

# Chemical weapon use in Iraq and Syria and the international responses

58th ISODARCO course on: *Global Security & Regional Disorder: Evolving Challenges, Elusive Solutions?*

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# 1. General outline

- Definition of chemical warfare
- Chemical warfare agents
- 1993 Chemical Weapons Convention
- Iraq chronology
- Syria chronology
- Syria-related bodies
- Current status: Iraq
- Current status: Syria
- Conclusions

## 2. Definition of chemical warfare

- “Chemical weapons” means the following, together or separately:
  - (a) Toxic chemicals and their precursors, *except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes* [emphasis added];
  - (b) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph (a), which would be released as a result of the employment of such munitions and devices;
  - (c) Any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in subparagraph (b)’.

### 3. Toxic chemical

- “Toxic Chemical” means:
  - Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere’.

*Source:* Chemical Weapons Convention, Article II, para. 2.

## 4. Implementation of prohibitions

- Definition is phrased to cover multi-component systems.
- Phrasing embodies a so-called general purpose criterion (GPC)
  - Mechanism by which definition remains comprehensive
    - Scientific and technological developments
    - Not ‘lists-based’ (i.e., avoids exclusions)
- Old and/or abandoned chemical weapons (OACW) are distinct from general definition and are subject to less intrusive declaration and verification requirements.
- “Offensive” versus “defensive” activity and/or programmes (i.e., potential grey areas).
- Chemical industry verification regime based on Annex on Chemicals.
  - Schedules 1, 2, 3
  - Certain unscheduled discrete organic chemicals that may contain phosphorus, sulphur or fluorine (DOC/PSFs).

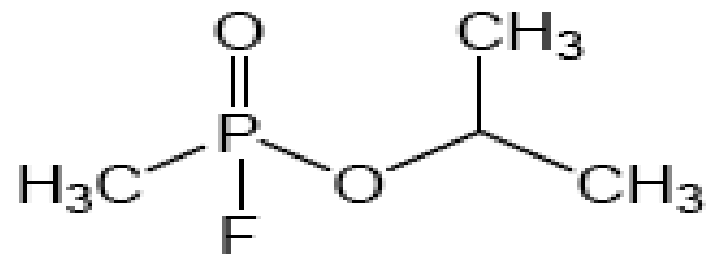
# 5. Chemical warfare agents

- Standard agents
  - Blister sulphur mustard (H, HD)
  - Organophosphorus nerve agents: sarin, VX
- Toxic industrial chemicals (TICs)
  - Chlorine, phosgene
- Non-standard/novel agents
  - Fentanyl derivatives

## 6. Selected agents: sulphur mustard\*

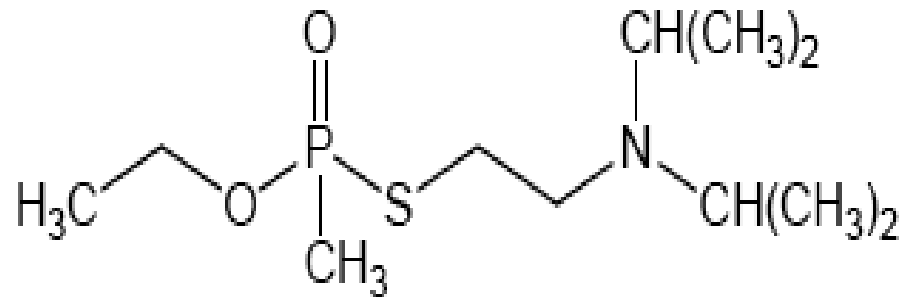


## 7. Selected agents: sarin\*





## 8. Selected agents: VX\*



## 9. \*Citation

D'Agostino, P. A., Chenier, C. L., *Analysis of Chemical Warfare Agents: General Overview, LC-MS Review, In-House LC-ESI-MS Methods and Open Literature Bibliography*, Technical Report DRDC Suffield TR 2006-022, unclassified (Defence Research and Development Canada: Suffield, Canada, Mar. 2006), p. 4.

