Briefing

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ISIL/Da'esh and 'non-conventional' weapons of terror

SUMMARY

The European Union and its Member States must prepare for the possibility of a chemical or biological attack on their territory by the self-styled 'Islamic State' in Iraq and the Levant (known variously as IS, ISIS or ISIL, and by the Arabic acronym 'Da'esh'). Since the beginning of October 2015, terrorist attacks in Ankara, the Sinai Peninsula, Beirut, Paris and Tunis, for which ISIL/Da'esh has claimed responsibility, have cost the lives of 500 people. Immediately following the latest attack in Paris, the jihadist terrorist group threatened further attacks in European cities.

ISIL/Da'esh has vowed that future strikes will be more lethal and even more shocking. This has prompted experts to warn that the group may be planning to try to use internationally banned weapons of mass destruction in future attacks. On 19 November 2015, the French Prime Minister, Manuel Valls, raised the spectre of ISIL/Da'esh planning a chemical or biological attack. At present, European citizens are not seriously contemplating the possibility that extremist groups might use chemical, biological, radiological or nuclear (CBRN) materials during attacks in Europe. Under these circumstances, the impact of such an attack, should it occur, would be even more destabilising.

European governments and EU institutions need to be on alert, and should consider publicly addressing the possibility of a terrorist attack using chemical, biological, radiological or even nuclear materials. The EU institutions have devoted considerable efforts to preventing a CBRN attack on European soil and preparing worst-case scenarios. However, some gaps remain, in particular with regard to information-sharing among Member States.

In this briefing:

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The likelihood of future attacks

Since the beginning of October, terrorist attacks in Ankara, the Sinai Peninsula, Beirut Paris and Tunis, for which ISIL/Da'esh has claimed responsibility, have cost the lives of 500 people. The attackers' weapons of choice so far have been explosive devices, including car bombs and suicide belts, and automatic weapons.

Immediately following the attacks in Paris on 13 November, the group announced that further attacks would take place in the immediate future, in Paris and other capital cities. Washington DC, London, and Rome were specifically mentioned, as well as targets in Belgium.

Rob Wainwright, the head of Europol, the coordinating organisation of EU countries' police forces, confirmed during a hearing in the European Parliament on 19 November that Europe was likely to face new ISIL/Da'esh attacks after those in Paris the previous week.

According to Wainwright, 'We are dealing with a very serious, well-resourced, determined international terrorist organisation that is now active on the streets of Europe. This represents the most serious terrorist threat faced in Europe for 10 years.' He noted ISIL/Da'esh's determination to export 'its brutal brand of terrorism to Europe', which was backed by serious capabilities in terms of resources and manpower.

Non-conventional weapons

Chemical, biological, radiological or nuclear (CBRN) materials as weapons of terror

Several experts[1] have warned that there is a genuine risk of ISIL/Da'esh using chemical, biological, radiological or even nuclear materials in the context of future attacks on European targets. It has been suggested that the group's next weapon of choice could, for example, be an improvised explosive device containing chemical or radioactive materials.

Nomi Bar-Yaacov, Associate Fellow in Chatham House's International Security Department, noted in 'What if ISIS launches a chemical attack in Europe' that 'there is a very real risk of Isis using unconventional weapons in Europe and beyond'.

Wolfgang Rudischhauser, Director of the Weapons of Mass Destruction (WMD) Non-Proliferation Centre at NATO Headquarters in Brussels, states in his article 'Could ISIL go Nuclear?' that 'ISIL actually has already acquired the knowledge, and in some cases the human expertise, that would allow it to use CBRN materials as weapons of terror.'

Chemical weapons are defined as non-living, manufactured chemical agents combined with a dispersal mechanism that, when activated, produce incapacitating, damaging or lethal effects on human beings, animals or plants. Chemical agents are dispersed in three different forms: gas, solid (aerosol), or as a liquid, and are delivered through inhalation, ingestion or absorption by the skin. A distinction is made between choking agents (e.g. chlorine), blistering and tissue-injuring agents (e.g. mustard), blood agents (e.g. cyanide), and nerve agents (organo-phosphorus compounds).

