# 2 CBRNE DIARY

Dedicated to Global First Responders

CBRNE-Terrorism Newsletter

April 2019


www.cbrne-terrorism-newsletter.com

# C²BRNE DIARY– 2019©

**April 2019**

**Website:** www.cbrne-terrorism-newsletter.com


## Editor-in-Chief

**BrigGEN (ret) Ioannis Galatas MD, MA, MC (Army)**
**PhD cand**
Consultant in Allergy & Clinical Immunology
Medical/Hospital CBRNE Planner & Instructor
Senior Asymmetric Threats Analyst
Manager, CBRN Knowledge Center @ International CBRNE Institute (BE)
Athens, **Greece**

**Contact e-mail:** igalatas@yahoo.com




## Advertise with us!

CBRNE-Terrorism Newsletter is published on-line monthly and distributed free of charge.

- Sponsors of the International CBRNE Institute can advertise for free.
- CBRNE related companies can advertise for free.


## PUBLISHER

**Mendor Editions S.A.**

3 Selinountos Street
14231 Nea Ionia
Athens, Greece
Tel: +30 210 2723094/-5
Fax: +30 210 2723698

**Contact e-mail:** Valia Kalantzi info@mendor.gr

## C²BRNE DIARY is:

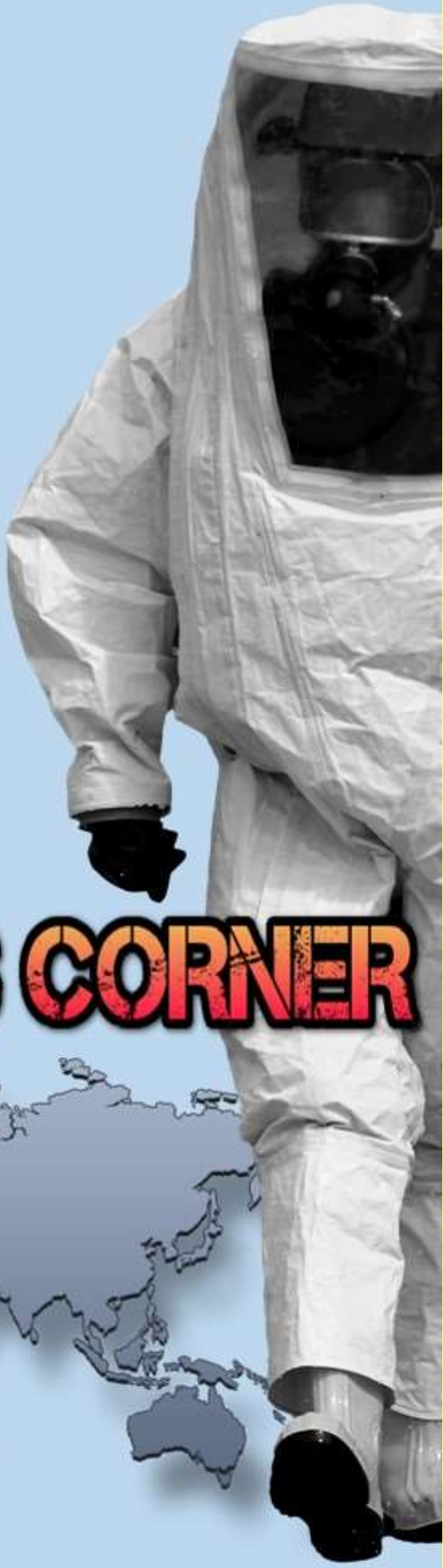
1. Read by First Responders in more than 80 countries around the globe;

2. Distributed free to more than 700 institutions, organizations, state agencies, think tanks, defense companies, institutions and universities.

International CBRNE Institute

CBRNE-Terrorism Newsletter

C²BRNE DIARY



# EDITOR'S CORNER

## Editorial

**Brig Gen (ret'd) Ioannis Galatas, MD, MA, MC**

*Editor-in-Chief*
C²BRNE Diary

*Dear Colleagues,*

April will be remembered for two incidents – the Notre Dame mega fire in Paris and the terrorism barrage in Sri Lanka that led to a bloodshed, perhaps the biggest after 9/11. Churches and luxury hotels were attacked in a Mumbai style only this time not in a single city but in different locations within the country. These two unfortunate incidents shade anything else happened during the fourth month of 2019:

- Uncertainty for the post-ISIS era.
- Saudi Arabia completed the building of its first nuclear power plant (according to Bloomberg).
- Big emphasis on hacking against the medical sector – I worry about this a lot; hospitals are the last frontiers before death: no functioning hospitals equals fewer chances to survive.
- Two unique drone proposals – one from Parrot with a thermal camera included in the price and one from Fotokite producing a kite-type drone for first responders.
- Again the big question: what will happen if the sea rises a few meters? Do we have a Plan B or is it too exotic to deal with now?
- Who decides when something is a terrorist incident? That is an easy one! The media of course!
- UN calls for repatriation of ISIS wives! Please do not forget the benefits and a studio with a view!
- In progress: BuChE as an anti-nerve agent solution – eagerly waiting.
- Late discovery (by me): Skin cream protects against vesicants! Include it in your CBRN field pack!
- Cyanide scare in Japanese businesses – in powder form, towards the 2020 Olympic Games…
- Measles on the rise almost worldwide; and so is the anti-vaccination movement. One more time we conclude that the human brain is capable of excellence and immense stupidity.
- The famous BioWatch is succeeded by the new BioDetection-21. Doomed to fail is another opportunity to spend money on a project that cannot overcome childhood diseases,
- A strange story about the mold *Candida auris* that is slowly spreading around the globe.
- Private company and academia decided to collaborate to synthesize a vaccine against plague. Keep on the good work.

The Editor is very proud to participate in a training course to be held at the Defense CBRN Center in Vught, The Netherlands. It is a great training environment providing realistic CBRN training along with theoretical training and excellent hospitality services. More in the May issue along with photos!
An ambitious project is about to begin in Qatar. The Qatar CBRN Academy is step-by-step approach its final stage and soon will be ready to provide courses to the civilian sector on all aspects related to CBRN threats and countermeasures. Academy's website will also be ready by May – its URL will be announced in May's issue as well. The core of training will be very simple but equally important: survival of first responders in order to be able to save contaminated victims. The Editor is very proud to take part in this effort and transfuse with expertise, experience and specialized knowledge to those in the first line of duty!

*The Editor-in-Chief*

# Notre-Dame, Ravaged by Fire, Faces a New Threat: Rain

Source: https://www.nytimes.com/2019/04/23/world/europe/notre-dame-fire-protect.html

Apr 23 — With rain expected in Paris later this week, workers at Notre-Dame cathedral on Tuesday scrambled to protect the building's interior, scaling the walls with ropes to put in place giant tarpaulin coverings, the cathedral's chief architect said.

A catastrophic fire last week destroyed the cathedral's attic and the lead roof, creating gaping holes in the immense vaulted ceiling, and leaving the building's interior perilously exposed. On Tuesday, a team of workers specialized in using ropes at great heights — "mountaineers" as they are called in French — labored to install the tarps.

"We are working as fast as we can," said the architect, Philippe Villeneuve, adding that the work was expected to be finished by Wednesday. The mountaineers are "used to working in perilous conditions," he added. "They know this kind of work."

Before putting up the tarp, the workers had to install prefabricated metal beams on which to suspend it. The job is dangerous not just because of the cathedral's height, but also because the fire left the building unstable: No one can be certain which parts might crumble as a result of the extreme heat to which it was subjected.

Investigators from the Paris prosecutor's office are still trying to determine the cause of the fire.

After interviewing dozens of workers, witnesses, security guards and construction company officials, investigators think it may have been caused by a short circuit linked to the restoration work that was underway when the fire broke out, perhaps connected to the wiring of the elevators that had been installed in the scaffolding, according to French news media reports

# All ISIS Has Left Is Money. Lots of It!

Source: https://www.defenseone.com/threats/2019/03/all-isis-has-left-money-lots-it/155784/

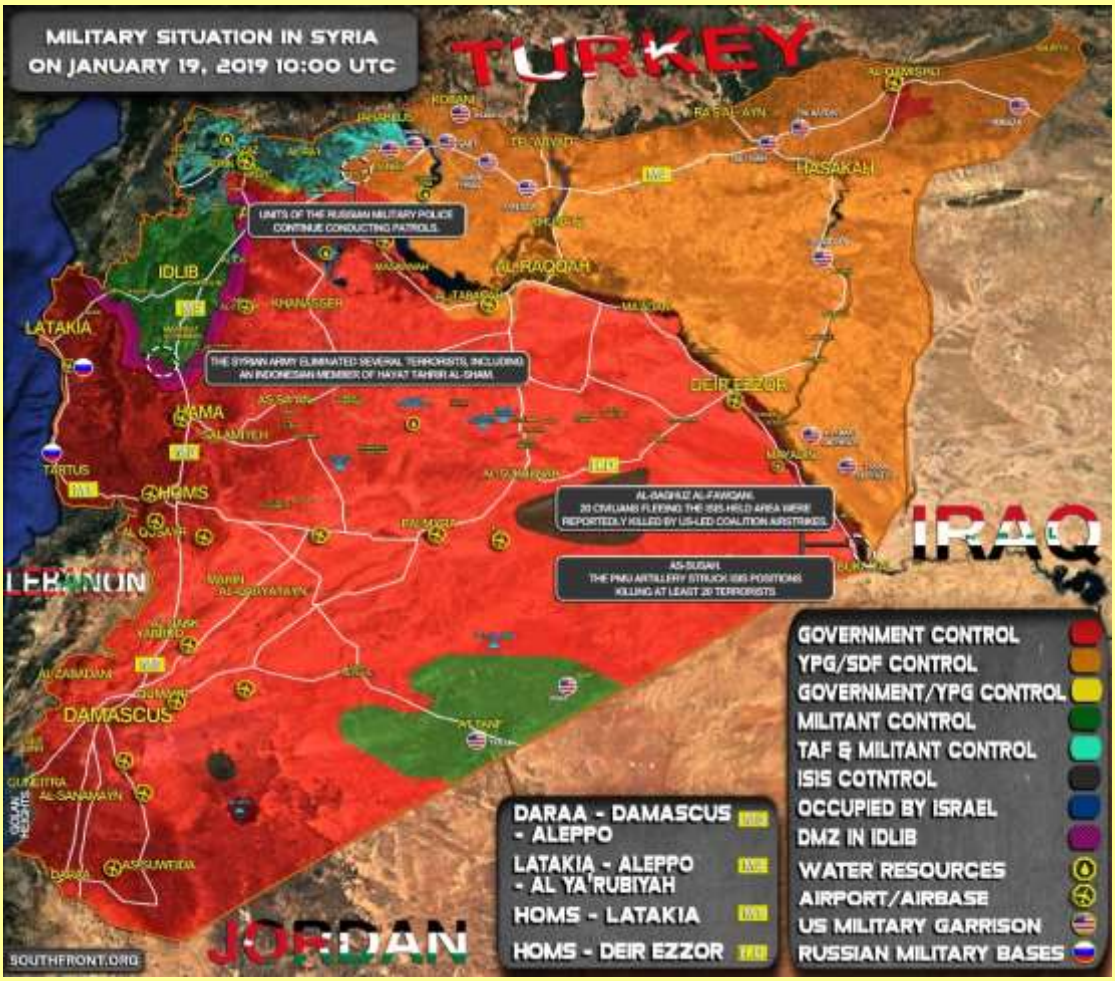
Mar 25—If you're looking to transfer money here, there's a chance you will be directed to Abu Shawkat. He works out of a small office in a working-class suburb of the Lebanese capital, but won't give you its exact location. Instead, he'll direct you to a nearby alleyway, and whether he shows up depends on whether he likes the look of you.

Abu Shawkat—not his real name—is part of the *hawala* system, which is often used to transfer cash between places where the banking system has broken down or is too expensive for some to access. If he agrees to do business, you'll set a password and he will take your cash, then provide you with the contact information of a *hawala* broker in the city where your money is headed. Anyone who offers that specific password to that particular broker will get the funds. Thus, cash can travel across borders without any inquiry into who is sending or receiving it, or its purpose.

In the case of neighboring Syria, U.S.- and British-funded projects have sent millions of dollars into the country using the *hawala* system, humanitarian organizations use it to pay staff, and Syrians working abroad depend on it to get money to impoverished relatives.

But Abu Shawkat runs the *hawala* equivalent of a mom-and-pop store: One of the giants of the industry, which analysts believe owns a network of money-services businesses and has moved millions of dollars a week, is the Islamic State.

Even as U.S.-backed forces wrest back the Islamic State's last strip of



territory in Syria, the United States and its allies are nowhere close to bringing down the terrorist organization's economic empire. The group remains a financial powerhouse: It still has access to hundreds of millions of dollars, according to experts' estimates, and can rely on a battle-tested playbook to keep money flowing into its coffers. That continued wealth has real risks, threatening to help it retain the allegiance of a committed core of loyalists and wreak havoc through terrorist attacks for years to come.

The Islamic State's financial strength offers a window into the broader challenge facing the United States and other governments. In its effort to squeeze the group financially, Washington has been forced to rely on a fundamentally different strategy than it employed in its military campaign: The main weapons at its disposal are not air strikes and artillery barrages, but subtler tools, such as sanctioning Islamic State–linked businesses, denying them access to the international financial system, and quietly cooperating with governments across the globe. Successes will be less visible, the campaign against the group will likely take years, and there is no guarantee of victory.

The end of the Islamic State's days of holding and governing territory represents a double-edged sword for officials looking to starve it of resources. On the one hand, its dramatic losses have made it far more difficult for the group to rely on two major sources of revenue: the exploitation of oil fields in Iraq and Syria, and the taxation of citizens living under its rule. These methods played a key role in allowing the Islamic State to raise roughly $1 million a day, a senior Iraqi security official, who declined to be identified discussing intelligence issues, told me, transforming the group into the world's richest terrorist organization.

On the other hand, the Islamic State's loss of territory has freed it from the costs associated with trying to build its self-declared "caliphate," allowing it to focus exclusively on terrorist activity. A U.S. Treasury Department official, who spoke on condition of anonymity, said that the group is operating increasingly like its insurgent predecessor, al-Qaeda in Iraq, and no longer requires the same resources it did when it governed territory. Oil still brings in revenue too: While the Islamic State no longer controls individual fields, the Treasury official added that a key source of the group's income is the extortion of oil-supply lines across the region.

The Islamic State is also still sitting on the massive windfall that it built up during the height of its power. "What we know is that they accumulated large amounts of cash and other assets," said Howard Shatz, a senior economist at the Rand Corporation and co-author of several studies on the Islamic State's finances. "We don't know where it all went."

Some of those funds appear to have been invested in legitimate commercial enterprises. In October, a series of raids on Islamic State–linked businesses in the Iraqi city of Erbil often run by middlemen who partner with the group not out of ideological sympathy but for profit, and then funnel revenue to the Islamic State when called upon.

The senior Iraqi security official told me that the bulk of the Islamic State's assets had been transferred to Turkey, though the Treasury Department claims owned and operated Syria-based money-services businesses that exchanged money with Turkey. The Turkish government has consistently denied providing safe harbor to either Islamic State individuals or the group's assets.

The war-ravaged states of Syria and Iraq also provide the Islamic State with ample opportunities to revive the tactics that financed its predecessor organization. From 2008 to 2012, when al-Qaeda in Iraq was driven underground, it operated much like a mafia: It skimmed construction contracts, particularly in the northern Iraqi city of Mosul; stole goods and resold them; and kidnapped members of wealthy families for ransom. Despite its straitened circumstances, the group was recording monthly revenues of nearly $1 million just in Nineveh province, of which Mosul is the capital, in late 2008 and early 2009.

Today it has even more factors working in its favor. The destruction of areas of northern Iraq once controlled by the Islamic State has necessitated a massive reconstruction effort. At a conference last year, countries show that senior Iraqi, Kurdish, and Turkish politicians had dealings with al-Qaeda in Iraq in 2009; oversight of how funds are spent is likely even worse now, given the magnitude of

the task. Second, the Islamic State kept meticulous records about the approximately 7 million to 8 million people living under its rule during the height of its power. If it retained control of those records, it could use them to extort Iraqis and Syrians.

"If you lived in ISIS territory, they know where you live, they know much money you make, and they know what your business is," Shatz told me. "They can go to a businessman and say, 'You must be very proud of your son. It would be a pity to see something happen to him.'"

Like any smart multinational conglomerate, the Islamic State has diversified its streams of revenue. Even if the United States and its allies manage to cut off, for example, the group's kidnap-for-ransom business, it can turn to those commercial enterprises and extortion rackets.

The situation is far from hopeless. The United States has already made a dent in the Islamic State's finances by targeting its oil network, and the group may find that its meticulous records can be used against it: Once captured, those records could provide a detailed overview of its personnel and sources of revenue. But there are no silver bullets.

Abu Shawkat's market advantage is that he can send money to places where formal institutions have crumbled. The Islamic State's business model relies on similar factors, only on a much grander scale. It aims to exploit state breakdown as a way to fund its main product: political violence. That violence then weakens the state further, creating more financial opportunities for the terrorist organization.

The military victory against the Islamic State is cause for celebration, but it also allows the group to fall back on an economic strategy that has served it well for years. Don't expect it to go out of business anytime soon.

# How terrorist groups learn

**By Colin P. Clarke**

Source: https://www.fpri.org/article/2019/03/how-terrorist-groups-learn-implications-for-al-qaeda/

Mar 13 – With the Islamic State (IS) losing the last of its territory, the global jihadist movement is now entering a new phase. The question on the minds of many is whether al-Qaeda will be able to capitalize upon the moment and reclaim the dominant position as the most capable Sunni jihadist terrorist organization. The most important factor determining al-Qaeda's future trajectory is what the group has learned over the past five years and how it seeks to implement change in its organization. If a review of what is known about terrorist groups and organizational learning is any indication, al-Qaeda will build upon its recent experience in Syria and elsewhere to reassert itself as a dominant force.

A host of contextual and circumstantial factors affect organizational learning. The environment in which an entity operates is one of the most dominant factors influencing its will and capacity to learn. The environment is the laboratory where learning takes place, and it helps shape the opportunities available for the terrorist group to pursue. It also impacts how successful the attempt to learn might be. The context includes obstacles or challenges that must be overcome, or at least mitigated, for the group to learn. For the last five years, Western counter-terrorism forces have been obsessively focused on combating IS, furnishing al-Qaeda with the operational space to maneuver, plan, and train.

Through its affiliates in Syria, Somalia, Yemen, and West Africa, al-Qaeda has taken advantage of weak and failing states, turning ungoverned spaces into alternatively governed spaces, with the governance provided by al-Qaeda franchise groups working at a grassroots level to generate political legitimacy among local populations. This has been a hallmark of al-Qaeda's affiliate in Syria, where the group softened its tone and juxtaposed its control to that of the far more draconian Islamic State. Moreover, al-Qaeda appears to be the last rebel group standing in Syria, at least for now, firmly entrenched throughout Idlib Province. The United States is also concerned about the spread of al-Qaeda to southwestern Libya, and about loose stockpiles of weapons throughout the Maghreb and Sahel. Of particular concern is the ubiquity of man portable air defense systems, known as MANPADS – upwards of 15,000 of these missiles are still

unaccounted for, presenting a major threat to civil aviation.

Depending on circumstances, a terrorist group can be more or less inclined to allocate specific resources toward learning. For example, when under siege from steady air strikes, most of the group's efforts are dedicated to surviving, with operational security consuming more bandwidth than usual, while the lion's share of resources is directed toward military capabilities. Circumstances are also directly correlated to an entity's potential to learn and adapt. When the operating environment undergoes considerable change, terrorist groups may be forced to implement drastic changes or risk being marginalized. Terrorist groups also need to be opportunistic and agile enough to respond effectively as political dynamics shift. With the Trump administration pulling back U.S. troops from places like Syria, Afghanistan, and West Africa, al-Qaeda will likely have a chance to control more territory, especially in areas like the Sahel and potentially Afghanistan, if a U.S. troop withdrawal leads the Taliban to offer al-Qaeda future safe haven.

Actors thinking beyond their immediate survival inevitably move toward instilling a culture of learning. The "organizational memory" of a group allows it to leverage the capabilities of its members without relying solely on a single individual or exclusive cadre of talent. In other words, organizational culture helps ideas outlast individuals long after they have departed, providing a survival mechanism to groups whose leadership faces constant risk of being killed or captured. Throughout the 2000s, the U.S. released a steady stream of announcements noting that al-Qaeda's "number three" (after Osama bin Laden and Ayman al-Zawahiri) had been killed, an observation that grew into a running (if not dark) joke among terrorism researchers because of the frequency with which it occurred. Knowledge becomes institutionalized at the organizational level when information is possessed, expanded upon, and/or refined over time. Groups that endure can pass information and successful tactics, techniques, and procedures on to the next generation. It bears noting that last year al-Qaeda marked its 30th year. It now seems poised to thrive in its fourth decade, reinvigorated and possibly under the leadership of Osama bin Laden's son, Hamza.

When non-state actors can effectively communicate within and across their organizations, they demonstrate the ability to convey knowledge, best practices, and lessons learned through interpersonal networks *and* from the upper echelons of leadership. Effective learning at the organizational level goes beyond individual talents – a learning organization can structure, store, and influence how its members and followers learn. Again, al-Qaeda is instructive here. The Boston Marathon bombers were able to construct their bombs with help from al-Qaeda's online magazine, *Inspire*, which provided the instructions necessary for Tamerlan and Dzhokhar Tsarnaev to build their explosive devices. Explicit knowledge, including information captured in written instructions that exist on the world wide web, can be exchanged easily, provided transmission is through a shared language. But even more valuable for terrorists is in-person knowledge transfer, which can help instill the practical, experiential knowledge that is more valuable to terrorists than documents or instruction manuals found online. Syria was the most recent learning laboratory for al-Qaeda affiliated jihadists, a vast territory where foreign terrorist fighters traveled, networked, learned, and dispersed. Previous conflicts in Afghanistan, Bosnia, Chechnya, and Iraq have demonstrated the utility of access to training camps, which offer militants the opportunity to exchange tactics and build expertise in bombmaking, encrypted communications, and counterintelligence. These camps also serve as focal points of indoctrination and dissemination of propaganda, which bolster the appeal of al-Qaeda and the ideology of 'bin Ladenism.'

One of the lessons actors can learn from studying the behaviors of others is whether their own knowledge base is dated or ineffective. Entities that remain consistent amidst volatility constantly reassess assumptions, including questions about whether older knowledge is still valid or true, and whether current routines are still effective or should be jettisoned in favor of others and why. The ability to learn is influenced by a determination for

risk acceptance, as well as a mission-command style tolerance for autonomy at lower echelons. Al-Qaeda's organizational style has long encouraged the adoption of innovative terrorist techniques, including those devised by individuals outside of the group's organizational boundaries, like al-Qaeda's operational mastermind Khalid Sheikh Mohammed. Moving forward, one way al-Qaeda will likely seek to advance its organization is through human-resources-style grooming and vetting of recruits. Historically, al-Qaeda has engaged in "talent spotting," as terrorism expert Mia Bloom has noted, to aid its recruitment process, discerning the skills of its recruits in order to find the most effective way to utilize an individual's specific talents.

Strategies that require groups to acquire or develop new technologies depend on a number of factors. Chief among them is a group's ability to build or modify the technology in-house, or to build a Rolodex with the proper contacts to help them deal with each of the critical components. Its experience fighting in Syria has expanded al-Qaeda's contacts, and, given the proliferation of jihadist groups worldwide – 67 active groups as of 2019 – there will be more opportunities for al-Qaeda to work with like-minded terrorists from North Africa to Southeast Asia. The threat is compounded by globalization, with barriers to entry for harnessing the power of technology lower than ever. After enjoying somewhat of a renaissance in Syria, al-Qaeda now boasts a more robust network and can seek to pursue several different types of cooperation. As its history has proven, al-Qaeda has managed to navigate the obstacles to alliance formation that have plagued other terrorist groups.

While the world has been focused on the Islamic State (IS) phenomenon since the group's rise in 2014, Al-Qaeda-linked groups in Syria, Yemen, and throughout West Africa have ingratiated themselves with local militants, parroting parochial grievances as a method of gaining entrée. As Georgetown University professor Bruce Hoffman has correctly noted, al-Qaeda's strategy over the past five years has been one of "quietly and patiently rebuilding."

By getting involved in certain conflicts that are both seminal and highly symbolic, such as the disputed territory of Kashmir, al-Qaeda could further burnish its image as the true vanguard of Islamist rebels committed to defending Muslims. If the group is able to successfully focus its resources on striking the West, the notoriety that accompanies a large-scale terrorist attack may provide the momentum necessary for al-Qaeda to supplant IS as the leader of the global jihadist movement.

***Colin P. Clarke*** *is a non-resident Senior Fellow in the National Security Program at the Foreign Policy Research Institute (FPRI), a Senior Research Fellow at The Soufan Center, and an adjunct political scientist at RAND.*

# Nanoweapons of macro destruction, what can the future bring?

**By Navanwita Sachdev**

Source: https://sociable.co/technology/nanoweapons-macro-destruction-what-can-future-bring/

Mar 27 – Trade is not the only aspect where the US and China are at loggerheads. Vying for military supremacy is a much more dangerous aspect of this rivalry.

US military has increased exercises in the Pacific, while China is going to uncanny lengths to build its weapon prowess. The concerns arise not just for these two nations but also for the rest of the world.

Robotics, AI, and nanotechnology are at the forefront of weapons-building programs in these nations. While AI and robotics have received their fair share of publicity in the media, nanotechnology hasn't been in the limelight recently.

However, developments, both inspiring and frightening, have been going on in the "small" world of nanotech.

Is the destructive side of nanotechnology being obscured from our view, so that we continue to say 'wow' and carry on with our lives when we catch a fleeting glimpse? After all, too much hype sometimes reveals more than is intended.

**Nanoweapon Regulation**

Use of nanotech in military development is not just about the bells and whistles; it can also be appalling in the kinds of inventions that are being brought out.

Jürgen Altmann, professor of experimental physics at the University of Dortmund, Germany, emphasized the need for preventive control in the form of regulatory measures taken in advance of dangerous developments in his 2004 paper, "Risks from Military Uses of Nanotechnology – The Need for Technology Assessment and Preventive Control."

"Military exploitation of NT has barely begun, but there are strong indications it may expand rapidly, driving and in turn being driven by the technology," he wrote at the time.

Altmann also predicted special dangers to arms control and stability from new biological weapons and microrobots. The US military is open to ideas such as, non-medical body implants and far-reaching concepts of human-body manipulation. Army workshops have mentioned concepts like 'neuro-functional implants', 'biological input/output devices', and 'implanted miniature computers' as early as 2001.

While some of these inventions can truly help, for example, in the case of paralyzed patients, applying them to soldiers' bodies raises ethical questions.

**Nanotech is a Multibillion Dollar Industry**

Nanotechnology is manipulation of matter on an atomic, molecular, and supramolecular scale. Its potential applications are numerous, which is why governments are investing billions of dollars in nanotechnology research.

Through 2012, the US invested $3.7 billion using its National Nanotechnology Initiative while the European Union invested $1.2 billion, and Japan $750 million.

The US president's 2019 Budget provides nearly $1.4 billion for the National Nanotechnology Initiative (NNI). This cumulatively totals almost $27 billion since the inception of the NNI in 2001.

The American Department of Defense (DoD) "views nanotechnology as an enabling technology area that should receive the highest level of corporate attention and coordination, because of the broad and interdisciplinary nature of nanotechnology."

While it is difficult to get figures of China's defense spending, its Beijing Institute of Technology (BIT) is pouring a lot of research into nuclear submarines with self-learning chips, microscopic robots that can invade a human body, and Star Wars-like 'laser AK-47s'.

The smallness of nanotech gives governments a lot of freedom to infuse it in the name of national security. As *The Nanoage* says, "Nano is the direction of future technological

progress, and military scientists and engineers have a duty to study these effects and apply what they learn to the protection of their people."

**Weaponizing Nanotech**

The need for defending a nation cannot be ignored. However, defense should remain defense and not become offense. Military organizations use nanotech for concepts like clothing with greater tolerance for temperature changes, scratch resistant surfaces, stronger, thinner and cheaper glass, coatings that don't degrade or need repainting, faster intensive medical help, and lighter and faster aircraft that use less fuel. However, when unimaginable weapons come into play, there is a shift in the feeling of usefulness of this kind of tech.

With the help of nanotech, the DoD has developed weaponry such as compact, powerful bombs that use nanometals such as nanoaluminum to cause ultra-high burn rates and chemical explosives with a magnitude more powerful than conventional bombs.

An example is the Nanothermite or 'super-thermite'. Other advancements in this area are superlasers to trigger small thermonuclear fusion explosions in a mixture of tritium and deuterium.

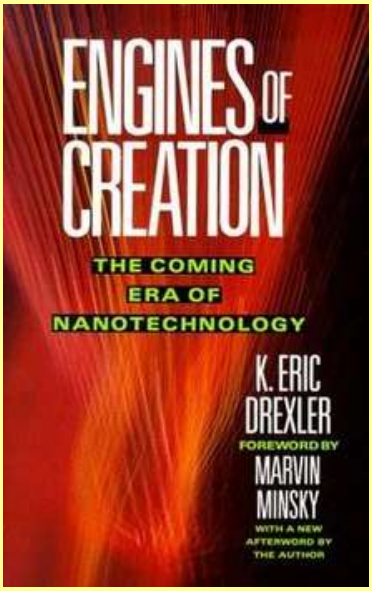
Any military technology that exploits the power of nanotechnology in the modern battlefield can be named nanoweapons. It's not just the effectivity of these weapons that make them attractive.

Consider this:

A whole mini-nuke device can be made to fit into a package weighing less than a few kilograms, which would give the equivalent yield of less than a ton to hundreds of tons of high-explosives. Technically, this doesn't make them Weapons of Mass Destruction, since the devices would utilize very less or no fissionable material, and thus will have virtually no radioactive fallout.

The fact that nanoweapons can be used to enter a body (yikes!) makes releasing highly toxic substances to the most vulnerable or desired target areas of a body very easy. It would be a bioterrorist's dream come true. However, the same tech can be designed to deliver medicines to targeted locations in a human body.

After the invention of any useful piece of technology, the next step is often repetition, or production on a mass scale. This repetition is what is expensive, space and time consuming. With nanotech, repetition will become easy because of the sheer reduction in size.




Again, when on the favorable side, this could mean faster development of medicine and more effective logistics, on the darker side, it means faster production for destruction.

**A Parallel Arms Race**

The more humankind survives and prospers, the more, it seems, we create weapons of destruction to protect ourselves from each other. And then we guard these weapons against the 'wrong hands' or an 'unfortunate accident'.

Assuming that we do survive such misfortune, nations might finally graduate from their kindergarten like the thought process of 'mine is bigger' rivalry and open their eyes in the real world and start thinking of the long-term prosperity this tech can bring us.

Nations are yet to clear the finish line for nuclear weapons. Nanoweapons will give birth to another parallel arms race, dividing the world, once again, into those who possess this tech and those who are at their mercy.

As the founding father of nanotechnology, Eric Drexler, lays out in his book, "Engines of Creation: The Coming Era of Nanotechnology," using nanotechnology, "they could cheaply tranquilize, lobotomize, or otherwise modify entire populations. This would simply extend an all too familiar pattern. The world already holds governments that spy, torture, and drug; advanced technology will merely extend the possibilities."

*__Navanwita Sachdev__ is an English literature graduate and a passionate writer of fiction and non-fiction as well as being a published author.*


EPT 1


EPT 1
The Evzones
The Greek
Presidential Guard
March 25, 2019
National Parade

# Italy: Legitimate-defense law approved

Source: http://www.ansa.it/english/news/politics/2019/03/28/legitimate-defence-law-approved_45274ae2-79ab-4a31-8c77-cce11238e2f3.html


Mar 28 – The Senate on Thursday gave final approval to the government's law expanding the right to legitimate self-defense. It was approved by the Upper House on its third reading with 201 votes in favor, 38 against and six abstentions.

The lawmakers from the parties supporting Premier Giuseppe Conte's government, the League and the 5-Star Movement (M5S), applauded as the legislation got the definitive green light. The bill expanding the right to self-defense from intruders, fashioned by Interior Minister and League leader Matteo Salvini, introduces norms similar to US 'stand your ground' laws.

"This is a great day for Italians," said Salvini, who recently courted controversy by visiting in jail a businessman who made a would-be thief kneel and shot and injured him in the chest.

"After years of chatter and polemics we have enshrined the sacrosanct right of legitimate self defense for those who are attacked in their homes, in their bars, and in their restaurants," he said.

"The Wild West is not being legitimized, but we are on the side of decent and respectable citizens".

Salvini has long campaigned for a law allowing self-defense in all cases and has repeatedly sided with business people and other citizens who have been prosecuted for excessive self-defense under the previous law.

But the new law may face legal hurdles, according to magistrates' union ANM. "There are numerous doubts that the law may be unconstitutional in many aspects," ANM President Francesco Minisci told reporters.

He also said the change in legislation was not needed, in his view. "The new law...will not safeguard citizens any more than they were safeguarded up till today; on the contrary is introduces concepts that have little to do with law, it foresees dangerous automatism and restricts the range of evaluation by magistrates, as well as bringing with it great difficulties in interpretation," he said.

Among the new factors to be weighed in self-defense cases there is the concept of "serious emotional disturbance" in the face of intruders, which would legitimize even deadly self-defense. Italy's association of penal lawyers also came out against the new law, calling it "useless and dangerous". They said it "intervenes on a virtual, non-existent emergency, seeing that the cases of (excessive) legitimate self-defense at home are two a year, and they end up in acquittals".

It is dangerous, the criminal lawyers said, because "it spreads the conviction in people that they can act in conditions of impunity at home. And that's not so". Mario Cattaneo, a northern

Italian restaurant owner who shot dead a thief and has been indicted for excessive self-defense, said "I'm thrilled, and I hope this law can put an end to my agony".

**EDITOR'S COMMENT:** Bravissimo Italia!

## Self-defense in New York and Italy

Source: https://reflectionsonitaly.blog/self-defense-a-comparison-of-new-york-state-and-italian-self-defense-rules/

In New York State the law of self-defense is legally referred to as "justification." When someone raises such a defense, he is not saying that he did not commit the act but that he was justified in so doing. Although New York State is one of the strictest in applying self-defense statutes, to an Italian, New York would probably come across as being extremely liberal in its treatment of victims that are forced to shoot and sometimes kill burglars or assailants that have broken into their homes or trespassed on their property to commit any number of crimes. In New York, to justify the use of deadly physical force you must believe that deadly physical force is being used on you and such belief must be objectively reasonable. You may not use deadly physical force if you can retreat to complete safety (hence no "stand your ground rules" apply in New York). If someone is in a situation where his attacker is running after him with a knife, but he is in a car, under New York law, such a person is guilty of murder if he gets out of his car and kills his attacker when he could just as easily and safely driven away. The duty to retreat, however, ceases to apply if a person is in his home. This is sometimes called the "castle doctrine". The doctrine stems from the idea that a man's home is his castle (and refuge of last resort) and a man should be able to defend it if necessary, without having to runaway.

What makes the difference between US self-defense statutes and Italian rules of "justification" lies not so much in the substantive rules but in the procedural rules, including the application and interpretation thereof by the courts:

**In all systems and jurisdictions, including Italy's, self-defense is an affirmative defense, which means that the claimant does not intend to dispute the fact committed but that such fact was justified or "*scriminato*" by or under the circumstances.**

Generally speaking, in most US jurisdictions, in order to claim such a defense, a defendant must make a case and present hard evidence. Unlike the prosecution, however, a defendant's burden of proof is lower. While the prosecution must prove guilt beyond a reasonable doubt, defendants are held to lower standards. For an affirmative defense to succeed in New York, a preponderance – meaning at least 50% of the evidence raised by a defendant during trial must convincingly substantiate his claim of self-defense in the eyes of the court.

In a civil law jurisdiction like Italy, if the substantive rules of self-defense are similar to those found in common law jurisdictions, the rules of procedure differ from the above, despite Italy's adoption, "adaptation" and introduction of common law adversarial rules in its criminal procedures almost thirty years ago (1988).

Probably the single most important difference between Italy's modern-day adversarial proceedings and common law trials lies in Italy's rules of evidence and the burden of proof. Italian rules of evidence are strictly construed and rigorously applied equally to both the prosecution and the defense. There is little or no shifting in the burden of proof during the course of an Italian trial as happens in common law jurisdictions. And so, under Italian "adversarial" rules of criminal procedure, defendants are not held to lower standards but to the same and equal standards of the prosecution. Why? Probably because of a misconception from "inquisitorial" days (and what provided in the Italian Constitution) that for a trial to be "fair and equal under the law" both sides must be held to the same rules of strict construction, interpretation and application, the mindset being, "what is good for the goose is good for the gander". And so, it is that Italian defendants are put on an equal footing with Italian public prosecutors who are judges chosen from among other colleagues to carry out the functions of prosecution. That, and Italy's constitutionally guaranteed system of multiple appeals

(naturally by either of our two "equal" parties) before a sentence can be said to be final (or *res judicata*) helps explains why Italian trials can seemingly last forever.

## Hamad International Airport ranked fourth best airport in the world: Skytrax

Source: https://www.qatarliving.com/forum/news/posts/hamad-international-airport-ranked-fourth-best-airport-world-skytrax


Mar 28 – The international airport for Qatar's capital city, Doha, Hamad International Airport (HIA) has been recognized as the fourth best airport in the world at the Skytrax World Airport Awards 2019, which were held in London yesterday.

Home to Qatar's national airline, *Qatar Airways*, the airport has been described as the most architecturally significant terminal complex in the world, in addition to being the most luxurious.

HIA has become a genuine gateway to the world serving over 36,000 flights and 30 million passengers each year.

The airport jumped a spot up in the Skytrax ranking of The World's Top 10 Airports from ***number fifth in 2018*** to number ***fourth this year***.

| The World's Top 10 Airports of 2019 are: | Best Airports 2019: 30 to 40 million passengers |
|---|---|
| 1. Singapore Changi Airport | 1. Doha Hamad |
| 2. Tokyo Haneda International Airport | 2. Zurich |
| 3. Incheon International Airport | 3. Copenhagen |
| 4. Hamad International Airport | 4. Melbourne |
| 5. Hong Kong International Airport | 5. Bogota |
| 6. Chubu Centrair International Airport | 6. Bangalore |
| 7. Munich Airport | 7. Minneapolis St.Paul |
| 8. London Heathrow Airport | 8. Dublin |
| 9. Narita International Airport | 9. Detroit Metropolitan |
| 10. Zurich Airport | 10. Ho Chi Minh City |

Preceding HIA for the first, second and third spot in the ranking are Singapore's Changi Airport, Japan's Tokyo International Airport, and South Korea's Incheon International Airport, respectively.

