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Articles

Islamic State and Al-Nusra: Exploring Determinants of Chemical Weapons Usage Patterns

by Geoffrey Chapman

Abstract

This article seeks to examine the determinants of use and non-use of chemical weapons between two typologically similar non-state actors. By comparing the differing patterns of chemical weapons usage exhibited by the Islamic State and Al-Nusra against commonly offered variables for drivers of non-state actor CBRN usage, it will be determined that they both share the ability to conduct basic chemical weapons attacks and have the same retaliatory and theological justifications to do so. However, the essential difference between the two groups that provides an explanation for the difference in chemical weapons usage can be found in the constraints (or lack thereof) imposed by their respective strategies. The formation of these approaches by their precursor organisations combined with their prior CBRN behaviour will provide further evidence to this conclusion.

Keywords: CBRN, Chemical Weapons, Al-Nusra, Islamic State, Chlorine

Introduction

Within the ongoing conflict in Syria and its spill over into Iraq, chemical weapons (CW) have become a salient point of international reaction. While much of the focus of the international community has been concerned with the response to the Assad regime's use of CW, Islamic State (IS) has also been a prolific user of CW. Between June 2017 and the first recorded instance of IS using CW in July 2014, IHS Conflict Monitoring has logged 71 instances of CW use attributed to IS.[1] This 'relatively routine' use of CW by a non-state actor is unprecedented – the Tamil Tigers used chlorine once and Aum Shinrikyo, despite producing its own sarin, only conducted 10 CW attacks.[2] Fortunately, most of IS' CW attacks have involved low level agents, either chlorine or (the relatively impotent) mustard gas; while they can cause panic and create significant numbers of casualties, there have been few fatalities.[3] Nevertheless, this frequent use of CW is in stark contrast to previous Al-Qaida (AQ) actions: while AQ core explored CBRN (Chemical, Biological, Radiological, Nuclear) options, they were never featured in an AQ core attack.[4] It will be argued that this shift towards the frequent use of CW by IS represents a long running strategic difference between AQ and IS.[5] To allow for a controlled comparison, this article will compare the use of CW by IS to its lack of use by AQ's Syrian affiliate, Al-Nusra. As much of the literature on non-state actor's use of CBRN focuses on the type of the group involved (e.g. religious cults, ethno-nationalists, etc.), this article will highlight factors that, in this case, caused two ostensibly similar groups to develop differences in CW usage.[6]

Given the politicised nature of CW within the Syrian context, statements relating to the attribution of CW attacks are controversial; however, there is a lack of evidence proving that Al-Nusra have been using CW.[7] There was an incident in Turkey in 2013 where it was initially reported that Al-Nusra operatives had been arrested with 2.5 kg of sarin in their possession, but Turkish government statements later claimed that the seized chemicals were antifreeze.[8] While one of the detainees was eventually convicted in absentia for membership of Al-Nusra, further details remain unclear.[9] Videos have emerged of rebels supposedly using CW, but their authenticity and origin is highly dubious.[10] Additionally, the Assad regime has frequently accused Al-Nusra of being responsible for CW incidents, although these have yet to be evidenced by an international body.[11] In the case of Talmenes on the 21st April 2014, the Joint Investigative Mechanism found the Assad regime responsible, despite its attempt to blame Al-Nusra.[12] In contrast to IS, where a repeated and well documented pattern of usage can be observed, there is insufficient evidence to claim that Al-Nusra have been using CW.[13] Rather than assessing Al-Nusra's potential acquisition of advanced CW, the apparent distinct difference in

usage between Al-Nusra and IS will be analysed.