Known use of chemical weapons

ISIL/Da'esh is documented to have used chemical weapons in Syria and Iraq.

- The group appears to have manufactured rudimentary chemical-warfare shells, and used them to attack Kurdish positions in Iraq and Syria at least three times in June and July 2015.[2] According to investigators, this involved toxic industrial or agricultural chemicals repurposed as weapons.

- In June 2015, Australian Foreign Minister, Julie Bishop, claimed that ISIL/Da'esh had used chlorine in combat.[3]
- In late August 2015, Médecins Sans Frontières[4] and the Syrian-American Medical Society (SAMS)[5] reported suspected ISIL/Da'esh use of mustard gas in Marea, northern Syria.

ISIL/Da'esh – motivation

Ideological shift

ISIL/Da'esh is considered to be particularly dangerous because of its radical ideology and its declared intention to shock: the group has used 'shock tactics' effectively to attract new recruits. The US intelligence community is reported to have warned in August that ISIL/Da'esh may be working to build the capability to carry out mass casualty attacks, a significant departure from the terror group's earlier focus on encouraging 'lone wolf' attacks.

Expertise

Threats can emanate from highly qualified individuals who have access to sensitive information and materials, and who possess the necessary expertise. ISIL/Da'esh has recruited and continues to recruit hundreds of foreign fighters, including some with degrees in physics, chemistry, and computer science, who experts believe have the ability to manufacture lethal weapons from raw substances. The Commission has drawn particular attention in this respect to returnees from Syria and other radicalised individuals, who have access to, or work in, sensitive areas.[6]

Biological weapons are complex systems that disseminate disease-causing organisms or toxins to harm or kill humans, animals or plants. They generally consist of two parts – a weaponised agent and a delivery mechanism'. Almost any disease-causing organism (such as bacteria, viruses, fungi, prions or rickettsia) or toxin (poisons derived from animals, plants or microorganisms, or similar substances produced synthetically) can be used in biological weapons. Historical biological weapons programmes have included efforts to produce: aflatoxin, anthrax, botulinum toxin, foot-and-mouth disease, glanders, plague, Q fever, rice blast, ricin, Rocky Mountain spotted fever, smallpox, and tularaemia, among others.

Control of territory and access to funding

The group controls large swathes of territory, approximately the size of Belgium, stretching, in Syria, from near the Turkish border to close to the Lebanese border, and to the east, in Iraq, to close to Baghdad. This gives the group a significant strategic advantage. It offers it a haven in which it can function freely, and shelter from third parties seeking to disrupt its activities.

Through activities centred in the parts of Syria and Iraq that are under its control, ISIL/Da'esh has access to 'extraordinary' levels of funding. A Reuters study published in October 2014 estimated that ISIL/Da'esh possessed assets of more than US$2 trillion, with an annual income amounting to US$2.9 billion.[7] The group earns about US$40 million a month from illicit oil sales.[8] In addition, ISIL/Da'esh reportedly taxes minorities, farmers and lorry drivers; confiscates property and livestock; sells foreign fighters passports; kidnaps civilians for ransom payments, and loots antiquities. The group also organises fund-raising events for its supporters, in the territory it controls and abroad.

Media strategy

In its effort to attract new recruits and consolidate its position, the group is using a very effective media strategy. Shocking images of beheadings, the burning alive of an enemy pilot, the mass executions of opposition fighters and other gruesome pictures are part of this strategy. Even though this did not happen during past attacks, it is conceivable that ISIL/Da'esh would deliberately use social networks to distribute disturbing images of victims of any future attacks in Europe.