## 10. Sulphur mustard skin effects\*



\*Source: Hurst, C. G., et al., 'Vesicants', p. 268 in Ed. Shirley D. Tuorinsky, *Medical Aspects of Chemical Warfare* (Borden Institute: Washington, DC, 2008).

# 11. World War I casualty estimates

Country	No.	Deaths	% of deaths/casualties
Russia*	475 340	56 000	11.7
France	190 000	8 000	4.2
Italy*	13 300	4 627	34.7
United States	70 752	1 421	2
United Kingdom	180 983	6 062	3.3
Germany	78 663	2 280	2.9
<b>Total</b>	<b>1 009 038</b>	<b>78 390</b>	<b>7.7</b>

*Source:* Gilchrist, Harry L., *A Comparative Study of World War Casualties from Gas and Other Weapons* (Edgewood Arsenal: Maryland, 1928), p. 7. \*Deemed by Gilchrist to be unreliable. Gilchrist's numbers are partly based on the UK's *Official History of the War, Medical Services, British Army*, vol. 2 (1924?); and, probably, W. D. Bancroft, et al, *The Medical Department of the United States Army in the World War, Medical Aspects of Gas Warfare*, vol. XIV (US Government Printing Office: Washington, DC, 1926). The UK issued similar studies of WW I casualties and deaths.

# 12. Chemical Weapons Convention (CWC)

- Implemented by the Organisation for the Prohibition of Chemical Weapons (OPCW)
  - Conference of the States Parties (CSP)
  - Executive Council (EC)
  - Technical Secretariat (TS)
- 193 States Parties
- 98 percent of declared stockpiles destroyed
- OPCW Designated Laboratory Network
  - 22 accredited in 2018
  - Must pass annual proficiency testing

# 13. OPCW activities

- Verified elimination of chemical weapons
- Achieving universal adherence to the CWC
- Preventing the re-emergence of chemical warfare
- Supporting national implementation
- Promotion of the peaceful uses of chemistry
- Assistance and protection against chemical warfare threats
- Responding to the use of chemical weapons

# 14. OPCW, cont'd

- 'Managed access' (cost, scope, level of intrusiveness)
  - Routine (chemical industry, CW-related)
  - Non-routine (challenge inspections, cooperation and fact-finding provisions of Article IX, Syria DAT, FFM, JIM, IIT, UN Secretary-General's investigative mechanism)
- List of Approved Inspection Equipment (C-I/DEC.71 and corr.1; S/1375/2016)
- General Operational Requirements and Common Criteria for All Inspection Equipment (C-I/DEC.71)
- Approved analytical techniques (GC, IR, MS, NMR)
- OCAD (circa 5000 CWC-listed chemicals—mainly GC/MS mass spec and retention indices; 'blinding' software', modalities for supplemental databases).

## 15. Iraq chronology

- Engaged in chemical warfare during the 1980-1988 Iran-Iraq War.
- UN Security Council Resolution 687 (1991) obligated Iraq to inter alia unconditionally remove and destroy all chemical weapons under the supervision of the UN Special Commission on Iraq (UNSCOM).
- Iraq joined the CWC in 2009.
- Al-Muthanna Complex declared to OPCW, captured by IS/Daesh forces, recaptured by Iraqi government forces and encapsulated in concrete in 2017.
- Concern that chemical weapon remnants or new chemical weapons would be used in the context of fighting against IS/Daesh forces (burning of elemental sulphur, H/HD synthesis and use).
- OPCW analytical support for H/HD forensics.



# 16. Syria chronology

- Conflict may be dated to March 2011.
- Longstanding allegations of CW programmes and stockpile—centred on sulphur mustard, sarin and VX.
- 23 July 2012 Syria MFA briefing
- March 2013 request by Syria to UN Secretary-General to investigate suspected chlorine use by opposition forces
- UN SG team forward deployed to Cyprus permitted to investigate August 2013 Ghouta incident
- OPCW involvement
  - Russia-US framework agreement 14 Sep. 2013
  - SY discloses CW holdings on 20 Sep. 2013
  - OPCW EC decision dated 27 Sep. 2013 adopted in conjunction with UN Security Council Resolution 2118 (2013).

