2 CBRNE DIARY

Dedicated to Global First Responders

CBRNE-Terrorism Newsletter

July 2019

Enjoy Summer time!

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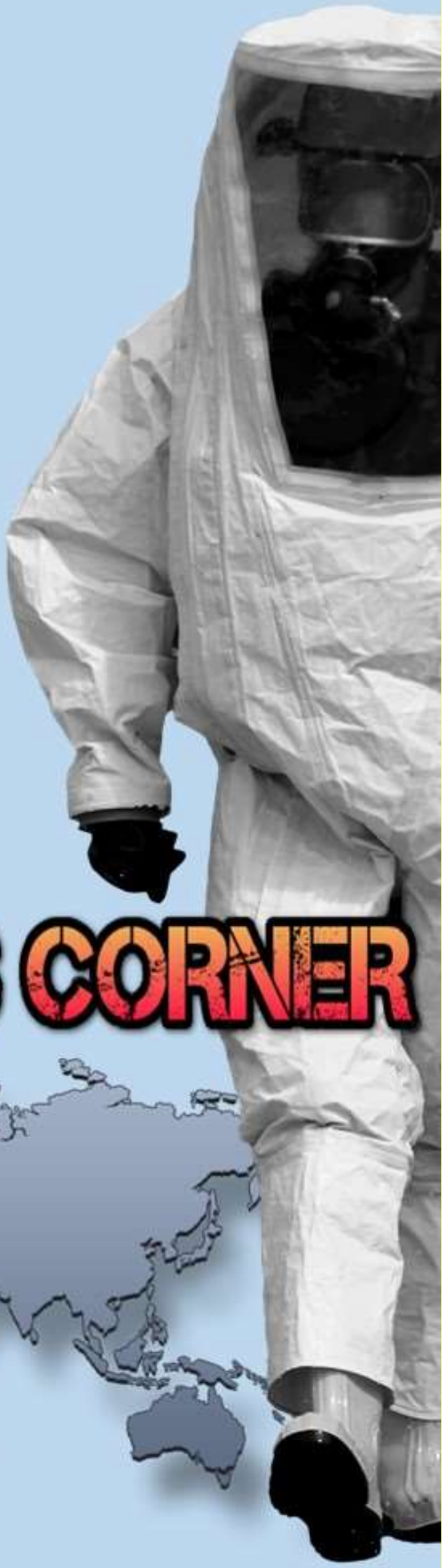

EDITOR'S CORNER

Editorial

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

Editor-in-Chief
C²BRNE Diary

Dear Colleagues,

Not much this month! And most impotantly not bloody ones! You can figure it out from the size of July's size. Some interesting news though:

- A lot of discussion about immigrants and refugees predominanty driven by the Italians who are trying to implement policies that are favorable to their country since the rest of EU is doing exactly this. There is a deliberate confusion in the terminology of these people. An immigrant is someone who legally moves from his own country to a new county and settle down there looking a better working future. An illegal immigrant is someone who has no legal national documents (I wonder why they do not have an ID or a passport) and tries to enter another country bypassing legal entry points and usually looking for a better future not always via hard work but mostly via receiving national or EU benefits. Finally, there are the refugees who are escaping from a conflict zone. According to the International Law a person is considered as a refugee the moment he/she leaves his/her country to a neighbring country – i.e. from Syria to Turkey) and looses the label of refugee when he/she moves from the neighboring country to a distant country like Greece or Italy. And the excuse that EU citizens should be thankful to all these people because they will help their economies and balance low birth rates is simply a poor one. I remember some time ago when Germany accused its heavy industry that is not absorbing newcomers they simply replied "there is nothing they have been trained to do"!
- The biggest amount ever of Captagen tablers was confescated in the Greek port of Pireaus – who is using them now the moment that the Islamic State belongs to the past (or not?)
- Read some papers on medical CBRN preparedness in both civilian and military hospitals – still a long way to achieve a satisfactory basic level.
- Read a paper questioning the signigicant of pralidoxime administration together with atropine and make your own conclusions.
- Should we apply a hair cut just after the docntamination process?
- It seems that the Fentanyl problem is getting bigger and bigger – not yet in Europe but is a visible near future threat.
- An interesting paper on contaminated corps management – a topic that we are not very good at (especially the majority of coroners and medical examiners due to lack of incidents and related experience).
- Who needs chemical warfare agents when on can spread havoc with a simple CS in a confined space – it happened insite a subway car in London (Oxford Circus Station).
- Negative pressure ambulances – another issue that requires solutions and new products. Covering with plastic sheets is not very proficient.
- The measles issue became a big problem and certain nations are taking radical measures – i.e. Germany made vaccination for measles compulsory.
- Ghana declared Public Health Emergency for Poliovirus type-2 – yes, that virus who considered as a past problem is haunting us again.
- WHO wake up at least and declared Ebola in Congo as an Emergency of International Concern – perhaps they were waiting deaths to go over 1,600 to act!