Radiological weapons combine radioactive material with a means of dispersing it among a target population, resulting in the inhalation or ingestion of, or immersion with, radioactive material. The resulting exposure to alpha and beta particles, gamma rays and neutrons produces incapacitating or lethal effects through external and internal radiation. Dispersal could take place through combining radioactive material with conventional explosives in a 'dirty bomb', by dispersing it in the form of aerosols or liquids, or even by contaminating water or food supplies.

Threat scenarios and ISIL/Da'esh's capacity

Access to raw material in Syria, Iraq and Libya

In the past, the difficulty of accessing and handling the 'raw material' for CBRN attacks has stopped terrorist groups, including Al Qaida, from using them in actual attacks.

However, over the past few years, ISIL/Da'esh is reported to have had several opportunities to gain access to CBRN material in Iraq and Syria, and most recently Libya.[9] In Syria, some chemical weapons material, including traces of sarin-type chemical weapons and ricin-type biological weapons,[10] is believed still to be in the country and potentially accessible to ISIL/Da'esh. In Iraq, the group had access in 2014 to bunkers from the past Iraqi chemical weapons programmes, including mustard agents. Nerve agent rockets may also still be available in Iraq. In July 2014, the International Atomic Energy Agency disclosed that militants linked to ISIL/Da'esh seized low-grade nuclear material from Mosul University in northern Iraq. Following its expansion into Libya, ISIL/Da'esh may have access to chemical materials from previous programmes.

In August 2014, a laptop owned by a Tunisian physics and chemistry graduate fighting with ISIL/Da'esh in Syria was found to contain a 19-page document on how to develop bubonic plague from infected animals and turn it into a weapon.[11]

Availability of CBRN material in Europe

According to the 2014 Communication of the European Commission on a new EU approach to the detection and mitigation of CBRN-E risks, there are ample opportunities for a determined terrorist outfit to access CBRN material:

- Thefts and misplacements of CBRN material occur on **hundreds** of occasions each year;
- There is a particular risk that terrorists might use sarin, ricin or anthrax;
- More than **150 cases** of trafficking of radiological and nuclear materials are reported annually to the Incident and Trafficking Database of the International Atomic Energy Agency (IAEA);[12]
- CBRN substances have been carried undetected into the European Union;
- Interpol's monthly CBRN intelligence reports show numerous examples of attempts to acquire, smuggle or use CBRN materials.

Toxic industrial chemicals (TICs)

Many chemicals used in industry for a very wide variety of purposes are toxic. These are generally referred to as toxic industrial chemicals (TICs). The lethal toxicity of TICs is lower than that of chemical weapon agents – between 10 to 100 times. At the same time, there are approximately 70 000 TICs compared to 'only' approximately 70 chemical weapons agents.

Extremely dangerous chemical agents are produced and stored in relatively poorly secured civilian industrial facilities and transported around the globe. TIC transport or production sites could become targets of an attack aimed at releasing chemicals into the environment. Non-state actors might also divert large amounts of dangerous chemical agents and use this material as the basis for chemical weapon attacks.[13]

Attacks on infrastructure

The Communication on the detection and mitigation of CBRN-E risks (covering CBRN plus explosives) highlights the danger that radicalised individuals who have access to and work in sensitive areas might use their insider knowledge to strike against critical infrastructure, such as, for instance, a water purification plant. Other potential targets include nuclear power stations or large chemical factories.

Nuclear weapons consist of nuclear explosives and the means for their delivery. Nuclear explosives are based on self-sustained nuclear reactions which transform the nuclear structure of atoms and in the process release great bursts of energy. Devastating damage accrues through a combination of effects comprising a powerful blast wave, thermal radiation, and initial and residual radiation.

Preliminary conclusions

Orchestrating a CBRN attack that would kill hundreds or thousands of citizens still poses a significant technical and logistical challenge. However, ISIL/Da'esh has very important financial resources, proven success in recruiting skilled university graduates, and access to CBRN material, at least in Iraq and Syria, and possibly in Libya. It also has an unknown number of sympathisers in Europe. This increases the probability that the group could carry out a CBRN attack on European soil.[14]

The situation at the EU level

It is primarily the responsibility of Member States to protect the population against CBRN incidents. There is no EU legislation specifically targeting or seeking to control chemical, biological, radiological and nuclear substances that could be used as ingredients of weapons of mass destruction.