A further point of contention would be the dimensions of the relationship between Al-Nusra and AQ core. As Al-Nusra's initial founders were long term members of the Islamic State of Iraq (ISI), tasked with founding a Syrian branch in 2011, Al-Nusra's relationship with AQ has clearly evolved over time.[14] Al-Nusra's relative success as it shifted from terrorism to insurgency led to disagreements between Al-Nusra and ISI over the demarcation of authority; by 2013 this had created a schism between the two groups.[15] This power struggle with ISI led Al-Nusra to align with AQ. In 2013, Al-Nusra integrated "at least two dozen senior al-Qaida leaders" into its leadership, thereby solidifying AQ core's influence over the organisation as its regional affiliate. [16] While the 'toxicity' of the AQ 'brand' has since led Al-Nusra to publicly distance itself from AQ in the intervening period and undergo a name change, analyst Charles Lister advises that "any potential decision to break ties from Al-Qaida should be read more as a politically smart maneuver", rather than a genuine split.[17]

Although it is beyond the scope of this article to analyse the shifts in the ongoing relationship between AQ and Al-Nusra, what is pertinent to the following analysis is that Al-Nusra have thus far conformed to a gradualist strategy in line with al-Zawahiri's 'General Guidelines for Jihad', rather than the uncompromising antagonism of IS.[18] How this strategy will develop as Al-Nusra becomes increasingly dominant within the Syrian rebel cause is yet to be seen; a departure from its previous approach can be seen with Hay'at Tahrir al-Sham's antagonism towards Ahrar al-Sham.[19]

The shifting nature of Al-Nusra's strategy indicates a further limitation of this study when used to extrapolate future CBRN behaviour, especially in different operational contexts. While IS have proven their willingness to use CW both locally and abroad, it will be argued that Al-Nusra have thus far deliberately restricted their terroristic activities for strategic reasons. If Al-Nusra, other AQ franchises, or AQ core itself redoubled their efforts to conduct attacks in the West, they would be less constrained by the need to convince local Sunni populations of the righteousness of their cause. Nevertheless, as effective CW use is dependent on know-how, it is unlikely that external operations cells will use CW without prior experience or direction. [20]

A final limitation of this article that dictates the employment of this wider comparative approach is the lack of communication from within each organisation explaining their approaches towards the employment of CBRN. While both IS and AQ core have communicated their desire for CBRN weapons, available discussion on how or if they would be used is even more limited; for AQ, this is seemingly because they have never had a CBRN weapon that they deemed operationally viable.[21] For IS and its precursor organisations, it is more complicated; despite chlorine attacks that occurred in Baghdad in 2006-2007 being commonly attributed to AQI and IS currently using CW, none of these actions have been publicly announced.[22] IS' propaganda magazines only fleetingly mention CW, and then only in the context of Assad's use and in a negative light.[23] Charles Lister quotes a lone IS militant who stated on his personal blog that IS have been using CW, but given IS' record for communicating its extreme brutality openly, this relative silence is a surprising omission.[24]

Similarities

In terms of contrasting why two ostensibly similar Salafist Jihadist organisations have demonstrated different patterns of CW use, the split between IS and Al-Nusra lends itself towards a controlled comparison. When it comes to practical limitations for inhibiting CW usage, both groups have had the opportunity to conduct basic CW attacks.[25] As both Al-Nusra and IS have had control over territory they are free to operate with relative impunity compared to a cell based terrorist group in a hostile state. Control over territory has also meant easy access to chlorine which is used ubiquitously for sanitation. In December 2012, Al-Nusra captured the SYSACCO plant near Aleppo and reportedly removed 200 tonnes of chlorine.[26] Similarly, IS allegedly appropriated chlorine from water treatment facilities in territory it held.[27] Furthermore, little technical knowledge is required to weaponize chlorine in its most basic form; although inefficient, chlorine canisters can be combined with conventional IEDs for an improvised dispersal mechanism.[28] Although this crude usage is unlikely to significantly enhance the lethality of an IED, it stands that a limited CW capacity has been available to both IS and Al-Nusra.

