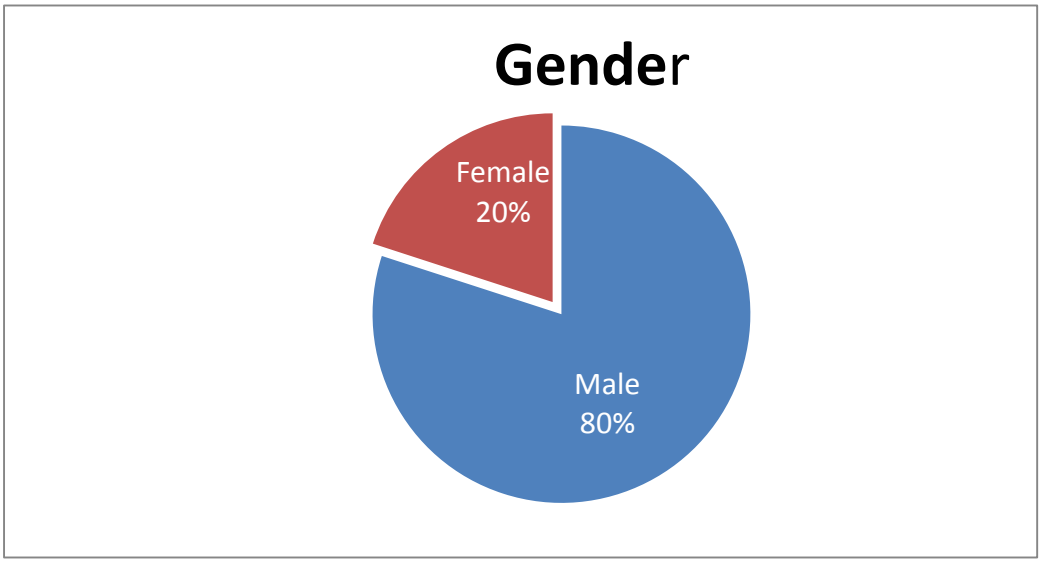


FIGURE 7: DISTRIBUTION OF INTERVIEWEES BY GENDER



Analysis of medical symptoms and signs

3.24 The following analysis is based on the interview of two casualties and their treating physician. The symptoms and the signs of exposure observed by the treating physician, and the treatment that was provided to those patients, in addition to the symptoms based on interviewees' testimonies, are discussed below.

3.25 The signs and symptoms of the four casualties from the family, as described by the two casualties who were interviewed by the FFM, are presented in the following table and chart.

TABLE 5: SIGNS AND SYMPTOMS OF FAMILY MEMBERS, AS DESCRIBED BY THE ADULTS IN THE FAMILY

Signs and symptoms	No. of Affected Persons
Redness of eyes	4
Strong flow of tears	3
Respiration difficulties	3
Vomiting	3
Nausea	3
Swallowing difficulty	2
Redness of skin	2
Skin painful	2
Deep liquid-filled blisters	2
Total	**4**