# 17. Syria's initial declaration\*

- 41 facilities at 23 sites.
- 18 chemical weapon production facilities [later revised to 27]
- 12 chemical weapon storage facilities.
- 8 mobile filling units, 3 chemical weapon-related facilities.
- 1000 tonnes of Category 1 chemicals (mainly precursors).
- 290 tonnes of Category 2 chemicals.
- 1230 unfilled munitions and 2 cylinders not claimed by Syrian Government and possibly filled with chemical weapons.
- Site diagrams for chemical weapon storage facilities.

*\*Source: Progress in the elimination of the Syrian chemical weapons programme', Note by the Director-General, OPCW document EC-*

*M-34/DG.1, 25 Oct. 2013.*

# 18. Consultations on completeness and correctness of SY declarations

- Documentation availability.
- Declarability of hexamine, and work with ricin.
- Identity and declarability of chemical samples taken during OPCW facility visits.
- Verification of destruction of infrastructure outside government control.
- OPCW Declaration Assessment Team (DAT): April 2014-present.

# 19. Maritime removal and destruction operations (2013-2014)

- OPCW-UN Joint Mission established 16 October 2013.
- Headed by Special Coordinator Sigrid Kaag of the Netherlands with dual reporting obligations to the OPCW and the UN Security Council.
- Chemicals removal operations from Latakia by Danish-Norwegian Combined Task Force (CTF)
- Sulphur mustard hydrolysis on MV Cape Ray
- Chemicals treatment in Finland, Germany, the United Kingdom and the United States.

# MV Cape Ray

(The container ship M/V Cape Ray departs Portsmouth, Va., Jan. 10, 2014, for sea trials. U.S. Navy photo by Petty Officer 2nd Class Jared Walker)



## 21. OPCW Fact-finding Mission (FFM)

- Established April 2014.
- Collected and analysed information related to numerous instances of suspected CW use in Syria
- Does not attribute responsibility.
- Has provided the information baseline to support the work of the OPCW-UN Joint Investigative Mechanism (JIM).
- Continues to operate.



## 22. OPCW-UN Joint Investigative Mechanism in Syria (JIM)

- Established by UN Security Council 2235 (2015) in August.
- Mandate expired in November 2017 due to disagreements among the 5 permanent members (P5).
- Issued 7 main reports that attributed responsibility for CW use to both the Syrian Government and non-state actors:
  - S/2016/142, dated 12 Feb. 2016
  - S/2016/530, dated 10 June 2016
  - S/2016/738, dated 24 Aug. 2016
  - S/2016/888, dated 21 Oct. 2016
  - S/2017/131, dated 13 Feb. 2017
  - S/2017/552, dated 28 June 2017
  - S/2017/904, dated 26 Oct. 2017

## 23. Attributions of responsibility by the JIM

Location	Date	Attribution	Chemical weapon agent
Marea	21 Aug. 2015	Non-state actor	Sulphur mustard
Umm Hawsh	16 Sep. 2016	Non-state actor	Sulphur mustard
Talmenes	21 Apr. 2014	Syrian Government	Chlorine
Qmenas	16 Mar. 2015	Syrian Government	Chlorine
Sarmin	16 Mar. 2015	Syrian Government	Chlorine
Khan Shaykhun	4 Apr. 2017	Syrian Government	Sarin (or 'sarin-like')

*Source:* United Nations, Security Council, 'Third report of the Organization for the Prohibition of Chemical Weapons–United Nations Joint Investigative Mechanism', S/2016/738, 24 Aug. 2016; and United Nations, Security Council, 'Seventh report of the Organisation for the Prohibition of Chemical Weapons–United Nations Joint Investigative Mechanism', S/2017/904, 26 Oct. 2017.