EU legislation has so far been restricted to controlling the use of chemicals as explosives precursors. Regulation (EU) No 98/2013 on the marketing and use of explosives precursors, which is based on Article 114 of the Treaty on the Functioning of the European Union (TFEU), provides for the approximation of laws in Member States which have as their object the establishment and functioning of the internal market. The Regulation establishes harmonised rules concerning the manufacture, possession and use of substances or mixtures that could be misused for the illicit manufacture of explosives, with a view to limiting their availability to the general public, and ensuring the appropriate reporting of suspicious transactions throughout the supply chain.

At the same time, the EU export rules that form part of the EU common commercial policy under Article 207 TFEU regulate the export of 'dual-use items' – items that have both commercial and military or proliferation applications. Regulation (EC) No 428/2009 sets up a Community regime for the control of exports, transfer, brokering and transit of

dual-use items. The Regulation derives from international commitments to counter the proliferation of nuclear, biological and chemical weapons as well as of items with potential military end-use.

Several Directorates-General of the Commission – including DG Trade, DG Home, DG Sanco, DG ECHO and DG Devco – are engaged in efforts to prevent CBRN from becoming a threat, to detect misuse of CBRN substances, and to develop disaster-response capabilities to respond to any CBRN-related crisis.

EU long-term strategies

In the decade after the break-up of the Soviet Union in 1991, the international community paid particular attention to the threat of non-state actors gaining access to CBRN material. The spectre of 'loose nukes' and 'orphan' radioactive sources, as well as the dangers posed by disbanded research institutes, led to the ratification of a series of legal instruments aiming to contain this threat. The 9/11 attacks on the Twin Towers in New York in 2001 intensified fears of the use of CBRN in the context of spectacular suicide terrorist attacks aiming to generate mass casualties. At EU level, the first coordinated response to this new threat was the European Security Strategy, adopted by the European Council on 12-13 December 2003. It specifically highlighted the dangers of terrorists acquiring and using weapons of mass destruction. It noted that the most frightening scenario would be one in which terrorist groups acquired weapons of mass destruction. It added that such an event would allow a small group to inflict damage on a scale previously possible only for states and armies.

With the aim of tackling terrorists' access to weapons and explosives, ranging from components for homemade explosives to CBRN material, the EU formulated the EU Strategy against Proliferation of Weapons of Mass Destruction (2003) and the European Union Counter-Terrorism Strategy (2005).

The EU's long-term response to the threat has three elements: legal, political and operational. EU Member States are signatories to the international treaty regime of non-proliferation conventions concerning nuclear, chemical and biological weapons. In addition, the EU actively promotes the universalisation of these conventions. At the political level, the EU has been part of several global initiatives, including the adoption of UN Security Council Resolution 1540, which establishes legally binding obligations on all UN Member States to have and enforce appropriate and effective measures against the proliferation of nuclear, chemical, and biological weapons, and the setting up of The Global Initiative to Combat Nuclear Terrorism (GICNT), the G7 Non-Proliferation Directors' Group and Global Partnership, and the Nuclear Security Summit.

At the operational level, in 2010, the EU launched the Chemical Biological Radiological and Nuclear Risk Mitigation Centres of Excellence Initiative (EU CBRN CoE) and adopted the CBRN Action Plan and the EU Policy on Enhancing the Security of Explosives. There are eight CBRN centres of excellence around the world, seeking to strengthen the institutional capacity of countries outside the European Union to mitigate CBRN risks. Three of these are located in the southern neighbourhood (Morocco, Algeria and Jordan), one in Africa (Kenya), and one in the Gulf (United Arab Emirates).