- The most important article in this issue is the research that managed to remove the bacterial armor of anthrax thus leading to effective therapies.
- A good idea is to install radiation detectors on ambulances and have a live radiation map on daily basis.
- Using 3D printers to make nuclear weapons – impossible? I do not think so!

But what is most important is you CBRN First Responders to fill your batteries during summer time in order to be able to continue be the shields of our societies against evil minds and exotic threats (and those who are stupid enough to think that are exotic or that they will not happen in their shift or asministration).

The Editor-in-Chief

Mass surveillance is coming to a city near you

Source: http://www.homelandsecuritynewswire.com/dr20190621-mass-surveillance-is-coming-to-a-city-near-you

June 21 – The tech entrepreneur Ross McNutt wants to spend three years recording outdoor human movements in a major U.S. city, KMOX news radio reports. Conor Friedersdorf writes in *The Atlantic* that if that sounds too dystopian to be real, you're behind the times. McNutt, who runs Persistent Surveillance Systems, was inspired by his stint in the Air Force tracking Iraqi insurgents. He tested mass-surveillance technology over Compton, California, in 2012. In 2016, the company flew over Baltimore, feeding information to police for months (without telling city leaders or residents) while demonstrating how the technology works to the FBI and Secret Service.

The complex issue of returning Islamic State fighters

Source: http://www.homelandsecuritynewswire.com/dr20190621-the-complex-issue-of-returning-islamic-state-fighters

June 21 – A new paper from the Australian National University (ANU) warns we need to look beyond stripping citizenship from Islamic State fighters seeking to return to Australia as an approach to dealing with terrorism.

The paper's author, Jacinta Carroll from the ANU National Security College, said public perception and official rhetoric on Australia's approach to foreign fighters is too focused on the stripping of citizenship.

"This is problematic on a range of fronts," she said.

"Citizenship loss can only apply to the small proportion of Australian terrorists who are dual citizens, and can also be interpreted as shirking Australia's responsibility both for its citizens and for bringing terrorists to justice.

"This presents a flawed view of Australia's approach to dealing with terrorism, which feeds the terrorist narrative."

The paper argues the federal government must do more to build the Australian public's understanding of the issue or risk providing a narrative that further feeds IS's rhetoric.

"Since the rise of IS, we now have by far more Australians heading overseas to join terrorist groups than at any other time in our history," Carroll said.

"We know from previous occasions that Australians who travel to join terrorist organizations will almost always get involved in further terrorist acts once they return to Australia."

ANU notes that around 230 Australians have travelled to the Middle East to join IS and other Islamist terrorist groups with around 100 still in the region.

To demonstrate the complexities of such cases, the paper highlights the case of Australian Zaynab Sharrouf. Sharrouf was taken to the conflict zone in 2014 by her parents when she was 13 and later became a prominent ISIS propagandist posting messages supporting IS atrocities and the activities of her terrorist father and first husband. Now 17, she is widowed, reportedly married for a second time to another fighter, has two children and is pregnant.

"Sharrouf is both a victim and supporter of terrorism and cases like this are very **legally and morally complex**," Carroll said.

"While she did not independently choose to be a foreign fighter, she has been radicalized and for a time played a high-profile role supporting IS.

Carroll said the Government must do more to communicate the complex issues involved with returning fighters, and the range of policies in place to deal with them.

Carroll suggests Government do more to promote the success of other policies in place to manage this issue - particularly the disengagement programs used to assist offenders and their families.
"There is almost no awareness that these programs even exist," she said.
"At the moment there is a perception in Australia that we aren't doing anything at all, we are just hoping that people will stay in the Middle East."
The paper's policy recommendations:

- ✓ Australian counter-terrorism officials should publicize Australia's approach to foreign fighters and use case studies to illustrate the range of roles, including women and children, and the individual nature of each case.
- ✓ The Australian Government should explain how Australians may be prosecuted by countries where crimes were committed, and also publicize Australia's support for international efforts including the United Nations Investigative Team examining IS war crimes, and the International Criminal Court.
- ✓ Commonwealth, state and territory governments should provide anonymized case studies on disengagement programs, including how these would work for foreign fighters and their dependents who might return to Australia.

