

*Dedicated to Global First Responders*

# CBRNE

## NEWSLETTER



June 2017



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**Borough Market**

**Westminster Bridge**

**Manchester Arena**

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**CBRNE-Terrorism Newsletter – 2017<sup>©</sup>**

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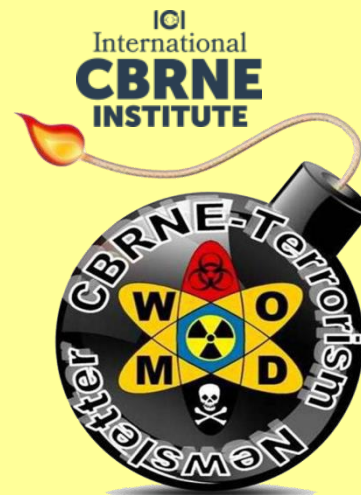
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# EDITOR'S CORNER





**Editorial****Brig Gen (ret'd) Ioannis Galatas, MD, MA, MC***Editor-in-Chief*  
CBRNE-Terrorism Newsletter*Dear Colleagues,*

I composed most of the June 2017 issue while I was hospitalized at the Army General Hospital of Athens – the place where I spend more than two decades of my professional medical life. I experienced a cyberattack myself when a virus stroke my GPS system and made me walk like stepping on two rocking boats – vestibular vertigo to be more scientifically precise. That period made me think again the incapacitating agents' capabilities – biological this time: imagine a benign virus attacking specifically the inner ear. Forget fighting; forget running; forget even making emergency calls. The virus can also self-destroyed in a week or so and would be difficult to be detected – at least not with existing means and methods. Hospitalization also revealed two things: (1) it is beneficial from time to time for doctors to become patients and record how easily their colleagues order numerous exams – often without an apparent diagnostic target. In a way, this resembles with CBRN planners who have never been inside a PPE ever in their life! (2) It is frustrating to know that certain technologies suitable for your case do exist but are not available (for many reasons – not only financial) – example: *AccuVein* or similar technologies that make blood collection or cannulation a quite comfortable process. In that respect what is the point to have all these new things available but not make use of them? Instead to continue follow old practices like dig, turn, push, pull, go deeper trying to locate a bloody vein? If you could see both my arms you might think that I am a junkie! If you can have an alert for dehydration while wearing your PPE why you should wait your colleague to faint in order to realize that he should have been withdrawn from the field 10 minutes ago?

Some time ago, I wrote that we spend a lot of pages analyzing a single terrorist attack in Europe the moment that in certain parts of the world we have terrorist attacks almost on daily basis. It seems that now our own “new normal” will have a similar effect. An attack in Brussels Grand Place (June 20)? A van attack against police convoy? OK – no big deal! What time should we meet for a drink? Of course this also might change if (or when) Europe will experience its first chemical or radiological attack on the ground or via a drone. That will elicit new publicity waves, new analyses, new measures and new restrictions. And many comments from all of us “experts” like “I told you! You did not listen!” etc. etc. bla, bla! So the main conclusion: Keep calm; be prepared; fight back or run fast and most important of all: do not be late for our late meeting!

And as always: Be alert First Responders because you are the shield protecting our values and core survival in an ugly world! Just remember that:

*The Editor-in-Chief*

## 739,478 visitors to U.S. in FY2016 overstayed their visas – and 628,799 are still in U.S.

Source: <http://www.homelandsecuritynewswire.com/dr20170526-739-478-visitors-to-u-s-in-fy2016-overstayed-their-visas-and-628-799-are-still-in-u-s>

May 26 – DHS earlier this week released the Fiscal Year (FY) 2016 Entry/Exit Overstay Report. The report provides data on departures and overstays, by country, for foreign visitors to the United States who entered as nonimmigrant visitors through an air or sea Port of Entry (POE) and were expected to depart in FY16. CBP processed 50,437,278 in-scope nonimmigrant admissions at U.S. air and sea POEs who were expected to depart in FY16—of which 739,478 overstayed their admission, resulting in a total overstay rate of 1.47 percent. Of the more than 739,000 overstays, DHS determined 628,799 were suspected “in-country” overstays, resulting in a suspected in-country overstay rate of 1.25 percent. An individual who is a suspected in-country overstay has no recorded departure, while an out-of-country overstay has a recorded departure that occurred after their lawful admission period expired.

## We Salute 5 Dog Breeds That Are Proven Military Heroes

By Lynn M. Hayner

Source: <http://www.dogster.com/lifestyle/we-salute-5-dog-breeds-that-are-proven-military-heroes>

May 25 – When we think about military dogs, we probably picture the [Belgian Malinois](#) working with U.S. Navy SEALs, or the [Labrador Retriever](#) detecting explosives. Below, we will hear from one such celebrated breed (*my own Shepherd, Zoey, insisted I include the [German Shepherd Dog](#) on this list*). But we'll also hear from some lesser-known breeds that have served our country. Let's start exactly with whom you'd expect: a *small Terrier breed*.



### 1. Yorkshire Terrier

Yorkshire Terrier courtesy Zoey Porter and Mary Ingersoll-Ackerman.

I'm thrilled to headline this list! I'm a tiny terrier with a mouse-chasing history, but my forefather Smoky was a renowned hero in WWII, attributed with many feats of bravery. For example, he bravely pulled critical wire through narrow pipes, sparing the soldiers a dangerous three-day digging task. Smoky's companionship was valued as well. History teaches us that dogs are treasured mascots in war. When President Franklin Roosevelt brought his dogs (an [Irish Setter](#) and a [Scottish Terrier](#)) everywhere he

traveled, soldiers took this as an okay to adopt their own mascot dogs during WWII. And at 4 pounds, my cousin Smoky made an easily transportable mascot.



## 2. Doberman Pinscher



Doberman Pinscher courtesy Rich Knecht photography

We're named after Friedrich Louis Dobermann, a late 19<sup>th</sup> century German tax collector who was harassed by thieves and perhaps some indignant tax-payers. Dobermann wanted to develop a well-rounded dog breed for both protection and companionship. Those traits were highly valued by the military. My forefathers worked in WWII as messengers and sentries for the U.S Marine Corps in the Pacific. A



memorial statute in Guam, [Always Faithful](#), honors my ancestors who died in service. Kurt, depicted on the statute, was the first canine casualty in Guam.

## 3. Bully Breeds

Staffordshire Bull Terrier by Shutterstock.

We bully breeds, including me, the [Staffordshire Bull Terrier](#), generally show both a natural affinity for humans and great physical strength. I myself was bred in England partly for some (*wretched*) fighting sports, but also for companionship. Let me

introduce you to [Stubby](#), a bully breed mix, who warned his WWI unit of poisonous gas, assisted in capturing an enemy spy, alerted his unit to incoming artillery shells, and found





injured soldiers,. We bully breeds cherish the war posters depicting us as symbols of dedication and valor.



#### 4. German Shepherd Dog

German Shepherd Dog courtesy Connie Cabanela.

We have quite the story to tell. After WWI, American soldiers returned from Germany with stories about our remarkable trainability. Americans fell in love with our loyalty and work ethic. Rin Tin Tin also gave us some great PR. In WWII, we were used for guarding, sentry work, and delivering messages. In the Vietnam war, Nemo, one of my heroic cousins, served as a sentry, fighting off guerrillas. Even though Nemo was seriously injured, he guarded his wounded

handler until medics arrived. And our service continues. Today I have relatives at the [341st Training Squadron](#), at Lackland Air Force Base in Texas, being trained for the Department of Defense. We also work in service roles assisting veterans, such as in the [Rebuilding Warriors](#) program. I have a cousin Dreamy, who watches over her Gulf War Army Veteran, Gary Orvis, in California. My Uncle Koda takes care of USMC Iraqi Veteran, Troy Burmesh, on a Montana ranch.

#### 5. Boxer

Boxer courtesy Tracy L Hendrickson.

In the world wars, we worked as guards, messengers, and pack-carriers. In WWII's Berlin airlift, my cousin [Vittles](#), equipped with his own harness and parachute, boosted morale for sure! My breed's bravery I attribute to our early ancestors, developed to hunt and hold prey such as bear. No small feat! And now I have the honor of concluding this article by giving a shout out to the many other champion breeds, including the [Rottweiler](#), [Airedale](#), and [Giant Schnauzer](#), that have served in wartime. And let's not neglect our mixed breed cousins. After all, the most decorated WWII war dog was a mixed breed (German Shepherd-[Collie](#)-[Siberian Husky](#)) named Chips, assigned to the 3rd Military Police Platoon. During the invasion of Sicily, Chips and his handler were held on the beach by an Italian machine-gun team. Chips attacked the gunners, who surrendered to American troops. He eventually served in some eight campaigns across Europe. Now that's impressive indeed.



## Australia plans to deny passports to convicted paedophiles

Source: <http://www.bbc.com/news/world-australia-40089351>

May 29 – **Convicted paedophiles would be denied passports in Australia under a "world-first" plan proposed by the government.**

The proposal, to be introduced to parliament, would prohibit registered sex offenders from travelling overseas.

Justice Minister Michael Keenan said it would affect about 20,000 offenders who had completed punishments but remained under monitoring by authorities.





Sex offenders would be able to apply for passports if they were no longer on the register, the government said.

"No country has ever taken such decisive and strong action to stop its citizens from going overseas, often to vulnerable countries, to abuse kids," Mr Keenan said.

**About 800 registered sex offenders travelled overseas from Australia in 2016, according to the government.**

#### 'Abhorrent crime'

The government said about 3,200 sex offenders would never be eligible for passports because they were being monitored for life.

**Mr Keenan described child sex tourism as an "absolutely abhorrent crime".**

The proposal was reached with independent Senator Derryn Hinch, long time campaigner for tougher laws to deal with sex offenders.

Mr Hinch said the proposal would protect children.

"You go to Bali, you go to Phnom Penh, you go to Siem Reap, and you see these middle-aged Australian men there, Caucasian men, with a young local kid - they are not there to get a suntan," he told reporters on Tuesday.

Last year, Australian man Robert Andrew Fiddes Ellis was convicted of sexually abusing 11 girls in Indonesia and jailed for 15 years.

## How Brussels prepared for Belgian Pride 2017

Source: <http://welovebrussels.org/2017/05/colorful-city-belgian-pride-2017/>



May 20 – Time to get started with the Belgian Pride 2017! Streets of Brussels will once again be filled with partying, acceptance, diversity and love!

The theme of the 22nd Belgian Pride Festival is #CrossingBorders, with a focus on 'Asylum and Migration'.

The slogan 'Crossing Borders' also puts focus on the experiences of LGBT+ refugees, both in their country of origin and at their arrival in Belgium.

**Sept 2016:** 'Gay' traffic light filters, installed in June for this year's London Pride, are here to stay,

Transport for London has confirmed. The fabulous traffic lights were brought in at 50 pedestrian crossings near Trafalgar Square.

**EDITOR'S COMMENT:** I copy from a Greek blog: "In the photo from Brussels on a pedestrian crossing, the lanterns were changed. As part of the "Gay Pride Festival", the lights in seven central locations of the city changed and in red show two "men" being held hand-to-hand with a heart between them, and in the green two "women" hold hand in hand.

And in order to prevent be accused as "racists", we are in favor of the self-determination of people and the self-determination of organs, indents and protrusions of the body ...

But we are not in favor of imposing this self-determination on the rest of society, that is, we are not in favor of accepting to put into our minds all that some put in their butts."



► Source: <http://www.makeleio.gr/επικαιροτητα/το-απεραντο-αδελφάτο-της-ευρώπης-στις/>

## Vetting Germany failing to use language and dialect recognition tech to ID asylum-seekers, extremists: Critics

Source: <http://www.homelandsecuritynewswire.com/dr20170531-germany-failing-to-use-language-and-dialect-recognition-tech-to-id-asylumseekers-extremists-critics>

May 31 – **Critics in Germany say that the country's immigration agency has failed to use a language recognition software which would have helped immigration agents identify the country of origin of asylum-seekers who have no other ID documents.**

The *Frankfurter Allgemeine Zeitung* reports that Federal Office for Migration and Refugees (BAMF) had the software available to it last year, but that the agency determined that using the software would run afoul of Germany's privacy and data protection laws.

Unnamed BAMF sources told FAZ that in 2016 the agency solicited proposals for language and dialect recognition software from German and Israeli IT firms in 2016, and that earlier this year conducted tests on several software solutions.

**BAMF says that about 60 percent of asylum-seekers arrive in Germany without ID papers,** and that it is difficult and time consuming to determine their country of origin. This often extends the process of deporting rejected asylum-seekers.

FAZ talked to experts who claimed the software could have helped to identify two men who applied for asylum and then carried out or planned attacks in Germany: Anis Amri, a Tunisian who used several different IDs, and who, in December, drove a truck into a

Christmas market in Berlin. The second is Franco A., a far-right German soldier who receiving protected status in Germany by falsely presenting himself as a Syrian refugee, and then planned a "false flag" terrorist attack (see "Reforms in German army after neo-Nazi terror plot discovered," [HSNW, 11 May 2017](#)).

Israeli and U.S. intelligence agencies have been developing technology to identify different Arabic dialects for some time, and the German Interior Ministry told DW that it was planning to test Arabic dialect recognition software in interviews with asylum-seekers.

The government's federal data protection commissioner's office told DW that the BAMF had not informed it of the details of the language recognition software, or how it would be used - and so could not comment further.

FAZ notes that the German government has been tightening regulations to allow closer surveillance of asylum-seekers, and that the Bundestag has recently approved a law to allow immigration authorities to search asylum-seekers' cellphones.

German agencies have also started collect biometric information from asylum-seekers in order to be able to compare images to a central European database.





## Mass trauma's emotional toll can disrupt children's sense of competence

Source: <http://www.homelandsecuritynewswire.com/dr20170531-mass-trauma-s-emotional-toll-can-disrupt-children-s-sense-of-competence>

May 31 – How children respond in the wake of mass traumatic events is related to their



perceptions of competence – or how they view their ability to control a situation, said Carl Weems, professor and chair of human development and family studies at Iowa State University. An overwhelming challenge, such as a natural disaster, can disrupt the development of that sense of well-being.

In a paper published by the journal *Applied Developmental Science*, Weems and his colleagues evaluated perceptions of competence and symptoms of post-traumatic stress disorder in children and teens exposed to hurricanes Katrina and Gustav and the Deepwater Horizon oil spill. They found that children with higher levels of competence were overall more resilient and had fewer PTSD symptoms.

IAState says that researchers found, however, that competence and well-being declined for older youth, specifically between the ages of 8 to 12, following the oil spill. Weems says the findings do not explain why this is the case. He and his colleagues suspect older youth had a

greater awareness, compared to younger children, of the oil spill's impact on their family and community, which affected their well-being. The damage from Hurricane Katrina was extensive and felt by everyone, regardless of age, said Weems, who lived in New Orleans at the time. Researchers characterized Hurricane Katrina as a traumatic event because it posed a direct threat to people's lives. While the oil spill was devastating, it was different. Not as many lives were at risk and entire neighborhoods were not leveled as a result.

"The oil spill stress involved more family economic hardship. The impact was more subtle than Katrina," Weems said. "That's why we think we only saw an impact from the oil spill on older children because they understood what was happening to their family."

In the paper, researchers explained that limited awareness of long-term consequences may have made it easier for younger children to rebound from the effect of the oil spill.

### Differences based on gender

**Age was not the only factor to influence PTSD symptoms. In the study, girls were more likely to have higher rates of PTSD symptoms following disasters.** Weems says this highlights the importance of interventions to promote competence and well-being among girls.

Researchers analyzed data from youth in five parishes or counties in the Gulf Region directly affected by Hurricanes Katrina, Gustav and the oil spill. More than 3,300 youth – 55 percent girls – between the ages of 8 and 18 were included in the study. Researchers had access to youth screenings and data collected prior to and after all three disasters.

Perceptions of competence and well-being were assessed through questions about the participants' relationships with their parents and friends, their ability to solve problems or respond in emergencies and control actions, as well as how they feel about life.



Researchers used surveys to measure symptoms of PTSD, and hurricane and oil spill exposure.

#### Treatment and intervention

Whether it is a terrorist attack, hurricane, tornado or wildfire, a natural disaster can profoundly affect a community with little warning. Weems says understanding how children respond to these situations can help researchers build appropriate interventions. Helping children face their fears and develop coping mechanisms to deal with those fears can improve resiliency.

In previous studies, Weems and his colleagues surprisingly found kids who experienced Katrina had stable PTSD before Gustav, but a significant decrease in PTSD symptoms after hurricane Gustav, which occurred three years later. Part of the reason why may be related to the successful evacuations and the fact few lives were lost during Gustav as a result, Weems said. In a way, Gustav made them face their fear.

Weems explained that **cognitive behavior therapy is based on this principle of facing your fears through “exposure” to similar events or situations, and is an effective intervention for youth experiencing difficulty after trauma. It teaches youth that they have the competence to cope.**

“We think Gustav may have provided a large scale, relatively more positive exposure for

many, because people evacuated and the negative effects were less compared to Katrina. This helped children to develop a sense of competence and self-efficacy,” Weems said.

“When intervening after a disaster – whether it’s a hurricane or a tornado – you want to help kids actively cope and not avoid dealing with the situation or their feelings about it. By helping them develop their own sense of competence and well-being in dealing with bad things, you’ll develop more resilient children and prevent long-lasting problems.”

Weems cautions against pushing children too far, but helping them face their fears in a safe way. He recommends cognitive behavior therapy for youth with more serious difficulties following a traumatic event or natural disaster.

Previous work by Weems and colleagues found that children watching Gustav-related TV coverage was associated with their PTSD symptoms post-Gustav. Subsequent analyses revealed the relationship between TV viewing and post-Gustav symptoms of PTSD was significant only for children who had high levels prior to the hurricane. Parents of children with anxiety disorders such as PTSD should recognize the potential effects of media, Weems said.

“Parents don’t necessarily need to keep their kids from watching the coverage, but it is best that they’re not glued to the TV,” he said.

“Parents should limit viewing and process the information with their kids.”

— Read more in Carl F. Weems et al., “Three-year longitudinal study of perceptions of competence and well-being among youth exposed to disasters,” *Applied Developmental Science* (25 August 2016): 1-14.

## Diplomat: Hezbollah is now more powerful than most NATO members

Source: <http://www.homelandsecuritynewswire.com/dr20170602-diplomat-hezbollah-is-now-more-powerful-than-most-nato-members>

**AMAZING!**

June 02 – **The Iran-backed terrorist group Hezbollah is “now more militarily powerful than most North Atlantic Treaty Organization members,”** a former Israeli ambassador to the United Nations wrote in [an op-ed](#) published Monday in the *Wall Street Journal*.

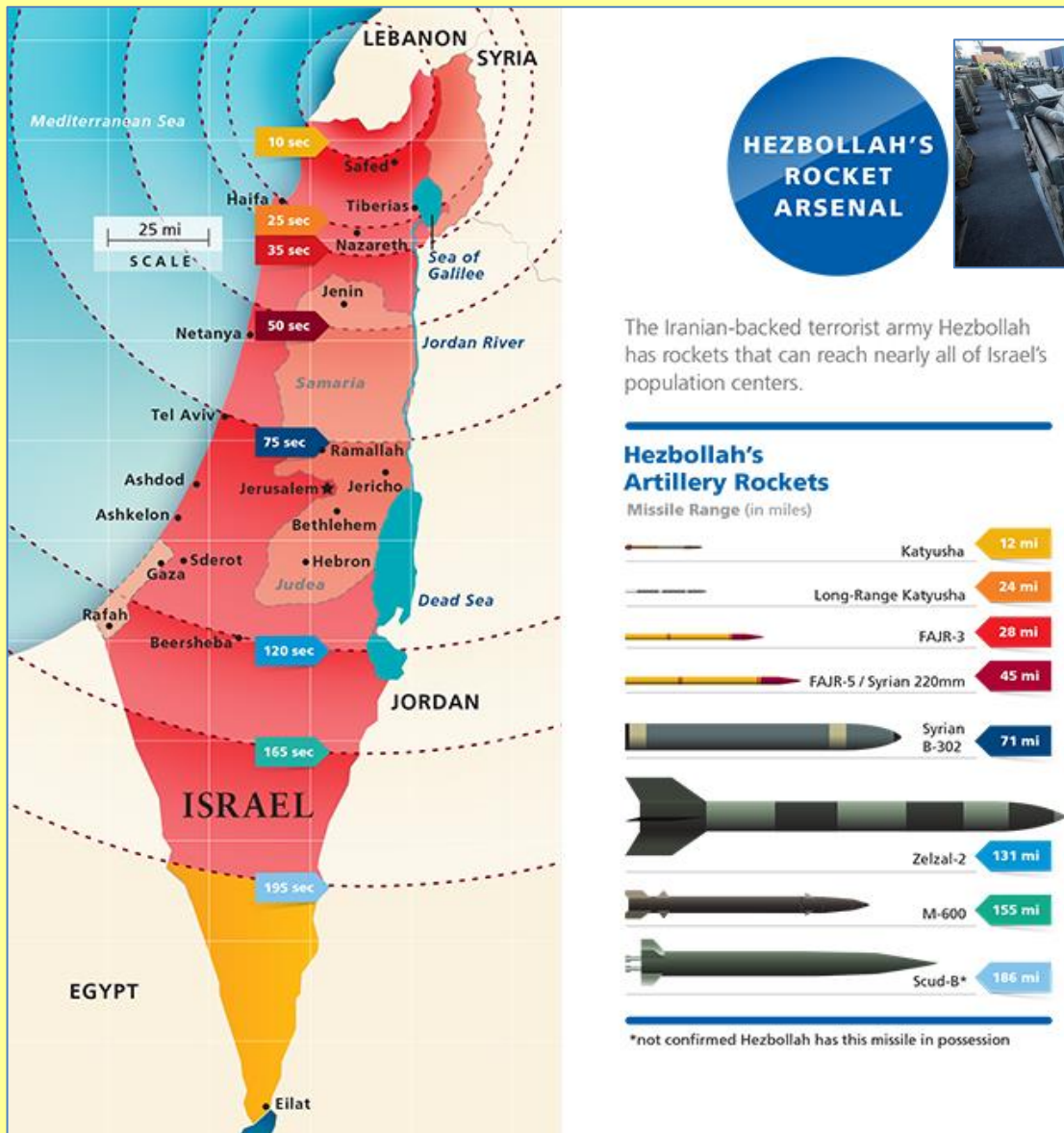
Hezbollah is now “10 times as strong now as it was in 2006, and its military infrastructure permeates Lebanon,” Ron Prosor observed. This is in violation of the “thoroughly ineffective” UN Security Council resolution 1701, which was adopted to end the 2006 Lebanon War and





called for the UN Interim Force in Lebanon (UNIFIL) to keep the country's south "free of any armed personnel, assets and weapons."

Hezbollah has thoroughly defied 1701, acquiring an estimated 150,000 missiles — more than the combined arsenals of 27 NATO nations — with a range capable of striking "anywhere in Israel" and the ability to "launch 1,500 of them a day," Prosor wrote. Lebanon's newly installed president Michael Aoun has also "embraced" Hezbollah's arsenal as "a principal element of Lebanon's defense." Nonetheless, Hezbollah acts "with Iran's interests in mind—not Lebanon's," and if it forces a war on Israel, it will not care about the resulting damage to Lebanon, Prosor pointed out. He pointed to Hezbollah's support of the Syrian government as an example, which has led it to unleash "genocide against the Sunni



Arab population."

In order to prevent a future war with Hezbollah, the United States will have to pressure the Security Council to strengthen and enforce resolution 1701, in line with Chapter 7 of the UN's charter, which mandates peace enforcement. The U.S. could also make its 43 percent contribution to UNIFIL's \$488 million annual budget contingent on its effectiveness in keeping arms out of southern Lebanon.



“War between Lebanon and Israel would be detrimental to Russian interests in Syria, so Vladimir Putin could be convinced to help rein in Hezbollah,” Prosor added. Sunni Arab states such as Egypt and Saudi Arabia also seek to contain Hezbollah and Iran, while “Western Europe should be eager to avoid a war that would worsen its refugee crisis.”

By taking the lead and moving diplomatically at the UN to disarm Hezbollah, the U.S. could “prevent the need to make terrible decisions about U.S. military intervention tomorrow,” Prosor concluded.

Brig. Gen. (res.) Nitzan Nuriel, a former director of Israel's Counter-Terrorism Bureau, [said](#) in March that another war between Israel and Hezbollah was “only a question of time.” A week later, IDF Chief of Staff Lt. Gen. Gadi Eisenkot [assessed](#) that Hezbollah is building up its arsenal in Lebanon, which will bear the brunt of any future conflict between the Iranian proxy and Israel. Israeli security officials [warned](#) earlier in March that the Lebanese army would fight alongside Hezbollah in a war against Israel.

Hezbollah's leader Hassan Nasrallah [admitted](#) in June 2016 that Iran provides his terrorist group with everything it needs. “We are open about the fact that Hezbollah's budget, its income, its expenses, everything it eats and drinks, its weapons and rockets, are from the Islamic Republic of Iran,” Nasrallah said. “As long as Iran has money, we have money... Just as we receive the rockets that we use to threaten Israel, we are receiving our money. No law will prevent us from receiving it.”

Nasrallah's acknowledgement of Iranian aid seems to confirm a public [assurance](#) given to him in August 2015 by Iranian Foreign Minister Mohammad Javad Zarif that the nuclear deal Iran reached with global powers presented “a historic opportunity” to confront Israel. **Iran recently announced that its defense spending would increase by 90 percent in the coming year.**

According to a July 2016 [report](#) by the Foundation for Defense of Democracies, Israeli officials believe that any future war with Hezbollah has the potential to cause “thousands of civilian deaths” in Israel. Hezbollah has, among other things, [threatened](#) to attack ammonium tanks in Haifa, which could kill tens of thousands of people.

Jonathan Schanzer, senior vice president of the Foundation for Defense of Democracies, [explained](#) that month that Hezbollah's widely-reported tactic of hiding military assets in civilian areas would lead to mass casualties. [Reports](#) emerged in 2013 that Hezbollah was offering reduced-price housing to Shiite families who allowed the terrorist group to store rocket launchers in their homes. An Israeli defense official [told](#) the *New York Times* in May 2015 that the buildup of Hezbollah's terror infrastructure in southern Lebanese villages meant that “civilians are living in a military compound” and that their lives were at risk. A few days later, a newspaper linked to Hezbollah [bolstered](#) the Israeli assessment.

**EDITOR'S COMMENT:** So the scenario is: arm Hezbollah to attack Israel from the “back” while Iran will attack Israel. And do they think that 150,000 rockets would be enough against a nuclear weapon; or two or more than two? In more than one directions? All that future human sacrifice will justify micro or mega-politic ambitions and superficial calculations and perceptions?

## The Poland “no Muslims no terror” map is seriously misleading

By Jack Peat

Source: <http://www.thelondoneconomic.com/news/poland-no-muslims-no-terror-map-100-fake-news/07/06/>

June 07 – **A terrorist map is doing the rounds on social media claiming that the reason BY – but it's completely inaccurate.**

The map was released amid claims by Polish minister, Ryszard Czarnecki that the only way to protect Poland from terrorist attacks is by not allowing Muslim migrants into the country.

His words reflected a tough stance on Muslim immigration been peddled by Polish Prime Minister Beata Szydło in the wake of fresh terror attacks on UK shores.

But Poland is no stranger to extremism in its country.

Far right groups are becoming increasingly prevalent domestically and overseas, where millions of Polish immigrants have made their homes in cities and towns across Europe.

What's more, most of the propaganda been spread on social media is completely inaccurate.





This map seems to show that Islamic terrorist incidents have occurred in their droves across Europe in places with no reported terrorism activity.

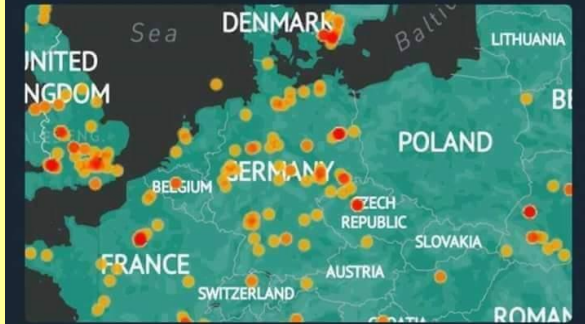
Bristol in the UK is heavily cited as enduring severe terrorist attacks, as is Wisbech in Cambridgeshire and Canterbury in Kent.

There is even one terrorist incident reported in the North Sea.

It also omits the fact that Poland has scarcely been involved in the conflict in the Middle East, which has been cited as a primary motivation behind attacks in countries which were involved.

From 2002 until 2014, Polish military forces were only part of the Coalition Forces that participated in the ISAF mission in Afghanistan led by NATO.

Map of terror attacks in Europe. Poland has a strict no-migrants policy. Draw your own conclusions



**Here is an official list of terror attacks in the UK since the Millennium according to Wikipedia:**

- 2000, 20 September: The **IRA** fired an RPG-22 rocket launcher at the MI6 headquarters in London.
- 2001, 4 March: The **IRA** detonated a car bomb outside the BBC Television Centre in London, damaging the front of the building and injuring one person.
- 2001, 3 August: The **IRA** detonated a car bomb in Ealing, London, damaging buildings and injuring seven people.
- 2001, 4 November: **IRA** car bomb in Birmingham.
- 2005, 7 July: 7/7 central London bombings conducted by four separate **Islamist extremist** suicide bombers, which targeted civilians using the public transport system during the morning rush hour. Three bombs were detonated on three separate trains on the London Underground and one on a double-decker bus. 56 people were killed and 700 were injured. It was the UK's worst terrorist incident since the 1988 Lockerbie bombing and the first Islamist suicide attack in the country.



- 2007, January–February: **Miles Cooper** letter bomb campaign. Miles Cooper said he was motivated by **anti-authoritarianism** and **opposition to surveillance**.
- 2007, 30 June: Glasgow International Airport attack perpetrated by **Islamist extremists**. Five people were injured and the only death was of one of the perpetrators.
- 2008, 22 May: Exeter attempted bombing in a café toilet by an **Islamist extremist**, injuring only the perpetrator.

#### 2010s

- 2013, 29 April to 12 July: Pavlo Lapshyn attacks. Lapshyn, a **Ukrainian student and right-wing extremist**, stabbed Mohammed Saleem, a Birmingham resident to death on 29 April. He later admitted to police that he wished to start a **“race war”**. Lapshyn later detonated a home-made bomb outside a mosque in Walsall on 21 June. 150 homes were evacuated but no person was injured. On 28 June Lapshyn detonated a second home-made bomb near a mosque in Wolverhampton, and attacked a mosque in Tipton with an improvised explosive device containing nails on 12 July. Friday prayers were delayed that day, and so his intended victims were still inside. Laphsyn was later sentenced to serve a minimum of 40 years.
- 2013, 22 May: A British soldier, Lee Rigby, was murdered and decapitated in an attack in Woolwich by Michael Adebolajo and Michael Adebawale, two **Islamist extremists** armed with a handgun and a number of bladed implements including a cleaver. Both men were sentenced to life imprisonment, with Adebolajo given a whole life order and Adebawale ordered to serve at least 45 years.
- 2015, 5 December: A man with a knife attacked three people at Leytonstone Tube Station in East London. The attacker was 29-year old Muhydin Mire who was shouting **“this is for Syria”**. The attacker was found guilty of attempted murder in June 2016. Three people were injured in the attack and one was seriously injured.<sup>[51]</sup>
- 2016, 16 June. Labour MP Jo Cox, aged 41, was killed by **Thomas Mair**, according to testimony given in court. Cox was fatally shot and stabbed outside the library in Birstall, West Yorkshire, where she was about to hold a constituency surgery at 1:00 pm. A 77-year-old local man, Bernard Kenny, was stabbed in the stomach while trying to fend off her attacker. The Crown Prosecution Service described it as an act of terror. The judge, in his sentencing remarks, said that Mair’s violence was politically-motivated.<sup>[54]</sup> Britain First distanced itself from the attack and Mair.
- 2017, 22 March: 2017 Westminster attack – Khalid Masood, a 52-year-old British man, born in Kent as Adrian Elms, drove a car into pedestrians on Westminster Bridge, before crashing the vehicle into the Palace of Westminster’s perimeter. He then entered the grounds of the Palace of Westminster, the meeting place of the Houses of Parliament, before being confronted by a police officer, whom he fatally stabbed before being shot himself. Six, including the perpetrator and the officer, were killed in the incident, and 49 people were injured. The attack is being treated as an act of terrorism motivated by **Islamic extremism**.
- 2017, 22 May: 2017 Manchester Arena bombing – A large explosion caused by a British **suicide attacker** with a bomb at the Manchester Arena, Manchester, killing 22 individuals and injuring 120. The attack occurred shortly after an Ariana Grande concert had concluded, and is the most deadly terror related incident in the United Kingdom since the 7/7 London bombings in 2005.
- 2017, 3 June: June 2017 London attack. 8 people were confirmed dead and at least 48 injured, some critically. A white van drove at high speed across London Bridge, running into groups of people, then crashed. The occupants then ran to nearby Borough Market, where they stabbed many people. All three of the **terrorists** involved were shot dead by police eight minutes after the incident was reported. All three were wearing imitation suicide bomb vests.

This map, first published in the [Washington Post](#), details 45 years of terrorist attacks up to 2015.

*Jack Peat is a business and economics journalist and the founder of The London Economic (TLE). He has contributed articles to The Sunday Telegraph, BBC News and writes for The Big Issue on a weekly basis. Jack read History at the University of Wales, Bangor and has a Masters in Journalism from the University of Newcastle-upon-Tyne.*







**Good horsy!**  
**Good bull!**



**STOP**  
*Bullfighting*



**Baaad matador Lea Vicens!**

**Feria de Nimes Festival – N. France**





## Czech government tells its citizens how to fight terrorists: Shoot them yourselves

Source: [https://www.washingtonpost.com/news/worldviews/wp/2017/01/06/czech-government-tells-its-citizens-how-to-fight-terrorists-shoot-them-yourselfes/?utm\\_term=.4e1d30617683](https://www.washingtonpost.com/news/worldviews/wp/2017/01/06/czech-government-tells-its-citizens-how-to-fight-terrorists-shoot-them-yourselfes/?utm_term=.4e1d30617683)

June 09 – A couple of months ago, Czech President Milos Zeman made an unusual request: He [urged citizens](#) to arm themselves against a possible "super-Holocaust" carried out by Muslim terrorists.

Never mind that **there are fewer than 4,000 Muslims in this country of 10 million people** — [gun purchases spiked](#). One shop owner in East Bohemia, a region in the northern center of the Czech Republic, told a local paper that people were scared of a "wave of Islamists."

**Now the country's interior ministry is pushing a constitutional change that would let citizens use guns against terrorists.** Proponents say this could [save lives](#) if an attack occurs and police are delayed or unable to make their way to the scene. To become law, Parliament must approve the proposal; they'll vote in the coming months.

The Czech Republic already has some of the most lenient gun policies in Europe. It's home to about **800,000 registered firearms and 300,000 people with gun licenses**. [Obtaining a weapon](#) is relatively easy: Residents must be 21, pass a gun knowledge check and have no criminal record. By law, Czechs can use their weapons to protect their property or when in danger, although they need to prove they faced a real threat.

This puts the country at odds with much of Europe, which has long supported much more stringent gun-control measures. In the wake of the 2015 terror attacks in Paris, France pushed the European Union to enact even tougher policies. The European Commission's initial proposal called for a complete ban on



the sale of weapons like Kalashnikovs or AR-15s that are intended primarily for military use. Ammunition magazines would be limited to 20 rounds or less.

The Czech Republic [came out hard against](#) the directive. Officials warned — somewhat ominously — that the measure would limit the country's ability to build "an internal security system" and make it nearly impossible to train army reservists. And a total ban on military-style rifles that can fire large numbers of rounds would make illegal thousands of weapons already owned by Czech citizens, potentially creating a black market for terrorists to exploit. Finland and Germany offered their own reservations; Europe's pro-gun groups also mobilized against the bill with the support of politicians on the extreme right.