# 24. 2018-2019 Syria-related developments

- 7 April 2018 chlorine was allegedly used at Douma.
- 21 April FFM visited one of two sites and collected samples.
- Russia reportedly conducted field investigations in parallel.
- WHO stated approximately 500 people sought treatment who displayed ‘signs and symptoms consistent with exposure to toxic chemicals’ WHO, ‘WHO concerned about suspected chemical attacks in Syria’, Press Release, 11 Apr. 2018, <<http://www.who.int/mediacentre/news/statements/2018/chemical-attacks-syria/en/>>
- 26 April Syria-Russian Federation press briefing in parallel to OPCW EC meeting.

## 25. 2018-2019 Syria-related developments, cont'd

- Special Session of the Conference of the States Parties convened in June 2018 and mandated by majority vote the OPCW to attribute formal responsibility for CW use, including where SY involvement is possible.
- Attribution to be carried out by newly established OPCW Investigation and Identification Team (IIT).

## 26. FFM findings on Douma incident

- Investigation is context-dependent and partly based on:
  - Site visits,
  - Chemical detection
  - Biomedical and environmental sampling
  - Witness and casualty interviews
  - Examination of 2 industrial cylinders for pressurized gas
- Sampling and analysis focused on stable chlorine reactive species—mainly bornyl chloride [a chlorinated derivative of alpha-pinene, a compound found in coniferous wood]
- Bornyl chloride is not normally encountered naturally in the environment.
- Other chemicals such as phosgene and HCN can yield such bornyl chloride.

## 27. FFM findings on Douma incident, cont'd

- ‘Regarding the alleged use of toxic chemicals as a weapon on 7 April 2018 in Douma, the Syrian Arab Republic, the evaluation and analysis of all the information gathered from the FFM—witnesses’ testimonies, environmental and biomedical samples analysis results, toxicological and ballistic analyses from experts, additional digital information from witnesses—provide reasonable grounds that the use of a toxic chemical as a weapon took place. This toxic chemical contained reactive chlorine. The toxic chemical was likely molecular chlorine’. [S/1731/2019, 1 Mar. 2019, para. 2.17]

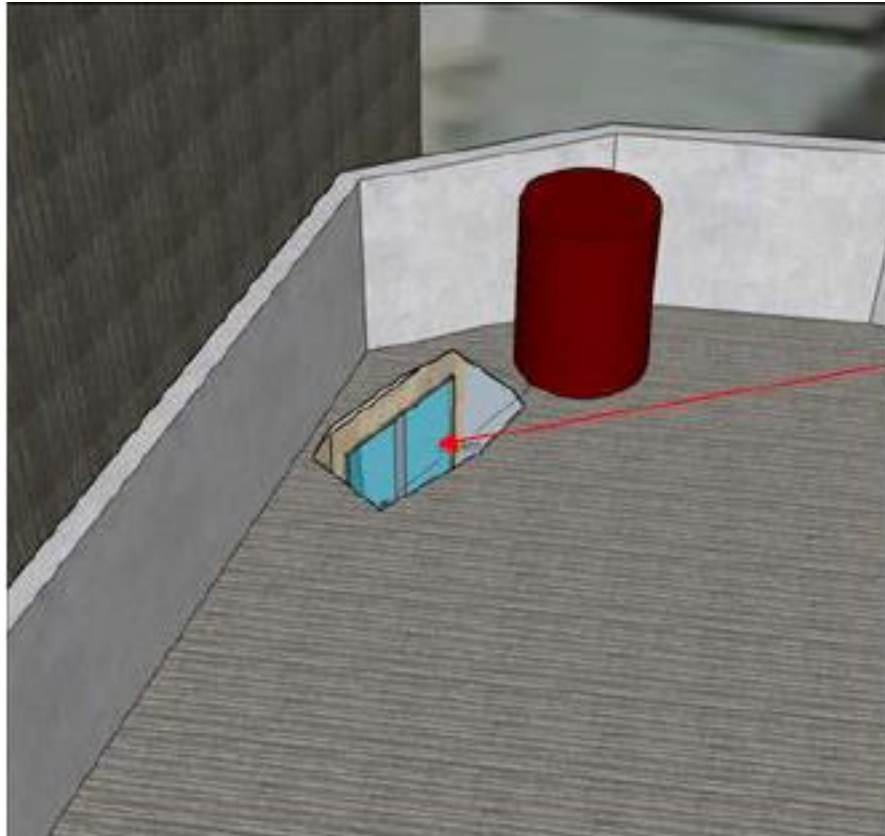
# 28. Location 4: 'cylinder in the bedroom'