While IS has gone on to manufacture its own “makeshift [CW] projectiles and mortar rounds” and use mustard gas, possibly either scavenged from the Muthanna facility or produced themselves, access to a more advanced CW capability was not a driver for IS’ initial usage of CW.[29] Whereas expertise has been highlighted as a driving factor for non-state actors’ use in the CBRN literature, IS used chlorine before mustard in 2014 and had been planning CW use in Baghdad in 2013.[30] Although the incorporation of know-how from foreign recruited members and former Baathist scientists may have helped IS improve their CW capability, access to advanced materials or expertise is not a sufficient explanation for the use of CW for either group, but may have been perpetuating IS use by improving its tactical utility.[31] Nevertheless, IS’ precursor organisations’ preoccupation with using CW, both in 2013 and 2006-2007 when they were attempting to acquire it under Abu Musab al-Zarqawi, demonstrates a longstanding interest in CW that predates their now unprecedented access to former Baathist expertise.[32]

In terms of potential justifications for use of CW, both Al-Nusra and IS have reportedly had chlorine and sarin used against them by the Assad regime. This has included IS having chlorine used against them at Der-Ezzor in 2014 and sarin allegedly used on villages under their control in December 2016.[33] For Al-Nusra, chlorine was reportedly repeatedly used against villages they occupied in the Hama plain in 2014 and then sarin was used against Khan Sheikhou in April 2017.[34] However, no connection emerges between use of CW on the two groups and a response in kind. In their present incarnation, IS was plotting use of CW in Iraq 2013 and used chlorine IEDs in 2014, before CW was used against them in Syria.[35] On the other hand, Al-Nusra has explicitly retaliated against the Assad regime for the use of sarin on Ghouta. Al-Nusra executed hostages, launched bombings and conducted conventional attacks but there was no apparent use of CW in return during its “eye for an eye” campaign.[36] With IS starting to use CW in Iraq and Al-Nusra responding to CW with conventional means, retaliation or even a permissive environment generated by wider CW use is clearly not a driving factor behind CW usage by IS or Al-Nusra.

As Salafist Jihadist organisations, both Al-Nusra and IS can find theological justification for the use of CW through the use of the same fatwas. While Al-Nusra have never publicly communicated a desire for CBRN and therefore have never needed to provide a reasoning themselves, they could draw on prior AQ statements issued either by Bin Laden, al-Awlaki or Zawahiri that provide a justification for mass casualty terrorism.[37] Although IS have stated that they would hypothetically use a nuclear device on the US, they could additionally cite Nasir al-Fahd’s 2003 fatwa on the use of CBRN, especially given his defection to IS in 2015.[38] IS could also draw upon the practices of their ideological progenitor, Abu Musab al-Zarqawi, who had said he would use CBRN weapons if he had them.[39] Therefore, for either Al-Nusra or IS, their ideology imposes no direct limitations on the use of mass casualty terrorism or CBRN use.

Essential Difference

Rather than an ideological conflict as such, the core doctrinal difference that has led to fighting between Al-Nusra and IS is the prioritisation with which the caliphate is founded. While both Bin Laden, Zawahiri and senior Al-Nusra members believed in “the pursuit of a caliphate,” this was the end goal of their struggle.[40] On the other hand, Zarqawi, AQI in 2006-2007 and then al-Baghdadi in 2014 all sought to found the caliphate at the earliest practical opportunity.[41] In 2014, the foundation of the caliphate had practical benefits within the enflamed power struggle between Al-Nusra and Al-Qaida on the one side and the then Islamic State of Iraq and the Levant (ISIL) on the other.[42] The implication of founding a caliphate is that all jihadists should pledge their *bay’a* (oath of allegiance) to the caliph rather than Zawahiri; not doing so is a clear signal of expressing its illegitimacy and therefore declaring yourself its enemy.[43] Al-Tamimi has argued that “[IS]’ fundamental problem in dealing with other rebel factions... [is because it] sees itself not merely as a “group”... but as a “state” that has the prerogative to rule over all others... [and therefore] adopts a particularly brutal approach to dealing with other rebel factions.”[44]

This uncompromising stance is further reflected both in IS’ (and its previous incarnation’s) attitude towards what it perceives as heresy and religious bad practice. In this regard, IS’ approach to salafi-jihadism has been described as “absolutely uncompromising,” even compared to fellow jihadists.[45] IS is willing to attack perceived deviant