— Read more in J. Carroll, The citizen as enemy combatant: dealing with foreign terrorist fighters (ANU, 22 June 2019).

EDITOR'S COMMENT: "Legally and morally complex"??? Really???

First-ever successful mind-controlled robotic arm without brain implants

Source: https://neurosciencenews.com/bci-prosthetic-arm-14283/

June 20 – A team of researchers from Carnegie Mellon University, in collaboration with the University of Minnesota, has made a breakthrough in the field of noninvasive robotic device control. Using a noninvasive brain-computer interface (BCI), researchers have developed the first-ever successful mind-controlled robotic arm exhibiting the ability to continuously track and follow a computer cursor. Being able to noninvasively control robotic devices using only thoughts will have broad applications, in particular benefiting the lives of paralyzed patients and those with movement disorders.
BCIs have been shown to achieve good performance for controlling robotic devices using only the signals sensed from brain implants. When robotic devices can be controlled with high precision, they can be used to complete a variety of daily tasks. Until now, however, BCIs successful in controlling robotic arms have used invasive brain implants. These implants require a substantial amount of medical and surgical expertise to correctly install and operate, not to mention the cost and potential risks to subjects, and as such, their use has been limited to just a few clinical cases.

A grand challenge in BCI research is to develop less invasive or even totally noninvasive technology that would allow paralyzed patients to control their environment or robotic limbs using their own "thoughts." Such noninvasive BCI technology, if successful, would bring such much-needed technology to numerous patients and even potentially to the general population.
However, BCIs that use noninvasive external sensing, rather than brain implants, receive "dirtier" signals, leading to current lower resolution and less precise control. Thus, when using only the brain to control a robotic arm, a noninvasive BCI doesn't stand up to using implanted devices. Despite this, BCI researchers have forged ahead, their eye on the prize of a less- or non-invasive technology that could help patients everywhere on a daily basis.
Bin He, Trustee Professor and Department Head of Biomedical Engineering at Carnegie Mellon University, is achieving that goal, one key discovery at a time.
"There have been major advances in mind-controlled robotic devices using brain implants. It's excellent science," says He.

"But noninvasive is the ultimate goal. Advances in neural decoding and the practical utility of noninvasive robotic arm control will have major implications on the eventual development of noninvasive neurorobotics."

Using novel sensing and machine learning techniques, He and his lab have been able to access signals deep within the brain, achieving a high resolution of control over a robotic arm. With noninvasive neuroimaging and a novel continuous pursuit paradigm, He is overcoming the noisy EEG signals leading to significantly improve EEG-based neural decoding, and facilitating real-time continuous 2D robotic device control.

The technology is directly applicable to patients, and the team plans to conduct clinical trials in the near future. The image is credited to College of Engineering, Carnegie Mellon University.

Using a noninvasive BCI to control a robotic arm that's tracking a cursor on a computer screen, for the first time ever, He has shown in human subjects that a robotic arm can now follow the cursor continuously. Whereas robotic arms controlled by humans noninvasively had previously followed a moving cursor in jerky, discrete motions–as though the robotic arm was trying to "catch up" to the brain's commands–now, the arm follows the cursor in a smooth, continuous path.

In a paper published in *Science Robotics,* the team established a new framework that addresses and improves upon the "brain" and "computer" components of BCI by increasing user engagement and training, as well as spatial resolution of noninvasive neural data through EEG source imaging.

The paper, "Noninvasive neuroimaging enhances continuous neural tracking for robotic device control," shows that the team's unique approach to solving this problem not enhanced BCI learning by nearly 60% for traditional center-out tasks, it also enhanced continuous tracking of a computer cursor by over 500%.

The technology also has applications that could help a variety of people, by offering safe, noninvasive "mind control" of devices that can allow people to interact with and control their environments. The technology has, to date, been tested in 68 able-bodied human subjects (up to 10 sessions for each subject), including virtual device control and controlling of a robotic arm for continuous pursuit. The technology is directly applicable to patients, and the team plans to conduct clinical trials in the near future.

"Despite technical challenges using noninvasive signals, we are fully committed to bringing this safe and economic technology to people who can benefit from it," says He. "This work represents an important step in noninvasive brain-computer interfaces, a technology which someday may become a pervasive

assistive technology aiding everyone, like smartphones."

Funding: This work was supported in part by the National Center for Complementary and Integrative Health, National Institute of Neurological Disorders and Stroke, National Institute of Biomedical Imaging and Bioengineering, and National Institute of Mental Health.