S/1731/2019, 1 Mar. 2019, p. 20



# 29. Location 4: 'cylinder in the bedroom'

S/1731/2019, 1 Mar. 2019, p. 17

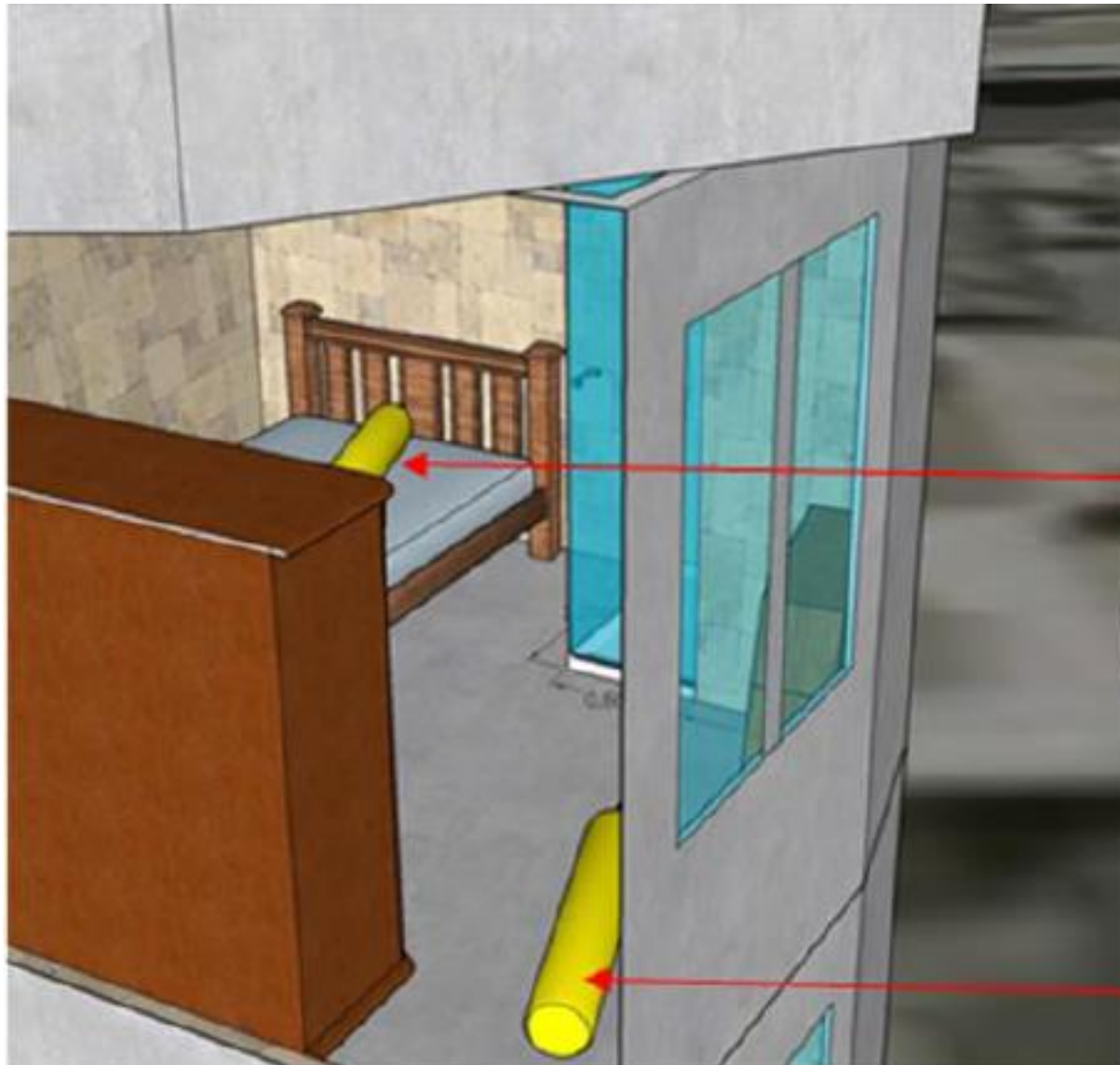


Crater in the roof-terrace measuring approximately 1 m x 1.6 m



# 30. Location 4: 'cylinder in the bedroom'

S/1731/2019, 1 Mar. 2019, p. 19



Position of cylinder as observed by the FFM team

Presumed initial landing point of the cylinder after penetrating the ceiling

# 31. 2019 OPCW EC meetings

- FFM is still gathering information and conducting interviews regarding 5 incidents:
  - Kkarbit Masasnah on 7 July 2017 and 4 Aug. 2017
  - Qalib Al-Thawr (Al-Salamiyah) on 7 July 2017
  - Yarmouk, Damascus on 22 Oct. 2017
  - Al-Balil (Souran) on 8 Nov. 2017.
- OPCW Director-General issues monthly updates on the status of the destruction of Syria's CW programme.
- All 27 declared chemical weapon production facilities have been verifiably destroyed.



## 32. Other bodies

- *Independent International Commission of Inquiry on the Syrian Arab Republic* [under auspices of UN Human Rights Council].
- *International, Impartial, and Independent Mechanism to Assist in the Investigation of Persons Responsible for the Most Serious Crimes Under International Law in the Syrian Arab Republic since March 2011* [established in 2016 by the UN General Assembly].
- *International Partnership against Impunity for the Use of Chemical Weapons* [French initiative started 23 January 2018].
- *Syria Accountability Project* (Open Society Foundation).

# 33. Conclusions

- CWC States Parties should demonstrate compliance to each other in good faith. Governments in good standing of their legal obligations are to enjoy equal rights and responsibilities.