Sunni Muslims under its takfiri doctrine and seeks to immediately overthrow secular authority in favour of the harsh application of its interpretation of Sharia law.[46] IS have a long running history of practicing extreme violence towards Shia Muslims and other religious minorities; not only is this ideologically justified within their framework, but attacking Shia Muslims served the purpose within Zarqawi's original strategy of igniting a sectarian conflict in Iraq.[47] Brutal violence in the form of mass casualty terrorism and beheadings were therefore instrumental in this pursuit.

The use of CW therefore fits well within IS' strategy that seeks to leverage maximum violence. While the use of crude CW may not produce as many casualties as conventional options, previous CW attacks have been noted for their ability to impart "a pervasive sense of fear and insecurity." [48] This is aptly demonstrated by AQI's chlorine campaign in 2006-2007; as punishment for Sunni tribes' attempts at expelling AQI from the area in the 'Anbar Awakening', AQI launched a series of reprisal attacks.[49] While the majority of AQI's actions consisted of increasingly lethal shootings and conventional bombings, their 19 chlorine enhanced vehicle-borne improvised explosive devices acted as supplementary terror weapons.[50] As the chlorine itself only inflicted injuries, Zanders claims that their use was "designed more to augment [AQI's]...fearsome reputation in order to subdue a population." [51]

While this tactic was abandoned in 2007, either for its inefficiency or simply as AQI was expelled from Anbar, ISI resumed the use of CW in July 2014.[52] This situates the resumption of CW attacks in the middle of ISIL's rapid rise to prominence in the summer of 2014. With territory to collect material from, ISIL had every incentive to attempt to use chlorine to inspire further fear; CW use could potentially inspire fresh routs, which had been the source of ISIL's success in their military campaign to that point.[53] Although ISI's success in using CW in this regard is difficult to quantify, their use of CW for its "psychological impact" has been noted.[54] While IS has not explicitly communicated its rationale for CW use, Novenario has revealed through content analysis of IS' propaganda magazines that they placed a heavy emphasis on intimidation of their opposition during this period.[55]

As IS has declared its unending hostility towards both kafir and takfiri alike, it has little to lose diplomatically from using CW.[56] As IS operates outside of international norms and institutions, there are few costs that the international community could impose above armed intervention, which IS initially welcomed.[57] The only barrier one could infer inhibiting its open communication over its CW use would be an avoidance of offending its potential recruits, given the status of CW within the Syrian conflict.[58]

While IS' chemical weapons capability increased between 2014 to 2017, the frequency with which it now uses CW is rapidly in decline.[59] The pocketing and then loss of Mosul, combined with coalition action against IS' CW sites appears to have stymied IS' CW deployment and development.[60] As IS' territorial holdings decline, there have been repeated warnings over the possibility of external CW terrorism.[61] Such scenarios have already manifested with a failed chlorine bombing in Indonesia in 2015 and an IS cell being dismantled in Morocco while in possession of an improvised CW cache.[62] In July 2017, Australian authorities disrupted an IS cell reportedly planning to deploy an improvised hydrogen sulphide dispersal device.[63] Notably, the alleged perpetrators were receiving both targeting and technical direction from IS handlers in Syria, although they remained "a long way from having a functional device" at the point of their arrests.[64]

If IS' abiding strategic approach can be characterised by the use of intimidation, Al-Nusra's can be summarised as a "strategy of gradualism" wherein both their revolutionary allies and the population under their control are slowly introduced to their brand of Salafi Islam.[65] This approach is in line with Abu Musab Al-Suri's jihadist theorisations which "prioritizes popular support above all other objectives." [66] After shifting from primarily terroristic tactics in 2012, Al-Nusra capitalised upon its influence which it had gained through its battlefield prowess to provide civil services to rebel-controlled territory.[67] The relative "efficiency and non-corrupt nature" of its administration provided further influence to the organisation.[68] This created a virtuous cycle, whereby their administration increased popularity, which attracted more recruits which, in turn, bolstered their military capabilities and influence yet further.[69] The success of this diplomatic and civil approach can be seen by how it leveraged popular support to bolster condemnation for both its designation as a terrorist

organisation by the US in 2012 and then again against an airstrike conducted against its fledgling external operations Khorasan cell.[70] On the other hand, Al-Nusra's continuing military ability was demonstrated through its coordination of rebel effort to capture Idlib in 2015.[71]