FIGURE 8: SIGNS AND SYMPTOMS OF FAMILY MEMBERS, AS DESCRIBED BY THE ADULTS IN THE FAMILY

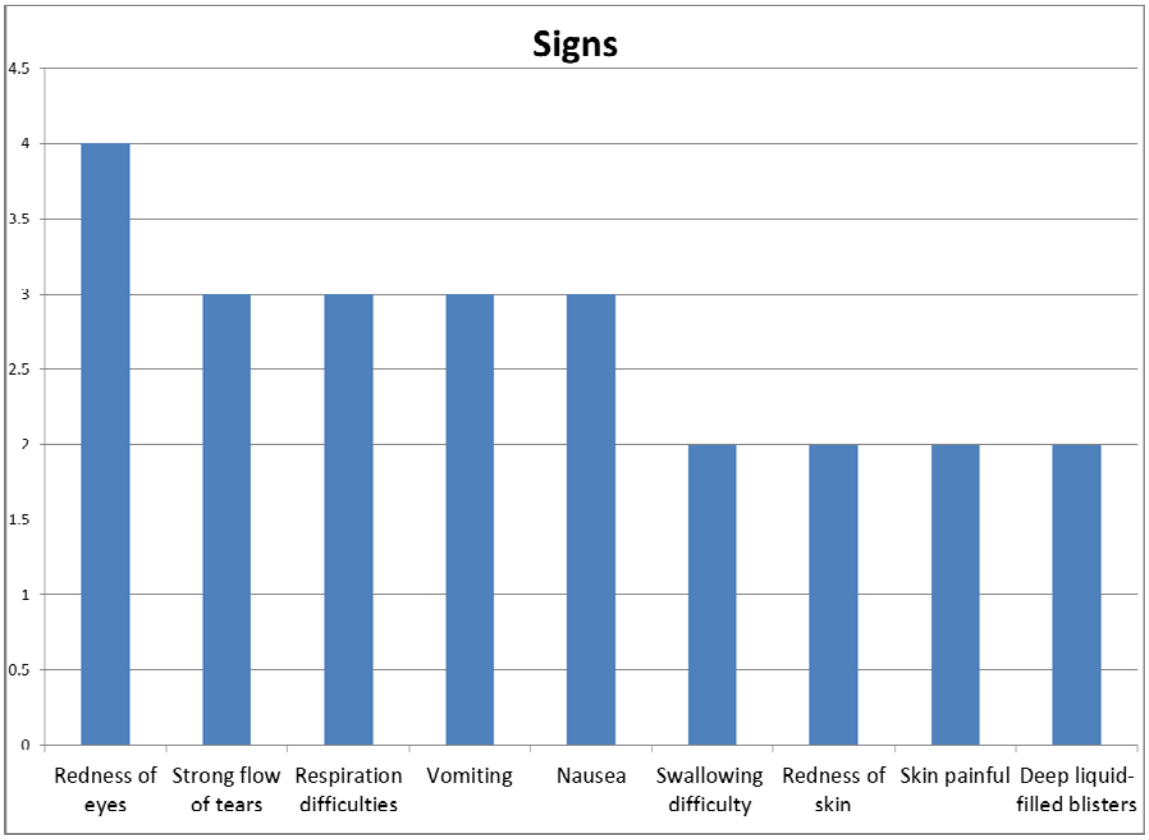


TABLE 6: CLINICAL EXAMINATION, SIGNS AND SYMPTOMS AS OBSERVED BY THE TREATING PHYSICIAN OF THE TWO ADULT CASUALTIES

Symptom	**No. of Affected Persons**
Redness of eyes	2
Eyes irritation	2
Swollen eyelids	2
Swallowing difficulty	2
Irritation of the mucous membrane	2
Respiratory signs	1
Urinary tract infection	1
Burn lesion	2
Deep liquid-filled blisters	2
Pigmentation	2
Total	**2**