*Gulf Times* reported that HIA has once again been ranked as a five-star Airport and secured the title of 'Best Airport in the Middle East' for the fifth year in a row and 'Best Staff Service in the Middle East' for the fourth year in a row.

Moreover, the airport was also marked as the sixth best in the world for ***airport dining as well as for cleanliness***, in the Skytrax airport rankings for 2019.

The awards, which recognize HIA's innovative facilities, five-star customer service and state-of-the-art terminal, are based on nominations from millions of passengers across more than 500 participating airports worldwide, making them one of largest passenger interaction survey awards in the world, reported *The Peninsula.*

"We are committed to raising the bar when it comes to the airport experience and will continue to invest in our facilities, services and technologies that distinguish us as the airport of choice for millions of passengers around the world," HIA Chief Operating Officer Engineer Badr Mohamed Al Meer said.

The Skytrax survey evaluates customer satisfaction across 39 key performance indicators for airport service and product comprising check-in, arrivals, transfers, shopping, security and immigration, through to departure at the gate, according to *Qatar Tribune*.

The awards ceremony was held in parallel to ***The Passenger Terminal Expo & Conference 2019***, which is the largest annual airport exhibition and airport-networking event in the world.

The second phase of HIA's expansion plan, launched in early 2019, will ***accommodate a capacity of 53mn passengers annually by 2022*** as well as an increase in cargo capacity to 3mn tons per year.

Additionally, improvements in operational efficiency will be seen in increased automation to allow 50% of passengers to perform self-check-in, increase in airspace capacity, and optimized baggage-handling processes.

The expansion plans are part of Qatar's preparations to host the 2022 World Cup where the country will witness a large number of visitors to the top global sporting event.

## HMP Berwyn inmates lock their own cells and guards have to knock before entering

Source: https://www.dailypost.co.uk/news/north-wales-news/hmp-berwyn-inmates-lock-cells-16046015

Mar 29 – Inmates at Wrexham's super prison can lock their own cells from the inside with guards "having to knock before entering."

The UK's newest and largest prison, HMP Berwyn say the move aims to reduce reoffending and improve prisoners' mental health and rehabilitation.

It means they will have the ability to lock their cells from the inside at times when all cells in a wing are unlocked if they want privacy or to use the toilet without being disturbed.

Staff can override these locks if required and prisoners cannot unlock their cells once locked from the outside.
However officers can still enter cells without knocking for searches and emergencies.
The Prison Officers' Association insist that guards don't have to knock.
Cells at the £250m prison have been renamed rooms and prisoners called "men" in a bid to create a more domestic environment.

The new approach is detailed in a report by the Royal Institute of British Architects and the Ministry of Justice – called Wellbeing in Prison Design .
The guidance covers issues like lighting, acoustics and how design can support employment, positive choices and relationships.
It aims to ensure that the design of any new prisons will help with rehabilitation and resettlement, arguing this will ultimately support its aim of reducing reoffending.
The report says: "Being given the possibility to personalize their own environments has a wide range of benefits for the health and well-being of people in custody, helping to create a sense of place and identity.
"Allowing men in custody to control atmospheric conditions like opening windows or ventilators, controlling heating... can alleviate negative well-being impacts of poor atmospheric conditions and generate a sense of self-efficacy."
A Prison Service spokesperson said: “We have committed to building up to 10,000 safe and decent prison places, replacing old jails which are expensive to maintain with those fit for the 21st century.
“While we welcome views on how the design of new prisons could reduce reoffending by improving prisoners’ mental health and rehabilitation, this document is not a blueprint for future prisons.
“Staff at HMP Berwyn can override the locks that prisoners use when they want privacy in their cells.”
Mark Fairhurst, national chair of the Prison Officers' Association said: "Many prisons have privacy locks that enable prisoners to lock their cells when they leave them so they can eradicate theft.
"Staff can override these privacy locks by using their cell keys.
"I am not aware of any member of staff at HMP Berwyn who knocks on a cell door before entering.
"To promote such a practice compromises the security of the establishment and forewarns prisoners of an officer’s presence if they have contraband.

"I can confirm that staff at Berwyn do not knock on cell doors prior to entering them and the POA would never endorse such a practice."

**EDITOR'S COMMENT:** What is this? Do they feel guilty for depriving their freedom and try to compensate with benefits and amenities forgetting why these people are behind the bars? And what about the guards? Nobody is thinking about them and how they feel with these innovations of those who think that self-decoration of cells and the Internet will change attitudes and reset mindsets. *Oh tempora, o mores!*

## Trenta wishes female newlywed pair well

Source: http://www.ansa.it/english/news/general_news/2019/04/01/trenta-wishes-female-newlywed-pair-well_9cc4f794-dc20-44bc-9805-a98aba2819fe.html

April 1 – **Italian Defense Minister** Elisabetta Trenta on Monday sent her best wishes to a lesbian couple, a navy officer and an NCO, who got married in La Spezia on Sunday. "I wanted to send my best wishes to Lorella and Rosy - I have learned that your friends call you that - our two sailors who celebrated their union on March 31," she said. Lorella commands a ship and Rosy is a warrant officer.

**EDITOR'S COMMENT**: If this is not an April 1st fool's day fake news, it is so frustrating for a Salvini fun! Of course, it was a civil marriage but officers should respect both their uniforms and traditions. Honestly, I do NOT care what they do behind the doors of their homes; I do care for the messages that are intentionally desire to spread and the suspicious political correctness of those in top positions. Give us a break!

## Turning Bystanders into First Responders

**By Paige Williams**

Source: https://www.newyorker.com/magazine/2019/04/08/turning-bystanders-into-first-responders

Apr 01 – One April morning in 2014, a sixteen-year-old sophomore at Franklin Regional Senior High, in Murrysville, Pennsylvania, stole two butcher knives from his parents' kitchen, hid them in his backpack, and took them to school. He was wearing all black and, according to witnesses, had a "blank expression." Just before first period, in the hall of the science wing, he stabbed several classmates.

A person can bleed to death in as little as five to eight minutes
(Illustration by Woody Harrington)

Then he pulled the fire alarm. As the corridor filled with people, the boy moved down the hallway, a knife in each hand, stabbing more students. He turned and raced back up the hall—an administrator remembered him "flailing the knives like he was swimming the backstroke." One girl later testified, "I could feel that my lip wasn't attached to my face anymore." A boy, stabbed in the belly, recalled, "I was gushing blood."

The students at Franklin Regional, which is seventeen miles east of Pittsburgh, had been trained to lock themselves inside classrooms during a "code red" event. In one room, a home-

economics teacher called 911 as she attended to an injured boy. A dispatcher asked where the "patient" had been hurt. "The lower abdomen," the teacher said. "On the right side."
"Do you have any way to control the bleeding?" the dispatcher asked.
"I'm putting pressure on it," the teacher said. She was stanching the blood with paper towels. This was helpful, the dispatcher told her, saying, "If it starts soaking through, I don't want you to lift it up at all. Find anything else you can to put on top of that."
The teacher had been applying pressure for about four minutes when the dispatcher said, "We have the actor in custody," adding, "But I don't want you to let any of your students leave that room." As the teacher bore down on the wound, she talked with the injured boy, her voice tense but cheerful. They joked that he could use the experience in a college-application essay. When he predicted that his mother was going to "have a panic attack," the teacher said, "I think she will." Then she said, "I never thought I'd have to do *this*."
Gracey Evans, a seventeen-year-old junior at the time, remembers that she was walking down the hall with her friend Brett when someone rushed past them "like a black mass." She didn't realize that Brett was hurt until he "fell to the ground, withering in pain"—he had been stabbed in the back. In front of her, a boy in a red hoodie grabbed his stomach. A third boy collapsed. The victims took refuge in a nearby science classroom.
Brett's wound did not look life-threatening, so Gracey dropped to her knees beside the boy in the red hoodie. She raised the hem of his sweatshirt and saw blood pouring out of a clean slit above his waistband. Although she had never witnessed real physical trauma before, she didn't flinch. Her mother was an orthopedic nurse, and she had seen videos of athletes' legs broken at grotesque angles.
Gracey recalls that someone handed her a "big wad" of those "terrible" brown paper towels that aren't very absorbent. She placed them over the gash, interlaced her fingers, and pushed. A dancer, she'd been told that she was stronger than she appeared, and she worried that she might be hurting her classmate, but she kept pressing. The boy suddenly vomited, and part of his liver emerged from the wound. Gracey, nauseated, let go, and blood rushed out again. "I'm so sorry!" she cried, unable to continue. Another student, who happened to be an E.M.T., took over, buying the boy more time.
Twenty-one people had been knifed, several severely, yet everyone survived. (The attacker was later sentenced to a minimum of twenty-three and a half years in prison.) Law-enforcement and health-care professionals in the Pittsburgh area took note of the fortitude and the competence of many bystanders. Listening to a playback of the teacher's 911 call, they marvelled at her calm and her effectiveness. Brad Orsini, an F.B.I. agent who worked the case, told me, "You'd have thought it was just another day for this woman." At one point, the teacher had told the boy, "You know what? Sometimes when stuff happens, you go into a different state of mind. You surprise yourself at how you can handle things."
A category of emergency known as an Intentional Mass Casualty Event is now considered a public-health crisis. In recent years, deadly attacks have occurred at schools, offices, concerts, sporting events, shopping malls, and houses of worship. They have involved guns, knives, trucks, and improvised explosive devices. In March, a gunman killed fifty people at two mosques in Christchurch, New Zealand. Much attention has been given to the rising frequency of mass shootings in the United States, but equally alarming is their worsening severity. In the attack at Columbine High School, which occurred in 1999, thirteen people were killed and twenty-four were injured. In the 2017 massacre at a music festival in Las Vegas, fifty-eight people were killed and eight hundred and fifty-one were injured. The arsenal of the Las Vegas perpetrator included the AR-15 assault rifle, a weapon that has been used in many rampages. (In fact, he had fourteen of them with him.) Bullets shot from an AR-15 travel at an extremely high velocity; the force of the ammunition can shatter the bones in a human arm merely by grazing it. Last year, Richard Carmona, a former U.S. Surgeon General, said, "More and more, the injuries we're seeing in the civilian world look like combat casualties." After the 2018 shooting at Marjory Stoneman Douglas High School, in Parkland, Florida—seventeen killed, seventeen injured—a trauma surgeon opened up a victim to find at least one organ in "shreds," with "nothing left to repair."
For victims whose injuries are serious but survivable, rapid treatment is essential. A person can bleed to death in as little as five to eight minutes. Traditionally, during an active-shooter event, paramedics held back until law enforcement secured the area, then rushed in to treat

the wounded and evacuate them to hospitals. That approach changed after Columbine. During that event, rescuers, unable to determine if the killers were dead or hiding, didn't reach some victims for hours. In a second-floor science lab, teachers and students were stranded with a coach, Dave Sanders, who had been shot once in the neck and once in the back. Two Eagle Scouts applied pressure to his wounds, and someone else put a sign in a window—"*1 bleeding to death.*" Sanders died at the scene; it's unclear whether he would have survived with quicker or different treatment.

The Las Vegas shooter positioned himself in a sniper's nest—a hotel window overlooking the festival—and sprayed the crowd with bullets. In this case, it was impossible to stage an orderly transition from a security phase to a medical phase: victims arrived at hospitals in Ubers and pickup trucks, or in the arms of loved ones and strangers.

As public shootings became commonplace, doctors started paying more attention to them. One such doctor was Lenworth Jacobs, the head trauma surgeon at Hartford Hospital, in Connecticut. He'd grown up in Jamaica, where his father was a doctor; when Jacobs was about seven, he and his dad came across an injured bicyclist by the side of the road, and the sight of his father urgently helping a stranger left a lasting impression. Jacobs told me that trauma surgery appealed to him because each case contains a "beginning, middle, and end." A patient presents with a problem—"a gunshot wound, a stabbing"—which is then resolved, one way or another. When Jacobs wasn't operating, he devised protocols that would help increase survival rates in the Emergency Department. At Hartford, he founded Life Star, the first helicopter-ambulance service in Connecticut.

On December 14, 2012, a deranged young man with a semi-automatic rifle and two handguns entered Sandy Hook Elementary School, in Newtown, Connecticut, an hour away from Hartford Hospital. The hospital is a Level 1 trauma center, a designation that signifies the highest level of care. As news of the shooter reached Jacobs, he prepared to send medevac choppers to Newtown, but was soon advised to stand down. "You hear 'Everybody's dead'—and that makes no sense," he told me. "Then you hear 'It's children'—and that makes *no* sense."

Twenty first graders had been killed, along with six administrators and teachers. Jacobs wondered whether the shocking number of casualties was related to the local emergency response, or to the nature of the gunshot injuries, or both. He reviewed the autopsy reports, and, although he had successfully operated on patients with unimaginable physical trauma, he was nevertheless unprepared for what he saw. Many of the children had been shot multiple times, at close range. The reports, he said, were "overwhelming."

The victims at Sandy Hook likely died instantly, but Jacobs, unable to "go back to business as usual," kept thinking about what could be done to reduce casualties in the future. There was not even a second to waste in such incidents: the wounded had to be treated immediately, at the scene.

Jacobs was a regent of the American College of Surgeons, an organization with some eighty thousand members worldwide. At an A.C.S. meeting soon after Sandy Hook, he urged his colleagues to focus on mitigating losses in Intentional Mass Casualty Events. "Obviously, prevention is the way to go," he said. "But, once something has happened, how can we increase survival?"

In trauma care, the primary cause of preventable death is hemorrhage. External bleeding can *always* be controlled in an extremity wound, if it is addressed quickly enough: no one should bleed to death from an arm or a leg injury, even with the loss of a limb.

This message had never been clearly conveyed to the public. Four months after Sandy Hook, Jacobs convened a small group of physicians, military leaders, and law-enforcement officials—including representatives of the F.B.I. and the Department of Defense—at Hartford Hospital. The group became known as the Hartford Consensus.

One member was Frank Butler, an ophthalmologist and a former Navy *seal* platoon commander. In the nineteen-nineties, Butler reviewed the state of battlefield trauma care in the U.S. military. He ultimately discovered that, during the Vietnam War, more than thirty-four hundred service members died because of hemorrhaging from extremity wounds.

For Butler, a solution came to mind: tourniquets. The devices are known to have been used as far back as 1674, during the Franco-Dutch War. Early versions consisted of a strip of cloth and a stick, which was used as a windlass. Modern tourniquets work much the same way:

you snugly encircle a bleeding limb with a band of cloth, then turn the windlass, tightening the band until it stops the flow of blood.

Tourniquets lost favor after the Civil War, because of their association with gangrene and amputation. By the time of Butler's review, medical doctrine had long held that tourniquets did more harm than good. It was true that the longer a tourniquet stayed in place the more it could damage the surrounding tissues and nerves, but in the modern era a patient could usually be evacuated quickly to a hospital. Moreover, early tourniquets hadn't always been used properly—they were strapped below the wound instead of above it, or they weren't tight enough. In a report, Butler argued that "the 'no tourniquet' rule," a "venerated tenet of prehospital trauma care," was wrong. As he recently put it to me, "Tourniquets save lives—period."

Butler's recommendations also introduced the concept of "tactical combat casualty care": soldiers, trained with basic lifesaving skills and equipment, could act as front-line medics when necessary. Several élite combat units immediately embraced the idea. The Army's 75th Ranger Regiment—whose members had seen comrades bleed to death from extremity wounds during the 1993 battle in Mogadishu—began training with tourniquets during simulated missions. Soldiers were taught how to apply a tourniquet to themselves or to someone else within seconds. A group of soldiers at Fort Bragg, in North Carolina, designed a tourniquet that was optimized for battlefield conditions; the device, which came to include a built-in windlass, secured by a plastic clip and a Velcro strap, is called a Combat Application Tourniquet, or C-A-T.

An outdated technique had become a modern cure. Tourniquets are now standard issue in the U.S. military, along with hemostatic dressings—sterile gauze infused with kaolin, a clay that promotes swift blood clotting. By 2012, the *Journal of Vascular Surgery* reported, some soldiers were embarking on missions with tourniquets "already in place" on their limbs.

In April, 2013, when Jacobs and the other experts convened at Hartford Hospital to talk about Intentional Mass Casualty Events, they discussed the tourniquet revival. The group decided that the military's standardized approach to controlling external hemorrhage could be applied to civilian life: members of the public could be trained to identify and treat life-threatening bleeding. The Hartford Consensus devised a protocol, Stop the Bleed, in the hope that it would become as widely known as C.P.R. and Stop, Drop, and Roll.

Jacobs told me that Stop the Bleed training had to be short enough to fit "between church and cooking dinner, or between dinner and the football game," and simple enough for a sixth grader to understand. The instruction had to focus on one goal: "Keep the blood in the body." He and his colleagues knew that the protocol would save lives if they could persuade people to use it.

Thirteen days after the Hartford Consensus first met, explosive devices filled with nails and ball bearings detonated near the crowded finish line of the Boston Marathon. The sidewalks of Boylston Street were strewn with injured spectators. As a team of specialists later wrote in *The Journal of Trauma and Acute Care Surgery*, the bombing was the first major terrorist event in the modern United States "with multiple, severe, war-like, lower-extremity injuries." More than a dozen people lost limbs in the blasts.

Boston has many hospitals, and paramedics were quick to the scene, but they were astonished by how many spectators had already applied pressure to wounds, using clothing or coffee-shop napkins. "Much of the early lifesaving was performed by amateurs," the Washington *Post* reported. Although more than two hundred people were injured, only three died, and *The New England Journal of Medicine* credited this achievement, in large part, to "courageous civilians."

The marathon attack confirmed the Hartford Consensus's view: people would instantly help one another during a crisis, even when the injuries were almost unbearable to see, much less to touch. The real first responders were bystanders.

One icy morning in mid-January, Matthew Neal, a trauma surgeon and a research scientist at the University of Pittsburgh Medical Center, got in his car and drove twenty-six miles north of the city. He arrived at Mars Area High School, where more than two hundred employees of the public-school district were filing into the auditorium, for a mandatory Stop the Bleed seminar. They wore puffy coats and snow boots, and carried Starbucks cups and thermoses that were still warm.

Neal, who is thirty-eight, is tall and lean, with a resonant voice. People call him Macky. He has his own laboratory, which recently received a grant partly funded by the Department of Defense to study treatments for types of bleeding that don't respond to compression, such as certain belly wounds. One night, when I joined his family for dinner, he told me, "My whole focus is blood."

He stood at the front of the auditorium with Raquel Forsythe, another U.P.M.C. trauma surgeon, who wore a voluminous red scarf and had her hair in a high bun. They used a laptop to project a presentation onto a screen. One slide read, "Why do I need this training?" The answers included "mass shootings," "motor-vehicle crashes," "home injuries," and "bombings."

The stabbings at Franklin Regional Senior High had occurred in the wake of other horrific attacks in the Pittsburgh area, including shootings at an L.A. Fitness franchise and a psychiatric clinic. The city's trauma specialists reviewed these tragedies, but, Neal told me, they often ended a case analysis "feeling a bit empty." No matter how nimble first responders are, Neal is prone to say, "I can't do anything if the patient's dead."

In October, 2015, the American College of Surgeons launched a national Stop the Bleed campaign. The White House backed it. President Barack Obama declared that national disaster preparedness was a "shared responsibility" between citizens and the government, and Vice-President Joe Biden described Stop the Bleed as a "call to action" for anyone "in a position to help." Cities at high risk for gun violence, including St. Louis and Baltimore, welcomed the program. Laurie Punch, a trauma surgeon and a leader of St. Louis's Stop the Bleed efforts, has said that trainers "want people to discover that they're not just victims—that they can actually save a life."

The Orlando Fire Department was modernizing its first-responder protocol when, in June, 2016, a gunman shot up the Pulse night club, killing forty-nine people and injuring fifty-three. Trauma specialists based at George Washington University Hospital, in Washington, D.C., found that four of the victims might have survived if they had received "basic E.M.S. care" within ten minutes and had been transported to a trauma hospital within an hour. (None of those who died had received tourniquets or other bleeding-control interventions.) Two days after the Pulse shooting, the American Medical Association voted to adopt a new policy aimed at training the general public in bleeding control.

In Pittsburgh, Andrew Peitzman, U.P.M.C.'s chief of surgery, urged the hospital system to embrace Stop the Bleed. Seminars were soon held throughout the region, with a special emphasis on training law-enforcement officers. U.P.M.C. announced that it would donate more than a million dollars to provide such supplies as tourniquets and hemostatic gauze to every public school, and to put "a tourniquet on the belt of every law-enforcement officer in western Pennsylvania." By the start of this year, nearly forty thousand people in western Pennsylvania had been trained, and bleeding-control kits had been handed out to some five hundred public schools in the area—more than anywhere else in the country.

Stop the Bleed uses a "ripple" approach: volunteers train people, who, in turn, train others. At the Mars Area High School seminar, Neal and Forsythe were the volunteers, along with a group of Cranberry Township paramedics and U.P.M.C. flight nurses. The team also included a more unusual participant: Neal's nine-year-old son, Cameron, who often helps his father teach workshops. He was standing with the other volunteers in a red-and-blue striped shirt, khaki cargo pants, and glasses. Before Christmas, Cameron's third-grade teacher had assigned how-to presentations; recommended topics included how to bake cookies or make a paper airplane. Although Cameron has various areas of expertise—Legos, kung fu—he chose to demonstrate Stop the Bleed.

The standard presentation contains graphic images: an enormous leg gash, a nearly severed foot. Macky Neal warns audiences that the photographs may be upsetting, and trainees sometimes look away or leave. The queasiness is understandable. Blood is supposed to remain inside the body, and it can be sickening to see it released, especially in large quantities. Blood is slippery and messy, and it has a strong metallic smell. Under certain circumstances, it may transmit disease. In traumatic injuries, blood may be mixed with body tissue and teeth and bone. Neal, the son of a Pennsylvania State Police commander, believes that showing people images of severe injuries, if done sensitively, can reduce their unease in a crisis later, just as the use of dummies in C.P.R. training helps people overcome the discomfort of performing chest compressions and mouth-to-mouth resuscitation during a cardiac arrest.

Primarily, the images are intended to help attendees identify life-threatening bleeding. Many bystanders' instinct is to cover up blood. But, as Forsythe put it, "to stop bleeding you need to *see* bleeding."
Paramedics talk about getting patients "trauma naked"—moving aside any clothing and pinpointing the source of hemorrhage. The loss of a limb is automatically considered life-threatening. In other cases, there are warning signs: Is blood pooling around the victim? Is the wound spurting? Are bandages saturated? Bystanders should pay close attention to a victim who becomes suddenly irrational or loses consciousness, symptoms that suggest the onset of hemorrhagic shock. Explaining that "people can bleed to death in as little as five to eight minutes," Forsythe told the audience, "It often takes E.M.S. that long to respond."
The location of a wound dictates treatment. For an arm or a leg, use a tourniquet. For a "junctional" injury—neck, armpit, groin—press against the wound or pack it with gauze. (Place the victim on a hard surface, to maximize pressure.) For a chest, belly, or head wound, the most helpful interventions, such as suction or a needle thoracostomy, require E.M.S. training, but applying pressure can help a patient hold on. Skeptics sometimes ask Neal whether administering emergency care will traumatize a young person, to which he responds, "It may be more traumatic to stand there and watch someone die." The National Center for Disaster Medicine and Public Health recently received a *fema* grant to design a Stop the Bleed-style program for schools.
Neal's son climbed onstage, to demonstrate how to address a severely bleeding wound. He knelt over an object that resembled a piece of smooth firewood. It was a training limb the size of an average male adult's thigh, with the spongy consistency of flesh. A "wound" in the limb went all the way to the "bone."
Cameron started by explaining manual pressure. He told the audience to place one hand on top of the other, interlocking the fingers for stability. "You're gonna push as hard as you can, shrugging your shoulders," for at least ten minutes, he said, or until help arrives. His father added, "This is not 'one hand while you're calling for help on your phone.' When it's your job to hold pressure, that is *exclusively* your job."
The next subject was tourniquets. When a victim has a potentially fatal injury to an arm or a leg, Neal and Cameron explained, tourniquets should be applied right away and should be "high and tight." Cinch the tourniquet just below the armpit or groin, they counselled, and "you will never be wrong."
Cameron slipped a C-A-T onto the fake limb. As he cranked the windlass, Neal asked, "How do we know


when to stop?" Cameron said, "When you don't see any more blood coming out." Once a tourniquet is on, it must be left on: only a medical professional should remove it. (Doctors advise against using improvised tourniquets—without a proper windlass, a belt or a tie won't be tight enough.)
They moved on to wound packing. Forsythe told the crowd, "This is the part that gives some people the willies." The hole in the fake limb simulated a gunshot or a stabbing injury. Cameron poked an index finger into it and said, "As you can see, it's really deep." He steadily thumbed length after length of gauze into the hole, and said, "You're gonna *stuff* it in." The audience laughed. The wound held several feet of gauze. When no more fit, Cameron balled up the remaining material and used it to apply pressure on top. His father explained that, beneath the skin, a

wound could be surprisingly large—it was important to "get gauze down in there, to occupy that space." Packing a wound added pressure that impeded blood flow, and the kaolin in the gauze encouraged clotting. In a mass-casualty incident, using tourniquets and packing wounds could free up first responders to move on to other patients.

The audience had questions. Which should be used first with an extremity wound, a tourniquet or wound packing? A tourniquet. What if the patient fights you? Calmly but firmly explain what you're doing, and acknowledge that the tourniquet may be painful. Forsythe noted, "Tourniquets hurt—a *lot*." (Paramedics typically give victims pain medication.) What if you don't have any hemostatic gauze? "If I needed to, right now, I could take off my scarf or my jacket and use that," she said.

For the second half of the training, everyone trooped to the cafeteria and broke into groups. Each table held a fake limb and a Stop the Bleed kit. The basic kit, which is sold online by the American College of Surgeons, costs sixty-nine dollars. It contains a C-A-T, a compression bandage, protective gloves, hemostatic gauze, and a Sharpie, for writing "*tourniquet*," and the time it was put on, in a highly visible location, such as across the patient's forehead.

Neal and his son claimed a table near the cafeteria's plate-glass windows, which overlooked a parking lot white with ice. Their students included a track-and-field coach, two custodians, an eighth-grade English teacher, a fifth-grade math teacher, and various administrators. One of the administrators watched the math teacher stuff gauze into the training limb, and said to Neal, "I mean, I understand that we need to stop the bleeding, but if you use your T-shirt to pack a wound—that's not sterile!"

"You're not gonna introduce a life-threatening infection," Neal told her. "We can take care of that at the hospital, with antibiotics." He added, "I don't mean to be blunt, but let *me* worry about that problem."

As everyone took a turn with the fake limb, the track coach, who had taught at the school for thirty years, mentioned that, after Sandy Hook, each of the classrooms at Mars had been issued a five-gallon "lockdown" bucket. The typical bucket contains gloves, bandages, Smarties candy, and kitty litter, which can be used as a makeshift toilet. Shaking his head, he said, "Times have changed."

Brad Orsini, one of the F.B.I. agents who worked the Franklin Regional case, retired in December, 2016. The Jewish Federation of Greater Pittsburgh hired him right away, as its first director of community security. Violence affecting the Jewish community had "become increasingly common around the world," the group's C.E.O., Jeffrey Finkelstein, said at the time.

Orsini spent twenty-eight years in the F.B.I.; during part of that time, he was a crisis manager. His new job entails conducting security assessments of the federation's seventy or so buildings and training the fifty thousand members of the local Jewish community in how to stay safe during an Intentional Mass Casualty Event. Orsini and the federation have also begun providing free training at mosques, through the Muslim Association of Greater Pittsburgh.

At Orsini's workshops, he stresses the importance of maintaining situational awareness: don't walk around wearing earbuds or staring at a phone. At offices and places of worship, it's essential to have worked out an escape plan, and to practice it regularly. To smash open a window, he advises trainees, strike the corners, not the center. He teaches Run, Hide, Fight—the protocol that has become a dreadful necessity as mass shootings have proliferated.

One morning in January, I sat in on security training at a Pittsburgh-area organization. The door was open; I had walked right in. In a conference room, employees were gathering around freshly delivered pizzas. Orsini, who is tall and bald, with a strong Pennsylvania accent, told them, "Our worst nightmare is somebody walking in here with a semi-automatic rifle and high-powered rounds."

On a large screen, he cued up security footage from January 6, 2017, of the baggage-claim area of the Fort Lauderdale airport. As travellers wheeled their luggage past carrousels, a young man reached into his waistband, removed a handgun, and began firing at random. Orsini told the room, "Watch what the people do. They just stood there, or got down on the ground."

The gunman killed five people. The shooting lasted about a minute. Orsini asked the group, "In seventy seconds, how far can you move?"

A woman said, "So you're saying run."

"I'm saying *run*," he said, adding, "Do whatever you can to stay alive."

In early September, 2018, Orsini taught the same protocol at Tree of Life, a synagogue in the Squirrel Hill neighborhood of Pittsburgh. The Jewish Healthcare Foundation had bought a bleeding-control kit for every synagogue in town. Tree of Life had installed a kit near the front door and was upgrading its security measures. The rabbi, Jeffrey Myers, did not like carrying his cell phone on Shabbat, for religious reasons, but Orsini urged him to reconsider.

On the morning of Saturday, October 27th, Myers began services at nine-forty-five. At five minutes to ten, an armed man entered and started shooting. Myers instructed congregants to run, then he, too, fled, as he had been trained to do. From a second-floor bathroom, he called 911. The gunfire grew louder, then softer, then louder again, giving him a rough sense of the shooter's movement through the building. Myers's phone call helped first responders understand what was happening inside.

When the gunman attempted to leave the synagogue, two police officers confronted him, and he shot at them; one was hit, and the other took shrapnel. The shooter then retreated into the building. For the next hour and a half, the city's emergency airwaves squawked with the communications of police, medics, and *swat* operators working the scene.

"We are pinned down by gunfire. He's firing out of the front of the building with an automatic weapon."

"Trauma surgeon is with the team."

"We got four D.O.A.s—checking on one more."

"I got one alive!"

"Four additional victims. Eight down, one rescued."

"Two rescued from the basement; three more victims in the basement."

"Contact! Contact! Shots fired! Shots fired!"

"We have one operator hit high in the arm. We have tourniquetted it."

"He's carrying an AR-15 and a Glock."

The emergency-medicine physician at the scene was Keith Murray, who serves as the medical director of the city's *swat* force. He leads a team called the Tactical Emergency Medical Service unit, which adheres to the "tactical combat casualty care" protocol that Frank Butler recommended in the nineties, after reviewing the Vietnam War data.

Murray and the paramedics he oversees have undergone advanced *swat* training, including in the use of firearms. Dressed in body armor, carrying sidearms, they move with *swat* operators to the "far forward" point of conflict, to provide medical care as soon as possible. Like combat medics, they risk their lives in order to save lives.

Tactical medicine, in the civilian world, is an emerging specialty. Teams like Murray's have been trained in hundreds of municipalities, from Los Angeles to Nantucket. Jim Morrissey, a former tactical paramedic for the F.B.I.'s San Francisco *swat* team, recently noted that " 'active shooter' incidents have shifted the way law enforcement operates."

Pittsburgh's first responders use an app that alerts them to urgent calls. When an incident occurs, they receive bulletins on their phones, and they can notify the group if they plan to respond. As the Tree of Life emergency unfolded, Murray and ninety others responded that they were on the way.

Murray, who is in his early forties, grew up in Nevada, in a military family. He attended medical school in Chicago, where he became interested in tactical medicine. In 2011, he moved to Pittsburgh to start the Tactical Emergency Medical Service unit, and he and Macky Neal became friends. Both have young children, and wives in the medical field: Neal's wife, Donielle, runs a research project on liver cancer; Murray's wife, Jennifer, is a surgeon. Until Neal met Murray, he'd never heard of a trauma doctor being attached to law enforcement.

When Rabbi Myers dialled 911, Murray was getting his son, Aspen, ready for a birthday party for Neal's daughter, Ellie. As Murray raced toward the scene, Neal, who was heading straight to the hospital, called him and asked, "Can this be real?"

Murray and his unit entered Tree of Life wearing Kevlar helmets and body armor, alongside *swat* operators. Murray carried a Glock in a drop holster on his left thigh. The pockets on his tactical vest held medical gear, including hemostatic dressings, chest seals, and tourniquets.

Inside the synagogue, they found a woman who had been shot in the upper right arm, and put a tourniquet on her. They cleared room after room, making their way to the third floor, where the shooter had barricaded himself in a classroom.
As operators forced their way inside, the shooter fired. The point man went down, with a shot to the head. Another operator positioned himself on the ground in front of him, so that his body armor could block bullets "like a sponge."
The other operators couldn't access the room because the first two lay in the doorway. An officer shot rounds through the wall, but the attacker was moving. "He'd shoot and move, shoot and move," Murray told me. *swat* operators splashed light on the darkened space, to get their bearings, and saw dust falling from the disintegrating ceiling, like snow.
An officer dragged the point man out of the doorway and down the stairs, to a treatment station that Murray had set up. The team cut away his clothes and saw that he had been hit in multiple locations, including the left arm and both legs. As the gunfire continued, Murray put two tourniquets on the point man's arm and a tourniquet on each leg. The officer who made the rescue had been shot in the wrist, and a teammate tourniquetted him.
All eleven of the congregants who were killed died before Murray's unit arrived. Everyone who left Tree of Life as a patient survived. The shooter, shot in the wrist and the hip, surrendered. "Suspect's talking about 'all these Jews need to die,' " someone on the emergency airwaves told a dispatcher. Murray's team packed the attacker's hip wound and put a tourniquet on his arm, and sent him out alive.

This article appears in the print edition of the April 8, 2019, issue, with the headline "Under the Gun."

***Paige Williams,*** *the Laventhol/Newsday Visiting Professor at Columbia University's Graduate School of Journalism, became a staff writer at* The New Yorker *in 2015.*

# U.S. designates Iran's Revolutionary Guards as "foreign terrorist organization"

Source: http://www.homelandsecuritynewswire.com/dr20190408-u-s-designates-irans-revolutionary-guards-as-foreign-terrorist-organization

Apr 08 – The United States has designated Iran's Revolutionary Guards Corps (IRGC) a foreign terrorist organization, U.S. President Donald Trump said on 8 April.

Washington will continue to increase financial pressure and raise the costs on Iran "for its support of terrorist activity," Trump said in a statement.
"This unprecedented step, led by the Department of State, recognizes that Iran is not only a State Sponsor of Terrorism, but that the IRGC actively participates in, finances, and promotes terrorism as a tool of statecraft.," a statement from Trump's press secretary said.
"We will continue to increase financial pressure and raise the costs on the Iranian regime for its support of terrorist activity until it abandons its malign and outlaw behavior."
The United States has already blacklisted tens of entities and people for affiliations with the IRGC, but not the organization as a whole.
"This designation will be the first time that the United States has ever named a part of another government as an FTO [foreign terrorist organization]," Trump said.

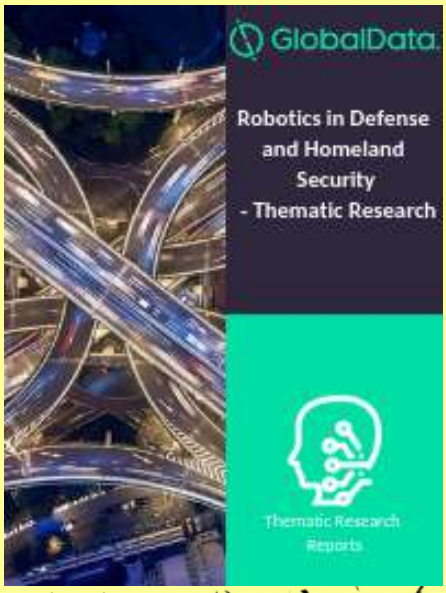
"It underscores the fact that Iran's actions are fundamentally different from those of other governments."
Critics have warned that such a step could open U.S. military and intelligence officials to similar actions by unfriendly countries.
On 7 April, Iranian officials reacted angrily after Trump's intention was first reported by U.S. media.
IRGC commander Mohammad Ali Jafari said the U.S. military will lose the security it enjoys in the region if Washington carries through with the designation.
"With this stupidity, the American army and security forces will no longer have today's calm in the west Asia region," Jafari was quoted as saying by the IRGC-affiliated Fars news agency.
Earlier, Iranian deputies said they will take reciprocal action against the United States.
"We will answer any action taken against [the IRGC] with reciprocal action," said a statement signed by 255 of the 290 Iranian parliamentarians, the state news agency IRNA reported on 7 April.
The U.S. currently designates some sixty groups around the world as foreign terrorist organizations, but none of them is a state-run military like the IRGC.
The designation will mean that sanctions would be imposed on the IRGC, including a freeze on assets that it may have in U.S. jurisdictions. It will also ban Americans from doing business it in any way or giving it material support.
The IRGC was established after the 1979 Islamic Revolution in Iran. It is the country's most powerful security organization and exerts a strong influence over much of the Iranian economy and political system.

**EDITOR'S COMMENT:** Most probably Iran will do the same for US Army, Special Forces or entire Armed Forces. Games big boys play!

# Robotics in Defense and Homeland Security - Thematic Research

Source: https://www.globaldata.com/store/report/gddef-tr-s004--robotics-in-defense-and-homeland-security-thematic-research/

Robotics systems are continuously being integrated into the force structures of militaries around the world. Although their market is now growing quickly, at times e xponentially, their introduction has not been an easy process. Unmanned Aerial Vehicles (UAVs) were the spearhead that opened the way for the technology to be tested, combat-proven and ultimately adopted by many countries worldwide. They offered the necessary learning curve for engineers to develop the range of systems and technologies included in them, and for users to test and implement new concepts of operations. With such a strong installed knowledge base, research organizations and institutions, both government and private, moved on to develop similar systems for the maritime and land environments.