Because of this local prioritisation and moves towards consolidating popular support, CBRN usage would be detrimental to this doctrine. Al-Nusra's leader, Jolani reportedly received direct instructions from Zawahiri to cease planning attacks on the West and to continue to "better integrate" his movement into the Syrian opposition.[72] Al-Nusra has since sought to both legitimise itself by disavowing AQ in order to potentially receive external assistance while also further ingraining itself within the Syrian revolution to provide protection from foreign intervention.[73] Mass casualty attacks outside of the region or attempts to use CBRN would jeopardise this approach. Both courses of action could potentially provide the pretext for greater armed intervention against the group, especially for CW use, given its highly politicised context within the Syrian Civil War.[74]

Much as with IS and its precursor organisation's longstanding interest in CW being aligned with their strategy, Al-Nusra's non-incorporation of CW reflects longstanding trends within AQ's doctrine. While "al-Qaida's leadership decided to pursue WMD primarily as a deterrent" in the 1990s under the directorship of Zawahiri, western intervention in the Middle East "changed the reality of the region." [75] Zawahiri initially sought to justify the use of WMD after 9/11, but no use has been forthcoming.[76] This reflected that only a basic CW capability was available to AQ and its use was not deemed operationally viable or even desirable; Zawahiri allegedly cancelled a plot that would have seen a crude hydrogen cyanide device used on the New York subway in order to obtain something "better".[77]

AQ core's shift towards a gradualist approach to jihad coincides with, and was likely spurred by, the failure of AQI to successfully capitalise on the American occupation of Iraq.[78] As AQI's violence in Iraq worsened, Zawahiri wrote a letter to Zarqawi asking him to refrain from his more brutal practices towards Shia Muslims. Notably, Zawahiri's letter was couched in terms of pragmatism rather than religious justification.[79] This was again reiterated in 2013 when Zawahiri issued his 'General Guidelines for Jihad' which emphasised that while attacking the West would remain their "foremost duty", "[their] struggle is a long one, and Jihad is in need of safe bases." [80] Therefore, Zawahiri advised avoiding conflict with local regimes unless necessary and the combined employment of operational restraint and propaganda to sway local Sunni populations.[81] Due to the necessity of co-opting local conflicts within the wider struggle against the "western Zionist-Crusader alliance," it can be inferred that CBRN weapons would play little immediate role as they would invite premature armed intervention and dissuade the local population from cooperating; as a result it is unsurprising that they are not mentioned within this framework. It is therefore notable that "Jabhat al-Nusra...has emerged as... [the] first successful test case" of AQ's gradualist approach, notably in the absence of CBRN threats or use, in sharp contrast to IS.[82] Therefore, the difference in CW usage patterns between IS and al-Nusra is best explained by "strategic constraints" inherent within their differing doctrines rather than an aversion to CW or environmental factors.[83]

Ongoing Concern

While the potential for continuing use of CW by IS in Syria and elsewhere is clear, Al-Nusra's strategic restraint is not perpetually sustainable. As it has come to dominate the remains of the Syrian opposition, its relative strength allows it to be assertive as seen through its recent aggression towards Ahrar al-Sham.[84] If Al-Nusra's influence continues to grow, it may feel comfortable in dropping its pretence of cooperation and engaging in terrorism abroad while it has the opportunity. As Al-Nusra has no discernible ideological qualms against using CBRN, it may engage in CW terrorism as part of this effort. Whether Al-Nusra would engage in terrorism abroad is uncertain, given that Zawahiri now rebukes the group for its ongoing attachment to "regionalism" and its attempts to "[deceive] America, which cannot be deceived as they wish to deceive it" by portraying themselves as local revolutionaries.[85] On the other hand, the recent defections of several opposition elements out of the Hay'at Tahrir al-Sham coalition and the indecisive outcome of its September Hama offensive indicate a negative outlook to Al-Nusra's position within the Syrian conflict.[86] If this trend continues and it were to

become the focus of government offensives, desperate circumstances may prompt Al-Nusra CW usage in Syria.