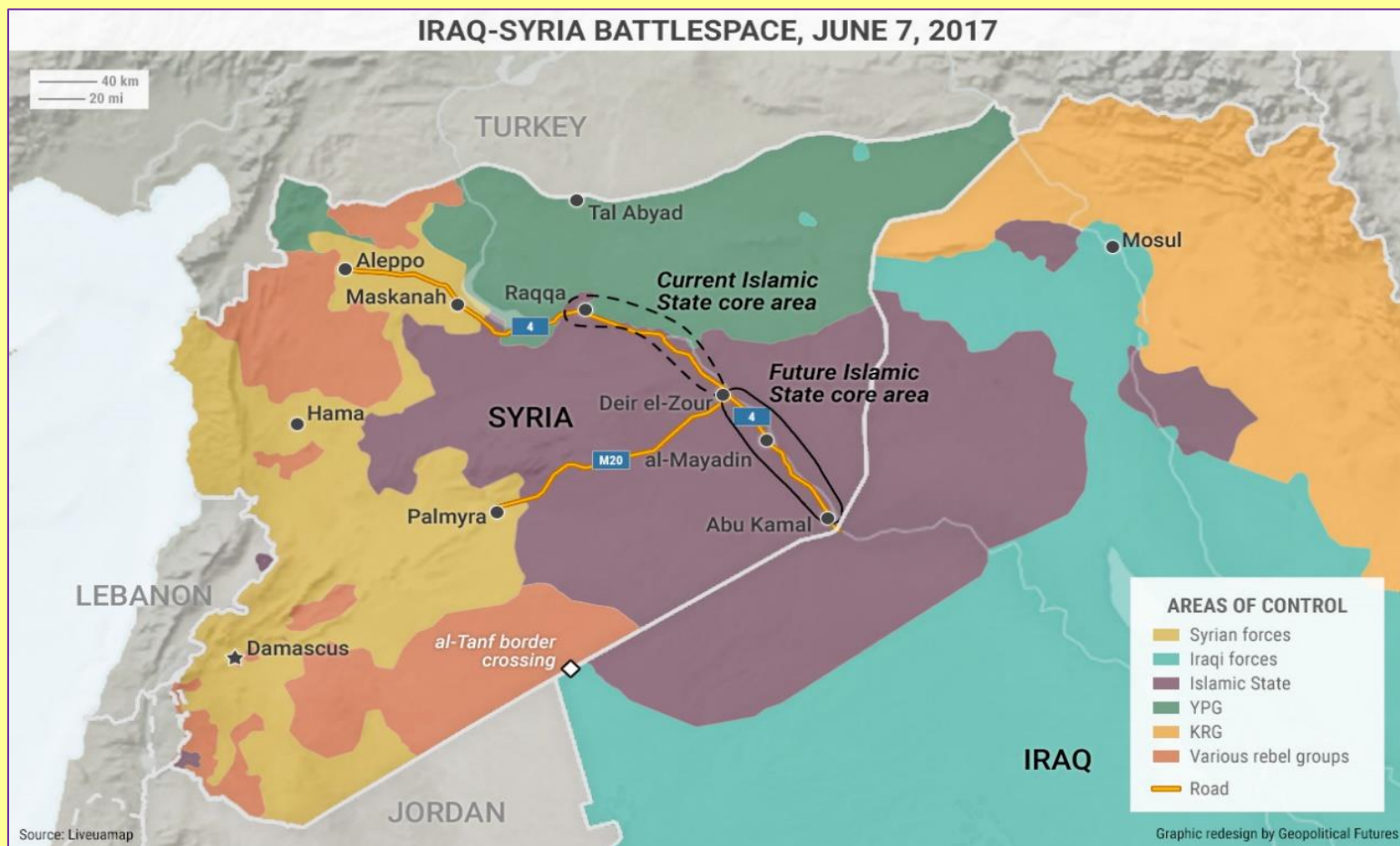


After months of contentious negotiations, the EU [passed a compromise](#) last month; the Council of Ministers will confirm the measure this spring. All member states will have 15 months to comply with the new gun restrictions. The final measure [bans](#) the sale of most military-style rifles and requires all potential buyers to go through a [psychological check](#) before they can buy a weapon. If someone fails a check in one E.U. state, that information will be shared in an international database so that the person can't procure a gun somewhere else. Online sales are also severely curtailed. The Czech Republic was the only country to oppose the directive for being too strict. Luxembourg also voted against the measure, but on the grounds that it was too weak.

That means that regardless of how the Czech parliament votes on the terrorist-hunting measure, gun laws in the Czech Republic are going to get stricter. All gun purchasers will be required to pass the psychological checks, though it's not yet clear if gun owners will have to turn in newly illegal weapons. That ambiguity has led [one Czech newspaper](#) to suggest that the Interior Ministry's latest move is much more about political safety than safety from terrorism.

## The Islamic State Changes Course in Syria and Iraq

Source: <https://geopoliticalfutures.com/islamic-state-changes-course-syria-iraq/>



June 9 – The U.S.-backed Syrian Democratic Forces began an invasion of eastern Raqqa on June 6. They captured the neighborhood of al-Mashalab before IS stopped their advance. Meanwhile, Syrian army forces loyal to Bashar Assad crossed into Raqqa province and are now less than 50 miles (80 kilometers) west of Raqqa city.

The Syrian army has also moved against IS in Aleppo province and outside of the city of Hama, and continues to push east from Palmyra toward the IS heartland. The Islamic State is reeling, no longer in a good position to defend its capital. That means its strategy must change, and along with it, our baseline assessment of its strategic imperatives in Syria.



In December 2015, GPF published a [detailed study of the Islamic State as a territorial entity](#), not as a terrorist group or ideological movement. The geographic core of the Islamic State was identified as a thin but heavily populated area on both sides of the Euphrates River, extending from Raqqa to the city of Deir el-Zour. Defense of this core was the Islamic State's primary geopolitical imperative.

The Islamic State is in danger of losing control of this territory. GPF's report identified four main avenues of approach toward the Islamic State's core territory. U.S.-backed Syrian Kurds chose the fourth approach, moving south from Tal Abyad for a frontal assault on the IS capital. The Syrian Democratic Forces gathered to the north, east and west of Raqqa, though highway 4, which leads from the city's southeast directly to Deir el-Zour, remains open to IS forces.

By itself, the SDF probably could not take Raqqa – at least not without immense difficulty. But Russian-backed Assad forces are also advancing on the city from the northwest, west and southwest. The combination of the two forces threatens to complete the encirclement of Raqqa and cut it off from the rest of IS territory.

The Syrian army took Maskanah on June 4 and has stayed on the offensive, taking two villages in Raqqa province. On June 6, the Syrian army forced IS to retreat from areas in the eastern part of Hama province. And for the past few weeks, Syrian army forces have slowly been making their way up the M20 highway, which runs east from Palmyra toward Deir el-Zour. These forces have advanced about 20 miles in the past month, but they are still roughly 100 miles from Deir el-Zour.

## The Road to 2040: A Summary of Our Forecast

Source: <https://geopoliticalfutures.com/the-road-to-2040-a-summary-of-the-forecast/>

**GPF** | GEOPOLITICAL  
FUTURES

**Dec. 2, 2015:** We look into the future and forecast what the world will look like in a quarter of a century. We predict several disruptions in the global structure by 2040 and conclude that much of the instability over the next 25 years will be focused in the European and Asian continents.

**Here is a summary of some of our key predictions for the next 25 years.**

In this glimpse into the next quarter century, we forecast several significant changes and disruptions in the global structure, which will be summarized here. However, one fact that will not change is the United States' position as the sole global power. Over the next 25 years, it will adopt a new strategy to maintain power at the lowest possible cost. This strategy will resemble isolationism, in that the **U.S.** will not be drawn into regional military conflicts in any significant capacity. The U.S. will support its allies with supplies, training and some air power, however, it will contain regional problems in Europe, the Middle East and Asia, rather than directly and forcibly engaging. This will prove to be a prudent strategy and help the U.S. sustain its global dominance.

In **Europe**, the European Union as an institution will collapse or redefine itself as a more modest

trade zone encompassing a smaller part of the continent. The current free trade structure is unsustainable because its members, particularly Germany, have grown overly dependent on exports. This dependency makes these economies extremely vulnerable to fluctuations in demand outside of their own borders. Germany is the most vulnerable country and will experience economic decline due to inevitable fluctuations in the export market. Consequently, by 2040, Germany will be a second-tier power in Europe. Other countries in Western Europe will be affected by its decline, leading Central Europe, and Poland in particular, to emerge as a major, active power.

**Russia** will continue to suffer from the effects of declining oil prices. The revenue from this commodity had been used to sustain internal cohesion. With this revenue now severely drained, Russia will devolve into a confederation or even fragment into secessionist parts by 2040. The future of Russian nuclear weapons will become a crucial strategic issue as this devolution takes place.

In **Asia**, as the decline of China's competitiveness in the export market continues, high unemployment will become a





significant challenge to the Chinese president. The regime will attempt to survive the economy's downward spiral by tightening its grip on power and sliding back into dictatorship. However, the regional divergences in China are too widespread and not easily suppressed by dictatorship. Therefore, by 2040, China will see a return to regionalism, accompanied by turmoil. As China weakens, a power vacuum will emerge in East Asia, which will be filled by Japan. By 2040, Japan, with its enormous economy and substantial military capabilities, will become the leading East Asian power.

In the **Middle East**, we do not foresee Islamic State being sufficiently contained in the coming decades. On the contrary, it is likely to expand its territory. Turkey and Iran are the only regional actors with the capability to challenge IS, and

Iran is unlikely to do so in any substantial way. Given Islamic State's territorial aspirations, Turkey will have to engage militarily to defend its borders. As Turkey asserts its military and economic strength, these developments will effectively bring a return of the Ottoman Empire, thrusting Turkey back into the position as the dominant regional power by 2040.

**To summarize, the dominant theme we see playing out over the course of the next 25 years is increasing disarray in Europe and Asia, contrasted by prolonged stability in North American and Latin America. Despite the growing unsteadiness in Eurasia, we also expect to see three regional powers emerge: Japan, Turkey and Poland. These countries will be outliers in an otherwise fragmented Eastern Hemisphere.**

#### Main Forecasts:

- The main trend over the next quarter of a century will be the continued and intensifying instability in the Eastern Hemisphere and increasing stability in the Western Hemisphere.
- Over the next 25 years, the United States will remain the world's sole global power.
- The U.S. will adopt a new strategy of maintaining power at the lowest possible cost, eschewing direct military intervention for containing regional problems and supporting allies.
- The European Union cannot maintain its free trade dimension and, since that dimension is at the heart of the EU, the union itself, including the euro, will at the very least contract geographically and will more likely disappear.
- The EU will redefine itself as a more modest trade zone encompassing a smaller part of the continent.
- Germany is the most vulnerable country to the coming EU collapse. The country will experience economic decline due to inevitable fluctuations in the export market, on which it is heavily dependent. By 2040, Germany will be a second-tier power in Europe.
- The rest of northwestern Europe, excluding Britain, will also experience a decline, linked to Germany's slump. Power and economic dynamism will, therefore, shift away from Western Europe and to Central Europe.
- Poland will emerge as a major, active power in Europe.
- Well before 2040, Russia will at best operate as if it is a confederation, with regions linked but not under Moscow's control. Alternatively, this may be combined with genuine secession of various regions, particularly in the High Caucasus, the Pacific Maritime region and Karelia. Whatever the details, the likelihood of Russia remaining intact is low.
- China's economy has been showing signs of slowing growth and, by 2040, the country will see a return to regionalism, accompanied by turmoil.
- As China weakens, a power vacuum will emerge in East Asia, which will be filled by Japan. By 2040, Japan, with its enormous economy and substantial military capabilities, will become the leading East Asian power.
- Islamic State will not be sufficiently contained in the coming decades.
- Islamic State's strength will be a challenge when its reach goes beyond the frontiers of the major powers. All of its opponents will react at that time, but only two are capable of extended offensive activity: Iran and Turkey.
- By 2040, we expect Turkey to be forced into the position of challenging the Islamic State. This situation will be, in effect, the return of the Ottoman Empire in Arab territory.



- In an operation against IS, we expect Turkey to be successful, but its success would draw Turkey into an occupation that it could not easily withdraw from.

#### Other Forecasts:

- The U.S. strategy with Russia from now until 2040 is to confront Moscow with a line of resistance (which includes the Baltic states, Poland, Slovakia, Hungary, Romania and Bulgaria) without itself becoming overly exposed.
- By the mid-2020s, both Germany and Russia will grow weaker and, while Poland may not surge by itself, its relative weight will increase dramatically.
- Russian military might will increase in the early phases of its terminal crisis causing tensions with Poland, but will fade as its core economic and political problems become less manageable.
- The future of Russian nuclear weapons will become a crucial strategic issue as the country's devolution takes place.
- The contraction in oil revenue will have long-term consequences in Russia. There will neither be sufficient resources for Moscow to sustain the region, nor an effective security apparatus to compel unity.
- The emergence of new economic powers, which will certainly happen in the next 25 years, is likely to be matched with new sources of energy, including hydrocarbons and others.
- As mentioned previously, Turkey will be forced to assert its military and economic strength against IS and other challengers, thrusting Turkey into the position of being the dominant regional power by 2040. This power will not be limited to the south, but will extend to the northwest into the Balkans and north into the Black Sea Basin.
- Some areas that are currently not seen as globally significant will emerge as economic powers, if not yet strategic challenges to the United States. They will be the high-growth, low-wage countries and, in many cases, simultaneously advanced industrial countries.
- As the Western Hemisphere grows increasingly stable compared to the Eastern Hemisphere, Latin America will be in a strikingly important position. However, it is still in an early stage of development that will likely last until 2040 for most countries.
- As Eurasia's fragmentation continues, the logical outcome is the rotation of powers. At or near the periphery of a severely weakened Eurasia, we expect to see three regional powers emerge, as described already above: Japan will return to being the major East Asian power; Turkey will be the dominant power in the Middle East; and Poland, leading a coalition from the Baltics to the Black Sea, will become a major player in Europe.
- From Europe to China, there are extraordinarily capable and creative populations that will continue to create wealth for themselves and others. But all of these countries – with the exception of India, which is already divided in many ways – are undergoing a process of fragmentation that will reduce their weight in the international system.

## Redrawing the Middle East

Source: <https://geopoliticalfutures.com/the-geopolitics-of-2017-in-4-maps/>

It has become cliché to point out that the Middle East's current political borders were drawn after World War I by colonial powers like the United Kingdom and France, and that the region's wars and insurrections in recent years are making these artificial boundaries obsolete. What isn't cliché is doubling down on that analysis. We've drawn a new map of the Middle East based on who controls what territory, as opposed to the official boundaries recognized by international organizations like the United Nations.

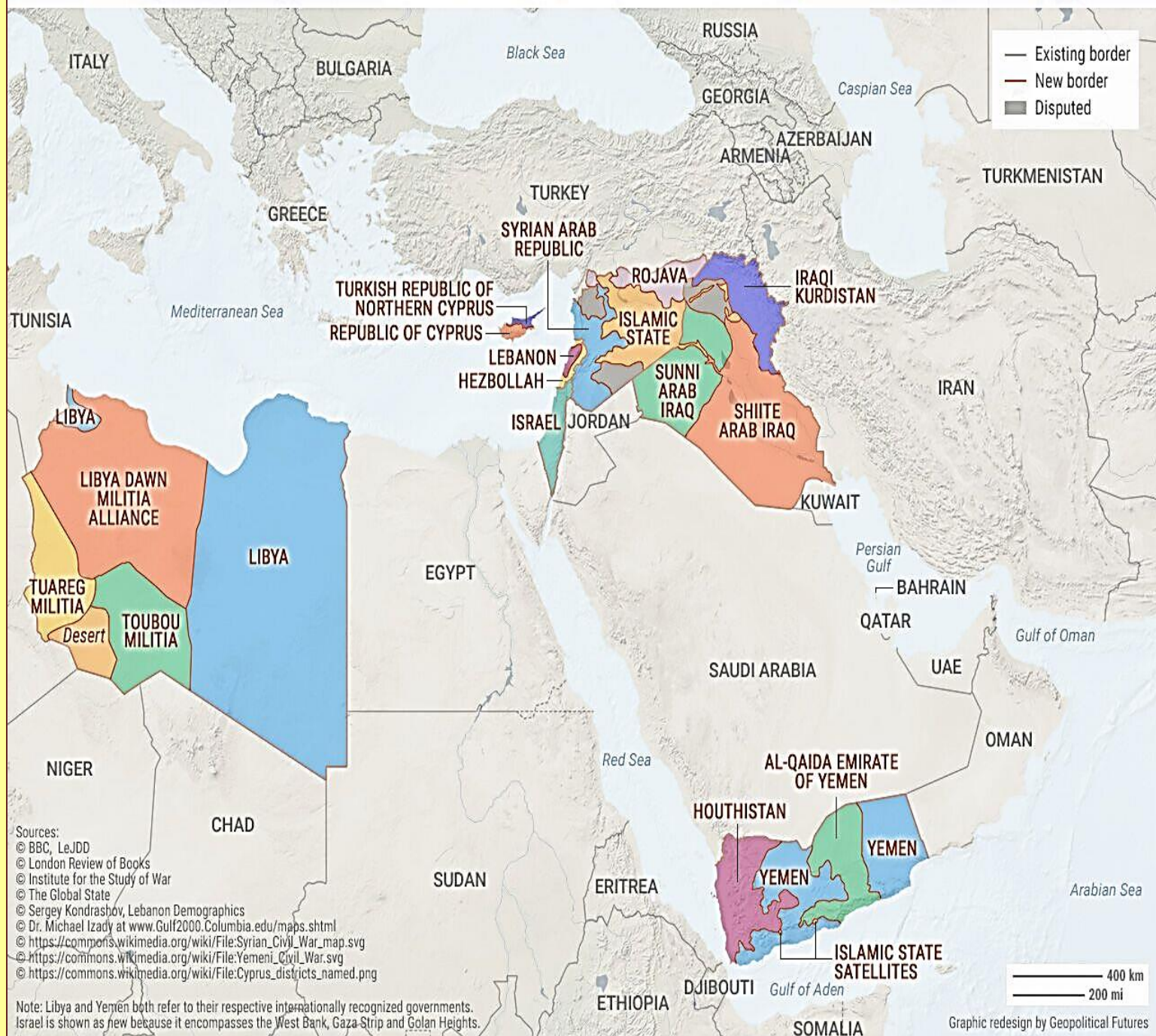
The map above reveals what the Middle East really looks like right now. Many will object to some of the boundaries for political purposes, but this map is explicitly not trying to make a political statement. Rather, it is an attempt to show who holds power over what geography in the Middle East.

From this point of view, Syria, Iraq, Yemen, and Libya don't exist anymore. In their places are smaller warring statelets based on ethnic, national, and sectarian identities. Other





## A NEW MAP OF THE MIDDLE EAST



borders (like those of Lebanon and Israel) are also redrawn to reflect actual power dynamics. Here, a politically incorrect but accurate map is more useful than an inaccurate but politically correct one. Just as important as redrawing the borders of countries that no longer function as unified entities is noting which countries' borders do not require redrawing. These countries include three of the region's four major powers: Turkey, Iran, and Saudi Arabia. The borders of the other major power, Israel, are only slightly modified. (Egypt is an economic basket case and does not qualify as a major power, even though it has arguably the most cohesive national culture in the Arab world.) The Middle East is defined by two key dynamics: the wars raging in the heart of the Arab world and the balance of power between the countries that surround this conflict.



## Imagining 2017's Brexit

Source: <https://geopoliticalfutures.com/the-geopolitics-of-2017-in-4-maps/>

## AREAS WITH STRONG NATIONALIST TENDENCIES

*Italicized names indicate regions with movements agitating for greater autonomy but not independence.*

Non-italicized names indicate regions with important secessionist movements, although both categories include moderate movements.



Sources: © Wikimedia: Bosnia\_and\_Herzegovina\_administrative\_divisions\_-\_en\_(entities)-\_colored.svg;  
HZ\_Herceg-Bosna.PNG; Active\_separatist\_movements\_in\_Europe.svg

Azores, Madeira and the Canary Islands are not shown. Regions shown have active parties campaigning for greater autonomy or independence. Other regions with weaker movements have not been included.

Graphic redesign by Geopolitical Futures

Analyzing this map must begin with a disclaimer: This is, first and foremost, an analytical tool and a means of thinking about Europe's future. It is explicitly not a prediction of what Europe's borders will look like in the future.

The map identifies areas in Europe with strong nationalist tendencies. Those regions with active separatist movements are not italicized. The italicized regions are those demanding increased autonomy but not independence. In many of these regions, secessionist movements may be favored by a minority of the population. The point here is not their size, but rather that in all these regions, there is some degree of national consciousness that is dissonant with the current boundaries of Europe's nation-states.

The European Union is a flawed institution because its members could never decide what they wanted it to be. The EU is not quite a sovereign entity, but it claims more authority than a free trade agreement. European nation-states gave up some of their sovereignty to





Brussels... but not all of it. So when serious issues arose (such as the 2008 financial crisis or the influx of Syrian and other refugees), EU member states went back to solving problems the way they did before the EU. Instead of “one for all and all for one,” it was “to each their own, but you still have to buy German products.”

Brexit shook the foundations of the EU in 2016. Elections in France and Germany and domestic instability in Italy will shake those foundations in 2017. But Brexit also opened the doors to a deeper question: How will national self-determination be defined in the 21st century? Not all of Europe's nation-states are on stable ground. The most important consequences of Brexit may end up being its impact on the political future of the United Kingdom. And in Spain, Catalonia already claims it will hold an independence referendum this year.

Brussels, meanwhile, keeps trying to speak with one voice. This map communicates just how hard that is... not just for the EU, but also for some of Europe's nation-states.

### Refugees? No thanks!



*European UNION's Solidarity  
on refugees' issues*

## Poll: Russians See Biggest WMD Threats Coming From US, Al-Qaida, 'Chechens'

Source: <https://www.russiamatters.org/blog/poll-russians-see-biggest-wmd-threats-coming-us-al-qaida-chechens>

June 12 – We at Russia Matters tend to treat claims by state-owned pollsters with a grain of salt, especially when it comes to political rankings. Nevertheless, we feel compelled to share the results of the following [survey](#) conducted by the Russian Public Opinion Research Center (VTsIOM) in May, as it gives some fascinating insights into ordinary Russians' thinking about nuclear-, biological- and chemical-weapons threats to their country.



When asked to assess what actor is most likely to launch an attack using weapons of mass destruction against Russia, respondents said they view the United States, al-Qaeda and “Chechen terrorists” as the first, second and third likeliest sources of such an attack, respectively. (A decade ago Russians ranked those potential attackers in the reverse order.)

In addition to highlighting Russians’ traditional reservations about the world’s military superpower (now exacerbated by an anti-American mood), such a ranking suggests that the Russian public fears the proliferation of WMD among non-state actors, even though no such attack has occurred since the 1990s when Chechen rebels planted [radioactive materials](#) in a Moscow park and blew up a [chlorine tank](#) in Grozny. It is also interesting that, perhaps for the sake of consistency, VTsIOM continues to refer to “Chechen terrorists” in its list of possible answers even though the insurgency in Chechnya has been all but quashed, with neighboring Dagestan now accounting for more political violence than any other Russian region.

**Surprisingly, judging by the poll, Russians are not as concerned about the proliferation of nuclear weapons among states.** Not only do countries (other than the U.S.) rank lower in the threat list than non-state groups, but also a small majority of respondents (41%) think that Russia and the other official nuclear powers should not punish other countries for pursuing nukes, versus 38% who said aspirants to the nuclear club should be punished. Such public sentiments are, perhaps, a reflection of the fact that the Russian leadership has been traditionally less forceful than their Western counterparts in negotiating with Iran and North Korea over their nuclear programs.

**See detailed results below.**

**Which of the following countries and organizations do you think pose a threat to Russia related to the use of weapons of mass destruction?**

*(multiple answers allowed, %)<sup>1</sup>*

Actor	Jan. 2006	Oct. 2006	July 2009	May 2017
USA	33	37	38	50
Al-Qaida	38	27	24	32
Chechen terrorists	55	41	46	15
North Korea	7	11	18	13
Britain	4	3	4	7
China	14	12	20	7
Iran	15	10	15	6
France	1	1	2	3
Pakistan	11	6	10	3
Israel	4	5	5	2
India	2	1	2	1
Other terrorist groups (this option not given in 2009 and 2017)	34	23	0	0
Others	2	2	2	19
No country or organization	4	14	10	13
Difficult to say	12	13	10	7

<sup>1</sup>Note that ISIS is not mentioned.





What policy, in your opinion, should Russia and other nuclear powers conduct toward countries that are developing nuclear weapons? (%)

Policy options	Oct. 2006	July 2009	April 2013	May 2017
We need to isolate them from the world community and introduce economic and other sanctions to prevent a new nuclear arms race and the emergence of an atomic bomb in more states	47	52	50	38
These countries have the same right to nuclear weapons as the US, Russia, China, etc., so there is no need to conduct any special policy toward those who create an atomic bomb	34	30	35	41
Difficult to say	19	18	15	21

**If you speak German, enjoy the video...!**

Source: [https://www.youtube.com/watch?v=2PvGZYqP\\_58](https://www.youtube.com/watch?v=2PvGZYqP_58)

## Gang members, domestic extremists vastly different, says first study to compare the two

Source: <http://start.umd.edu/news/gang-members-domestic-extremists-vastly-different-says-first-study-compare-two>

June 09 – **Domestic extremists tend to be much older, better educated, more affluent, more religious, and are more likely to be white than street gang members**, according to a sweeping new

University of Colorado Boulder study that systematically compares the groups for the first time.

The study, funded by the U.S. Department of Justice and published in the journal *Justice Quarterly*, also found that contrary to popular belief, U.S. gang members seldom go on to become radicalized and commit acts of terrorism.

The findings come as the Trump administration has named the large U.S. street gang MS 13 “one of the gravest threats to American public safety,” and ideologically motivated extremism remains a national concern. The authors hope the paper, and related studies, will be used to help inform policies to counter both domestic terrorism and gang participation.

“Both criminal gangs, like MS-13, and domestic extremist groups, like neo-Nazis, pose great risks for crime and violence in the United States,” said lead author David Pyrooz, an assistant

professor of sociology. “This study gives us a much better statistical portrait of what such groups look like in relation to each other.”

For the study, researchers compared data from 1,473 political extremists [in Profiles of Individual Radicalization in the United States \(PIRUS\) dataset](#) with 705 gang members from the National Longitudinal Survey of Youth (NLSR) dataset. PIRUS is compiled and maintained by the [National Consortium for the Study of Terrorism and Responses to Terrorism \(START\)](#).





**‘El Salvador has already designated MS-13 a terrorist group’**

PIRUS includes information, taken from interviews and media accounts, about members of violent extremist groups or terrorist organizations, and individuals who committed crimes motivated by far-right, far-left, Islamist, or other ideologies.

“Criminologists have been studying gangs for years, whereas the study of domestic extremists is relatively recent,” explained co-author Gary LaFree, director of START and professor of Criminology and Criminal Justice at the University of Maryland. “There has been some hope that if the processes by which individuals get into gangs resemble how they get into terrorist organizations, we might be able to use what we know from countering gang participation to counter participation in terrorism.”

But the study, conducted by Pyrooz, LaFree, Scott Decker of Arizona State University and Patrick James of the University of Maryland, suggests there are fewer links than suspected.

- ◆ Only 82 domestic extremists – less than 6 percent – had gang ties. “This suggests gangs are not breeding grounds for extremism as previously thought,” Pyrooz said.
- ◆ On average, members of extremist groups are 34 years old; gang members are 19.
- ◆ While females constitute nearly one-third of gangs, 90 percent of extremists are male. Eighty percent of domestic extremists are white, while fewer than half of gang members are. And just 1.2 percent of extremists have no religious affiliation, while 24 percent of gang members are not religious.
- ◆ In all, the groups showed similarities in only 10 out of 27 measures.

“Overall, these preliminary findings suggest that, on an individual level, policies and programs designed to prevent and intervene in gang membership might not translate very well to domestic extremism,” Pyrooz said. “The jury is still out for group- and community-level approaches.”

That said, the researchers did find a few compelling commonalities that draw people to both types of groups, including strong attachments to like-minded peers and poor employment history.

For studies to come, they’re conducting in-person interviews with gang members to compare their life histories with those of domestic extremists.

“We want to better understand how and why members from each of these groups enter and leave them, and provide this basic research to people out in the trenches dealing with these issues,” Pyrooz said.





The National Institute of Justice funded the study, "[Cut from the same cloth? A comparative study of domestic extremists and gang members in the United States.](#)" Arizona State University criminologist Scott Decker also contributed.

*David Pyrooz is Assistant Professor of Sociology and Faculty Associate of the Institute of Behavioral Science at the University of Colorado Boulder. His research interests are in the areas of gangs and criminal networks, incarceration and reentry, and developmental and life course criminology. He received the New Scholar Award from the Academy of Criminal Justice Sciences in 2015 and the Ruth Shonle Cavan Young Scholar Award from the American Society of Criminology in 2016.*

*Gary LaFree is Director of the National Consortium for the Study of Terrorism and Responses to Terrorism (START) and Professor of Criminology and Criminal Justice at the University of Maryland. His research is on the causes and consequences of violent crime and terrorism. His most recent book (with Martha Crenshaw) is Countering Terrorism, published in 2017 with Brookings Press.*

*Scott Decker is Foundation Professor in the School of Criminology and Criminal Justice at Arizona State University. His main research interests are in gangs, violence, and criminal justice policy. He is a Fellow in both the American Society of Criminology and the Academy of Criminal Justice Sciences.*

*Patrick James is a Senior Faculty Specialist at the National Consortium for the Study of Terrorism and Responses to Terrorism (START). He is the project manager for the Profiles of Individual Radicalization in the United States (PIRUS) project, which seeks to explain the underlying mechanisms and processes of domestic radicalization. He earned his MA in International Studies from the University of Denver, concentrating in political violence, Middle East policy, and international security issues.*

## Dear Theresa May, Getting Rid of Human Rights Won't Stop Terrorism

By Simon Allison

(June 13, 2017)

Source: <http://www.newsweek.com/theresa-may-human-rights-terrorism-isis-africa-terrorism-624385>

*Dear Prime Minister,*

Congratulations on your election victory, which comes at a difficult time for your country and your leadership. What the United Kingdom needs now is certainty, you've said. Citizens will no doubt look to your campaign promises to see what that might mean for them.

That's what we wanted to talk to you about, actually. Usually we criticize politicians when they fail to deliver on their sweeping campaign promises. This time, we are in the strange position of hoping there is one promise you won't keep.

The twin terror attacks in Manchester and London in the run-up to the vote were tragic. The very real threat of terrorism facing the U.K. was rightly condemned in the strongest terms by leaders across the political spectrum, yourself included. "Enough is enough," you said, and "things need to change."

**You're right. Things do need to change. But we're worried about the changes you propose to make.**

You spoke about longer prison sentences for anyone convicted of terrorism offenses, and of making it easier to deport foreign terrorist suspects back to their own countries. You also spoke about "doing more to restrict the freedom and movements of terrorist suspects when we have enough evidence to know they are a threat, but not enough evidence to prosecute them in full in court."

**And then there was this: "And if our human rights laws get in the way of doing it, we will change the law so we can do it."**

On the African continent, we have been dealing with terrorism for decades. We've seen this kind of talk before, from leaders who want to appear strong and so resort to heavy-handed tactics. And we've seen this talk translate into action: from [the massacres of](#)



[civilians](#) committed by the Nigerian military, [to incidents of torture in Kenya](#), to extrajudicial executions in Algeria, to detention without charge in Egypt, to crackdowns on media and civil society in Chad.

In all these instances, human rights are often framed as an impediment to fighting terrorism—a burden that must be sidelined in order to solve the larger terrorist problem. In this, your pledge to dismiss human rights “if they get in the way” echoes the rhetoric of some of the worst human rights abusers in the world. But over the years, extensive [research](#) conducted across the continent and in some of its most dangerous areas has led us to a rather different conclusion.

“Violence begets violence. Using excessive force and foregoing human rights often plays into the hands of terrorist groups like Boko Haram in West Africa and Al-Shabab in the Horn of Africa, who use government’s heavy-handedness to justify their actions,” said Otilia Maunganidze, head of special projects at the Institute for Security Studies (ISS).

**The research is compelling.** In [Kenya](#), former members of extremist groups overwhelmingly pointed to abuses committed by the state as a major factor in signing up. It is a similar story in [Mali](#), where youths who were previously involved in jihadi groups blamed the state’s inability to protect its population, alongside abuses committed against that population, as a major spur to recruitment.

In a counterterrorism atmosphere that has largely failed to protect human rights, the war on terror in Africa is [failing](#). In 2009, according to Jane’s Terrorism and Insurgency Centre, there were 171 militant attacks in Africa, causing 541 deaths. By 2015, just six years later, those numbers had risen to 738 attacks and 4,600 deaths.

Prime Minister, remember those numbers as you contemplate reneging on the U.K.’s human rights commitments. Africa’s experience suggests that doing so is likely to make the terrorism problem worse—and, in the process, damage your country’s standing in the world.

“We have seen the devastating impact of neglecting human rights and elements of the rule of law on how the U.S. is perceived in the global fight against terrorism. But even more stark is how terrorist groups have used this to garner support—arguing that they are fighting repression, exclusion, marginalization and unjust systems,” said Maunganidze.

Human rights are not a luxury to be discarded at the first sign of trouble.

Human rights are, ultimately, the difference between winning and losing the fight against terrorism. That’s why the United Nations, as one of the four pillars of its Global Counter-Terrorism Strategy, recognizes “respect for human rights for all and the rule of law as the fundamental basis for the fight against terrorism.” Crucially, it’s not just about the *principle* of human rights. It’s also good strategy.

“It’s not just the moral issue. Experience shows that by doing counterterrorism properly, by using the criminal justice system and respecting human rights, states are actually able to gather more evidence and intelligence into terrorist activities,” said Anton du Plessis, executive director at the ISS. “This is how states can penetrate terrorist networks and funding streams. You lose that edge by going for a hard-line approach.

“A crucial aspect to this is international cooperation, which is vital in combating transnational terrorism,” du Plessis continued. “But countries can’t work with or trust other countries that act extrajudicially or unlawfully. Ironically, the U.K. itself has in the past refused to cooperate with governments that are serial human rights abusers.”

Also consider the impact your stance will have outside your borders. While imperfect, [the United Nations Security Council](#) remains the world’s most influential decision-making body. But among its five permanent members, only France now remains vocally committed to upholding its human rights obligations. The onus then will shift to nonpermanent members, such as Sweden or the Netherlands (whose term begins in 2018), to fight for these rights on the global stage.

Prime Minister, we understand that you are under huge pressure to act decisively against terrorism. Under the circumstances, taking the fight to the bad guys may seem like good strategy. But real strength and meaningful results do not lie in arbitrary detention, or torture, or restrictions on free movement.

To beat the likes of Al-Qaeda and the Islamic State militant group (ISIS), you have to do better than them; you have to offer an alternative that is inclusive and just. And the best way to build that kind of society is to guarantee the basic freedoms enshrined in Britain’s human rights commitments. That’s the only kind of strength that terrorists are really afraid of.





*Simon Allison is a consultant at the Institute for Security Studies, an African nonprofit organization with offices in South Africa, Kenya, Ethiopia and Senegal.*

**EDITOR'S COMMENT:** The first reading of this address to the PM leads to the conclusion that the issue of human rights should be handled carefully while countering terrorism. The African examples are quite impressive and logic. Any form of abuse might lead to just opposite results including recruiting of new terrorists etc. A second reading gave me the feeling that the only concern of the writer and his organization was the fact that the African flow to the UK might be interrupted. At the bottom end, human rights was never violated in Europe without a profound cause. If you follow the law, the law has no reason to invade your life. This might be a naive generic approach and mistakes always happen all over but I think that evil is not killed if we keep on protesting about the CCTVs that mailed us at home a photo with the mistress in the car for speeding violation and the wife happened to see it. If you see something, say something and stop texting while walking in the streets. Support the gov and policing authorities in their fight against terrorism. Be actively involved and be trained to counter difficult complex situations modern societies are facing and fight back against those that they have knives and think that we only love roses. Well, that would be my urge to the new PM.

## Germany considering spying on children suspected of radicalization

Source: <http://www.homelandsecuritynewswire.com/dr20170614-germany-considering-spying-on-children-suspected-of-radicalization>

June 14 – Germany is debating the question of whether the country's intelligence and law-enforcement agencies should out under **surveillance minors radicalized by extremist Muslim clerics**.