Inside this report, we look at the top themes, its predictions and identify winners and losers.
Scope
This report is part of our ecosystem of thematic investment research reports, supported by our "thematic engine". About our Thematic Research Ecosystem -
GlobalData has developed a unique thematic methodology for valuing technology, media and telecom companies based on their relative strength in the big investment themes that are impacting their industry. Whilst most investment research is underpinned by backwards looking company valuation models, GlobalData's thematic methodology identifies which companies are best placed to succeed in a future filled with multiple disruptive threats. To do this, GlobalData tracks the performance of the top 600 technology, media and telecom stocks against the 50 most important themes driving their earnings, generating 30,000 thematic scores. The algorithms

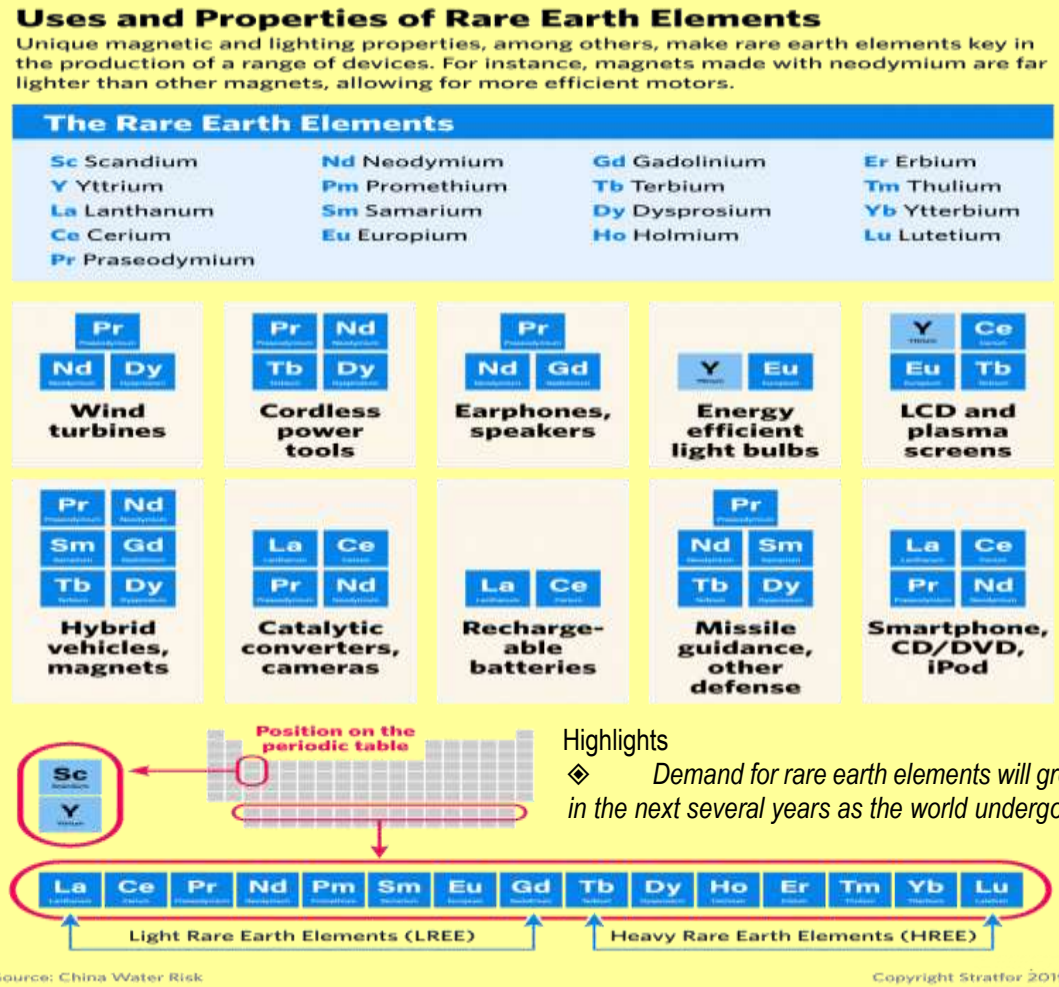
in GlobalData's "thematic engine" help to clearly identify the winners and losers within the TMT sector. Our 600 TMT stocks are categorised into 18 sectors. Each sector scorecard has a thematic screen, a risk screen and a valuation screen. Our thematic research ecosystem has a three-tiered reporting structure: single theme, multi-theme and sector scorecard. This report is a Multi-Theme report, covering all stocks, all sectors and all themes, giving readers a strong sense of how everything fits together and how conflicting themes might interact with one another.

Reasons to buy

- Our thematic investment research product, supported by our thematic engine, is aimed at senior (C-Suite) executives in the corporate world as well as institutional investors.
- Corporations: Helps CEOs in all industries understand the disruptive threats to their competitive landscape
- Investors: Helps fund managers focus their time on the most interesting investment opportunities in global Aerospace & Defense.
- Our unique differentiator, compared to all our rival thematic research houses, is that our thematic engine has a proven track record of predicting winners and losers.

## The Geopolitics of Rare Earth Elements

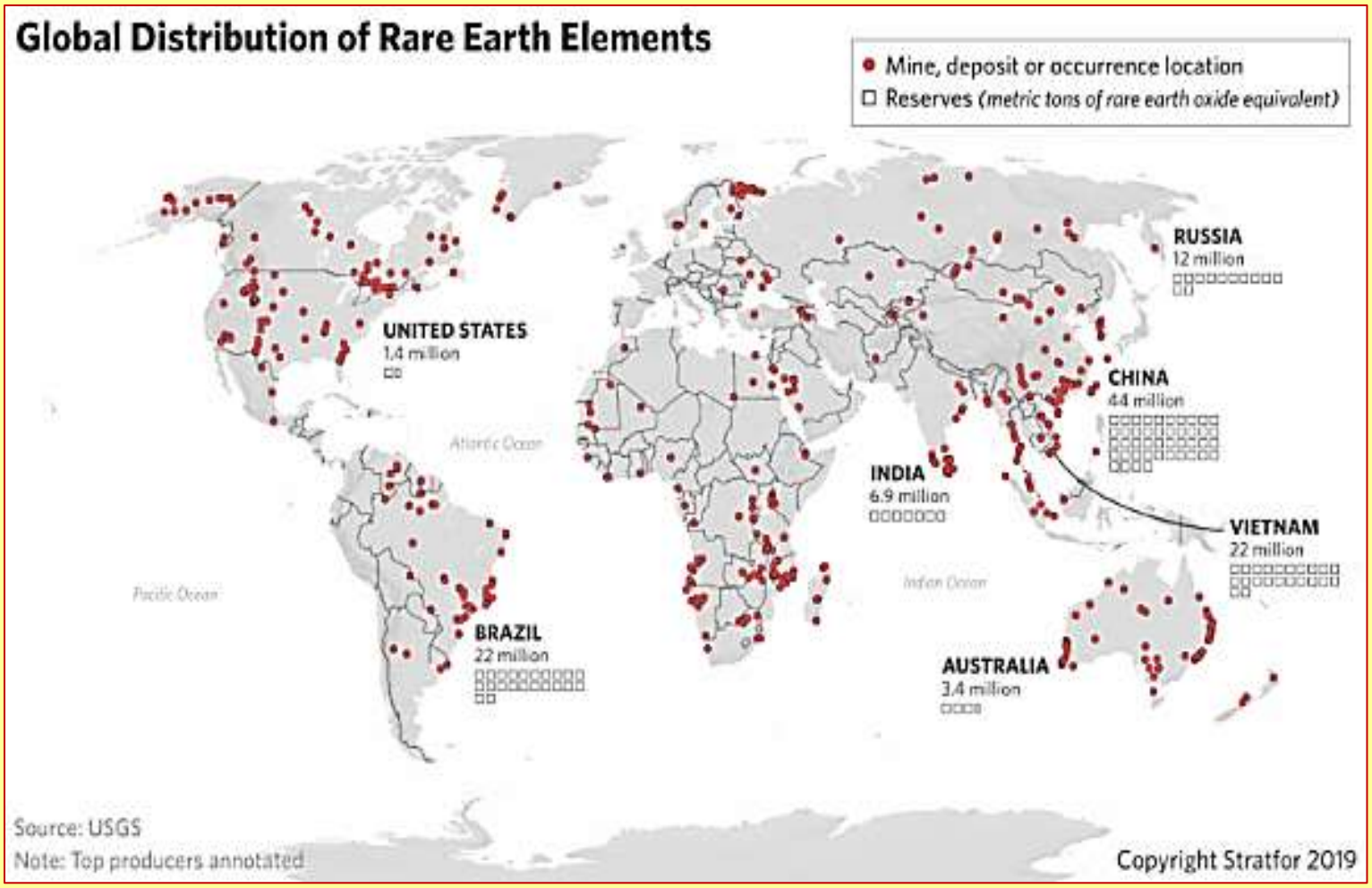
Source: https://worldview.stratfor.com/article/geopolitics-rare-earth-elements




Highlights

◈ *Demand for rare earth elements will grow in the next several years as the world undergoes an energy transition, but the supply chain is vulnerable.*

◈ *China is the top supplier in the market, but its own growing domestic demand may lessen its dominance by driving increased production outside its own borders.*




◈ *The U.S. defense industry makes up a small portion of the total demand for rare earth elements. To ensure supply alternatives from China, the U.S. government will likely need to proactively intervene in the market to shift production dependence away from China.*

## Islamic State: the "caliphate" is off the map for now, but will evolve in dangerous ways

**By Harout Akdedian**

Source: http://www.homelandsecuritynewswire.com/dr20190410-islamic-state-the-caliphate-is-off-the-map-for-now-but-will-evolve-in-dangerous-ways

Apr 10 – The so-called Islamic State (IS) recently lost its last remnant of territory in Syria, but observers were quick to remind the world that the war against the organization is far from over. What then does this loss of territorial control actually mean for IS?

At its height, the self-proclaimed "caliphate" controlled an estimated 34,000 square miles across Syria and Iraq, so its defeat on the ground is clearly a severe blow for it. Nevertheless, IS is now expected to evolve. Its networks will disperse into virtual, online spaces and become largely invisible. It will focus on insurgency tactics and terror attacks with a wider reach.

In the face of this evolution, it may seem like maintaining IS in a contained geographic pocket would have been better than eradicating its primary territorial base altogether. With its defeat on the ground in Syria and Iraq, however, IS and its offshoots will have a more limited capacity for recruitment, indoctrination and growth.

**The importance of territory**

The success of rebel groups to survive protracted armed conflicts is dependent on their ability to maintain territorial control. They require it to extract resources and enlist local recruits.

Territorial control allows armed groups to force local populations into compliance and conformity with their ideological outlook. Since its inception, IS understood that its radical "Islamic" community does not locally exist. Instead, the organization set about creating it, reshaping communities under its control in its own image.

Comparative evidence from civil wars around the world demonstrates how territorial control does not depend on a local population's ideological agreement with the forces in place. Instead, in his book The Logic of Violence in Civil War, Stathis Kalyvas argues that a combination of coercive measures and local administrative bodies allows a force to maintain order, stability and compliance.

For example, during the Liberian civil war in the early 1990s, NPFL (The National Patriotic Front of Liberia) rebels, led by Charles Taylor, used administrative bodies and courts in the territory they controlled to create an alternative order backed up by displays of brutality and violence. This led to an intricate system of patronage and loyalty that created new dependencies between local communities and the new regime. These Taylor-era Liberian courts are comparable to IS's religious courts which controlled the issuing of permits for cross border activities, defined the educational content of local schools, distributed social services – and carried out extreme public punishments.

In enduring armed conflict, these administrative bodies, social services and displays of order encourage the cooperation of the local population. In other words, territorial control allows the occupier to manage the behavior and, potentially, the ideology of the people under its control.

**Instruments of control**

Under IS, spectacles of brutality and violence were a key part of this. Public executions involved people being incinerated, stoned, decapitated, and thrown off towers. Staged in front of local people, these executions were carefully choreographed, and meticulously documented and disseminated – both locally and internationally.

IS explicitly claimed that these acts of brutality were intended to create a vacuum by disrupting local societal structures that could then be "filled" and "managed" by them. Essentially, displays of violence were used as an instrument of social organization.

Data personally collected between 2012 and 2014 shows that many living under the rule of radicalized groups such as IS judge these groups based on their own immediate day-to-day conditions rather than the organization's overall performance or outlook.

If administrative structures function and people have access to food and basic services, for example, local populations may overlook – or even adhere to – the occupying force's ideology (albeit under duress). And those that don't are severely and publicly punished as an "example" to others.

The 2014 executions of members of the Sunni Arab al-Sheitaat tribe, in Deir el-Zor, Syria, are a case in point. IS took the lives of more than 700 of its members for revoking a pledge of allegiance. In addition, IS incessantly targeted other Jihadi or predominantly Sunni rebel formations. Indeed, the tally of those killed continues to increase as more mass graves are discovered.

**Violent consolidation**

Such atrocities were examples of IS consolidating its power through the elimination of rivals and the suppression of potential or real dissent within its area of control. Faced with this, local populations had no choice but to imitate expressions of religiosity as defined by IS and to demonstrate compliance. For local people, this was a method of adaptation and survival – but IS's loss of territorial control now greatly reduces its capacity to control and indoctrinate local residents in this way.

The question of how IS's methods impacted local populations in the long run is yet to be answered. A lot will depend on what happens next in its former territory and to those living there now.

Either way, while IS is badly incapacitated, it certainly is not finished. It will most likely splinter into new organizations which might try to establish territorial control elsewhere. Parts of

North Africa and the Maghreb are particularly susceptible, where control over vast swathes of land remain contested. In the meantime, IS will continue to try to nurture its virtual communities and seek new audiences online.

***Harout Akdedian** is Carnegie SFM Postdoctoral fellow, Central European University.*

## U.K. citizens prohibited from traveling to, remaining in designated terrorist areas

Source: http://www.homelandsecuritynewswire.com/dr20190411-u-k-citizens-prohibited-from-traveling-to-remaining-in-designated-terrorist-areas

Apr 11 – British Home Secretary Sajid Javid said that British citizens who travel to overseas terrorism areas will face up to ten years in jail under new laws, which come into effect today.

The legislation targets potential foreign fighters, and making it a punishable offense to enter or remain in a "designated area."

Javid announced the measure last year as part of a government drive to tackle the threat of people going overseas to fight.

The *Independent* reports that the Counter Terrorism and Border Security Act gives the home secretary the power to designate an area as prohibited for British citizens, and if someone enters or remains in that area, he or she could be sentenced to a 10-year jail term.

The law requires that the Home Office has to be convinced that it is necessary to designate an area in order to restrict U.K. nationals and residents from travelling to or remaining in that area.

The legislation contains exemptions to protect those who have a legitimate reason for being in the area, such as journalism, aid work, diplomacy, or attending the funeral of a relative.

Javid stressed that the law does not apply retrospectively, so that it cannot be used against those who have already gone overseas to fight in parts of Syria and Iraq.

The government said it hoped that the new measure will serve as a deterrent and make it easier to prosecute people who return from terrorism hotspots.

**It is estimated that about 900 people are believed to have travelled from the U.K. to take part in the conflict in Syria.**

The new legislation also makes it illegal to "recklessly" express support for a proscribed organization and obtain or view terrorist material online. It also and extends extra-territorial jurisdiction for some terrorism-related crimes

.

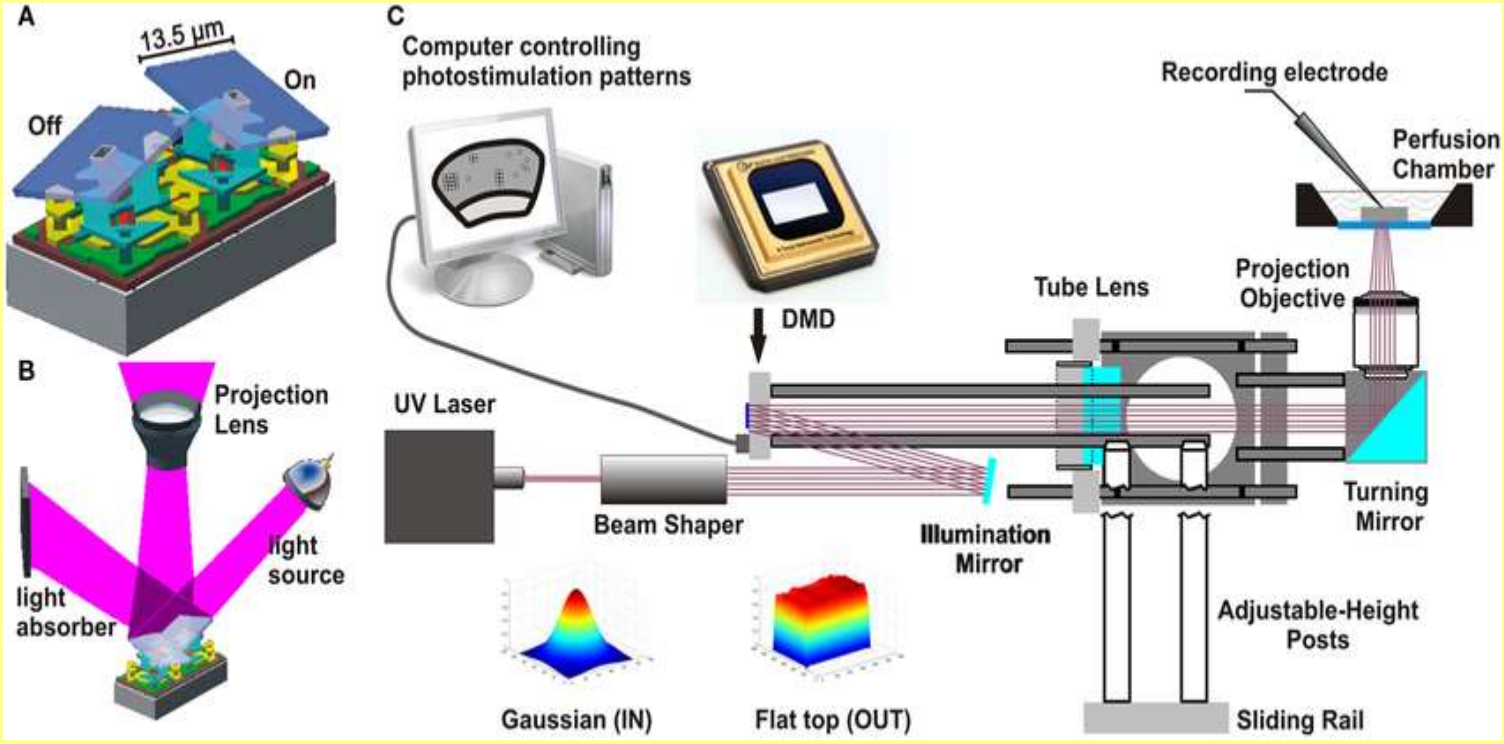
**EDITOR'S COMMENT:** Now??? Or do they know something that we do not?

## Learning from Bees to Navigate in GPS-Denied Environments

Source: https://i-hls.com/archives/90498

Apr 12 – How do you navigate when your GPS system fails? A new, virtual reality system for GPS denied environments mimics nature, and could eventually provide the U.S. Air Force with a new type of navigation system. The University of Alabama in Huntsville (UAH) partnered with Polaris Sensor Technologies to test various screen materials and then design and build an insect experiment scene projection system for the Air Force.

The Air Force is interested in learning how insects use polarization vision, says Dr. Don Gregory, professor of physics. Polarization involves the geometrical orientation of light wave oscillations, a property the insects detect and use somehow to direct themselves.




Principal of digital micromirror device (DMD) function and integration of a DMD into the photostimulation light path. (A) Two DMD mirrors with one mirror (left) in the "off" and the other (right) in the "on" position (illustration adapted with permission from Texas Instruments). (B) Illustration of a two-mirror DLP system. Each micromirror reflects the light either toward the projection optics (left mirror in the bottom illustration) or toward a light absorber (right mirror; illustration adapted with permission from Texas Instruments). (C) Schematic drawing of the light path for the DLP photostimulation system using a UV laser, a "beam shaper" (Flat-Top Generator, Stocker Yale, NH) and the DMD to reflect UV light onto stimulation sites on the slice. The "beam shaper" alters the spatial intensity profile of the laser beam from Gaussian to a rectangular "flat-top" (color illustrations below beam shaper) to ensure homogeneous illumination of the DMD.

"Many insects can see and use optical polarization. For example, some insects can see the partial polarization pattern in the sky, which we cannot see without instruments. So, think about scenarios in which GPS is not available, such as at the bottom of 'urban canyons.' How do you navigate?" asks Dr. Gregory. "Some insects, including bees, ants and locusts, navigate by sensing the celestial polarization pattern, and it would be pretty cool to understand how they do that and exploit the mechanism to deal with GPS-denied situations."

To figure out how the insects exploit polarization and color vision, Air Force scientists first need an experimental environment that provides realistic visual stimuli for the insects.

"We want the insect to think it's outside," Dr. Gregory says.

There are two possible screen types to project experimental images to insects. One uses a reflective screen material that bounces back projected images like a movie screen. The second uses a transmissive screen that displays images projected on it from behind, similar to projection TV screens, according to uah.edu.

The team is developing an IMAX-like screen for insects. The fact that insects can see in a wider spectrum than humans adds to the challenge.

Another challenge is the screen refresh rate, the screen has to flicker faster than the insect can detect it.

The development employs the same Digital Micro-mirror Device (DMD) technology used in the latest generation of movie projectors.

Polaris develops polarization-based imaging systems for military and scientific entities. Commercial systems derived from these efforts provide daylight detail in the dark and visibility in low contrast conditions

with real-time image processing. Their sensors capture, measure, display, and enhance images which can be colorized to display critical data, according to the company website.

## Who decides when something is a terrorism incident?

Source: https://www.insurancebusinessmag.com/uk/news/kidnap-ransom-terrorism/who-decides-when-something-is-a-terrorism-incident-164816.aspx

Apr 15 – **When there's an incident, who decides if it's a terrorist attack? The government? The media? The police?**

Some people would claim any one of these answers to be true. But when it comes to insurance, and the declaration of a terrorism incident, the answer can be a little trickier.

Geoff Stilwell, CEO and managing director of Beech Underwriting, explains that in the case of an incident, immediately the insurer would start getting phone calls and they would take action.

"What would happen in the event of a loss, my phone would be jingling off the hook," he said. This then, he said, would see Beech sending its people to the scene, as soon as it was safe, and assessing what was happening.

"And we would be talking to underwriters straight away and that decision would be made there and then as to whether we're going to deal with it or not," Stilwell said. "As soon as that occurs our claims team are down there as soon as they can possibly get there."

For Stilwell and Beech, it occurs this way because they are an independent insurer, and not part of the Pool Re terrorism offering. This means they are not reliant on the government to declare a terrorism incident to pay out an organisation's claim.

**The most blatant example of this, the CEO and managing director explained, was during the Borough Street Market incident in 2017.**

"When Borough Street Market occurred, as a prime example, that occurred on the Saturday night," Stilwell said. "We had people there on the Sunday morning. By the time on Monday morning when our offices were fully open, we had already declared it an incident."

Stilwell said that Beech acted quickly because it was "obvious" that it was considered a terrorist incident by their policy - so they paid out to their clients with non-damage denial of access insurance and had repairs being done as soon as possible.

"It was clearly obvious that is what it was," he said. "It took the government 23 days. In the meantime, we had declared that an incident, we had people on the ground.

"What was relevant to us, we had people in there on Thursday finishing off the repairs. They had a party - and this is all documented - they had a party on the Friday to celebrate the opening of Borough Street Market."

Ultimately, Stilwell explains, Beech is not required to wait until the government or police declare something a terrorist incident to pay out claims. This isn't the case with government backed schemes.

"So, the answer, we are not reliant on the government to declare an incident," he said. "It is our decision; it is the underwriter's decision. And we clearly knew - and thus we reacted quickly, promptly, and got things moving."

The CEO does get frustrated when he speaks about the 2017 incident at Borough Street Market, however, because he did get complaints that Beech wasn't doing enough—when it was regarding businesses who didn't have insurance with Beech.

"It was a bit ghouly when I got a number of phone calls from the press and from a couple of MPs moaning at me after about two weeks saying you've not done enough," Stilwell said. "I'm going 'hang on a minute, this is what we've done, who are you talking about?' And they said [this person] and we said, 'they're not one of our clients'.

"Now, you know, unfortunately there were a number of people in Borough Street Market who lost a week's takings because they couldn't trade. Our clients, who we were involved with, had non damage denial of access and they got paid almost immediately."

# The Persistent Threat of Aviation Hijacking

**By Steve Hoodjer and Paris Cione**

Source: https://nationalinterest.org/feature/persistent-threat-aviation-hijacking-48317


Mar 20 – On February 24, on a flight from Dhaka to Dubai, a Bangladeshi national named Mohammad Palash Ahmed brandished a toy gun and managed to hijack a passenger plane carrying 156 people. His demands were not for the freedom of an oppressed land or the release of some fellow fighters, but only to speak with the Bangladeshi prime minister about his failing marriage to a popular actress. The situation ended with the plane landing at Shah Amanat International Airport where Ahmed refused to surrender and was killed by security personnel.


While hijackings today are notable for their rarity, Ahmed's act was not dissimilar from past incidents. As consultants, we recently compiled a new database of attacks on aviation assets for a client. While the complete data remains proprietary, this recent event allows us to apply the findings publicly for the first time. What this teaches is that as the focus of global security shifts, the tactics, techniques, and procedures of the past have never truly gone away. While focus rightly returns to great-power competition, policy makers and practitioners should not forget the hard-earned lessons of past security challenges.

Aviation assets in Bangladesh have rarely been the targets of hostile actors, despite decades of on-again, off-again civil unrest. In total, there are only six aviation attacks—two bombings, two incidents of protests spiraling out of control and damaging facilities, and two previous hijacking attempts. In 1979, a lone hijacker demanded money and another aircraft to escape to somewhere unknown. While the man was able to force the flight to divert to India, he later surrendered to negotiators. The second incident took place in 1996 when one man attempted to take over the flight but was quickly overpowered by passengers and crew. His motive went unreported.

Hijackings by a lone actor, as was the case in both past Bangladeshi incidents and the recent one, have been the rule rather than the exception. Of the 991 hijacking attempts we counted, surprisingly few were carried out by organized terrorist groups or seemed to have any connection to an ongoing conflict at all. We coded each of the cases as "yes" or "no" based on whether we judged them to have an affiliation to organized armed struggle (notwithstanding general motivations that were only in part political, such as the rash of hijackings in the 1950s by refugees from Eastern Bloc countries). It appears that 853 incidents, or 86 percent, had no such affiliation. So while a few prominent events burned the image of the idealistic terrorist commandeering an aircraft for some higher purpose into the public imagination, such incidents are actually a historical rarity in the full history of hijackings.

Aside from asylum attempts, most lone hijackers possess individualized motivation that we as analysts classify as "personal/idiosyncratic." This most recent hijacking seems to fit the category given Ahmed's reported marital concerns and possible mental health issues. We judged that perpetrators with "personal/idiosyncratic" beliefs were responsible for 131 of the 991 incidents, or just over 13 percent. That does not seem like a large amount, but only purely criminal incidents, where hijacker demanded only money (think D. B. Cooper) or tried to divert an aircraft to flee justice (seventy-eight incidents) and Communist/ left-wing (sixty) come close to inspiring as many lone actors.

Ahmed's demand to take his grievance directly to the prime minister is unusual, but not unprecedented. A subset of the "personal/idiosyncratic" includes at least four incidents of hijackers demanding a personal audience with a world leader. In 1972 an Italian man demanded to meet with Pope claiming to be "Jesus Christ, Superstar." It is not clear if he was the second coming of the savior or the Broadway musical. Seven years later, a German man demanded to meet the chancellor but settled for being allowed to release a statement to the media before he released the passengers. In 1988, a Brazilian man demanded to meet his president to discuss personal economic matters. Finally, in 1996, an Egyptian man and his son claimed they needed to speak to Muammar el-Qaddafi to deliver a message from God. Perhaps Qaddafi had not heard the gospel of "Jesus Christ, Superstar" from the 1970s.

It appears from the open sources that Ahmed's only weapon was a toy pistol (though Ahmed also may have bluffed his way into the cockpit with a fake bomb). Actual firearms have been the weapon of choice by hijackers, used in 390 incidents either as the sole weapon or along with explosives, incendiaries, or other weapons. Still, a significant number of perpetrators have either used fake weapons or bluffed their way with none, 111 in total. It might seem that a toy pistol could be a weapon of choice because it is easier to sneak on board in the wake of post–9/11 security upgrades, the data does not confirm this. Hijackings with fake weapons peaked in the early 1990s, primarily driven by escapes from the former communist bloc, when refugees used everything at their disposal, before declining along with all hijackings.

Finally, Ahmed's attempt was unsuccessful—his demands were unmet, and he lost his life. Of the 991 hijackings, we judged roughly half (471) we judged as ending unsuccessfully—with the hijacker killed, arrested, or otherwise causing minimal disruption. Seventy-nine hijackers have been killed in the attempt not including intentional suicides of the 9/11 terrorists). In most of those cases, the hijacker was the only fatality. While most hijackers live to tell the tale, the numbers are a reminder that even before 9/11 the idea of officials and the public cooperating with a hijacking has been somewhat overstated.

The recent event in Bangladesh is atypical in our time, but not unparalleled historically. The attributes of this situation find ample precedent in previous decades worth of events. As national-security professionals reorient their focus on traditional challenges of great-power rivalry, the basics of protecting critical infrastructure such as aviation assets must not be lost. It only takes one screwball to throw a wrench in the system.

***Steve Hoodjer*** *is an intelligence analyst, U.S. Army veteran, and consultant specializing in terrorism and nuclear security. He holds a Master of Public Policy degree from the University of Northern Iowa.*

***Paris Cione*** *is a consultant specializing in terrorism and global security. She is a senior at The George Washington University majoring in International Affairs.*

# Knife-crime assault data to help forecast fatal stabbings

Source: http://www.homelandsecuritynewswire.com/seworld20190416-knifecrime-assault-data-to-help-forecast-fatal-stabbings

Apr 16 – Cambridge criminologists worked with a Metropolitan Police detective to show that the number of assaults resulting in knife injuries over one year correlated with an increased risk of deadly knife crime in the same small areas the next year.


DCI John Massey from the Met's Homicide Command manually trawled through thousands of knife crime records to pick out and "geo-code" incidents where people were stabbed and cut but survived during the 2016/17 financial year.

Cambridge says that this may be the first dataset of non-fatal knife assault "hotspots" in the U.K. Current crime statistics do not distinguish between incidents without injury – displaying of knives during robberies, for example – and those where knives have wounded.

Massey found 3543 knife assaults had occurred during the 12-month period: a ratio of 66 non-fatal stabbings for every knife homicide that year. Each assault was coded to one of London's 4835 local census areas – some as small as a few football fields – and compared to the locations of the 97 homicides from the following 2017-18 financial year.

Some 2781 areas, over half of London, had no knife assaults at all in the first year. Of these areas, 1 percent saw a homicide in year two.

Of the 41 neighborhoods that had six or more injuries from knife assaults in the first year, 15 percent went on to suffer a homicide the following year.

The researchers argue that this reveals a large increase in homicide risk: these top assault hot spots were 15 times more likely to suffer a knife homicide the following year than all areas – the majority of London – with no knife assaults.

They say that data on knife assaults provide a "consistent pattern" of greater knife homicide risk the next year. Census areas with two to four assaults had around a 4 percent risk of homicide in year two, and those with five assaults had a 9 percent risk. Six or more assaults equated to a 15 percent risk.

The researchers suggest that with the right technological approach, police could receive automated daily updates of homicide risk based on the latest data – helping to guide patrol allocations. The study is published in the *Cambridge Journal of Evidence-Based Policing*.

"If assault data forecasts that a neighborhood is more likely to experience knife homicide, police commanders might consider everything from closer monitoring of school exclusions to localized use of stop-and-search," said study co-author Prof. Lawrence Sherman from the University of Cambridge.

"Better data is needed to fight knife homicide. The current definition of knife crime is too broad to be useful, and lumps together knife-enabled injuries with knife threats or even arrests for carrying knives."

"Police IT is in urgent need of refinement. Instead of just keeping case records for legal uses, the systems should be designed to detect crime patterns for prioritizing targets. We need to transform IT from electronic filing cabinets into a daily crime forecasting tool," he said.

However, Sherman and colleagues caution that solely focusing on assault hotspots is not a "panacea". The 41 top hotspots in the study contained only 6 percent of the following year's total knife deaths.

The new study was co-authored by DCI Massey as part of his Master's thesis research at Cambridge's Institute of Criminology, where he worked with Sherman and his colleague Dr. R. Timothy Coupe.

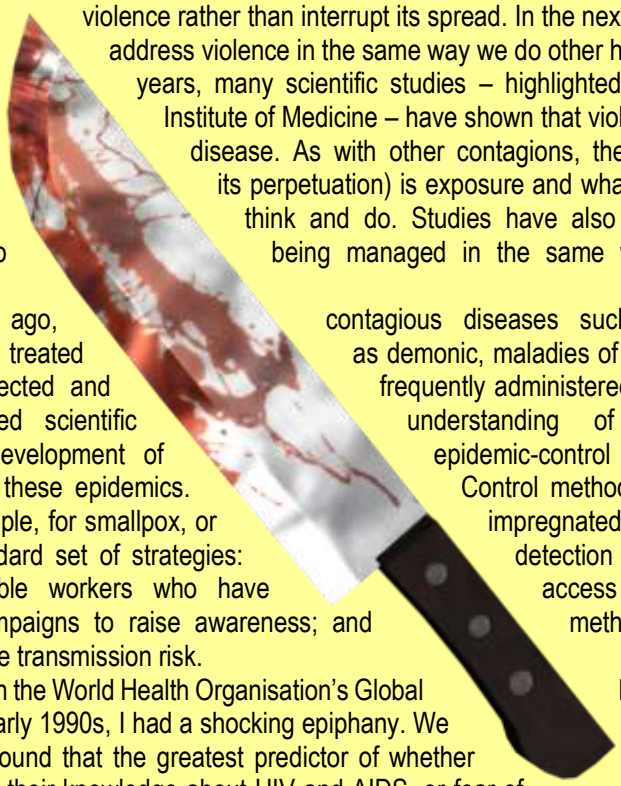
"These findings indicate that officers can be deployed in a smaller number of areas in the knowledge that they will have the best chances there to prevent knife-enabled homicides," Massey said.
No single area in the 2017-18 financial year had more than one fatal stabbing. However, 69 percent of the knife homicides occurred in census areas where at least one non-fatal knife assault had taken place the year before.
The study's authors say the last decade of deadly knife crime has been a "moving target". The research suggests little repetition of homicide location. In the ten years up to 2018, there were 590 knife homicides across London spread over 523 different census areas.
The researchers write that geo-coding annual knife assaults to a census area provides a reliable – if far from perfect – basis for forecasting knife homicide.
Added Sherman: "When combined with intelligence-gathering on the streets, this form of data analysis could enhance the effectiveness of scarce resources to create a new and more powerful preventative toolkit. Our study is just the first step."

*— Read more in John Massey et al., "Forecasting Knife Homicide Risk from Prior Knife Assaults in 4835 Local Areas of London, 2016-18," Cambridge Journal of Evidence-Based Policing (14 April 2019).*

## The four things London needs to do to fix its knife crime epidemic

**By Gary Slutkin**
Source: https://www.wired.co.uk/article/treat-violence-epidemic

Apr 16 – Community violence, mass shootings, terrorism, hate crimes, regional conflicts and war remain major worldwide problems, but our current reactions to them – from policing to military intervention – frequently perpetuate violence rather than interrupt its spread. In the next ten years, we should instead see and address violence in the same way we do other health epidemics.



Over the past 20 years, many scientific studies – highlighted in a landmark 2013 report by the US Institute of Medicine – have shown that violence behaves exactly like a contagious disease. As with other contagions, the biggest predictor of violent behaviour (and its perpetuation) is exposure and what one (unconsciously) thinks one's peers think and do. Studies have also shown that violence responds dramatically to being managed in the same way as other health epidemics.
Only 150 years ago, contagious diseases such as smallpox and leprosy were seen and treated as demonic, maladies of morality or character. We blamed those affected and frequently administered punitive "remedies". Only through improved scientific understanding of contagious-disease processes and the development of epidemic-control methods have we reduced or eliminated these epidemics. Control methods vary by disease – immunisation, for example, for smallpox, or impregnated bed nets for malaria – but they share a standard set of strategies: detection and interruption of spread through credible workers who have access to those at highest risk; public health campaigns to raise awareness; and methods for changing behaviours that increase transmission risk.
When I was working with the World Health Organisation's Global Programme on AIDS in the late 1980s and early 1990s, I had a shocking epiphany. We conducted research across the world and found that the greatest predictor of whether someone used a condom or not was not their knowledge about HIV and AIDS, or fear of their potentially deadly consequences, but whether people believed their friends used them. The same, it turns out, is true of many violent behaviours including possession and use of a weapon, be it a knife or a gun.

In 2000, I worked with local community groups to pilot an epidemic-control approach to gun violence in Chicago, and we saw a 67 per cent drop in shootings and killings in the first year. Subsequently, we established Cure Violence – a public health anti-violence programme – which has now trained and partnered with more than 100 communities in 16 countries.
Numerous independent evaluations have documented the effectiveness of this approach. The method uses highly trained local, credible peer messengers – "violence interrupters" and outreach workers – to change behaviours and norms about violence, in the same way as epidemic control works for contagious diseases such as cholera, ebola and HIV/AIDS. This approach has achieved 40 to 90 per cent drops in shootings and killings in places as varied as the US, Mexico, Honduras, South Africa and the UK, and it is now being applied in the Middle East. We now need to make this the standard approach to violence.

## Over the next 10 years, we should take the following actions:

### Rapidly re-educate the public

We need to educate policymakers and the public on our new scientific understanding of violence and, as in other paradigm shifts, change the language used to characterise it. Our public discussion about violence must reflect an understanding of its contagious nature, the brain processes underpinning this and the effectiveness of epidemic-control strategies. Terms such as "outbreaks", "transmission", "interruption" and "outreach" must replace harmful and unhelpful language such as "criminals", "gangs" and "enemies".

### Build epidemic-control infrastructures

Dramatic reductions in violence have been achieved and sustained in communities and cities that have established and expanded a network of violence interrupters – highly trained and trusted individuals from "the inside" who can intervene with people at risk of committing or being a victim of violence. These infrastructures should be developed first in the most endemic and at-risk situations. Similar infrastructures have reduced and eradicated other contagious diseases.

### Create new norms

In medicine, epidemics are caused by invisible microorganisms, affecting different organs. With violence, their equivalent are invisible behavioural norms operating through brain-mediated circuits. We can not only interrupt their spread, but also create new norms through health-based outreach and public education, just as we have for smoking, drunk driving and risky sexual behavior.