While IS as an organisation is broadly in decline, a further concern stemming from their use of CW is that it could disseminate its knowledge regarding its CW developments, thereby further enabling future proliferation and use. Until now, available jihadist guidance on the manufacture of CW has remained crude and has not advanced significantly from the “Mubtakar” device.[87] This potential hazard was clearly highlighted by the efforts of an IS “controller” to direct the Australian cell disrupted in July 2017 to use CW in mass casualty terrorism.[88] If training materials on improvised CW devices were further refined and distributed, IS could have a pronounced and continuing impact on jihadi CBRN terrorism.

Conclusion

To conclude, this article has sought to demonstrate that the differing pattern of CW usage between IS and Al-Nusra is inadequately explained by several commonly offered drivers of non-state actor CBRN use. Instead, the driving factor behind why two similarly motivated groups exhibit differences in CW use is best explained by a doctrinal difference that has far reaching strategic implications. For IS, the desire to found the Caliphate at the earliest practical opportunity and the need to stoke sectarian conflict has driven them to embrace a brutal strategy within which CW has clear utility. Conversely, Al-Nusra embraced a gradualist strategy that has been forwarded by core AQ. As a result, it has sought to co-opt the Syrian opposition by achieving popular acclaim through non-corrupt administration and battlefield success. Terrorist attacks on foreign targets and the use of CW would endanger this effort. However, as Al-Nusra comes to dominate the remnants of the Syrian opposition, this restraint may not hold. From this perspective, “[the] use of chemical weapons” should not be viewed as “just one more area where al Zarqawi’s followers have surpassed their brethren in Al-Qaida,” but rather as the manifestation of differing strategies which have each enjoyed success within their own respective frameworks.[89]

About the Author: *Geoffrey Chapman is a PhD student at King’s College London and a research assistant at the Centre for Science and Security Studies (CSSS). His research focuses on CBRN non-proliferation issues with his thesis examining historical proliferation attempts. Current work conducted for the CSSS involves international nuclear security education and security culture assessment. He has worked for IHS Markit Jane’s on open-source intelligence projects and has delivered papers and presentations for them on CBRN issues within the context of the Syrian Civil War. Aside from his thesis, his current research includes co-authoring a paper on the lessons that future actors may learn from the use of chemical weapons within Syria*

Notes

[1] Columb Strack, “Islamic State’s chemical weapons capability degraded”, *IHS.com*, (2017) URL:<http://blog.ihs.com/islamic-state%E2%80%99s-chemical-weapons-capability-degraded-v2>

[2] Carole N House, “The Chemical, Biological, Radiological, and Nuclear Terrorism Threat from the Islamic State.” *Military Review* (2016). p.74. For Aum Shinrikyo, see: Monterey Institute, “Chronology of Aum Shinrikyo’s CBW activities”, (2001) URL: https://www.nonproliferation.org/wp-content/uploads/2016/06/aum_chrn.pdf - they also conducted 7 additional biological attacks. For Tamil Tigers, see: Bruce Hoffman, “The first non-state use of a chemical weapon in warfare: the Tamil Tigers’ assault on East Kiran.” *Small Wars & Insurgencies* Vol. 20, pp. 3-4 (2009).

[3] Columb Strack, op. cit..