- Communication of technical findings
  - Legally and technically correct conclusions *versus* ‘reductionist’ counter-narratives
  - Decision making by consensus
- Routine OPCW TS operations ‘firewalled’ from IIT.
- OPCW is experiencing institutional stresses and possible longer term fractures as, for example, decisions by majority vote become ‘normalised’.
- Multilateral disarmament and arms control regimes are component of broader architecture to maintain international peace and security, as well as international norms and standards.

# 34. Abbreviations and acronyms

<b>CSP</b>	Conference of the States Parties
<b>CTF</b>	Combined Task Force
<b>CW</b>	chemical warfare/chemical weapon
<b>CWC</b>	Chemical Weapons Convention
<b>DAT</b>	Declaration Assessment Team
<b>DOC</b>	discrete organic chemical
<b>EC</b>	Executive Council
<b>FFM</b>	Fact-finding Mission
<b>GC</b>	gas chromatography
<b>GPC</b>	General Purpose Criterion
<b>IIT</b>	Investigation and Identification Team
<b>IR</b>	infrared
<b>JIM</b>	Joint Investigative Mechanism
<b>MFA</b>	Ministry for Foreign Affairs
<b>MS</b>	mass spectrometry
<b>NMR</b>	nuclear magnetic resonance
<b>OACW</b>	old and/or abandoned chemical weapon
<b>OCAD</b>	OPCW Central Analytical Database
<b>OPCW</b>	Organisation for the Prohibition of Chemical Weapons

# 35. Abbreviations and acronyms, cont'd

<b>PSF</b>	phosphorus, sulphur, fluorine
<b>SG</b>	Secretary-General
<b>SY</b>	Syria
<b>TIC</b>	toxic industrial chemical
<b>TS</b>	Technical Secretariat
<b>UN</b>	United Nations
<b>UNSCOM</b>	United Nations Special Commission on Iraq
<b>WHO</b>	World Health Organization

*Teşekkür ederim.*  
*Thank you.*

*John Hart DScMil\**

\*Presentation contents are personal views.