### Recruit political and philanthropic champions

We must urgently encourage investment from funders in health and other sectors whose main concern is saving lives, and recruit skilled leaders to champion epidemic health approaches to preventing violence.
This health approach can be applied in almost every situation where violence can occur. Although it is true that overall rates of violence have decreased through human history, we have also seen unexpected and catastrophic outbreaks occur. At a time of relative peace, for example, the killing of two people in 1914 led to a world war that left 20 million dead. And, like disease, the effect of local outbreaks of violence can be felt globally. Today, ongoing violence in the Middle East and Central America is causing dangerous political and economic upheavals in many other parts of the world through an ever-burgeoning refugee crisis.
In the next ten years, we should radically shift our view and approach to violence. Just as public-health and epidemic-control methods have brought an end to other deadly health epidemics, transformative investment in their application to violence can do the same.

***Gary Slutkin*** *is a physician and the founder and CEO of Cure Violence and professor of epidemiology and global health at the University of Illinois at Chicago School of Public Health.*

# Shipping Containers & Hidden Dangers

**By Richard Schoeberl**

Source: https://www.domesticpreparedness.com/resilience/shipping-containers-hidden-dangers/

Apr 10 – American seaports are not only the maritime doorway to the nation but also a crucial link in the U.S. two-way trade with other nations. Today, billions of dollars' worth of unchecked goods move in and out of U.S. international seaports every month, making ports vulnerable to disruption from both terrorist attacks and natural disasters. In the United States, the Customs and Border Patrol (CBP), the U.S. Coast Guard, the Department of Agriculture, port authorities' own police forces, and many other local, state, and federal government agencies diligently work together to protect the nation's seaports from myriad threats. Nuclear proliferation is a viable threat and the possibility of a terrorist attack on a U.S. seaport is certainly plausible – both with the potential to cause immediate devastation to the local community and to cripple the already delicate global economy.

Busy Ports

The United States currently is served by more than 360 commercial ports – which, according to the U.S. Coast Guard, provide nearly 3,200 handling facilities for both cargo and passengers. Additionally, U.S. seaports process more than 2 billion tons of import/export freight per annum. In 2009 alone, according to the U.S. Department of Transportation, nearly 10 million ocean-borne cargo containers entered the United States through its seaports.

Los Angeles and Long Beach, California, are unequivocally the busiest North American container ports, trailed by the Port of New York and New Jersey. In 2011, the Port of Long Beach handled more than 6 million containers and the Port of New York and New Jersey handled 5.5 million – both container totals are measured in TEUs (20-foot equivalent units).

Cargo containers are an important component of the global supply chain – the flow of goods from manufacturers to retailers. Unfortunately, the mass influx of containers provides innumerable opportunities for would-be terrorists to smuggle and detonate a weapon of mass destruction (WMD) on U.S. soil. Although terrorism remains a critical security focus at seaports, it is actually rated by U.S. Customs as a lower risk than other threats – e.g., drug smuggling, human trafficking, weapons trafficking, and trade and import safety violations – that have the potential to compromise the nation's supply chain.

**Consequences of an Attack**

Apart from the potential human costs that may result from a lack of port security, the economic costs of a maritime attack can be overwhelming. During a time when workforces face layoffs, impending unemployment extensions, and foreclosures, any political or

economic factor that impedes the flow of trade would not only affect the seaports themselves but also interrupt the supply of goods. The widespread effect would be felt throughout the country, and in many other nations as well.

Rear Admiral Paul Zukunft, the Coast Guard's Assistant Commandant for Maritime Security, told the House Subcommittee on Border and Maritime Security last year that, "Considering that high concentrations of our population live in and around port areas, and 95 percent of our international trade is done via the sea, the consequences of any attack or disruption on our maritime transportation system are potentially severe."

Section 1701 of the 9/11 Commission Act of 2007 requires that all maritime cargo containers bound for the United States must, as of 12 July 2012, be scanned by non-intrusive imaging equipment and radiation detection technology before being loaded on ships. Reinforcing efforts to counter the looming terrorist threat at U.S. ports is the fact that then-candidate Barack Obama promised during his 2008 presidential campaign to "Develop technology that can detect radiation and work with the maritime transportation industry to deploy this technology to maximize security without causing economic disruption."

**The Benefits & Pitfalls of 100-Percent Screening**

Unfortunately, the practicality of fully implementing the "100-percent screening" mandate is questionable – so much so that today, nearly six years since the 9/11 Commission Law was enacted, the U.S. Department of Homeland Security (DHS) has failed to implement the mandate ordered by Congress.

Given the complexity and magnitude of the global supply chain, as well as the massive number of containers transported to and from the United States each year, U.S. seaports remain susceptible to a broad spectrum of threats that domestic as well as international terrorists may be able to exploit. Although the U.S. intelligence community has long suggested the possibility of terrorists smuggling a WMD into the United States inside a shipping container is relatively low, the vulnerability to such an attack is theoretically very high.

According to the CBP, in fact, agency officials scanned only 473,380 – about 4.1 percent of the approximately 11.5 million containers shipped into U.S. ports in 2012 – with X-ray or gamma-ray machines, and some shipments getting only a cursory paperwork review. The low percentage of scanned cargo is officially rationalized as a "layered risk-based approach" to cargo scanning and focuses primarily on specific cargo considered to be "high risk" – how that term is defined and bestowed is not always clear.

Detecting radioactive materials or any other harmful matter at U.S. ports clearly remains a challenge for federal officials. However, U.S. Representative Candice Miller, a Michigan Republican who chairs the House Subcommittee on Border and Maritime Security, accepts the current approach. In a statement before the subcommittee on 7 February 2012, she acknowledged that, "We all recognize it [the current process] may be optimal but perhaps not realistic from a cost perspective." She also reiterated a statement from DHS Secretary Janet Napolitano that, "The 9/11 Act's mandate to scan 100% of maritime cargo containers is not achievable, does not necessarily make sense, and is not in line with the current risk-based approach."

At the same hearing, though, former Rep. Laura Richardson (D-Calif.) said that a successful terrorist attack "on one of our ports, such as the Port of Los Angeles or the Port of Long Beach, would have a devastating economic impact and severely impact the global supply chain. The cost of one terrorist attack in our ports," she continued, "would far surpass the costs of instituting the 100 percent container scanning that is required by law and was recommended by the 9/11 Commission. We have been extremely fortunate that an attack has not yet occurred in our ports."

**A Recipe for Disaster – Funding Cuts & Dense Populations**

The Megaports Initiative – a collaborative effort between DHS, the U.S. Department of State, and their counterparts in U.S. international partners – is also facing severe spending cuts. The U.S. government has spent roughly $850 million on 42 different maritime security projects in 31 other nations to carry out such tasks as: (a) providing the seaports of other nations with radiation recognition equipment; (b) training foreign inspectors; and (c) providing other assistance to the employees of foreign governments who operate the ports.

Whether that funding stream will continue at the same level seems doubtful. According to a GAO statement in November 2012, "The administration's fiscal year 2013 budget proposal would reduce the Initiative's budget by about 85 percent, and NNSA [National Nuclear Security Administration] plans to shift the Initiative's focus from establishing new Megaports to sustaining existing ones."
It is important to note that a number of America's seaports can be found in or near highly populated areas and, therefore, are attractive targets for a terrorist organization. The New York region, for example, is home to approximately 19 million people. The consequences of a WMD or nuclear attack at the Port of New York and New Jersey could be cataclysmic.
According to 2006 estimates by the RAND Corporation and a 2005 report from the Congressional Research Service, an attack on a U.S. seaport could cause thousands of deaths and severely impair international trade, with damages ranging from a "low" of $45 billion to more than $1 trillion. In order for the 100-percent screening mandate to be fully realized, regardless of costs associated with the mandate, DHS must safeguard the movement of cargo at each and every link of the supply chain, beginning at the port of origin, continuing during the entire time the cargo is in passage, and not ending until such time as the cargo reaches its port of destination in the United States. In short, simply inspecting the cargo manifest – the rather porous "inspection process" often used – is no longer sufficient.
In summary, the costs associated with scanning all maritime cargo containers before they arrive in this country are great, but the consequences of not doing so could be much greater. Securing the nation will become increasingly more difficult as budgets continue to decrease, screening and security measures are delayed until after containers reach their U.S. destination, and only a small percentage of the scanning required is actually carried out – on random containers.
In a worst-case situation, a nuclear weapon concealed inside a cargo container can be triggered from a distance. If a WMD does in fact happen to be detected at random by radiation portal monitors – in New York or Long Beach, perhaps – it may still be too late to stop or even mitigate the damage and to save the lives of tens of thousands of people living within the port area targeted.

***Richard Schoeberl*** *has more than 17 years of counterintelligence, counterterrorism, and security management experience, most of it developed during his career with the Federal Bureau of Investigation, where his duties ranged from service as a field agent to leadership responsibilities in executive positions both at FBI Headquarters and at the U.S. National Counterterrorism Center. During most of his FBI career he served in the Bureau's Counterterrorism Division, providing oversight to the agency's international counterterrorism effort. He also was assigned numerous collateral duties during his FBI tour – serving, for example, as a Certified Instructor and as a member of the agency's SWAT program. He also has extensive lecture experience worldwide and is currently a terrorism and law-enforcement media contributor to Fox News, Sky News, al-Jazeera Television, and al-Arabiya.*

## How Effective Are School Lockdown Drills?

Source: https://www.npr.org/2019/04/19/715193493/how-effective-are-school-lockdown-drills

Apr 19 – On the morning of her 16th birthday, in her AP music class, Megan Storm thought she was going to die.

The sophomore at Lake Brantley High School in suburban Orlando, Fla., said she heard an announcement over the intercom that the school was in a code red lockdown — it was a drill, but Storm said students were not told that. She and her classmates hid in the dark, behind an instrument locker.
"It was just really quiet. And we all sort of huddled together," Storm said.
In the 20 years since the Columbine High School shooting in April 1999, a generation of American children have learned not just how to prepare for a fire or tornado or earthquake — but also how to hide from a potential shooter.

Some drills are sedate, where teachers lock doors, turn out lights and tell kids to hide in a corner. Others are hyper-realistic, with plastic pellets and fake blood.

**Locks, lights, out of sight**

There's little academic, peer-reviewed research that can answer a big question for school administrators: What types of school security systems, including these drills, actually work?

At Lake Brantley High, Megan and her classmates heard loud noises that sounded like gunshots and door knocks. Other students were crying and texting their family and friends.

"I wish I had brought my phone," she said. "I thought I was going to die."

And then, a second announcement: The lockdown was just a drill. The loud noises turned out to be nearby construction crews. Megan resumed classes and went home at the end of the day. She then "got off the bus and just immediately broke down," said Megan's father, David Storm.

He and other parents were highly critical of school officials after that botched drill in December 2018. In response, district officials said future drills would be announced before they actually start.


**Helping schools make informed choices**

It's generally up to state or local governments to decide how, or if, to drill their students. But they have little hard data to base their decision on.

"Research on security measures is in a very sad state," said Jeremy Finn, a professor of education at the State University of New York at Buffalo.

Just a three-hour drive east from Finn's office in western New York, a researcher is trying to change that. Jaclyn Schildkraut, an associate professor of criminal justice at the State University of New York at Oswego, is helping the Syracuse City School District implement lockdown drills, and collecting data on how effective they are.

She decided to tackle the question, in part, because of the lack of research into school security overall. The relative rarity of school shootings makes it difficult work, and Finn added that it's difficult to measure a security program's effect on a negative — a shooting that didn't happen. Schildkraut also said that too many schools have gravitated toward unproven yet tangible measures, like metal detectors and bulletproof backpacks.

"As a nation, we're throwing a lot of money at problems and we don't know if those things are going to work," she said. "But they make us feel better because we can see them."

**Lockdowns, when well executed, can slow a gunman**

If lights go out and doors are locked, Schildkraut said, the perpetrator will have fewer opportunities to kill students before police arrive.

So since last fall, Schildkraut and a team of undergraduate assistants have run drills at some 30 schools in Syracuse. They arrive, unannounced, at a school and ask the principal to read an announcement to inform students that a lockdown drill is about to start. Then Schildkraut's team fans out and checks every classroom in the school.

"We look at the proportion of the rooms that are secured properly, the proportion that have their door locked, the proportion that have their lights off, etcetera," she said.

Schildkraut keeps data for every classroom and then drills the same school again months later to check for improvements. She also surveyed more than 10,000 Syracuse students on how safe they feel at school, both before and after the drills.

She hopes to present some of her findings at the upcoming American Society of Criminology conference. Eventually, she'll submit it to peer-reviewed journals. It would then be accessible to any school district in the country trying to make the tough decision of how to keep their students safe.

Schildkraut is understanding of parents who worry about lockdown drills and said they are clear examples of them getting out of hand. But she said they are as necessary now as fire drills, or duck-and-cover nuclear bomb drills 50 years ago.

"You have to give kids tools to keep themselves safe," she said.

Her own motivations are deeply personal. Schildkraut grew up near Parkland, Fla., and her brother went to Marjory Stoneman Douglas High School, which experienced a deadly shooting last year. The Virginia Tech massacre in 2007 pushed her to get back into school and pursue criminology. She has a newly published book about Columbine's legacy.

"While I may only be one person, I really believe that I can make a difference," she said. "And if it takes tough love, or it takes teaching moments, or it takes coming down on administrators, or whatever needs to be done, like they have to understand the seriousness of this. That 'not one more' really means, 'not one more.' And maybe that doesn't mean not one more to everybody, but it does to me."

Jahira Edwards, a sophomore at Institute of Technology at Syracuse Central, has been through a handful of Schildkraut's drills. For one of them, she said she was momentarily confused as to whether it was just a drill. Then she figured it out.

"I knew it was a drill because somebody knocked at the door, and like everybody was scared. I'm like, 'No, if he actually wanted to shoot us, he would come in, not just knock at the door.' So I was like, 'It's a drill,'" she said.

Edwards is the type of prepared student Schildkraut wants. All the drills have had another impact on Edwards: They make her think about how vulnerable she is at school.

"I try not to think, 'Oh, it couldn't happen at my school,'" she said. "But I know it could."

## How Columbine became a blueprint for school shooters

**By Jillian Peterson**

Source: http://www.homelandsecuritynewswire.com/dr20190418-how-columbine-became-a-blueprint-for-school-shooters

Apr 18 – When twelve students and one teacher were killed in Littleton, Colorado twenty years ago, it not only became what at the time was the worst high school shooting in U.S. history. It also marked when American society was first handed a script for a new form of violence in schools.

We make that observation as researchers – a psychologist and a sociologist – who have been studying mass public shootings as part of a grant from the U.S. Department of Justice.

Since the 1999 tragedy at Columbine High School, we identified six mass shootings and forty active shooter incidents at elementary, middle or high schools in the United States. Mass shootings are defined by the FBI as an event in which four or more victims died by gunfire.

In twenty – or nearly half – of those forty-six school shootings, the perpetrator purposely used Columbine as a model.

Columbine's influence continues until this day. On April 17 – just three days ahead of the 20th anniversary of the Columbine shooting – authorities closed schools across Colorado due to a credible threat of a woman armed with a shotgun and who was "infatuated with Columbine." The 18-year-old Florida woman was reportedly found dead in Colorado later in the day from an apparent self-inflicted gunshot wound.

**The ties that bind to Columbine**

In our study of school shootings, we only looked at cases where a gun was fired on campus, following the practice of The Washington Post's database on school shootings. Had we included foiled plots, the number would be significantly higher.

Several school shooters in our study were fascinated with Columbine and researched the massacre before their own. This includes the Parkland shooter, a 14-year-old who aspired to be "the youngest mass murderer," and a 15-year-old who shot at his teacher after she refused to praise Marilyn Manson, the rock singer who was erroneously blamed for inspiring the Columbine killers.

The timing of the April 17 threat to Colorado schools is no coincidence. Prior perpetrators chose the anniversary of Columbine to commit their shootings, including one month and two years after. A different shooter talked of how he was going to "pull a Columbine." Others discussed Columbine with classmates, even joked about it.

The Sandy Hook Elementary School shooter idolized the Columbine killers and curated a Tumblr account paying homage, alongside a graphic collage of Columbine victims. A North Carolina shooter was so obsessed with Columbine that he took a vacation there with his mother and fantasized about "finishing off" any wounded survivors.

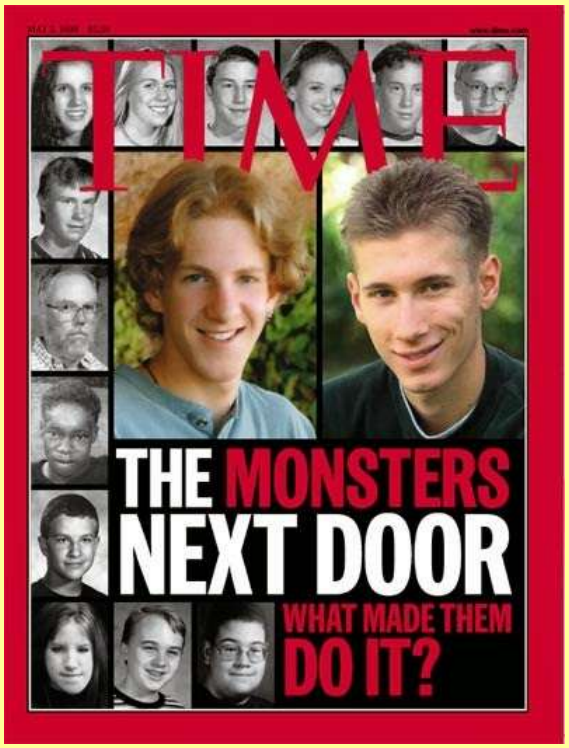
Multiple shooters, including one 15-year-old in Oregon and another in Washington state, were inspired by a documentary about Columbine that included detailed recreations of what happened. One Wisconsin teenager held his classroom hostage after reading a book about Columbine.

Perpetrators also dressed in trench coats like the Columbine shooters, including those responsible for the 2018 Santa Fe shooting, where 10 people died, and a 2004 nonfatal shooting in New York. Indeed, the trench coat has appeared in subsequent school shootings because Columbine gave it meaning beyond any intrinsic use.

**Why Columbine?**

Columbine has spawned an entire subculture of "Columbiners" and copycats. A March 2019 shooting in Brazil that killed eight shows that Columbine's influence is global. But Columbine was not the first school shooting, not even that year. Eleven months before the horror in Littleton unfolded, an expelled 15-year-old – also wearing a trench coat – killed two and injured 25 at a school in Springfield, Oregon. Why do we not now talk about the "Springfield effect"?

Partly because the perpetrator in Springfield was professionally diagnosed as psychotic, meaning his attack could be more easily explained away. He also acted alone, whereas having two shooters immediately intensified the intrigue around Columbine. But the main reason for Columbine's longevity was that its perpetrators created manifestos and home movies of their preparations in hopes that their story would outlive them. Unfortunately, it has.




Before Columbine, there was no script for how school shooters should behave, dress and speak. Columbine created "common knowledge," the foundation of coordination in the absence of a standardized playbook. Timing was everything. The massacre was one of the first to take place after the advent of 24-hour cable news and during the "the year of the net." This was the dawn of the digital age of perfect remembering, where words and deeds live online forever. Columbine became the pilot for future episodes of fame-seeking violence.

**Separating myth from reality**

Our research has found that school shootings have nothing to do with jock envy, satanism, video games, or Keanu Reeves, and school shooters are not psychopathic masterminds. In fact, these soundbite explanations for aberrant behavior only blind us to the reality of school violence.

School shooters are almost always current students of their schools. They are students who are in crisis, students who have experienced trauma, and students who are actively suicidal prior to the shooting and expect to die in the act. Such children have always existed. But for 20 years they've had a new script to follow.

And we, the public, have contributed to the production and direction of this script. Again and again and again. Through our obsession with true crime and films, books, memes and entire websites devoted to Columbine. By releasing CCTV footage of the shooting to the public. By running our children through regular lockdowns and active shooter drills starting in preschool through 12th grade. By sending them to school through secure entrances with clear backpacks and bulletproof binders. Society and culture have reared a Columbine generation, modeling that this is just part of childhood in America.

**Flipping the script**

After serial killing peaked in the late 1980s, it's hard to know which faded first – the serial killers themselves or the public obsession with them. The same fear and fascination that created the serial killer panic is what drives the Columbine effect. After 20 years, it's time to rewrite the script being rehearsed with young people.

It starts with no names, no photos and no notoriety for mass shooters in media coverage – which is why we don't indulge here. The next step is a paradigm shift from homeroom security to holistic violence prevention in schools – mental health, supportive environments, strong relationships and crisis intervention and deescalation. Teachers should feel as comfortable asking a student about suicide as they feel going into lockdown; empowered to spend as much time teaching empathy and resilience as they do now training to run, hide, fight.

The victims and survivors of school violence must not be forgotten, but to prevent another two decades of contagion and copycats, it requires a recognition that it is time to close the curtain on the spectacle of Columbine.

***Jillian Peterson*** *is Professor of Criminal Justice, Hamline University.*

# "Hardened" schools are not safe from gun violence

Source: http://www.homelandsecuritynewswire.com/dr20190418-hardened-schools-are-not-safe-from-gun-violence

Apr 18 – Hardening of schools seems to be a questionable endeavor, given the dearth of evidence regarding effectiveness, says a Ball State University researcher.

"School Firearm Violence Prevention Practices and Policies: Functional or Folly?" a comprehensive review of the literature from 2000 to 2018 regarding school firearm violence prevention, found no programs or practices with evidence that they reduced such gun violence.

"It could be the rarity of school shootings that makes it extremely difficult to prove that any combination of interventions in schools would be effective," said Jagdish Khubchandani, a Ball State health science professor who partnered with University of Toledo professor James Price on the research project.

The paper was published a recent edition of the journal Violence and Gender.

"School firearm violence and school shootings have received increasing attention from school personnel, policymakers, and in the mass media," Khubchandani said. "However, little is known about prevention and reduction of school firearm violence. The purpose of this narrative review is to describe the current practices regarding school firearm violence prevention and use of the disease prevention and health promotion framework to describe current practices and policies on school firearm violence prevention measures."

Khubchandani said American schools use a variety of strategies, including monitored or locked doors to the building, security cameras, metal detectors, hiring resource officers, and random checks of lockers.

"To the extent that schools adopt ineffective firearm violence prevention measures, they are creating a false sense of security," Khubchandani said. "School systems need to engage in collaborative research for evidence-based practices and policy advocacy through coalition building to address state firearm laws. Schools also need to expand their mental health services and cost-effective educational interventions for reducing violence."

School officials should not give in to political pressures to "do something" when that "something" is likely to be ineffective, deceptive, and wasteful of limited school resources, he warns.

The researchers also noted that more research funding is needed to pursue definitive answers regarding what is effective in substantially reducing school firearm violence and preventing youth from carrying or using guns.

*— Read more in James H. Price and Jagdish Khubchandani, ""School Firearm Violence Prevention Practices and Policies: Functional or Folly?" Violence and Gender (19 March 2019).*

## UN calls for repatriation of IS wives, children in Syria

Source: http://www.homelandsecuritynewswire.com/dr20190418-un-calls-for-repatriation-of-is-wives-children-in-syria

Apr 18 – The U.N. Office for the Coordination of Humanitarian Affairs (OCHA) is calling on countries to repatriate thousands of wives and children of Islamic State militants in Syria, who are living in dire conditions in the al-Hol camp in al-Hasakeh governorate in northeast Syria.
More than 75,000 people who fled Islamic State's last stronghold in Baghuz are living in overcrowded, desperate conditions in al-Hol Camp.
Women and children comprise 90 percent of the population. Among them are more than 11,000 foreign women and children, including those born of a foreign father or mother.
Governments have expressed reluctance to repatriate their nationals, who left their countries of origin to join the Islamic State militant cause in Syria. But Regional Humanitarian Coordinator for the Syria Crisis Panos Moumtzis said all member states have an obligation under international law to repatriate their own nationals.
He said no one should be rendered stateless.
Moumtzis is appealing to states to accept the children who have the nationality of their foreign mother or father.
He said children should be treated first and foremost as victims. Children have special rights for protection that apply in all situations, he told VOA.
"This has to be irrespective of the children's age, sex, and including any perceived family affiliation," he said. "The perceived family affiliation should really not affect the determination of the best interests of the child. So, it is really a special plea for the children."
The U.N. children's fund estimates there are about 2,500 children living with their mothers in a separate area of the al-Hol camp. Moumtzis said women are being kept apart from the rest of the population to reduce tensions.
He said there is hostility toward them because of their suspected involvement with IS fighters.
He said the area where the foreign women and their children are staying is more restricted than the rest of the camp. The United Nations, he added, has not been allowed to access the area, which is run by the Kurdish-led Syrian Defense Forces.
He said the International Committee of the Red Cross is one of a few organizations allowed to go in and out. The United Nations, he said, provides the ICRC with life-aving supplies, which they distribute to the residents.

**EDITOR'S COMMENT:** Why the UN is involved in family affairs? Why don't they let families live their lives as wished? Instead they will welcome them back as if nothing happens, provide benefits and why not a nice house and everything would be a bad dream. Too much compassion is bad for our health! I favor the "second chance" approach but only for those who deserve it.

## Tokyo's counter-terrorism unit begins operation ahead of Olympics

Source: https://japantoday.com/category/crime/tokyo%27s-counter-terrorism-unit-begins-operation-ahead-of-olympics

Apr 21 – The Tokyo Fire Department's newly established counter-terrorism unit went operational Saturday to strengthen the city's response to terrorism threats and natural disasters.
The unit will have on-site command over rescuers and vehicles from the department's fire stations in the metropolitan area at the time of terrorist attacks and other disasters.


"Terrorism has occurred around the world, and Tokyo needs to be keenly aware of the risks and well prepared to respond. The unit gives us great confidence," Tokyo Governor Yuriko Koike said in a ceremony.

The unit will be deployed as needed. A command vehicle will be dispatched to centralize management of personnel and equipment.

The unit conducted a drill on Saturday involving an aerial drone and ambulances to search for and transport the injured in a mock terror attack.

**EDITOR'S COMMENT:** These are good news although a bit surprised by the fact that the new unit is under fire brigade. I would be delighted to read (soon) that they are having a similar approach regarding CBRN threats. For the time being there is only explosive silence.

## 320 killed (latest count), 500 injured in Easter Sunday attacks on churches, hotels in Sri Lanka

Source: http://www.homelandsecuritynewswire.com/dr20190422-nearly-300-killed-500-injured-in-easter-sunday-attacks-on-churches-hotels-in-sri-lanka

Apr 22 – In the worst wave of terrorist violence in Sri Lanka in ten years, a series of blasts on Sunday have hit churches and hotels in and near the Sri Lankan capital, Colombo.

The nearly simultaneous blasts targeted churches during Easter services and hotels frequented by foreign guests. Sri Lankan officials said 290 people, including at least 27 foreigners, had been killed in the blasts in Colombo and elsewhere. More than 500 more have been injured.

A hospital source told AFP news agency that U.S., British, and Dutch citizens were among those killed in the explosions. The Chinese state newspaper *People's Daily* said one Chinese national was also killed, while state news agency Xinhua said four others were injured. Portugal also confirmed one of its citizens was killed.

CNN reports that one church, St. Anthony's Shrine, was in the north of the capital, Colombo, and another, St. Sebastian's Church, in the nearby town of Negombo. The third church, Zion Church, was in the eastern town of Batticaloa, where a hospital official told A FP that more than 300 people were receiving treatment for injuries sustained in the blast.

St. Sebastian's Church in Negombo

Ruwan Wijewardene, the Sri Lankan defense minister, said Sunday that seven suspects had been arrested in connection with the blasts.
The three five-star hotels targeted by the terrorists were named as the Cinnamon Grand, the Kingsbury, and the Shangri-La, all in the center of Colombo.

Later on Sunday, two additional blasts occurred on the outskirts of Colombo. One of those explosions, at a hotel in the southern Colombo suburb of Dehiwala, killed two people, according to police. The other, in the north of the city, killed three police officers when the upper floor of a house they were searching collapsed.
The Sri Lanka government has imposed a curfew throughout the country. The Defense Ministry said the curfew would begin at 6:00 p.m. local time and end Monday at 6:00 a.m. local time. Police later issued a statement saying that the curfew would last "until further notice."
The government also announced that major social media platforms and messaging apps had been blocked to prevent the spread of misinformation and rumors.
Prime Minister Ranil Wickremesinghe has convened an emergency meeting of the National Security Council following the blasts. He called in a tweet for Sri Lankans "to remain united and strong."
The archbishop of Colombo, Malcolm Ranjith, called on the Sri Lankan government to punish those behind the attack "mercilessly, because only animals can behave like that."
New Zealand Prime Minister Jacinda Ardern, whose country recently experienced deadly shootings at two mosques in which 50 died, condemned the attacks in Sri Lanka in a statement.
There have been no immediate claims of responsibility, but the government on Monday blamed a little-known radical Islamist group for the devastating Easter Sunday suicide

bombings. Some Christian groups have spoken of facing growing intimidation by hard-line Buddhist monks in recent years. Members of the Buddhist community clashed last year with minority Muslims, with some Buddhists alleging that Muslims had been compelling people to convert to Islam.
Sri Lanka is a majority-Buddhist country, with Catholics making up only 6 percent of the population.
There were attacks on Catholics during the civil war, which ended in 2009. During the war, the nationalist Hindu Tamil Tigers, who fought for an independent Tamil country in north Sri Lanka, launched a series of bombings in public places, including Buddhist temples, Catholic churches, and popular tourist hotels.

**What we know so far**

- The government on Monday blamed a little-known radical Islamist group for the devastating Easter Sunday suicide bombings. Officials said the group, which had not carried out any serious attacks before, had received help from an international terrorist organization.
- The bombings began around 9:00 a.m., and targeted Roman Catholic churches — St. Anthony's Shrine in Colombo, the capital; St. Sebastian's Church in Negombo; and Zion Church in Batticaloa — and three luxury hotels: the Shangri-La, the Cinnamon Grand, and the Kingsbury, all in Colombo.
- Twenty-four suspects have been detained. Three officers were killed hunting for the attackers at a housing complex.
- Ten days ago, security officials were alerted to a threat to churches from a radical Islamist group, National Thowheeth Jama'ath. It was unclear what security measures, if any, were taken, or whether the attacks on Sunday were carried out by the Islamist group.
- The Sri Lanka government temporarily blocked major social media and messaging services, including Facebook and WhatsApp, to curb misinformation.
- At least thirty-five of the dead were foreigners, several of them Americans. Others were British, Chinese, Dutch and Portuguese.

## IS claims responsibility for deadly Sri Lanka blasts

Source: http://www.homelandsecuritynewswire.com/dr20190423-is-claims-responsibility-for-deadly-sri-lanka-blasts

Apr 23 – The Islamic State group said Tuesday, without providing evidence, that it was responsible for a series of blasts in Sri Lanka that killed more than 300 people and injured hundreds of others on Easter Sunday. Also Tuesday, Sri Lanka's state minister of defense told parliament that those who carried out the attacks did so in retaliation for attacks at two mosques in Christchurch, New Zealand last month.

# Sri Lanka attacks: government's social media ban may hide the truth about what is happening

**By Meera Selva**

Source: http://www.homelandsecuritynewswire.com/dr20190423-sri-lanka-attacks-government-s-social-media-ban-may-hide-the-truth-about-what-is-happening

Apr 23 – Sri Lanka has temporarily banned social media and messaging apps in the wake of the coordinated Easter Sunday attacks on churches and hotels across the country, which killed at least 290 people. The ban is ostensibly to stop the spread of misinformation – but in Sri Lanka Facebook and social media platforms generally have created a positive space for public conversation that did not exist before. Shutting down social media, leaving its citizens reliant on state messaging and a weak and beaten down form of journalism, the government now risks preventing Sri Lankans from finding out the truth about what is happening in their fragile and delicately balanced country.

*Meera Selva is Director, Journalism Fellowship Program, RISJ, University of Oxford.*

# What's Different About the Attacks in Sri Lanka

Source: https://www.theatlantic.com/international/archive/2019/04/sri-lanka-hasnt-seen-kind-islamist-terrorism/587761/

Apr 23 – Sri Lanka has a bloody history marked by a brutal, nearly 30-year civil war. In recent years, it's been mostly spared from violence, until Easter Sunday, when large-scale, apparently coordinated terrorist attacks on churches and hotels killed nearly 300 people.

The government blamed the attack on a little-known Islamist militant group, National Thowheed Jamath, which had gained notoriety in Sri Lanka for defacing four statues of the Buddha outside temples in Mawanella, a town in the country's center, in December 2018. What investigators will now have to piece together is how the group's capability skyrocketed from vandalism to a sophisticated, multipronged attack and, perhaps more important, why now.

Places of worship are soft targets, but the attacks Sunday suggested a level of complexity not seen since the civil war between the government and the separatist Tamil rebels that ended in 2009. The Tamil rebels pioneered modern suicide bombings, assassinated political leaders, and targeted civilians. But that conflict was also ethnic in nature: the majority Sinhala community versus the Tamil rebels. Since then, religious violence has been rare—and when it does erupt, it is typically restricted to Buddhist-Muslim tensions. That's partly why the Easter assault by an obscure group on Christian places of worship is so surprising.

"It doesn't make sense," C. Christine Fair, an expert on terrorism in South Asia and an associate professor at Georgetown University, told me. She said that National Thowheed Jamath had never attacked churches previously. Moreover, Sri Lanka has generally not seen tensions between Muslims, who make up 10 percent of the population, and Christians, who are about 7 percent. It's far more likely, Fair said, that an outside group, such as the Islamic State or al-Qaeda, based in the Indian subcontinent is involved in some way.

No group has so far claimed responsibility for the attack. The Sri Lankan government, which imposed a social media blackout after the attack, has blamed National Thowheed Jamath and arrested several people. Rajitha Senaratne, a spokesman for Sri Lanka's cabinet, told reporters Monday that there "was an international network without which these attacks could not have succeeded." He did not elaborate, nor did he provide evidence.

Rita Katz, the director of the SITE Intelligence Group, which monitors jihadist networks, noted on Twitter that coordinated attacks on chuches is, in fact, a hallmark of ISIS, which has carried out similar operations in Egypt and the Philippines. Although Islamist militancy

has not been a big problem for Sri Lanka, ISIS has issued some of its statements in Tamil, a language spoken in the south of India and by Sri Lanka's ethnic Tamils. (Most of Sri Lanka's Muslims are Tamil—though the country's Tamil population is mostly Hindu.)

It is not yet clear what, if any, links National Thowheed Jamath has with ISIS or other terrorist organizations. But jihadist groups have made successful inroads in parts of the world where they previously have had little influence, such as in the Philippines and Indonesia. They have used online propaganda to radicalize disaffected youth in Europe; have recruited from existing organizations, such as the Taliban in Afghanistan and Boko Haram in Nigeria; and have stepped into the security vacuum in places like Libya. Indeed, Sri Lanka acknowledged in 2016 that 32 Sri Lankan Muslims had joined ISIS, a tiny fraction of the country's overall Muslim population, but significant enough for the country's government to have taken notice. It is not known whether any of them has returned home.

Additionally, operations like the one in Sri Lanka require expertise and planning. Militants have to be radicalized, recruited, and trained to carry out an attack of that magnitude. This suggests the existence of safe houses, planning cells, and bomb-making equipment and materials—all hallmarks of a well-organized group. "You don't roll out of bed and decide to martyr yourself in a suicide-bombing attack," Bruce Hoffman, an expert on terrorism and a professor at Georgetown University, told me.

In hindsight, an attack at this particular moment in Sri Lanka should not be a complete surprise. Tensions between the majority community and Muslims have risen since the civil war ended; political rivalries have hobbled governance; and in the aftermath of the bombings, it has emerged that there were warnings—several of them—about an impending attack.

"Postwar, the one community that was being scapegoated was the Muslim community," Shobhana Xavier, an expert on global Islam in South Asia who is an assistant professor at Queen's University in Kingston, Ontario, told me, referring to the idea that Muslims had replaced Tamils as the distrusted minority. "There was a heightened sense of Islamophobia."

That sentiment grew more acute, fanned mostly by misinformation spread via social media, and spilled over into violence in March 2018, when Buddhists attacked Muslim-owned businesses and places of worship. At least two Muslims were killed. Even during that period, Prime Minister Ranil Wickremesinghe and President Maithripala Sirisena reportedly did not communicate. The two men are bitter enemies whose rivalry pushed Sri Lanka into a constitutional crisis last year that was resolved only through the Supreme Court's intervention.

The multiple warnings about churches being targeted were ignored and didn't make their way to Wickremesinghe. It's unclear whether they weren't delivered because of incompetence; because of his rivalry with Sirisena, who controls the police and the military; or because information was kept in bureaucratic silos. (Sri Lanka's Muslim community also reportedly had warned authorities multiple times over the years about the group's activities.)

While the search for answers continues, there have already been repercussions: Muslim fishermen in Batticaloa, in the east of the country, were attacked following the blasts. As Xavier told me, "If it does end up that this particular group" carried out the attack, "it could mean devastating days ahead for the country."