*Merkur* reports that Bavaria's interior minister Joachim Herrmann defended the proposed change to the law at a meeting of state and federal interior ministers in Dresden.

"It would only be possible in extremely exceptional cases," said the Christian Social Union (CSU) politician. He highlighted several cases in which minors had been brainwashed into carrying out violence, or had radicalized themselves in recent years.

**The law currently bars the country's intelligence agencies to save any data on anyone under the age of 18 when the data was collected.**

Herrmann said it is "divorced from reality" to argue that investigators should look the other way when they learn about a radicalized minor. Roger Lewentz, the Social Democrat interior minister in Rhineland-Palatinate, described the Bavarian proposal as "unthinkable."

"That we would send the intelligence agencies to spy on juveniles — that isn't going to happen," Lewentz said.

"That is not only not possible, but it goes against everything we stand for politically."

The Local reports that there have been several cases in recent years of radicalized minors attempting commit violent crimes.



Earlier in June, 18-year-old Saleh S. was [sentenced to eight years in youth detention](#) after he attempted to set fire to a shopping center in Hanover in 2016.

Saleh S. was 17 at the time of the crime, and admitted to the court that he wanted to kill as many people as possible. No one was injured or killed in the incident.

Saleh S. is the older brother of 16-year-old Safia S., who was [convicted of attempted murder in January](#) and sentenced to six years in jail.



The teenage girl stabbed and severely wounded a 34-year-old police officer – she said it was on orders by ISIS, though the terrorist group did not claim the attack.

In April, [a Syrian teenager was convicted of planning a bomb attack](#) on behalf of the Isis terror group and sentenced to two years' juvenile detention.



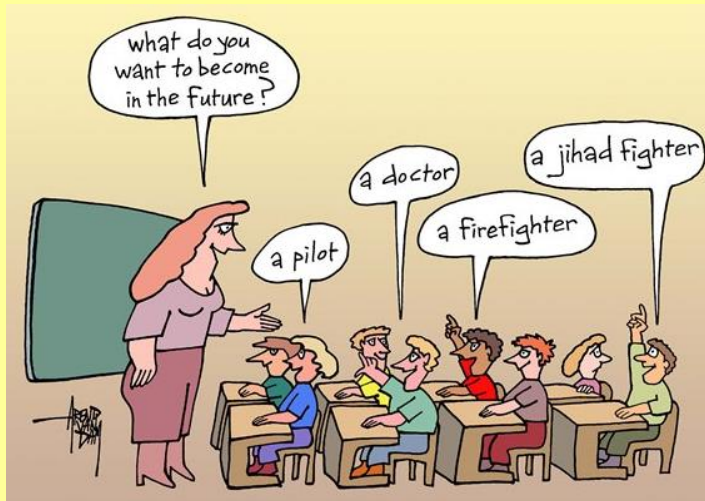
## Four things schools can do to help tackle extremism and radicalization

By Sue Roffey

Source: <http://www.homelandsecuritynewswire.com/dr20170614-four-things-schools-can-do-to-help-tackle-extremism-and-radicalization>

June 14 – The terrorist attacks in Manchester and London renewed discussions about how to stop young Muslims being radicalized.

A lot of the ideas focus on closing down social media sites, reporting “at-risk” individuals or organizations, and educating pupils on the evils of extremism. But while it's important to be having these types of



conversations, most of these suggestions are reactive. In that they are about what to do when the seeds of terrorism have already been planted, meaning there has been little mention of strategies to reduce the chances of young people coming under the influence of violent extremism in the first place.

There is no excuse for terrorism, but if there is any chance of stopping it, there has to be understanding of its roots, along with long-term strategies to undermine the causes. And as most terrorists are “home-grown” – in that they are often born

and raised in the country they then go on to attack – what happens in schools may well be critical. Of course, putting things in place in education is not a cure all, but it may help to keep all of us safe and also ensure that communities are not divided.

**The following are strategies that can be used by teachers and schools to help to stop those extremist seeds from being sown. They are not targeted to specific groups but can be of benefit to all pupils.**

### 1. Foster an inclusive environment

A sense of belonging is a [basic psychological need](#) and the groups to whom we are affiliated shape who we are and who we become. Schools that only value high flyers create “exclusive belonging” where bullying and marginalization can thrive.

Social exclusion inhibits feelings of belonging, self-esteem, perceptions of control over the environment, and of leading a meaningful existence. It can also lead to powerful, negative, deep-rooted reactions.

Research by [The Australian Policy Unit](#) found three shared characteristics of young people who become violent Islamist extremists. They had a sense of injustice or humiliation, had a need for identity and purpose, and a need to belong.

Ultimately, all students need to believe that they matter, their contributions are valued and others care about them. Whether or not this happens will depend on the values and practices that predominate in school culture.





An [inclusive sense of belonging](#) goes beyond wearing a school uniform and includes ways in which schools demonstrate respect for the communities they serve. This could include encouraging teachers to get to know all their students, as well as identifying ways of improving communication with families.

## 2. Education beyond the academic

Education is more than gathering facts and passing exams, it is also about learning how to grow into who you are as a person and [learning to live together](#).

It is not only what young people believe about themselves that matters, it is what they come to believe about others. Where schools adopt a proactive approach to social and emotional learning they encourage young people to find out what they have in common, making it more difficult to dehumanize others. Which leads us onto the next point.

## 3. Encourage empathy

Schools should aim to identify positive values and strengths, and help children to understand the skills that are required to build healthy relationships – including the development of empathy.

When young people are given opportunities to understand more about their emotions, they may come to a better understanding of why they feel what they do, and also find safe ways to

express feelings. And they may also begin to appreciate how their emotions may be manipulated by others.

Despite [evidence of its efficacy](#) in attitude and behavior change, [social and emotional learning](#) no longer has a place in most UK schools where higher academic outcomes are the overriding priority, so maybe it is time this is revisited?

## 4. Make student's voices heard

Young people are often idealistic, want to be heard and want to make a difference. And [research](#) suggests that young terrorists have a similar motivation – even though this is demonstrated in acts of destruction.

Schools can provide constructive channels that engage pupils positively with their communities in ways that provide them with a sense of being agents of change.

Known as “[service learning](#)” this combines active engagement with community projects alongside a reflexive process. It's about [teaching empathy as well as literacy](#). It's about teaching compassion as well as composition. It's about teaching advocacy as well as algebra. My own experience of working with challenging young people and engaging them in these types of projects is that it has been transformative – in the way they see themselves, their potential, the communities they are working with and their ability to contribute to something. For the first time they become significant.

*Sue Roffey is Adjunct Associate Professor, School of Education, Western Sydney University.*

**EDITOR'S COMMENT:** Totally agree with Prof. but I think the last two sentences should not give the picture that schools will substitute families in all the issues mentioned in this article. If family does not make you feel significant most of the game has already been lost. It is family that transfuses ideals and ethics on daily basis. What is the point to provide all described above and then afterschool, children to attend a 3hr class at the local mosque or madras?



## USS Fitzgerald involved in collision

Source: <http://www.globalsecurity.org/military/library/news/2017/06/mil-170616-nns03.htm>

June 16 – **USS Fitzgerald (DDG 62) was involved in a collision with a merchant vessel at approximately 2:30 a.m. local time, June 17, while operating about 56 nautical miles southwest of Yokosuka, Japan.**

The Japanese Coast Guard is on scene and providing assistance at the request of the U.S. Navy. Japan Coast Guard cutters IZUNAMI and KANO are on station, as well as a helicopter. The USS Fitzgerald is under her own power, although her propulsion is limited.



**CBRNE-TERRORISM NEWSLETTER – June 2016**

The USS Fitzgerald suffered damage on her starboard side above and below the waterline. The collision resulted in some flooding. The ship's crew is responding to the casualty. The full extent of damage is being determined.

The extent of number of personnel injuries is being determined. Currently working with the Japanese



Coast Guard to conduct a medevac via helicopter for one Sailor.

The USS Dewey (DDG 105), medical assistance and two Navy tugs are being dispatched as quickly as practicable to provide assistance. Naval aircraft are also being readied.

**USS Fitzgerald (DDG-62)**

Tonnage: 9000

Length: 154m

Draught: 12.08m

Speed: >30 knots

**ACX Crystal**

Tonnage: 29060

Length x Breadth: 222.6m x 30.1m

Draught: 9.6m

Speed (Max / Average): 18.5 / 16.5 knots

**EDITOR'S COMMENT:** Amazing accident in open sea – even at night. It would be a good idea both officers on duty to retire early. Unless proven that both vessels experienced the same mechanical failure restricting them to avoid collusion. Even if it was intentional (remember *Speed II*?) or in auto-pilot, the destroyer had enough speed to avoid it providing there was somebody on duty at the bridge... Best for the 7 missing and 3 injured sailors! **UPDATE:** All seven of them found dead the day after.

## Long Island, NY – Greek gay “teacher of the year” meets US President



NG: “We, as teachers, are the ones who will shape the future of this country. Knowing you all, I am confident that future will be a bright one!”

**EDITOR'S COMMENT:** Courage Mr. President! Courage! It is part of the job taken! Or is it not? Up to you to restore respect for the institutions and social politeness!







## Sheikh Mohammed's mosque **renaming** conveys a beautiful message

By Andrew Thompson

Source: <http://www.thenational.ae/opinion/sheikh-mohammeds-mosque-renaming-conveys-a-beautiful-message>



June 18 – The Mohammed bin Zayed Mosque is a stunningly beautiful place of worship. The four minarets signal its royal benefactor – only the ruling family can build mosques with more than two minarets; it is also a place where muezzins are trained. It is a place of gathering in Abu Dhabi for the religious leaders.

**What sets this mosque apart, however, is the neighbourhood. The Anglican church of St Andrew's, the Roman Catholic Church of St Joseph and the Egyptian Coptic Church of St Antonio's, all share the same car park.** It is in this context that the **renaming of the mosque to that of Mary, Mother of Jesus (Mariam Umm Eisa)**, is especially poignant. As one wit recently commented: "St Mary's is now the new centre of worship on the block". It is now the only religious building in Mushrif dedicated to a woman. Is this also a reflection of the UAE's commitment to empowering women?

St Mary is a central figure in the Christian faith. Every Christmas, her story is retold in churches all over the world. A teenage Palestinian Jewish

girl was chosen by God to give birth to a great prophet and the Messiah. That baby boy went on to become a history maker. His teachings and example have shaped the lives of millions. Jesus is loved and respected by both Christians and Muslims. Many Christians are surprised to learn that Mary has a whole chapter in the Quran named after her. In Arabic, Mary is called Maryam. They are even more surprised to learn that in common with Christians, Muslims also believe in the Virgin Birth and see the arrival of Jesus as a sign from God.

Mary is upheld as a woman of great faith, a true servant of God and honoured for her obedience to a calling that was fraught with misunderstanding and danger. Her life was not without pain and grief. She was a refugee and a teenage unwed mother. She endured poverty and injustice, and suffered under the oppressive shadow of imperialist Rome. Yet she was chosen by God and centuries later the world continues to remember



her as an ordinary woman with an extraordinary mission.

Mary speaks to our times today. In a sense nothing has changed in the world. The number of refugees continue to grow. Sectarian violence is a frightening reality all over the world, while poverty and injustice are ever present. The predicament of pregnant teenage girls remains fraught and dangerous. Yet the life of one seemingly insignificant woman contained a hope that prevailed. The pivotal faith of Mary, burning bright against a bleak landscape, shows how God delights to use the weak and the marginalised to bring about change.

For Christians and Muslims, faith in God is the heartbeat of their daily existence. A regular prayer and scripture reading is what sustains them. The liberating role of faith in God simply cannot be underestimated.

This is why the rise of violence in the name of God troubles us. The prevalence of intolerance within the religious communities is a departure from their core conviction that their divine

imperative is to love God and love their neighbour. A narrative that divides the world into "us" and "them" fails to recognise the teaching that we are all created in the image of God.

Today, Muslims and Christians pray for peace and tolerance and for leaders who will embody our hopes and values. They look to a time when orthodoxy is reflected in orthopraxy. That is, good religion is manifested through good behaviour.

Sheikh Mohammed bin Zayed, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces, understands this need; hence the renaming of the mosque. The gesture highlights the UAE's commitment to tolerance. The response of the Christian community has been one of delightful surprise, often followed by a recognition of what this means for them.

By renaming the mosque after Mary, both Christians and Muslims are challenged to the call to be obedient to God and prevail over the threat of intolerance.

*The Reverend Canon Andrew Thompson MBE is the senior Anglican chaplain in Abu Dhabi and the author of Christianity in the UAE and Jesus of Arabia.*

## Turkey's Failed Grand Design for the Middle East

By Burak Bekdil

Source: <http://www.meforum.org/6768/turkey-failed-grand-design-for-the-middle-east>

June 16 – In many ways, the recent crisis between Qatar and its Gulf and other Muslim "friends" marked, among other things, the last nail in the coffin of Turkey's "grand Middle Eastern design." Once again, Turkey's leaders were trapped by their own ideological shallowness into betting on a losing horse.



Turkish president Recep Tayyip Erdoğan (right) and Tunisian Islamist Rachid Ghannouchi at the feet of Afghan warlord Gulbuddin Hekmatyar in the 1990s

Very important Turks in dark suits saw the start of the Arab Spring as a golden opportunity to realize their neo-Ottoman ambitions. In Tunisia, their Islamist brothers in arms, the Ennahdha Party, would come to power and annihilate the "secular infidels." Rachid Ghannouchi, Ennahdha's chief ideologue, never hid his admiration for Turkish president Recep Tayyip Erdoğan's stealth Islamization by popular vote.

Erdoğan received one rock-star welcome after another on his visits to Beirut and Egypt. He failed, however, to detect that **Lebanese** Muslims' devotion to him was

merely praise for his outspoken hatred of Israel. He also failed to predict the turn of political events in **Egypt**, investing all his political resources in the Muslim Brotherhood. In **Iraq**, he





calculated that with some western backing, he could end the Shiite rule in Baghdad and build a Sunni regime instead. In **Gaza**, Hamas was, and still is, Erdoğan's ideological next of kin.

In **Syria**, the non-Sunni [Alawi] president, Bashar al-Assad, is Erdoğan's worst regional nemesis. Erdoğan's expectation, it appears, was that Assad would be toppled and replaced by a coalition of Sunni jihadists. Eventually, a pro-Sunni belt in the Middle East would take shape, totally subservient to the emerging Turkish empire and to its emerging caliph, Erdoğan.

**Such was Erdoğan's grand design for the region. Qatar was not simply the "lubricant" of Turkey's fragile economy but also Erdoğan's main ideological partner.**

The story is not progressing according to that script, however. Hezbollah in Lebanon decided Erdoğan was simply "too Sunni" for their tastes, notwithstanding his virulent anti-Israeli rhetoric and ideology. In Tunisia, Ennahdha, to Erdoğan's disappointment, signed a historic compromise with the country's secular bloc instead of fighting to annihilate it. The Brotherhood in Egypt lost not only power but also legitimacy as international pressure mounted in recognition of the group's links with violence. In Baghdad, the rulers are still Shiite and controlled by Tehran. In Syria, Assad remains in power, backed by Iran and Russia, and Erdoğan's jihadist comrades are almost entirely devoid of strategic importance. Moreover, an emerging Kurdish belt in northern Syria has become a Turkish nightmare. Hamas, like the Brotherhood, is getting squeezed day by day, both regionally and internationally. Erdoğan's ambition to end the naval blockade of Gaza is already a long-forgotten promise. And now Qatar is in trouble, along with Erdoğan himself.

It is not just Erdoğan's other friends in the Gulf and the Muslim world that are now strangling Qatar through a punishing isolation. **Erdoğan must also contend with US President Donald Trump, who declared that Qatar – Turkey's staunchest ally – "had been a high-level sponsor of terrorism."**

Erdoğan, still a firm believer in ideology as foreign policy, is not getting any closer to reality. Immediately after the Gulf and other Muslim sanctions were placed on Qatar, the Turkish president signed two treaties with the Gulf state: one to send troops to a joint Turkish-Qatari military base in Qatar, and the other to provide Turkish training for Qatari gendarmerie units. Turkey, along with Iran, also quickly moved to send food stocks to Qatar in an attempt to ease the sanctions.

Erdoğan said the sanctions were wrong; that Ankara would continue to improve its already good relations with Doha; and that "we will never abandon our Qatari brothers." With a caliph's self-confidence, he ordered that the crisis be resolved before the end of the holy Muslim month of Ramadan (i.e., the end of June). As to Qatar's connection to terror, what connection? Erdoğan says he has never seen Qatar supporting terrorism. This declaration is reminiscent of his past statement that he "went to Sudan and did not see any genocide there," made in support of his "good friend" Omar Bashir, who was wanted by the International Criminal Court on charges of crimes against humanity and genocide.

The cast of the Gulf drama reveals ideological kinships. As part of their anti-Qatar campaign, Saudi Arabia, Bahrain, the United Arab Emirates, and Egypt accused 59 individuals and 12 charity organizations of terror links. One of the accused is Youssef al-Qaradawi, the Egyptian chairman of the International Union of Muslim Scholars. Who is Qaradawi?

In 2004, Qaradawi said, "There is no dialogue between us [Jews and Muslims] except by the sword and the rifle." In 2005, he issued a fatwa permitting the killing of Jewish fetuses. And in 2013, when millions of secular Turks took to the streets to protest Erdoğan's Islamist policies, Qaradawi rushed to Erdoğan's aid by declaring that the "Turkish protesters were acting against Allah's will."

Once again, Erdoğan's Turkey stands on the wrong corner at the wrong moment. Some of his men fear Turkey may be next in line for international sanctions for standing in solidarity with what Washington views as a high-level sponsor of terror. This may be unlikely, but **Erdoğan is ignoring two potential dangers.**

**First**, he is operating on the flawed assumption that business as usual will resume no matter how the Gulf crisis ends, and that the Turkish-Qatari alliance will be up and running according to the same ideals.

**Second**, he believes the West is too weak to sanction Turkey either politically or economically, so it has little to fear on that front.

He is wrong on both counts. Doha may not be the same place after the Gulf Arabs find a way out of their crisis. **A less Turkey-friendly Qatar may well emerge.** Turkey's two staunchest ideological allies, the Brotherhood and Hamas, will likely be further pruned in



their own corners of the Arab world, with non-Arab Turkey possibly remaining their only vocal supporter. And the impending "slap" Ankara is ignoring may come not from Washington but from Erdoğan's Muslim friends in the Gulf.

Shortly before the Qatar campaign, Turkey's defense bureaucracy was curious as to why the Saudis kept delaying a ceremony for a \$2 billion contract for the sale of four Turkish frigates to the Kingdom in what would have become Turkey's largest-ever single defense industry export. Now they have an idea why. That deal, if scrapped, may be just one of the starters on a rich menu.

*Burak Bekdil is an Ankara-based political analyst and a fellow at the Middle East Forum.*







# CHEM NEWS





## Police bust ISIS terror cell preparing 'chemical attack' in Morocco

Source: <https://www.rt.com/news/333058-morocco-isis-terror-commando/>

**February 2016** – Moroccan authorities have dismantled an ISIS terrorist cell, described as “the most dangerous” ever, which was planning attacks potentially involving chemical weapons. Among the arrested was a 16yo who had allegedly been trained to carry out a suicide bombing.

In a police raid on a “safe house” in El Jadida on Thursday, police arrested a 10-member cell and confiscated a large cache of weapons consisting of automatic machine guns, revolvers, and a rifle that were brought from Libya. An Islamic State (IS, formerly ISIS/ISIL) flag was also reportedly seized in the raid.



Among those detained was one French national and a 16-year old teenager, who received training to carry out a suicide car bomb attack, Director of the Central Bureau of Judicial Investigations (BCIJ), Abdelhak Khiame, said at a press conference on Friday.





*"It's far from a terrorist cell, it is a real armed commando," Khiame said. "The 10-member cell was commandos acting based on precise plans designed by IS."*

The cell members were active in the cities of Essaouira, Meknès and Sidi Kacem, and Laayoune. The terrorist gang also set up a training camp in Sehb El Harcha.

*"These people were trained on site in coordination with Daesh, which provided them with the necessary arms," BCIJ director said, explaining that this signals a change of tactic in the Islamic State which until now trained their cell members inside Syria and Iraq.*

**Khiame added that authorities also recovered toxic biological and chemical substances that could be used to make the explosives. Six jars seized in the raid contained an agricultural fertilizer with high sulfur content (second photo in previous page).**

*"This material allows to make homemade explosives of fearsome power," Ahmed Rami from the BCIJ told Huffington Post Morocco. "Once heated to a high temperature, this material releases toxic gas that leads to certain death."*

Another three jars contained an orange color mix which *"when stored in an anaerobic environment creates tetanus toxin, which once contracted, attacks the central nervous system and causes death,"* a member of the service risk management at BCIJ explained to HuffPost.

BCIJ claims to have dismantled 152 militant cells since 2002, including 31 since 2013 that were linked to armed terrorist groups fighting in Syria and Iraq.

## North Korean WMD: A Guide to Online Resources

By Joshua Pollack

Source: <http://www.armscontrolwonk.com/archive/1203226/north-korean-wmd-a-guide-to-online-resources/>

May 22 – North Korea's nuclear and missile programs are the topic *du jour* in the WMD world, but if you're trying to get smart about the subject, where should you turn? The amount of material never gets any smaller, and you've nearly got to be an expert in your own right to judge what's what.

I won't try to catalogue and evaluate everything out there. Instead, I'd like to point out a handful of good things, say why I think they're good, and note any concerns or qualifications. My emphasis will be both on recent, up-to-date publications and on older materials of enduring value. I'm also sticking with what's openly

accessible online, in English. A survey of the published literature is out of scope for today, and I'm not qualified to sift works in Korean, Japanese, etc. The focus, furthermore, will be on Weapons of Mass Destruction, with one partial exception: materials concerning how the regime functions and sees the world. That tells us, among other things, why WMD are so important to Pyongyang.

Obviously this is not a comprehensive list, and it represents only my own judgments. Also, I have no intention of keeping this page up to date. What you see is what you get! Enjoy.

### The single most comprehensive resource

- The [NTI North Korea WMD country profile](#). A sprawling collection of useful material, updated a few times a year: nukes, chem, bio, missiles, production facilities, the whole deal. Caveat: It's so big that it can't easily be reviewed and refreshed in its entirety as new information comes to light. But by the same token, it's the single resource that's closest to exhaustive.

### The missile program

- The [NTI/CNS North Korea missile test database](#). Created and maintained by Shea Cotton and colleagues and first released in April 2017, this is most current and complete publicly available dataset on North Korean missile tests and space launches.
- Joseph S. Bermudez Jr., "[A History of Ballistic Missile Development in the DPRK](#)," CNS Occasional Paper No. 2, Nov. 1999. Although this paper is getting long in the tooth, I still find myself returning to it.



- Daniel A. Pinkston, "[The North Korean Ballistic Missile Program](#)," Strategic Studies Institute, US Army War College, Feb. 2008. This one is also getting old, but is particularly valuable for its look at North Korean science and technology, which remains under-examined in English-language publications.
- Joseph S. Bermudez Jr., "[DPRK Ballistic Missile Infrastructure: The Tae-sung Machine Plant](#)," *KPA Journal*, Vol. 2, No. 5, May 2011. A good look at North Korea's primary missile-building complex, at least for liquid-fueled missiles.
- Joshua Pollack, "[Ballistic Trajectory: The Evolution of North Korea's Ballistic Missile Market](#)," *Nonproliferation Review*, Vol. 18, No. 2, July 2011. Pretty much what the title says: a reconstruction of the changing patterns of North Korean ballistic missile exports.
- Jeffrey Lewis, Melissa Hanham, and Amber Lee, "[That Ain't My Truck: Where North Korea Assembled Its Chinese Transporter-Erector-Launchers](#)," 38North.org, Feb. 3, 2014. A virtuoso sleuthing effort, identifying the specific building inside North Korea where its first ICBM launch vehicles were assembled. *This is not easy to do!*
- Twitter. Some of the best high-resolution photographs and rapid analysis of North Korean missile displays and tests can be found here. Some of the most active feeds belong to [Tal Inbar](#), [Xu Tianran](#), [Joseph Dempsey](#), [Dave Schmerler](#), [Melissa Hanham](#), [Scott LaFoy](#), [Ankit Panda](#), and [Nathan J. Hunt](#).
- [David Wright's blog posts at AllThingsNuclear.org](#). Lately, as North Korea has begun testing missiles of longer ranges, it has been "lofting" them, that is, shooting them higher than normal, so they fall well short of their maximum range, and don't land in Japan or fly over it. David Wright has been rapidly doing the math to estimate their full range.
- The [ArmsControlWonk podcast](#). North Korean missile tests are a regular feature here, in discussions usually featuring Jeffrey Lewis, Aaron Stein, and Scott LaFoy.

### The nuclear program

- Mary Beth Nikitin, "[North Korea's Nuclear Weapons: Technical Issues](#)," Congressional Research Service report RL34256, Apr. 3, 2013. This report cries out for an update, but it covers just about everything you want to know through early 2013. It's probably the single best resource as of that date.
- Daniel Wertz and Matthew McGrath, "[North Korea's Nuclear Weapons Program](#)," National Committee on North Korea, Jan. 2016. In the absence of an update from Nikitin, this eight-page brief must do! It covers a great deal.
- Balazs Szalontai and Sergey Radchenko, "[North Korea's Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives](#)," Cold War International History Project Working Paper No. 53, August 2006. A remarkable collection of translated archival materials from the Cold War. More documents have since become available at the [Wilson Center Digital Archive](#). This is not a casual read, but it's essential for serious researchers.
- Choe Sang-hun, "[North Korea Learning to Make Crucial Nuclear Parts, Study Finds](#)," *New York Times*, Sep. 23, 2013. A look at North Korea's efforts toward reducing dependence on imported equipment and materials for uranium enrichment, a strategy with implications for other strategic programs as well.
- Jeffrey Lewis and Nathaniel Taylor, "[North Korea's Nuclear Year in Review—And What's Next](#)," NTI.org, Dec. 20, 2016. This feature includes an extraordinary 3-D interactive map and VR tour of the Punggye-ri nuclear test site. It starkly concludes that North Korea is preparing for a very large number of underground nuclear tests, and has the option of conducting much larger tests than before.
- Frank Pabian and David Coblenz, "[North Korea's Punggye-ri Nuclear Test Site: Analysis Reveals Its Potential for Additional Testing with Significantly Higher Yields](#)," 38North.org, Mar. 10, 2017. A more detailed analysis that nicely complements the previous item in this list.





- David Albright, Sarah Burkhard, Mark Gorwitz, and Allison Lach, "[North Korea's Lithium 6 Production for Nuclear Weapons](#)," ISIS-online.org, Mar. 17, 2017. A study that uses North Korean scientific literature, among other sources, to assess the country's progress toward making hydrogen bombs.

#### Nuclear military strategy

- Max Fisher, "[The Hidden Messages in North Korea's Military Parade](#)," NYTimes.com, Apr. 18, 2017. An evaluation of the roles of the array of missiles, new and old, displayed in Pyongyang this April 15.
- Bonnie Berkowitz, Laris Karklis, and Tim Meko, "[North Korea showed off a lot of missiles. What might be its targets?](#)", WashingtonPost.com, May 18, 2017. The authors take up the flip side of the coin, looking into specific targets for nuclear strikes. Both of these features avoid the jargon of Western nuclear strategy ("counterforce" and "countervalue"), allowing the authors to try to assess North Korea's approach on its own terms.

#### Chemical and biological weapons

- "[North Korea's Chemical and Biological Weapons Programs](#)," International Crisis Group Asia Report No. 167, Jun. 18, 2009. A wide-ranging look at both types of weapons and their role in North Korean military thinking, to the extent we can know. (Crisis Group reports don't list authors, but this one appeared when Daniel Pinkston was their guy in Seoul.)
- Mark Fitzpatrick, "[North Korean Proliferation Challenges: The Role of the European Union](#)," EU Non-proliferation Consortium, Non-proliferation Report No. 12, June 2012. Don't be misled by the subtitle; this 16-page brief is of interest to more than EU readers. It distills the main points of a much larger publication on North Korea produced by the International Institute for Strategic Studies in 2011 (not available online). Unfortunately, the nuclear and missile sections are now completely out of date, but read it for the chem and bio portions.
- Melissa Hanham, "[Kim Jong Un Tours Pesticide Facility Capable of Producing Biological Weapons: A 38 North Special Report](#)," 38North.org, Jul. 9, 2015. Quite simply the best example of using open-source analysis to assess an aspect of North Korean WMD capabilities that has yet been published, blending technical understanding with a keen sense of how the North Korean regime uses ambiguous signals for deterrence or coercion.

#### North Korean political economy

- Kim Kwang Jin, "[The Defector's Tale: Inside North Korea's Secret Economy](#)," *World Affairs Journal*, September-October 2011. ([Alternative link if the above doesn't work](#).) A penetrating explanation of North Korea's parallel economies during the Kim Jong Il era (1994-2011): the anemic People's Economy, and the flush Royal Court Economy, which supports both the ruler's personal needs and North Korea's WMD programs.
- Choe Sang-hun, "[As Economy Grows, North Korea's Grip on Society is Tested](#)," *New York Times*, Apr. 30, 2017. An eye-opening look at how much has changed in the North Korean economy since Kim Jong Un assumed power in December 2011.
- Atsuhito Isozaki (with James Person), "[Understanding the North Korean Regime](#)," Wilson Center Asia Program, April 2017. A concise volume that explains North Korean regime ideology, structure, and perceptions through the lens of official propaganda, a rich and deeply revealing set of sources when studied closely. The author, a Japanese scholar, is familiar with a much wider range of scholarship than his American counterparts, having studied Japanese, South Korean, Chinese, and American works. One caveat: in its discussion of North Korean ideology, this monograph dwells on the legacy ideologies of *juche sasang* (the "self-determination" idea) and *songun chongchi* (military-first politics), neglecting the emergence of what now appears to be Kim Jong Un's own signature ideology, *jaryok jagang* ("self-reliance and self-development"). It's mentioned



briefly in the previous item in the guise of “jagang, or self-empowerment,” but has yet to receive sustained attention in English-language studies of North Korea.

#### A bonus item

- Max Fisher and Jugal K. Patel, “[What One Photo Tells Us About North Korea’s Nuclear Program](#),” *New York Times*, Feb. 24, 2017. I didn’t know where exactly to place this one in the categories above, but wasn’t about to leave it out. It’s a case study in several methods of open-source analysis, and something I was very pleased to be associated with. This feature shows just how *stimulating* the study of North Korean WMD can be!

*Joshua Pollack used to be a consultant to the U.S. government on arms control, nonproliferation, deterrence, and the like. Now he’s the editor of the *Nonproliferation Review* and a Senior Research Associate at the James Martin Center for Nonproliferation Studies (CNS), Middlebury Institute of International Studies at Monterey (MIIS), based in Washington, DC.*

## CBRN training: traditional methods vs. simulation

By Steven Pike

Source: <http://www.argonelectronics.com/blog/cbrn-training-traditional-methods-vs.-simulation>



Apr 21 – The threat of CBRN ([chemical](#), biological, radiological and [nuclear](#)) incidents is a very real one. Whether malicious and intentional - such as in the context of warfare or a terrorist attack - or accidental - such as a spill or leakage - the consequences of CBRN incidents can be incredibly destructive. Therefore, it is vital that those individuals who would be on the front line if the worst were to happen (namely, the military and emergency services staff) are well-equipped to respond to and mitigate the fallout.

Traditionally, CBRN training has been carried out using live agents or simulant agents – and this continues to be the case. More recently, technology has enabled training to be undertaken using [simulation](#). Both approaches have their advantages and drawbacks.

Here, we will explore how they measure up against one another.

### Traditional methods

Live agent training (LAT) and simulant agent training (SAT) both involve the release of chemical, biological, radiological or nuclear materials into the training environment. With LAT, real materials are used; with SAT, materials that replicate the properties of those materials are used.





## 1. LAT

LAT is the most realistic training method – after all, real materials are being employed. It is the closest an individual can get to dealing with a CBRN incident out in the field and, therefore, it is the zenith of CBRN training. LAT takes place in controlled, allocated areas, which are generally situated within the confines of military or government establishments.

While this method equips trainees with invaluable knowledge and skills, it must be stringently monitored and this means that training scenarios are limited. Using live agents means taking into account both environmental and health and safety legislation and, consequently, highly-trained staff must be on-site to oversee training exercises.

LAT is also expensive to implement – for example, training at the VysKov LAT facility in the Czech Republic currently costs €2-3,000 per person (with 15 people attending each course), with additional charges for the instructional staff attendance.

## 2. SAT

SAT is one step down the ladder from LAT but, nevertheless, realistic, as real detectors are still used. It is not a replacement for LAT; rather, it serves as a precursor, providing students with the opportunity to get to grips with the detectors, before they move onto the next stage of training. The most obvious benefit of SAT is that the dangers associated with LAT are reduced, as real agents are not being used. This provides more scope for training scenarios. However, simulant agents are not completely harmless and, over time, they can still have an impact on the environment into which they are released. Furthermore, it can be difficult for trainees to suspend their disbelief during SAT – they know the agents being used pose no real threat and

this can remove the sense of immediacy and danger inherent in LAT.

Like LAT, SAT is expensive, with the cost of chemical simulant kits varying between £300 and £2,300.

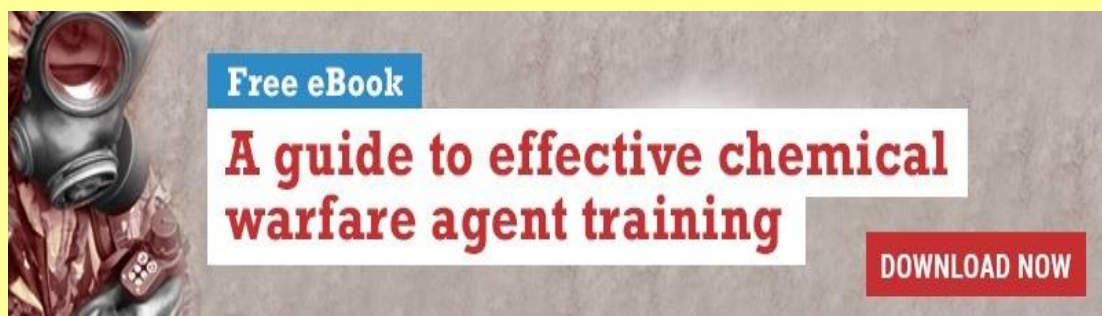
## Simulation training

Simulation training is powered by technology, utilising computer-based simulation tools, which exactly replicate real detectors. These simulators are used to "detect" simulation sources, which mimic live agents. Like SAT, simulation training is not a replacement for LAT. Simulation training has two main benefits: there are no environmental or health and safety regulations to adhere to; and, consequently, a wide range of training scenarios can be set up. On the other hand, as with SAT, students are well aware that they are training in a "safe" environment. Additionally, creating an artificial hazard environment requires a much greater depth of understanding and knowledge, which can be a challenge for newly-qualified instructors.

Both traditional methods and simulation have their place in CBRN training. LAT is indispensable – it prepares students in a way that SAT and simulation training simply cannot. However, it should not stand alone as a training method; rather, when students undertake LAT, they should already have significant CBRN training experience.

Therefore, when we talk about traditional methods vs. simulation, we are really talking about SAT vs. simulation training. As can be seen, both methods have their benefits and downsides. Therefore, choosing a training method comes down to the particular requirements of the individuals involved.

To find out more about LAT, SAT and simulation training, why not download our eBook below.



**Free eBook**

**A guide to effective chemical warfare agent training**

**DOWNLOAD NOW**



## A recent ISIS media from Rutbah featured for the first time IS drones dropping bombs loaded with toxic chemicals on Iraqi government army

Source: <http://isis.liveuamap.com/en/2017/1-february-a-recent-isis-media-from-rutbah-featured-for-the>



## Daesh Experiments With Nicotine, Thallium Part of 'Larger Chemical Arms Program'

Source: <https://sputniknews.com/military/201705251053968124-daesh-nicotine-thallium-chemical-weapons/>

May 25 – Daesh is reported to have used thallium sulfate and a nicotine-based compound to poison its prisoners in a bid to obtain readily available toxic chemicals as part of a larger weapons program, an expert on chemical and biological weapons at the Begin-Sadat Center for Strategic Studies of Bar Ilan University, Dr. Dany Shoham, told Radio Sputnik.