"Noninvasive neuroimaging enhances continuous neural tracking for robotic device control". B. J. Edelman, J. Meng, D. Suma, C. Zurn, E. Nagarajan, B. S. Baxter, C. C. Cline and B. He. Science Robotics. *doi:10.1126/scirobotics.aaw6844.*

10 Conflicts to Watch in 2019

By Robert Malley

Source: https://foreignpolicy.com/2018/12/28/10-conflicts-to-watch-in-2019-yemen-syria-afghanistan-south-sudan-venezuela-ukraine-nigeria-cameroon-iran-israel-saudi-arabia-united-states-china-kurds-ypg/

December 2018 – In a world with fewer rules, the only truly effective one is knowing what you can get away with. The answer today, it turns out, is: quite a lot.

As the era of largely uncontested U.S. primacy fades, the international order has been thrown into turmoil. More leaders are tempted more often to test limits, jostle for power, and seek to bolster their influence—or diminish that of their rivals—by meddling in foreign conflicts. Multilateralism and its constraints are under siege, challenged by more transactional, zero-sum politics.

Instruments of collective action, such as the United Nations Security Council, are paralyzed; those of collective accountability, including the International Criminal Court, are ignored and disparaged.

Nostalgia can be deceptive. Too fond a portrayal of the era of Western hegemony would be misleading. Iraq's chemical weapons use against Iran in the 1980s; the 1990s bloodletting in Bosnia, Rwanda, and Somalia; the post-9/11 wars in Afghanistan and Iraq; Sri Lanka's brutal 2009 campaign against the Tamils; and the collapse of Libya and South Sudan: all these happened at a time of—in some cases because of—U.S. dominance and a reasonably coherent West. A liberal and nominally rules-based order hardly stopped those setting the rules from discarding them when they saw fit. The erosion of Western influence, in short, looks different from Moscow, Beijing, and the developing world than it does from Brussels, London, or Washington.

Still, for better and for worse, U.S. power and alliances have for years shaped international affairs, set limits, and structured regional orders. As the West's influence declines, accelerated by U.S. President Donald Trump's contempt for traditional allies and Europe's struggles with Brexit and nativism, leaders across the world are probing and prodding to see how far they can go.

In their domestic policies, many of those leaders embrace a noxious brew of nationalism and authoritarianism. The mix varies from place to place but typically entails rejection of international institutions and rules. There is little new in the critique of an unjust global order. But if once that critique tended to be rooted in international solidarity, today it stems chiefly from an inward-looking populism that celebrates narrow social and political identity, vilifies minorities and migrants, assails the rule of law and independence of the press, and elevates national sovereignty above all else.

Trump may be the most visible of the genre, but he is far from the most extreme. The wind is in the sails of strongmen worldwide. They realize, at times perhaps to their surprise, that constraints are crumbling, and the behavior that results often fuels violence or crises.

Myanmar's mass expulsion of 700,000 Rohingya, the Syrian regime's brutal suppression of a popular uprising, the Cameroonian government's apparent determination to crush an Anglophone insurgency rather than tackle the grievances fueling it, the Venezuelan government's economic warfare against its own people, and the silencing of dissent in Turkey, Egypt, and elsewhere are but a few examples. All are motivated in part by what leaders perceive as a yellow light where they used to see solid red.

Beyond their borders, these leaders test norms, too. Having annexed parts of Georgia and Crimea and stoked separatist violence in Ukraine's Donbass region, Russia is now throwing its weight around in the Sea of Azov, poisoning dissidents in the United Kingdom, and subverting Western democracies with cyberwarfare. China obstructs freedom of navigation in the South China Sea and arbitrarily detains Canadian citizens—including the International Crisis Group's Michael Kovrig. Saudi Arabia has pushed the envelope with the war in Yemen, the kidnapping of a Lebanese prime minister, and the gruesome murder of dissident journalist Jamal Khashoggi in its consulate in Istanbul. Iran plots attacks against dissidents on European soil. Israel feels emboldened to undermine ever more systematically the foundations of a possible two-state solution.

Such actions are hardly new or equal in magnitude. But they are more brazen and overt. They have this much in common: They start with the assumption that there will be few consequences for breaches of international norms.

The U.S. government has hardly been an innocent bystander. Trump's disdain for human rights and penchant for transactional diplomacy have set a strikingly negative tone. So too has his flouting of America's international commitments: tearing up the Iran nuclear deal and, worse, threatening to impose economic punishment on those who choose to abide by it; hinting he will leave the Intermediate-Range Nuclear Forces Treaty if U.S. demands are not met rather than working within it to press Russia to comply; and signaling, through attacks on the International Criminal Court and chest-thumping speeches about U.S. sovereignty, that Washington regards its actions and those of its friends as beyond accountability.