## The first lone-wolf terrorist

Source: http://www.homelandsecuritynewswire.com/dr20190422-the-first-lonewolf-terrorist

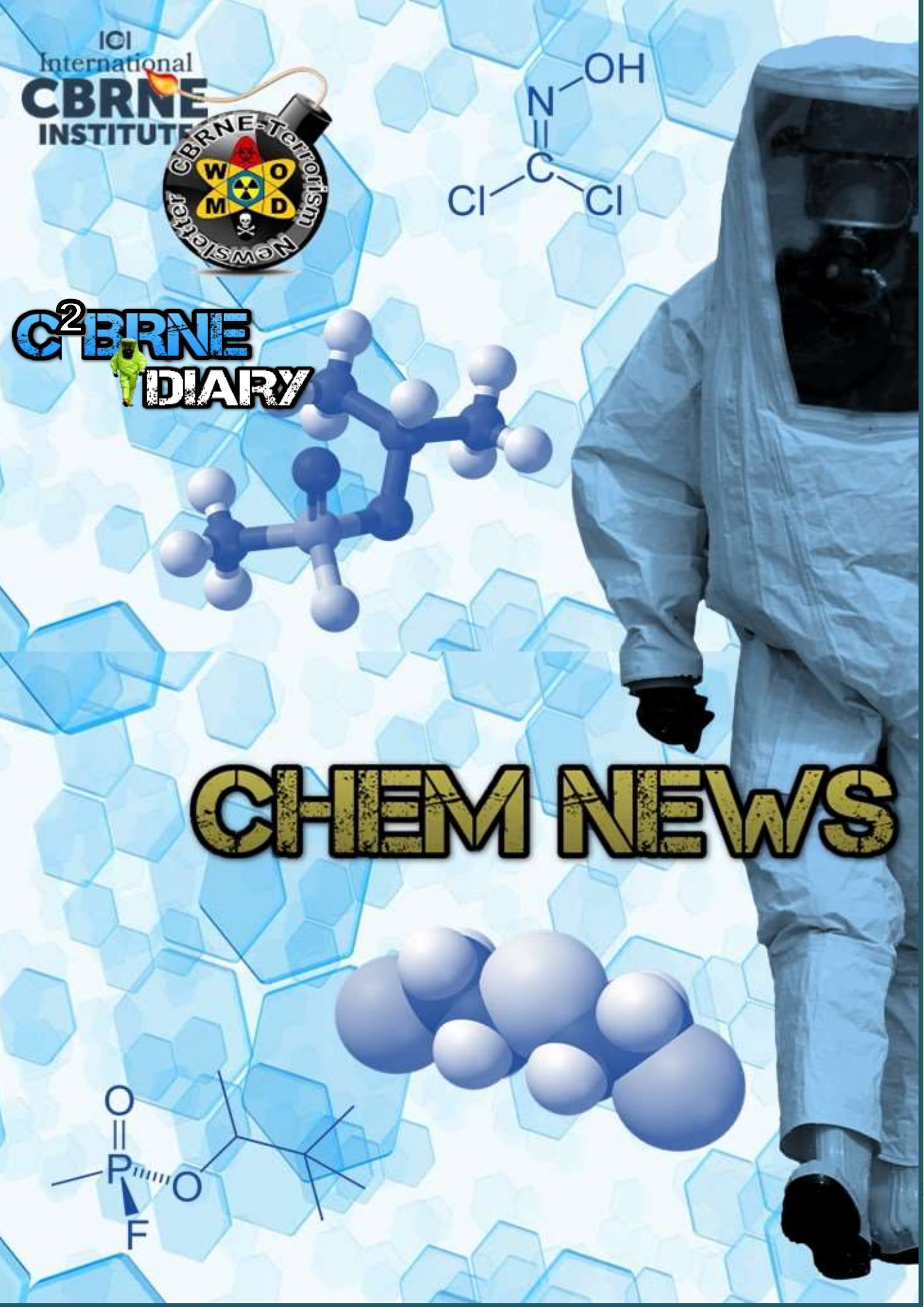
Apr 22 – Muharem Kurbegovic is considered the first "lone-wolf" terrorist. He was born in Sarajevo in 1943 and immigrated to the United States in 1967 to pursue a career in engineering. In 1973 he launched a series of bombing in and around Los Angeles. What especially alarmed the authorities was his interest in building chemical weapons, including nerve-gas munitions, to use in his planned attacks:

ICI International CBRNE INSTITUTE

CBRNE-Terrorism Newsletter

C²BRNE DIARY

# CHEM NEWS



## More Nerve Gas Attacks Likely, According to Journal of American Physicians and Surgeons

Source: https://www.prnewswire.com/news-releases/more-nerve-gas-attacks-likely-according-to-journal-of-american-physicians-and-surgeons-300817763.html

Mar 25 – Recent nerve-gas attacks on civilians suggest the need for better preparedness, writes Steven Hatfill. M.D., in the spring issue of in the *Journal of American Physicians and Surgeons.*

In 2017, Kim Jong-nam, the half-brother of the North Korean president Kim Jong-un, was assassinated at the Kuala Lumpur International Airport in Malaysia, with a form of the V-series of nerve agents developed by the British in the late 1950s. In 2018, there were several poisonings in England, apparently involving Russian Novichok ("Newcomer") agents. These were thought to be related to the attempted assassination of former Russian double agent Sergei Skripal.

Russia is believed to have made significant advances in chemical warfare agents during the Cold War, despite the Chemical Weapons Convention. The highly classified Novichok agents may be 10 times as potent as VX and designed to circumvent NATO countermeasures and detection equipment.

Civilian physicians need to be aware of the symptoms and signs of chemical weapons exposure, as antidotes must be administered quickly, effective protective gear must be used by responders, and proper decontamination and waste management must be employed.

Dr. Hatfill summarizes clinical findings and principles of management to aid civilian authorities in recognizing that an attack has occurred and in formulating a stopgap response until expert resources can arrive.

The *Journal of American Physicians and Surgeons* is published by the Association of American Physicians and Surgeons (AAPS), a national organization representing physicians in all specialties since 1943.

## Guelph company awarded federal contract to create anti nerve agent to protect against chemical threats

Source: https://www.guelphtoday.com/local-news/antoxa-awarded-federal-contract-to-create-anti-nerve-agent-to-protect-against-chemical-threats-1343158

Mar 27 – Guelph-based pharmaceutical company Plantform Corporations's subsidiary, AntoXa Corporation, was awarded a contract from the federal government to work on the production of an **anti-nerve agent, butyrylcholinesterase (BuChE).**

AntoXa received a one-year contract of up to $329,395 and is collaborating with Defence Research and Development Canada (DRDC) with a likelihood to extend the contract another two years.

The anti-nerve agent BuChE is a plant-based protein that safeguards one against powerful nerve agents such as sarin and soman.

Sarin is a deadly chemical substance that meddles with the body's nervous system by blocking an enzyme which is responsible for confirming the delivery of a message sent by the neurotransmitter.

Due to the attack on this enzyme, the neurotransmitter in the body sends disorderly messages which can result in twitching, paralysis and unconsciousness.

Soman is very similar to sarin but has psychological effects on the body as well.

Both nerve agents in their liquid form are colourless and tasteless. Sarin is also odourless whereas soman has a slight odour.

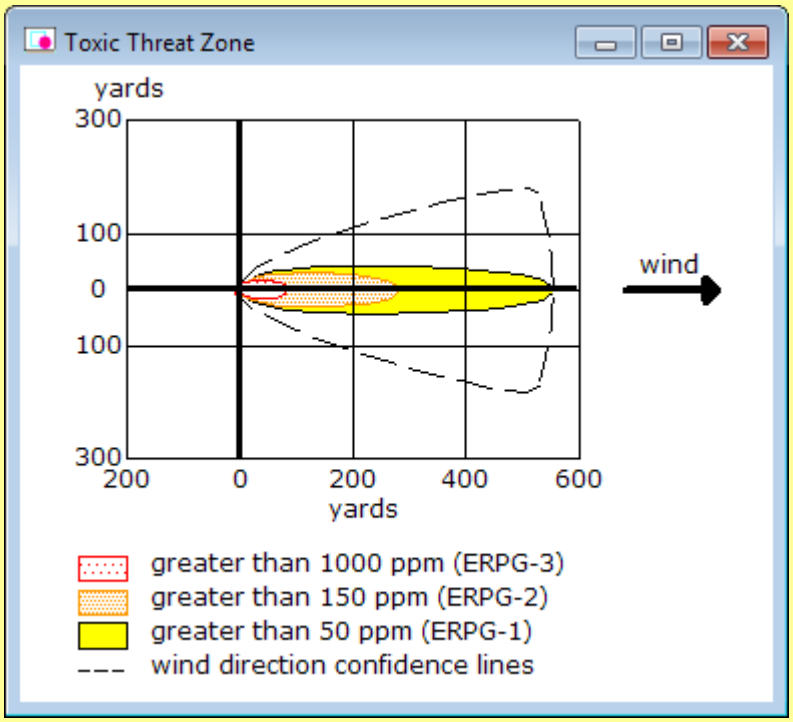
It was reported that sarin was the cause of approximately 48 deaths in Syria in April 2018. Women, men and children were seen lying unconscious with foam coming out of their mouth in videos circulating on social media.

In March 2018, former Russian intelligence officer and agent for UK intelligent services Sergei Skripal and his daughter Yulia Sergei were poisoned with a chemical agent, novichok. The father and daughter were found unconscious on a public bench.
AntoXa's President and Chief Operating Officer Ashley Meyers said incidents like the one in Salisbury and those in Syria underline the importance of developing ways to safeguard from chemical terrorism agents.
"Our mission and objective are to produce defence based solutions to the military and civilian population so that includes medical countermeasures against biological and chemical threats," said Meyers.
Meyers says the funding is going to support the development of multiple drug candidates of DRDC and they're all based on the drug BuChE, a naturally occurring enzyme in humans which has an ability to bind to and mop up nerve agents.
"AntoXa's unique approach is that we have a low-cost tobacco-based system that we used to manufacture this. There are other companies out there that are manufacturing this particular enzyme however many of them do it using expired human blood donations," said Meyers.
"In Canada, that would be from Canadian blood services but that can be very very expensive and resources can be limited as well as there are also certain challenges associated with ensuring that you remove any viruses or pathogens that could potentially be blood products going from one human to another."
Plantform founder, Christopher Hall – a retired professor of environmental science from the University of Guelph – recognized the advantages of using tobacco plants to create antibodies in the 1990s.
"It's kind of a copy of the human version and that's Antoxa's innovation to this problem is the low-cost tobacco system," said Meyers.
"It's certainly important for Canada to develop the capabilities. I hope that we never face a threat like this."

## Model Problems

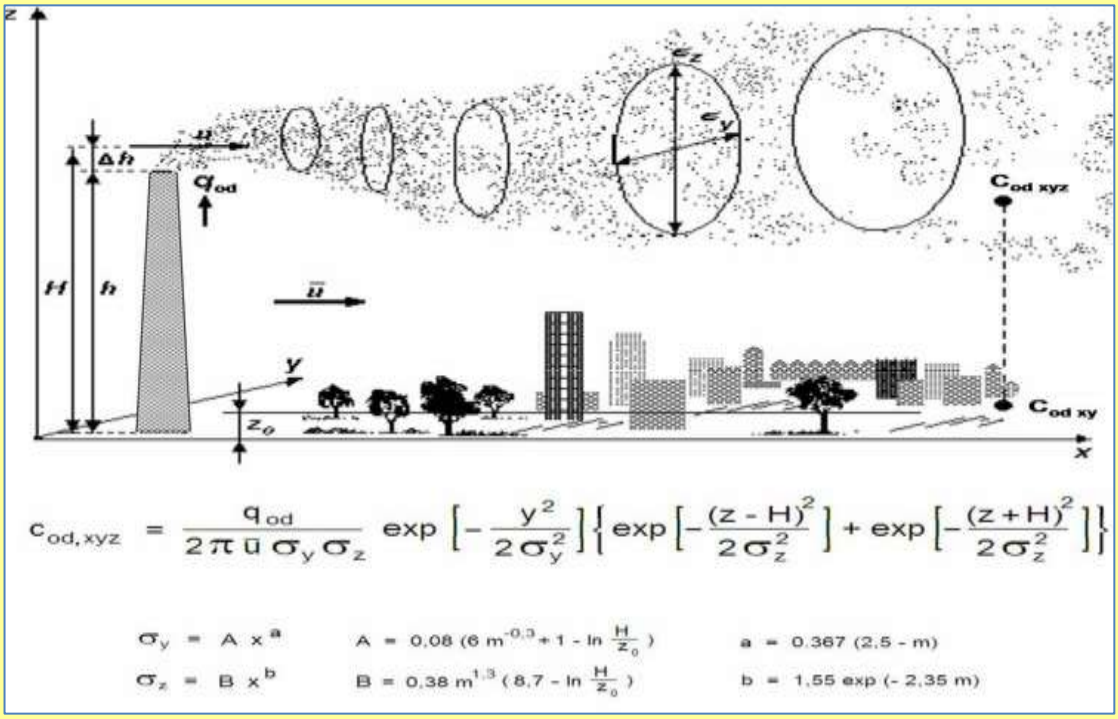
Source: https://www.cbrnpro.net/news-bedford/2016/2/22/model-problems

No, we are not talking about anorexia, cocaine, or Tom Brady. We are talking about the problems inherent with atmospheric dispersion models and their application to hazardous materials releases and CBRN incidents. These really come down to two basic issues: the problems inherent to the different models and the misuse of these models.




Talking about this. (An ALOHA model, Courtesy: Environmental Protection Agency).

The inherent problems are a technical issue, but one that is easily explained without getting too technical (according to MS Word this post is at a 11.8 grade level!). There are tons of different dispersion models. See a good list here. As you can see, most use something called "Gaussian dispersion," which if you are so interested, you can learn all about here. The biggest problem with such models is that they assume that in any release, the chemical of concern mixes immediately with the atmosphere so that the concentration is like a bell curve, i.e. the highest concentration is down the center of the cloud. This problem is inherent to basic dispersion modelling software like the EPA's CAMEO/ALOHA suite.




A graphic representation of a Gaussian Dispersion Plume Model with equations (Courtesy: Wikipedia Commons)

While such models provide "close enough" concentration estimates for many conditions, those models become problematic when conditions reduce mixing in the atmosphere,

specifically at low wind speeds (less than 3 miles per hour) where concentrations in reality tend to remain higher especially at the source. In such conditions, modelling software like ALOHA will offer incorrect models. Likewise, very stable atmospheric conditions like those associated with low-lying fog, produce concentrations that tend to remain high far from the source, contrary to what the model will predict.
What does that mean? That means that if you are modelling a chemical attack or a release in the early morning or night and using a Gaussian based model like ALOHA to do it, your model will be inaccurate. If you know from reading your chemical warfare history or remember your old FM 3-3, early morning and atmospherically stable periods are prime times for battlefield chemical attacks.
Basic models like ALOHA have other issues. Specifically, they fail to account for:

- Byproducts from fires, explosions (combustion) or chemical reactions – specifically they assume that the release does not react with air or water vapor, even though many chemicals do. That means that a chemical released may not be the chemical that is actually in the plume!
- Particulates – ALOHA and most basic Gaussian dispersion models cannot do particles, dust, or other solid material, which rules out radioactive material among other things.
- Chemical mixtures – Basic modeling only does pure chemicals and a small number of solutions.
- Wind shifts and terrain steering – Basic models assume wind speed and direction are constant throughout the downwind area. In reality, this is usually not the case. This is especially true in in built up or urban areas, or where there are significant transitions in terrain. For example, an open area that transitions to a heavily forested one or the bottom of a valley versus the hilltop overlooking it. This effect is "terrain steering" and is the result of wind shifting speed and direction as it crosses varied terrain. In urban areas, large buildings create all sorts of eddies and currents impossible to model. This is particularly problematic in areas like stadiums or certain facilities where wind can "swirl" and create a cyclonic effect or in major metropolitan areas like Manhattan or Downtown Chicago where the skyscrapers create a wind tunnel effect.
- Terrain – This relates to the item above. Basic models assume flat terrain, though adjustments are possible for "roughness." Such models do not predict pooling or sloping ground effects, so liquids and gases that might settle in a depression will not show up. Think of it this way – an ALOHA model of a chlorine release in World War I would fail to predict the way the gas settled into trenches and shell holes, which was also true of liquid mustard contamination which tended to flow into and collect in such depressions (along with rain water).
- Fragments – an explosive event scatters both debris and material. Basic dispersion models do not predict fragment trajectories. Therefore, if the release involves the scattering of say a liquid or solid that subsequently vaporizes, reacts, or disperses due to fire; those new release points are not in the model, which only has the single release point of the explosions origin. So basic dispersion models have trouble with liquid agents delivered by artillery and/or dispersed by explosive charges, especially if that release involves multiple rounds or bomblets.

(Note: The above list is adapted from the one here.)
That does not mean that the big brains have not tried to alleviate some of these problems. There are many variations of dispersion models. The Defense Threat Reduction Agency (DTRA) *Hazard Prediction and Assessment Capability* (HPAC) and its associated *Consequence Assessment Tool Set/Joint Assessment of Catastrophic Events* (CATS-JACE), are CBRN equivalent of ALOHA/CAMEO and use a variety of underlying models like SCIPUFF or PUFF-PLUME (for radioactive material) to try to offset some of the problems inherent in basic Gaussian models like those used by ALOHA. However, these complex models have their own issues. The reason there are so many different models is that no one model fits every circumstance. More importantly, there are hosts of things no model can address. You wouldn't ask Kate Moss to model plus size bathing suits, and you'd never ask a supermodel which set of snow tires is best for your old Bronco.
There is one other big problem with all dispersion models. For large areas (say a county in Oklahoma) and big dispersals (like an industrial facility), assuming you are using the right model and give it accurate inputs the results will be, while not perfect, close enough to be useful for decision making. They are "good-enough" models but should not be confused with reality, which is always inherently more complicated. This all falls apart however when you

attempt to do "indoor" modelling or highly localized models. The smaller the model the more inaccurate it is, likewise if you try to model really big things (like the atmospheric dispersion of radioactive material from Chernobyl or Fukushima) your model will similarly fall apart after a certain point. Trying to get an accurate model of something so vast is like asking Zoolander to turn left.

Both of these circumstances (modelling too small or too big an event) suffer inordinately from the "butterfly effect." That effect, which comes from the problems inherent with weather forecasting models, is based on a discovery where a meteorologist using what was then thought to be the most accurate model for predicting weather increased the accuracy of his input by one decimal place (let's say from 1.355 to 1.3545), and got a complete different forecast.[i] The example from which the effect gets its name is that if a butterfly flaps its wings in Japan you might end up with a thunderstorm over Oklahoma.

That very example, which comes from atmospheric models (after all, weather forecast models are at their core, atmospheric models), demonstrates the problems of modeling in a nutshell. A dispersion model is no more accurate than your local weather forecast. In fact, models are heavily dependent on weather, which programs like HPAC can account for, but only to a point. Further, the more inputs you have for the model, the more likely a change in one can have an outside effect on all the others, and our atmosphere has an awful lot of variables.

This problem of "micro-climates" makes urban dispersion models, small facility models, and indoor modeling impossible. Despite many attempts to come up with a good enough version, none works. As one DARPA scientist who attempted it a number of years ago explained to me, "You open a door a ¼ of an inch one time, or a ½ inch another and you get a completely different model. It can't be done," he explained. A similar attempt to produce models at a chemical production facility produced the same problem. Too many atmospheric variables – valves switching on and off, steam and heat producing eddies in the air, people walking about, vehicles coming and going; all produced atmospheric disturbances that changed the outcome. There were too many variables, many of them random.

For very large dispersion models encompassing the worldwide effects of say, radiation released by Chernobyl, the number of variables is even greater. Such models are good enough only in that weather forecasts are good enough. Based on atmospheric data a weather forecaster might predict lower or higher temperatures across a wide area (Western Europe or California) but his accuracy in predicting the actual high and low temperature in your neighborhood will have a greater degree of error associated with it – they might get within a few degrees or so. So is it with any dispersion model, you can make some broad generalizations, but specificity in your prediction is subject to wider error.

Here are two good rules of thumb about all dispersion models: One, know your models and their limitations. Two, don't try to get too granular or detailed – the closer and smaller in size you get, the less accurate it is.

While there are hosts of other inherent issues with atmospheric dispersion models, the real problem isn't often the models themselves but the way people misuse them. From bad data (the GIGO problem) to failing to understand the limitations of the model in use, there are hosts of bad modeling decisions made across the CBRN community every day. The most fundamental error is failing to understand that the models are not exactly predictive, even the highly complicated ones. The real world will be different from the model.

By this point, you are probably thinking, "Why model at all then?" Well, there are many good reasons, but any modeler or CBRN professional needs to understand how to use them and present them. The following are CBRNPro.net's suggestions, helpfully organized into a top ten list.

**10.** Never ever hand a plume model to a first responder or anyone that is not a CBRN professional without extensive explanation – or better yet, don't do it – even to so-called "professionals" use the model to create another, more broadly outlined product (see #9).

**9.** Give them a plume model overlaid with an old-fashioned circle and cone of uncertainty overlay instead. Better yet, only give them circle/cone models.

**8.** If you are a decision maker, incident commander, or ground maneuver unit, and someone approaches you with a plume model, ask him or her if they know what Gaussian diffusion is.

They don't need to explain or understand differential equations, but if they have no idea what it is, or its limitations, ignore any model they give you.

**7.** Use models to focus your air monitoring and contamination surveys. Do not assume the model is remotely accurate until you confirm some part of it on the ground, in the real world.

**6.** Remember a model is only approximate (within known limitations). It is also a snapshot in time. Weather and other variables change. Know how and when to account for those changes.

**5.** Sometimes, it is better to use the "old fashioned way," like a simple nomogram for a nuclear weapon, rather than a fancy model. The error probability is higher, but the errors are more likely to fall to the safe side.

**4.** Models are only as good as the data that feed them. The more complex the modelling software suite (HPAC) the more variables there are. If a modeler cannot explain more than half of the variables, or provide solid data for them, the model is less than worthless.

**3.** If you are modelling many unknowns, it is better to be safe than sorry. Assume the worst, but be ready to explain it as a worst-case scenario and discount your results. Better yet, don't run a model until you have more data. Use a big circle cone model and only make assumptions you can confidently make and even then, worst case those.

**2.** Never, ever, ever, attempt to present a plume model as accurate inside a major urban area, in highly varied terrain, or in unique release points with significant microclimates or terrain steering problems (like open air stadiums). Better yet, don't model them at all. Use a circle/cone overlay instead, or just explain what is more likely (from urban canyons or stadiums, or in areas with significant depressions, etc.).

**1.** If you have something fancy, like HPAC/CATS-JACE, know when to use it and for what: Nuclear weapons models outputs are good (they are the original basis of the program), but only if you know or can accurately estimate the yield and have access to good weather data. Radiation Dispersal Devices suffer a major GIGO problem, by the time you know the explosive charge and size of the original radioactive source in the RDD you won't need a model anymore. Chemical models are not bad, though not necessarily better than ALOHA if you lack accurate input data. Biological agents are always problematic. Lastly, in nearly every case it is better to leave natural disasters (i.e. Hurricane) to the National Weather Service or NOAA.

Finally, and this is true in all cases, if you cannot explain more than half the variable inputs for any model, don't use the model, even a slight change to one can produce dramatically different results and you need to know what each does. Instead remember that for most Hazmat/simple incidents, ALOHA or a circle/cone based on the North American Emergency Response Guide (ERG) is probably better for decision-making, as long as you re-evaluate regularly for weather shifts or changes in variables.

There you have it: Model problems that don't involve Jay Cutler, Tyra Banks, or eating disorders. Of course, there is one other rule of CBRN that is always worth repeating: Know which way is upwind and uphill and when in doubt, *keep calm and decon*.

[i] Incidentally, this problem is a major point of contention when discussing "climate models" used in the debate over greenhouse gas emissions and "global warming/cooling" or climate change. It is a common complaint of scientists that policy makers who use their climate models do not understand their inherent complexities or problems.

# Pick Your POICN: Introducing the Profiles of Incidents involving CBRN and Non-State Actors (POICN) Database

**By Markus K. Binder and Gary A. Ackerman**

*Published online: 27 Mar 2019*

## Abstract

The majority of scholarship on chemical, biological, radiological, and nuclear (CBRN) terrorism relies on non-empirical theorizing or the in-depth examination of a handful of prominent cases. A key reason for the dearth of systematic analyses is the lack of a

comprehensive database on CBRN terrorism events amenable to quantitative analysis. This article introduces the Profiles of Incidents involving CBRN and Non-State Actors (POICN) database, consisting of 517 CBRN terrorism–related events from 1990 to 2017. After laying out the general scope of the database and its unique approach to incident validation, the article illustrates POICN's potential through preliminary observations of the data.

▶▶ Read also: http://files.isanet.org/ConferenceArchive/ae8d73ea82934950b4d934da56cf55da.pdf

# Phase I study of a topical skin protectant against chemical warfare agents

**By Eisenkraft A[1], Krivoy A, Vidan A, et al.**

*Mil Med. 2009 Jan;174(1):47-52.*

Source:https://www.ncbi.nlm.nih.gov/pubmed?Db=pubmed&Cmd=Retrieve&list_uids=19216298&dopt=abstractplus

**Abstract**

Vesicants and some nerve agents penetrate exposed skin, mainly through the sensitive integration areas of the personal protective equipment. Therefore, improving dermal barrier with a topical agent should reduce the threat of exposure. A topical skin protectant **lotion (IB1 – Brand name: Demostyx)** was developed to improve protection against chemical warfare agents. Preclinical studies in several animal models have proven the protective efficacy of IB1. Here we present the results of a randomized placebo-controlled, double-blind phase I clinical study, performed with 34 healthy volunteers. The study tested the safety of repeated applications, including ruling out transdermal permeation of magnesium, which may lead to a dangerous blood magnesium level, since the lotion contains magnesium sulfate. Other objectives included detection of dermatological adverse effects, assessment of application convenience, and effect on daily activities. Importantly, no serious adverse effects were recorded and the lotion did not interfere with daily tasks. There were no significant differences in magnesium levels between the placebo and the study groups in any of the applications. No toxic levels of magnesium were found in either group. We conclude that IB1 is probably safe, easily self-applied, and does not cause any significant inconvenience. Therefore, IB1 can be considered as an adjunctive chemical, biological, and radio-nuclear (CBRN) protective aid to field soldiers.


## Dermostyx

DERMO-STYX is based on a mixture of magnesium sulfate and glycerin, ingredients that are widely used in cosmetics and in medicine. It is absorbed into the stratum corneum and remains there without further absorption into the circulation.

DERMO-STYX reduces the size and severity of skin lesions following vesicants exposure, prevents VX intoxication, ameliorates clinical symptoms of parathion, acrolein (Papite) and chloropicrin intoxications.

The barrier properties of DERMO-STYX are immediate upon application and remain effective for at least 12 hrs.

The expected use of DERMO-STYX is by application mainly on sensitive skin areas (armpits, groin, waist, wrists), when necessary (before exposure).

It is easily applied on the skin and removed by rinsing with water, it is compatible with common decontamination doctrine (Fuller earth) and a quantity of 10-15gr is sufficient for one application covering approximately 20% of the body surface.

## Mock drill at PVP Mall on CBRN emergencies

Source: http://www.newindianexpress.com/cities/vijayawada/2019/mar/28/mock-drill-at-pvp-mall-on-cbrn-emergencies-1957051.html

NDRF team with masks at the mock drill held to create awareness among people about what to do in cases of CBRN emergencies in city on Wednesday I R V K Rao

Mar 28 – A team of National Disaster Response Force (NDRF) officials conducted a mock drill at PVP Mall on Wednesday as part of which an awareness session was organized for the public on safety measures to follow during the times of CBRN emergency.

**EDITOR'S COMMENT:** Four soldiers in PPE, two different fashion regarding the head cover! How obvious is the fact that they have never been taught the "buddy system"!

## All-in-One Sensor

Source: https://i-hls.com/archives/90218

Apr 04 – The ability to measure pressure, temperature and humidity is important in many applications, such as monitoring patients at home, robotics, electronic skin (flexible electronics that are able to mimic functionalities of human or animal skin), functional textiles, surveillance and security, to name just a few. Research until now has targeted integrating the different sensors into the same circuit, and this has presented several technical challenges, not least concerning the interface to the user.

Researchers from the Laboratory of Organic Electronics at Linköping University, Sweden, have developed a new sensor that could be highly significant in fields such as robotics, healthcare and security. They succeeded in combining all three measurements into a single sensor.

Cellulose soaked in a carefully designed polymer mixture acts as a sensor to measure three parameters at the same time – pressure, temperature and humidity. The measurements are completely independent of each other.

This has been made possible by the development of an elastic aerogel of polymers that conducts both ions and electrons, and subsequent exploitation of the thermoelectric effect, according to eurekalert.com.


الأكاديمية
CBRN
Academy
الدوحة
http://www.
To be launched in May 2019!

# Interview: Colonel Xavier Lefebvre

*Commander of the French Joint CBRN Defense Center*

Source: http://nct-magazine.com/nct-magazine-april-2019/xavier-lefebvre-interview/

Colonel Xavier Lefebvre has been dedicated to the CBRN Defense expertise since 2002. He is a former Commanding Officer of the 2nd Dragoon Regiment (2008-2010) which is the unique French CBRN Defense Regiment. He has been working for 10 years in CBRN defense doctrine at the national level and for NATO including in conducting the 2008 and 2014 French commitments in the NRF CJ-CBRN Defense Task Force. This culminated in a 3-year assignment (2013-2016) at the NATO Joint CBRN Defense Center of excellence as its Operations Support Director. From 1st July 2017 he has been assigned as the Joint CBRN Defense Center (CIA NRBC) Commanding Officer, leading CBRN education and training, doctrine development, capability requirement and resource management.

**You have been dedicated to CBRNe Defense since 2002; what are the biggest changes in doctrine and resources that you have observed and what trends do you see ahead of us?**

Actually, I joined CBRN Defense – NBC Defense at that time – in June 2001 as I was engaged in the General Staff Course at the then Joint Staff College in Paris. It was still the Peace Dividends' era which had resulted in France in a dramatic downsizing of our CBRN defense capabilities. For instance, the Army was only maintaining a 2 companies strength specialized battalion while basic training was no longer a priority among the Armed forces. 9/11 was a shock! We realized that we were engaged in a dangerous path, lower than the minimum required. Decisions were taken to rebuild and centralize our land capabilities around a unique regimental-sized pool of experts able to support deployed forces but also subsequently contribute to the domestic security from joint coordination.

A major and continuous trend has been the enlargement of the CBRN defense scope - which could be somehow synthesized in "from NBC to CBRN". Up to the 90's, the main mission of NBC Defense was to support the armed force in a major high-intensity conflict, facing large scale NBC threat. Then from the Balkans emerged industrial and environmental risks to be dealt with – so-called ROTA[1] - which came along with WMD proliferation and pandemic concerns as potential consequences from the increasing globalization and border opening. Consequently, while NBC defense had been focusing fo decades on war agents, CBRN defense is now trying to deal with all issues from the basic environmental risk encountered by our deployed force to a nuclear burst part of a major conflict. For instance, in 2014-2015 France deployed a Medical Personnel Treatment Center in Guinea as part of their effort to fight against the Ebola epidemic.

This trend has been recently amplified by the emergence of non-state actors and the actual end of a non-use taboo from state actors such as Syria but also through targeted assassination attempts. To face those evolutions we have now been shifting to a more active attitude, from the fight against WMD proliferation to counter-proliferation including actual strikes against the Syrian remaining chemical program capabilities.

Eventually, while those trends should extend to the upcoming decade at least, the rapid technological developments in all areas - such as nano and biotechnologies, genetics or 3D printing - and their easier accessibility though digital proliferation is a matter of vigilance - if not of concern - for the near future. CBRN defense must track all evolutions that may impact its ability to protect forces and the population, while at the same time high-intensity threats has not fully disappeared.

**▶▶ Read the full interview at source's URL.**

# Interview: Andrea Fabiana García Centurión

*OPCW's Regional Instructor and Chemical Instructor in the School of Military Engineering of the National Army of the Republic of Uruguay*
Source: http://nct-magazine.com/nct-magazine-april-2019/andrea-fabiana-garcia-centurion-interview/

Former Lieutenant Andrea Fabiana García Centurión is an OPCW Regional Instructor as well as Chemical Instructor in the School of Military Engineering of the National Army of the Republic of Uruguay.

She holds a degree in the chemical field from the National University (UdelaR). From 1990 to 2012 she worked as a chemist in the Quality Control area of the Military Hospital's Pharmaceutical Laboratory. During her career she completed numerous national and international courses in the chemical weapons field. From 2016 to 2019, she worked as Production manager in the Explosives Factory of the National Army.

**What do you think are, as a woman and a professional, the biggest challenges working in CBRNe defense? Is there something in particular that you would have wanted to know at the beginning of your career?**

I would say that my biggest challenge has been working with extremely dangerous agents, considering that I am the mother of a young child (I have a 9-year-old boy). While most trainings are done with simulant agents (less dangerous versions of the real substances), I had the opportunity of working with the real agents during my training with the OPCW (Organization for the Prohibition of Chemical Weapons) in Slovakia. Also, while I thoroughly enjoy and appreciate the training and teaching opportunities, as well as visiting other countries, the travelling involved has been, at times, hard on my boy. Another challenging situation was that I started training for CBRNe while I was still working fulltime as an analytical chemist at the pharmaceutical laboratory of the Uruguayan Military Hospital. Finally, even though the relative roles of men and women are rapidly evolving, I would not be completely honest if I didn't mention that there is still a bit of stigma in this field, regarding women.

I would have wanted to know about this specific area of chemistry earlier in my career, because once I learned about it I fell in love with it. As my country, Uruguay, was not involved in either of the world wars, it never developed chemical weapons. In fact, it is a chemical weapon-free country, as is the rest of Latin America and the Caribbean. As a consequence, this specific branch of chemistry is not offered as an option in our universities. Had I learnt about it earlier, I would have done everything I could to become an expert in this area, even if it involved taking the necessary courses and training in other countries.

**▶▶ Read the full interview at source's URL.**

# Country Profile: Austria

**By Colonel Friedrich Aflenzer**
*CBRND Officer - Force Development Division, Federal Ministry of Defence Austria*
Source: http://nct-magazine.com/nct-magazine-april-2019/country-profile-austria/

The Austrian National Security Strategy (ANSS) considers defense policy as an integral part of comprehensive security provisions, which should be harmonized with Austria's internal security policy as well as with foreign, and development policies. Austria's main defense policy objectives remain:

- Provision of military capability to maintain Austria's sovereignty and territorial integrity; and
- Military assistance to the civil authorities in protecting Austria's population and its constitutional institutions.

In addition, the ANSS states that the Austrian Armed Forces (AAF) should also be able to provide and sustain adequate contributions to international crisis response operations within

the framework of multinational organizations, namely the UN, EU, NATO, and OSCE. These operations should preferably be conducted under a UN mandate.

Austria sees NATO/EAPC and NATO/PfP as important fora for further strengthening transatlantic cooperation in the field of security policy and crisis management.

The political guidance stated that the AAF face the following challenges:

- operating in a changed and more complex security environment with growing terrorist and hybrid threats
- supporting the civilian authorities and security organizations in managing an increasing irregular migration challenge;
- responding to more frequent natural disasters due to climate change

**▶▶ Read the rest of this article at source's URL.**

## DHS is considering classifying fentanyl as a 'weapon of mass destruction'

Source: https://taskandpurpose.com/dhs-fentanyl-wmd

Apr 15 – The Department of Homeland Security is considering designating the painkiller drug fentanyl as a weapon of mass destruction "when certain criteria are met," according to an internal memo obtained by Task & Purpose.

Dated Feb. 22, 2019 under the subject line "Use of counter-WMD authorities to combat fentanyl," the information memorandum prepared for then-Secretary Kirstjen Nielsen from James F. McDonnell, DHS assistant secretary for countering weapons of mass destruction, offered background on the drug and how some elements of the U.S. government see fentanyl as a potential "mass casualty weapon."


"Fentanyl's high toxicity and increasing availability are attractive to threat actors seeking nonconventional materials for a chemical weapons attack," wrote McDonnell, a longtime Homeland Security executive appointed by President Donald Trump to lead the Countering Weapons of Mass Destruction (CWMD) Office in May 2018.

"In July 2018, the FBI Weapons of Mass Destruction Directorate assessed that '...fentanyl is very likely a viable option for a chemical weapon attack by extremists or criminals," he wrote.

The Department of Justice did not respond to a request for comment from Task & Purpose. The Department of Homeland Security also declined to answer any questions from Task & Purpose regarding the memo.

In 2017, President Trump declared the opioid crisis a public health emergency amid tens of thousands of American deaths traced to fentanyl overdose in recent years.

Roughly 50 to 100 times more powerful than morphine, fentanyl is a synthetic opioid that is medically-prescribed to treat severe pain under such names as Sublimaze and Actiq, according to the National Institute on Drug Abuse.

The illegal version — usually sourced from China or Mexico — is sometimes manufactured and sold as powder, put in small candies and eye droppers, or mixed into other illicit drugs to increase their potency, which has led to a significant increase in overdoses for unknowing drug users.
But the effort to classify the drug as a weapon capable of causing mass casualties has some experts scratching their heads.
"This is like declaring ecstasy as a WMD," said one member of the DoD's counter-WMD community, who would only speak on condition of anonymity, mentioning another illegal drug that could lead to overdose death.
Dan Kaszeta, a chemical, biological, radiological, and nuclear defense expert, told Task & Purpose the threat of fentanyl being used as a weapon is a "fringe scenario" since there are "literally dozens" of available toxic chemicals that could easily be weaponized.
"It reads like somebody is laying the administrative background for trying to tap into pots of money for detecting WMD and decontaminating WMD," Kaszeta told Task & Purpose after viewing the memo. "It's an interdepartmental play for money, that's all it is."
Indeed, the budget for countering weapons of mass destruction has declined, apparently due to Trump's homeland security priorities, which mainly emphasize border security and enforcement.
"The priorities are: increased border security along the southern border, hiring 15,000 more Customs and Border [Protection] agents, and increasing the number of detention facilities for undocumented immigrants," John Fischer, DHS division director, told National Defense Magazine in Sep. 2017. "That is consuming the budgets. Everybody else within DHS ... is contributing to those priorities."
Less than a year after the Countering Weapons of Mass Destruction Office was established, McDonnell's memo seemed to suggest that increasing counter-fentanyl efforts could get WMD-focused homeland security personnel alongside others trying to stop drug smugglers.
"[Counter-WMD] Office efforts will focus on quantities and configurations that could be used as mass casualty weapons," McDonnell wrote. "However, many activities, such as support to fentanyl interdiction and detection efforts, would tangentially benefit broader DHS and interagency counter-opioid efforts."
"Within the past couple years, there has been a reinvigorated interest in addressing fentanyl and its analogues as WMD materials due to the ongoing opioid crisis," McDonnell added, telling Nielsen that his office could assist in counter-fentanyl efforts by managing and developing new technologies, deploying sensors, and assisting others in the field.
McDonnell also claimed that other senior leaders in the Department of Defense, such as Navy Adm. Craig Faller, commander of U.S. Southern Command, had "proposed formally designating fentanyl as a WMD material."
A spokesperson for Southern Command declined to answer whether Faller had done so, telling Task & Purpose in a statement that "the command is constantly assessing a wide range of threats and concerns with our inter-agency partners and their potential impacts to national security; however, we will not be discussing the specifics of these conversations."
As part of the memo's proposed next steps, McDonnell said his office would further brief DHS on counter-WMD efforts related to fentanyl and host an interagency planning event on the topic.
"I think an interagency planning event is a good idea," a senior defense official told Task & Purpose on condition of anonymity in order to discuss sensitive matters, though the official concluded it was far more feasible for a threat actor to manufacture sarin or mustard gas. "Anybody with a college level degree in chemistry can manufacture chemical weapons agents."
"I cannot see any scenario where a nation-state would use fentanyl on the battlefield, or for that matter, a terrorist using a really toxic chemical like fentanyl in an attack when they could just sell it for funding the purchase of firearms and explosives or steal an industrial chemical instead," the official said.