"It was indeed part of a larger program. For a long period of time [Daesh] was trying to [create] mustard gas. They have also tried to produce a nerve agent, apparently unsuccessfully for the time being. And of course, [Daesh] has produced and used chlorine on many occasions as a chemical warfare agent. So this is indeed part of a larger chemical weapons program," he said.

Media reports indicate that Iraqi special forces obtained documents detailing Daesh's experiments with thallium and nicotine during the large-scale operation aimed at liberating Mosul. The second

# POISON CHEMISTRY - THALLIUM SULFATE

Sometimes referred to as 'the poisoner's poison', thallium sulfate is colourless, odourless, and tasteless. It is slow-acting, and difficult to diagnose.

## HISTORY



Thallium was discovered in 1861 by William Crookes, and its toxicity was quickly noted. It is especially toxic in its bivalent compounds, including thallium sulfate, acetate, and carbonate.



In the late 1800s, thallium sulfate was used to treat some medical conditions, including syphilis, gonorrhoea, & gout. The side effects meant that it was not widely used, however.



Thallium sulfate was often employed as a rodenticide and insecticide, making it easy for would-be poisoners to obtain. Its usage in rat poisons has been banned in many countries since the 1970s, however.



## THALLIUM (I) SULFATE



MEDIAN LETHAL DOSE: 10-15mg/kg

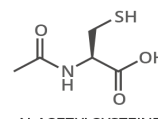
## TREATMENT



PRUSSIAN BLUE



SODIUM IODIDE



N-ACETYL-CYSTEINE

No substance can remove thallium which has already been absorbed, but Prussian blue and sodium iodide help remove unabsorbed thallium from the intestinal tract. As thallium binds to sulphhydryl groups, N-acetylcysteine has also been suggested as a treatment.

## EFFECTS



CONSTIPATION



ABDOMINAL PAIN



VOMITING & NAUSEA



PAIN IN EXTREMITIES



'MEES' LINES ON NAILS



HAIR LOSS

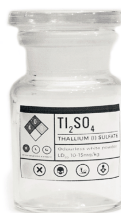


INCREASED HEART RATE



CONVULSIONS, COMA & DEATH

Initial symptoms indistinct. Large doses kill before some effects are apparent, but with lower doses, hair loss occurs 2-3 weeks after poisoning. Damage to nerves, causing pain, is also characteristic. Toxicity is due to the similarity between potassium & thallium ions.



## DETECTION



URINE

0.4% BISMUTH NITRATE  
IN 20% NITRIC ACID, THEN  
10% SODIUM IODIDE IN  
A SATURATED SODIUM  
THIOSULFATE SOLUTION



RED PRECIPITATE OF  
THALLIUM BISMUTH IODIDE

Qualitative testing for thallium in urine can be carried out as detailed above, though this method can produce false positive results. More common is the use of atomic absorption photospectrometry of a urine sample, which uses absorption of light to identify thallium.



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largest city in Iraq spent nearly three years under the group's control. The papers believed to be authentic were recovered from the University of Mosul.





"Those two families of compounds (nicotine, thallium and their derivatives) are highly poisonous. They are actually extremely toxic and could cause death in very minute amounts. **The difference is that thallium would cause death very slowly.** It's a gradual process, but unfortunately a one-way ticket. Since nicotine is an alkaloid, it acts faster. They are both deadly substances," the expert said. "The simplest way to bring about intoxication by those substances would be via contaminating food, drinks or drinking water."

Dr. Shoham added that terrorists would not require "a high level of sophistication" to use these substances in a potential attack.

The expert further said that Daesh has most likely shared the information on its tests with its operatives in the Middle East and beyond.



## **Draeger Hellas S.A.: PPE maintenance training seminar**

Source: <http://dhseminars.gr/?p=298>



May 25 – Total success for the 1<sup>st</sup> Seminar of Chemical Suits Maintenance organized in the premises of Draeger Hellas S.A at Nea Ionia, Attica for the International Airport of Athens' Fire Service. The two firemen that participated, were practiced/trained for 16 hours on issues related to the safe usage, maintenance and advanced functions of chemical protection suits.



## **DERMaL eToolkit**

Source: <http://www.domesticpreparedness.com/updates/dermal-etoolkit/>

June 02 – Emergency response personnel are often at risk of getting dangerous chemicals on their skin. Despite the availability of numerous high-quality resources designed to guide emergency management and operations personnel, data gaps continue to exist on specific hazards or scenarios. Available resources contain an overwhelming quantity of data on inhalation exposures, but data related to dermal exposures are more challenging to find. Dermal contact is an important exposure pathway and can present significant health risks [Dotson et al. 2015].

The goal of the [DERMaL eToolkit](http://www.domesticpreparedness.com/updates/dermal-etoolkit/) is to provide informational resources and tools associated with dermal exposures to chemicals. The resources and tools are intended to be used to



assist in assessing the hazards associated with dermal contact with chemicals during emergency response activities. The DERMaL eToolkit is organized by 1) incident phase, 2) information categories, and 3) resource types.

### The DERMaL eToolkit

Using the DERMaL eToolkit, an emergency responder in the field would be able to quickly access critical information on their phones or tablets about:

- Health Effects
- Exposure assessment
- Selection of control measures
- Medical management



The DERMaL eToolkit prioritizes resources by the needs of the emergency management and operations personnel. Subject matter experts recruited from various technical fields (i.e., industrial hygiene, emergency response, and law enforcement) rated the resources included in the eToolkit database on a set of variables including quality, accessibility, and popularity. This ensures that the most relevant resources of the search criteria appear at the top of the list.

Pre-defined searches are accessible on the main page for each phase of the response. For the response phase, “hot buttons” were included for PPE, DECON, and health information, because these terms were determined to be the most likely to be used during the response phase. Other tools on the homepage that could be utilized include a dermal checklist for assessing risks during response activities.

The DERMaL eToolkit was developed by NIOSH as a companion to [Chemical Hazards Emergency Medical Management \(CHEMM\)](#). It was created using responsive design, so that the eToolkit is easy to read and minimizes the need for resizing, panning, and scrolling across a range of devices including personal computers, tablets, and smart phones.

### Acknowledgments/Credits

The DERMaL eToolkit was prepared for the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH) by the Oak Ridge Institute for Science and Education (ORISE) through an interagency agreement with the U.S. Department of Energy. A list of those responsible for the DERMaL eToolkit is provided here: <https://dermal.nlm.nih.gov/about.php>.

Released by Centers for Disease Control and Prevention (CDC). Click [here](#) for source.





*join us*



**CBRN  
Knowledge Center**



**Explosives  
Knowledge Center**

**[ici-belgium.be/en/](https://ici-belgium.be/en/)**



## 16 injured in acid attack in Tehran

Source: <http://en.apa.az/world-news/asia-news/16-injured-in-acid-attack-in-tehran.html>

June 08 – **A motor biker has carried out an acid attack on 16 people in the capital Tehran, Iran, informed source said.**

The incident took place this morning in southern Tehran, APA reports citing Fars news agency.

No further information has been released about the perpetrator and his motives. The report did not provide any details on the identity of the victims.

13 people were killed and more than 40 injured in attacks on Iran's parliament and Khomeini mausoleum on June 7. ISIL claimed responsibility for the attacks.

## Detecting and preventing the use of chemical weapons

Source: <http://www.homelandsecuritynewswire.com/dr20170608-detecting-and-preventing-the-use-of-chemical-weapons>

June 08 – Like detectives looking for clues, researchers at the Department of Energy's Pacific Northwest National Laboratory have been working for nearly a decade on ways to identify the "fingerprints" of potential chemical threats. The ability to identify a particular agent and attribute its source is key to responding to and even preventing these threats.

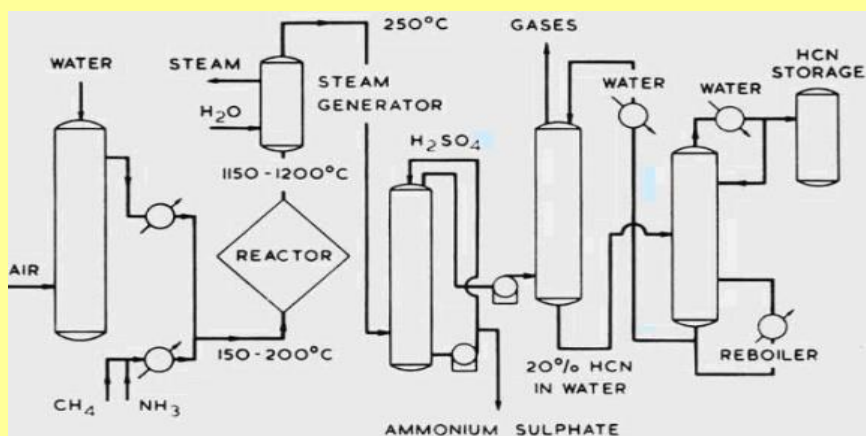
Steven Ashby, director of Pacific Northwest National Laboratory, writes that at PNNL, a multidisciplinary team is conducting research and development in chemical detection and forensics with support from the Department of Homeland Security's Science and Technology Directorate and other U.S. government sponsors. Their work involves developing approaches to detect trace amounts of telltale compounds — the fingerprints, in samples taken from the area where an alleged attack took place or where an attack was thwarted.

These researchers are advancing the science behind the ability to identify the source of a particular chemical threat. Through the novel use of analytical techniques, researchers are able to help authorities connect a particular threat agent to where it may have been manufactured and, in some cases, to the specific lot of precursor materials. This information could be used by authorities to attribute a chemical attack to an individual, organization or state entity. This could help

prevent follow-on attacks and, perhaps, even prevent them in the first place.

Additionally, analyses like these help address the challenges associated with commercial, dual-use chemicals that are produced for legitimate purposes but could also be used to produce chemical weapons. **For example, cyanide** is used in everyday products like pesticides and plastics, as well as for mining. But cyanide also can be used to poison food and medicines, such as the cyanide-laced Tylenol capsules that led to several deaths in the Chicago area in the 1980s.

**The steps to make cyanide are pretty much the same from manufacturer to**



**manufacturer. However, researchers have found that various factors, including the manufacturing process and materials, and even the locale, may introduce manufacturer-specific impurities that can be detected in the final product.**





**These “chemical attribution signatures” are the fingerprints authorities need to help put two and two together.**

Ashby notes that PNNL research has shown that cyanide’s signatures are probably unique enough to reveal where it was manufactured, by geographical location as well as specific plant, thereby helping authorities to determine who might have had access. Similarly, the chemical signatures of commercial calcium ammonium nitrate — a common chemical in fertilizer that also can be used in homemade explosives — can be indicative of its place of manufacture. Yet another effort is focused on tracing impurities in the raw materials used to make mustard agents to differentiate one sample from another.

PNNL researchers participated in the recent American Chemical Society National Meeting, at which they organized a symposium on chemical forensics, the fourth in a series. This symposium brought together experts from around the world, including representatives from the Organization for Prohibition of Chemical Weapons (OPCW) — an independent, international disarmament

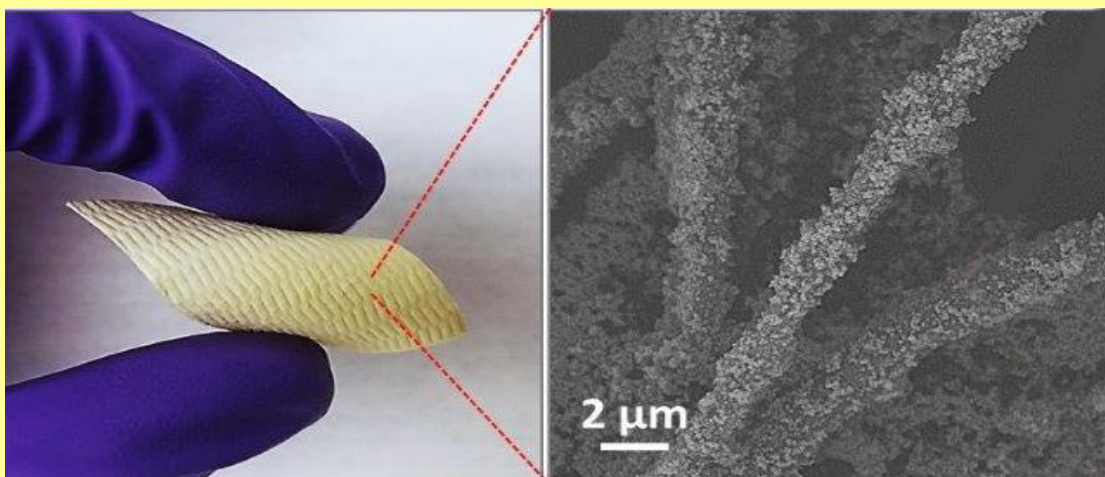
organization with 192 members that are working together to rid the world of the threat of chemical weapons. Today, 90 percent of the world’s declared stockpile already has been destroyed. “While the OPCW is focused on eliminating threats, PNNL is helping lead international efforts in chemical forensics that will make it possible to connect weaponized chemicals to their source,” Ashby writes. PNNL researchers formed the Chemical Forensics International Technical Working Group, an ad hoc group that includes scientists, treaty experts, law enforcement and industry leaders dedicated to advancing the science of chemical forensics. The group’s inaugural meeting took place in early April.

“Through technical expertise and leadership like this, PNNL scientists are making it easier for authorities to find those behind chemical attacks, as well as those who might be planning to use chemical weapons. In this way, we are helping to make the world a bit safer,” Ashby concludes.

## **New fabric coating could neutralize chemical weapons, save lives**

Source: <http://www.homelandsecuritynewswire.com/dr20170608-new-fabric-coating-could-neutralize-chemical-weapons-save-lives>

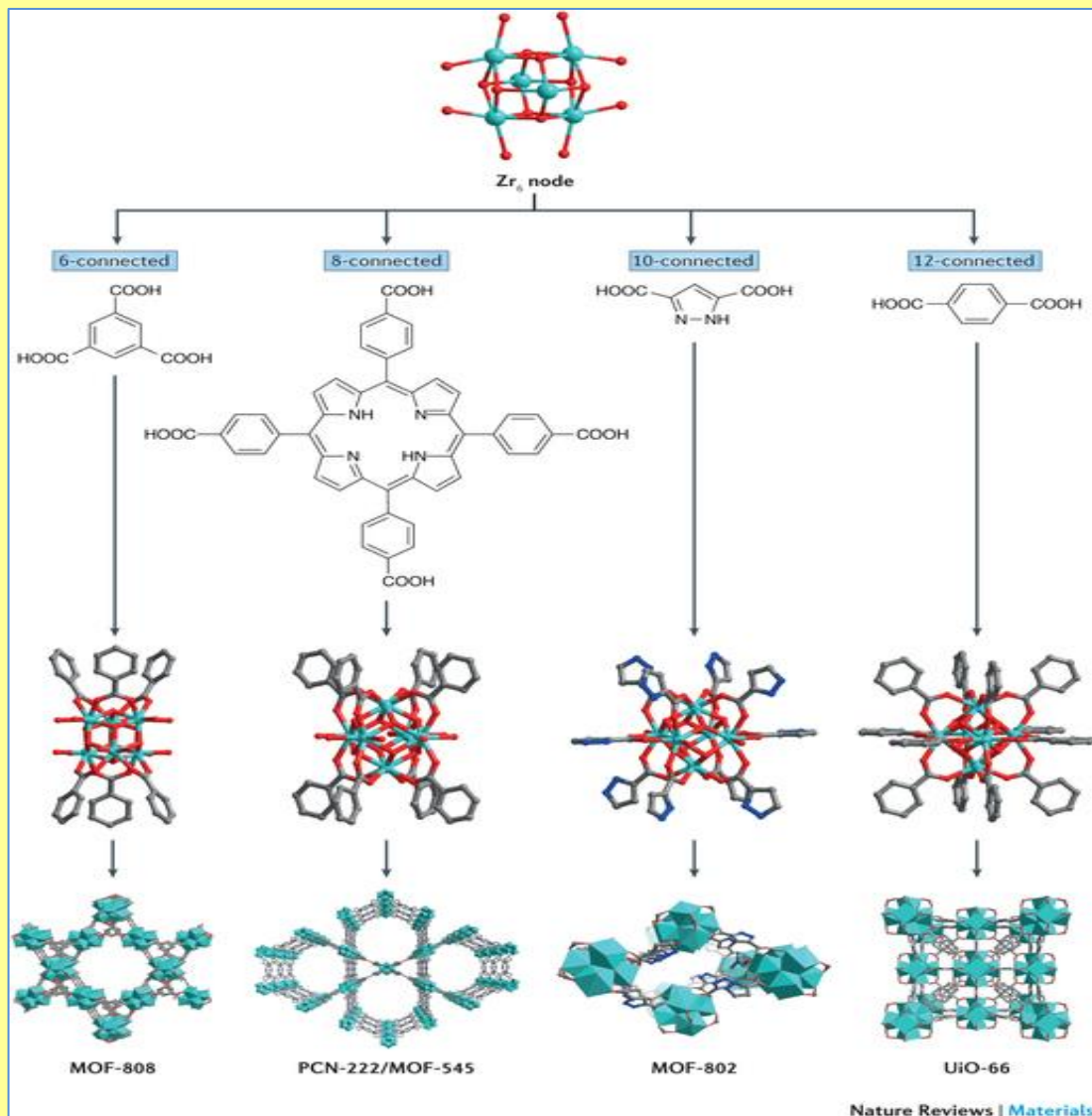
June 08 – Chemical weapons are nightmarish. In a millisecond, they can kill hundreds, if not thousands. But, in a study published in the ACS journal *Chemistry of Materials*, scientists report that they have developed a way to adhere a lightweight coating onto fabrics that is capable of neutralizing a subclass of these toxins — those that are delivered through the skin. The life-saving technique could eventually be used to protect soldiers and emergency responders.



A new fabric coating could neutralize chemical weapons and help save countless lives.



Since their first use in the First World War, dozens of chemical weapons with devastating potential have been developed. For example, just a pinprick-sized droplet of the nerve gas sarin on the skin is lethal.



ACS says that recently, scientists have begun exploring the **use of zirconium-based metal-organic framework (MOF) powders to degrade and destroy these harmful compounds**. MOFs are miniscule, porous structures that have large surface areas that allow them to absorb vast amounts of gases and other substances. The zirconium within them helps neutralize toxic materials. But making MOFs can be tedious, requiring high temperatures and long reaction times. Plus, most MOF powders are unstable and incorporating them onto clothing has proven challenging. Dennis Lee, Gregory N. Parsons and colleagues wanted to see if they could “grow” MOFs onto fabric at room temperature, potentially creating a lightweight shield that could be used on uniforms and protective clothing.

Building on previous work, the researchers exposed polypropylene, a nonwoven fabric commonly used in reusable shopping bags and some clothing, to a mixture consisting of a zirconium-based MOF, a solvent and two binding agents. To ensure that the coating spread evenly across the cloth, they treated the fabrics with thin layers of aluminum, titanium or zinc oxide. They tested this combination with dimethyl 4-nitrophenyl phosphate (DMNP), a relatively harmless molecule that has similar reactivity as sarin, soman and other nerve agents. They found that the MOF-treated





cloths deactivated the DMNP in less than 5 minutes, suggesting this process is a viable means to create improved protective clothing.

— Read more in Dennis T. Lee et al., “Catalytic “MOF-Cloth” Formed via Directed Supramolecular Assembly of UiO-66-NH<sub>2</sub> Crystals on Atomic Layer Deposition-Coated Textiles for Rapid Degradation of Chemical Warfare Agent Simulants,” *Chemistry of Materials* (12 May 2017).

## TRIAGE AND TOXICITY WORKSHOP/MASTER CLASS

30 August 2017

Hotel Mutterhaus, Dusseldorf, Germany

The **Horizon 2020 Project TOXI-triage** is working to develop accelerated situational awareness alongside traceable point of care diagnostics. Advances in remote piloted airborne systems (“drones”), breath analysis, tag and trace as well as machine learning are under development and review to provide “tools for detection traceability triage and individual monitoring of casualties”. An important, indeed vital, element of our work is listening to and consulting carefully with end-users and we are pleased to announce a workshop/master class on triage and toxicity.



What is the triage process and how does it change in the case of a CBRN event? How to behave in the hot zone? What is needed to get a full operational picture as a first responder ambulance crew or firefighter in full protective gear? How can this be enhanced by TOXI-triage technology?

The workshop/master class starts with expert practitioner presentations from Fire Department Mannheim, Deutsche Bundeswehr, National Ambulance Resilience Unit (NARU) and Fire Rescue Brigade of Moravian-Silesian Region (HZSMK) to get an overview of triage and treatment from different perspectives.

Furthermore there will be a technology expo, showing the latest developments in the TOXI-triage project. Perhaps the most important part of the exercise follows with table-top discussions about technology, simulation, field technical exercises (FTX) and triage where each delegate will rotate through different teams who will provide structured analysis and feedback. Each team will be supported by an expert who will chair, provoke and encourage contributions to ensure that all points-of-view, insights and ideas are heard and considered.

Further details and a registration form are available from the TOXI-Triage website at:  
<http://www.toxi-triage.eu/content/workshopmaster-class-triage-toxicity>



## 908 Devices Introduces Next-Generation HPMS Device for the First Responder Community

Source: <http://908devices.com/products/mx908/>

June 14 – 908 Devices, a pioneer of analytical devices for chemical and biomolecule analysis, today announced the release of MX908™, a second-generation handheld chemical detection and identification device powered by the Company's patented and award-

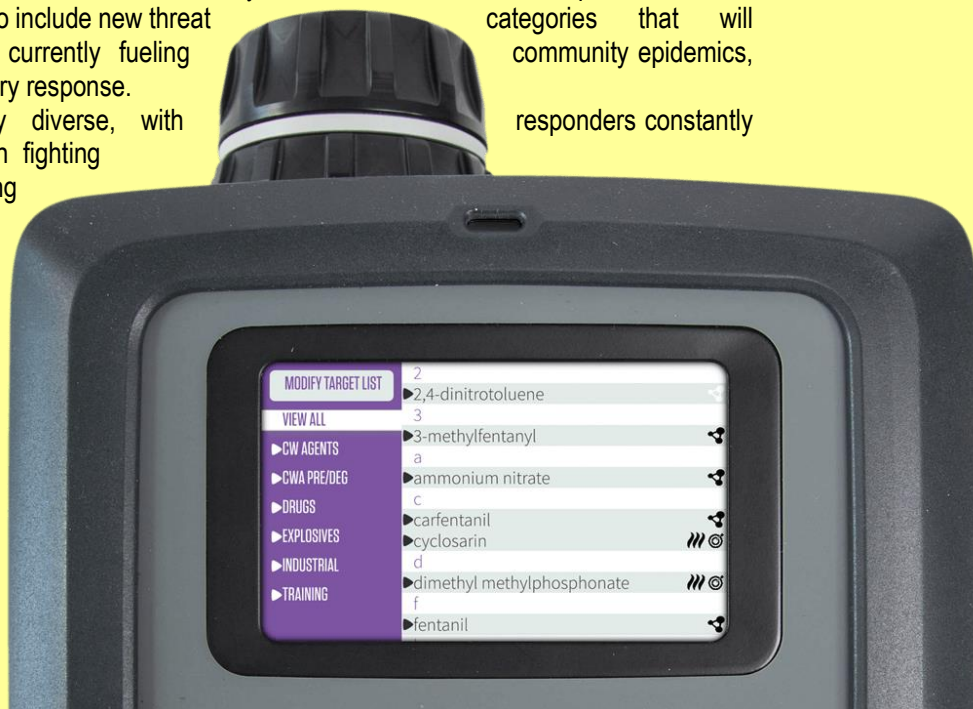
Designed for true trace-level detection and identification across a variety of CBRNE and Hazmat response missions, MX908 complements the success of 908 Devices' first-generation device M908™. This device is deployed globally and protects communities across the United States with at least one device fielded in every state. The enhanced power of HPMS enables MX908 to provide civilian, federal and military responders with new and improved target detection and identification capabilities. This includes increased sensitivity that is up to 1,000 times greater than previous generation devices, and a new simultaneous dual-mode ionization for even broader threat category coverage.

"M908 continues to bring unprecedented and sorely-needed capabilities to the first responder toolkit, but we didn't want to stop there," said Dr. Kevin J. Knopp, President and CEO, 908 Devices. "It is critical that first responders keep pace with growing threats, which is only possible through continuous innovation. This belief has guided our tireless R&D efforts to strengthen and expand the applications of our HPMS technology by way of MX908."

With MX908, elite responders will benefit from unmatched versatility and detection power. The device features an upgraded all hazards target list, which includes a broader spectrum of chemical warfare agents (CWA) as well as explosives and high-priority toxic industrial chemicals (TIC). From military grade, commercial and improvised explosives to novel threat materials, MX908 empowers responders to solve the challenges associated with today's threat landscape. The MX908 target list will continue to evolve to include new threat categories that will address the chemical dangers currently fueling community epidemics, public safety concerns, and military response.

"This landscape is extremely diverse, with responders constantly managing the disparity between fighting the familiar while also facing countless unknowns," said John Kenneweg, Vice President, 908 Devices. "With the launch of MX908, we are delivering a next-gen device designed to address a wider range of applications, equipping responders with the detection and identification capabilities they need to combat today's modern threats."

MX908 weighs just 3.9 kg (8.7 lbs.) and was purpose built to serve as a multi-mission device. Its enhanced sensitivity and selectivity enables responders to displace other pieces of equipment in their toolkit, thus lightening the load





associated with response missions. Similar to M908, MX908 is easy-to-use, shelf-ready and provides rapid chemical detection and identification of solids, liquids and vapors within seconds.

## FLIR Announces FLIR Griffin G510 Portable Gas Chromatograph-Mass Spectrometer for Chemical Hazard Identification

Source: <http://www.domesticpreparedness.com/updates/flir-announces-flir-griffin-g510-portable-gas-chromatograph-mass-spectrometer-for-chemical-hazard-identification/>

June 09 – FLIR Systems, Inc. (NASDAQ: FLIR) today announced the Griffin G510 Gas Chromatograph-Mass Spectrometer (GC/MS), its first person-portable chemical identifier. The FLIR Griffin G510 enables military and civil responders to easily sample all phases of matter, including solid, liquid, and vapor, to rapidly identify chemical hazards in the field.

The versatile Griffin G510 represents a new-generation of portable GC/MS capability, with multiple integrated sample inlets that simplify on-scene analysis and a technology core that delivers actionable, lab-caliber answers.

The FLIR Griffin G510 comes equipped with an integrated heated sample probe designed for downrange missions. When used in



survey mode, it identifies vapor-phase

chemicals

within seconds. The split/split-less injector allows for environmental, forensic, and hazardous material sampling by enabling syringe injection of organic liquids, a first for person-portable GC/MS systems.

Featuring a nine-inch touchscreen, the FLIR Griffin G510 can be operated while wearing full personal protective equipment when in a hot zone. When a chemical threat is automatically identified using industry-standard NIST library, the FLIR Griffin G510 alerts the operator with audible, visual, and color-coded alarms. Designed to withstand harsh environments, the FLIR Griffin G510 is IP65-rated, dust-tight and spray-resistant. Long-lasting, onboard, rechargeable batteries ensure every mission receives support from beginning to end.

"The FLIR Griffin G510 is a groundbreaking chemical analysis tool that brings versatility and lab quality performance and identification to the field," said Dennis Barket, Jr., Vice President and General Manager of FLIR Detection. "The ability to quickly identify unknown threats and confirm known hazards gives responders confidence to take immediate action, ensuring the public's safety."

FLIR will showcase the FLIR Griffin G510 at the International Hazardous Materials Response Teams Conference hosted by the International Association of Fire Chiefs (IAFC) June 16-17, 2017 in Baltimore, Maryland, booth #1153. The FLIR Griffin G510 will be available for order worldwide in the second half of 2017 through FLIR and established distribution networks.

►► To learn more about the FLIR Griffin G510, please visit: [www.flir.com/G510](http://www.flir.com/G510)



Important

## Sea of sarin: North Korea's chemical deterrent

By Reid Kirby

Source: <http://thebulletin.org/sea-sarin-north-korea%E2%80%99s-chemical-deterrent10856>



June 21 – North Korea periodically comes into the news as it advances its nuclear and ballistic missile ambitions and continues to employ rhetoric about destroying its enemies. With the Korean Peninsula technically still at war, a growing concern today is that at some point North Korea will acquire the capability to launch a nuclear-armed ballistic missile against the United States or one of its allies. Counterproliferation efforts on the peninsula have had a frustrating history, leading the United States to deploy its Terminal High Altitude Area Defense (THAAD) missile system in South Korea. The US secretary of state, Rex Tillerson, has even [suggested](#) the possibility of preemptive military action against the North.

To many analysts of South Korean security, the problem with the preemptive military option is Seoul's proximity to North Korean artillery placed across the demilitarized zone. North Korea, as a form of strategic deterrence, has periodically threatened to use this artillery to turn Seoul into a "sea of fire." Lending credence to Pyongyang's threats are [figures](#) from the Global Security website:

**"According to one report, a South Korean security analyst suggested that DPRK artillery pieces of calibers 170mm and 240mm 'could fire 10,000 rounds per minute to Seoul and its environs.' North Korea has about 500 long-range artillery tubes within range of Seoul, and the total rate of fire of these artillery pieces would be between 2,000 and 4,000 rounds per minute. The DPRK's [200] 240mm [multiple rocket launchers] fire either 12 or 22 rounds, providing a maximum single salvo of no more than 4,400 rounds."**

Seoul, South Korea's capital, is the country's largest and densest population center, with more than 10 million people living in an area of about 600 square kilometers. It is the heart of the world's fourth-largest metropolitan area and it contains one-fifth of South Korea's population. It has been estimated that a sustained North Korean artillery attack on Seoul would result in tens of thousands of fatalities if the artillery were armed with conventional high explosives, and in the hundreds of thousands in the case of chemical weapons.

Still, as appalling as these figures appear, they are ultimately figurative, based on [vague North Korean threats](#). It is debatable how many of North Korea's artillery pieces might be tasked with an attack on Seoul, and if they are within range. Artillery in the demilitarized zone, notes Roger Cavazos of the Nautilus Institute, mostly [covers](#) the less densely populated one-third of the city, closer to the DMZ. Using imagery from Google Earth to analyze losses in Seoul due to an artillery attack with high explosives over several days, Cavazos estimates casualties an order of magnitude lower than some others have estimated. While estimates have varied regarding how many artillery pieces the North has, with some estimates running into the thousands, the 700 artillery pieces noted by Global Security is a conservative figure that most analysts have accepted.

Without knowing the details of Pyongyang's military plans, estimates of the consequences of a North Korean artillery assault are ultimately hypothetical analogies. **Where chemical artillery in particular is concerned—because the composition of weapons, payloads, and targets is unknown—the most appropriate analysis of the magnitude of a countervalue threat relies on a heuristic approach.** That is, one associates a quantity of sarin with casualty rates based on a generalized application of how chemical weapons operate, rather than performing a simulation of how individual weapons would impact specific targets. Using such an approach, differences in population densities (for example, an attack on Incheon instead of on Seoul) will lower casualty estimates, but will not change the percentage of the targeted population that suffers casualties.

Proponents of preemptive military action against North Korea's nuclear program, along the lines of Israel's 1981 Operation Opera against Iraq's nuclear program, typically ignore North Korea's history of asymmetrical responses. But North Korea's capacity to inflict mass chemical casualties on the Seoul area in a "sea of sarin" attack rivals its capacity for nuclear destruction. And compared to the nuclear threat, which involves a finite number of warheads and delivery systems vulnerable to air defenses and antimissile systems, the chemical threat is not as





easily negated. Until North Korea becomes a party to the Chemical Weapons Convention, the chemical threat will persist as a potential deterrent to military action against Pyongyang.

### Assessing the chemical artillery

North Korea is believed to have placed a high priority on chemical weapons ever since Kim Il-sung's "Declaration of Chemicalization" in 1961. But the quantity, quality, and durability of the North Korean chemical arsenal are unknown. In the 1970s, intelligence estimates by the United States and South Korea rated North Korea's chemical warfare potential as mostly defensive. By the late 1980s, views had changed; Pyongyang was believed to have 250 tons of mustard gas and some nerve agents. **By 2010, North Korea was estimated to possess 2,500 to 5,000 tons of chemical weapons, mostly sarin and the nerve agent VX.** Furthermore, it is assumed that North Korean military doctrine treats chemical weapons as a natural aspect of the nation's scheme of maneuver, and that chemical weapons would be used from the outset of hostilities. Chemical weapons are reportedly pre-deployed—with one out of three North Korean projectiles believed to be chemical. The February assassination of Kim Jong-nam in Malaysia with VX was undoubtedly a reminder to North Korea's enemies of the chemical threat that Pyongyang poses.

**Bruce Bennett of the RAND Corporation reports that eight manufacturing facilities have been identified in North Korea, capable of producing 5,000 tons of chemical weapons a year during peacetime and 12,000 tons during wartime. The Nuclear Threat Initiative, meanwhile, reports that North Korea has 11 production and storage facilities—in addition to 13 research and development facilities, two test ranges, and four military bases equipped with chemical weapons, as well as facilities near the cities of Kanggye and Sakchu prepared to fill chemical artillery.**

Earlier, I cited a claim that North Korea's 170mm and 240mm artillery could fire 10,000 rounds per minute

on Seoul. This claim requires validation. While numbers vary, let's assume that North Korea has 500 170mm guns and 200 240mm guns (the M-1985)—the conservative numbers specified on the Global Security website—and delve into a bit more detail.

North Korea has the M-1978 *Koksang* self-propelled gun; the M-1989 variant of this gun carries 12 rounds. Its estimated range is about 25 miles—and with rocket-assisted projectiles, the range can be extended up to about 37 miles. From North Korea's firing positions along the Kaesong salient of the demilitarized zone, these 170mm guns can cover a one-third to one-half of Seoul without rocket-assisted projectiles and all of Seoul with them (see Figure 1). North Korea's 240mm artillery rockets are fired from either the 12-rocket M-1985 or the 22-rocket M-1991 mobile multiple rocket launcher. With their range of about 20 miles, these launchers can cover less than one-third of Seoul from the same firing positions along the Kaesong salient. The *Juche 100* variant of the 240mm rocket is reported to have a range of about 37 miles.

So the rate of fire of 10,000 rounds per minute appears incorrect—it is apparently based on the rate of fire produced by 155mm artillery pieces (that is, 12 rounds every 3 minutes). The larger-caliber 8-inch gun in the United States has a sustained rate of fire of 10 rounds every 15 minutes,

implying that a more appropriate rate for 170mm guns may be 12 rounds per 15 minutes. The firing rate of 240mm rockets is one rocket every 4 seconds, with 5 to 8 minutes to reload

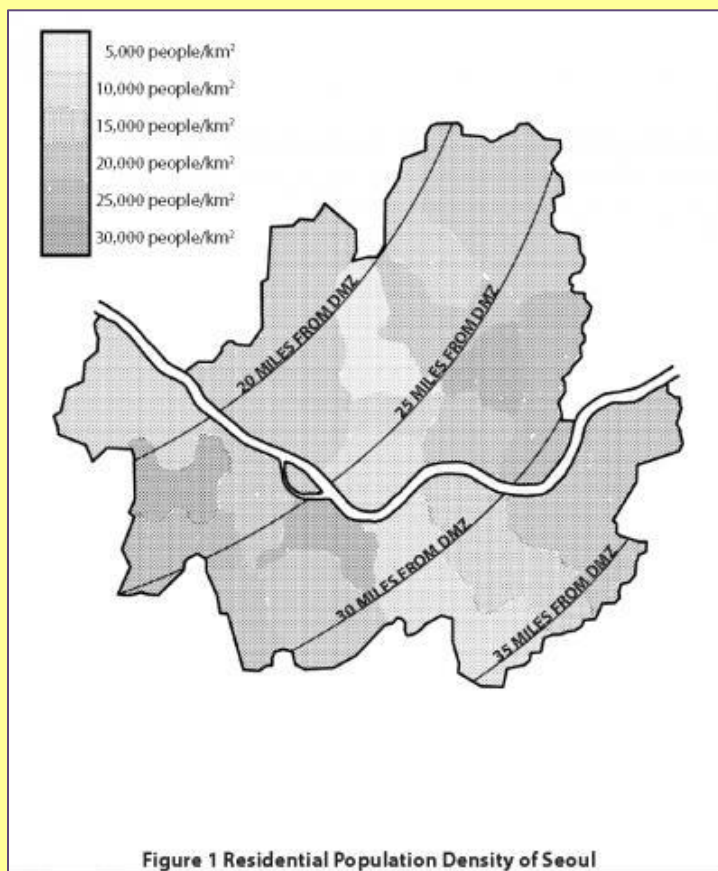


Figure 1 Residential Population Density of Seoul



after expending either 12 or 22 rockets. Assuming 500 170mm guns and 200 240mm guns, the more likely overall rate of fire is 10,800 rounds every 15 minutes.