FIGURE 9: THE CLINICAL EXAMINATION, SIGNS AND SYMPTOMS AS OBSERVED BY THE TREATING PHYSICIAN OF THE TWO ADULT CASUALTIES

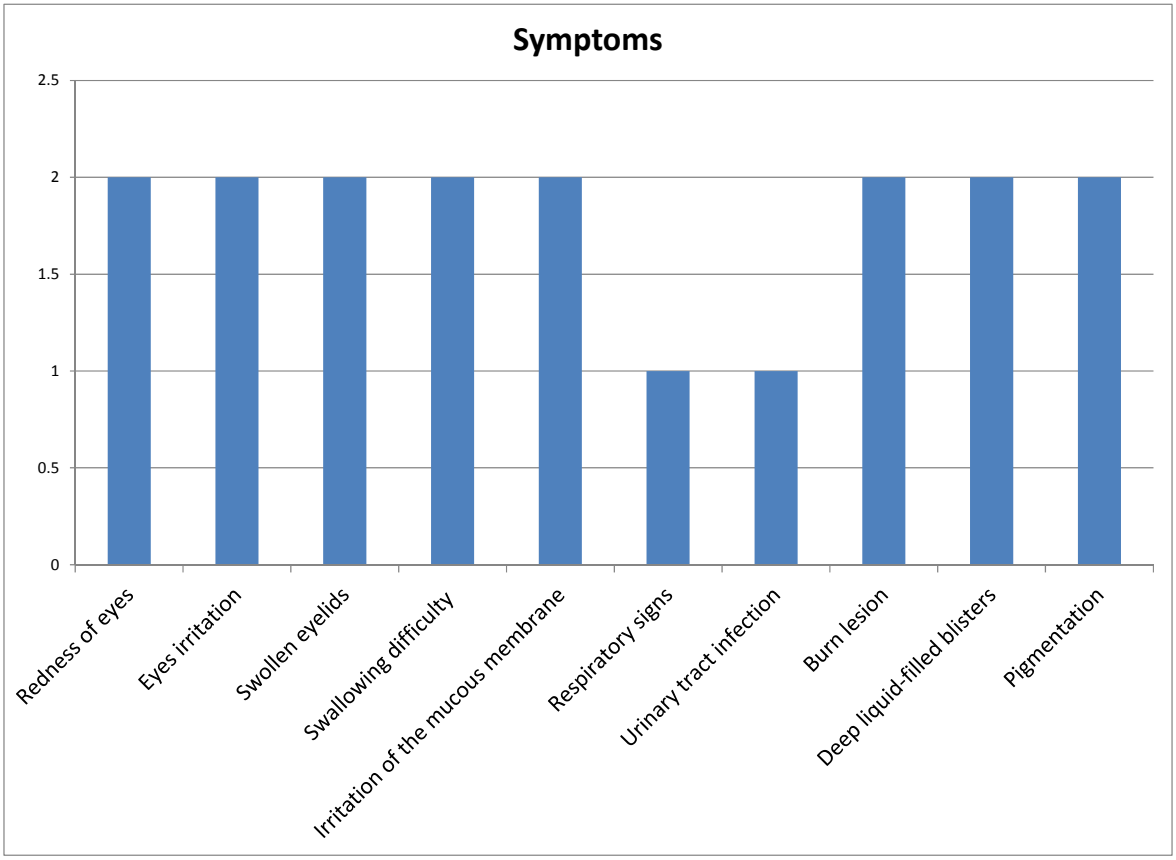


TABLE 7: LABORATORY AND RADIOLOGICAL EXAMS CONDUCTED BY "HOSPITAL 1" IN COUNTRY X FOR THE 2 ADULT CASUALTIES

General blood analysis	2
General urine analysis	2
General blood culture	2
General urine culture	2
X-ray	2

3.26 The visual examination during the interview of the two adult casualties met by the FFM (18 days after the incident) demonstrated several burn lesions (first and second degree) and pigmentation, and the patients' voices were hoarse. In addition, the wife presented a scar, most probably from recent caesarean surgery.

Report of biomedical samples

3.27 The FFM witnessed the collection, by hospital staff, of biomedical samples (blood and urine) from the two adult casualties met by the FFM. Blood was separated in-country into plasma and cells, and then divided into three aliquots from each individual. Urine was also divided into three aliquots from each individual.

3.28 The samples were received at the OPCW Laboratory on 11 September 2015, and were unpacked and stored (under seal) in the secure archive. The samples were repackaged and transported to two partner laboratories on 21 and 24 September 2015 under escort of OPCW Laboratory chemists. This complete process was documented, and the chain of custody of all samples was maintained.

3.29 In total, there were three aliquots from each sample. No aliquots were given to any parties other than the laboratories. The first aliquot is safely stored in the secure archive in Rijswijk. The second and third aliquots were sent to two partner laboratories (laboratories noted as "lab 2" and "lab 3").

3.30 The following table summarises the findings from the analyses of the biomedical samples.

TABLE 8: SUMMARY OF THE ANALYSIS FROM THE BIOMEDICAL SAMPLES

Sample Code	Sample Type	Findings
1047/B	Blood plasma	Indicators of sulfur mustard exposure: Serum albumin tripeptide adduct Derivative of released thiodiglycol
1058/B	Blood plasma	
1047/U	Urine	Indicators of sulfur mustard exposure: Derivative of thiodiglycol Derivative of sulfur mustard metabolites
1058/U	Urine	

3.31 The analyses of the two laboratories are consistent. The two laboratories confirmed the presence of indicators of sulfur mustard in the plasma samples for both victims. The laboratories also confirmed the presence of indicators of sulfur mustard exposure in urine samples for one of the victims. One of the designated laboratories indicated a negative result for urine concerning one victim.