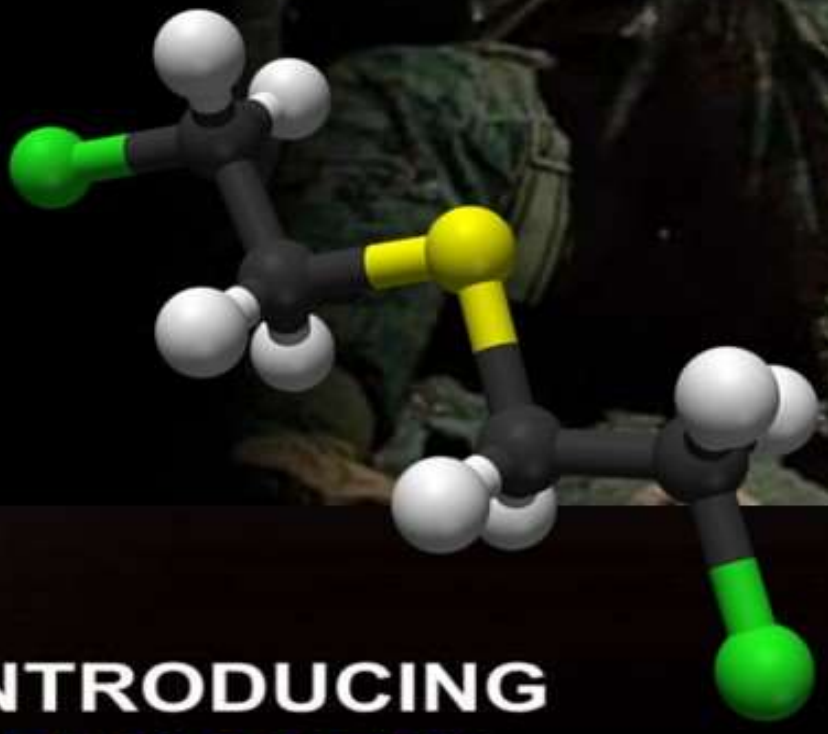
**▶▶ Read the full memo at source's URL.**

DermostyX

Protective Solution Against Chemical Warfare Agents

rekah.co.il/

# Be prepared For the UNEXPECTED



## INTRODUCING DERMOSTYX

Strengthening protection against CWA and TICs


**Rekah Pharmaceutical Industry Ltd**

# No, Fentanyl Isn't a Weapon of Mass Destruction

Source: http://nymag.com/intelligencer/2019/04/fentanyl-isnt-a-weapon-of-mass-destruction.html

April 16 – Faced with a declining federal budget for a division charged with countering weapons of mass destruction, the Department of Homeland Security is considering a proposal to extend the label to fentanyl. Task & Purpose reported on Monday that James F. McDonnell, who heads the department's WMD division, proposed the change in a February memo to then–DHS Secretary Kirstjen Nielsen. The drug's "high toxicity and increasing availability" made it "attractive to threat actors seeking nonconventional materials for a chemical weapons attack," McDonnell wrote. There isn't much of an evidential basis for classifying fentanyl as a WMD, but McDonnell's suggestions could still find support for reasons that have nothing to do with science and everything to do with politics.

Fentanyl is a powerful synthetic opioid typically prescribed to patients in acute pain. In its illegally produced version, it can be a potent and often deadly drug, especially when mixed with other substances, like heroin. The prevalence of illegal fentanyl does appear to be driving sharp increases in rates of death by opioid overdose. But as the drug proliferates, so too do myths about its real dangers. McDonnell's memo fits into an overarching narrative that bestows almost magical properties on fentanyl. A 2017 Bloomberg News feature, which set up and tried to examine the possibility that the opioid could be deployed as a WMD, even claimed that fentanyl "is so potent that even a small amount — the equivalent of a few grains of salt — can be lethal."

This isn't really true. You can't get high or become ill simply by touching fentanyl, but police departments often claim otherwise. They report dramatic, but varied, symptoms that don't mesh with established scientific evidence about fentanyl and the way it's absorbed by the human body; one officer in East Liverpool, Ohio, even claimed he could feel his body "shutting down" after brief contact with powdered fentanyl. (The same Bloomberg piece that attributes fatal qualities to minuscule amounts of fentanyl uncritically repeats the officer's story as fact.) However, physicians have suggested that police officers who say they've been sickened by mere exposure to the drug are actually displaying signs of mass sociogenic illness — hysteria, in other words. This isn't exactly proof that fentanyl would make an effective weapon of mass destruction. In fact, it would be difficult to disperse, and other, deadlier chemical agents already exist.

Right-wing political commitments don't necessarily motivate all urban legends about fentanyl. The opioid crisis is real, and illicit fentanyl is dangerous. But hysteria can also be politically useful, and this particular outbreak is helpful to Trump. He ran, in part, on a promise to restore law and order to a nation in moral decline. In the fever swamps, immigrants bring this deadly substance over the border en masse; it then sickens police officers and kills innocent Americans. To Trump, fentanyl and opioids categorically are a cudgel. As recently as April 4, he threatened to close the U.S. border with Mexico "if the drugs don't stop." Kellyanne Conway, who acts both as a spokesperson for the president and as his "opioids czar," despite having no experience in public health, said in March that people were ingesting marijuana laced with fentanyl. There isn't much evidence that fentanyl-laced marijuana is a real problem, as BuzzFeed News reported at the time, but police departments continue to spread the claim in comments to the press and on social media.

So why does McDonnell want to classify fentanyl as a WMD? As Task & Purpose points out in its initial report, funding for DHS's WMD division has experienced a decline commensurate with the Trump administration's overweening focus on immigration and the border. "It reads like somebody is laying the administrative background for trying to tap into pots of money for detecting WMD and decontaminating WMD," one expert told Task & Purpose. "It's an interdepartmental play for money, that's all it is." McDonnell's memo appeals to the president's basest instincts. If the ploy works, McDonnell won't just earn more funding for his division. He could also stoke Trump's anti-immigration agenda, and open the door to a draconian law-enforcement crackdown — all while the administration largely fails to deliver on its promises to address the opioid epidemic.

# Harmful chemicals – endocrine disruptors, review of EU rules

Source: https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2019-2470647_en

Endocrine disruptors are chemical substances that alter the functioning of the endocrine (hormonal) system and negatively affect the health of humans or animals.
They are regulated by a variety of EU measures. This review will assess whether these measures are delivering on their overall objectives (protecting health and the environment)

**Dräger products**
Source: https://www.draeger.com/en_seeur/Chemical-Industry/Productselector/Personal-Protection-Equipment#s=78

**Dräger X-plore® 8000**

X-plore 8500

X-plore 8700

Challenging workplace conditions demand reliable solutions. The Dräger X-plore® 8000 offers a new level of intuitive handling combined with intelligent electronics that provide the high degree of safety your people need to focus on the task at hand. The Dräger X-plore 8000 features heavy-duty design with rubber protectors and high ingress protection (IP65) against dust and water jets from any direction. Two battery versions incorporating the latest Li-ion battery technology provide power for at least 4 h or 8 h, respectively. The air inlets are protected from frontal moving debris, ensuring that sparks or water do not come into direct contact with the filter.

**Dräger X-plore® 8000 headpieces**

The innovative Dräger X-plore® 8000 headpieces are an integral part of our new powered air-purifying respirator (PAPR). Both the loose- and tight-fitting series offer robust, effective protection along with a high degree of comfort and compatibility with other products like our new belt units for airline applications. Aside from safety, comfort and top performance in numerous application fields, the X-plore 8000 headpieces can be effortlessly combined with other components from the X-plore series. So whether you combine them with the X-plore 8500 powered air-purifying respirator or the X-plore 9300 constant-flow belt unit, you can be sure of performance quality and safety no matter what the job demands. X-plore the possibilities! The Dräger X-plore 8000 series of short and long hoods is extremely lightweight, meaning that they are ideal for long periods of use without sacrificing comfort or safety. Designed for applications that do not require additional mechanical head and eye protection, they are available in both standard and premium models.

**Dräger PARAT® 3200**

The Dräger PARAT® 3200 is a mouth piece / nose-clip escape device equipped with a multi-gas ABEK15 filter. Packed in a robust and ergonomic case the unit is compact and easy to carry. Approved to the only recognized standard for filtering industrial escape devices (DIN 58647-7) – it provides users a minimum of 15 minutes escape time.

**Dräger FPS® 7000 Head-up Display (HUD)**

One of the many benefits of the FPS® 7000 Facemask is the option of fitting a head up display. Always within the field of view the head up display allows easy monitoring of the cylinder contents without any manual action by the wearer.

***Easy to fit and remove***

The display fits easily into the FPS 7000 facemask, and can be quickly fitted without the need for tools, saving time during maintenance. In an emergency you can transfer the HUD between facemasks in a matter of seconds.

***Well Protected***

The HUD is well protected in the facemask and can not be damaged by heat, shocks, humidity or chemicals.

***Long battery life***

Providing on average 360 hours of use and easily changed without the need for tools.

*Wireless operation*

The transmitter unit wirelessly transfers data to the facemask, avoiding time consuming connection of cables, reducing costs and connection errors.

*Easy to read LED's*

Red, amber and green LEDs provide precise information about your cylinders air pressure at all times. The display automatically adapts to ambient brightness enabling clear indication of pressure information, even under poor lighting conditions.

*Additional low air pressure warning*

In addition to the SCBA's primary low pressure alarm a red LED on the HUD flashes if the cylinder pressure reaches the low-pressure warning threshold. This provides the wearer with an additional warning

**Dräger REGIS® 300 and 500**

Hands-free monitoring of respiratory protection of emergency and rescue teams: The boards REGIS® 300 and 500 enable the incident manager to keep track of respiratory equipment wearers and their deployment time. Thanks to an automatic intermediate alarm, monitoring can be combined with other tasks. In co-usage with the external tracer, distances of up to 40 m are possible. With Dräger REGIS, the incident manager is able to monitor up to three teams simultaneously, with up to three wearers per team. Easy to read displays with countdown timers inform about the remaining deployment time. The displays of both boards are illuminated with the touch of a button to ensure all important data is easy to see even in difficult conditions.

**Dräger SPC 3700 with CVA 0700**

➲ SPC 3700 CVA 0700 ➲

The Dräger SPC 3700 is a constant flow disposable suit. In combination with the newly designed vest CVA 0700 it offers ideal protection, comfort and flexibility. The liquid-tight protective suit (type 3) protects the wearer from contact with chemicals and allows greater movement, while the vest provides the necessary breathing and ventilation air for a pleasant cooling effect.

Working with the SPC 3700 means that you can fully focus on your job while enjoying the kind of quality, reliability and innovation that has made Dräger famous. The safe-flow feature continually provides the correct flow of air over a pressure range of three to ten bar, while the special auto-test feature means that no pretesting is necessary.
An additional warning signal alerts the wearer if the right pressure is not reached, or the airflow is too low. Also convenient is the high degree of compatibility with other Dräger products such as external air sources like the PAS AirPack series, MAV or PAS MAC series.
The large opening in the back of the suit allows a quick and easy donning of the suit. The vest is simply strapped on and the airline hose connects the vest with an external breathing air source. Before entering any dangerous environments, it is important to activate the air supply function before closing the suit.

**Dräger Compressed Air Breathing Cylinders**

All carbon composite cylinders feature an aluminium liner, wrapped with carbon fibre with a fibreglass



outer layer with a smooth resin finish, This makes the cylinders lightweight, easy to clean and extremely resistant to shocks, chemicals and abrasion.

***Complete, one-stop breathing apparatus***

Dräger designs and manufactures its own range of fully wrapped carbon composite cylinders, ensuring that the cylinders match and are approved for use with your Dräger breathing apparatus.

***Customised to your requirements***

Order Dräger cylinders tailored to meet your requirements: with your own logo, labels and colours. Personalising your cylinders makes it easier for you to allocate and manage your equipment.

***Extensive range - a cylinder for every application***

2 up to 9 litre cylinders in volume, 15 to 30 years design life, 200 or 300 bars, a range of valve configurations including excess flow valve or twin pack options: with Dräger you're sure to find the right cylinder for every application.

***Dräger Quick Connect: Simple and fast cylinder changes***

Whether its during use or maintenance, you can change cylinders quickly without the need for screwing or unscrewing the handwheel manually. The Dräger Quick Connect cylinder valve connection saves you time - and ensures a safe connection between the cylinder and breathing apparatus.

**Dräger PSS® BG 4 plus**

Designed especially for tough missions: The Dräger PSS® BG 4 plus closed-circuit breathing apparatus combines uncompromising safety with the highest level of breathing and carrying comfort. The positive pressure unit supplies the wearer with up to four hours of breathing air, even in toxic atmospheres.

The positive pressure breathing circuit protects the wearer by preventing hazardous substances from entering the sealed breathing system. Depending on the applications, the duration of use is up to four hours. A $CO_2$ absorber removes carbon dioxide from the exhaled air. At the same time, the breathing air is enriched with oxygen from the oxygen cylinder. Before the regenerated breathing air is inhaled again, it flows through the breathing air cooler.
The minimum valve, which enriches the breathing air with additional oxygen upon demand, has been treated with a special coating to protect against corrosion. A redesigned clip simplifies the fastening of the valve. The area around the pressure reducer has been strengthened and additional reinforcement protects the carrying plate, providing greater stability when handling the unit complete with oxygen cylinder. To reduce the temperature of the inhaled air and minimize physical stress for the wearer, the breathing air cooler can also be filled either with ice or a re-generating cooling cartridge.
The cooling cartridge as an alternative to ice and can be used for a variety of applications with only three hours of recharging time necessary. The cooling cartridge can be easily exchanged and used unlimited
The data captured by the Dräger Bodyguard II electronic monitoring unit can be transmitted to Dräger PSS Merlin Telemetry Boards or Merlin Modem. This telemetric monitoring and communications system displays the Bodyguard data for each of the wearers who are logged on. As a result, entry control personnel are able to view the current status of each of the device wearers and can respond immediately in case of an emergency.

**Dräger PAS® MAC Series**

Providing continuous breathing quality air to safety professionals in the harshest of environments, these Mobile Breathing Air Compressors meet the needs of single or multiple users over long durations. Available in electric- or diesel-driven versions, each of the four models is fully compatible with Dräger compressed air and airline breathing equipment.

## New sensors can sense and sort troublesome gases

Source: http://www.homelandsecuritynewswire.com/dr20190417-new-sensors-can-sense-and-sort-troublesome-gases

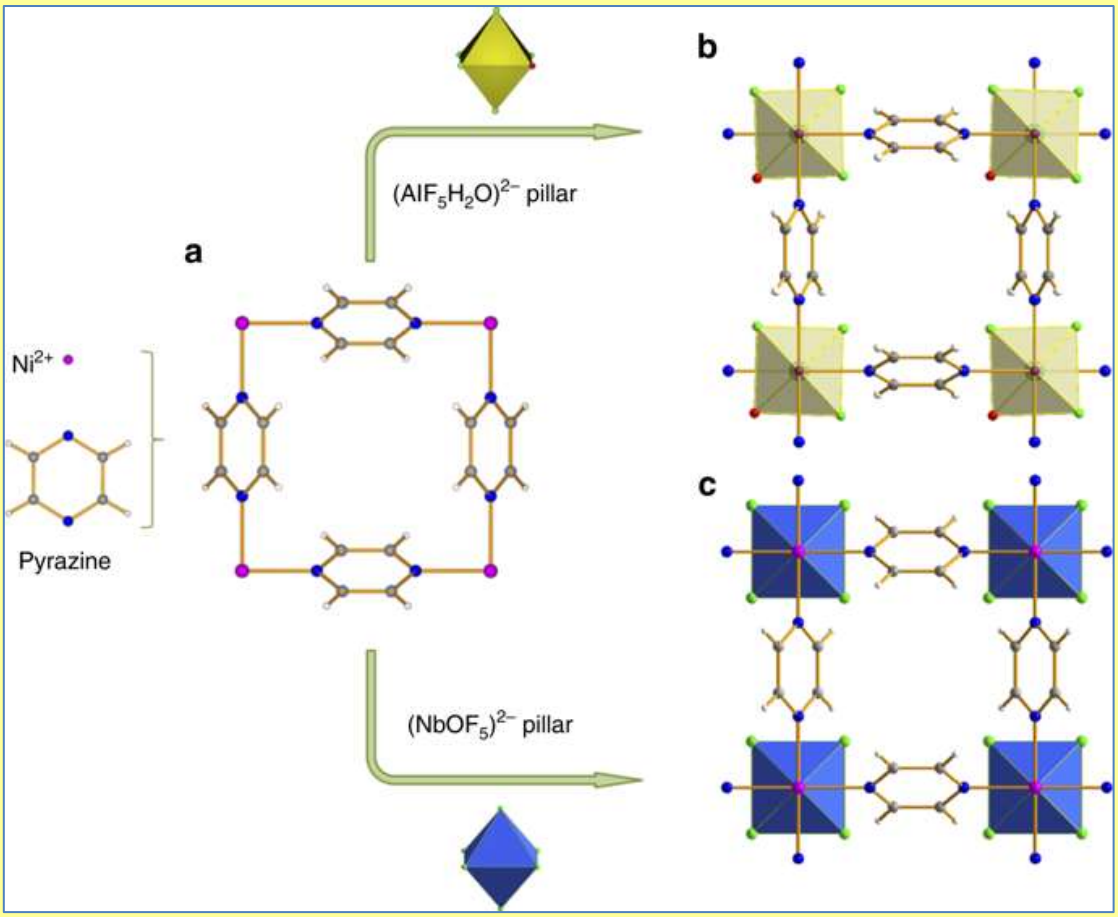
Apr 17 – From astronauts and submariners to miners and rescue workers, people who operate in small, enclosed spaces need good air quality to work safely and effectively. Electronic sensors now developed by a KAUST team can simultaneously detect at least three critical parameters that are important to monitor to ensure human comfort and safety.
These new sensors use fluorinated metal-organic frameworks (MOFs) as the sensing layer. MOFs are porous materials comprising a regular array of metal atoms held together by small organic-molecule linkers to form a repeating cage-like structure. KAUST's Mohamed Eddaoudi, who led the two studies of the sensor's efficacy, explains that by altering the metal and organic

components, MOFs can be tuned for applications ranging from gas separation and storage to catalysis and sensing.

"Many people have attempted to develop simple, efficient, low-cost SO2, CO2 and H2O sensors without success," say researchers Mohamed Rachid Tchalala, Youssef Belmabkhout and Prashant Bhatt, all from Eddoudi's lab.

KAUST says that the approach taken by Eddaoudi's group was to develop a fluorinated MOF, which Belmabkhout and Tchalala tested as sensor materials for these gases. Testing of these state-of-the-art materials was in collaboration with Khaled Nabil Salama and his team.

The first study shows how the sensor can measure the concentration of carbon dioxide and the level of humidity in the air. While the second study of the same fluorinated MOFs shows it can detect the harmful and corrosive gas sulfur dioxide, or even selectively remove it from powerplant flue gas.




Synthesis and crystal structure of KAUST-7 and KAUST-8. **a** $[Ni(pyrazine)_2]^{2+}$ square grid resulting from the connection of $Ni^{2+}$cations and pyrazine molecules. **b** Crystal structure of KAUST-8 resulting from the pillaring of $[Ni(pyrazine)_2]^{2+}$ square grid with $(AlF_5(OH_2))^{2-}$ pillar. **c** Crystal structure of KAUST-7 resulting from the pillaring of $[Ni(pyrazine)_2]^{2+}$ square grid with $(NbOF_5)^{2-}$ pillar

"Traces of SO2 are invariably present in the flue gas produced by factories and powerplants, and SO2 can poison materials developed to trap CO2 for carbon capture and storage," say Belmabkhout and Bhatt. "AlFFIVE-1-Ni can soak up SO2 with an affinity 66 times higher than for CO2, while showing good stability to SO2 exposure."

The MOFs could also be used with two simple, low-cost high-sensitivity sensor platforms. Quartz crystal microbalance (QCM) sensors that are coated with a thin film of either MOF detected the change in mass with the absorption of SO2, or water and CO2. Similarly, MOF-

coated interdigitated electrode sensors detected a change in electronic properties with the absorption of water and CO2.
Both sensor platforms, the team showed, could monitor moisture and CO2 levels under real atmospheric conditions. "The signal is calibrated against CO2 concentration, humidity level and mixtures of both," Tchalala explains. A QCM-based sensor could also detect SO2 in the air at levels of just 25 parts per million.

*— Read more in M. R. Tchalala et al., "Fluorinated MOF platform for selective removal and sensing of SO2 from flue gas and air," Nature Communications 10, Article number: 1328 (22 March 2019).*

## Cyanide scare as 18 Japanese firms receive poisoned extortion letters

Source: https://www.telegraph.co.uk/news/2019/01/29/cyanide-scare-18-japanese-firms-receive-poisoned-extortion-letters/

A follower meditating in front of portraits of Aum Supreme Truth guru Shoko Asahara, leader of the Aum Shinrikyo cult Credit: TORU YAMANAKA/ AFP

January 2019 – Eighteen companies across Japan have received envelopes containing what a white powder that authorities have confirmed is highly toxic potassium cyanide along with a note demanding money.
The first letters were delivered to pharmaceutical companies, food manufacturers and the head office of a national newspaper last week, with more arriving over the weekend and in the first two days of this week.
Each of the letters contained a letter purportedly signed by one of the 13 members of the Aum Shinrikyo cult who were executed last year for their roles in the release of sarin nerve gas on the Tokyo subway system in 1995. There is no indication that surviving members of the cult - which is under close police surveillance - are behind the extortion attempt

Each of the letters demanded payment of 35 million Korean Won (£23,877) in Bitcoin, the *Mainichi* newspaper reported, and contained the threat to create fake drugs or lace food with potassium cyanide and then make it accessible to members of the public.
The letter warned that "a tragedy will happen" if the money was not transferred by February 22.
Police have declined to name the pharmaceutical and food companies that have been targeted, although they are understood to be based in Tokyo, Osaka and Sapporo, in northern Japan.
One envelope was delivered to the Tokyo offices of the *Mainichi Shimbun* on January 25, the paper reported, adding that investigators believe the threats are all the work of the same person.
They are also looking into a similar incident in January of last year in which envelopes containing threatening letters were sent to a number of pharmaceutical firms demanding money.
Relatively simple to produce, ingesting potassium cyanide can cause giddiness, nausea, rapid breathing and a sense of suffocation and anxiety, with the central nervous system most at risk of damage. The consumption of a large dose of the compound can cause respiratory arrest, muscle spasms, coma and death.

**EDITOR'S COMMENT:** Keep in mind the "powder" threat since we have (so far): white powder (anthrax spores and potassium cyanide) and ultra-fine black powder (Novichok).

## iPhone, Apple Watch could get poison gas sensor

Source: https://www.cultofmac.com/602730/iphone-apple-watch-poison-gas-sensor-carbon-monoxide/

January 2019 – Apple is considering adding a poison gas sensor to its mobile products. This would enable


your iPhone or Apple Watch to detect if you're being exposed to carbon monoxide or another harmful chemical.

Carbon monoxide kills 400 Americans every year, and causes 20,000 visits to emergency rooms, according to the CDC. Part of the reason it's so dangerous is because it has no smell or taste, and is colorless.

Apple Watch, iPhone to the rescue

A patent filed by Apple for Chemically Robust Miniature Gas Sensors, proposes hardware that can be used to tell is this dangerous substance is in the air. This would be small enough to build into a smartphone or smartwatch.

In addition to carbon monoxide (CO), this sensor would also be able detect ozone (O.sub.3), nitrogen dioxide (NO.sub.2), nitrogen monoxide (NO), sulfur dioxide (SO.sub.2), methane (CH.sub.4) and volatile organic compounds (VOCs).

As this is only at the patent-request stage, it's too early to say whether future iPhones or Apple Watches might get a poison-gas sensor.

## Person-Portable GC-MS Griffin G510

Source: https://www.flir.eu/products/griffin-g510/


Quickly and easily identify chemical hazards at the site of interest with the FLIR Griffin™ G510 portable gas chromatograph mass spectrometer (GC-MS). It complements presumptive detectors used during emergency missions, by enabling responders to analyze all phases of matter (liquid, solid, vapor) so they can take immediate action. The G510 features a large touchscreen with automated user controls, can be operated while wearing full PPE, and is built with an IP65-rated enclosure for harsh environments.

# CBRNe World Journal

*February 2019 issue*

Source: https://cbrneworld.com/magazine

Dr Kate McCarthy Barnett, Regional Disability Integration Specialist at the Federal Emergency Management Agency, talks to Gwyn Winfield about providing decon for at-risk populations

## No decon left behind

Dr Paul Sheehan, programme manager at Darpa's biological technologies office, talks to Gwyn Winfield about listening to what bacteria have to tell us

## Verbs not nouns...

Lt Col Tim Nicholson-Roberts BSc MRCP(UK) FRCA FFICM DipMedTox EDIC, consultant in anaesthesia and intensive care medicine at the UK's Royal Centre for Defence Medicine, offers an interesting solution to the hidden problem of phosgene

## Hit the hay


ICI
International
CBRNE
INSTITUTE
CBRNE-Terrorism Newsletter
W
O
M
D
C2BRNE
DIARY
BIO NEWS

# Explaining public resistance to vaccination

Source: http://www.homelandsecuritynewswire.com/dr20190326-explaining-public-resistance-to-vaccination

Mar 26 – In 1998, the respectable *British Medical Journal* (*BMJ*) published an article by Andrew Wakefield, which connected autism with the measles, mumps, and rubella (MMR) vaccine. The article raised skeptical eyebrows shortly after its publication, but it took the journal twelve years to retract the paper (see "Wakefield's article linking MMR vaccine and autism was fraudulent," *BMJ*, 6 January 2011). By then, however, the contents of the fraudulent article had been broadly disseminated.

In 2006, investigative journalist Brian Deer revealed in the *Sunday Times of London* that Wakefield had been paid over £400,000 to fabricate his findings.

But it was too late. A small but loud and aggressive group, consisting of fringe conspiracy peddlers and worried but misinformed parents, took Wakefield's bait.

A new study set out to find answers to these questions: Why is it so challenging to increase the number of people who get vaccinated? How does popular resistance to vaccination remain strong even as preventable diseases make a comeback?

A study, from Dartmouth College, shows that past problems with vaccines can cause a phenomenon known as hysteresis, creating a negative history that stiffens public resolve against vaccination. The finding explains why it is so hard to increase uptake even when overwhelming evidence indicates that vaccines are safe and beneficial.

Dartmouth notes that a hysteresis loop causes the impact of a force to be observed even after the force itself has been eliminated. It's why unemployment rates can sometimes remain high in a recovering economy. It's why physical objects resist returning to their original state after being acted on by an outside force. And, according to the Dartmouth research, it's why the public resists vaccination campaigns for ailments like the common flu.

"Given all the benefits of vaccination, it's been a struggle to understand why vaccination rates can remain stubbornly low," said Feng Fu, an assistant professor of mathematics at Dartmouth College. "History matters, and we now know that hysteresis is part of the answer."

The research, published in the journal *Proceedings of the Royal Society B*, is the first study to demonstrate that hysteresis can impact public health.

"Once people question the safety or effectiveness of a vaccine, it can be very difficult to get them to move beyond those negative associations. Hysteresis is a powerful force that is difficult to break at a societal level," said Fu, who led the research team.

Low vaccine compliance is a public health issue that can cause the loss of "herd immunity" and lead to the spread of infectious diseases. In parts of Europe and North America, childhood diseases like measles, mumps and pertussis have returned as a result of insufficient vaccination coverage.

"We have great evidence that vaccines work and prevent illnesses that can create a lot of morbidity and even death in children," says Ellen Meara of the Dartmouth Institute. "And we have really no scientific evidence suggesting that they are unsafe in the way that resistance toward vaccinations suggests. It does feel like a public health crisis."

Previous studies have combined behavior models with epidemiology to understand the challenge of voluntary vaccination, but have been unable to completely explain the persistence of low vaccine compliance. The Dartmouth research specifically studies how past problems associated with vaccinations can impact present and future vaccination decisions.

"This study shows why it is so hard to reverse low or declining vaccine levels," said Xingru Chen, a graduate student at Dartmouth and the first author of the research paper. "The sheer force of factual, logical arguments around public health issues is just not enough to overcome hysteresis and human behavior."

According to the research, the hysteresis loop can be caused by questions related to the risk and effectiveness of vaccines. Negative experiences or perceptions related to vaccination impact the trend of uptake over time — known to the researchers as a "vaccination trajectory" that gets stuck in the hysteresis loop.

Hysteresis prevents an increase in vaccination levels even after the negative objections have been cleared, making society increasingly vulnerable to disease outbreaks.
"When it comes to vaccination levels, the past predicts the future. Unfortunately, this means that a lot of people are going to needlessly suffer unless we find a way to break the negative impact of the hysteresis loop," said Fu.
Chen and Fu expressed frustration in the confusion between disease and the side effects of vaccinations, which perpetuates fear of vaccines. Equally problematic is the free-rider problem, in which people refuse vaccines because they rely on the majority of their community to get treatment.
"Even if side effects are minor, it makes people exaggerate the risks of the vaccine," Fu said. "Because of the massive preemptive vaccination of childhood diseases, people don't see the diseases that often. So people replace the fear of disease with the fear of the vaccine. If you want to boost the vaccination levels, it [will happen] slowly because people get stuck in a hysteresis loop."
>To amplify the problem, public misconceptions surrounding vaccines are amplified due to what Fu calls an "echo chamber" where people surround themselves by others who will only reconfirm their biases.
The study refers to the example of whole-cell pertussis vaccine in England and Wales in the period from 1978 through 1992. It took that 15-year span for uptake of the "whooping cough" vaccine to recover from 30 percent to 91 percent. According to the research team, such a recovery should only take about a year under ideal circumstances.
The research also notes the slow increase in measles vaccination in the face of resurgent outbreaks. In some countries, like France, measles has become an endemic disease despite the availability of an effective vaccine.
According to the study: "The coverage of measles vaccination has only gradually climbed up, but still remains insufficient, for more than a decade following the infamous MMR vaccination and autism controversy."
"Vaccination levels in a population can drop quickly, but, because of hysteresis, the recovery in that same population can take many years," said Chen.
For the common flu, the study suggests that a vaccine would have to have an effectiveness of above 50 percent in order to achieve high levels of vaccination, a difficult level to reach because of the speed with which the illness mutates.
By identifying the hysteresis effect in vaccination, the research team hopes that public health officials can design campaigns that increase voluntary vaccination rates, particularly by promoting vaccination as an altruistic behavior that is desired by moral and social norms.

**Tackling vaccination hesitancy**

Despite the scope and magnitude of this trend, Chen and Fu were determined to use their expertise in mathematical modeling to tackle a global problem.
"We are doing research using mathematics to explain some social phenomenon," Chen said. "But I think it's beyond our ability to persuade the audience and normal people to do something. We also received hate emails after we published the paper."
Fu said that mothers were mainly responsible for the hate mail.
"I can understand, because MMR side effects like fever and rashes look terrible, but the measles and mumps and whooping cough are even worse," he said. "Instances of the diseases are not huge, so people don't confront these diseases very often. Now they don't fear diseases, but they fear vaccines and their side effects. Vaccines became the victim of their own success."
To increase vaccination levels, the researches pointed to decreasing herd immunity, which means that people forgo vaccinations and rely on the fact that a great proportion of their community will get vaccines instead.
"One way to overcome the hysteresis effect is just to increase altruistic behavior," Fu said. "The vaccine compliance problem is essentially a free-riding problem."
Meara also noted that introducing evidence and information to those who are resistant toward vaccines can be much more effective than shaming those individuals.

"One of the things I found really interesting is a local provider who is making an effort to not shame clients who have a fear of vaccines, but instead to share information and evidence," Meara said. "Instead of pushing it, what she does is she reaches out individually to parents to let them know [about disease outbreaks.] Apparently, that kind of soft approach can be really effective in bringing someone around."
Though it may be difficult to boost altruistic behavior and break the hysteresis loop, Chen and Fu's research has highlighted a global health issue and proved the necessity of mathematical modeling in real-world problem solving.
"It's important for future scientists to learn not just mathematics but [an] interdisciplinary approach to real world problems," Fu said. "Models can be very profound and have [a] huge impact [on] reshaping our thinking of global problems."

*— Read more in Xingru Chen and Feng Fu, "Imperfect vaccine and hysteresis," Proceedings of the Royal Society B: Biological Sciences (9 January 2019).*

**EDITOR'S COMMENT:** For some time now, I am wondering what if in case of a real bioterrorism attack, the population refuses to participate in a mass vaccination program or a mass distribution of other medication that will combat pathogens released. DO we have a plan for this? Perhaps all these "strange" to most of us "zombie" drills can match the hypothesis mentioned above.

## Italy imposes heavy fines on parents of unvaccinated schoolchildren

Source: http://www.homelandsecuritynewswire.com/dr20190328-italy-imposes-heavy-fines-on-parents-of-unvaccinated-schoolchildren

Mar 29 – Italian media reports that across Italy, parents are falsifying vaccine documents to prevent their children from being barred from attending school. These parents are responding to a new law, which imposes fines of thousands of euros for not vaccinating their children. The Italian government announced the new measured last Wednesday, imposing strict controls on unvaccinated children, after the new law went into effect last Monday. The law stipulates that minors aged 16 and under must have 10 mandatory vaccinations in order to attend schools, nurseries or kindergartens.
The *New York Times* reports that instead of vaccinating their children, several parents have submitted falsified health documents in an effort to keep them in school. Under the law, parents could "self-certify" that the child was vaccinated, but some parents have used forged documents.

In the Italian town of Belluno, public prosecutors launched investigations into verification processes at schools after seventeen parents submitted "self-certified" documents that falsely stated their children had received the mandatory vaccinations. Other provinces have reported similar cases.
Italian authorities say that thousands of schoolchildren have not received the mandatory vaccinations, which include those against measles, tetanus, polio, and hepatitis B. Parents can be fined up to €3,500 ($3,955) for not vaccinating their children.
In the past, leaders of the two populist, right-wing coalition partners let their skepticism over vaccination be known. Last year, Italian Interior Minister Matteo Salvini said that "10 vaccines for children are too many" and "sometimes even dangerous." He has said there needs to be more legal flexibility to account for parents' choice on whether they want their children vaccinated.

Days before the law went into effect, Salvini called on Health Minister Giulia Grillo, a 5 Star Movement (M5S) lawmaker, to relax the regulation to allow children under the age of 5 to attend kindergartens without the vaccinations. She said while there may be shortcomings with the law, it is up to parliament to decide the way forward.

The anti-vaccination movement has gained steam in recent years, even though the World Health Organization (WHO) asserts that "vaccination is one of the most cost-effective health interventions available, saving millions of people from illness, disability and death each year."

DW notes that the WHO said in February that the number of people infected with measles has risen to the highest in a decade. Earlier this month, the UN said measles is witnessing a global resurgence due to "vaccine hesitancy." The measles vaccine is around 97 percent effective in preventing the highly infectious disease.

## FDA finalizes rules for anthrax bacteria tests, spine devices

Source: https://www.medtechdive.com/news/fda-finalizes-rules-for-anthrax-bacteria-tests-spine-devices/551718/

.

Bacillus bacteria tests have previously been unclassified because they were in commercial distribution prior to May 28, 1976, when the Medical Device Amendments to the Federal Food, Drug and Cosmetic Act were signed into law. As "preamendment devices," there was no final agency determination about the testing criteria required or the regulatory pathway to use for the devices before the final rule.

The final rule is intended to ensure manufacturers provide consistent information on testing criteria and performance evaluations for bringing new Bacillus bacteria detection devices to market, according to FDA.

"This final rule helps manufacturers who market these products understand the requirements, including testing criteria and how to address potential safety risks for lab workers using the devices, to ensure availability of safe and effective diagnostic tests in the face of bioterrorism threats," FDA Commissioner Scott Gottlieb said.

To reduce the risk to lab workers of exposure to anthrax from handling the specimens, FDA said it is also restricting distribution of the products to laboratories that follow public health guidelines to address appropriate biosafety conditions, interpretation of test results and coordination of findings with public health authorities.

FDA's other final rule revises identification language for posterior cervical screw systems and establishes special controls for the devices. A posterior cervical screw system is used to immobilize and stabilize the cervical spine in spinal fusion surgery. The controls specify that:

1. Design characteristics must ensure that the geometry and material composition of the device are consistent with its intended use.
2. Nonclinical performance testing must demonstrate mechanical function and durability of the implant.
3. Device components must be biocompatible.
4. Validation testing must demonstrate the cleanliness and sterility of device components and device-specific instruments.
5. Device labeling must include a clear description of the technological features of the device, the intended use and indications for use, and certain specified device-specific warnings, precautions and contraindications.

Both final rules become effective 30 days after publication in the Federal Register.

## Pox on everybody's house

Source: http://www.homelandsecuritynewswire.com/dr20190402-pox-on-everybody-s-house

Apr 02 – It was not so long ago that a NIH scientist stumbled across smallpox vials in a cold-storage room — and it was not during a time of increased concern for synthetic biology. *Pandora Report* notes that from CRISPR babies to garage DIY biohacking kits, it seems like the last few years have been inundated with synbio conversations.

Throw in the horsepox synthesis experiment in 2017 and you have got quite a heated conversation about the potential for synthetic biology to bring back some pretty horrible diseases we'd like to forget.
David Kushner writes in *Wired* that:

> The trio published their findings in the scientific journal *PLOS One* in January 2018—and the blowback was swift and brutal. Critics accused Evans and Noyce of opening a Pandora's box that could send humanity back to the dark ages of disease. *The Washington Post*'s editorial board wrote that 'the study could give terrorists or rogue states a recipe to reconstitute the smallpox virus.' Tom Inglesby, director of the Center for Health Security at the Johns Hopkins Bloomberg School of Public Health, denounced the research on National Public Radio: 'Anything that lowers the bar for creating smallpox in the world is a dangerous path.' Gregory Koblentz, director of the biodefense program at George Mason University, warned in the journal *Health Security* that the synthesis of horsepox 'takes the world one step closer to the reemergence of smallpox as a threat to global health security'.

Kushner says that the fallout of this research brought forth more concerns regarding smallpox defense, if we should destroy the samples, and the safety of synthetic biology. Sure, DARPA has launched Safe Genes and Ginkgo Bioworks is helping to improve screening tools, but "even these automated checks can't prevent determined buyers from obtaining samples through less scrupulous vendors on the black market. As with computer viruses, new strains appear from the ether before society is aware they exist. The same is true for trying to keep ahead of potentially lethal synthetic DNA."