With that established, we can calculate how much sarin Seoul might receive during a chemical artillery barrage. The sarin payload of each 240mm rocket is known to be 8 kilograms per rocket, based on the Soviet *Katyusha*. There is little information available on the 170mm projectile, but a chemical payload of 5 kilograms per projectile can be assumed, based on a US chemical shell of comparable size (the experimental 175mm T223, created for the T145 and T256 guns). Misfires and duds for these artillery weapons would reduce the amount of sarin released on Seoul. Overall, the chemical loading would be about **100 kilograms per square kilometer every 15 minutes**.

### Civilian losses

How much *total* sarin North Korea placed on Seoul would depend in part on Pyongyang's chemical objectives—that is, the casualty rate it hoped to achieve—and on prevailing weather conditions. Anglo-American chemical retaliatory plans during World War II called for a 25 percent casualty rate in urban targets; this objective was retained in the earlier half of the Cold War. Figures from that era for estimating casualties from sarin assumed a median lethal dosage (LC<sub>50</sub>) of 70 mg·min/m<sup>3</sup> and a median incapacitating dosage (IC<sub>50</sub>) of 35 mg·min/m<sup>3</sup> (for example, if a soldier were breathing 7 milligrams of sarin per cubic meter of air for 10 minutes, there would be a 50 percent probability he would die). The prevailing weather conditions assumed in this analysis are for urban terrain under neutral atmospheric stability, with five-knot winds.

A heuristic **approach** to estimating the total quantity of sarin required to inflict 25 percent casualties on a city such as Seoul under the specified conditions simplifies the problem into a **box model of 600 square kilometers, with casualty rates integrated by area to find the necessary quantity**. Using this approach, a “sea of sarin” attack on Seoul would require about 400 kilograms of sarin per square kilometer. Such an attack would require a total of 240 tons of sarin, easily within the estimated size of North Korea's chemical arsenal. It would take one hour for North Korean artillery to mass sufficient sarin on Seoul to attain a 25 percent casualty objective—or three hours if mixed with high-explosive fire at a 1:2 ratio of chemical to high-explosive projectiles or rockets.

Should North Korea subject Seoul to a 240-ton chemical artillery attack, using the casualty estimating rules in the US Army 1966 field manual *FM 3-10 Employment of Chemical Agents*, the expected outcome would be as follows:

Consequences of a 240-ton sarin attack on Seoul (higher lethal dosage assumed)		
Effect	Percentage of population affected	Number of people affected
Fatalities	6.5	650,000
Casualties	19.5	1,950,000
Fringe	10 to 15	1,000,000 to 1,500,000

**Based on Cold War–era dosage figures for sarin, North Korea could, in a matter of hours, inflict around 25 percent casualties by distributing 240 tons of sarin throughout Seoul.** But these dosage figures were indexed for soldiers considered among the healthiest third of a population that is relatively young overall (military service age). For a diverse population encompassing all ages and genders, and with a wide range of health statuses, the lethal and incapacitating dosages of sarin are significantly lower. The Institute for Defense Analysis held a workshop in 1998 to assess the state of the art and to arrive at dosage figures appropriate for the general population. The institute estimated that, for the general population, the median lethal dosage would be only half the dosage assumed in the US Army field manual mentioned above.

The Tokyo subway sarin attack and the Ghouta attack in Syria lend support for using lower dosage figures for a general civilian population. The 1995 attack on the Tokyo subway suggests that the general population will perceive even fringe effects—miosis, for example





(excessive constriction of the pupils)—as casualty effects. Furthermore, based on the number of chemical rockets involved, the sarin chemical attack on Ghouta in 2013 resulted in a high number of fatalities. This supports the validity of the lower dosage figures recommended by the institute. If the institute's figures for a sarin attack on a civilian population are used, the consequences of a North Korean chemical artillery attack become much more severe:

Consequences of a 240-ton sarin attack on Seoul (lower lethal dosage assumed)		
Effects	Percentage of population affected	Number of people affected
<b>Fatalities</b>	25	2,500,000
<b>Severe Casualties</b>	10	1,000,000
<b>Moderate Casualties</b>	19	1,900,000
<b>Mild Casualties</b>	40	4,000,000

**The overall expected casualty rate is nearly total. Compared to the military-dosage scenario, there would be more than 3.8 times the number of fatalities and almost 1.5 times as many moderate-to-severe casualties.** Estimates of chemical-weapon effects based on Cold War-era dosage figures are a gross understatement of the number of fatalities and casualties that could be expected in a general civilian population. And if Pyongyang expended quantities of chemical weapons appropriate for a military rather than a civilian population—which is logistically feasible even for a large-area target such as Seoul—the probable effect on a general civilian population would be significant overkill.

How does one visualize such an attack? In more than half of Seoul, the consequences would be comparable to the worst images from the Ghouta sarin attack; in the remainder of the city, consequences would be similar to the Tokyo subway attack. Long-term consequences might not be immediately appreciated, but would be severe as well. **For survivors experiencing cardiopulmonary arrest, a fair number might enter a persistent vegetative state due to anoxia.** Neuropathy and ataxia (loss of control over bodily movements) [might be present](#) for up to three months after the attack in 10 percent of survivors, and about 8 percent would likely have post-traumatic stress disorder for up to five years afterward. Policy makers also should not discount public perceptions of latent effects, whether real or imagined. Gulf War Syndrome, the 1984 Bhopal Disaster, and the use of Agent Orange in Vietnam all provide cautionary examples of the way lingering doubts, with political importance, can persist for more than a decade after a mass chemical incident.

### South Korea's response

To be sure, South Korea is not defenseless against a sea-of-fire countervalue attack. **While it is not logistically or technically feasible for South Korea to directly shoot down 10,800 chemical projectiles and rockets every 15 minutes, Seoul has a formidable counter-battery capability to destroy North Korean artillery pieces.** The problem would be responding quickly enough—and prioritizing the destruction of 500 170mm guns, and 200 240mm multiple rocket launchers, in a demilitarized zone crowded with numerous other artillery pieces.

The qualitative difference between a nuclear and a chemical deterrent lies in the latter's mass effect. For example, if three attack aircraft flew on a mission to deliver a nuclear weapon and only one aircraft carried the weapon, a one-in-three probability of losing an aircraft would result in a binary situation: a two-thirds probability that the weapon would have 100 percent of its intended effect or a one-third probability that it would have none of its intended effect. Chemical weapons are different; a one-in-three chance of losing an attack aircraft would mean that two-thirds of the chemical payload would be delivered to the target and mass casualties would still result.

**Successful counter-battery attrition against a "sea of sarin" attack would require destroying all North Korean chemical artillery in less than 15 minutes.** In general terms, the attrition would shrink the portion of Seoul experiencing a Syrian-type casualty scenario, replacing it with a Tokyo-type casualty picture. A chemical load of 100 kilograms per square



kilometer would still result in mild casualties for about 93 percent of the affected population, moderate casualties for about 7 percent, and numerous fatalities in the vicinity of each burst. It is this mass effect from artillery which makes the potential of a North Korean chemical countervalue attack a potent possible deterrent. The mass-action nature of a chemical attack would inflict massive numbers of casualties even in the unlikely scenario that South Korea silenced *all* North Korean artillery within 15 minutes.

Civil defense could help reduce casualties. **Seoul has 3,321 civil defense evacuation centers. Spread across the country are 17,501 protective shelters.** There is even a smartphone app to help direct people to the nearest shelter during an attack. After the 2010 North Korean bombardment of Yeonpyeong Island, South Korean civil defense authorities issued 1,300 protective masks to island residents and made plans to boost the chemical protection capabilities of its civil defense corps, including the renovation of public shelters against chemical weapons. Depending on availability, on how much warning is provided, and on public response time, civil defense measures could substantially reduce chemical casualties. If the typical response time were on the order of two minutes into the attack—unlikely—expected casualties would be only one-quarter of those expected in a population without chemical protections.

### Reason to hesitate

Details about North Korea's chemical arsenal are not known with confidence. We do not know for sure what chemical weapons North Korea would use or how it would use them. The North's repeated threats to turn Seoul into a sea of fire may be only rhetoric. The North's strategic views concerning deterrence and escalation are also unknown. History shows a willingness in Pyongyang to engage in military provocations *short of* the level that would justify a renewal of the Korean War. Nonetheless, it is possible to make a rough estimate of the impact of a massive chemical artillery attack on a large urban center such as Seoul. Ultimately, such an estimate is illustrative, representing one of many possible scenarios, yet it can still provide a reasonable understanding of the potential magnitude of a sarin artillery attack against civilian population centers.

If publicly stated intelligence estimates are to be believed, North Korea's chemical arsenal represents a credible and present threat. How North Korea could apply this threat as a deterrent is speculative. But the destructive potential of the threat should give reasonable cause to hesitate regarding preemptive military options against North Korea's nuclear weapons ambitions.

*Reid Kirby is a recognized military historian and consultant to government, scholars, publishers, and television documentarians. His focus is on the history of chemical and biological weapons technology development and doctrine. He is currently working on a historical study of US Cold War biological weapons relating to air power doctrine and nuclear weapons.*





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# BIO NEWS





## Two stories from the past...

**Laboratory analysis of environmental samples taken following the reported release of live poliovirus****RIVM Letter report 2015-0032**

By E. Duizer

Source: <http://www.rivm.nl/bibliotheek/rapporten/2015-0032.pdf>

Map of part of Belgium and the Netherlands.

A = Antwerpen, Belgium,

B = GSK, Rixensart, Belgium,

C = mussels sampling site, Kloosterzande, the Netherlands,

D = sewage sampling site Krabbendijke, the Netherlands,

E = sewage sampling site Stavenisse, the Netherlands.

The blue line represents the water flow from Rixensart to Antwerpen.

**How Liberian Govt Cleared Patrick Sawyer to Travel to Nigeria while under observation for Ebola**Source: <http://www.premiumtimesng.com/foreign/west-africa-foreign/166559-exclusive-how-liberian-govt-cleared-patrick-sawyer-to-travel-to-nigeria-while-under-observation-for-ebola-2.html>**August 2014** – The Liberian Government was aware that **Patrick Sawyer**, its citizen who

brought the Ebola virus into Nigeria, had possibly contracted the virus from his late sister, yet cleared him to travel to Nigeria for a conference organised by the Economic Community of West African States [ECOWAS], PREMIUM TIMES can

authoritatively report today.

Documents obtained by this newspaper showed that Mr. Sawyer's employers, ArcelorMittal, an iron mining company, suspended him from work and isolated him after it became aware that he

had contact with his sister who died of the virus on July 8.

The company also issued an internal memo to staff of the company informing them that Mr. Sawyer had been referred to the Liberian Health ministry for testing and close observation.

"A family member of an ArcelorMittal Liberia employee died on Tuesday, July 8th, in Monrovia due to a confirmed case of the Ebola virus," the **July 11 edition of Satellite**, an internal newsletter of ArcelorMittal Liberia, said. "The employee had minimal contact with the victim, at the state where the virus was infectious.



“Doctors say the risk of potential transfer to any member of the ArcelorMittal staff or contractors is very low. The employee has submitted to the Ministry of Health for a medical examination for possible Ebola infection, and has also requested the Ministry of Health to make the result available to ArcelorMittal Liberia and its close affiliates.

“There is no evidence to suggest that the employee has been infected. Under the Ministry of Health guidelines, the employee is being monitored on a daily basis and will continue to do so for a period of 21 days. During this time the employee will be absent from work.”

The [July 25 edition of the Satellite](#), which announced Mr. Sawyer’s death, reads:

“Patrick was last at the Buchanan site (of ArcelorMittal) on 9th July when he informed us about the death of his sister. Having informed us of this news, Patrick was submitted to the Ministry of Health for a medical observation and isolation and requested not to return to work until he had passed through the incubation period. He has not been at the Buchanan site or in any ArcelorMittal office since that time.”

But despite being under isolation and observation for the deadly disease, the Liberian Government, through its Deputy Finance Minister For Fiscal Affairs, Sebastian Muah, cleared Mr. Sawyer to travel to Nigeria for an ECOWAS convention in Calabar.

The deputy minister personally admitted approving the trip in an [online discussion forum](#), where some Liberian citizens raised questions about his action and competence.

Mr. Muah could not be reached for comments on Monday. His mobile telephone was switched off the numerous times PREMIUM TIMES called.

But the Liberian Minister of Information, Lewis Brown, admitted to this newspaper that his government knew Mr. Sawyer was possibly infected by the virus before he travelled to Nigeria.

“I can confirm to you that he was advised by the Chief Medical Officer at the Ministry of Health not to leave the country because he was under observation,” Mr. Brown said by telephone from Monrovia, the Liberian capital. “It was regrettable that he left the country while being observed.

“We felt he had a duty to his colleagues to tell them that he was under observation for the disease. We also felt he had a duty to our country and yours (Nigeria) not to leave Liberia so as not to endanger the lives of others.”

Asked why a Liberian government official approved Mr. Sawyer’s trip to Nigeria even when the administration was watching him for Ebola, Mr. Brown said he had no information that the Deputy Minister, Mr. Muah, okayed the journey.

He however explained that such an administrative slip was possible at the time Mr. Sawyer left Liberia for Nigeria because at that time, inter-agency cooperation among government departments was low.

“It’s possible the health ministry was monitoring him (Mr. Sawyer) but the finance ministry did not know,” Mr. Brown said. “It was a slip and we have learned from it regrettably.”

He said the Patrick Sawyer incidence had now compelled Liberia to rework its procedures.

“Now the practice is to share the names of everyone under observation with all other agencies, including the airport, so they cannot leave the country,” the minister said.

“Before the Patrick Sawyer incidence, we did not have that kind of cooperation. We were not locking people under observation down. We were only bringing them to the isolation centre after they showed signs of the disease.”

Liberian newspaper, The New Dawn, which saw the CCTV footage recorded at the James Spriggs Payne’s Airport, Monrovia, moments before Mr. Sawyer boarded an Asky Airline plane to Lagos on July 20, reported that he looked “terribly ill” and wore a “sad countenance” like someone in severe pain.

Apparently overtaken by “excruciating pain,” he, at a point, laid flat on his stomach on the floor in the corridor of the airport.

The paper also reported the footage as capturing Mr. Sawyer sitting alone and avoiding bodily contacts with other passengers who came close to him at the boarding gate of the airport as he awaited his flight to Lagos.

Mr. Sawyer became severely ill on the plane and was taken to First Consultant Hospital, Obalende, from the Murtala Mohammed Airport in Lagos.



Reports of events before he travelled to Nigeria and soon after his death have now shown that top Liberian government officials were aware of his trip to Nigeria and appeared to have done nothing to stop him.

The reports have also shown that Mr. Sawyer did not escape from where he was quarantined as reported by some newspapers.

In fact, the actions of some Liberian officials suggested that they were more concerned with getting Mr. Sawyer to the convention venue in Calabar and cared very little about the health risk he posed.

After he died, First Consultant Hospital issued a statement saying it resisted immense pressure from Liberian officials to discharge Mr. Sawyer from the hospital to enable him to attend the

convention in Calabar, with diplomats saying he had a key role to play at the convention.

Nigeria was free of Ebola until July 20 when Mr. Sawyer arrived.

He became terribly ill on his flight and was rushed to the First Consultant Hospital Obalende, Lagos, where he died on July 24.

Nigeria's Health Minister, Onyebuchi Chukwu, said on Monday that although the Liberian government has apologized for the incidence, it was pertinent to note that Nigeria was free of Ebola Virus until its importation by the Liberian-American.

Mr. Sawyer's action, he said, has placed unnecessary stress on Nigeria's health system.



Source: <http://www.cdcafrica.com/>

2017 – Center for Diseases Control and Prevention in Africa (**CdcAfrica**) is a collaboration of volunteer medical professionals in the US working alongside their Third World Countries (particularly in Africa) local counterparts to bring basic health solutions to the dire medical needs of millions of suffering people in Africa and also making attempt to offer a platform for emergency medical relief efforts around the world during catastrophic situations.

Common courses of deaths in third world countries were attributed to starvation and malnutrition during the past century. Today, Africa and other third world countries are confronted with deaths resulting from common treatable diseases like measles, mumps, rubella, malaria, neo-natal and early childhood diseases. The dismal health situation in these countries has been worsened since the early 90s by the exponential increment of HIV/AIDS epidemic. Over-the-counter medications are a

luxury, administering of vaccines and immunization drugs are untenable because of the cost of dispensing of these drugs. The problem maybe compounded and rendered hopeless because most of the countries' emergency health preparedness plans remain on their books with no immediate action in sight to implement them due to lack of institutional will and the capacity to take on such programs.

Attempts have been made in many African and third world countries by governments and non-profit institutions at combating HIV/AIDS and many other debilitating diseases but the goals and results often times seem to be tainted due to lack of proper coordination of the health delivery systems, lack of cooperation by local people coupled with an ineffective utilization of the available resources. Diseases statistics and data storage in some cases are untenable due to non-existent basic data management infrastructure, lack of incentives





and motivation for health statistical personnel, proper training or education, cultural influences and disappointments from the existing governmental health institutions who have no proper oversight or accountability procedures to ensure cost-effective utilization of allocated resources.

Poverty and malnutrition have had degenerative consequences on the vast population amidst the fight for basic health support during the past century.

With Africa's socially closely knitted structure and extended family system, one might be inclined to think it is possible to do more with less! The contrary is what rules currently until mindsets are changed through public education and the flow of information is uncensored by some political machinery.

**In many of these countries:**

- CdcAfrica is working in concert with African local governments to help establish an emergency medical response system to assist in disease forecasting and emergency health delivery.
- CdcAfrica is helping to revamp immunization and vaccination programs to stop the immediate spread of contagious diseases, air and water-borne diseases.
- CdcAfrica is working to help African local medical professionals to get help in the form of enhanced education and training to bring personnel to the level of standardized health practice.
- CdcAfrica is conducting surveys in 48 countries in Africa to help identify the countries and regions of immediate and urgent healthcare needs.

- CdcAfrica is setting up 4 PILOT interventional clinics for critical emergency medical treatment and will also serve as a platform for specialized medical professionals. Each clinic is projected to treat at least 250,000 out-patients annually in addition to some special need cases.
- CdcAfrica is helping to establish a new African Medical Professional Society (AMPS) to identify leading and outstanding deliverers of healthcare to grant recognition and to support their efforts in any way possible so that they can become a resource for local training. (Due to rather unusual high social and cultural practices of the people in Africa it is imperative that cdcAfrica adapts in certain cases, the approach of local health providers)
- CdcAfrica's plan of action includes health delivery to remote and inaccessible towns and villages for its immunization and vaccination programs for infants, children and women. The project is carried out by the Mobile Clinic. It is envisaged to have total of 16 Mobile Clinics to serve in very remote areas.

CdcAfrica is a nonprofit organization registered with the US Federal government for the purposes listed above among many others. It will seek cooperation and contributions (both cash and material) from and among health providers, institutions, pharmaceuticals, governments and volunteers in order to successfully deliver the much needed healthcare with urgency and little or no cost to the beneficiaries.

## Bioterrorism Rears Its Ugly Head in Mystery Novel

Source: <http://www.webwire.com/ViewPressRel.asp?ald=209429>

May 22 – The story behind James Frazee's first work of fiction, "The Mosquito Bites," is fueled by his experiences working in the chemical industry.

The story behind James Frazee's first work of fiction, "[The Mosquito Bites](#)," is fueled by his experiences working in the chemical industry. In his book, the protagonist, Alex Gregory, faces a life-threatening predicament after he discovers a company secret.

Alex Gregory's employment at Sterling Chemicals, a multimillion-dollar organization, takes a dangerous turn after his unearthing of the



company's clandestine operations. Now Alex attempts to save humanity from an imminent ecological disaster. How can he prevent the catastrophe that is about to be unleashed?

The book is published by LitFire and is now available at different online retailers. James Frazee also wrote nonfiction books prior to "*The Mosquito Bites*." Information about the books and James Frazee is available at [www.jamesfrazeebooks.com](http://www.jamesfrazeebooks.com).

## Lessons from Ebola: New approach improves disease outbreak management

Source: [http://www.medicalnewstoday.com/releases/317495.php?utm\\_source=newsletter&utm\\_medium=email&utm\\_campaign=weekly-hcp](http://www.medicalnewstoday.com/releases/317495.php?utm_source=newsletter&utm_medium=email&utm_campaign=weekly-hcp)

May 17 – A new approach to information gathering could allow scientists to quickly identify the most effective way to manage a disease outbreak, an advance that could save lives. Developed by an international team of researchers led by Penn State scientists using insights from the 2014 [Ebola](#) outbreak, the method pinpoints critical pieces of missing information required to improve management decisions during an outbreak. A paper describing the approach appears in the journal *Proceedings of the National Academy of Sciences*.

"When a disease outbreak happens, there is a lot of information that you just don't know: who will get sick, how will the disease spread, what will make things worse or better? But you still have to act," said Katriona Shea, Alumni Professor of Biology at Penn State and senior author of the study. "Our approach allows us to make better decisions about how to manage an outbreak in the face of uncertainty, saving lives." The new method provides a way to prioritize information gathering by applying a "value of information" analysis - a method used in economics and wildlife management to identify critical questions that need to be answered in order to improve decisions.

"Our approach synthesizes data from many models and provides two important pieces of information," said Shou-Li Li, postdoctoral researcher at Penn State and first author of the paper. "It identifies the best course of action, given what we know now, and highlights the gaps in our knowledge that actually matter to the selection of intervention strategies."

Because the approach can be used in real time as understanding of the outbreak evolves and as new models to understand outbreak dynamics are created, the researchers believe it

can streamline the decision-making process for policymakers.

"It could guide the management of outbreaks where rapid decision-making is critical, including diseases we know a lot about, like [influenza](#), those that we don't know a lot about, like [Zika](#), and those that we don't yet know exist," Shea said.

Uncertainty about the Ebola outbreak in 2014 led to widely differing predictions of how many people would contract the virus, with estimates ranging from a few thousand to over a million cases. "The difference between the projections and the actual size of the 2014 Ebola outbreak caused intense public debate," said Li. "But rather than focusing on how big the outbreak would be, our study focused on what to do to keep it small."

The study revealed key pieces of missing information that were more important than the number of cases for selecting the best course of action to manage the outbreak. "Although the number of cases may be important for determining management strategies for other outbreaks, that was not really the case with Ebola," said Shea. "For Ebola, it turns out that the models didn't disagree as much as everyone thought they did. Despite huge disagreement over the number of cases, the models used to make these predictions overwhelmingly agreed on the best course of action to slow the outbreak."

Of the 37 models of Ebola outbreak dynamics that the research team evaluated, the majority consistently ranked two commonly proposed management strategies





as the most effective: reducing transmission rates at funerals and reducing transmission rates in the community. For example, the outbreak could be best contained by ensuring safe burials, providing household sanitation kits, encouraging sick individuals to remain at home, and increasing community awareness. Strategies that focused on reducing transmission at hospitals or increasing hospitalization rates would not be as effective. "Obviously it's going to help the outcome for individual patients to have better quality of care," said Shea, "but it might not stop the outbreak. Ultimately, we focused on what you should do to stop the outbreak as effectively as possible. Our method provides a way to pin down what you need to learn about first."

"Responding to a fast-moving disease threat such as an Ebola outbreak means having to make decisions with less-than-perfect information," said Sam Scheiner, a program

director in the National Science Foundation's Division of Environmental Biology, which funded the research. "This study provides a new, important tool for decision-makers in such situations."

In addition to Shea and Li, the research team from Penn State includes faculty members Ottar Bjørnstad and Matthew Ferrari and undergraduate student Riley Mummah. The research team also includes Michael Runge from the USGS Patuxent Wildlife Research Center; Christopher Fonnesbeck from Vanderbilt University School of Medicine; and Michael Tildesley and William Probert from the University of Warwick.

This research was funded by the National Science Foundation, the National Institutes of Health, and the U.K. Biotechnology and Biological Sciences Research Council and was supported by the Huck Institutes of the Life Sciences.

**Article:** *Essential information: Uncertainty and optimal control of Ebola outbreaks*, Katriona Shea et al., doi: 10.1073/pnas.1617482114, published online 15 May 2017.

## Mass poisoning in Turkish Army training Center

Source (GR): <http://www.pronews.gr/portal/20170526/defencenet/toyrkia-enoples-dynameis/62/maziki-dilitiriasi-ston-toyrkiko-strato-enas-nekros>

May 25 – 1,046 soldiers affected by mass (food?) poisoning in a training center in the city of Manisa,



Turkey were more of 6,000 are trained. 211 of them are hospitalized in intensive care units and one died. Autopsy will be conducted by the Medical Institute of Smyrna (İzmir).



## Asymptomatic Ebola: A Rare Event

By Amesh A. Adalja, MD, FACP, FACEP, FIDSA

Source: [centerforhealthsecurity.org](http://centerforhealthsecurity.org)

May 26 – There has been some controversy over the question of whether the viral hemorrhagic fever virus Ebola can--like many infectious diseases--cause subclinical illness. On the one hand, subclinical illness in which few to no symptoms are present could diminish the quoted morbidity and mortality rate of the disease or, on the other hand, provide the basis for resurgent epidemics. Prior studies of varying methodological quality have provided conflicting data. **A new study published in *Lancet Infectious Diseases* attempts to answer this question definitively.**

### Low Rate of Positivity in Asymptomatic Contacts

Using a novel IgG Ebola glycoprotein capture assay, Glynn and colleagues surveyed survivors and household members who were treated at the **Kerry Town Ebola Treatment Center in Sierra Leone**



during the West African Ebola outbreak of 2014. Crucially, control subjects from neighborhoods in Sierra Leone without known cases of Ebola were part of the study.

Oral swabs from the former Kerry Town patients were, as expected, positive at a rate of 97.4%, while those from controls were 99.7% negative. Household contacts without a known history of Ebola were 8.3% positive on single testing, but on repeat testing more than half of those results were negative. The positive rate in asymptomatic contacts was 2.6%. Not surprisingly, of those contacts of Ebola patients who were not formally diagnosed with Ebola, 33.3% of those with contact with an Ebola corpse were positive. An overall rate of asymptomatic infection was calculated at 2.6% in the total cohort studied.<sup>1</sup>

### Optimizing Outbreak Control

The findings of this study are very important and should inform future Ebola outbreak management. By using control subjects, Glynn and colleagues incorporated appropriate rigor into their low overall estimate of 2.6% asymptomatic infection. If asymptomatic infection is a rare event, as this study suggests, then outbreak control should be focused on identifying symptomatic individuals and initiating the appropriate infection control measures to halt an outbreak.

Additionally, the novel assay used in the study, which requires just oral swabbing, is an important new tool that can be employed in similar studies and to understand where Ebola has occurred in the past. As a new outbreak of Ebola has been identified in the DRC, it will be important to use this near real-time approach to target efforts on tasks that have the





highest yield. As USAMRIID's Kuhn and Bavari write in an accompanying editorial, "The biggest threat to human populations therefore remains another introduction of Ebola virus from its natural host--and not transmission from an apparently healthy person infected with Ebola virus."<sup>2(p571)</sup>

### References

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2. Kuhn JH, Bavari S. Asymptomatic Ebola infections--myth or reality? *Lancet Infect Dis* 2017;17:570-571.

## Handheld Device May Help Predict Bleeding After Head Injuries

Source: [http://www.medscape.com/viewarticle/880620?nlid=115243\\_1362&src=WNL\\_mdplsnews\\_170526\\_mscpedit\\_emed&uac=82598DG&spon=45&impID=1355696&faf=1](http://www.medscape.com/viewarticle/880620?nlid=115243_1362&src=WNL_mdplsnews_170526_mscpedit_emed&uac=82598DG&spon=45&impID=1355696&faf=1)

May 25 – A handheld electroencephalography (EEG) device can quickly and effectively determine whether a patient has a brain bleed after sustaining a head injury, new research suggests.



Last year, the US Food and Drug Administration (FDA) [cleared](#) the **Ahead 300** (BrainScope Company Inc) for the assessment of traumatic brain injury (TBI). The mobile device combines EEG, proprietary algorithms, machine learning, and smartphone technology.

The new multisite study, which included 720 adult patients who came to emergency departments (EDs) with a closed head injury, showed 92% to 97% sensitivity for a TBI with the presence of intracranial blood and 93% to 98% sensitivity for predicting traumatic hematomas.

"We were surprised that the predictability improved substantially

between our prior study, which had a sensitivity of around 88% to 90%, and this one," lead author, Daniel Hanley, MD, director of the Brain Injury Outcomes Program at Johns Hopkins University School of Medicine, Baltimore, Maryland, told *Medscape Medical News*.

"And we were pleased to see that the changes that were made in the instrument really improved it," added Dr Hanley. "I think the take-away from this study is that quantitative tools to help us evaluate mild traumatic brain injury are now a reality."

The findings were [published online](#) in *Academic Emergency Medicine*.

### "Opens Up Possibilities"

**The investigators note that approximately 2.5 million patients come to EDs in the United States with suspected head injuries each year. While most undergo computed tomography (CT), more than 90% of these scans do not show any structural injury to the brain, they write.**

"Before our study, there was no objective, quantitative measures of mild head injury other than imaging," said Dr Hanley in a release. But the new device "opens up the possibility of diagnosing head injury in a very early and precise way."





## Greece – Can you recognize this tree?

18.04.2010



Read answer at the end of this chapter





## CDC deadly pathogen labs could be safer, OIG report finds: 7 things to know

Source: <http://www.beckershospitalreview.com/quality/cdc-deadly-pathogen-labs-could-be-safer-oig-report-finds-7-things-to-know.html>

May 26 – The CDC can do more to improve safety oversight in its labs that handle deadly pathogens, according to a [review](#) conducted by the HHS Office of the Inspector General.

The review comes after several reported mishaps at the CDC in recent years. In June 2016, CDC officials reported [34 incidents](#) that were not disclosed to congressional investigators in which bioterrorism pathogens were mishandled. In 2014, a CDC lab technician was accidentally [exposed](#) to live Ebola virus.

**Here are seven things to know about the most recent OIG report.**

1. The OIG report is the first of a two-part review of the CDC's oversight of the Division of Select Agents and Toxins labs. These labs house extremely deadly pathogens like Ebola and plague. They are also home to anthrax and the toxins that cause [botulism](#) and ricin poisoning, according to [USA Today](#).
2. While the CDC met its goal of performing inspections at each DSAT lab once from 2013 through 2015, the agency fell short of meeting its goal to ensure 30 percent of lab inspections were unannounced in 2013 and 2014. Surprise lab inspections are more likely to encounter violations.
3. Over the three years, CDC inspectors identified 8,111 instances of potential noncompliance during 500 inspections across the DSAT entities. More than 60 percent of these observations were related to biosafety and security.
4. Approximately 341 "theft, loss and release events" were reported across the 275 DSAT entities from 2013 through 2015. The severity of these incidents varied widely, ranging from needle sticks to ruptures in wearable protective equipment. One such incident resulted in an illness.
5. The review found 73 percent of the labs did not report a single theft, loss and release event. Officials with the CDC expressed concern that some labs may be underreporting such events, according to the OIG review.
6. "We identified vulnerabilities of oversight that could pose a risk to public safety," said Dwayne Grant, a regional inspector general with HHS, according to [USA Today](#). "We suggested adding guidance and training for biosafety and security, having unannounced inspections and looking for those theft, loss and release incidents and the labs that had zero."
7. Former South Dakota Sen. Tom Daschle, a Democrat and member of the Blue Ribbon Study Panel on Biodefense, told [USA Today](#) the work done in these CDC labs is important for both national security and public health and expressed concern regarding the Trump administration's proposed [CDC budget cuts](#). "It's not just bioterrorism or global pandemic, but mishaps of our own making, so these lab safety and security issues are crucial," said Mr. Daschle. "And the proposed cuts to the CDC are troubling — that's only going to exacerbate this problem dramatically."

►► To read the OIG's full report, [click here](#).

## Sensors throughout Austin monitoring for bioterrorism agents

Source: <http://kxan.com/2017/05/31/sensors-throughout-austin-monitoring-for-bioterrorism-agents/>

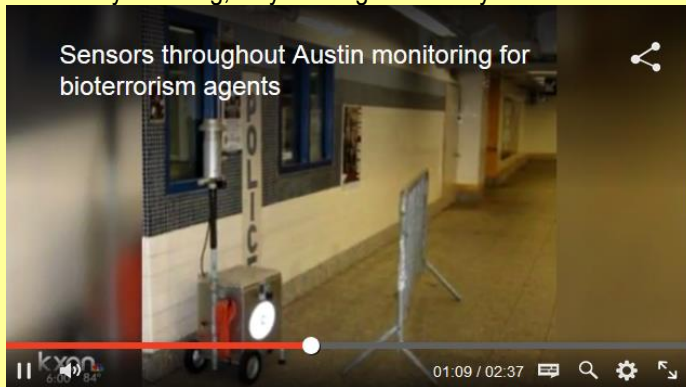
May 31 – Bioterrorism. It's a threat that many people don't think about, yet is ever present on the minds of health officials and the Department of Homeland Security.

**In 2003, after the anthrax scare at federal buildings, BioWatch was formed.** BioWatch is an early warning system that is designed to detect the release of bioterrorism agents. Special sensors are strategically placed in selected cities, such as Austin, to monitor the air.

Dr. Philip Huang with Austin Public Health is the local chair of the BioWatch Program. He says the sensors work like a vacuum sucking in air samples with special filters. The samples are tested every day at a secret lab in Austin.



"It is always working," says Huang. "We always have staff that are collecting these daily. **This is a system we operate to monitor the air 7 days a week, 365 days a year.**



Being prepared is half the battle.

"In the case of a biological agent, there are no outstanding signs or symptoms an event has occurred," says Josh Davies, the director of Emergency Services in Travis County. "So it takes longer to sense the presence in the environment. That's why a system like Biowatch is



so critical."

If the system does detect something, there is an action plan that includes local emergency officials as well as federal officials.

"We have other preparation activities where going through those exercises of what would we do to get every person in our community within 48 hours life saving antibiotics," says Huang.

[According to a 2014 report](#) from the Texas Department of State Health Services, the BioWatch Program tested everything from bacillus anthracis (anthrax) to ricin.

## Is Gotham Ready for Bioterror?

By Tevi Troy

Source: <https://www.city-journal.org/html/gotham-ready-bioterror-15129.html>

Savage terror attacks in recent years have killed thousands of people in the United States, Western Europe, Asia, and the Middle East. The increasingly brazen acts, while violent and tragic, have been limited in scope because of the terrorists' dependence on conventional weapons—firearms, vehicles, and homemade bombs. After each incident, a familiar sequence of responses ensues: politicians call for resolve; civil authorities and residents work to clean up the damaged area; medical personnel give aid to the victims; shopkeepers and merchants reopen. And almost everyone outside those directly affected moves on, hoping that terror won't call their number in the future. Getting on with life makes sense, of course, but complacency about terrorism looms





as a serious problem in free societies—especially since future terrorist threats hold the potential to shake the foundations of our society. The overwhelming evidence—from Osama bin Laden’s hard drive to incessant ISIS tweets—is that our jihadist enemies are determined to break through conventional limitations on death-dealing and do us even more grievous harm.

Of all the types of unconventional threats we face, bioterror may be the most worrisome. The danger is especially pressing for high-visibility areas such as Washington and, especially, New York. Gotham’s centrality as a cultural and financial center, along with its size and symbolism, makes it a more desirable target for jihadists than any other city. According to a Heritage Foundation breakdown of 74 failed terrorist plots against the United States between 9/11 and 2015, 16, or 22 percent, targeted New York, more than any other U.S. city—one reason that New York felt the need to create its own antiterror unit. (Another reason: city officials didn’t trust federal law enforcement and intelligence entities to give the NYPD actionable intelligence on a timely basis.)

