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**Technical Secretariat**

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**NOTE BY THE TECHNICAL SECRETARIAT**

**SECOND REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA  
KEY FINDINGS**

1. On 29 April 2014, the Director-General announced the creation of an OPCW Fact-Finding Mission in Syria. The Mission was mandated to establish the facts surrounding allegations of the use of toxic chemicals, reportedly chlorine, for hostile purposes in the Syrian Arab Republic.
2. The Fact-Finding Mission submitted its summary report covering the period from 3 to 31 May 2014 on 16 June 2014 (S/1191/2014, dated 16 June 2014) which was circulated to the States Parties.
3. The Second Report of the Fact-Finding Mission, including its key findings, is hereby circulated for the information of States Parties to the Chemical Weapons Convention.
4. The Director-General considers it expedient for the Fact-Finding Mission to continue its work, which will include transcribing the recorded evidence and data that it has obtained as well as continuing to look into other alleged incidents.

Annexes:

- Annex 1: Cover Note by the Head of the OPCW Fact-Finding Mission in Syria  
Annex 2: Second Report of the OPCW Fact-Finding Mission in Syria – Key Findings



**Annex 1**

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

10 September 2014

Director-General,

In continuation of the Summary Report of the Fact-Finding Mission (FFM) in Syria, dated 16 June 2014, I submit herewith the second report on the work recently conducted by the FFM, including its key findings.

Malik Ellahi  
Head of the FFM

## Annex 2

### SECOND REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA KEY FINDINGS

#### Introduction

1. On 16 June 2014, the OPCW Fact-Finding Mission (FFM) in Syria submitted to the Director-General the “Summary Report of the Work of the OPCW Fact-Finding Mission in Syria Covering the Period from 3 to 31 May 2014” (S/1191/2014, dated 16 June 2014). The Executive Council of the OPCW (hereinafter “the Council”), at its Forty-Second Meeting, and then at its Seventy-Sixth Session, emphasised its unequivocal support for the Director-General’s decision “to continue the Mission, while stressing that the safety and security of Mission personnel remains the top priority. The Council called upon all parties in the Syrian Arab Republic to extend their full cooperation to the Mission and to ensure that it completes its work safely and effectively. The Council also encouraged all States Parties that are in a position to do so to work with the relevant parties in the Syrian Arab Republic in this respect.”
2. Based on the Director-General’s decision and the guidance provided by the Council, the FFM commenced preparations to conduct the second phase of its work. A key objective for the FFM was to carry out some of the activities that it had been unable to perform because of the attack on its convoy while heading for Kafr Zita on 27 May 2014. Such activities would have included on-site collection of samples and other evidence and, more significantly, the acquisition of the testimony of victims, treating physicians, first responders, and eye-witnesses. On return to the Headquarters, the FFM began planning to interview witnesses at a safe location outside of Syria as an alternative to visiting the sites in question. A plan was finalised to bring witnesses from the villages of Talmenes, Al Tamanah, and Kafr Zita to an identified safe location. The FFM arrived at the location on 18 August 2014. The first group of witnesses from Talmenes arrived on 25 August 2014 and the interviews started the same day. Subsequently, two additional groups of witnesses from Al Tamanah and Kafr Zita were interviewed, with the process concluding on 4 September 2014.
3. As part of the arrangements for the interviews, the FFM agreed that, except for the names of the villages in question, the names of individuals and any other such information that the witnesses deemed might cause risks to their safety, would not be mentioned in this report or otherwise divulged.
4. This report presents the key findings from the interviews and the considerable amount of documentation and other relevant information collected by the FFM. For background purposes, reference may be made to the earlier report of the FFM (S/1191/2014).

#### Organisation of work

5. The FFM organised its work in two teams, each led by an OPCW medical doctor and supported by another interviewer/note-taker and an interpreter. The Head of the FFM acted as the interview coordinator. All witnesses agreed to participate in a recorded interview by signing a consent form. This includes both an audio and video record.

Four individuals consented to an audio record only. After each interview was recorded (audio and video), the consent form, the recordings, and any other information provided by the witness, such as medical documents, sketches, photographs, or videos, were collated, sealed, and registered as confidential material.