Certificate of death

3.32 A certificate of death related to the baby, received from the family through an NGO, confirmed that the date of death was 4 September 2015 in hospital 3. The type of death was natural death caused primarily (directly) by a bacterial sepsis due to (secondary) chemical weapon poisoning. No autopsy was requested. The FFM did not receive any further information from hospital 3.

Impact points

3.33 The following figures show an aerial view of Marea and the alleged impact point of the munition that caused injury to the family.

FIGURE 10: AERIAL VIEW OF MAREA

FIGURE 11: LOCATION OF IMPACT POINT IN MAREA

4. DISCUSSION AND CONCLUSIONS

4.1 Based on monitoring of media reports by the Secretariat, the FFM was ready to mobilise very quickly after reports appeared in the media. This capability was critical to being able to meet patients whilst there was still a high potential for retrieving relevant biomedical samples. Thus, the casualties' testimony could be taken whilst it was relatively fresh in their memories and bio-markers in samples could be detected before the body had the chance to metabolise them.

4.2 On deployment, the team was able not only to meet alleged casualties but also to interview them and to witness the taking of both blood and urine samples. The credibility of these is further enhanced by the interview with the treating physician and supplemented by a member of hospital staff who encountered the casualties on initial medical referral, closer to the location and date of the alleged incident.

4.3 Due to the risks associated with visiting the alleged incident area and the apparent nature of the alleged chemical, the team was not able to obtain other samples, whether chemical, munition, or environmental. Furthermore, the interviews did not concentrate on means of deployment, particularly due to time constraints related to the health and care of the patients. Thus, with predominantly open-source information, the team could not establish a great degree of confidence regarding the means of deployment of chemical.

4.4 This investigation demonstrated:

(a) an unusual prior event;

(b) a number of afflicted persons with a similar disease or syndrome presenting at around the same time;

(c) a number of cases of unexplained disease;

(d) an illness occurring in an unusual setting within a community;

(e) analyses of signs and symptoms; and

(f) positive laboratory results.

4.5 The team deliberately deployed with a small footprint and at short notice to give the greatest surety of obtaining strong and certain evidence. Given the team size, the geographical spread of potential casualties and witnesses, and the practicalities in obtaining further samples (given the likelihood of them containing a Schedule 1 chemical), the focus was on prioritising this evidence rather than on trying to widen the scope to more casualties, witnesses, and/or to obtain more samples.

4.6 The team can confirm, therefore, with the utmost confidence that at least two people were exposed to sulfur mustard (Appendix 5) and were in the process of recovering from the exposure. Additionally, it is very likely that the effects of sulfur mustard resulted in the death of an infant.

Appendix 1

FFM TEAM MEMBERS

Name	Role(s)	Speciality
Inspector 1	Team Leader	CPT
Inspector 2	Deputy Team Leader. Interview team. Sample handling	AC
Inspector 3	Interview team. Logistics. Sample handling support	HSS
Inspector 4	Interview team coordinator	MD
MPC 1	HQ-based operational and planning support	MPC

Appendix 2

TIMELINES

Mission Timelines

Date (all 2015)	Activity	Location
21 August	Alleged incident	Not applicable to the team
22 August	TS aware of incident. Initial review of open source media	The Hague
25 – 27 August	Networking and liaison with potential enablers of a mission.	HQ
27 August	Team ready to deploy	HQ
3 – 10 September	Deployment. Included negotiations with family members and hospital staff, prior to interviews with patients	Country X
11 September to date	Interview transcription, evidence review, report writing, concurrent with separate mission.	HQ

Patient Pathway

	Projectile	**21 August 2015 10:00 to 11:30**
Vomiting Eyes and skin redness	House	One hour later
Difficulty of swallowing **Visual disturbance**	**House**	**Few hours later**
Burn, ophthalmic and respiratory signs	Marea hospital	16:00 or 17:00 (6 to 7 hours later)
	Direct referral to **Tal Refaat hospital** **Seju Hospital**	
Blisters	Kilis hospital	22 August 2015 After midnight (> 12 hours later)
Burn, ophthalmic and respiratory signs	**Hospital**	**22 August 2015 14:00 (~27 hours later)**
	Interview	9 September 2015 (19 days later)