Biological attacks are disease outbreaks on steroids, requiring a speed and scope of response much greater than typically needed for natural infectious-disease events—or conventional terror. Responding to bioterror in New York would present particularly significant challenges because of the city’s size, population density, and transportation issues.

Bioterror is widely seen as the stuff of movies and spy novels, but history shows that it’s all-too possible—and that law enforcement is ill equipped to prevent or even to prosecute it. Thus far, America has seen few genuine bioterror incidents (and none that matches the dark plots in Tom Clancy novels). Yet even these rare and not terribly sophisticated attacks have made an impact.

The Chicago Tylenol poisonings of 1982, for example, used cyanide, not a biological agent, but still killed seven people, panicked a nation, resulted in 32 million bottles of Tylenol getting pulled from the shelves, and changed product-safety packaging forever. In 1984, members of the Buddhist Rajneeshee cult spread salmonella out of plastic bags at restaurants in The Dalles, Oregon, east of Portland. The cult wanted to influence local elections and hoped that poisoning non-cult members would improve their electoral prospects. The poisonings sickened about 750 people and hospitalized 45. Fortunately, none died. The 2001 anthrax mailings killed five, injured members of the media, shut down the Capitol, threw the U.S. postal service into turmoil, and sent Americans looking for Cipro prescriptions in anticipation of the next dispersal. The Tylenol villain was never identified; the anthrax culprit was also never definitively identified, despite what Kelly McKinney, former deputy commissioner at the New York City Office of Emergency Management, called “one of the largest and most complex investigations in the history of law enforcement.” And in the Oregon cult example, federal officials caught the perpetrators only after they admitted what they had done. As these examples make clear, it is exceedingly hard to prevent or detect bioterror, let alone catch the perpetrator.

Another fearsome aspect to bioterror is the massive damage that it can potentially cause. Dark Winter, a 2001 simulation exercise by the federal government, gamed out what would happen in a smallpox outbreak for which the nation was unprepared. The exercise used actual U.S. vaccine stockpile figures to determine its parameters; officials had enough vaccine for only 5 percent of the U.S. population, and 1 million Americans “died” in just 68 days. In 2009, a National Security Council assessment put potential deaths from an anthrax attack in the “hundreds of thousands,” and the economic cost at more than \$1 trillion.

Experts worry that such scenarios have become increasingly more plausible. As the shock of terror wanes from its awful regularity, terrorists may feel the need to intensify the fear that they generate. “At some point, these methods will no longer be as novel or effective in sowing fear as they have been,” Columbia’s Stephen Morse told me, “fueling terrorists’ temptation to overcome the technical and perceptual barriers and move to more dramatic means.” Similarly, former White House biodefense aide Robert Kadlec notes: “While terrorists have not used biological agents in terrorist attacks yet, the trends indicate more terrorist groups are interested in conducting such attacks.”

Terrorists’ development of weapons is a much scarier concern than their acquiring of weapons. “When we talk about terrorists’ acquiring a nuclear weapon,” says former Navy secretary Richard Danzig, “we’re talking about just that—they’re acquiring a weapon. With biological weapons, we’re talking about acquiring the ability to produce weapons.” Once that



ability exists, Danzig says, “You really have to think about biology as potentially the subject of a campaign, where somebody keeps attacking, rather than a one-shot incident.” Morse compares bioweapons knowledge to learning how to assemble improvised explosive devices (IEDs): “Once a few well-connected people learn how, they can teach others.”

Developing the capability is difficult but far from impossible. As former Defense Advanced Research Projects Agency (DARPA) director Brett Giroir told the *New York Times*, “A person at a graduate-school level has all the tools and technologies to implement a sophisticated program to create a bioweapon.” New technologies are making the terrorists’ job easier. According to Kelly McKinney, while “the technical requirements to develop and disseminate a biological agent are high . . . certain disruptive technologies are making it easier for the bad guys. We are hearing that in the not too distant future, these agents and devices could be brought together in a suburban basement.”

We cannot know the true impact of a massive bioterror event, but the evidence suggests that the United States is not yet ready for one. Former senator Joseph Lieberman and former Homeland Security secretary Tom Ridge cochaired a recent Blue Ribbon Panel on biodefense on which I participated. The panel concluded: “The United States is underprepared for biological threats. Nation states and unaffiliated terrorists (via biological terrorism) and nature itself (via emerging and reemerging infectious diseases) threaten us. While biological events may be inevitable, their level of impact on our country is not.”

According to Stanford’s Lawrence Wein, a successful anthrax attack in New York could cost 100,000 lives, with full decontamination taking more than 300 years. As Judith Miller wrote in *City Journal* nearly a decade ago, a major anthrax incident would test New York severely. (See “[Bioterrorism’s Deadly Math](#),” Autumn 2008.) Miller found that New York’s distribution, transportation, and decontamination capabilities were all inadequate for bioterror. That other cities are similarly unprepared should be of little comfort, given New York’s prominence as a target.

Thankfully, New York has made major progress over the last decade, with heightened awareness and extensive planning and training programs in place—as well as its own biological-detection capabilities. New York’s Countermeasures Response Unit Office has built an extensive infrastructure, including “points of distribution (POD) sites, trained management and staff, materials and equipment, and supporting information-management systems,” McKinney says. Team members believed that they could “provide antibiotics to the entire population of New York City within 72 hours,” he observes, and large-scale training exercises seem to bear out this confidence.

New York recently tested its vulnerable subways as part of its preparatory efforts. In the spring of 2016, the city worked with the Department of Homeland Security to release an innocuous gas in the subways—on the Number 4, 5, and 6 lines—to measure its potential effects on airflow. Bob Ingram of the New York Fire Department’s Center for Terrorism and Disaster Preparedness said that the test was “extremely beneficial. We can all think about how this behavior is going to be, but this test will hopefully have enough data to back it up with science.”

And it’s not all tests: New York has seen its share of real-world disease outbreaks over the last decade, including inhalation anthrax in 2006, multiple hepatitis A exposures in 2008 and 2013, the H1N1 “swine flu” of 2009, Ebola in 2014, Legionnaires’ disease in 2015, and Zika virus in 2016. None of these approached the scale of a massive bio-attack, but each helped refine the Department of Health and Mental Hygiene’s capabilities. New York City has “planned, trained, and exercised in a regular fashion that, quite frankly, other cities have not,” says Kadlec, including being perhaps the only jurisdiction “to conduct a no-notice exercise.” With relentless focus and hard work, the city has made considerable strides in readiness.

Despite all of New York’s good work, serious vulnerabilities remain. On the prevention front, for example, environmental screening for airborne pathogens is a key form of detection—but particularly tough in New York, with its more than 240 skyscrapers, more than double that of any other U.S. city. (Chicago is the only other American city with more than 100.) Each one of those 240-plus skyscrapers is its own bioterror target, with vulnerable ventilation systems that could be used to spread a biological agent to thousands of inhabitants. Skyscrapers are more promising targets for bioterrorists than an outdoor environment; a closed-ventilation system avoids the vagaries of weather effects and ultraviolet degradation, maintaining full potency of the biological





agent. Building managers are aware of the vulnerabilities, and most have security in place, but it's easy to imagine a breach.

The sheer size of New York City is another hurdle. With five boroughs, 8.5 million people, and more than 300 square miles, even the city's large and relatively well-prepared force of first responders has a lot of ground to cover. And in contrast to 9/11, bioterror would likely be spread out across the city, with multiple points of convergence. Navigating New York City traffic to get to the affected areas would be daunting. Further, the subways, which are vital to maintaining a manageable traffic flow, are notoriously hard to protect. Tests of biological-agent detection in American subways such as the one conducted in spring 2016 are helpful, but they have high failure rates. And government testing often cannot detect pathogens unless they are at stratospheric levels—well beyond the level necessary to be fatal.

Another form of detection comes from doctors and other health professionals. If hospitals detect unusual symptoms, especially multiple occurrences of specific symptoms, they notify the Centers for Disease Control. New York has 62 hospitals, including at least two where translators communicate in 150 languages. Health professionals in such a large city with a sizable transient population and a constant influx of visitors may be slower to pick up on an unusual disease vector. New York, recognizing its potential vulnerability, has put into place more active monitoring to detect unusual disease patterns. The New York Department of Health and Mental Hygiene uses what's known as a "syndromic surveillance system" to monitor unusual or alarming patterns that could emerge from emergency-room activity, first-responder calls, and over-the-counter medication sales. But the task remains formidable.

The federal agencies in charge are highly bureaucratized and not always nimble in response. McKinney worries about the sizable gap between the city's preparedness and that of state and federal officials, who, having done much less, "will bring an enormous amount of chaos and confusion with them." New York will have to do more to bring about cooperation with entities that may be less focused on bioterror. The city must demand more cooperation and focus from the state and localities and work to ensure that its preparedness exercises include state and federal officials.

One intangible factor: civic culture and the character of residents. New Yorkers pride themselves on toughness—sometimes to the irritation of the rest of the country—and they have shown a willingness to soldier on through the most unusual circumstances, as they do through other hazards of daily life in the Big Apple. If the famous New Yorker resilience could help against a real pathogen, the city would have little to worry about.

"Unlabeled, secret stockpile warehouses are strategically placed at 12 locations throughout the country." Some of the issues regarding New York's size and complexity are compounded when it comes to responding to bioterror. The foundation of U.S. bioterror-combating strategy is based on the accumulation of countermeasures in the Strategic National Stockpile (SNS), which would be rapidly distributed when needed.

The SNS, containing about \$7 billion worth of countermeasures, costs the U.S. about half a billion annually to develop and maintain. The materials include vaccines, responsive agents such as antivirals, and tools for first responders, such as respirators, as well as agents to respond to radiation and chemical attacks. The exact nature of the products in the SNS is classified, for good reason. "If everybody knows exactly what we have, then you know exactly what you can do to us that we can't fix," says SNS director Greg Burel. "And we just don't want that to happen." The SNS locations themselves look like large, nondescript warehouses. "If you envision, say, a Walmart Supercenter and stick two of those side by side and take out all the drop ceiling, that's about the same kind of space that we would occupy in one of these storage locations," says Burel.

For the most part, the stockpile has what experts think it needs: for example, 300 million treatment courses for smallpox, enough for every citizen, and enough anthrax vaccine to handle a three-city incident. In fact, the U.S. hired a consulting firm, Gryphon Scientific, to evaluate whether it was stockpiling the right products; Gryphon concluded that it was. According to the firm's Rocco Casagrande, "one thing we can say is that across the variety of threats that we examined, the Strategic National Stockpile has the adequate amount of materials in it and by and large the right type of thing." A stockpile is useful only if it can get materials where they need to be in a crisis. The SNS is very effective at enabling government officials to send needed countermeasures anywhere



in the United States on short notice, thereby reducing the danger of a bio-strike spreading out of control. Unlabeled, secret stockpile warehouses are strategically placed at 12 locations throughout the country to ensure the efficient delivery of supplies. The goal: to be capable of getting crucial countermeasures to any location in the country within 24 hours.

Then the materials have to be distributed effectively. Currently, the primary method for dispensing SNS supplies is by the Points of Distribution (POD) system. Other possible distribution methods exist, such as using the postal service or encouraging the purchase of home med kits. New York's planners assume, though, that postal workers would not show up for distribution in a bioterror scenario. Even if they did, the city acknowledges that it lacks the capability to keep them safe. As for home med kits, paternalistically minded public-health officials tend to be skeptical of giving individuals autonomy over the purchase of countermeasures for their own consumption. It is thus likely that a POD would be the primary distribution method.

In the POD approach, the drugs are delivered to a central location (schools and other public spaces), and people must access them on their own. This method raises significant concerns. First, it discriminates against those who lack the means to transport themselves to the pickup spot. Second, the POD method is also a "blind" distribution: aiming for fairness, it does not necessarily target those who need the countermeasures the most, such as members of a particularly high-risk population. The government does draw up lists of primary recipients—including first responders, vulnerable populations, the military, and some key government officials—but POD-based distribution does not lend itself easily to that kind of prioritization.



The danger of insufficient supplies at a distribution center during a tense period is potentially combustible and could lead to unrest. Third, some countermeasures may require a qualified health professional to administer, which complicates the question of staffing the distribution centers.

The 2001 anthrax mailings killed five and caused a national panic. (STEVE MITCHELL/AP PHOTO)

In recent years, New York has engaged in exercises to ensure that public-health officials are ready for a possible citywide

distribution of emergency countermeasures. **In a surprise citywide bioterror drill in August 2014, 1,500 city employees from 13 agencies set up 30 distribution sites across the city in less than eight hours. Overall, New York's health department has trained more than 3,000 employees in the establishment and operation of PODs.** Recognizing the transportation difficulties that would emerge, city planners have wisely assigned staffers to distribution locations near their own homes. The test persuaded the CDC to take the groundbreaking step of forward-deploying assets from the SNS into New York's own stockpiling warehouse in order to avoid an additional step in distribution.

New York's relevant experience also offers some encouragement. **In 2009, for example, during the H1N1 influenza, New York administered vaccines to 195,000 schoolchildren at 1,200 New York schools, as well as 50,000 additional individuals at 29 locations across the city.** Going further back, in 1947, New York's Department of Health vaccinated more than 6 million New Yorkers during a minor smallpox outbreak. The vaccinations took place at 179 clinics and benefited from the cooperation of key groups in the city, including doctors, labor unions, and local businesses. Of course, New York's population has increased by 2.5 million people since then—more than the total population of all but two other U.S. cities: Los Angeles and Chicago.

With a population the size of New York's, telling inhabitants what to do and where to go won't be easy. With all the progress in new communications technologies of recent years, many still fail in times of crisis. After 9/11, for example, telephone circuits were overloaded. New





York has faced such obstacles before. In 1999, the city set up a hotline for residents worried about the outbreak of West Nile virus. The network responded to more than 150,000 queries over seven weeks. In the case of bioterror, officials would need to reach out to many more individuals over a much shorter period of time.

Cross-community cooperation—that is, how well people will respond, work together, and obey authorities—is also crucial. The 1965 New York City blackout, which affected 30 million people across the Northeast, was recalled nostalgically as a pleasant hiccup by city residents. People got along splendidly (arrest totals that day were below average), the power was restored in about 13 hours, and some later tittered that the hospitals saw a slight baby boom nine months later. Just 12 years later, though, on July 13, 1977, three separate lightning bolts struck and destroyed three power lines in Westchester County, New York, leading to a very different blackout experience, with more than 1,600 stores looted or damaged, more than 1,000 fires, and more than 3,700 people arrested. The mayhem caused over \$300 million in damages. Part of the reason for the contrast was a breakdown of social norms in the intervening years. New York in 1977 was a very different place from what it had been in 1965—more crime-ridden, more volatile, and struggling to overcome bankruptcy.

While New York in 2017 is dramatically safer than it was in 1977, it is still a far different city from what it was in 1965—or in 1947. Bioterror response plans count on the cooperation of a pliant populace to show up at PODs or vaccination clinics. It's not at all clear that New Yorkers today could be classified as pliant. The problems we have seen recently in terms of the tensions between the police and Mayor Bill de Blasio, as well as ongoing protests from groups such as Black Lives Matter, point to a worrisome level of distrust between authorities and some of the populace.

Some authorities even seem conflicted themselves, seeing emergency situations as periods in which police forces accrete dangerous powers. Less than a year after the 2001 anthrax episode, the New York Civil Liberties Union's Robert Perry testified about the Model Emergency State Health Powers Act (MESHPA), a draft bill that would give states additional powers in the case of a public-health emergency. Perry warned that "government, acting in the name of public safety, has demonstrated bad judgment, and worse, using state police powers in a discriminatory manner to suspend freedoms based upon race or national origin." He saw the bill's definition of a public-health emergency as "overly broad" and warned that it "fails to clarify sufficiently the circumstances that would justify the declaration of such an emergency." On the right, Phyllis Schlafly's Eagle Forum denounced MESHPA as a "Totalitarian bill on health pending in your state!" MESHPA is hardly faultless legislation; but the pushback against it from the Right and the Left illustrated how government actions in a true public-health emergency could face skepticism, lawsuits, and other actions that may impede government's ability to respond.

Where does that leave us? Looking to New York's considerable assets—its unmatched police and counterterror forces, its centrality to Homeland Security planning, its resources, and its people—there are reasons to believe that the city would prove equal to bioterror, should it happen. Yet given the existential crisis that such an attack would present, New York must remain ever vigilant to keep its residents safe.

*Tevi Troy is a presidential historian, former White House aide, and former deputy secretary of Health and Human Services. His latest book is [Shall We Wake the President? Two Centuries of Disaster Management from the Oval Office](#).*



## Highly poisonous plant discovered in Ghent and on the Ruppel

Source: <http://deredactie.be/cm/vrtnieuws.english/News/1.2992556>

May 30 – **Water dropwort**, a highly poisonous plant has been found in the port of Ghent and in marshes on the River Ruppel. Annelies Jacobs of the environmental organisation Natuurpunt: "Water dropwort belongs to the Apiaceae family and is easily confused with wild carrots and celery. Do well not to add the stems of this plant to a salad or it could be your family's last!"





"The roots are often taken for parsnips, while the stem resembles that of celery. Touching the plant isn't



dangerous but eating parts is! The entire plant is poisonous, but the poison is at its most concentrated in the roots."

## The Department of Defense Chemical and Biological Defense: 2017 Annual Report to Congress

Source: <https://fas.org/irp/threat/cbw/cbd-2017.pdf>

June 03 – The U.S. Department of Defense (DoD) Chemical and Biological Defense Program Enterprise develops and acquires capabilities that allow the Joint Force to deter, prevent, protect against, mitigate, respond to, and recover from chemical, biological, and radiological (CBR) threats and effects within a layered and integrated defense. This report assesses DoD's overall readiness to fight and win in a CB warfare environment.





## Personal Protective Equipment for Use in a Filovirus Disease Outbreak

Source: <http://apps.who.int/iris/bitstream/10665/251426/1/9789241549721-eng.pdf?ua=1>

May 30 – Filoviruses (Ebola and Marburg) are highly contagious pathogens, which cause severe and often fatal illness in humans. Health workers are at increased risk of infection because of their close and prolonged contact with severely ill patients with a high viral load. The risk of transmission of Ebola virus can be reduced if appropriate measures are taken, including the use of personal protective equipment (PPE).



## For the first time, a new strain of bird flu was transmitted human-to-human. This is highly unusual—and could be the first sign of new global pandemic.

Source: <https://www.undispatch.com/first-time-new-strain-bird-flu-transmitted-human-human-highly-unusual-first-sign-new-global-pandemic>

May 26 – In 1918, the world was rocked by pandemic flu. A virulent strain of influenza, H1N1 influenza swept across the whole planet. A fifth of the world's population was infected, and 20-40 million people died. It killed more people than World War One.

We haven't seen pandemic influenza on that scale since then, but it's been because of luck, not skill. Our globalized world is actually at a greater risk for pandemic than we were in 1918. Thanks to air travel, people travel farther, faster, and more often than they did a century ago. In just the last decade, we've seen Ebola cross borders, Zika infect a new continent, and a 2009 H1N1 pandemic that had a thankfully, inexplicably, low mortality rate.

So far, however, we haven't seen a truly devastating flu epidemic in humans. Mild forms of the flu have been very contagious, and do routinely cross borders and infect large numbers of people, but they're mild. People get unpleasantly sick, and the very young and very old may die, but the mortality rates are not unusually high. At the same time, we've experience some very deadly forms of the flu. Avian influenza, known as H7N9, kills 40% of people who are infected. That's a mortality rate to fear – H1N1 had a mortality rate of 2-5% in 1918. However, avian influenza is not contagious from person to person – it spreads bird to person.

The pandemic of 1918 was both highly contagious and highly deadly. We haven't seen that in the last hundred-something years.

Which brings us to last week, when a Chinese medical journal reported a human-to-human transmission of H7N9. H7N9, as mentioned, has a mortality rate of about 40%. Its impact on humans has been mitigated by the fact that it only spreads from birds. Family members can care for each other without fear.

Last week, though, China reported a case of H7N9 that appears to have spread person to person, not bird to person. The infected patient had no contact with birds or live bird markets, and he had no underlying medical condition. He was a healthy 62-year-old man, who helped a family member hospitalized with H7N9 to use the bathroom. Genetic analysis of the infecting virus indicates that he was infected with the same strain of virus that infected his family member.

This could be a sign that H7N9 is evolving into a virus that spreads among people. A highly contagious virus that has a 40% mortality rate. By way of comparison, Ebola is a highly contagious virus with a 50% mortality rate that spreads among people. There is serious potential here for global catastrophe.

It's not doomsday yet. Helping someone use the toilet is a very intimate act; that means a contagious virus, but not necessarily highly contagious. Spreading in that kind of close quarters does not mean it will spread in schools or markets. And according to the epidemiological report, "There were a lot of family members in the ward, but he was



the only one who was in close contact with the index case, and he was the only one confirmed H7N9." So even being in the same room with an infected person does not necessarily mean infection.

The WHO has called for increased surveillance efforts for H7N9, but it isn't quite ringing the alarm. While these human cases are a sign of an evolving virus, it hasn't so far evolved into the danger zone. Their analysis [states](#) that "current epidemiological and virologic evidence [Tweet](#)

suggests that this virus has not acquired the ability of sustained transmission among humans. Therefore the likelihood of further community level spread is considered low."

The US Centers for Disease Control and Prevention (CDC) [is less certain](#). According to acting director Anne Schuchat, "This one hasn't (evolved) yet. But that's why we're keeping our eye on it. Because it has the capacity to evolve and change."

## New developments in the fight against antimicrobial resistance

Source: <http://crisis-response.com/news/news.php?article=1426>



June 06 – Scientists have discovered a way to structurally modify vancomycin to make an already-powerful version of the antibiotic even more potent, an advance that could eliminate the threat of antibiotic-resistant infections for years to come. Dale Boger, co-chair of TSRI's Department of Chemistry, who led the research at the at The Scripps Research Institute (TSRI), said: "Doctors could use this modified form of vancomycin without fear of resistance emerging."

The original form of vancomycin, which has been prescribed for 60 years, is an ideal starting place for developing better antibiotics as bacteria are only now developing resistance to it. This suggests bacteria already have a hard time overcoming vancomycin's original mechanism of action, which works by disrupting how bacteria form cell walls.

Boger called vancomycin "magical" for its proven strength against infections, and previous studies by Boger and his colleagues at TSRI had shown that it is possible to add two modifications to vancomycin to make it even more potent. "With these modifications, you need less of the drug to have the same effect," Boger said.

The new study shows that scientists can make a third modification – which interferes with a bacterium's cell wall in a new way – with promising results. **Combined with the previous modifications, this alteration gives vancomycin a 1,000-fold increase in activity, meaning doctors would need to use less of it to fight infection.**

The discovery makes this version of **vancomycin the first antibiotic to have three independent mechanisms of action**. "This increases the durability of this antibiotic," said

Boger. "Organisms just can't simultaneously work to find a way around three independent mechanisms of action. Even if they found a solution to one of those, the organisms would still be killed by the other two."

Meanwhile, Yale University scientists have developed a novel chemical process that may lead to the creation of a new class of antibiotics. "This is one way to focus our talents as synthetic chemists in a direction that can immediately help patients," said Seth Herzon, a chemistry professor at Yale and member of the Yale Cancer Center.

The new process makes it possible to create molecules related to the natural product **pleuromutilin** from simple commercial chemicals in the laboratory. Pleuromutilin is produced by a fungus and was found to have useful antibacterial properties in the early 1950s. Since then, scientists in academia and the pharmaceutical industry have created thousands of pleuromutilin derivatives by a process known as semisynthesis, which involves chemically modifying pleuromutilin itself. However, a large proportion of these derivatives only vary at a single position in the molecule. A practical





full synthesis, which would make a wealth of additional antibiotics possible, has remained elusive.

"We worked on this project for a few years when I started at Yale, but didn't record much success," Herzon said. "The pharmaceutical industry has historically been the driving force behind antibiotics development. However, antibiotics are essentially at the bottom of the list in terms of investment return. Consequently, most major pharmaceuticals have walked away from this area."

This has led to a dearth of new drugs to combat resistance, Herzon added. "As the anti-bacterial

crisis kept getting worse, we decided we had to pick this back up and conceive an entirely different approach," he said.

"Making pleuromutilin is great, but we are more interested in the non-natural compounds we can access through synthesis. We're continuing to refine the synthesis, and the sky is the limit now, in terms of the modifications we can make," Herzon explained. "We're going to start testing compounds immediately. If all goes well we ultimately hope to move our compounds into clinical trials to treat drug-resistant infections."

## Joint Criminal and Epidemiological Investigations Handbook-2016 International Edition

Source: [https://www.cdc.gov/phlp/docs/crimepihandbook2016.pdf?utm\\_content=buffer64fba&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer](https://www.cdc.gov/phlp/docs/crimepihandbook2016.pdf?utm_content=buffer64fba&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer)

June 10 – This handbook was developed to facilitate the use of resources and maximize communication and interaction among law enforcement and public health. This effort minimizes potential barriers during a biological threat response.



## Yersinia pestis, Biological Warfare, and Bioterrorism

By Raymond A. Zilinskas

CBW Magazine; January-June 2017 (Vol 10/1)

Source: [http://www.idsa.in/cbwmagazine/yersinia-pestis-biological-warfare-and-bioterrorism#footnote2\\_geaza8z](http://www.idsa.in/cbwmagazine/yersinia-pestis-biological-warfare-and-bioterrorism#footnote2_geaza8z)

I teach a graduate seminar course at the Middlebury Institute of International Studies at Monterey titled "Chemical and Biological Weapons and Arms Control." Last semester a student asked me, "Since the Japanese and Soviet biological warfare programs weaponized *Yersinia pestis*, is it possible that a terrorist group would follow their example and attempt to develop a biological weapon whose payload was *Y. pestis* bacteria"? I did not have an answer to the question, so I decided to conduct research whose objective was to prove or disprove the hypothesis: "It is likely that in the not too distant future, a terrorist group will utilize *Y. pestis* in an attack against a human population."

### Introduction

In the historic literature there are many accounts of armies and armed bands having utilized *Y. pestis* for biological warfare (BW) purposes. The methods for waging BW were primitive, such as catapulting plague victims who were sick or had recently died and thus were infested by human fleas (*Pulex irritans*) that, in turn, carried *Yersinia pestis* (*Y. pestis*)<sup>1</sup> into the encampments of enemies.<sup>2</sup> After the plague victim's body landed within the targeted area, the fleas would escape its lifeless host and seek living animals for their meals of blood. When successful, the flea's bite would convey *Y. pestis* cells into the new host. However, no modern military has used such methods for disseminating *Y. pestis* among its enemies, nor are they likely to be so used in the future. For this reason, I chose not to delve into ancient military history but limit my consideration to two BW methods that have been used in the 20th century and, possibly, might again be used in the future. The first method is to disperse *Y. pestis* via a vector, for example human fleas such as *P. irritans*, amidst a targeted population. The second method involves dispersing *Y. pestis* cells as an aerosol onto the enemy's troop formations or civilian populations.



It must be made clear that when considering BW programs, their main objectives are to conduct research and development (R&D) for offensive purposes; i.e., to develop and produce biological weapons such as spray systems, bombs, rockets, or missiles whose payloads consist of bacterial or viral pathogens. Offensive BW programs are forbidden by international law, mainly the 1972 Biological and Toxin Weapons Convention (BWC).<sup>3</sup>

Conversely, biodefense R&D is permitted under international law, including the BWC. The products of biodefense programs are vaccines, therapeutics, diagnostics, and detectors that are used by nations to defend their populations against attacks utilizing biological weapons and should prevention fail, to treat its victims quickly and correctly. Countries that in the past have acquired offensive BW programs also conducted defensive programs to defend their populations from the BW agents their military scientists produce and from agents possibly possessed by adversaries. Of course, today when emerging infectious diseases and biological terrorism are world-wide existential threats, there are numerous countries that support biosecurity programs whose main objectives are to protect their populations from endemic, introduced, and emerging diseases and by doing so, they also are better prepared to meet the lesser threats of both bioterrorism and BW.

Before describing and discussing national BW programs, I believe it is useful to provide some background. Accordingly, this article has seven sections. First, I describe the pathogen *Y. pestis* and the three forms of the disease it causes. The second section contains a short history of plague vaccines, while the third section contains an even shorter history of therapeutics. The fourth, fifth, and sixth sections address the historical BW programs of, respectively, Japan, the United States (U.S.), and the Union of Soviet Socialist Republics (USSR). Of these countries, Japan and the USSR chose to weaponize *Y. pestis* and use it to arm biological weapons,<sup>4</sup> while the U.S. decided not to weaponize *Y. pestis* but did investigate methods to defend against plague. In the seventh and last section I discuss reasons why *Y. pestis* currently is considered a dangerous threat agent by both military and civilian entities that are responsible for protecting their populations from infectious diseases and consider future developments that may result in weapons based on *Y. pestis* becoming elements of national or terrorist arsenals. By doing the last, the stated hypothesis is supported or refuted.

### **Yersinia pestis and Plague**

In nature, the pathogen named *Y. pestis* can cause any of three forms of plague depending on the route of infection – bubonic, pneumonic, or septicemic. The most common form of plague is bubonic plague, which humans most often contract after having been bitten by a flea infected with *Y. pestis*. After the pathogen enters the host's tissues, it is conveyed through the lymphatic system to lymph nodes where it replicates. The lymph nodes then become inflamed, rigid, and painful. When this occurs, the affected lymph nodes are visible as swellings that are called "bubos." In humans, bubos typically are most pronounced in armpits and groin. At advanced stages of the infection the bubos may burst, turning into suppurating open sores. Untreated victims of bubonic plague have a mortality rate between 60 and 80%. Pneumonic plague is much rarer than bubonic plague and more deadly. Unlike bubonic plague that is spread most often by infected fleas, pneumonic plague is spread by *Y. pestis* cells that are carried in aerosols emitted by coughing and sneezing persons who already are sick with plague. Untreated pneumonic plague has a mortality rate close to 100%. For the purpose of this article, readers should know that the largest known outbreak of pneumonic plague occurred during 1910-1911 in Manchuria, with the first cases being detected in Harbin.<sup>5</sup> The number of persons who died during this outbreak is estimated to have been between 40,000 and 60,000.<sup>6</sup>

Septicemic plague is when *Y. pestis* cells circulate systemically in a victim's blood. Both the bubonic and pneumonic plague can convert to the septicemic form and when this occurs, untreated victims have a mortality rate is close to 100%. Even if treated with antibiotics, patients afflicted with septicemic plague are most likely to die.

### **History of Plague Vaccines<sup>7</sup>**

In the late 1890s, Pasteur Institute scientist Waldemar Haffkine worked for some time to develop a useful plague vaccine. In 1897, he released for general usage a so-called killed





whole cell (KWC) vaccine.<sup>8</sup> The KWC vaccine was the main plague vaccine for most of the world for about 40 years and proved to be highly effective against bubonic plague but not against pneumonic plague. It is noteworthy that in 1947, the Department of Bacteriology at the Haffkine Institute, located in Mumbai, India, supplied 23.5 million ml of KWC plague vaccine, the highest production in the history of the Institute.<sup>9</sup> However, since a fairly high proportion of vaccine recipients suffered unpleasant side effects, in the 1940s an increasing number of health agencies prevailed on their governments to forbid the marketing of the KWC vaccine, especially so when more effective and safer live whole cell (LWC) vaccines became available. One exception was that the U.S. developed a KWC vaccine, which is discussed below.

A LWC vaccine was first developed in 1906 by P. Strong who tested it the Philippines. It did not prove effective, but a successful LWC vaccine was developed by L. Otten in 1934 using the *Y. pestis* Tjiwedej strain that had been recovered from a dead rat. It proved highly efficient in South Africa, protecting about 80% of those persons who received it.<sup>10</sup> However, although effective against bubonic plague, it did not protect against pneumonic plague. A more effective LWC vaccine consisting of the *Y. pestis* EV strain was developed by Pasteur Institute scientist G. Girard and colleagues in the mid 1930s.<sup>11</sup> In effect, various variants of the EV strain vaccine continue to be used in many countries of the world to this day, especially by countries that previously were part of the USSR (see below).

The U.S. began a large effort to develop a plague vaccine after it entered World War II and thus sent hundreds of thousands of soldiers into regions of the world where plague was common. The Cutter Laboratories in Berkeley, California, was able to improve on Haffkine's KWC vaccine derived from a virulent strain of *Y. pestis* and produced an effective vaccine named USP. Over the years, Cutter scientists continued to improve on the USP vaccine, with vaccine A being in use during 1942-1951, vaccine B during 1950-1968, and vaccine C during 1968-1998. There were no plague cases during World War II among American soldiers who had been vaccinated. This fine record continued during the Viet Nam conflict. In the 1960s, Viet Nam was the world's leading country in plague incidents, so the exposure of Americans to plague was much greater than in World

War II. All American soldiers received the UPS vaccine C before entering the country and by the time that the conflict ended, just eight soldiers contracted plague, which was a rate hundreds of times less than among the Vietnamese.<sup>12</sup> Production of the UPS vaccine ceased in 1998 and since then, no plague vaccine for human use exists in the U.S.

R&D that aimed to create a LWC vaccine began in April 1943 when the U.S. Navy Medical Research Unit No. 1 located in Berkeley, California, led by Albert P. Krueger, was given the task to "study the offensive possibilities and defenses against the organism of Asiatic plague."<sup>13</sup> By November 1944, the unit had made sufficient progress so that it was ready to attempt small scale pilot plant production of an avirulent strain of *Y. pestis* named A-1122. The largest reactor used for this purpose was 50 gallons (189 liters). The unit continued its work with *Y. pestis* into the 1970s, although in 1946 spun off some of it to the Department of Bacteriology, University of California at Berkeley (UCB).

In parallel with the investigations carried out by Krueger's team, another team led by K.F. Meyer at the George Williams Hooper Foundation, University of California San Francisco, sought to improve both the Haffkine KWC vaccine and the EV LWC vaccine. This work, which continued into the 1970s, was supported by the Commission on Immunization of the Armed Forces Epidemiological Board.<sup>14</sup>

USSR scientists began work to develop a plague vaccine in 1936, when the Scientific Research Institute of Epidemiology and Hygiene at Kirov procured the avirulent *Y. pestis* EV strain from the Pasteur Institute in Antananarivo, Madagascar. By 1941, a team led by M.M. Faybich had developed methodology for keeping high immunogenicity of their line of the EV strain at the initial level. The team developed a dry, live plague vaccine by using this line and methods for its large-scale production. This vaccine was called *Vaccinum pestosum vivum siccum*.<sup>15</sup> The Soviets claim to have produced and distributed 47 million doses of plague vaccine to Soviet armed forces during World War II. They also asserted that when the Red Army was preparing to invade Manchuria in August 1945, 8.5 million doses were manufactured for the specific purpose to vaccinate all soldiers in the Far East. Even though plague was endemic to this region, reportedly no Red Army soldier contracted plague on the Eastern front.<sup>16</sup> The researchers M.M. Faybich, I.A. Chalisov, and R.V. Karneev were



awarded the State Prize of the USSR in 1945 for having developed the dry plague vaccine.<sup>17</sup> A LWC EV vaccine continues to be used to this day in Russia and most of the USSR's former republics. The Stavropol Anti-plague Scientific Research Institute is the only producer in Russia of a LWC vaccine, which now is named EV NIEG.<sup>18</sup> Western countries have tended not to allow this vaccine to be used by their health providers because other vaccine strains derived from the EV76 line are known to cause a number of negative side effects.<sup>19</sup>

### Treating Plague

The German scientist C. Domagk discovered the first sulfa drug, Prontosil, in 1935, which proved to be somewhat effective in treating plague. However, effective treatment of plague only became possible in 1946, when streptomycin, the first antibiotic that proved to be highly efficient against plague became generally available. Although streptomycin remain the drug of choice to treat plague, it can be replaced by the modern antibiotics gentamicin and doxycycline. Whichever antibiotic is used, it must be administered very soon after a person has been infected in order for the antibiotic to be effective.<sup>20</sup>

### Japanese Weaponization of *Yersinia pestis*

In the mid-1930s, the Japanese military secretly established the Kwantung Army Epidemic Prevention and Water Supply Department, whose code name was Unit 731, which was staffed with BW specialists drawn from the imperial Japanese army. This unit was commanded by a military physician, major Shiro Ishii, who was particularly interested in plague.<sup>21, 22</sup> In 1936, Unit 731 moved from Japan and established its headquarters in the Pingfan district, which was located approximately 24 kilometers south-east of Manchuria's largest city, Harbin. When in 1940 the unit reached its full strength, it comprised of eight divisions that employed an estimated 3,000 persons. In addition to Unit 731, several other Japanese units deployed throughout occupied China were involved in developing biological weapons.<sup>23</sup> For example, Unit 100, headquartered near Hsinking, was established in 1936 and was led by veterinarian Yujiro Wakamatsu. Its responsibility was to develop weapons against animals. Yet another unit, Ei 1644, was established in 1939 under the cover name "Anti-epidemic Water Supply Unit" and headed by medical doctor Masuda Tomosada, was located in Nanking. Like Unit 731, it developed weapons against humans. After the USSR entered the war against Japan in August 1945, the Red Army quickly overran Manchuria and in the process captured ten of Unit 731's servicemen and two from Unit 100. The 12 were charged with developing, manufacturing and using "bacteriological weapons" and were tried for these war crimes in Khabarovsk city during December 25-30, 1949. The extensive trial record was published in English in 1950.<sup>24</sup> The servicemen confessed that Units 731's and 100's specific functions were to investigate the weapons utility of the pathogens that cause "plague, cholera, gas gangrene, anthrax, typhoid, and paratyphoid."<sup>25</sup> However, it is clear from their testimony that of the pathogens investigated by Unit 731, the highest priority was to weaponize *Bacillus anthracis* and *Y. pestis*. Accordingly, in this article I focus on *Y. pestis*.