6. Each individual submitted their identification documents issued by the Government of the Syrian Arab Republic, indicating their date and place of birth, place of residence, and other particulars. The treating physicians also submitted copies of their medical credentials.
7. In organising the interviews, the FFM worked closely with the organisation “Violations Documentation Center in Syria”.
8. Independently of the individuals from the three villages who were interviewed, the FFM interviewed and received information from members of the “CBRN<sup>1</sup> Task Force”, who had performed a systematic collection of data in the field following reported attacks in Talmenes and Kafr Zita.

### **Events and conditions in the three villages as described to the FFM**

#### Salient description of events relating to each of the three villages

9. **Talmenes**, a village located in the province of Idlib, has a population of some 20,000 inhabitants. The village has one small field medical clinic, established about 18 months ago, with very limited resources and facilities offering only basic medical aid. Fourteen individuals from Talmenes were interviewed between 25 and 29 August 2014. This group included two treating physicians, two nurses/medical responders, and 10 victims/witnesses. Witnesses recalled two attacks with barrel bombs containing chlorine dropped from helicopters. These attacks occurred on 21 and 24 April 2014, respectively. The first attack, as related to the FFM, was at around 11:00, with two devices striking close to each other and resulting in nearly 200 casualties. One woman, a teenage girl, and a seven-year old boy died as a result of exposure to lethal doses.
10. **Al Tamanah** is a nearby village that has two field medical clinics with minimal resources in terms of medicines and medical equipment. They have the capability to provide only the most basic medical aid to limited number of individuals. The FFM interviewed and collected testimonies from 14 individuals, including two treating physicians, two nurses/medical responders, and 10 victims/witnesses. These interviews were held from 29 August 2014 to 2 September 2014. According to the witnesses, this village has been attacked five times with barrel bombs containing chlorine dropped from helicopters. The dates recounted are 12, 18, and 30 April 2014, and 22 and 25 May 2014. All attacks, except the one of 22 May 2014, occurred at night. These attacks resulted in more than 150 casualties, and eight of the most severely affected, mostly women and children, died from exposure to lethal doses of the toxic chemical.

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<sup>1</sup> CBRN = chemical, biological, radiological, and nuclear.

11. **Kafr Zita** is a small town located some 30 km from the city of Hama in northern Syria. The town had two hospitals, one of which was destroyed during an air raid. Witnesses reported some 17 “chlorine” attacks, with the last one occurring as late as 28 August 2014. These attacks led to dozens of casualties. The witnesses could recall at least two deaths, and a high number of casualties. One of these attacks occurred in the vicinity of the town hospital and medical personnel themselves suffered exposure. The FFM interviewed nine individuals from this town, including two treating physicians, two nurses/first responders, and five witnesses/victims. These individuals were interviewed from 2 to 5 September 2014. Given the frequency of the attacks on Kafr Zita, these witnesses seemed to suffer from stress and could not exactly recall the numerous dates and the times of the attacks. The medical records handed over to the team by the treating physicians, however, provide the dates on which casualties were treated.

### **Key Findings in Narrative**

12. The 37 recorded testimonies from witnesses belonging to the three villages, together with documentation, including medical records collected by the FFM, present a composite account of the conditions experienced in the three villages, especially in the aftermath of the attacks. The frequency of the reported attacks, the first-hand accounts provided by a relatively large number of witnesses, and the significant amount of supporting data and documentation create a distinctly discernable and revealing narrative.
13. When the attacks began, people responded in the manner to which they had become accustomed. These villages are under constant attack from high-explosive ordnance. Such attacks would typically occur following the sound of helicopters flying at high altitude. A rudimentary early-warning mechanism would warn people to take shelter. Some spotters would position themselves so as to keep an eye on the movements of the aircraft. Given the high altitude, the features of the helicopters would be barely visible, though some witnesses described the helicopters as having a “wing like” extension on both sides, from which the ordnance—described by them as barrel bombs—was released. Once released, people expected the familiar strong thunderclap of high explosives and proportional destruction.
14. In describing the incidents involving the release of toxic chemicals, witnesses invariably connected the devices to helicopters flying overhead. When dropped, a piercing heavy, whistling sound—some comparing it to that of a fighter jet in a dive—would be heard before the barrel hit the ground. Witnesses also invariably reported the explosions as being muffled. As described, these explosions were more akin to high-impact crashes rather than to loud explosions. The descriptions of the locations impacted and of immediate environments suggest that the devices were designed either to rupture on impact or carry a small improvised explosive charge. Villagers have collected a grainy compound from an unexploded device that resembles synthetic chemical fertiliser. A bag full of this material was presented to the FFM.
15. The physical damage in the immediate environment of the points of impact, as described and as seen on video, is consistent with what would normally occur as a