EU CBRN Action Plan and the EU Policy on Enhancing the Security of Explosives

In November 2010, the Council adopted a plan to strengthen chemical, biological, radiological and nuclear security in the European Union over a five-year period (EU CBRN Action Plan).

The action plan proposed three types of action, including prevention, detection, and preparedness and response. It seeks to ensure that unauthorised access to CBRN materials is as difficult as possible, that Member States have the capacity to detect CBRN materials in order to prevent CBRN incidents, and that they have the capacity to respond to incidents involving CBRN materials and to recover from them as quickly as possible.

Under the action plan, Member States have:

- established three lists of high-risk CBRN materials;
- identified good practices in security training and education;
- developed EU guidelines for minimum security training requirements;
- developed scenarios in the CBRN detection field; and
- improved emergency response plans.

The Commission is looking at the CBRN risk in conjunction with the risk of misuse of explosives. In 2008, the Justice and Home Affairs Council adopted an EU Action Plan on Enhancing the Security of Explosives, which aims to reduce the possibility of the misuse of explosives for terrorist purposes. This was followed, in 2013, by the adoption of the above-mentioned Regulation (EU) No 98/2013 on the marketing and use of explosives precursors.

Following the 2012 progress reports under the EU CBRN Action Plan and the Action Plan on Enhancing the Security of Explosives, extensive consultation took place with Member States. The progress report on the CBRN action plan found that implementation was uneven, but that Europol played a strong role as facilitator for the exchange of information and good practice, the organisation of joint training exercises, data collection, and distribution and actions related to early warning.

A new CBRN-E Agenda was defined, to focus on key priorities to be addressed at EU level.

In Conclusions adopted on 11 December 2012, the Council stressed the need to identify areas with insufficient security arrangements and step up common efforts to enhance the security of production, storage, handling and transport of high-risk CBRN and explosive materials. However, no new legislation has been proposed to date.

The Commission is currently reviewing the CBRN Action Plan, with input from the Member States, with a view to proposing a new action plan early next year.

Programmes and funds to address the CBRN threat

In 2004, the Commission published a Communication on Security Research. In the initial period, 2004-2006, €65 million was allocated to such research.

Subsequently, the EU's research and innovation funding programme for the 2007-2013 period, the Seventh EU Framework Programme (FP7), allocated €1 350 million to research on security. The key FP7 activities in this area relate to restoring safety and security in case of crisis.

Important EU counter-terrorism projects under the FP7 focusing on CBRN include (data from 2014):

- DECOTESSC1, a project seeking to identify the gaps between the existing situation and an optimal counterterrorism system against CBRNE;

- **ISIS**, a project developing an integrated intelligent sensor system for improved security of water;
- SECUREAU, a project focusing on the decontamination of drinking water distribution systems following a deliberate contamination;
- **BIO-PROTECT**, a project focusing on the development of a fast alert, easy-to-use device for detection and identification of airborne bacteria, spores, viruses and toxins;
- **REWARD**, a project developing a real time wide area radiation surveillance system and **SCINTILLA**, a project developing detection capabilities of difficult to detect radioactive sources and nuclear materials;
- **SNIFFER**, a project developing capabilities for securing the food chain – from primary production and animal feeds to consumer-ready food – against major deliberate, accidental or natural CBRN contamination;
- **CATO**, a project developing a comprehensive open toolbox for dealing with CBRN crises caused by a terrorist attack using non-conventional weapons or on facilities with CBRN materials. This project, in particular, addresses the key management challenges arising in the context of a CBRN incident;
- **EDEN**, a demonstration project involving a consortium of 36 members in 15 EU countries, aiming to develop and ensure the resilience capacity of European societies, by looking at the whole CBRNE cycle, including prevention, preparedness and response. This project, in particular, integrates and coordinates existing EU capacities and competences to deal with the challenges of the CBRNE threat;
- CAST, a project conducting a comparative assessment of security-centred training curricula for first responders on disaster management;
- BRIDGE, a project developing a system to support interoperability – both technical and social – in large-scale emergency management.