*— Read more in David Kushner, "Synthetic Biology Could Bring a Pox on Us All, Wired (29 March 2019).*

## Israel Saw 4,000 Measles Cases in 2018—and Only 30 the Year Before

Source: https://www.thedailybeast.com/israel-saw-4000-measles-cases-in-2018and-only-30-the-year-before?ref=home

Apr 02 — In the frightening measles outbreak that has hit New York, the first child diagnosed was an unvaccinated ultra-Orthodox Jew who was infected while visiting Israel, where an outbreak of the highly infectious virus has been wreaking havoc on public health protocols.
With 214 confirmed cases, Rockland County, north of New York City, announced a draconian measure, barring all unvaccinated children and adolescents from public places, after emergency efforts—including the administration of almost 17,000 measles-mumps-rubella (MMR) vaccines in less than six months—failed to quell a widening medical emergency.
"The number of diagnosed cases in Israel soared from about 30 in 2017-2018 to almost 4,000 in 2018-2019."


Photo Illustration by The Daily Beast/Getty

Measles, caused by a highly contagious virus, is a leading cause of vaccine-preventable deaths in the world. To keep it in check, as it has been for years, more than 95 percent of any given population must be immunized. At that point there is what's called "herd immunity," the modern miracle wrought by mass immunizations.
Turning those numbers around, even a tiny proportion of unvaccinated persons in an insular but not completely isolated community threatens the lives of society's most vulnerable people: the youngest, the oldest, or the immuno-compromised, such as cancer patients. And

it turns out that ultra-orthodox Jews, who live in insular communities but travel widely, are vulnerable to such an epidemic.

So far, two Israelis have died in a measles outbreak that has seen the number of diagnosed cases in the country soar from about 30 in the year 2017-2018 to almost 4,000 in the year 2018-2019.

On Sunday, Ketty Dor, Kan News' chief health correspondent, outlined the 3,799th case of measles identified by Israel's ministry of health, which is typical.

A woman in her thirties from the city of Tiberias, who gave birth last weekend to her 10th child, is being kept in isolation with her newborn after noticing the rash typical of measles shortly after returning home with the baby, who was infected by his mom.

Officials from the Ministry of Health are trying to track anyone who may have been exposed. That number includes, in addition to the woman's nine older children, the 26 other newborns in the nursery at the same time, and their mothers and relations who were at Tiberias' Poriya Hospital.

For at least a year now, Israeli health officials have been playing a game of immunological cat and mouse, seeing out cases in cities with large ultra-Orthodox communities. In Jerusalem alone there have been 2,138 diagnosed cases, including the two fatalities. When an 18-month-old girl died on Nov. 1, 2018 it was the first recorded death from measles in Israel in 15 years.

In December, an 82-year-old woman passed away from the once-outdated disease.

But despite the insular lives led by ultra-Orthodox Jewish communities, the principal reasons behind rampant propagation in Israel, according to Rotem Elizera, the health correspondent for the daily *Yediot Ahronot* who has spearheaded coverage of the outbreak, are non-ideological.

"In Israel you have two types of anti-vaxxers," he explained in an interview with The Daily Beast.

"The small but loud crowd of well-educated, prosperous people who question the entire medical establishment and are skeptical of conventional world views, and the larger crowd that doesn't vaccinate its kids, who are mostly ultra-Orthodox. They simply have very low rates of compliance in general."

In the case of ultra-Orthodox communities, he says, "most of their reasons are what you'd call practical: Let us say it is a family with seven or eight children and a parent needs to take an infant to the well-baby clinic. You have to wait a week for the appointment, find childcare for the other kids, you're going to miss half a day of work, and it's not like the child is in need of acute care for a galloping fever or a hacking cough. It's just a shot. So they delay."

According to Elizera, before measles' resurgence as a pressing global health problem, neighborhoods such as Jerusalem's Mea Shearim, with cramped, teeming alleyways reminiscent of pre-War Europe, had compliance rates under 50 percent.

Rabbis, responding to the crisis, have been part of the national effort to suppress the epidemic.

Last autumn, as measles started making daily news, the Ministry of Health drafted them to the cause, which brought thousands to an immunization operation, says Ketty Dor, "but it was almost too little, too late."

"The number of patients has gone down in recent months. The eruption has moved from Jerusalem and Safed to the city of Tiberias, where there have been 80 new cases in the past month."

Conventional anti-vaxxers are also having their moment.

In February, a student at Tel Aviv's elite Alliance High School was discovered to have measles, causing the ministry to issue a warning to thousands of exposed students who suddenly faced the prospect of infection by a potentially deadly, highly contagious virus.

Israelis, who are covered by a national health-care system, have extremely high rates of immunizations. In Jerusalem, 96.5 percent of first-graders entered school in September 2017 with their vaccinations in order. In Arab communities, compliance is at virtually 100 percent.

Yaakov Litzman, Israel's deputy minister of health and himself an ultra-Orthodox Jew who moved to Jerusalem from Borough Park, Brooklyn, aged 17, in 1966, posted an urgent call on the ministry's website, in which he warned that "vaccines are a cornerstone of the prevention of dangerous infectious diseases, and in public health they make a decisive contribution to the health of children and the population in general."

Elizera says that with measles rampaging through Europe, especially Romania and Italy, which are among Israelis' favored weekend destinations, "this whole thing was just a matter of time."

## FDA's final rule ensures safer, better tests to detect anthrax-causing bacteria

Source: https://homelandprepnews.com/countermeasures/33198-fdas-final-rule-ensures-safer-better-tests-to-detect-anthrax-causing-bacteria/

Apr 02 – The U.S. Food and Drug Administration (FDA) on Monday issued a final rule that restricts both the use and distribution of Bacillus bacteria detection devices, which are prescribed to preliminarily identify and diagnose cases of anthrax and other infectious diseases.

"The FDA plays a critical role in protecting our nation from bioterrorism threats such as anthrax," said Dr. Scott Gottlieb, FDA commissioner. "Anthrax is a bioterrorism threat because the spores are resistant to destruction and can be spread by release in the air."

Anthrax is caused by *Bacillus anthracis*, a disease that humans acquire directly from contact with infected herbivores or indirectly via their products, according to the National Center for Biotechnology Information (NCBI), which is part of the National Institutes of Health.

For instance, people might get anthrax from handling infected material, which the center said accounts for more than 95 percent of cases; from eating infected meat; and from inhaling spore-laden dust, the NCBI says.

"Exposure to anthrax can and has caused serious injury or death," Dr. Gottlieb said.

The newly published final rule from the FDA, which is an agency within the U.S. Department of Health and Human Services, now classifies as moderate-risk the in vitro diagnostic device used to detect Bacillus species (spp.). The classification is listed in the FDA's guideline, "Class II Special Controls Guideline: In Vitro Diagnostic Devices for Bacillus spp. Detection," which restricts the device to prescription use only and curtails its distribution.

"FDA believes that the special controls established and imposed by this final rule and special controls guideline, together with the general controls, will provide a reasonable assurance of safety and effectiveness of the device," according to the FDA's final rule published in the April 1 Federal Register. "Further, FDA believes that the restrictions on use and distribution are required for the safe and effective use of the device."

The decision to do so was based on recommendations from the Microbiology Devices Advisory Panel, as well as public comments filed in response to the FDA's proposed rule and the agency's experience with these devices, according to the final rule.

Gottlieb said the rule "finalizes our effort to provide a clear and predictable review pathway for these specific test developers, which is a critical part of our commitment to fostering the development of innovative, safe and effective products to protect public health."

The FDA's distribution restriction on these products is limited to just those laboratories that follow public health guidelines addressing biosafety conditions, interpretation of test results, and coordination of findings with public health authorities, according to the final rule.

Such action will lessen the risks associated with handling Bacillus spp. specimens, which pose anthrax exposure risks, especially to lab workers who handle them, said Gottlieb.

The final rule also will ensure manufacturers continue providing consistent information on testing criteria and performance evaluations as they work to bring new Bacillus bacteria detection devices to market, according to the FDA.

"This final rule helps manufacturers who market these products understand the requirements, including testing criteria and how to address potential safety risks for lab workers using the devices, to ensure availability of safe and effective diagnostic tests in the face of bioterrorism threats," Gottlieb explained last week.

The devices previously were unclassified since they went into commercial distribution before medical device amendments to the Federal Food, Drug, and Cosmetic Act became law in 1976.
The FDA's new final rule becomes effective on May 1.

# Threat of bioterrorism requires stock cultures

**By Anuska Lahiri**
Source: http://www.dailytargum.com/article/2019/04/threat-of-bioterrorism-requires-stock-cultures

Apr 04 – Bioterrorism, as facilitated by the advancement and exploitation of technology, is a threat that looms over us constantly. It is a threat that is even more pervasive than terrorism in the traditional sense, as bioterrorists effectively weaponize pathogens with the intent of creating an epidemic or pandemic that can decimate populations before anybody is even aware they are at risk.
Biological warfare is severely unethical in that it not only promotes undue suffering and death for masses of people, but it is very difficult for governments to counteract if they lack thorough research on the organism at use. Essentially, the best weapon to fight against bioterrorism is an extensive arsenal of biological research conducted by qualified scientists in sanctioned facilities.
Currently, the United States enjoys a sanctioned institution, the Centers for Disease Control and Prevention (CDC), that does the kind of research that is most useful in the plight against bioterrorism. The CDC is now confronted with the issue of whether to retain its remaining stock cultures containing the smallpox virus. It is my opinion that, in the face of bioterrorism, it is of utmost importance that the remaining stock cultures are not destroyed.
The variola virus, which is responsible for infecting people with smallpox, is an extremely virulent pathogen. In history, it was one of the most painful diseases to plague humankind until it was eradicated by the World Health Organization (WHO) in 1980. Because of its uniquely powerful nature, the variola virus is helpful to the research of virus genomic information, the characterization of new antivirals, the evaluation of new vaccines and better ways to define disease pathogenesis.
CDC officials, contest to the necessity of retaining the cultures and how there is still work to be done, saying "...we believe that the original goals of the WHO agenda for newer and safer vaccines, fully licensed antiviral drugs, and better diagnostics have still not been fully met."
The essay released by the officials also stressed how working with the live variola virus has greatly improved their abilities to diagnose, treat and prevent smallpox with diagnostic assays, antiviral drugs and vaccines like IMVAMUNE and Lc16m8, respectively. Clearly, the variola cultures are an invaluable resource for scientists who are working toward guarding the public against deadly orthopoxviruses.
In consideration of the benefits of retaining the stock cultures, some may argue that there is no need to develop smallpox vaccines on the grounds that the virus has been eradicated since 1980. But, a result of technological advancements is that it is virtually impossible for a virus to be eradicated. Genome replication technology ensures that if someone has access to a virus' genomic code, it is possible for them to replicate it infinitely.
Recently, research conducted by virologist David Evans and his associate included a detailed account of how the scientists reassembled horsepox DNA to form a smallpox hybrid. This publication is concerning because it leaves the world vulnerable to people who intend to abuse the information and commit bioterrorism. It is careless acts like this that provide a reason to retain stock cultures for research, because in the case of a bioterrorist successfully replicating the smallpox genome and bringing it back into action, we would be much more prepared with the research under our belts.
Moving past the fact that bioterrorists may exploit technology to bring the smallpox virus back into action, critics of culture retainment might also argue that the act of smallpox research is dangerous in itself. But, it has been found by the National Science Advisory Board for Biosecurity that "...very few

government-funded gain-of-function experiments posed a significant threat to public health," which includes research on pathogens like influenza and Middle East Respiratory Syndrome (MERS).

To ensure safety in dealing with deadly pathogens, the National Institutes of Health, which provides grants for scientific research, will surveil research more closely than in the past. Moreover, the U.S. Department of Health and Human Services intends to thoroughly assess both the gain-of-function projects being conducted with government money and the scientists in charge of them under its new plan.

Aside from the necessity of smallpox research and the risk that might accompany it, opponents of culture retainment might also point out how expensive it is for the government to fund pathogen research. But, in reality, it might be more expensive to forego conducting pathogen research than to deal with the consequences of doing so.

"The human and economic costs of such public health emergencies vary, but they almost always exceed the cost of preventive action," which rang true in the cases of severe acute respiratory syndrome (SARS) and Ebola, which respectively cost $40 billion and $4.3 billion to deal with, while the costs of new vaccines are between $500 million to $1.8 billion. Regarding smallpox, an epidemic would surely cost the U.S. government billions, given the fact that the variola virus is highly contagious. Thus, it would be smart to take preventative measures now by conducting research, rather than paying exorbitant sums in the case of a re-emergence.

In confronting the problem of whether the remaining stock cultures of smallpox should be destroyed, it is important to consider the benefits of keeping them. In researching the cultures, scientists might be able to make useful breakthroughs in vaccines, diagnostic methods and other areas.

To cater to those who advocate for the destruction of cultures for safety or economic reasons, organizations and agencies of the government have stepped up their oversight capacities. As far as financial burdens are concerned, pathogen research and preventative measures are statistically less expensive than the cost of dealing with the consequences of no research or preventative measures. All things considered, it seems to me that the benefits of keeping smallpox cultures greatly outweigh any risks.

***Anuska Lahiri** is a School of Arts and Sciences sophomore majoring in political science.*

# Russian disinformation and the measles surge in Greece

**By Christopher Kremidas-Courtney**

Source: http://www.ekathimerini.com/239108/opinion/ekathimerini/comment/russian-disinformation-and-the--measles-surge-in-greece

Apr 02 – According to recent reports from international health experts, Europe is currently experiencing a 20-year high in measles cases, including in many countries where it had been mostly eradicated. Within the European Union, Greece has been hit the worst. The primary reason, according to the World Health Organization (WHO), is "vaccine hesitancy." This is listed as one of the WHO's top 10 global health threats for 2019. According to the WHO, "vaccine hesitancy" is defined as the reluctance or refusal to vaccinate despite the availability of vaccines.

The causes of vaccine hesitancy are multifaceted, but a major factor is the influence of news media and social media, in particular the role of bots and trolls in spreading disinformation about vaccines.

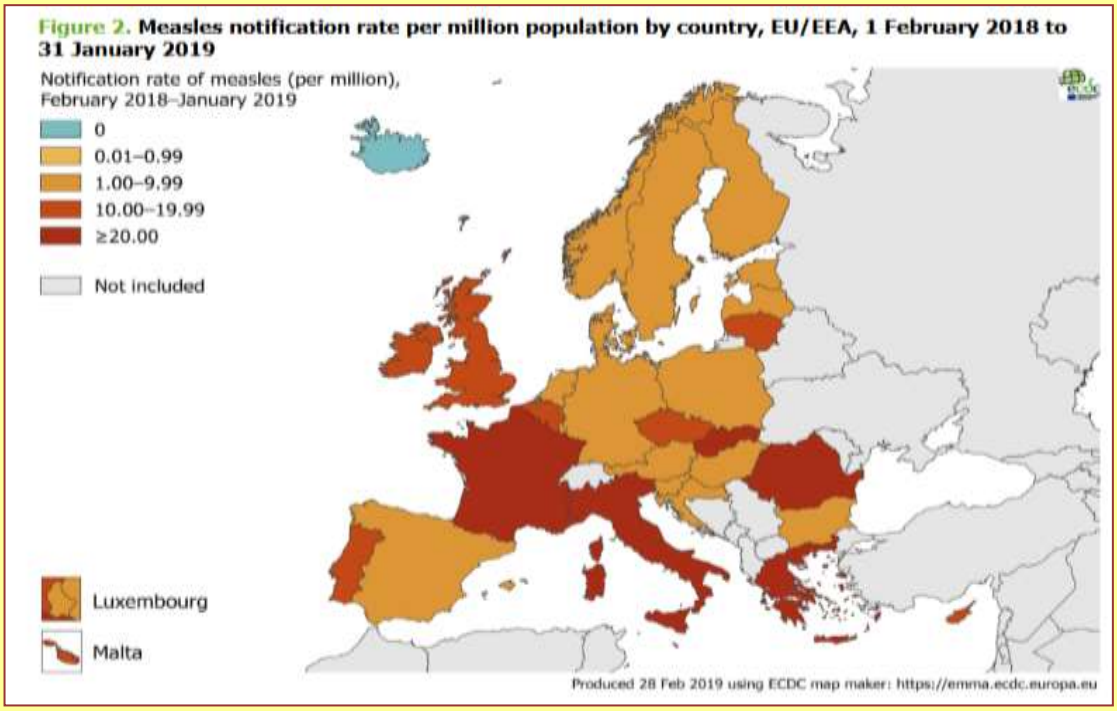
According to the recent study "Weaponized Health Communication: Twitter Bots and Russian Trolls Amplify the Vaccine Debate," carried out by researchers from the George Washington University, the University of Maryland and Johns Hopkins and which was published in the American Journal

of Public Health, the same bots and trolls that were linked to Russia's Internet Research Agency which spread discord in the 2016 US elections are now feeding disinformation and contributing to the current measles crisis in Greece and the rest of Europe. This same study says that 93 percent of the vaccine narrative on Twitter originates from or is amplified by Russian trolls and/or bots. The goal of this disinformation campaign is to flood the discourse with anti-vaccine propaganda, creating a sense of "false equivalence" in the "anti-vax vs pro-vax" discourse. The bots assist by repeating and spreading the same narrative on various social media platforms in the languages of the countries they are targeting.

**In 2018, Ukraine saw the biggest surge in measles outbreaks of all European countries, with a 634 percent increase in cases.** From 2017 to 2018 an astonishing 53,000 cases were reported in Ukraine. In 2018, Ukraine's minister of health attributed the rapid rise of measles cases to the ongoing war, substandard vaccines imported from Russia, and Russian anti-vaccination propaganda on social media and in the mainstream media.

At the same time, a newly published study from Queen Mary University of London found a positive association between the percentage of people in a country who voted for populist parties and the percentage who are skeptical of vaccinations. Also, populist parties in Europe are seen taking positions which also feed into vaccine hesitancy.

**Greece's left-wing SYRIZA government has proposed that parents should be able to opt out of vaccinating their children.** Furthermore, since the beginning of 2019 there have been three posts by suspected trolls in Greece falsely stating the US Centers for Disease Control and Prevention (CDC) "admitted" that vaccines cause autism. These posts were subsequently spread and amplified by suspected Russian bots. Currently, with **196 cases per million** residents, Greece has the highest per capita number of reported measles cases within the EU.




▶▶ **Read also:** https://ecdc.europa.eu/sites/portal/files/documents/measles-monthly-report-march-2019.pdf

Concerned parents searching online for information about vaccines struggle to sort out truth from disinformation. One anthropological study at McMaster University in Canada found that 71 percent of the top 10 Google search results using the keyword "vaccination" were anti-

vaccination sites. Anna Kata, the study's author, calls the internet a "postmodern Pandora's box" in which scientific truth is rejected and misinformation is conflated with information.
So, what can be done to address the disinformation challenge which is feeding the measles surge in Greece?
Firstly, public health information campaigns combined with increased transparency about vaccines, more flexible vaccine schedules, and better risk-benefit data can serve to better inform those parents who may not be resistant but may be ambivalent about vaccinating their children.
Some experts suggest mandatory vaccine schedules as an effective approach, but these can lead to even greater resistance among the most skeptical parents. Conversely, mandatory vaccinations do signal a broad societal consensus that vaccines are an important aspect of public health. Just last week Italy enacted a new law making a full schedule of vaccinations mandatory and banning young children from schools unless they have been vaccinated.
Finally, the early identification and elimination of trolls and bots, before their influence spreads too far, is an important step in countering a disinformation campaign. To do so requires a detection system that is not simply automated but also augmented by human judgment to ensure adequate safeguards and provide feedback to better improve detection accuracy.

***Christopher Kremidas-Courtney*** *is a senior consultant at Strategy International.*

# Collaboration Agreement Aims to Produce a Plague Vaccine

Source: https://www.pharmacytimes.com/resource-centers/immunization/collaboration-agreement-aims-to-produce-a-plague-vaccine

Apr 09 – Creating and testing a solid dose vaccine against plague is the goal of a collaborative agreement between Enesi Pharma and scientists at the Oxford Vaccine Group (OVG) at the University of Oxford.[1]
Plague is a serious infectious disease with a high mortality rate unless treated early with antibiotics.[1]
There are 3 forms of plague—bubonic, septicemic, and pneumonic[2]—and no approved vaccine available.[1-2]
According to the World Health Organization, most cases of plague since 1990 have occurred in Africa (particularly in Madagascar), however, outbreaks have been reported worldwide, including in the United States.[1]
Plague is also recognized by public health authorities globally as a potential agent of bioterrorism with *Y. pestis* classed as a Category A priority pathogen by the US National Institute of Allergy and Infectious Disease (NIAID) and considered a priority pathogen by the UK Vaccine Network based on the high risk that plague poses to national security and public health.[1]
People most commonly acquire plague when they are bitten by a flea that is infected with the plague bacteria, according to the CDC. Individuals can also become infected from direct contact with infected tissues or fluids while handling an animal that is sick with or that has died from plague, and from inhaling respiratory droplets after close contact with cats and humans with pneumonic plague.[2]
"Vaccination represents a foundation of healthcare globally and our goal at OVG is to apply innovation to ensure people are protected from serious but preventable diseases wherever they live. We are pleased therefore that the collaboration with Enesi, through ImplaVax and solid dose vaccines, potentially offers an approach that could help address this challenge," said Christine Rollier, professor, OVG, in a prepared statement.[1]
Enesi and OVG aim to create a stable and easy-to-use solid dose plague vaccine for use in areas around the world where outbreaks occur as well as for building strategic stockpiles as part of government preparedness for rapid deployment in the event of a bioterrorism incident.[1]
The collaboration will leverage Enesi's needle-free technology (ImplaVax) and a proprietary vaccine against *Y. pestis* developed by OVG, based on a ChAdOx adenovirus vector.[1]
ImplaVax is a novel formulation and needle-free device technology that enables solid dose vaccine implants to be delivered quickly under the skin. The aim of the technology is for

health care providers or individuals themselves to administer the vaccine using a simple, convenient, and reusable needle-free device.[1]

"This is our first collaboration to develop vaccines for infectious diseases based on adenovirus vectors and represents important progress with our broad strategy to assess the potential of our ImplaVax technology with the major immunogenic platforms on which global vaccines are based," said David Hipkiss, CEO, Enesi, in a prepared statement.[1] "Plague is a clear priority for governments and public health organizations around the world and there is a real need for a vaccine where none currently exists. We look forward to advancing this exciting project with OVG and benefiting from their insight to the requirements for successful vaccine development."

Human plague occurs in areas where the bacteria are present in wild rodent populations. Risks are generally highest in rural and semi-rural areas, including homes that provide food and shelter for various ground squirrels, chipmunks and wood rats, or other areas where you may encounter rodents. In the United States, plague is most common in the southwestern states, particularly New Mexico, Arizona and Colorado.[2]

**References**

1. Enesi Pharma and University of Oxford Collaborate to Target Plague With a Novel ImplaVax®-enabled Adenovirus-based Solid Dose Vaccine [news release]. Oxford, England; April 9, 2019: Enesi. https://prnmedia.prnewswire.com/news-releases/enesi-pharma-and-university-of-oxford-collaborate-to-target-plague-with-a-novel-implavax-r-enabled-adenovirus-based-solid-dose-vaccine-884102762.html. Accessed April 9, 2019.
2. Centers for Disease Control and Prevention. Plague: Frequently Asked Questions. CDC website. https://www.cdc.gov/plague/faq/index.html. Last reviewed November 27, 2018. Accessed April 9, 2019.

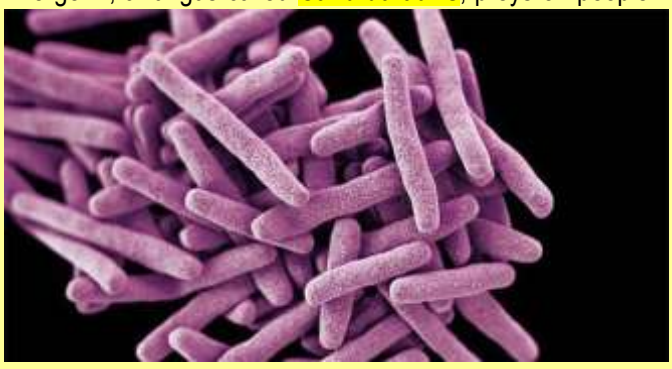
# A Mysterious Infection, Spanning the Globe in a Climate of Secrecy

**By Matt Richtel and Andrew Jacobs**

Source: https://www.nytimes.com/2019/04/06/health/drug-resistant-candida-auris.html

Apr 06 – Last May, an elderly man was admitted to the Brooklyn branch of Mount Sinai Hospital for abdominal surgery. A blood test revealed that he was infected with a newly discovered germ as deadly as it was mysterious. Doctors swiftly isolated him in the intensive care unit.

The germ, a fungus called **Candida auris**, preys on people with weakened immune systems, and it is



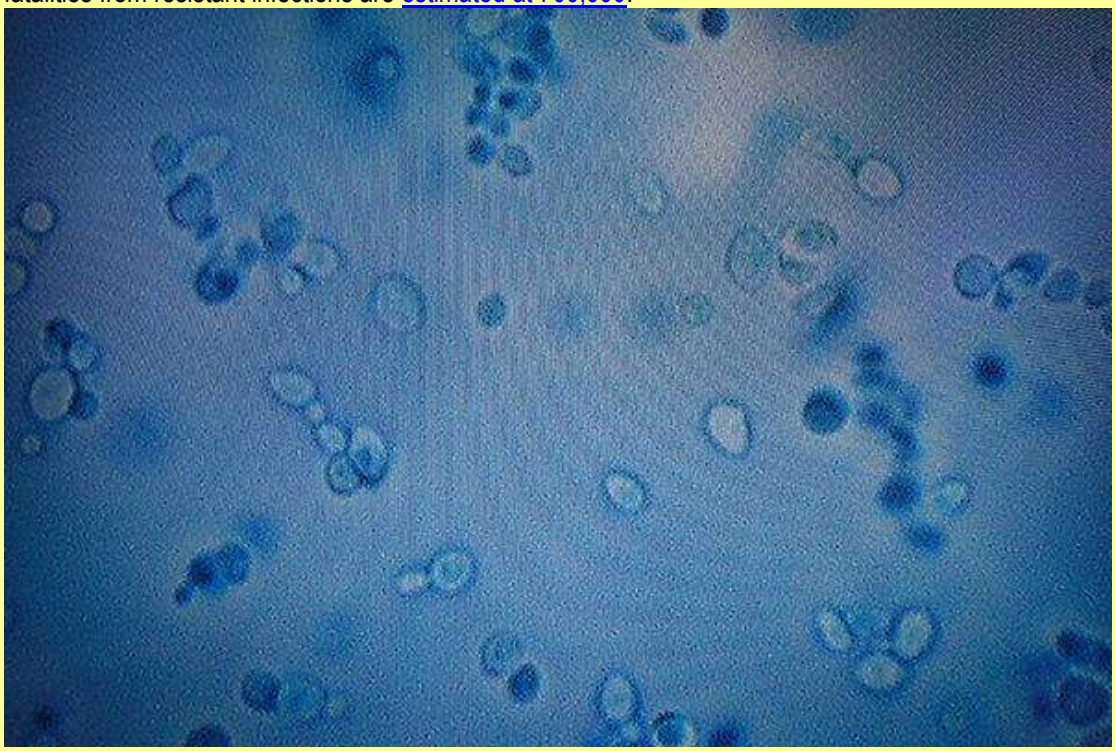
quietly spreading across the globe. Over the last five years, it has hit a neonatal unit in Venezuela, swept through a hospital in Spain, forced a prestigious British medical center to shut down its intensive care unit, and taken root in India, Pakistan and South Africa.

Recently C. auris reached New York, New Jersey and Illinois, leading the federal Centers for Disease Control and Prevention to add it to a list of germs deemed "urgent threats."

The man at Mount Sinai died after 90 days in the hospital, but C. auris did not. Tests showed it was everywhere in his room, so invasive that the hospital needed special cleaning equipment and had to rip out some of the ceiling and floor tiles to eradicate it.

"Everything was positive — the walls, the bed, the doors, the curtains, the phones, the sink, the whiteboard, the poles, the pump," said Dr. Scott Lorin, the hospital's president. "The mattress, the bed rails, the canister holes, the window shades, the ceiling, everything in the room was positive."

C. auris is so tenacious, in part, because it is impervious to major antifungal medications, making it a new example of one of the world's most intractable health threats: the rise of drug-resistant infections.
For decades, public health experts have warned that the overuse of antibiotics was reducing the effectiveness of drugs that have lengthened life spans by curing bacterial infections once commonly fatal. But lately, there has been an explosion of resistant fungi as well, adding a new and frightening dimension to a phenomenon that is undermining a pillar of modern medicine.
"It's an enormous problem," said Matthew Fisher, a professor of fungal epidemiology at Imperial College London, who was a co-author of a recent scientific review on the rise of resistant fungi. "We depend on being able to treat those patients with antifungals."
Yet even as world health leaders have pleaded for more restraint in prescribing antimicrobial drugs to combat bacteria and fungi — convening the United Nations General Assembly in 2016 to manage an emerging crisis — gluttonous overuse of them in hospitals, clinics and farming has continued.
Resistant germs are often called "superbugs," but this is simplistic because they don't typically kill everyone. Instead, they are most lethal to people with immature or compromised immune systems, including newborns and the elderly, smokers, diabetics and people with autoimmune disorders who take steroids that suppress the body's defenses.
Scientists say that unless more effective new medicines are developed and unnecessary use of antimicrobial drugs is sharply curbed, risk will spread to healthier populations. A study the British government funded projects that if policies are not put in place to slow the rise of drug resistance, 10 million people could die worldwide of all such infections in 2050, eclipsing the eight million expected to die that year from cancer.
In the United States, two million people contract resistant infections annually, and 23,000 die from them, according to the official C.D.C. estimate. That number was based on 2010 figures; more recent estimates from researchers at Washington University School of Medicine put the death toll at 162,000. Worldwide fatalities from resistant infections are estimated at 700,000.



A projection of the C. auris fungus on a microscope slide. Credit Melissa Golden for The NY Times

Antibiotics and antifungals are both essential to combat infections in people, but antibiotics are also used widely to prevent disease in farm animals, and antifungals are also applied to

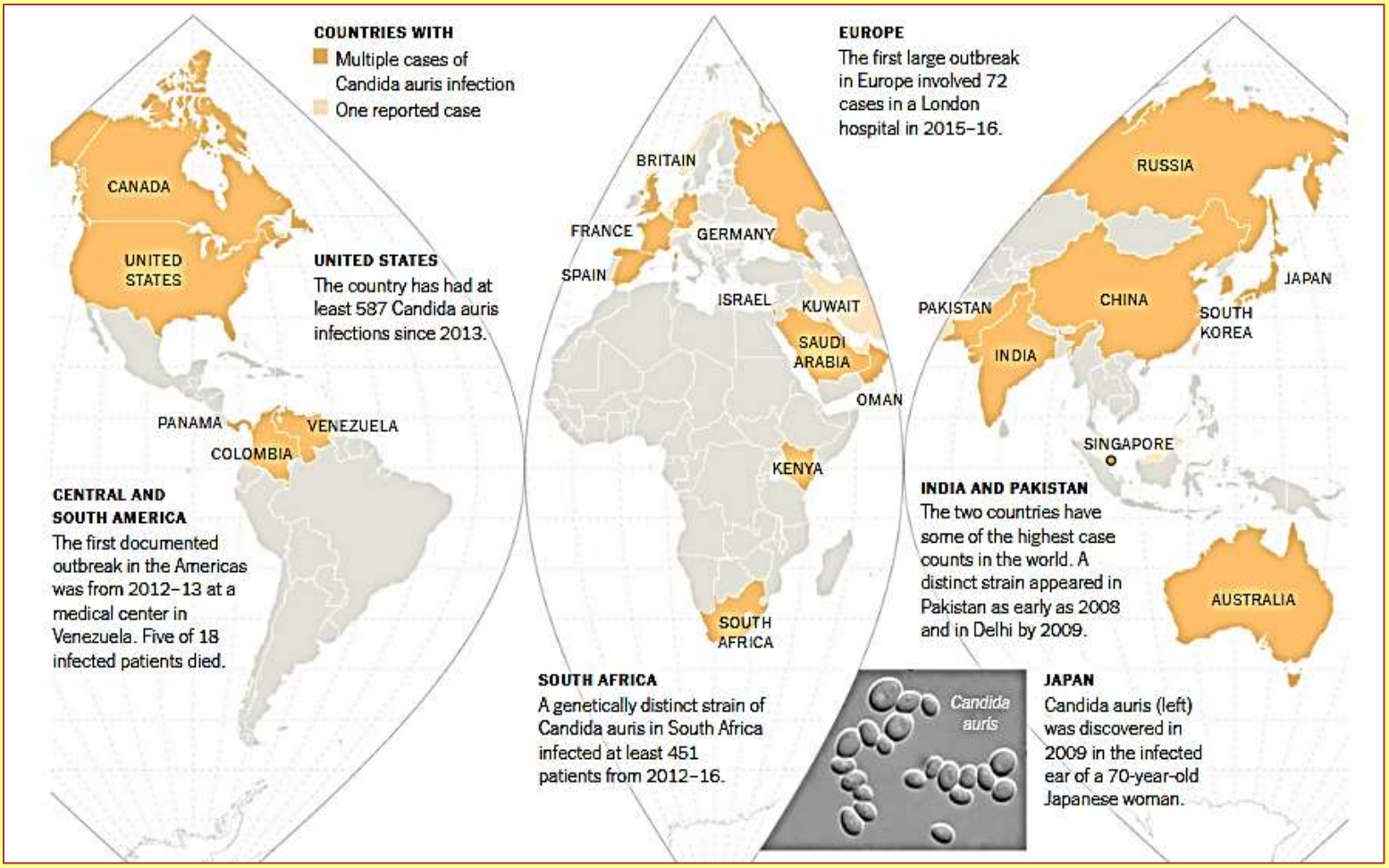
prevent agricultural plants from rotting. Some scientists cite evidence that rampant use of fungicides on crops is contributing to the surge in drug-resistant fungi infecting humans.

Yet as the problem grows, it is little understood by the public — in part because the very existence of resistant infections is often cloaked in secrecy.

With bacteria and fungi alike, hospitals and local governments are reluctant to disclose outbreaks for fear of being seen as infection hubs. Even the C.D.C., under its agreement with states, is not allowed to make public the location or name of hospitals involved in outbreaks. State governments have in many cases declined to publicly share information beyond acknowledging that they have had cases.

All the while, the germs are easily spread — carried on hands and equipment inside hospitals; ferried on meat and manure-fertilized vegetables from farms; transported across borders by travelers and on exports and imports; and transferred by patients from nursing home to hospital and back.

C. auris, which infected the man at Mount Sinai, is one of dozens of dangerous bacteria and fungi that have developed resistance.




**Sign Up for NYT Parenting**

From the team at NYT Parenting (launching soon!): Get the latest news and guidance for parents. We'll celebrate the little parenting moments that mean a lot—and share stories that matter to families.

Other prominent strains of the fungus Candida — one of the most common causes of bloodstream infections in hospitals — have not developed significant resistance to drugs, but more than 90 percent of C. auris infections are resistant to at least one drug, and 30 percent are resistant to two or more drugs, the C.D.C. said.

Dr. Lynn Sosa, Connecticut's deputy state epidemiologist, said she now saw C. auris as "the top" threat among resistant infections. "It's pretty much unbeatable and difficult to identify," she said.

Nearly half of patients who contract C. auris die within 90 days, according to the C.D.C. Yet the world's experts have not nailed down where it came from in the first place.
"It is a creature from the black lagoon," said Dr. Tom Chiller, who heads the fungal branch at the C.D.C., which is spearheading a global detective effort to find treatments and stop the spread. "It bubbled up and now it is everywhere."

**'No need' to tell the public**

In late 2015, Dr. Johanna Rhodes, an infectious disease expert at Imperial College London, got a panicked call from the Royal Brompton Hospital, a British medical center in London. C. auris had taken root there months earlier, and the hospital couldn't clear it.
"'We have no idea where it's coming from. We've never heard of it. It's just spread like wildfire,'" Dr. Rhodes said she was told. She agreed to help the hospital identify the fungus's genetic profile and clean it from rooms.
Under her direction, hospital workers used a special device to spray aerosolized hydrogen peroxide around a room used for a patient with C. auris, the theory being that the vapor would scour each nook and cranny. They left the device going for a week. Then they put a "settle plate" in the middle of the room with a gel at the bottom that would serve as a place for any surviving microbes to grow, Dr. Rhodes said. Only one organism grew back. C. auris.
It was spreading, but word of it was not. The hospital, a specialty lung and heart center that draws wealthy patients from the Middle East and around Europe, alerted the British government and told infected patients, but made no public announcement.
"There was no need to put out a news release during the outbreak," said Oliver Wilkinson, a spokesman for the hospital.
This hushed panic is playing out in hospitals around the world. Individual institutions and national, state and local governments have been reluctant to publicize outbreaks of resistant infections, arguing there is no point in scaring patients — or prospective ones.
Dr. Silke Schelenz, Royal Brompton's infectious disease specialist, found the lack of urgency from the government and hospital in the early stages of the outbreak "very, very frustrating."
"They obviously didn't want to lose reputation," Dr. Schelenz said. "It hadn't impacted our surgical outcomes."
By the end of June 2016, a scientific paper reported "an ongoing outbreak of 50 C. auris cases" at Royal Brompton, and the hospital took an extraordinary step: It shut down its I.C.U. for 11 days, moving intensive care patients to another floor, again with no announcement.
Days later the hospital finally acknowledged to a newspaper that it had a problem. A headline in The Daily Telegraph warned, "Intensive Care Unit Closed After Deadly New Superbug Emerges in the U.K." (Later research said there were eventually 72 total cases, though some patients were only carriers and were not infected by the fungus.)
Yet the issue remained little known internationally, while an even bigger outbreak had begun in Valencia, Spain, at the 992-bed Hospital Universitari i Politècnic La Fe. There, unbeknown to the public or unaffected patients, 372 people were colonized — meaning they had the germ on their body but were not sick with it — and 85 developed bloodstream infections. A paper in the journal Mycoses reported that 41 percent of the infected patients died within 30 days.
A statement from the hospital said it was not necessarily C. auris that killed them. "It is very difficult to discern whether patients die from the pathogen or with it, since they are patients with many underlying diseases and in very serious general condition," the statement said.
As with Royal Brompton, the hospital in Spain did not make any public announcement. It still has not.
One author of the article in Mycoses, a doctor at the hospital, said in an email that the hospital did not want him to speak to journalists because it "is concerned about the public image of the hospital."
The secrecy infuriates patient advocates, who say people have a right to know if there is an outbreak so they can decide whether to go to a hospital, particularly when dealing with a nonurgent matter, like elective surgery.