result of a heavy object impacting a built-up area with massive force: no fires were reported, and no obliteration of residential compounds. Common features included the partial collapsing of roofs—where these devices struck the houses directly—collapsed walls, and impact craters.

16. In courtyards, domesticated birds and animals died, and leaves on plants facing the point of impact withered and wilted “as autumn leaves”. In one case, a child standing close to the impact site died later because of exposure to the toxic chemical, while showing none of the obvious physical trauma as that usually inflicted by a conventional explosive device. In the houses that were exposed to the toxic chemical, discolouration of clothes and furniture was reported.
17. These descriptions are consistent with many publicly available accounts as well as with the video footage acquired by the FFM. Some of the locations described by the witnesses tally with those previously reported to have been attacked. Videos seen and retained by the FFM include a demonstration of geographic coordinates confirming the points of impact in Talmenes and Kafz Zita.
18. Other reports that provide further insight into the conditions include observations by ordinary citizens that low-lying areas created greater exposure than higher elevations. In one village, citizens had identified and used a low-lying area in the north-east of the village as a refuge against shrapnel and flying debris during conventional attacks. On 21 April 2014, when Talmenes was first struck by toxic chemicals, the wind was blowing towards the east. Unaware of the downwind hazard of toxic chemicals, unsuspecting villagers attempted to escape to their usual shelter. The gas cloud also headed in the same direction and descended into the depression, thus leading to the large number of casualties. Relating a similar observation, a volunteer first responder with no training and only basic education said that, driving through the village, the lower lying parts carried a stronger odour of the substance than higher elevations.
19. The FFM repeatedly encountered accounts of people attempting to flee the affected areas and taking precautions instinctively or to best of their knowledge and resources. One family, whose house was struck, reportedly took shelter in the bathroom, standing under a shower; others reported covering their mouths and faces with wet towels, and still others unsuccessfully tried to protect themselves using paper masks that are effective only against dust. A sleeping toddler escaped serious exposure because her face was covered with a blanket to protect her against insects. Other family members suffered much greater exposure.
20. One account described to the FFM concerned an attack that occurred “one day before the end of Ramadan” this year, and just a few minutes before the time to break the daily fast. The affected individuals in this case had taken refuge in a basement shelter, expecting a conventional attack from a helicopter, when a barrel bomb with chlorine fell some 40 to 50 m away from the shelter. This basement shelter, approximately 10 x 10 m in size, has two entrances/exits; one opening to the north and another opening to the south-east. The latter is connected to a street at a higher elevation compared to the northern exit. The shelter was packed with people from the neighbourhood. They were informed about the chlorine attack and asked to escape to higher ground. By this time, the victims also began to smell the odour of chlorine.

Some people took the south-east exit and were less exposed, whereas those who took the north exit ran directly into the chlorine cloud heading in a north-south direction. These individuals developed more severe symptoms, with some immediately falling unconscious and regaining consciousness later in the hospital.

