

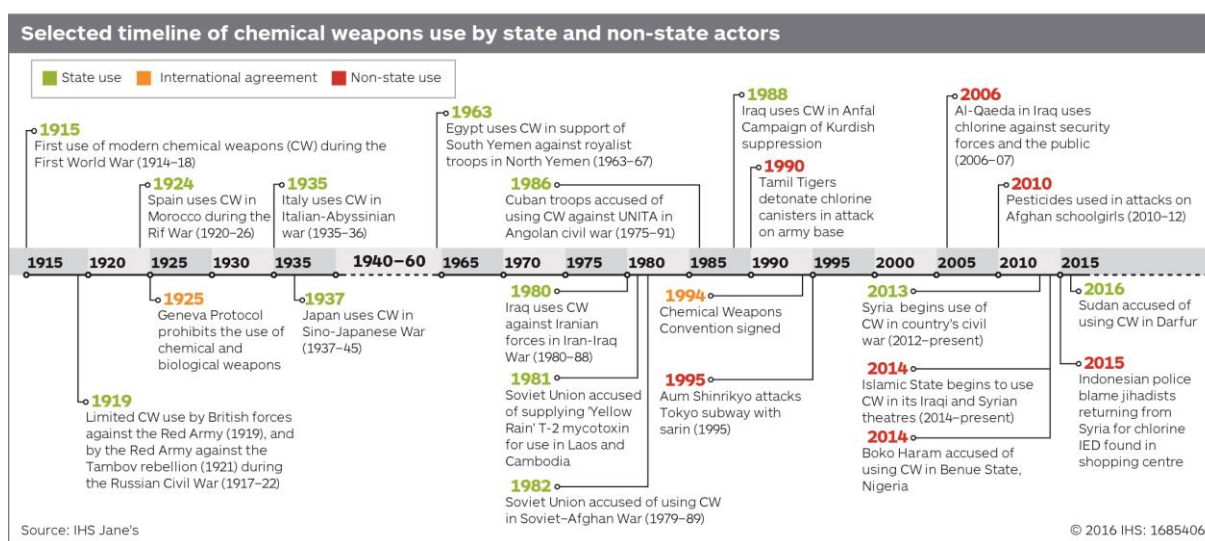
Chemical warfare threat continues to evolve

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As improvised chemical weapons attacks become increasingly common, greater training and awareness are needed for responders on the ground. *Hamish de Bretton-Gordon* examines some of the lessons to be learnt from chemical weapons use in Syria and Iraq.

The Organization for the Prohibition of Chemical Weapons (OPCW) on 24 August 2016 publicly confirmed long-standing suspicions that the Islamic State militant group and the Syrian government had both used chemical weapons (CW) in the country's ongoing civil war. Out of the nine CW attacks investigated by the OPCW's joint investigative mechanism (JIM), there was sufficient information to conclude that the Islamic State had used mustard agent in at least one attack in Syria (on 21 August 2015) and that Syrian government forces had used chlorine against the towns of Talmenes (on 21 April 2014) and Sarmin (on 16 March 2015). Although the JIM's remit confined its investigation to Syria, there is cumulative documentary evidence - including videos and first responder/casualty testimonies - that the Islamic State has also continued to use mustard agent and chlorine in Iraq as the international coalition attempts to dislodge it from the north of the country.

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Selected timeline of chemical weapons use by state and non-state actors (IHS)

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Cold War legacy

During the 1980s, the main CBRN threat came from the potential for use by a state actor, with various NATO member states, signatories to the Warsaw Pact, and countries in the Middle East and Asia all having non-conventional weapons programmes. Large military research and development (R&D) programmes resulted in an array of standardised CWAs, and armed forces were routinely trained and equipped to 'survive and operate' in contaminated environments.

The end of the Cold War changed the nature of state-level CBRN threats, as numbers of nuclear weapons were substantially cut following arms control agreements, most significantly by Russia and the US. The Chemical Weapons Convention (CWC) committed states across the world to destroy their stocks, and the revelation of the scale and sophistication of Russia's hitherto secret biological weapons programme gave a new impetus to biological safety across the world.

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New concerns

As the Cold War ended, global terrorist organisations with CBRN interests emerged. Although a global reach implies considerable access to human and physical resources, the ability to develop sophisticated weapons is likely to be linked to a group's organisational structure. Such organisations in fact encompass several different centres of gravity. For example, Al-Qaeda Central, the organisation's pre-2001 administrative centre, was based in Afghanistan and was complemented by various regional affiliates, such as Al-Qaeda in Iraq (AQI).

Although both layers were united by a common ideology and sought the overthrow of existing Arab governments, they varied in the levels of human and physical resources available to them, as well as in operational objectives. For example, Al-Qaeda Central's focus included the 'far enemy' (the United States), while regional groups primarily confined their attacks to their local areas. The Islamic State employs a similar model, with its core leadership based in Raqqa, and its self-declared Wilayat - such as those in Chechnya, Libya, or Nigeria - representing the group's co-opting of regional struggles.