Appendix 3

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/SOP/GG011	Standard Operating Procedure for Managing Inspection Laptops and Other Confidentiality Support Materials
5.	QDOC/LAB/SOP/OSA2	Standard Operating Procedure for Off-Site Analysis of Authentic Samples
6.	QDOC/LAB/WI/CS01	Work Instruction for Handling of Authentic Samples from Inspection Sites and Packing Off-Site Samples at the OPCW Laboratory
7.	QDOC/LAB/WI/CS03	Work Instruction for Documentation, Chain of Custody and Confidentiality for Handling Off-Site Samples at the OPCW Laboratory
8.	QDOC/LAB/WI/OSA3	Work Instruction for Chain of Custody and Documentation for OPCW Samples On-Site
9.	QDOC/LAB/WI/OSA4	Work Instruction for Packing of Off-Site Samples

Appendix 4

OPEN-SOURCE REFERENCES AND INFORMATION

Date of Incident	Location	District	Source/link(s)
21/08/2015	Marea	Aleppo	https://en.wikipedia.org/wiki/Use_of_chemical_weapons_in_the_Syrian_civil_war, https://twitter.com/Maraei_Halabi/status/634623344139182080, https://www.facebook.com/marea.news3/posts/1144195432263849, https://www.facebook.com/omar.hafez.1422/posts/493507697473119, http://www.shaam.org/ال دول ة ت نـظ يـم/ سـوري ة أخ بـار/الأخ بـار سامة غازات ت حوي ب قذائ ف ي س تهدف - - - - - - - .html, https://www.facebook.com/ShaamNetwork.Arabic/posts/1026469854070255https://youtu.be/mWk8ObYs6do, https://twitter.com/Maraei_Halabi/status/634936201955426304/photo/1, https://twitter.com/Ahmadmuaffaq/status/635020557780516864, https://www.facebook.com/ShaamNetwork.Arabic/photos/a.170186573031925.48606.165780076805908/1026920057358568/?type=1, http://www.shaam.org/%D8%A7%D9%84%D8%A3%D8%AE%D8%A8%D8%A7%D8%B1/%D8%A3%D8%AE%D8%A8%D8%A7%D8%B1-%D8%B3%D9%88%D8%B1%D9%8A%D8%A9/%D8%A7%D9%84%D8%B3%D8%A7%D9%83%D8%AA-%D9%8A%D8%A4%D9%83%D8%AF-%D8%A7%D8%B3%D8%AA%D8%AE%D8%AF%D8%A7%D9%85-%D8%AA%D9%86%D8%B8%D9%8A%D9%85-%D8%A7%D9%84%D8%AF%D9%88%D9%84%D8%A9-%D8%A7%D9%84%D8%AE%D8%B1%D8%AF%D9%84-%D9%81%D9%8A-%D9%82%D8%B5%D9%81-%D9%85%D8%A7%D8%B1%D8%B9-%D8%A7%D9%84%D8%A3%D9%85%D8%B3.html, https://twitter.com/Mamoun_sy/status/635522268152659968/photo/1

Appendix 5

CHARACTERISTICS OF MUSTARD AGENTS

1. Mustard agents are usually classified as “vesicants” or "blistering agents" owing to the types of the tissue damage caused by these substances, resulting in burns and blisters to tissues with which they come in contact. The effect of mustard agent is delayed and the first symptoms do not occur until 2-24 hours after exposure.

2. In its pure state, mustard agent is colourless and almost odourless. At room temperature, mustard agent is a liquid with low volatility and is very stable during storage.

3. In the form of gas or liquid, mustard agent attacks the skin, eyes, respiratory track and gastro-intestinal tract. Internal organs may also be injured, mainly blood-generating organs. The delayed effect is a characteristic of mustard agent. It gives no immediate symptoms upon contact and consequently a delay of two to twenty-four hours may occur before pain is felt and the victim becomes aware of what has happened. By then cell damage would have already begun.

4. Acute mortality arising from exposure to mustard agent is low. The most common cause of death as a result of mustard agent poisoning is the complications after lung injury caused by inhalation of mustard agent.

5. There is no antidote which can affect the basic cause of mustard agent injury. Instead, efforts must be made to treat the symptoms. The most important response measure in the event of suspected or known exposure to mustard is to rapidly and thoroughly decontaminate the patient as soon as possible.

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