21. People typically described a dense, honey wax-to-yellow hue towards the centre of the cloud rising from the impact of the devices. The cloud would rise to a height of approximately 60 to 70 m and then settle, moving along the ground in the direction of the wind. All described the toxic chemical smell as being very strong, irritating, and of “chlorine”. The intensity of the odour would begin to reduce in the vicinity of impact sites some 30 to 45 minutes later.
22. Casualties were evacuated from the vicinity of the impact sites by ambulance; some were makeshift, with volunteers using personal cars and motorbikes, and some people were evacuated on foot. Another striking feature in the testimonies was that local field hospitals established to treat the war wounded were severely handicapped in treating the high number of casualties, and there was therefore a frequent transfer of patients to the neighbouring villages. The doctors who were interviewed reported treating patients from other locations. This was a recurring theme during the interviews. Many severely affected individuals were reported to have been evacuated for treatment outside of Syria. The hospital admission and discharge records from these hospitals have not yet been accessed by the FFM. The FFM was made aware that autopsies on at least two victims were also performed outside Syria, and the findings from the pathology report are also of interest to the FFM as further confirmatory information.
23. In the earlier attacks, first responders rushing to the scene to help reported getting exposed themselves, some seriously, with many requiring medical attention. As the attacks became more frequent, people adapted. First responders started using wet cloths or trauma bandages as masks. With the very first attacks, medical professionals expecting the usual war victims reported being taken aback by the fact that the mere presence of victims in the hospitals made the entire premises smell strongly of a substance similar to what was variously described as bleach, cleaning material, or chlorine. The medical personnel at these clinics did not have personal protective equipment for their personal safety, and had to manage with surgical masks and latex gloves. Most of them also later suffered from symptoms resulting from cross-contamination. Physical injuries, such as those caused by conventional ordnance, were nearly always absent among those reporting to the hospitals for medical treatment.
24. Those reporting casualties to the clinics frequently decontaminated themselves by washing their face and exposed parts of body with soap and water. In one instance, people even used the available carbonated drinks, believing these to be effective.

#### **Clinical effects of exposure as described to the FFM**

25. The typical presenting symptoms of those who were exposed to the toxic chemical included a burning sensation in the eyes, redness and itching in the eyes, excessive tearing, blurred vision, a burning sensation on the face and exposed skin, burning in

the throat, coughing, difficulty breathing, shortness of breath, a feeling of suffocation, excessive nasal discharge, excessive watering in the mouth, nausea, vomiting, abdominal pain, diarrhoea, headache, generalised weakness, drowsiness, disorientation, a feeling of panic, and loss of consciousness.

26. The spectrum of clinical signs as observed by medical personnel included redness of the eyes, excessive lacrimation, rhinorrhoea, coughing, tachypnoea, dyspnoea, orthopnea, cyanosis, increased tracheal secretions, which were frothy and pink in severe cases, hypoxemia, with pulse oximetry showing an SpO<sub>2</sub> of less than 60% in severe cases, agitation, and altered levels of consciousness. In the most severe cases, patients had diffuse crepitations on auscultation and advanced respiratory distress. Available X-rays of those most severely affected show pulmonary oedema.
27. The medical team members of the FFM clinically examined some of those who were exposed but did not detect any abnormalities, though these individuals complained of increased sensitivity to strong odours, generalised weakness, occasional bouts of coughing, reduced stamina, and dyspnoea on exertion.
28. The treatment provided to those affected after initial exposure included oxygen inhalation, nebulisation with salbutamol, intravenous delivery of the steroids hydrocortisone or dexamethasone, intravenous fluids, and airway suction to remove secretions. Most of the less exposed casualties responded well to the treatment provided, with people being discharged from clinics within two to three hours. The most severely affected needed to be intubated and required mechanical ventilation. Since the local clinics are without ventilators, such casualties were referred to other hospitals outside of Syria, with a number of them not surviving the journey.

### **Conclusions**

29. Thirty-seven testimonies of primary witnesses, representing not only the treating medical professionals but a cross-section of society, as well as documentation including medical reports and other relevant information corroborating the circumstances, incidents, responses, and actions, provide a consistent and credible narrative. This constitutes a compelling confirmation that a toxic chemical was used as a weapon, systematically and repeatedly, in the villages of Talmanes, Al Tamanah, and Kafr Zeta in northern Syria. The descriptions, physical properties, behaviour of the gas, and signs and symptoms resulting from exposure, as well as the response of the patients to the treatment, leads the FFM to conclude, with a high degree of confidence, that chlorine, either pure or in mixture, is the toxic chemical in question.
30. Following the establishment of the FFM in late April, there was a marked reduction in allegations, especially in the months of May, June and July. However, during the month of August there was a spate of new allegations, with accounts of the incidents bearing strong resemblance to those that are now confirmed as having been chlorine attacks.