The Japanese decided to concentrate on two methods for dispersing BW agents, one that used explosive force to disperse a formulation containing *Y. pestis* as an aerosol over targeted populations and a second type that depended on dispersing fleas infected with *Y. pestis* to cause bubonic plague in population centers. Of the two, more effort was spent on the second.

Unit 731's fermentation facility could produce 300 kg of *Y. pestis* cells in one production cycle. In parallel, the unit's entomologists developed methods for raising large numbers of fleas; they claimed to have been able to produce 40 million infected fleas per month, the weight of which was approximately 10 kg.

In 1947, a team of American investigators led by Herbert H. Fell, Chief of the Planning Pilot-Engineering Division at Fort Detrick, interviewed 24 former Unit 731 scientists and technicians. Team members learned that Unit 731 used captured prisoners of war and kidnapped Chinese citizens as subjects for laboratory and field experiments to determine infectious and lethal doses of *Y. pestis*. In the laboratory, pathogens were introduced into human subjects by direct injection, oral preparations, inhalation of aerosols, or bites by fleas carrying *Y. pestis*. The findings were as follows:





ID50 was 10-6 milligrams (mg) subcutaneously and 0.1 mg orally.<sup>26</sup> Respiration for 10 seconds of air containing 5 mg/meter<sup>3</sup> was infectious to 80% of exposed persons. The incubation period was normally 3-5 days and death occurred 3-7 days after onset of fever. In most cases of artificially induced plague that terminated fatally, the usual bubonic form became pneumonic three days before death and then was highly contagious.<sup>27</sup>

The Japanese military progressed from conducting such fatal human experimentations against prisoners in a laboratory setting to doing so as part of open air field trials. Human subjects were tied to stakes in open fields and exposed to pathogens in one of three ways. First, they were forced to inhale pathogens that were dispersed as aerosols by sprayers mounted on aircraft or land vehicles. Second, Type 50 Uji bombs whose payloads consisted of pathogens would be placed in the middle of a circle consisting of stakes onto which subjects were tied and an explosive force would disseminate the payloads as explained below. Third, specially adapted Uji bombs would have payloads constituted by fleas infected with *Y. pestis* that would be dispersed by a carefully measured explosive force created by a primacord over a group of tied-up subjects. Briefly, the findings from open field trials were as follows: "The spraying trials proved ...that this method was highly effective, both with subjects held within a room and also exposed to bacilli spread from aircraft at low altitudes. Of the subjects used in these trials, 50-100% became infected and the mortality was at least 60%."<sup>28</sup> However, the two types of bomb experiments gave different results: "The conclusion from all the [explosive] bomb trials was that plague bacilli were not a satisfactory B.W. weapon due to their instability but that it was much more practical to spread plague by means of fleas."<sup>29</sup>

The Type 50 Uji bomb weighed 25 kg and held 10 liters of payload. The nose cone contained an impact delay fuze and a bursting tube loaded with 500 grams of TNT (see Figure 1). In cases when the tail fuze and the primacord failed to function, the explosive train in the nose would detonate when the bomb impacted on the ground and thus would disperse its payload.<sup>30</sup>

Approximately 500 bombs of this model were manufactured in 1940 and 1941, and extensive field trials were conducted during the period 1940 to 1942 at Unit 731's proving ground near Anta, Manchuria. Bombs were tested by static explosion and drop tests from aircraft. For the initial tests, bombs were filled with a dye solution and suspensions of nonpathogenic organisms. Later bomb trials were conducted using a suspension of *B. anthracis* spores as the payload. In drop tests with a wind velocity of 5 meters per second and bombs being detonated at an altitude of 200 to 300 meters, the payload would be dispersed over an area of 40-60 meters by 600-800 meters.

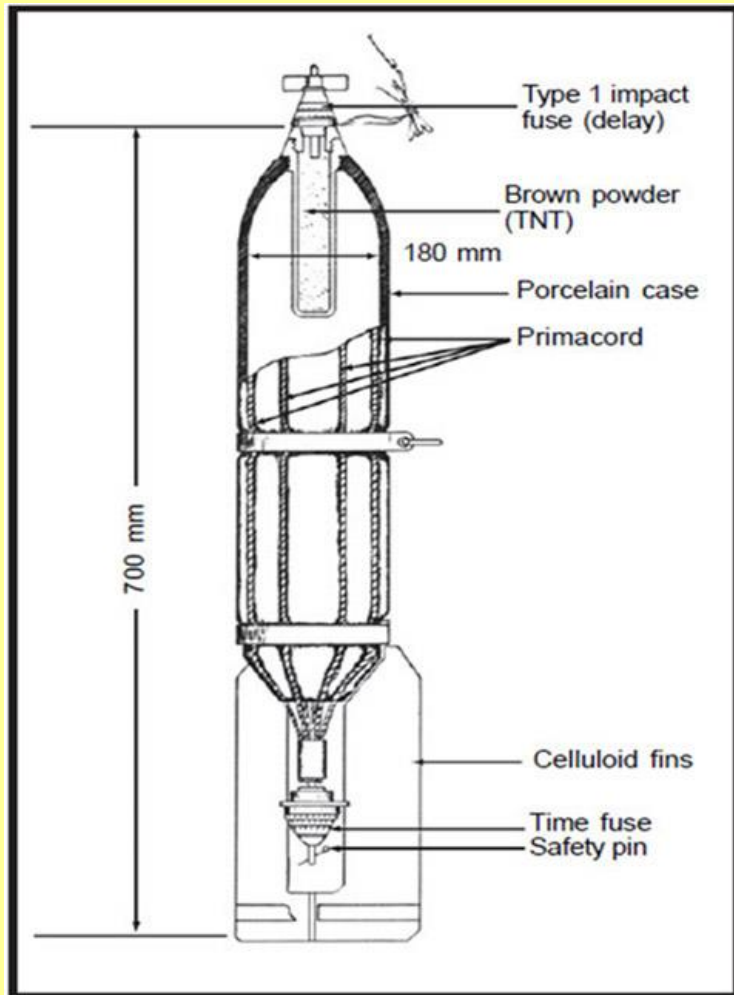
Some of the Type 50 Uji bombs were adapted to carry up to 30,000 fleas infected with *Y. pestis* as payload. The dispersal method for the explosive opening of the bomb had to be reworked so that it did not kill the fleas. The adapted bomb was wrapped with a 4-meter long primacord; a fuze would explode the primacord at an altitude of 200 to 300 meters, thus liberating the bomb's payload.<sup>31</sup> After many trials field trials at Anta, the dispersal method was perfected to the point that 80% of the fleas survived this dispersal method. The adapted Uji bombs probably were the most effective biological weapons developed and used by the Japanese in terms of being able to sicken and kill the largest number of targeted Chinese. There were two groups of victims of Japanese BW. The first group was constituted by persons that Unit 731 used as subjects in their inhumane laboratory experiments that involved infecting subjects with different pathogens and recording the results. Human subjects were also used in open field tests of candidate biological weapons in order to learn which of them were most effective. According to historical records, more than 3,000 Chinese anti-Japanese patriots, civilians, Soviet citizens, Mongolians and Koreans were used as human subjects and were inoculated with various pathogens by different methods, including passive oral infection, injection, bites by infected vectors, and exposure to aerosols created by exploding bombs.<sup>32</sup> Most of them died almost immediately, but some survivors were vivisected after they contracted various diseases.



The second group was Chinese civilians and soldiers. As noted above, Unit 731 manufactured large quantities of *Y. pestis* cells that were used to contaminate blood fed to many thousands of fleas. The fleas were emplaced in Uji bombs that were carried by aircraft and released on Chinese population centers. As a result, plague among humans and rats became epidemic in Chinese provinces. For example, in the Zhejiang, Jiangxi, Hunan, and Heilongjiang Provinces 1,814 people were infected, and 1,666 of them died.<sup>32</sup> As for the total number of Chinese deaths due to Japanese BW, one estimate by a Chinese

scholar is that "...during Japan's invasion of China Biological Warfare activities were carried out in more than twenty provinces and cities, causing more than 200,000 casualties among the Chinese people."<sup>33</sup> As the Chinese public and delivery health systems largely disintegrated during World War II, it is probable that little or no plague vaccine or sulfa drugs were available to the Chinese population, so the casualty rate might even have been higher than estimated by Liu Huaqui. While a large proportion of the Chinese population suffered greatly under Japan's barbarous occupation, it is clear, however, that Japan's usage of its biological weapons brought no advantageous military effects on the outcome of its aggressions in China and elsewhere.

Figure 1: Type 50 Uji Bomb<sup>34</sup>



#### The United States' Biological Warfare Program

The U.S. started its BW program in 1942, following the precedent set by the United Kingdom (U.K.) and Canada. The reason why these countries did so was that their intelligence agencies had incorrectly concluded that Germany had an operational BW program,<sup>35</sup> so they had to defend against its weapons and develop their own biological weapons so they would be ready to retaliate in kind. It is ironic that the intelligence agency at the time perceived what did not exist, but they failed to uncover what did exist, namely the Japanese BW program. There

certainly were intimations that Japan possessed biological weapons. For example, U.K. intelligence received information from John B. Grant, who at that time was working at the All-India Institute of Hygiene and Public Health, Calcutta, that in December 1941 Japan had used bacteria "...during the Changteh incident in December 1941," the U.K. War Cabinet concluded "...that the allegations were propaganda and were not supported by the technical evidence supplied."<sup>36</sup> A different source appears to have supported Grant's observation. A dispatch issued by U.S. military intelligence reported that "...the Chinese military spokesman, Chungking, was accusing the Japanese of starting germ warfare. He said that on November 4th Japanese planes dropped food and clothing at Changteh, Hunan Province, and that persons who made use of these were taken ill and died with symptoms similar to those of bubonic plague."<sup>37</sup> In the event, the U.S. government decided that information provided by the Chinese was propaganda and therefore should not be taken seriously. So it was that the U.S. and U.K. only learned about the Japanese BW program after its defeat in August 1945.

According to Rosebury and Kabat, after World War II ended, the U.S. BW program conducted a study as to which pathogens should be considered as possible BW agents.<sup>38</sup> Eventually 39 agents were chosen for screening and out of these, *B. anthracis* and *Y. pestis*





were given highest priority for weaponization as lethal agents. This is probably the reason why *Y. pestis* was studied intensively within the U.S. BW program and by scientists in other government laboratories as well as academic laboratories. One such project had already started in July 1946 at the UCB, which was funded by the Office of Naval Research. The principal investigator was Albert P. Krueger. Krueger's team studied not only *Y. pestis*, but other pathogens that caused respiratory diseases such as *Mycobacterium tuberculosis*, *Diplococcus pneumoniae*, and *Corynebacterium diphtheria*.<sup>39</sup> Example of studies conducted by the Krueger team were behavior of *Y. pestis* in an airborne cloud, nutritional studies of *Y. pestis*, virulence and viability of *Y. pestis* during prolonged incubation in liquid culture, and the mutation of *Y. pestis* induced by camphor. After Krueger retired in 1957, the project was moved to the UCB School of Public Health where it remained until it was terminated in 1975. All the R&D conducted at the UCB was for defensive purposes.

Sometime during the 1950s, the decision was made by the U.S. BW program to give highest priority to weaponizing *B. anthracis* while *Y. pestis* was given a much lower priority. There seemed to have been four reasons for this decision, and these are spelled out in two reports published in 1952 and 1953 that once were classified but were declassified many years ago:

1. The first testing of *Y. pestis* strains using monkeys had indicated that the LD50 was approximately 3,000. However, subsequent testing indicated that the LD50 was actually 20,000 – 50,000, or even higher. This meant that *Y. pestis* was much less virulent than other bacterial pathogens such as *B. anthracis*.<sup>40</sup>
2. Substantial laboratory data evidenced that *Y. pestis* stored in wet solution had poor storage characteristics in this form.<sup>41</sup>
3. Laboratory data indicated that *Y. pestis* had been lyophilized and stored successfully, however data was conflicting as to virulence yields. In some cases, a marked drop in virulence was observed after lyophilization and storage. Data from other tests indicated that *Y. pestis* strains could be lyophilized and stored with little loss in viability and virulence. Due to this conflicting data, more investigations were required to solve this issue.<sup>42</sup>
4. Open air testing done at the Dugway Proving Ground during March 1952 had as its objective to determine the characteristics of the *Y. pestis* A-1122 strain under field conditions. The result was that "low viable counts obtained under the conditions of these tests seem to indicate that this organism loses viability rapidly."<sup>43</sup>

There might have been other reasons than the foregoing four reasons why *Y. pestis* was never weaponized by the U.S. BW program, but the facts speak for themselves; i.e., by the time that President Richard Nixon closed down the BW program, it had weaponized seven agents for use against humans (see Table 2), but *Y. pestis* was not one of them. (The U.S. also weaponized three agents for use against crops – rice blast, rye stem rust, and wheat stem rust).<sup>44</sup>

In view of the U.S. not having weaponized *Y. pestis*, it is worthwhile to review the allegation that has been made by the Chinese and North Korean governments of the U.S. forces having used biological weapons during the Korean War.<sup>45</sup> The report of the so-called International Scientific Commission is filled with allegations of the American having waged BW during the Korean War, of which one example is presented here:

Since the beginning of 1952, numerous isolated foci of plague have appeared in North Korea, always associated with the sudden appearance of fleas and with the previous passage of American planes. Seven of these incidents, the earliest dating from 11th Feb., were reported in SIA/1, and in six of them the presence of the plague bacteria in the fleas was demonstrated. Document SIA/4 added the statement that after a delivery of fleas to the neighborhood of Au Ju on the 18th Feb., fleas which were shown bacteriologically to contain *Pasteurella pestis*, a plague epidemic broke out at Bal-Nam-Ri in that district on the 25th. Out of a population of 600 in the village, 50 went down with plague and 36 died.<sup>46</sup>

Although little-remembered now, these charges produced enormous political repercussions at the time, with extensive debate in the United Nations in New York and international protests against the alleged U.S. use. A typical comment by *Pravda* in 1952 was that, "These bandits in generals' uniforms, the butchers in white gloves, the bloody bigots and traders in death



who have unleashed the most inhuman carnage in history, warfare with the assistance of microbes, fleas, lice and spiders.”[47](#)

In January 1998, a historian researching the archives of the Central Committee of the Communist Party of the Soviet Union (CPSU) discovered 12 documents containing detailed and authoritative evidence that the Korean War BW allegation was contrived and fraudulent.[48](#) One document dates from February 21, 1952, and the others from the period of April 13 to June 2, 1953. They describe the way in which the allegations were contrived by North Korean and Chinese officials and Soviet advisers, and include direct communications between the Central Committee of the CPSU to the Chinese and North Korean leaders, Mao Tse-tung and Kim Il-sung, and replies by the latter. For example, one document, from May 1953, opens with the following lines: “For Mao Zedong: The USSR Government and the Central Committee of the CPSU were misled. The spread in the press of information about the use by the Americans of bacteriological weapons in Korea was based on false information. The accusations against the Americans were fictitious.”[49](#)

More recently, a former Director of the Chinese People’s Volunteers’ Army Health Division, Wu Zhili, who was directly involved in public health issues during the Korean War had his account of the allegation published. Wu wrote his article in 1997, but it was not discovered until 2005. Furthermore, it was not published until November 2013, when the Chinese journal *Yan-Huang Chun Qiu/Yan-Huang Historical Review* did so. It is not possible to here reprint Wu’s rather lengthy article, suffice it to state his conclusion: This has been my silent regret for decades. There has been no other. I only feel sorry for the international scientists who signed their names. Perhaps I am too naïve, because it is possible they knew the truth but obeyed the requirements of the political struggle. If it was like this then fine, but if not then they were deceived by me. I had unceasingly expressed my apology for them to Huang Kecheng [Chief of Staff in 1952]. Huang said, “You don’t need to feel this way, this was political struggle! Furthermore, you have expressed your views on bacteriological warfare from the beginning. It was not an easy situation, and you were given responsibility too late.”

I think there will be a day in history to speak clearly about this incidence. Now that I am an 83-years old man who knows the facts and is no longer on duty, it is fitting to speak out: the bacteriological war of 1952 was a false alarm.[50](#)

In view of the evidence provided here that the U.S. never weaponized *Y. pestis*, the information from the USSR archives that indicates that the USSR ambassador to Peking in 1952 knew that the allegation of the U.S. having waged BW in Korea was false and, most important, by Wu Zhili’s thorough account of what really occurred in Korea, which was not BW, but to restate Wu’s conclusion, “the bacteriological war of 1952 was a false alarm.”

To finish this section, the U.K. and Canada closed down their offensive BW program during the 1950s, but retain substantial defensive capabilities to this day. The U.S. continued its offensive BW program until November 25, 1969 when President Richard Nixon terminated it by executive order. [51](#) Like the British and Canadians, the U.S. maintains a strong, encompassing defensive BW program to this day.

### Weaponization of *Yersinia pestis* by the USSR

The most complete history of the USSR’s huge BW program and its implications for today’s Russia has been told by Milton Leitenberg and Raymond A. Zilinskas.[52](#) They explained how this program had two generations with the first spanning 1928-1971 and the second 1972-1992. This article contains an abridged history of this program, with an emphasis on the weaponization of *Y. pestis*.

### USSR’s First Generation BW Program

In 1925, the director of the USSR Military Chemical Agency, Dr. Yakov Fishman, set up a small BW laboratory in Moscow, eventually to be called the Scientific Research Institute of Health, and appointed Nikolay N. Ginsburg to be its head. In 1928 Fishman submitted a laboratory progress report to Commissar for Defense Kliment Y. Voroshilov that had four parts:[53](#) (1) a description of Ginsburg’s investigations that demonstrated the feasibility of BW; (2) an assessment of the potential uses of bacteria for purposes of warfare and sabotage; (3) a plan for the organization of military biology and (4) a second plan for organizing defenses against





biological attacks. The second part included a description of how a team led by Ginsburg was attempting to increase the virulence and stability of *B. anthracis*, a pathogen they found well suited for purposes of BW since it is both virulent and hardy. The Ginsburg team also investigated the BW potential of *Vibrio cholerae* and *Y. pestis*. Unlike the Japanese BW program which utilized two forms for dispersing *Y. pestis*, by vectors and by aerosols, Soviet military scientists weaponized *Y. pestis* for aerosol dispersal only.

Fishman's report appears to have motivated the Revolutionary Military Council to issue a secret decree in 1928 that ordered the establishment of an offensive BW program.<sup>54</sup> Thus, the USSR's first generation BW program commenced. As a result of the decree's implementation, the USSR came to possess a large BW program before World War II. German intelligence learned from Soviet prisoners of war that this program was conducted in three institutes in the Moscow-region, including Ginsburg's Institute (renamed the Worker's and Peasant's Red Army [RKKA] Biotechnology Institute), four institutes in the Leningrad region, and an open air test site on Vozrozhdeniye Island in the Aral Sea.<sup>55</sup>

As noted above, in 1945 the Red Army captured 12 Unit 731 servicemen and learned a great deal from them about Japanese program. A Soviet BW scientist interviewed by one of the authors recalled some of what was learned:

Information from the Japanese was used for both BW purposes and for defense. The Japanese reports were meticulously written and had complete information on their experiments involving many pathogens. We particularly found information on plague [bacteria] of interest because they had tested many strains for virulence not only on animals, but also humans. They also conducted experiments using different doses of agents. We [the Soviet Army] never tested on humans. So the Japanese data gave us information on strains that were virulent not only in animal models, but also in humans. So we could compare our strains with theirs and use those that were most virulent in humans for BW. At that time the level of microbiology was not so high, and scientists could not secure highly virulent genetically modified strains. So we worked with what we had from nature. For defense, we used their information on the immunological responses by humans to pathogens in developing vaccines and therapeutics. Moreover, the Japanese had good data on how organisms responded to formulations existing at that time.<sup>56</sup>

The USSR's first generation BW program can be characterized as having assessed known pathogens for the weapons potential and employed the three classical applied microbiology techniques – mutation, selection, and propagation – to weaponize the most promising candidates. By the time the first generation program merged into the second generation program, its scientists had weaponized five bacterial pathogens; *B. anthracis*, *Burkholderia mallei*, *Coxiella burnetii*, *Francisella tularensis*, and *Y. pestis*, as well as the Venezuelan Equine Encephalitis virus (VEEV), variola virus, and botulinum neurotoxin.

A team at the USSR Ministry of Defense (MOD) Scientific Research Institute of Epidemiology and Hygiene at Kirov led by V. A. Lebedinsky and Yu.V. Chicherin focused on weaponizing *Y. pestis* in the 1960s. The main objective of this work was to develop an especially virulent *Y. pestis* strain that was resistant to the existing EV vaccine. The USSR BW program did have a *Y. pestis* strain validated for BW, and it is probable that the Lebedinsky-Chicherin team was its developer.<sup>57</sup>

In a related project, the same team in Kirov reportedly developed *Y. pestis* simulants based on strains of *Yersinia pseudotuberculosis* and *Yersinia enterocolitica*. Although strains of these zoonotic pathogens can cause low-order gastrointestinal disease in humans, other strains are non-pathogenic and thus could safely be used as simulants in open-air field tests.

### USSR's Second Generation BW Program

In 1971, the Central Committee of the Communist Party (CCCP) and the USSR Council of Ministers issued a decree, stamped "of special importance," that laid the foundation for the organization of a new system to acquire modern biological weapons.<sup>58</sup> The decree formally marked the beginning of USSR's "modern," second generation BW program. Soon thereafter, the MOD's Decree No. 99 established the 15th Directorate to direct the USSR's BW program and appointed Colonel General Yefim I. Smirnov as its head.<sup>59</sup> Further, the Politburo ordered the establishment of an entirely new organization named Biopreparat dedicated to BW that was comprised of five major institutes, as well as an unknown number of production plants and storage facilities. Although an ostensibly civilian organization, it received its orders from the 15th Directorate. Biopreparat's



main responsibility was to manage a large program codenamed “*Ferment*” (which translates to “Enzyme”) whose objective was “...to develop a second generation of biological weapons using genetically modified strains, which would be of greater military value than existing natural strains. It planned to introduce new properties into diseases organisms, such as antibiotic resistance, altered antigen structure, and enhanced stability in the aerosol form, making delivery of the agent easier and more effective.”<sup>60</sup> Further, a new and highly secret Interdepartmental Scientific-Technical Council on Molecular Biology and Genetics,<sup>61</sup> whose cover designation was P.O. Box A-3092,<sup>62</sup> was established to provide scientific direction to *Ferment*, and the highly regarded virologist and academician Victor M. Zhdanov was appointed its chairman.<sup>63</sup> In addition to *Ferment*, the USSR Ministry of Agriculture was ordered to operate a program codenamed *Ekology*, whose objective was to weaponize bacteria, fungi, and viruses for use against agriculturally important animals and crops.

*Ferment* initially focused on traditional agents, such as *B. anthracis*, *B. mallei*, *F. tularensis*, *Y. pestis*, variola virus, and VEEV, but within a few years its scientists also investigated filoviruses (especially Ebola and Marburg viruses), Junin virus, and Machupo virus.<sup>64</sup> Alongside its offensively directed R&D, Biopreparat Institutes performed defensively directed R&D under a program codenamed Problem 5 whose lead agency was the N.F. Gamaleya Institute of Epidemiology and Microbiology, but Problem 5’s R&D was mostly performed by six institutes that comprised USSR’s anti-plague system. Its major objective was to develop vaccines and treatments for the pathogens that *Ferment* weaponized and foreign threat agents discovered by Soviet intelligence. Two reports written by researchers at the James Martin Center for Nonproliferation Studies contain the history and organization of the anti-plague system, including Problem 5.<sup>65</sup>

The USSR’s BW program reached its apex in the late 1980s when it had four components. The first component was constituted by three military R&D institutes and an open air test site. The second was Biopreparat, which had five major research institutes and about 35 supporting facilities. The third was the Ministry of Agriculture with six research institutes and an unknown number of supporting facilities. And the fourth was Problem 5 as describe above. The BW program’s civilian institutions are listed in Table 1. At that time, an estimated 60,000 persons operated USSR’s BW program.

The R&D involving *Y. pestis* was mainly conducted at the MOD’s Scientific Research Institute of Epidemiology and Hygiene at Kirov and Biopreparat’s State Research Center for Applied Microbiology (SRCAM) located at a secret city called Obolensk. Since there have been no defectors from any of the three MOD’s biological institutes, little is known about the BW-related R&D that was conducted within their walls. Conversely, many scientists who once worked for Biopreparat have either defected or, after the USSR dissolved in December 1991, succeeded in relocating to countries such as Israel, United Kingdom, United States, and elsewhere. Accordingly, there is a considerable amount of information about the R&D conducted by Biopreparat institutes.

The first two R&D objectives for SRCAM was for its scientists to (1) eliminate epitopes on the surface of classic BW agents so as to make them unrecognizable to the diagnostic techniques and vaccines possessed by Western countries,<sup>66</sup> and (2) to develop strains of *B. anthracis*, *B. mallei*, *B. pseudomallei*, and *Y. pestis* that were resistant to ten antibiotics.<sup>67</sup>

In 1982, SRCAM scientists V.M. Krasilnikova, A.V. Karlyshev, and P.A. Cherepanov started to investigate the *Y. pestis* F1 antigen and, eventually, they were able to express F1 in *E. coli*.<sup>68</sup> One of outcomes of molecular cloning of *caf1* operon was a development of original method for generation of a so-called “F1 minus” strain of *Y. pestis*.<sup>69, 70</sup> The reason for doing so was that in Western countries, standard serological tests have been used for many years to detect antibodies to the F1 protein and these tests are the basis for the surveillance and diagnosis of plague in infected humans and animals. By using a F1 minus strain of *Y. pestis* in their biological weapons, the Soviets would have made it more difficult for the attacked population to identify the causative pathogen of the resulting disease outbreak and begin timely treatment. A F1 minus strain of *Y. pestis* was indeed created, but it was taken over by MOD so its fate as a BW pathogen is unknown.

The first multiple antibiotic resistant strain of *B. anthracis* was successfully created in 1986. During 1987-1988, multiresistant antibiotic strains of *F. tularensis*, *B. mallei*, and *B. pseudomallei* were also created. The research that aimed to develop a multiresistant





antibiotic strains of *Y. pestis* initially produced some promising results, but by the time the USSR's BW program was terminated in 1992, this line of research proved to be unsuccessful. It bears stressing that although multiresistant antibiotic bacterial strains were created, they were not tested in the open air at Aralsk 7, so their degree of efficiency as BW agents is not known.

A third approach involving *Y. pestis* was taken by I.V. Domaradsky. He had the idea of transferring the gene that codes for diphtheria toxin into a militarily useful bacterium. This toxin, which is produced by the bacterial pathogen *Corynebacterium diphtheriae*, had the dual benefit of having a relatively simple chemical structure and being exceedingly toxic.<sup>71</sup> Within a fairly short time, he was able to clone the diphtheria toxin gene and transfer it into *Y. pseudotuberculosis*.<sup>72</sup> This was a substantial accomplishment since at that time *Y. pseudotuberculosis* was more difficult to engineer than *E. coli*. Domaradsky then wanted to undertake the same manipulation using *Y. pestis* as the recipient host for the cloned gene. He was not able to finish this work for unknown reasons, but according to another SRCAM scientist, in 1990 the diphtheria toxin gene was transferred into *Y. pestis*.<sup>73</sup> SRCAM scientists K.I. Volkovoy and P.A. Cherepanov reported that this construct proved to be highly virulent and immunosuppressive in monkeys.

The USSR relied on two mainstay biological weapons: a cluster submunition called the Gshch-304 (АУ-304), and a spray system.<sup>74</sup> Both were open air tested at Aralsk-7 with payloads that included *Y. pestis*.<sup>75</sup>

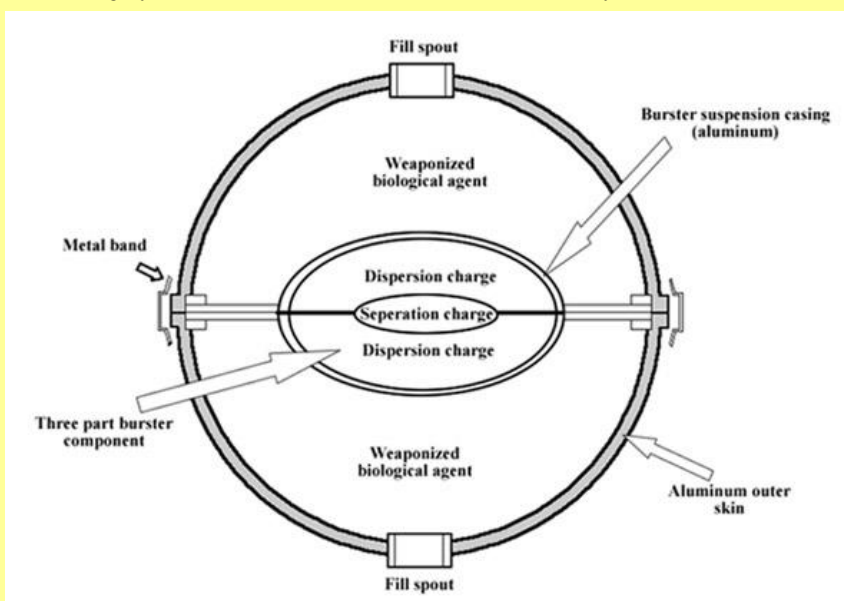
Figure 2. Gshch-304 (АУ-304) Bomblet

After the USSR dissolved in December 1991, the new Russian President Boris Yeltsin eventually came to terms with the knowledge that the USSR had operated an offensive BW program in violation of the BWC.<sup>77</sup> In response, on April 11, 1992, he issued Edict No. 390, "On Ensuring the Implementation of International Obligations Regarding Biological Weapons," which

ordered that the USSR's BW programs be shut down.<sup>78</sup> At approximately the same time, Yeltsin promulgated a decree that led to a 50% reduction in the staffing levels at the MOD and Biopreparat Institutes and a 30% cut in their funding. In actual practice an even more severe downsizing occurred, with individual institutes undergoing personnel decreases ranging from 50% to over 90%.

On the international level, in accordance with the confidence building measures agreed on by BWC state parties in 1986,<sup>79</sup> the Yeltsin government submitted Russia's confidence building Form F, which is a declaration on past activities in offensive and defensive biological research and development programs. The Form F submitted by Russia briefly described USSR's and Russia's offensive and defensive BW-related efforts from 1946 to March 1992 and identified some of the research institutions that been part of those efforts. It asserted that the USSR began dismantling its offensive facilities in 1986, which was also when Biopreparat was transferred from the MOD to the Ministry of Medical and Microbiological Industries. By April 1992, Aralsk 7 on Vozrozhdeniye Island had been dismantled and its infrastructure had been largely demolished. However, while the second was true, it was not so the first; i.e., the Soviet BW program continued as before until 1992, at which time it shrunk because of the lack of funding noted above.

Finally, it bears noting that despite all evidence to the contrary, the Putin administration has asserted several times that the USSR never had an offensive BW program, claiming that it only operated a defensive program to protect against possible BW attacks. Even more disturbing was that shortly after having taken the oath of president for the second time, Putin forecasted: "What is the future preparing for us? ... In the more distant future, weapon



systems based on new principles (beam, geophysical, wave, genetic, psychophysical and other technology) will be developed. All this will, in addition to nuclear weapons, provide entirely new instruments for achieving political and strategic goals. Such high-tech weapon systems will be comparable in effect to nuclear weapons but will be more “acceptable” in terms of political and military ideology.”<sup>80</sup>

**Table 1: Known Components of USSR’s Civilian BW System Circa 1986**

#### **R&D Institutes**

All-Union Research Institute for Applied Microbiology (SRCAM) in Obolensk  
 All-Union Research Institute of Molecular Biology (Vector) in Koltsovo  
 All-Union Scientific Research Foot and Mouth Disease Institute, Vladimir  
 All-Union Scientific Research Institute of Veterinary Virology and Microbiology, Pokrov  
 Institute of Engineering Immunology (IEI), Lyubuchany  
 Research and development facility of unknown name, Vladimir  
 Research Institute of Highly Pure Biopreparations (IHPB) in Leningrad  
 Scientific Institute of Phytopathology, Golitsyno  
 Scientific Institute of Phytopathology, Tashkent, Uzbekistan SSR  
 Scientific Research Agricultural Institute, Otar, Kazakhstan

#### **Production and Mobilization Plants**

Berdsk Chemical Factory, Berdsk  
 Biokombinat, Georgia (anti-animal agents?)  
 Biosintez Combine, Penza  
 JSC “Sakagrobiomretsvi” (Biokombinat), Tabakhmela, Georgian SSR  
 Omutninsk Chemical Factory, Omutninsk  
 Production Facility “Biokombinat,” Alma Ata, Kazakhstan SSR  
 Production plant of unknown name, Pokrov  
 “Progress” Plant, Stepnogorsk  
 Scientific and Production Base, Omutninsk  
 Scientific and Production Base of the Siberian Branch of the Institute of Applied Biochemistry, Berdsk  
 Scientific Experimental and Production Base (SNOBP), Stepnogorsk  
 Scientific-Research Technological Institute of Biologically Active Substances (IBAS), Berdsk  
 Sintez Combine, Kurgan

#### **Special Weapons and Facility Design Units**

All-Union Institute for Biological Instrument Development (Biopribor), Moscow  
 Institute of Applied Biochemistry, Moscow  
 Institute for Biochemical Technological Development (Biokhimmash), Moscow  
 Scientific-Research Technological Design Institute of Biologically Active Substances (IBAS), Berdsk  
 Special Design Bureau of Controlling Instruments and Automation, Yoshkar-Ola  
 Special Design Bureau for Precision Machinery Building, Kirishi  
 State Institute for the Design of Enterprises of the Biological Industry (Giprobioprom), Moscow  
 Unknown name, Posyolok Volginsky (or Poselok Volginsky)

#### **Antiplague Institutes<sup>81</sup>**

Central Asian Scientific Research Anti-Plague Institute, Alma Ata  
 Stavropol Research Anti-Plague Institute, Stavropol  
 Anti-Plague Research Institute for Siberia and the Far East, Irkutsk  
 Rostov Research Anti-Plague Institute, Rostov-on-Don  
 Volgograd Research Anti-Plague Institute, Volgograd  
 Russian Research Anti-Plague Institute “Microbe”, Saratov



Table 2: Lists of Anti-personnel Agents Validated for Biological Weapons by U.S. and USSR

U.S.	USSR
<b>Bacteria</b>	
<i>Bacillus anthracis</i>	<i>Bacillus anthracis</i>
<i>Brucella suis</i>	<i>Brucella</i> species
<i>Coxiella burnetii</i>	<i>Coxiella burnetii</i>
<i>Francisella (Pasteurella) tularensis</i>	<i>Francisella tularensis</i>
	<i>Pseudomonas mallei</i>
	<i>Pseudomonas pseudomallei</i> (?)
	<i>Yersinia pestis</i>
<b>Viruses</b>	
	Marburg virus
Venezuelan Equine Encephalomyelitis virus	Venezuelan Equine Encephalomyelitis virus
	Variola virus
<b>Toxins</b>	
Botulinum neurotoxin	
Staphylococcal enterotoxin B	Staphylococcal enterotoxin B

### **Yersinia pestis as a Current Threat Agent**

In 2014, the World Health Organization (WHO) reported that in 2013 there were 783 plague cases worldwide, including 126 deaths.<sup>82</sup> Most plague cases occurred in three countries – the Democratic Republic of Congo, Madagascar, and Peru. The low number of plague cases, and their far-off sites, clearly demonstrate that in our time plague has largely disappeared as a major public health threat. Yet, the U.S. Centers for Disease Control and Prevention (CDC) has designated *Y. pestis*, along with four other pathogens and one toxin,<sup>83</sup> as a highly dangerous Category A threat agent. Why is this so?