"Why the heck are we reading about an outbreak almost a year and a half later — and not have it front-page news the day after it happens?" said Dr. Kevin Kavanagh, a physician in Kentucky and board chairman of Health Watch USA, a nonprofit patient advocacy group. "You wouldn't tolerate this at a restaurant with a food poisoning outbreak."

Health officials say that disclosing outbreaks frightens patients about a situation they can do nothing about, particularly when the risks are unclear.

"It's hard enough with these organisms for health care providers to wrap their heads around it," said Dr. Anna Yaffee, a former C.D.C. outbreak investigator who dealt with resistant infection outbreaks in Kentucky in which the hospitals were not publicly disclosed. "It's really impossible to message to the public."

Officials in London did alert the C.D.C. to the Royal Brompton outbreak while it was occurring. And the C.D.C. realized it needed to get the word to American hospitals. On June 24, 2016, the C.D.C. blasted a nationwide warning to hospitals and medical groups and set up an email address, candidaauris@cdc.gov, to field queries. Dr. Snigdha Vallabhaneni, a key member of the fungal team, expected to get a trickle — "maybe a message every month."

Instead, within weeks, her inbox exploded.

Glo Gel under a black light in a room at Mount Sinai Hospital, before a simulation "terminal" cleaning of that room. Hospital workers place the gel in unexpected places to check that a room has been deeply cleaned — a necessary precaution after the hospital had to spend $1 million on cleaning equipment to protect against C. auris. Credit Hilary Swift for The NY Times

**Coming to America**

In the United States, 587 cases of people having contracted C. auris have been reported, concentrated with 309 in New York, 104 in New Jersey and 144 in Illinois, according to the C.D.C.

Advertisement

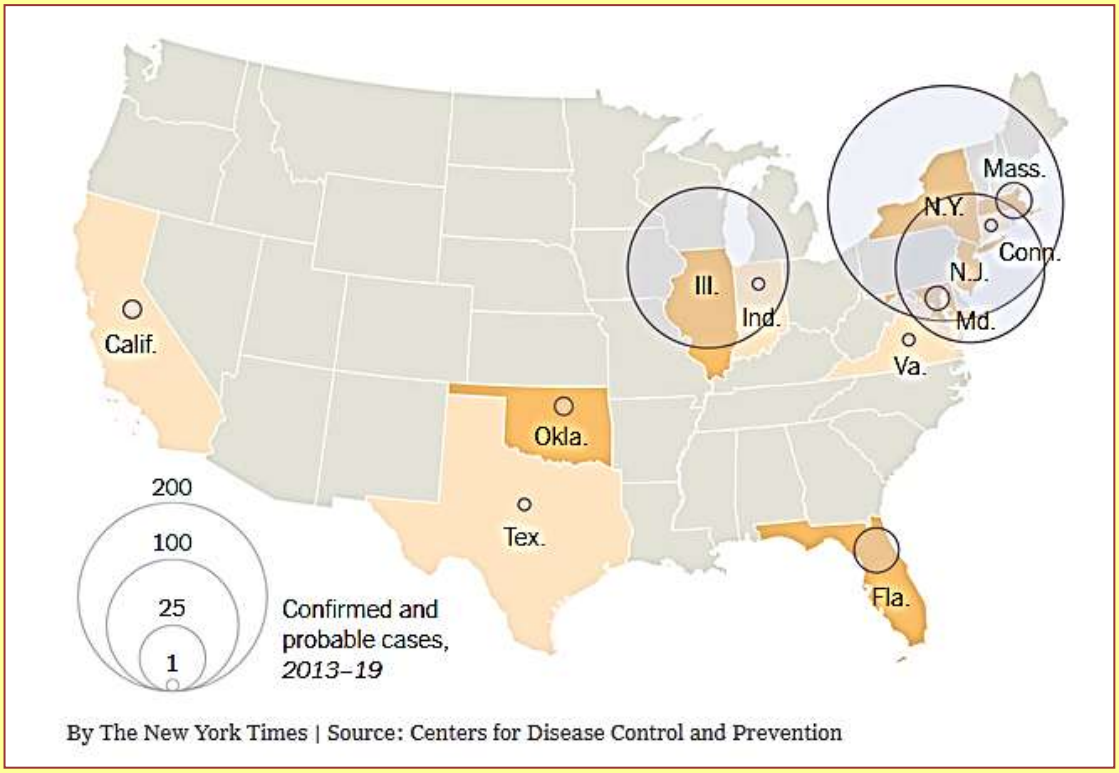
The symptoms — fever, aches and fatigue — are seemingly ordinary, but when a person gets infected, particularly someone already unhealthy, such commonplace symptoms can be fatal.

The earliest known case in the United States involved a woman who arrived at a New York hospital on May 6, 2013, seeking care for respiratory failure. She was 61 and from the United Arab Emirates, and she died a week later, after testing positive for the fungus. At the time,

the hospital hadn't thought much of it, but three years later, it sent the case to the C.D.C. after reading the agency's June 2016 advisory.

**Candida Auris by State**

Most cases in the United States have been in nursing homes in New York City, Chicago and New Jersey.
This woman probably was not America's first C. auris patient. She carried a strain different from the South Asian one most common here. It killed a 56-year-old American woman who had traveled to India in March




2017 for elective abdominal surgery, contracted C. auris and was airlifted back to a hospital in Connecticut that officials will not identify. She was later transferred to a Texas hospital, where she died.
The germ has spread into long-term care facilities. In Chicago, 50 percent of the residents at some nursing homes have tested positive for it, the C.D.C. has reported. The fungus can grow on intravenous lines and ventilators.
Workers who care for patients infected with C. auris worry for their own safety. Dr. Matthew McCarthy, who has treated several C. auris patients at Weill Cornell Medical Center in New York, described experiencing an unusual fear when treating a 30-year-old man.
"I found myself not wanting to touch the guy," he said. "I didn't want to take it from the guy and bring it to someone else." He did his job and thoroughly examined the patient, but said, "There was an overwhelming feeling of being terrified of accidentally picking it up on a sock or tie or gown."

**The role of pesticides?**

As the C.D.C. works to limit the spread of drug-resistant C. auris, its investigators have been trying to answer the vexing question: Where in the world did it come from?
The first time doctors encountered C. auris was in the ear of a woman in Japan in 2009 (auris is Latin for ear). It seemed innocuous at the time, a cousin of common, easily treated fungal infections.
Three years later, it appeared in an unusual test result in the lab of Dr. Jacques Meis, a microbiologist in Nijmegen, the Netherlands, who was analyzing a bloodstream infection in 18 patients from four hospitals in India. Soon, new clusters of C. auris seemed to emerge with each passing month in different parts of the world.

The C.D.C. investigators theorized that C. auris started in Asia and spread across the globe. But when the agency compared the entire genome of auris samples from India and Pakistan, Venezuela, South Africa and Japan, it found that its origin was not a single place, and there was not a single auris strain.
The genome sequencing showed that there were four distinctive versions of the fungus, with differences so profound that they suggested that these strains had diverged thousands of years ago and emerged as resistant pathogens from harmless environmental strains in four different places at the same time.
"Somehow, it made a jump almost seemingly simultaneously, and seemed to spread and it is drug resistant, which is really mind-boggling," Dr. Vallabhaneni said.
There are different theories as to what happened with C. auris. Dr. Meis, the Dutch researcher, said he believed that drug-resistant fungi were developing thanks to heavy use of fungicides on crops.
Dr. Meis became intrigued by resistant fungi when he heard about the case of a 63-year-old patient in the Netherlands who died in 2005 from a fungus called Aspergillus. It proved resistant to a front-line antifungal treatment called itraconazole. That drug is a virtual copy of the azole pesticides that are used to dust crops the world over and account for more than one-third of all fungicide sales.
A 2013 paper in Plos Pathogens said that it appeared to be no coincidence that drug-resistant Aspergillus was showing up in the environment where the azole fungicides were used. The fungus appeared in 12 percent of Dutch soil samples, for example, but also in "flower beds, compost, leaves, plant seeds, soil samples of tea gardens, paddy fields, hospital surroundings, and aerial samples of hospitals."
Dr. Meis visited the C.D.C. last summer to share research and theorize that the same thing is happening with C. auris, which is also found in the soil: Azoles have created an environment so hostile that the fungi are evolving, with resistant strains surviving.
This is similar to concerns that resistant bacteria are growing because of excessive use of antibiotics in livestock for health and growth promotion. As with antibiotics in farm animals, azoles are used widely on crops.
"On everything — potatoes, beans, wheat, anything you can think of, tomatoes, onions," said Dr. Rhodes, the infectious disease specialist who worked on the London outbreak. "We are driving this with the use of antifungicides on crops."
Dr. Chiller theorizes that C. auris may have benefited from the heavy use of fungicides. His idea is that C. auris actually has existed for thousands of years, hidden in the world's crevices, a not particularly aggressive bug. But as azoles began destroying more prevalent fungi, an opportunity arrived for C. auris to enter the breach, a germ that had the ability to readily resist fungicides now suitable for a world in which fungi less able to resist are under attack.
The mystery of C. auris's emergence remains unsolved, and its origin seems, for the moment, to be less important than stopping its spread.

**Resistance and denial**

For now, the uncertainty around C. auris has led to a climate of fear, and sometimes denial.
Last spring, Jasmine Cutler, 29, went to visit her 72-year-old father at a hospital in New York City, where he had been admitted because of complications from a surgery the previous month.
When she arrived at his room, she discovered that he had been sitting for at least an hour in a recliner, in his own feces, because no one had come when he had called for help to use the bathroom. Ms. Cutler said it became clear to her that the staff was afraid to touch him because a test had shown that he was carrying C. auris.
"I saw doctors and nurses looking in the window of his room," she said. "My father's not a guinea pig. You're not going to treat him like a freak at a show."
He was eventually discharged and told he no longer carried the fungus. But he declined to be named, saying he feared being associated with the frightening infection.

***Matt Richtel*** *is a best-selling author and Pulitzer Prize-winning reporter based in San Francisco. He joined The Times staff in 2000, and his work has focused on science, technology, business and narrative-driven storytelling around these issues.*

*Andrew Jacobs is a reporter with the Health and Science Desk, based in New York. He previously reported from Beijing and Brazil and had stints as a Metro reporter, Styles writer and National correspondent, covering the American South.*
*Ana Harrero contributed reporting from Caracas, Venezuela, and Raphael Minder from Valencia, Spain.*

## DHS S&T Awards $1.5M to Zeteo Tech to Develop and Test Real-Time Biological Threat Detection Technology

Source: https://www.newswise.com/articles/dhs-st-awards-1-5m-to-zeteo-tech-to-develop-and-test-real-time-biological-threat-detection-technology

Apr 11 – The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) has awarded $1.5 million to Zeteo Tech to develop and test a new sensor technology prototype that combines trigger and detector functions and will enable real-time detection of aerosolized biological threat agents including bacteria, viruses, and toxins.
"S&T's objective in developing this new sensor technology and our other biological and environmental threat detection initiatives is to protect citizens and critical infrastructure from these threats," said William N. Bryan, Senior Official Performing the Duties of the Under Secretary for Science and Technology. "These efforts will greatly improve detection and response times to potential bioterrorism attacks or naturally occurring biological incidents."
S&T is working to develop and test new technologies that will decrease the time and costs required to detect a biological incident. The Zeteo Tech prototype sensor will combine two component technologies that together have trigger and detector functions. The trigger technology will sort individual airborne biological agents by size and shape and send them into the detector one particle at a time to ensure that a clean, single "molecular fingerprint" is generated for that particle.
The detector will use matrix-assisted laser desorptive ionization time-of-flight mass spectrometry (MALDI-TOF MS) technology to generate molecular fingerprints that are unique to each particle. By combining these technologies, this novel sensor offers potential for continuous air monitoring with the ability to rapidly and confidently identify biological particles indicative of a bioterrorism event with limited human intervention for sample collection and analysis.

## Will robots replace doctors?

Source: https://www.brookings.edu/blog/usc-brookings-schaeffer-on-health-policy/2019/03/05/will-robots-replace-doctors/

## Anti-vaxxers are spreading a virus that just won't die

**By Sarah Baxter**
Source: http://www.homelandsecuritynewswire.com/dr20190411-antivaxxers-are-spreading-a-virus-that-just-won-t-die

Apr 11 – There is a bronze statue of the sled dog Balto near the children's zoo in Central Park, New York. It has stood there since 1925, the year the husky raced across the frozen wastes of Alaska to bring antitoxin serum to the remote town of Nome, where children were dying from diphtheria.
Sarah Baxter writes in the *Sunday Times* that Balto has been called into service once more to counter the anti-vaxxer mania sweeping America. She quotes a popular internet meme which said: "Balto didn't bust his ass …to get those vaccines for dying children for you to send your kids to school without being vaccinated."

"You have to wonder why people are behaving more ignorantly than nearly a century ago," Baxter writes, adding:

*In 1995, the year a much-loved cartoon film of Balto was released, Andrew Wakefield began researching a possible link between autism and the measles, mumps and rubella (MMR) vaccine. He was struck off the medical register in Britain in 2010 but, after moving to the U.S., has become something of a celebrity. He now lives with Elle "the Body" Macpherson and is supported in his bogus views by Donald Trump.*

*The Americans have often fallen for medical conspiracies. Having laughed my head off at General Ripper's fear in the Cold War film classic Dr Strangelove that fluoridation was a communist plot affecting his "precious bodily fluids", I was amazed to find that huge swathes of the US remain without fluoride in the water to this day.*

*The British, though, can be just as gullible. Simon Stevens, head of the NHS, warned this month that parents from his daughter's primary school were exchanging anti-vaccine texts on WhatsApp. One parent claimed: "My kids aren't vulnerable and I think loading up on vaccines blocks their systems from fighting disease as it should do."*

*Stevens blamed the "vaccination deniers" for a five-year decline in protection rates and a tripling of measles cases across England last year. In Europe 80,000 people caught measles last year, a fourfold increase over 2017 (in Italy there was a certain satisfaction last week when a member of the populist League party who had opposed compulsory vaccination fell victim to chickenpox).*

*This isn't our first brush with the anti-vaxxers. Before The Sunday Times exposed Wakefield as a fraud in 2004, I shared childcare with a friend who was adamantly opposed to vaccinating her children. "I felt I was being asked to put poison into my baby in order to protect the 'herd'," she said, "when, as a healthy-eating, middle-class girl, she was very unlikely to get those diseases." Her own mother had been offered thalidomide for morning sickness in the 1960s and she felt she had every reason to distrust the medical establishment.*

*Later my friend wised up to the fact that the anti-vaccine movement was a "complete scam", and all her children went on to receive jabs. However, she reckons there are a lot of 18 to 21-year-olds out there — the same age as her*

*daughters — who were born at the time of the original Wakefield hysteria in Britain and could now be vulnerable to the devastation that measles can cause to pregnant women.*

*I've known measles can give rise to serious birth defects ever since I had to sit exams at home at 15 to protect a pregnant teacher, but I suffered only mild spots and a high fever. That's how I learnt that the MMR isn't just about me and you: it's about those we might infect. It could be your child or your grandchild who is damaged later in life. Wakefield's dirty work won't be over for generations.*

*The herd immunity that my friend took for granted is breaking down under pressure from other causes, too, such as the arrival of unvaccinated immigrants and resistance to jabs among certain religious communities. But the hippie-dippy boho middle class has been joined in its suspicion of vaccines by the conspiracy-minded global far right.*

Baxter notes that, predictably, social media have played their part in the proliferation of anti-vaccine propaganda. Stevens has suggested Instagram and YouTube ban all such harmful content, but Baxter says that after Facebook, correctly, promised last month to block support for white nationalism and separatism in the wake of the Christchurch mosque attacks, she is wary of adding to the list of censored items.

She concludes:

*At the same time, the potential for bullying doctors and patients on the internet is enormous. A fascinating experiment took place in Pennsylvania recently after a local doctor's surgery posted a Facebook video urging parents to vaccinate their children against the human papillomavirus (HPV). Soon 10,000 vicious comments along the lines of "vaccines kill" piled up on the site. With the help of researchers from Pittsburg University, the doctors found that only five came from Pennsylvania. Others came from all over the world as part of a coordinated attack.*

*For Rockland county, in New York state, the answer to an outbreak of 153 measles cases last week was to ban unvaccinated children from all public places for a month. Admittedly there are no guards at shopping malls to enforce compliance, but it does seem a little draconian.*

*My preferred solution would be to insist on compulsory vaccinations for schoolchildren — without exception. Yes, we're big on "our bodies, our choice" in Britain, but one person's poor decision can disable another person for life. It's no different, to my mind, from the wearing of seatbelts. Feel free to gamble with your own children's lives. Not mine.*

*Read the article: Sarah Baxter, "Anti-vaxxers are spreading a virus that just won't die," Sunday Times (31 March 2019).*

## Homeland Security replacing troubled biodefense system with another flawed approach

**By David Willman**

Source: https://www.latimes.com/politics/la-na-pol-biowatch-replacement-20190215-story.html

Feb 19 – The Trump administration is quietly moving to replace **BioWatch**, the nation's problem-plagued system for detecting an airborne attack of anthrax spores or other infectious agents, with technology that also has severe shortcomings, a Times investigation has found.

The first new device was installed without public notice in December and others are being emplaced at 11 other U.S. locations with a goal of supplanting BioWatch "within the next couple of years," James F. McDonnell, an assistant secretary of Homeland Security, said in an interview.

McDonnell, who heads Homeland Security's office of countering weapons of mass destruction, said the new system, called **BioDetection 21**, will be faster and more reliable than BioWatch. He said he hopes

to put as many as 9,000 new detection devices in place by 2025.

But testing at an Army facility last year and use of the sensing devices in previous military operations identified critical problems with their ability to detect the bacteria, viruses or toxins that might be wielded in an attack, according to scientific experts and official documents.

BioWatch was hurriedly installed after the 9/11 terrorist attacks of 2001 in an effort to provide a quick, dependable warning system in the event, however unlikely, of the deliberate spread of anthrax, smallpox or other deadly pathogens. Authorities could then respond with antibiotics, vaccines, quarantines or other emergency measures to minimize casualties.

However, BioWatch generated scores of disruptive false alarms, including in Los Angeles, Pasadena and San Diego, and scientists have warned that the system — which has cost $1.6 billion so far — is not reliable.

The new system will depend on so-called trigger devices that use fluorescent light to identify potentially dangerous biological material in the air. Once the devices trigger a warning, officials would seek confirmation with handheld equipment.

But a lengthy report last fall, commissioned by Homeland Security's scientific staff, warned that the trigger devices frequently can't distinguish between deadly pathogens and airborne pollen or paper dust, increasing the likelihood of false alarms.

The report also showed that four trigger devices failed in testing last year to detect tiny, unclumped anthrax spores — the type that experts say a skilled terrorist or state-sponsored biowarfare program might produce.

Moreover, the triggers correctly detected small particles of viral material — simulating smallpox or other deadly viruses that could be weaponized — in just eight of 168 attempts, a success rate of less than 5%.

Trigger devices have "clear limitations … for detection of smaller particles and some biological threat categories," the report said.

The Times obtained a copy of the report, which was produced by the Johns Hopkins University Applied Physics Laboratory. The findings were consistent with Homeland Security's earlier evaluations of triggers, according to current and former federal scientists.

The new report also recommended against using the handheld devices, called biological identifiers, that would be used to confirm or dispel a trigger alert under BioDetection 21.

It cited the cost and utility of the devices, saying civilian officials would not order an evacuation or other major emergency response without taking additional time to verify an attack through genetic testing at a laboratory.

Given the drawbacks of the triggers and handheld identifiers, Homeland Security risks replacing BioWatch with a system that would be even less useful, according to several current and former government scientists who have led federal efforts to improve biodetection.

"The technology hasn't evolved to the point where it would be an effective replacement'' for BioWatch, said Stephen A. Morse, a microbiologist who worked for 32 years at the U.S. Centers for Disease Control and Prevention.

Trigger devices, he said in an interview, "don't detect small particle sizes. They don't detect low concentrations of particles."

Morse and other experts said the triggers would struggle with fine-powdered anthrax and would not reliably detect low volumes of the bacterium that causes tularemia, another potential biowarfare agent. Known as rabbit fever, tularemia can set in after inhaling just 10 to 50 particles of the bacteria, compared with 8,000 to 50,000 anthrax spores needed to cause that disease.

McDonnell said the test results in the Johns Hopkins report "raise concerns," but he believes problems will be resolved as BioDetection 21 is rolled out.

"Part of what I'm sort of reining in the scientists a little bit on is, 'Don't let perfection be the enemy of good enough,'" he said.

McDonnell said he is "certainly concerned" that too many false alarms could undermine public confidence.

But he said he "probably" would seek to close a major public facility, such as Pennsylvania Station in New York, the busiest passenger rail hub in America, if one of the new devices triggered a warning and the handheld equipment confirmed a dangerous pathogen.

Additional verification through genetic testing at a lab would be necessary to administer medicines, he said.

McDonnell estimated the new system could detect and confirm infectious agents in less than three hours. BioWatch was designed to produce such results in 12 to 36 hours.

He also is seeking better computing capability that might help the new system distinguish between benign and dangerous material, he said.

The first trigger device was installed Dec. 22 and another will be added this month, McDonnell said, adding that he has funds set aside to pay for all 12 sites. He declined to identify them.

McDonnell said he aims to keep the new system's operating cost to $80 million a year, the same as BioWatch now costs.

The triggers intended for the new system were tested last May and June at the Army's Edgewood Chemical Biological Center in Maryland, according to the Johns Hopkins report.

The military has used trigger devices for years in the Middle East and South Korea to detect possible biological attacks — and false alarms have been common.

When those triggers signal an attack, troops put on masks and protective suits to block ingestion or skin contact with airborne bio-agents. If it's a false alarm, the troops remove the gear and resume their duties.

The military accepts the false alarms as the price for using a portable, if imperfect, detection system. In a busy city or crowded stadium, a false alarm — and the sight of emergency responders in moon suits — could create panic.

"In the military, you can always live with an occasional false alarm," said Stephen Reeves, a retired Army major general whose staff developed the air-sampling technique used for BioWatch. "You can't deal with that with the public."

The threat of an intentional biological release has loomed for decades. The United States renounced its offensive biowarfare program in 1969, but officials suspect some adversaries and terrorist groups have continued efforts to weaponize pathogens.

Fears soared several weeks after the 9/11 attacks, when letters laced with anthrax spores killed five people, infected 17 others and forced the closure of numerous government buildings and U.S. mail facilities.

The FBI ultimately concluded that the culprit was Bruce E. Ivins, an Army microbiologist who was an anthrax specialist at Ft. Detrick, Md. Ivins killed himself in July 2008 after he learned he was about to be indicted for the anthrax deaths.

Soon after the letter attacks, BioWatch was being installed around the country. Placed at street level or atop buildings, the system's compact sensors suck air through filter cartridges intended to trap any suspect material. Once a day, the used filter is replaced by a technician and taken to a local laboratory that uses genetic testing to search for BioWatch-targeted pathogens.

Although the George W. Bush administration assured Congress that BioWatch was working smoothly, it proved problematic from the start.

In July 2012, The Times disclosed that BioWatch had falsely warned of scores of attacks through 2008, including at high-profile public events.

On Aug. 28, 2008, for example, Barack Obama's acceptance speech at the Democratic National Convention in Denver was jeopardized by BioWatch's false warning of tularemia at the site.

After six hours of tense deliberations, including conference calls between the White House, Homeland Security headquarters and state health officials in Denver, Colorado authorities concluded that no attack had occurred.

"What we had in Denver was a false positive," Chris Lindley, who headed the state's emergency response, recalled recently. "Hundreds of people sat around rooms and debated and talked about how we would respond, how we would quarantine, how we would administer [antibiotics]. All that was just wasted time."

In 2015, a report by the Government Accountability Office, which conducts investigations and audits for Congress, identified 149 false alarms by BioWatch. In each case, officials at the scene ultimately decided the system was at fault.

At an industry-sponsored biodefense conference in Washington last Nov. 14, three former top U.S. officials publicly

repudiated the system they had helped launch.
"None of us really believe" in BioWatch, said Tom Ridge, who oversaw its installation in 2003 as the first secretary of Homeland Security.
"I had such high expectations" for BioWatch, said Tom Daschle, who was Senate majority leader when an anthrax-laced letter was opened at his office in October 2001.
"And I must say, I'm very disappointed with what has happened since."

"After 2001, we really rushed to get things in place, including BioWatch," said Joe Lieberman, the former senator from Connecticut who chaired the Senate Homeland Security Committee. The system "never fully delivered on our hopes for it."
Lieberman asked McDonnell whether switching to BioDetection 21 "will really bring us as close to up to date as we can — and have a much more effective system than BioWatch?"
McDonnell replied, "Yes, sir."

***David Willman*** *is a reporter for the Los Angeles Times based in Washington, D.C. Willman won the Pulitzer Prize for investigative reporting for articles that prompted the market withdrawal of Rezulin, a widely sold diabetes drug. His subsequent reports, documenting widespread pharmaceutical industry payments to federal researchers, triggered a ban of such compensation at the U.S. National Institutes of Health. His work has also exposed the nation's unreliable system for countering bioterrorism. He is author of "The Mirage Man," the groundbreaking account of the anthrax letter attacks. Willman's national honors include the top award from Investigative Reporters and Editors (twice), the Worth Bingham Prize for Investigative Journalism, the Scripps Howard Foundation's award for best Washington-based reporting and, with colleagues, the George Polk Award.*

**EDITOR'S COMMENT:** To be honest, I never comprehend the idea of detecting bioterrorism pathogens outdoors in open spaces. Indoor's detection is a more down to earth approach especially if significant quantities are somehow released. But outside? With countless molecules, pollens, spores, microbes, organic and inorganic particles etc. and not only this but also avoid false positive alarms? I think that for the time being we are quite far away from the desired solution. Perhaps an AI intervention will help differentiate the material collected and provide fast and accurate results and warnings.

# 2019 a record year for measles infection since the disease was eradicated in 2000

Source: http://www.homelandsecuritynewswire.com/dr20190416-2019-a-record-year-for-measles-infection-since-the-disease-was-eradicated-in-2000

Apr 16 – The number of measles cases confirmed in the United States since the first of the year grew by 90 in the last week, raising the total to 555 cases, meaning it's likely 2019 will see the most measles cases in the United States since the disease was eradicated in 2000.
As it stands, the 555 cases still falls short of 2014's total of 667 measles cases, which included 383 cases in an Amish community in Ohio.
CDC notes that so far this year twenty states have confirmed measles, including Maryland, which recorded its first case of the year.
Arizona, California, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, Nevada, New Hampshire, New Jersey, New York, Oregon, Texas, and Washington, have all recorded cases.
The number of affected states is likely to increase to 21, as Iowa today reported that a person from the northeastern part of the state was diagnosed as having measles, and likely contracting the disease on a recent trip to Israel. The Iowa Department of Public Health (IDPH) said the case-patient has been complying with health officials.

"This is the first case of measles in Iowa since 2011, and serves as a reminder for all Iowans to ensure their vaccinations are up-to-date," IDPH said in a news release. "Vaccines prevent diseases and save lives."
CDC is tracking six ongoing outbreaks, including two in New York City and Michigan that have also been tied to travel to and from Israel.
Rockland County, New York, added 29 cases to an outbreak that's resulted in 186 cases. In that outbreak, 81.2 percent of patients have had no measles, mumps, and rubella (MMR) vaccinations, and 40.9 percent are 3 years old and younger.
An outbreak in Butte County, California, grew by 3 cases to a total of 9, and numbers in Santa Clara, California, rose by 1 case, to a total of 4 measles cases, but those cases are not connected to one another, according to Marianna Moles, a public communications specialist with the Santa Clara County Public Health Department. The CDC designates "outbreak" status as having 3 or more epidemiologically connected cases.

**Global measles cases up 300 percent**
Today the World Health Organization (WHO), in a global update, said measles cases are also climbing dramatically worldwide.
"Preliminary global data shows that reported cases rose by 300 percent in the first three months of 2019, compared to the same period in 2018. This follows consecutive increases over the past two years," the WHO said.
Provisional numbers for 2019 show 170 countries reporting 112,163 measles cases to the WHO. As of this time in 2018, there were 28,124 measles cases in 163 countries.
The United States joins Israel, Thailand, and Tunisia as countries the WHO identifies as hot spots due to pockets of unvaccinated people.
Other leading outbreak regions include the Democratic Republic of the Congo, Ethiopia, Georgia, Kazakhstan, Kyrgyzstan, Madagascar, Myanmar, Philippines, Sudan, Thailand and Ukraine, causing many deaths—mostly among young children, the WHO said.
Measles is highly contagious, and can be deadly. The WHO said 110,000 deaths were attributed to the virus in 2017.
"The disease is almost entirely preventable through two doses of a safe and effective vaccine. For several years, however, global coverage with the first dose of measles vaccine has stalled at 85 percent," the WHO said. Coverage needs to reach 95 percent to prevent outbreaks.

## Bleeding Control - The Next Step in Active Shooter Guidance

**By Birch X. Barron**
Source: https://www.domesticpreparedness.com/resilience/bleeding-control-the-next-step-in-active-shooter-guidance/

*Military methods used for bleeding control on the battlefield can be just as effective on the scene of an active shooter, terrorist attack, or other mass casualty incident. It is time to teach these methods to anyone who may someday find himself or herself in a position to save a life by stopping the bleed.*

**January 2016** – The current guidance for surviving an active shooter or terrorist attack – "Run. Hide. Fight®" – is direct and concise but incomplete. Victims with gunshot wounds and other traumatic injuries may lose blood rapidly, and their lives are dependent on immediate action from those around them. Incorporating basic bleeding control information into active shooter, terrorist attack, and mass casualty guidance can empower bystanders and save lives.
No one should die from uncontrolled bleeding. Simple techniques to slow blood loss have been used for decades, and extensive military research in Iraq and Afghanistan has demonstrated their effectiveness in treating injuries from gun violence and attacks involving

improvised explosive devices. Without intervention, severe-but-controllable hemorrhage can cause death in as little as five minutes, and many victims may be beyond rescue by the time trained medical teams arrive on scene.

As the United States builds resilience in the face of increasing violence, lessons must be taken from experiences on the battlefield. Following shootings and mass casualty incidents, rapid intervention by bystanders, law enforcement officers, and other nonmedically trained responders is critical to patient survival. Techniques to stabilize traumatic bleeding are not complicated to learn, and initiatives to promote bleeding control can be easily incorporated into community and first responder preparedness efforts.

### Step 1: Educate

Opportunities to learn bleeding control techniques should be promoted publicly and made available to the entire community. Special emphasis should be placed on training all law enforcement officers and nonmedical first responders to use bleeding control techniques for self-care and the care of others. Essential skills include safely identifying the source of bleeding, packing and compressing a wound, and applying pre-made or improvised tourniquets as necessary to slow the rapid loss of blood. Educational resources are readily available online.

### Step 2: Improve Access to Life-Saving Equipment

Essential bleeding control supplies such as gloves, hemostatic gauze, and tourniquets should be purchased and made easily accessible in high-risk public locations. Emergency medical services (EMS) personnel, law enforcement officers, and other first responders should be equipped with bleeding control supplies to carry in their vehicles or on their person.

### Step 3: Incorporate Bleeding Control Initiatives into Existing Policy

Plans and policies that pertain to active shooter and intentional mass casualty events should be updated to include guidance and support for bleeding control initiatives. To maximize community resilience, bleeding control initiatives should extend beyond government agencies to private sector businesses and professional, community, social, and faith-based organizations.

In the wake of recent mass shootings – in San Bernardino, California; Paris, France; and Colorado Springs, Colorado – it is increasingly clear that improved survival lies in the hands of the people within close proximity. Bleeding-control initiatives empower bystanders to take action, and the skills learned are applicable to a wide variety of emergencies. A new step is being added to improve survival within the community: Run. Hide. Fight. Stop the bleed.

*The DHS Stop the Bleed initiative is a resource with simple materials for public distribution. Detailed hemorrhage control guidance can be found in the Hartford Consensus document produced by the Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass-Casualty and Active Shooter Events.*

***Birch Barron, MSPH**, is a senior policy analyst with the University of Maryland Center for Health and Homeland Security (CHHS). He currently serves as the senior advisor to the medical director at the Howard County Department of Fire & Rescue Services and as an emergency management specialist with the Howard County Office of Emergency Management. Prior to his work with CHHS, he has led local and international emergency response efforts as a firefighter, educator, project manager, and Peace Corps volunteer. He holds a Master of Science degree from the Johns Hopkins Bloomberg School of Public Health and a BA in Psychology from Linfield College.*

## Metabiota Launches New Epidemic Tracker Website

Source: http://outbreaknewstoday.com/metabiota-launches-new-epidemic-tracker-website-78898/

Apr 17 – The World Economic Forum believes pandemics could cause a $570 billion annual loss to the global economy. With the proliferation of infectious disease threats, including the resurgence of Measles resulting in New York declaring a public health emergency last week to a recently discovered pathogen called Candida auris that has emerged globally as a multidrug-resistant infection, it has become more critical than ever before to have better

insights into outbreaks and ongoing epidemics. That is why Metabiota has launched the Metabiota Epidemic Tracker, a free, new platform to view, analyze and understand events that could impact people, industries and nations.

"Until now, there has not been an effective way for organizations to plan for — and mobilize against — emerging health threats," said Bill Rossi, CEO of Metabiota. "As we saw from the impact of the Zika virus, where travel alerts correlated to significant financial losses for the hospitality industry, infectious disease events can cause a ripple effect of health and economic hardships. This tracker aligns with Metabiota's mission to make the world more resilient to human and economic health threats by providing an open, focused and balanced view into emerging and ongoing outbreaks."

Based on detailed information for over 120 pathogens, each with its unique profile, history and up-to-date statistics, including reported cases and deaths, The Epidemic Tracker is optimized for a wide range of users, from corporate risk managers assessing risks that could impact their organizations to health and safety professionals protecting their workforces to travel enthusiasts and anyone curious about the global health landscape.

## WHO Ebola responder killed in attack on the Butembo hospital

Source: https://www.who.int/news-room/detail/19-04-2019-who-ebola-responder-killed-in-attack-on-the-butembo-hospital

Apr 19 – "Today, Dr. Richard Valery Mouzoko Kiboung, an epidemiologist deployed by WHO in the response to the Ebola outbreak in the Democratic Republic of the Congo (DRC) was killed in an attack on Butembo University Hospital. Two other persons were injured in the attack but are believed to be in a stable condition.

"'I and all of WHO are deeply saddened by the loss of our colleague and brother Dr. Mouzoko. He put himself on the frontline to save lives in the Democratic Republic of the Congo,' said WHO Director-General. Dr. Tedros Adhanom Ghebreyesus. 'We grieve with his family and friends at this very difficult time.'


"'This is a tragic reminder of the risks' health workers take every day to protect the lives and health of others. We are outraged by this atta ck: health workers and health facilities must never be targets.'

"The attack took place during a coordination meeting being held at the hospital at that time.

"'We are assessing the security situation to ensure the safety of all patients, health workers and Ebola responders,' said Dr. Tedros. 'At the same time, we remain committed to continue supporting the Ministry of Health of DRC to end this outbreak as quickly as possible.'"

Tweet from Dr. Tedros: "Today we lost one of our very own: Dr. Richard Valery Mouzoko Kiboung, an epidemiologist deployed in the #Ebola response in #DRC, during a hospital attack in Butembo.

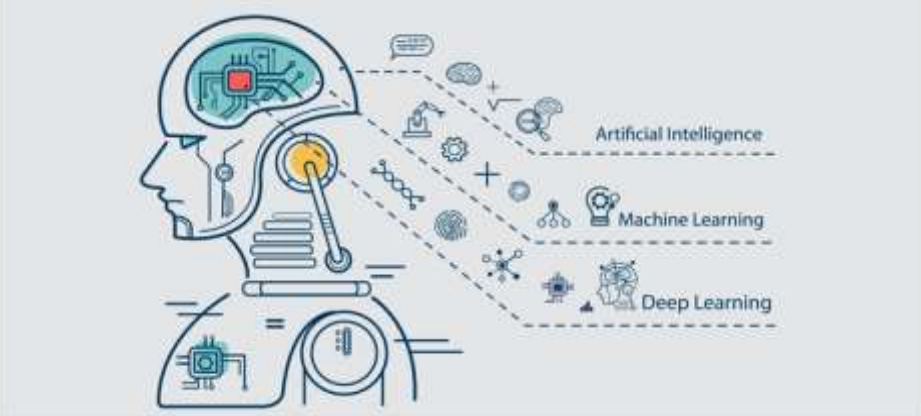
"We grieve together with his family during this difficult time.

# AI makes key protein research a million times faster

Source: https://www.cnet.com/news/ai-makes-key-protein-folding-research-a-million-times-faster/

Apr 17 – Protein folding has been a famously difficult computing problem for decades: How do you figure out the exact structure of these massive molecules that our DNA defines? Now artificial intelligence is getting us to the answer a lot faster.

Harvard Medical School biologist Mohammed AlQuraishi has used the latest machine learning technology to detect structural patterns in well-understood proteins, then apply that to other proteins.




The results, while not precise enough for protein folding applications like discovering new drugs, is at least a million times faster than conventional computing techniques. And this is just a first crack at a technology that can be improved and combined with other modeling techniques.

It's an illustration that AI, though fraught with fears about effects like abetting police states or wiping out human jobs, has the potential to improve medicine, among other things.

Mohammed AlQuraishi from Harvard Medical School developed an AI technique to predict how crucial biological molecules called proteins form. As his model improves, the colorful prediction gradually comes closer to the actual protein structure shown in gray.

"We now have a whole new vista from which to explore protein folding," AlQuraishi said in a statement Wednesday. "We've just begun to scratch the surface."

AI today most often refers to neural network technology loosely based on human brains, and it's revolutionized everything from voice commands and facial recognition to debugging software and turning on windshield wipers. AI models learn patterns from real-world training data, an approach that means humans don't have to make specific instructions like trying to define what it sounds like when somebody says "Alexa, what's the weather today?"

In humans and any other form of life on Earth, DNA strands contain instructions on how to assemble amino acids into the long strings that become proteins. The laws of physics determine exactly how those strings collapse into tight bundles, with the resulting surface structures critical to protein interactions inside cells.

But modeling exactly how that will happen inside a computer quickly gets difficult for bigger proteins. That means it's hard to understand what's going on with proteins. AlQuraishi, though, believes the AI technique could not only help this understanding but also potentially be used to engineer new proteins that perform a specific job.

AlQuraishi's results were published Wednesday in the journal Cell Systems.

**EDITOR'S COMMENT:** Does this means that we can also make biological weapons a million times faster? If AI research follows the paths of gene editing then I am sure that big problems are only one corner away.