[4] Rolf Mowatt-Larssen and Graham T. Allison. *Al Qaeda Weapons of Mass Destruction threat: hype or reality?*. Boston: Belfer Center for Science and International Affairs, (2010) p.8. However, cells and individuals inspired by AQ have repeatedly attempted to use CW. See René Pita, “Assessing al-Qaeda’s chemical threat.” *International Journal of Intelligence and CounterIntelligence* Vol. 20, 3 (2007), pp. 492-490.

[5] While al-Nusra have since changed their name from to Jabhat Fateh al-Sham and are now the leading element of the Tahrir al-Sham coalition, they will be referred to as Al-Nusra in this article for the sake of clarity.

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[11] Laura Smith-Spark, “Assad claims Syria chemical attack was ‘fabrication’, in face of evidence”, *CNN*, (2017); URL: <http://edition.cnn.com/2017/04/13/middleeast/syria-bashar-assad-interview/index.html> ; see: OPCW FFM, S/2017/45; URL: <http://reliefweb.int/sites/reliefweb.int/files/resources/N1701193.pdf> and OPCW FFM, S/1318/2015/Rev.1; URL: <http://www.the-trench.org/wp-content/uploads/2016/01/OPCW-FFM-20151217-Syria-request-Rev1.pdf> for the FFM failing to find sufficient evidence for evidence for government accusations. While one government soldier tested positive for sarin exposure in Jobar, the UN Secretary General’s investigation could not verify the incident. - UN SecGen’s investigation, “United Nations Mission to Investigate Allegations of the Use of Chemical Weapons in the Syrian Arab Republic”, 2013, p.19; URL: <https://unoda-web.s3.amazonaws.com/wp-content/uploads/2013/12/report.pdf> .

[12] OPCW-UN JIM, S/2016/738, p.13; URL: http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2016_738.pdf .

[13] See OPCW-UN JIM, S/2016/738, p.14 and Columb Strack, op.cit. .

[14] Charles Lister, “Profiling Jabhat al-Nusra”, *Brookings*, (2016), p.9; URL: https://www.brookings.edu/wp-content/uploads/2016/07/iwr_20160728_profiling_nusra.pdf .

[15] *Ibid.*, p.12-13.

[16] *Ibid.*, p.14.

[17] *Ibid.*, p.7 & p.20.

[18] *Ibid.*, p.5.

[19] Gregory Waters, “Hay’at Tahrir al Sham’s gamble: the failure of blood”, *Open Democracy*, (2017); URL: <https://www.opendemocracy.net/north-africa-west-asia/gregory-waters/hayattahriralsham-syria-idlib-turkey-AhraralSham-FSA> .

[20] Jonathan Tucker, “Toxic Terror”, pp. 8-9.

[21] “The Perfect Storm”, *Dabiq* 9, p.77, Rolf Mowatt-Larssen and Graham T. Allison. *Al Qaeda Weapons of Mass Destruction threat: hype or reality?*, p. 21.

[22] For Zaraqawi’s denial, see: Sammy Salama & Lydia Hansell, “Does Intent equal Capability? Al-Qaeda and Weapons of Mass Destruction”, *The Nonproliferation Review*, 12:3 (2005), p.628. For 2006-7 chlorine use, see - Mohammed Hafez and Maria Rasmussen. “Terrorist Innovations in Weapons of Mass Effect, Phase II.” Monterey Naval Postgraduate School. (2012); URL: <https://www.hsdl.org/?view&did=709612> .

[23] See “the Call to Hijrah”, *Dabiq*, 3, p.35 and “the Failed Crusade”, *Dabiq*, 4, p.40 .

[24] Charles Lister, *The Syrian Jihad: Al-Qaeda, the Islamic State and the Evolution of an Insurgency*, New York: Oxford University Press (2015), pp.379-380.

[25] John Parachini, “Putting WMD terrorism into perspective.” *Washington Quarterly* 26.4 (2003), pp.43-44.

[26] Syrian Free Press, “Bashar al-Jaafari: ‘Al-Nusra Front is still carrying out operations in the area of UNDOF’” (2014); URL: <https://goo.gl/RKXuso> .

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