According to the CDC, all Category A agents possess certain characteristics that add up to them being perceived as posing significant risks to national security. These characteristics are:

- They can be easily disseminated or transmitted from person to person;
- The diseases they cause result in high mortality rates and have the potential for major public health impact;
- Their appearance in a community might cause public panic and social disruption; and
- Their prevention requires special action for public health preparedness.<sup>84</sup>

I maintain that beside the four common characteristics, there is another compelling reason why *Y. pestis* in particular is a dangerous threat agent and that is because two nations have weaponized it in the not too distant past. In other words, Japan and the USSR spent much effort and money to develop *Y. pestis* for the purpose of using it as payload in its biological weapons. They would not have done so unless their military scientists were convinced that biological weapons armed with *Y. pestis* would have been useful to their militaries.

### **The Potential of *Y. pestis* for Bioterrorism**

*Y. pestis* is a zoonotic pathogen that is widely distributed in natural plague foci in Asia, Africa, western North America, and Eurasia. In the natural plague foci, there are more than 80 reservoirs with different kind of fleas as potential vectors and *Y. pestis* has at time been transmitted between reservoirs by infected fleas biting mammals. In many plague foci, it is not difficult for trained field workers to capture rodents that carry fleas infected with *Y. pestis*. Using standardized techniques still practiced today, a trained microbiologist can subsequently culture and isolate *Y. pestis*. In view of the many natural plague foci spread throughout the world, it is theoretically possible for terrorists to acquire *Y. pestis* from natural sources.





Nature is not the only source for *Y. pestis*; ill-willed persons could steal cultures from laboratories and culture collections. In this regard, possibly the most substantial threat is posed by yet another component of the former USSR's BW program; namely, the anti-plague system. Its work, which was mostly defensive in nature, was cloaked in secrecy because the USSR considered information about endemic infectious disease to be state secrets. Actually, the anti-plague system had responsibilities that ranged beyond BW defense, including protecting the country from endemic and imported dread diseases such as plague, anthrax, tularemia, and Crimean-Congo hemorrhagic fever. As such, its researchers were among the few in the USSR that were permitted to work directly with the most dangerous bacterial and viral pathogens, strains which were stored in in-house culture collection.

After the USSR dissolved in December 1991, this system fragmented, with one anti-plague institute and many stations located outside Russia becoming part of the health systems of the newly independent nations. The main problem that attended this development was that Russia stopped funding most of these now foreign anti-plague facilities and their new home governments have not taken up the financial slack. One of the results of lack of funding is that the physical security that once protected facilities and culture collections deteriorated to near uselessness. For the newly independent nations (except Russia), a program initiated by the U.S. called the Cooperative Threat Reduction program has provided sufficient assistance required to safeguard the premises of anti-plague institutes and stations, including their culture collections.<sup>85</sup> Nevertheless, the possibilities exist that outsiders could break into anti-plague facilities and steal cultures of pathogens and use them as a basis for BW programs by terrorist groups. Alternatively, corrupt insiders could be paid by criminals to steal cultures from laboratories or cell culture collections. The proliferation issues posed by the anti-plague system as it now exists in many countries has been reported by CNS researchers.<sup>86</sup>

However, even if pathogens are acquired by terrorists or proliferant nations, it does not mean that the new owners possess a biological weapon. The information about weaponization of *Y. pestis* that emanated from Japan, USSR, and the U.S. indicates that this process is a difficult one, mainly because this pathogen is fragile and therefore has to be formulated; i.e., certain chemicals are added to the bacterial cells that serve to protect them from desiccation and other stresses in order to be effectively disseminated onto targeted populations. The Japanese found that formulations used for a *Y. pestis* aerosol did not work well. As a result, their preferred biological weapon was the Uji bomb carrying fleas infected with *Y. pestis*. I suspect that no terrorist group would have neither the expertise nor the will to deal with the problem of breeding and packaging the thousands of fleas required to disseminate *Y. pestis*. As for the U.S., its BW program gave up on weaponizing *Y. pestis* and instead chose to weaponize bacterial pathogens that are easier to handle, are more lethal, and survive better as components of aerosols.

Soviet military scientists spent years to develop a formulation that protected the *Y. pestis* cells so instead of the half-life of unprotected cells being a few minutes in the open air, the formulated cells would have a half-life of 10-20 minutes depending on temperature and humidity.<sup>87</sup> No terrorist group would possess the expertise in aerobiology that the USSR had, and so even if they tried to produce a *Y. pestis* aerosol, they undoubtedly would fail. In addition, they probably would face substantial problems with biosafety; i.e., protecting their own operators from exposure to this deadly pathogen.

Based on lessons from the Japanese, U.S., and USSR BW programs, I conclude that it is not likely that *Y. pestis* will be used by a terrorist group in the near future to attack a human population. The more likely scenarios are that terrorists will use food-borne or beverage-borne pathogens or toxins to contaminate food items or beverages that are utilized by their targeted populations. Since botulinum neurotoxin can be purchased from Internet sources and because it is comparatively easy to manufacture, it might be the agent of choice for terrorists.<sup>88</sup> Another possibility is that a terrorist group will have learned from Aum Shinrikyo's failed approach to disperse aerosolized quantities of the avirulent Sterne strain of *B. anthracis* over Japanese urban areas and instead conduct similar attacks but with a virulent *B. anthracis* strain.<sup>89</sup>



**Acknowledgement:**

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►► **References are available at source's URL.**

*After graduating from California State University at Northridge with a BA in Biology (1962), and from University of Stockholm with a Filosofie Kandidat in Organic Chemistry (1963), Dr. Zilinskas worked as a clinical microbiologist for 16 years before commencing graduate studies at the University of Southern California. His doctoral dissertation addressed policy issues generated by recombinant DNA research, including the applicability of genetic engineering techniques to biological weapons development. After earning a Ph.D. in 1981, Dr. Zilinskas worked at the U.S. Office of Technology Assessment (1981 - 1982), the United Nations Industrial Development Organization (1982 - 1986), and the Center for Public Issues in Biotechnology, University of Maryland Biotechnology Institute. In addition, while at Maryland he was an Adjunct Associate Professor at the Department of International Health, School of Hygiene and Public Health, the Johns Hopkins University.*

*In 1993, Dr. Zilinskas was appointed a William Foster Fellow at the U.S. Arms Control and Disarmament Agency (ACDA), where he worked on biological and toxin warfare issues. In April 1994, ACDA seconded Dr. Zilinskas to the United Nations Special Commission (UNSCOM) for seven months, during which time he participated in two biological warfare-related inspections in Iraq (June and October 1994) encompassing 61 biological research and production facilities. At UNSCOM headquarters, he set up a database containing data about key dual-use biological equipment in Iraq and developed a protocol to guide UNSCOM's on-going monitoring and verification program in the biological field.*

*After the fellowship ended, Dr. Zilinskas returned to the Center for Public Issues in Biotechnology and Johns Hopkins University. In addition, he became a long-term consultant to ACDA (which now is part of the U.S. Department of State), for which he carried out studies on Cuban allegations of U.S. biological attacks against its people, animals, and plants and investigations carried out by the United Nations of chemical warfare in Southeast Asia and the Arabian Gulf region. Dr. Zilinskas remains to this day a consultant to the U.S. Department of State and the U.S. Department of Defense.*

*On September 1, 1998, Dr. Zilinskas began working as a Senior Scientist in Residence at the Center for Nonproliferation Studies, Monterey Institute of International Studies, Monterey, CA. His research focuses on achieving effective biological arms control, the proliferation potential of the former Soviet Union's biological warfare program, and meeting the threat of bioterrorism. He also is a Research Professor at the Graduate School of International Politics at MIIS, where he teaches courses on biological and chemical weapons and arms control and emerging issues in international public health. Dr. Zilinskas' book *Biological Warfare: Modern Offense and Defense*, which provides a definitive account on how modern biotechnology has qualitatively changed developments related to biological weapons and defense, was published in 1999 by Lynne Rienner Publishers. He also is co-editor of the *Encyclopedia of Bioterrorism Defense*, which was published in summer 2005 by Wiley and Sons. Currently, he is writing a book on the former Soviet Union's biological warfare program, including its history, organization, intent, and accomplishments, which will be published by Harvard University Press in late 2008 or early 2009.*

**Use of Chemical and Biological Weapons by Daesh / ISIS**

**By Natallia Khaniejo**

*CBW Magazine; July-December 2016; Vol.9 (3)*

Source: <http://www.idsa.in/cbwmagazine/use-chemical-and-biological-weapons-by-daesh-isis>

The recent years have been witness to the rise of religious extremism, radicalization and increased conflict from Non State Actors. The

tactics of anarchism and the spread of extremist hate and fear by these NSAs have intensified





and the methods of propagandistic proliferation and fear mongering have also evolved as a consequence. Groups like the ISIS have capitalized on recent technological advancements to spread their base and reach out to a wider audience. Aside from ideological and symbolic proliferation vis-à-vis social media, the increased economic and logistical support provided to these groups has raised serious concerns regarding their ability to access and use Chemical, Biological, Radiological and Nuclear (CBRN) material for malicious purposes. This article attempts to examine the 'reality' of a biological weapons threat from ISIS and the transactional modalities involved therein.

The Islamic state of Iraq and Syria<sup>1</sup> (ISIS/ISIL/Daesh) is a Salafist, Jihadist militant group that follows a fundamentalist Wahhabi strain of Sunni Islam. Aside from the proliferation of its extremist ideological footprint, the group's primary aim is the establishment of an 'Islamist Caliphate'. The group has been declared a terrorist organization by the United Nations and several other countries worldwide, but there are several ways in which the groups religious ideology differs from its counterparts such as the Al Qaeda. "IS grew out of what was Al Qaeda in Iraq, which was formed by Sunni militants after the US-led invasion in 2003 and became a major force in the country's sectarian insurgency. In 2011, the group joined the rebellion against President Bashar al-Assad in Syria, where it found a safe haven and easy access to weapons<sup>2</sup>." One of the key differences between IS and Al Qaeda is the former's "emphasis on eschatology and apocalypticism<sup>3</sup>." The group disregards interpretation and calls for a return to what it considers is 'pure Islam' which necessitates the founding of a Caliphate following Salafist doctrines through extremist means. Since its emergence, IS has gone on to become a global threat and its extremist philosophy has proliferated into countries like Pakistan, Afghanistan, etc.

**One of IS's key strengths has been the use of non conventional methods of warfare for ideological proliferation.** They have a tremendous social media presence, and tend to utilize the potential of Cyber anonymity for efficient ideological proliferation, radicalization and mobilization. Aside from their (now well known twitter presence) they use several encrypted technologies such as Telegram, etc. for the proliferation of their message and they also have a magazine 'Dabiq' that is used to further spread their propaganda. Aside from their Cyber presence and their use of conventional weapons and asymmetric warfare - car bombs and suicide bombers - IS has also made use of chemical weapons in Iraq and Syria. It is further suspected that the group is also engaged in research surrounding Biological and Nuclear weapons as well. One of the key reasons for turning towards Chemical Biological, Radiological and Nuclear (CBRN) weapons is due to "their capacity to cause significant disruption across sectors, as well as considerable revenue loss for governments. In particular, cleaning up after a CBRN incident could require that people, buildings, infrastructure and the environment undergo a cost intensive and lengthy decontamination process<sup>4</sup>." The amorphous nature of the threat posed by CBRN weapons, usually means that States are ill equipped to place sufficient preventive measures against the same. This makes them an extremely cost effective as well as strategically potent method of attack. While there are several treaties in place regarding the use/possession of Chemical and Nuclear substances, there are still loopholes that Non State Actors have exploited in the past to gain access to sensitive CBRN material. While the Chemical Weapons Convention (CWC) has incorporated a clause that "prohibits the weaponisation of all chemicals<sup>5</sup>". The Biological Weapons Convention (BWC) has a similar clause regarding the "prohibition on the weaponisation of biological pathogens and agents<sup>6</sup>", yet the dual use nature of research surrounding Chemical and Biological raw material makes them a constant vulnerability. Furthermore, the inability to limit the access to such materials due to their dual use nature becomes a constant





vulnerability given the proliferation opportunities that emerge thereof. "The BWC does not have a verification mechanism for monitoring global sources of dangerous pathogens, but focuses its efforts instead on voluntary confidence-building measures<sup>7</sup>."

Historically speaking there have been uses of biological and chemical weapons by Non State Actors and Terrorists. While IS has used Chemical weapons and Mustard Gas in Syria and Iraq, the most well known biological attack that was carried out successfully was the "nerve gas attack in the Tokyo underground carried out by the apocalyptic Aum Shinrikyo sect in March 1995, which led to over 1000 casualties and 12 fatalities<sup>8</sup>." Biological Weapons are "deadly pathogens - bacteria, microorganisms or viruses - or toxins which can be deliberately released in order to inflict harm<sup>9</sup>." There are several methods of releasing the pathogens into public spaces and these organisms can be 'weaponized' and spread through inhalation, contact, absorption, medium transference<sup>10</sup>, etc. Given the current globalized world order, the transference of the threat and the domain it could possibly affect also increases tremendously as a result. The use of Bioweapons and the effects thereof thus becomes a transnational threat and the dynamics of such an attack need to be examined. The primary vulnerabilities that could lead to pathogen proliferation would be the dual use nature of the source material conjoined with an 'insider threat'. Furthermore, the dual use threat is not limited to high end scientific research but also easy accessibility to potent chemicals through everyday objects. For example "When procured in sufficiently large quantities, solvents used in ballpoint pen ink can be converted into mustard gas."<sup>11</sup> Technological advancement also provides an anonymous platform with access to information regarding the creation and proliferation of Weapons of Mass Destruction (WMDs). Aside from surface level content that provides information, the deep dark web provides access to the requisite materials as well. This technological progress, coupled with an increasingly globalized world order, poses a tremendous vulnerability across the board. A biological attack while unlikely should still be considered an important threat as the

devastation that it causes can wreak transnational havoc.

**There are several reasons why terrorist groups are attracted towards Biological weapons**, these include rapid proliferation, relatively lower cost of operation, multiple mediums of insertion<sup>12</sup>, lengthy decontamination process<sup>13</sup> which would require research and investment into the appropriate antibodies, easier access of material as compared to Nuclear material, problems of attrition, and relative ease of anonymous access. Furthermore, these attacks can also cause a tremendous amount of panic and instability that can deconstruct socio-economic order and affect critical architecture adversely thereby propagating the anarchic/malicious intent of the perpetrator. There have been threats of IS experimenting with animal matter and other such hosts with pathogens. Sources have reported that Mohammed Abrini - the man responsible for the Paris attacks in 2015 was caught with the makings of a crude animal bomb that suggests that IS might be experimenting with biological matter and weaponizing them<sup>14</sup>. Furthermore, experts have gone on to state that it would not be impossible for IS to access the materials required for the construction of a Biological weapon. As Dany Shoham states "Suitable pathogens are readily available at academic laboratories, vaccine factories and pharmaceutical companies, all of which are civilian facilities<sup>15</sup>." While the prosecutor in Abrini's case later went on to state that the contents of the bag which included animal faecal matter could not be used for the construction of a bomb, the threat of using animal carcasses as host material for biological experimentation remains. With a lot of Non State Actors, the primary issue faced while dealing with Biological weaponization is the process of converting pathogens into weapons. After initial procurement most Non State Actors run into roadblocks as they lack the scientific expertise required for converting this raw material into an actual weapon. That is not a major issue with ISIS as they have a strong economic and scientific architecture in place for chemical and biological warfare experimentation. For example "In June 2014, ISIS took control of two



bunkers in Iraq, 45 miles outside of Baghdad that held 2500 degraded chemical missiles armed with Sarin Gas and other Chemical agents.<sup>16</sup> Given the area of operation and control experts have stated that ISIS has supporters all across the globe that fund its projects and it has taken control of Saddam Hussein's stockpiles from the Iraq war and the Syrian conflict. Therefore, it stands to reason that taking into account ISIS's access to Saddam Hussein's stockpiles and scientific infrastructure, its implementation of a CBRN weaponization program might be challenging - given the collateral issues involved - but not entirely impossible.

However, that being said, **there are several reasons deterring ISIS from launching a full scale bioweaponization program.** Some of the key concerns surrounding Bioweaponization involve the inability to control the pathogen once it is released. Furthermore, the target area and recipients of the pathogen cannot be limited or contained either. Biological weapons fall under the realm of chaos theory wherein at any given point the entire operation could backfire and spiral out of control. While gaining access to pathogens might not be difficult, the nuances of weaponizing them and containing them in an insulated environment until it is time for release might be challenging. Furthermore, the factor of human error in the process of handling the pathogen could lead to either the death of the pathogen or the spread of the pathogen among the ranks of ISIS itself. Additionally, even if researchers were to come up with a potential antibody to immunize the ranks of the group against the pathogen, the issues of mutation and resistant strains remain. This is potentially why most biological attacks - Aum Shinrikyo's and the post 9/11 attacks - have been limited to the usage of Anthrax which is widespread but not as potent. Furthermore, ideologically speaking the use of bioweapons wouldn't fit in with ISIS's ideological conditioning strategy given that they'd be unable to pick and choose their targets. Furthermore, they have more than enough chemical stockpiles and conventional armament to wreak havoc and terror in precise and calculated strikes for now.

In conclusion, the use of CBRN materials and their possible weaponization into Weapons of Mass Destruction remains a constant threat given the loopholes in the safeguarding mechanisms surrounding the materials. Yet the potential risks involved in the weaponization of biological pathogens and the collateral damage that could emerge as a result might serve as potential deterrents against their usage and proliferation. Nevertheless, it is essential to stockpile and recalibrate the transfer and proliferation of such material to prevent them from being used for malicious purposes. Furthermore, investing in preparedness and safety mechanisms against biological weapons might help safeguard civil society not only against an attack but also against accidents involving such volatile material. The ongoing march of technological progress is another factor that needs to be taken into account given how coterminous the relationship between Medicare and technology is.

The Internet of Things (IoT) is a lived reality that forms a part and parcel of daily existence which has definitely improved quality of life but it has simultaneously also increased the risk of attack and the dangers of intrusion. Most hospitals use high end technology to store biological materials for research but given the vulnerabilities of cybernetic frameworks, the slightest loophole in encrypted data management could lead to potentially disastrous effects. The use of social media for ideological proliferation is not new, but points to the sophisticated advancements being made within the ranks of Non State Actors like ISIS which are at times much better equipped to use cybernetic architecture to their advantage. Governments need to come together to understand the Technological threat that might emerge from this blurring of boundaries between CBRN and Technological research and experimentation. Given the transnational scope of the threat governments need to pool their resources to safeguard their Information Technology architecture to protect Critical Infrastructure that might be dependent on these IT frameworks.

►► References are available at source's URL.



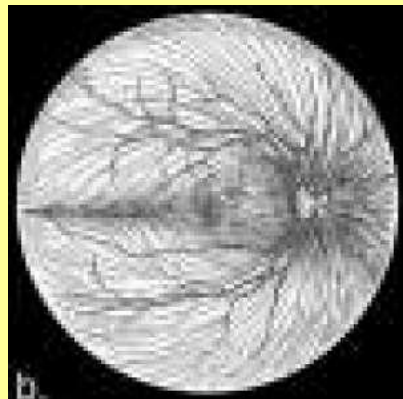
## Ebola leaves unique scar inside survivors' eyes

Source: <https://www.livescience.com/59525-ebola-eye-scar.html>

June 16 – In some Ebola [Ebola virus disease (EVD)] survivors, **EVD leaves a unique scar at the back of the eye that can be seen long after they are cured of the disease**, according to a new study.

Researchers analyzed information from 82 [EVD survivors] in Sierra Leone and 105 people who lived in the area but never had EVD. All participants took a vision test and had the back of their eyes examined with an ophthalmoscope. Among EVD survivors, more than a year had passed, on average, between the time they were cured of the disease and the time of the eye examination.

When asked to read letters on an eye chart, the EVD survivors tended to perform just as well as those who'd never had the disease, meaning their infection didn't seem affect their vision.



However, approximately 15 percent of EVD survivors had a unique scar on their retina, the light-sensitive tissue at the back of the eye. The people who had never contracted EVD did not have this particular type of scar, the study found.

**This scar, "often resembling a diamond or wedge shape, appears unique,"** the researchers said. The scar was next to the eye's optic disc, the spot where nerve fibers exit the eye to connect to the brain. This suggests that the EVD virus enters the eye by traveling along the optic nerve, the researchers said.

Previous studies have found that up to 60 percent of Ebola survivors experience eye symptoms, including eye inflammation and temporary vision loss, but little is known about the patients' long-term vision outcomes, the researchers said.

About 7 percent of the EVD survivors in the new study had white cataracts, or cloudy areas in the lens of the eye that can affect vision. In contrast, no white cataracts were found in the participants who'd never had Ebola, the researchers said.

However, it's not clear whether EVD survivors could safely have surgery to remove cataracts, because there is concern that the virus can linger in the eye and might pose a risk to doctors performing the surgery.

But in the new study, the researchers tested the eye fluid of 2 Ebola survivors with cataracts, and the fluid tested negative for the virus. This finding suggests that Ebola does not necessarily remain in eye fluid in survivors with cataracts, and that in some patients, cataract surgery could be performed safely, the researchers said.

**Citation.** Steptoe P.J., Scott J.T., Baxter J.M. (July 2017). Novel Retinal Lesion in Ebola Survivors, Sierra Leone, 2016. *Emerg Infect Dis* 23(7)--July 2017. <<https://dx.doi.org/10.3201/eid2307.161608>>

### Abstract

We conducted a case-control study in Freetown, Sierra Leone, to investigate ocular signs in Ebola virus disease (EVD) survivors. A total of 82 EVD survivors with ocular symptoms and 105 controls from asymptomatic civilian and military personnel and symptomatic eye clinic attendees underwent ophthalmic examination, including widefield retinal imaging. Snellen visual acuity was under 6/7.5 in 75.6 percent (97.5 percent CI 63 percent-85.7 percent) of EVD survivors and 75 percent (97.5 percent CI 59.1 percent-87.9 percent) of controls. Unilateral white cataracts were present in 7.4 percent (97.5 percent CI 2.4 percent-16.7 percent) of EVD survivors and no controls. Aqueous humor from 2 EVD survivors with cataract but no anterior chamber inflammation were PCR-negative for Zaire EVD virus, permitting cataract surgery. A novel retinal lesion following the anatomic distribution of the optic nerve axons occurred in 14 percent (97.5 percent CI 7.1 percent-25.6 percent) of EVD survivors and no controls, suggesting neuronal transmission as a route of ocular entry.





## Small protein found in Ebola virus may be responsible for its rapid spread, study says

Source: <https://homelandprepnews.com/stories/22808-small-protein-found-ebola-virus-may-responsible-rapid-spread-study-says/>

June 12 – A Tulane University-lead study recently revealed how **a small protein found within the Ebola virus may be responsible for the virus' ability to spread rapidly from person-to-person.**

Ebola-infected patients are known to produce large quantities of a compound known as **delta peptide**. The peptide's active functions, however, remain unknown.

For the study, researchers first tested the effects of purified delta peptide on mammalian cells which lead to the determination that a viral protein called viroporin, which damages host cells and makes membranes more permeable, could be responsible.

"Our leading hypothesis is that the delta peptide affects the gastrointestinal (GI) tract by

damaging cells after its release from infected cells," William Wimley, professor of biochemistry and molecular biology at the Tulane University School of Medicine, said. "This effect may be a major contributor to the severe GI illness of patients with the Ebola virus."

**Tulane researchers said the next step would be to start developing various therapies that target the delta peptide.**

The discovery comes as worldwide healthcare professionals work to contain a recent outbreak of the disease in a remote area of the Democratic Republic of the Congo (DRC). In total, 29 suspected cases have appeared since the first case was identified on April 22. It is the ninth such outbreak to appear in the DRC since 1976.

## Another mass poisoning (?) in the Turkish military

More than 3,000 affected – location: occupied Northern Cyprus; might be connected with previous Manisa



similar incident in Turkish mainland.



## Ebola vaccine developed in Canada shows promising results

Source: [http://www.medicalnewstoday.com/releases/317981.php?utm\\_source=newsletter&utm\\_medium=email&utm\\_campaign=weekly-hcp](http://www.medicalnewstoday.com/releases/317981.php?utm_source=newsletter&utm_medium=email&utm_campaign=weekly-hcp)

June 20 – A phase 1 randomized controlled trial has found an Ebola virus disease (EVD) vaccine, developed in Canada, was well-tolerated with no safety concerns, and high antibodies were present in participants 6 months after immunization. The study, led by Canadian researchers, is published in *CMAJ (Canadian Medical Association Journal)*.

The research team conducted the clinical trial "as part of a coordinated, international effort to expeditiously evaluate candidate EVD vaccines and make them available to control the epidemic," writes lead author Dr. May ElSherif, Canadian Center for Vaccinology, IWK Health Centre, Halifax, Nova Scotia, with coauthors.

There have been some recent clusters of Ebola cases in Africa and more expected as survivors may still spread the virus to uninfected people.

**The trial involved 40 healthy people aged 18 to 65 years and looked at safety of the vaccine and the lowest dose required for an immune response after injection with one of 3 doses.** At a ratio of 3:1, thirty participants received the vaccine and 10 received [placebo](#) injections. The researchers found that **adverse events were mild to moderate**, with only 3 severe reactions, including [headache](#), [diarrhea](#) and [fatigue](#), which completely resolved.

"The results of this trial were positive and very promising; all 3 dose levels of the VSV [vesicular stomatitis virus] Ebola vaccine were well-tolerated by participants, and no safety

concerns were identified," says Dr. May ElSherif.

Several Ebola vaccine candidates are being assessed in ongoing or recently completed phase 1, 2, and 3 trials in various parts of the world. **This VSV-Ebola vaccine (formal name: rVSVΔG-ZEBOV-GP)** was developed at the Canadian National Microbiology Laboratory of the Public Health Agency of Canada. A similar parallel trial was conducted at the Walter Reed Army Institute of Research (WRAIR) in the United States.

Wild type VSV primarily infects animals (e.g., cattle and horses) and rarely infects humans.

Data from this trial and others indicated an optimum dose of 20 million pfu that will be assessed among people with compromised immune systems in areas where Ebola is endemic. An upcoming study at 2 sites in Africa, as well as in Montréal and Ottawa in Canada, will test the safety and protection levels of the VSV-Ebola vaccine in HIV-infected adults and adolescents. A completed phase 3 trial showed that the vaccine is effective in preventing EVD in contacts of recently confirmed cases.

Given the ongoing presence of Ebola, "these facts underscore the importance of continuing efforts and collaborations that may ultimately lead to licensed Ebola vaccines that would protect humans and prevent or control outbreaks in the future," conclude the authors.

**Article:** [Assessing the safety and immunogenicity of recombinant vesicular stomatitis virus Ebola vaccine in healthy adults: a randomized clinical trial](#), May S. ElSherif MD MPH et al., *CMAJ*, doi: 10.1503/cmaj.170074, published 19 June 2017.

## Preventing outbreaks: U.S. investment in global health security training

By Kathryn Insley

Source: <http://www.homelandsecuritynewswire.com/dr20170622-preventing-outbreaks-u-s-investment-in-global-health-security-training>

June 22 – Biological agents including viruses, bacteria, and toxins, can devastate local economies with their potential effects on humans and livestock. In addition to potentially catastrophic immediate impact, these agents could also set in motion long-term disasters,



causing regional instability and challenging international security. For these reasons, the U.S. Department of State invests in many programs to reduce biological security risks.

To understand the source and evolution of the biological agents in an outbreak, scientists compare samples from the outbreak to those in their labs. Not all biological materials have the same level of risk, and scientists use a graded approach to protect communities from their accidental or intentional release. Especially in the case of the most dangerous materials, scientists must use stringent protocols to prevent their accidental escape or intentional removal from the lab. These techniques prevent the unintentional exposure of workers or communities as well as prevent the theft, diversion, or unauthorized removal of dangerous biological agents.

Because diseases may freely transgress state borders, preventing outbreaks caused by biological agents is a matter of international concern. The State Department funds projects around the world to improve the safe handling and responsible use of dangerous biological materials. By training local trainers to build in-country biorisk management expertise, such programs have a multiplied effect. One example of the U.S. investment in global health security is our cooperation with public and animal health partners in Algeria.

The State Department carefully evaluates and selects the most impactful projects for each region, pairing local needs with appropriate subject matter expertise. One source of such expertise is Sandia National Laboratories (SNL), which has received State Department funding to implement numerous health security projects. Just this April, Lora Grainger, working at the Labs' [International Biological and Chemical Threat Reduction](#) (IBCTR), travelled to Algeria to train Algerian trainers on a project funded by the State Department. Participants included scientists working in Algeria's national network of laboratories managed by the Ministry of Agriculture, the [Institut National de Médecine Vétérinaire](#) (INMV). In an advanced trainer workshop, more than a dozen Algerian experts continued to build the skills and knowledge on material safety after having taken an introductory training course held by IBCTR in May 2016 that was also sponsored by the State Department. More importantly, Algerian trainers developed the skills to design new courses tailored to local needs and independently deliver them where they are most needed. Following the cooperative training, these trainers will have ongoing access to Sandia mentors.

The U.S. and Algerian governments' partnership to develop biorisk management trainers has existed for several years. This summer, Sandia's Country Lead for Algeria, Lynn Fondren, will deliver the first course on secure shipping of biological materials enabling domestic shippers to meet the gold standard of safety precautions set by the International Air Transportation Association (IATA). This State Department-funded follow-on course will prepare Algerian experts in the Ministries of Health, Agriculture, and Higher Education to become trainers that instruct individuals within their respective ministries to become certified to ship biological materials in accordance with the IATA standard requirements. Implementing practices like triple packing and special handling by carriers will keep communities safer even when transporting samples domestically.

For scientists with a shared interest in global health security, these projects are a valuable opportunity to share information and learn from each other. They face challenges unique to their varied environments, but collaborating on ways to address threats and prevent disasters is among the most interesting and rewarding parts of their work. The State Department is proud to support efforts that mitigate biorisks around the world and strengthen global health security.

*Kathryn Insley serves as Acting Director Office of Cooperative Threat Reduction in the [Bureau of International Security and Nonproliferation](#).*

## How plague attacks us – and how we should defend ourselves

Source: <http://www.homelandsecuritynewswire.com/dr20170622-how-plague-attacks-us-and-how-we-should-defend-ourselves>

June 22 – The plague that is believed to have caused the Black Death still occasionally ravages populations, albeit to a much smaller extent than before. Now we know more about how the bacteria attack us.





But how does the plague bacterium attack human beings, and how does the body defend against its constantly evolving attacks? New research on the bacterium is yielding new answers.

### An “arms race”

Evolution seems to work like an “arms race” between bacteria and humans.

Bacteria attack the human body in new ways, but over several generations, human beings become better at fighting them and build resistance to the attacks – at least until the bacteria find new and different means of attacking us.

To put it another way, bacteria find ways to inhibit immune responses, but the body also develops new ways to circumvent the blockade and to recognize the infection. “We can only hope that humans win in the end!” says Egil Lien, an adjunct professor in NTNU’s Department of Cancer Research and Molecular Medicine.

Lien is part of a group at the NTNU-CEMIR research center, which among other things investigates how bacteria attack people. For this project, Lien’s group researched bacterial effector proteins.

### Confuses human cells

**Effector proteins** are signal substances from bacteria that trigger a particular reaction when they enter a host cell. Many bacteria that cause disease typically use specialized secretion systems to introduce their effector proteins into human cells.

These effector proteins can have various functions, but their main purpose is to provide a good growing environment for the invading bacteria.

Bacteria can stop attacks and bacteria-inhibiting activities on themselves by blocking the host cells’ immune responses, which is often the task of the innate immune system.

Put simply, bacteria can use the effector proteins to create chaos inside cells, allowing the infection to spread without being effectively stopped.

### Multiple methods

Bacteria can secrete effector proteins in several ways. One of the best-known methods is the type 3 secretion system, which is found in various disease-causing pathogens such as salmonella, *E. coli*, shigella and *Yersinia*.

“These secretion systems are sophisticated nanomachines,” says Lien. “They form a ‘needle’ from the bacterium and create a pore in the target cell membrane that the effector proteins are released into.”

Researchers associated with NTNU-CEMIR use *Yersinia pestis* – that is, the bacterium that causes bubonic plague – as a model system that demonstrates how several types of bacteria work.

The Black Death was most likely a combination of the bubonic and pneumonic plagues, according to most scientists in the field.

### Bacteria control cytokines

Gemini [says](#) that researchers at NTNU-CEMIR have discovered how some of these bacterial effector proteins can block new signaling pathways in our innate immune system.

The researchers focused on how bacteria manipulate the cell’s secretion of the signal molecules (called cytokines) IL-1 $\beta$  and IL-18. These excretions can produce anti-bacterial responses in mammals.

“*Yersinia* is very effective in controlling the secretion of these cytokines. One type of effector molecule called YopM can inhibit the activation of a cell complex called the pyrin inflammasome, which regulates the release of IL-1 $\beta$  and IL-18,” says Lien.

One bacterial strain that lacks YopM and that is weakened in normal mice can cause disease reactions in mice lacking pyrin. This result has proven that this mechanism is important for immune functions in mammals.

### New defense mechanisms

Evolution allows humans can develop new defense mechanisms against such attacks. People who survive bacterial attacks and go on to have children will pass on their genes and their ability to resist disease to the next generation.

Eventually, individuals who fight off bacterial attacks can come to predominate in an entire population, especially if the illness is so damaging or deadly that it prevents people from passing on their genes.



This situation can lead to unexpected results – like that it may be an advantage to be exposed to less serious illnesses.

#### **Rare disease can provide greater resistance**

“It’s interesting that some people, like those who have the autoinflammatory disease Familial Mediterranean fever (FMF), have mutations in their pyrin molecule. These patients may have an increased level of IL-1 $\beta$  and IL-18,” says Lien.

One hypothesis is that these individuals may have had a different resistance to infections, such as the Black Death, throughout the ages. Might this population have been more resistant since they have greater amounts of signal substances? Could this have been a positive

selection factor that helped them, on average, to have more surviving children than those who did not have increased resistance?

FMF is a rare disease in Norway. It is much more common in Turkey, for example, which was one of the portals for bringing plague from Asia to Europe during the Black Death in the Middle Ages.

“More research may be able to find connections between these pyrin mutations, historic epidemics and pandemics, and modern infections,” Lien says.

He adds that the CEMIR project has already found complex interactions between bacteria and host organisms, and shown new aspects of how the body fights infections.

— Read more in D. Ratner et al., “Bacterial secretion systems and regulation of inflammasome activation,” *Journal of Leukocyte Biology Online* 10, no. 1 (3 November 2016); D. Ratner et al., “Manipulation of IL-1 $\beta$  and IL-18 production by *Yersinia pestis* effectors YopJ and YopM and redundant impact on virulence,” *Journal of Biological Chemistry* 291 (16 February 2016): 9894-905; and D. Ratner et al., “The *Yersinia pestis* effector YopM inhibits Pyrin inflammasome activation,” *PLOS Pathogens* (2 December 2016):e1006035.

**Quiz on Greek tree** – it is a *Ricinus communis* (Red Castor Bean) tree