Although there are differences in ideological and operational focus for both groups, their ability to conduct successful CBRN attacks varies geographically and will be a function of their own organisation, as well as the strength of local security forces.

Al-Qaeda has a well-documented interest in nuclear weapons and in November 2015 a joint Moldovan-FBI sting operation revealed that the Islamic State group was interested in obtaining caesium, which observers feared could be used in a radiological dispersal device (a 'dirty bomb'). A further investigation by Moldovan authorities revealed that an unnamed Middle Eastern extremist group had sought to buy highly enriched uranium (HEU), possibly for an improvised nuclear device.



Firefighters clean houses exposed to a chemical attack on Taza, south of Kirkuk in northern Iraq on 26 March 2016. (Anmar Khalil/AP/Press Association Images)

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Chemical threats

With such considerable barriers to the most destructive weapons, groups may resort to CW that have lower technical barriers. Although groups such as the Islamic State and Aum Shinrikyo have developed their own CWA, use of TICs by the Syrian government suggests that responses to modern CBRN threats need to be reassessed to protect against both TICs and homemade agents, which are likely to be characterised by low toxicity and short persistence in the environment.

Previously, TICs had been used primarily as psychological weapons aimed at shocking the public and undermining confidence in local security forces. However, the use of chlorine in Syria has demonstrated that TICs are increasingly capable of being used to operational effect, with the Syrian armed forces using chlorine during operations to demoralise insurgent forces and blunt their offensives, and to spread terror to depopulate areas. For example, in what may be the first occurrence of chemical-chemical warfare since the First World War, as of October 2016, Syrian chlorine improvised explosive devices (IEDs) had prevented the Islamic State from taking the strategic military airport at Deir ez-Zour, despite the group's use of mustard agent against Syrian troops defending the facility. Part of this may stem from the fact that the Syrian army has well-developed CBRN operating procedures and kit, whereas the Islamic State does not appear to have developed equivalent systems.

Before the coalition's assault on Mosul in late October 2016, Iraqi Kurdish Peshmerga commanders in August had expressed concern to *IHS Jane's* about assaulting the city due to the Islamic State's chemical threat and the Peshmerga's lack of protective equipment. Earlier in October 2016, the Kurdish high representative in the United Kingdom, Karwan Jamal Tahir, wrote to UK secretary of defence Michael Fallon to ask urgently for equipment to protect Kurdish forces from Islamic State CW. Tahir claimed that CW had been used on at least 19 separate occasions

on the Kurdish frontline, which stretches for more than 1,000 km, and it is possible that the Islamic State may take advantage of this lack of protection and training and use CW during its defence of Mosul.



A still from a video purporting to show Free Syrian Army militants using an improvised artillery piece launching a canister of cooking gas, sometimes referred to as a 'Hell Cannon'. (Youtube)

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Local terrorism

Although the core leadership of groups such as the Islamic State may seek to conduct catastrophic attacks in Europe or the United States, whether they would seek a CBRN attack in this form is debatable as it would expose any required materiel to interdiction.

Instead, the main terrorist threat linked to such groups comes from the lower, regional levels of Al-Qaeda and the Islamic State, which are represented by small groups and individuals. Although some may have attended 'training camps' abroad, others may only have access to online material for inspiration and training. Where terrorists of these types operate in stable countries, by virtue of having to operate covertly they will have to adopt more diffuse structures, affecting their capabilities and priorities.

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First response

The use of CW poses a substantial number of complications to first responders. In Syria, the main challenges have been to identify the chemical substances used and to act accordingly. NGOs in Syria such as the Union of Medical Care and Relief Organizations (UOSSM) have good procedures and equipment to mitigate chlorine attacks, but have been caught off-guard when new agents have been introduced - such as the Islamic State's first use of mustard agent on 15 August 2015 at Meara, near Aleppo. Once mustard agent had been identified, the procedures and kit were updated; the UOSSM is currently able to protect against chlorine, mustard, and sarin. Nevertheless, the use of novel agents in the conflict would probably create another period of vulnerability for the group. Highly sophisticated and expensive equipment is not necessarily the answer, as simple single-gas detectors and training for first responders to identify different chemical agents have proved effective.



A photo taken on 6 September 2016, provided by the Syrian anti-government activist group Aleppo Media Center (AMC), shows medical staff treating a man suffering from breathing difficulties inside a hospital in Aleppo, Syria. (Uncredited/AP/Press Association Images)

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Outlook

Agility and flexibility may be the best approach to operating on the contemporary battlefield, rather than the current cumbersome protection measures. In order to operate in this environment, a soldier requires the ability to identify the substance that they are attacked with, just enough CBRN protection to allow them to get out of the immediate attack area, and effective decontamination to allow them to clean themselves and prevent the spread of the agent to others. All this is achievable but will require a paradigm shift in current force protection doctrine and stance.

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