The current EU Framework Programme for the period 2014-2020, Horizon 2020, has increased the amount allocated to security to €1 695 million.

Under the 2007-2013 prevention and fight against crime programme (ISEC), the Commission's Home Affairs Directorate-General funded 27 projects in the area of CBRN, to a total amount of €14 million, and a further 22 projects in the area of explosives security, to a total of €8.7 million.

As part of the active implementation of the above-mentioned 'EU Strategy against Proliferation of Weapons of Mass Destruction', the Council adopted a Decision on 30 November 2015 to contribute €4.6 million to support special missions in the context of the joint investigative mechanism of the Organisation for the Prohibition of Chemical Weapons (OPCW) and the United Nations (UN). The joint investigative mechanism was established by UN Security Council Resolution 2235(2015), to identify the perpetrators of chemical attacks in the Syrian Arab Republic.

Emergency Response Coordination Centre

The Commission has set up an Emergency Response Coordination Centre within the Humanitarian Aid and Civil Protection department (ECHO), to support a coordinated and speedy response to disasters inside the European Union. The ERCC allows for a coherent European response during emergencies, with the aim of cutting unnecessary and expensive duplication of efforts.

The centre draws on the resources of the EU Civil Protection Mechanism, which was established in 2001 to foster cooperation among national civil protection authorities across Europe. The mechanism currently includes all 28 Member States (plus six neighbouring countries).

Action at EU level dealing directly or indirectly with the threat of CBRN use by terrorists is divided among a number of institutions, including the External Action Service and several of the Commission's Directorates-General.

Genuine cooperation among EU Member States to address the CBRN threat is hampered by Member States' reluctance to share information, often from intelligence sources, for example by using the communication tools that the Commission puts at Member States' disposal.

The role of EU Member States

The EU CBRN Action Plan explicitly recognises that it is primarily Member States' responsibility to protect the population against CBRN incidents. According to the Commission's own assessment, the EU and the Member States have already done a lot to address the CBRN threat.

On 14 November, the day after the latest terrorist attacks in Paris, the French government authorised the use of atropine sulfate, which can be used as an antidote in the event of chemical attacks.[15] Antidotes have been distributed to emergency medical services and firefighting teams that might be called upon to respond to a chemical attack.[16] On 19 November 2015, in a speech to the French Parliament, the French Prime Minister, Manuel Valls, warned that ISIL/Da'esh may use chemical and biological weapons in the future. The French Prime Minister's office stressed that his mentioning the possibility of a chemical weapons attack was 'not new information on the status of the threat, just a realistic observation'. 'Middle East experts know that [ISIL/Da'esh] seeks and uses chemical weapons,' a spokesman told Le Monde. 'To not consider this possibility would be a mistake.' Security around Paris's water supply has also been increased in response to concerns that it might be vulnerable to a non-conventional attack. Eau de Paris, the capital's state-run water company, has banned access to six key sites to all but essential staff, after the authorities declared a state of emergency for three months.[17]

Outlook

As part of ongoing efforts to monitor returning foreign fighters and radicalised individuals in EU Member States (see EPRS briefing on 'Foreign fighters'), there may be scope for intelligence services to screen and monitor these individuals for specialist CBRN knowledge.[18] Platforms made available by the Commission could present an opportunity to share this information among Member States.

The example of the French Government may prompt other EU Member States, particularly those most concerned with jihadist threats following the Paris attacks, to openly address the possibility of a terrorist attack involving non-conventional weapons. Is it time for EU governments to routinely equip emergency crews with antidotes to an attack involving non-conventional weapons and to increase security around key installations, for example? Do Member States need to consider the possibility of raising the public's awareness of the possibility of terrorist attacks involving CBRN material and inform the public of specific measures that have been taken to protect it?

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