The danger of today's free-for-all goes beyond the violence already generated. The larger risk is of miscalculation. Overreach by one leader convinced of his immunity may prompt an unexpected reaction by another; the ensuing tit for tat easily could escalate without the presence of a credible, willing outside power able to play the role of arbiter.

True, not everyone gets away with everything all the time. Bangladesh seemed poised to forcibly return some Rohingya refugees to Myanmar but stopped, almost certainly in response to international pressure. The feared Russian-backed reconquest of Idlib, the last rebel stronghold in Syria, has, for now, been averted, in no small measure due to Turkish, European, and U.S. objections. The same is true (again: for the time being) when it comes to a potential Saudi-led offensive on the Yemeni port of Hodeidah, with Riyadh and Abu Dhabi largely deterred by warnings about the humanitarian impact and cost to their international standing.

Elsewhere, leaders anticipating impunity have been taken aback by the severity of the response: Russian President Vladimir Putin, for example, by the stiff sanctions and show of united resolve that Western powers have maintained since Moscow's annexation of Crimea and the killing of its former agent on British soil; Saudi Crown Prince Mohammed bin Salman by the outrage that followed Khashoggi's murder.

Overall, though, it is hard to escape the sense that these are exceptions that prove the absence of rules. The international order as we know it is unraveling, with no clear sense of what will come in its wake. The danger may well lie less in the ultimate destination than in the process of getting there. As the following list of 10 Conflicts to Watch in 2019 amply illustrates, that road will be bumpy, and it will be perilous.

1. Yemen

If one place has borne the brunt of international lawlessness over the past year it is Yemen. The humanitarian crisis there—the world's worst—could deteriorate further in 2019 if the key players do not seize the opportunity created over the past weeks by U.N. Special Envoy Martin Griffiths in achieving a partial cease-fire and encouraging a series of confidence-building steps.

After more than four years of war and a Saudi-led siege, almost 16 million Yemenis face "severe acute food insecurity," according to the U.N. That means one in two Yemenis doesn't have enough to eat.

Fighting started in late 2014, after Houthi rebels expelled the internationally recognized government from the capital. It escalated the following March, when Saudi Arabia, together with the United Arab Emirates, began bombing and blockading Yemen, aiming to reverse the Houthis' gains and reinstall the dislodged government. Western powers largely endorsed the Saudi-led campaign.

In late 2018, Yemeni militias backed by the United Arab Emirates surrounded Hodeidah, a Houthi-controlled port, through which aid for millions of starving Yemenis passes. The coalition appeared determined to move in, convinced that taking the port would crush the rebellion and make the Houthis more pliant. But the consequences of such an offensive would be almost unimaginable. The top U.N. relief official, Mark Lowcock, has warned it could provoke a "great big famine." That, and the fallout from Khashoggi's murder, prompted Western powers to begin restraining the Gulf coalition. On Nov. 9, the United States announced it would no longer refuel coalition jets conducting air raids in Yemen. A month later, Griffiths, with Washington's help, reached the "Stockholm agreement" between the Houthis and the Yemeni government, including a fragile cease-fire around Hodeidah.

There are other glimmers of light. U.S. pressure to end the conflict could intensify in 2019. The Senate has already voted to consider legislation barring all U.S. involvement in the war.

Once the Democrats assume control of the House of Representatives in January 2019, they could move more aggressively in this direction.

That and more will be needed to end the Yemen war or at least avoid it taking another turn for the worse. All parties—the Houthis and their Yemeni adversaries, but also the Saudis and Emiratis—seem to believe that time is on their side. Only pressure from Europe, Oman, and Iran on the Houthis; from the United States on Saudi Arabia and the UAE; from those two Gulf countries on the Yemeni government; and from Congress on the U.S. administration stands a chance of making a difference.

2. Afghanistan

If Yemen is the world's worst humanitarian disaster, Afghanistan suffers its deadliest fighting. In 2018, by one tally, the war killed more than 40,000 combatants and civilians. Trump's reported decision in mid-December that half of U.S. forces in Afghanistan would leave brought further unease. In principle, Washington's signal that it is ready to pull out could advance diplomatic efforts to end the war by focusing belligerents' and regional actors' minds. But the ad hoc nature of the decision—seemingly made without looping in top officials—and the specter it raises of the United States cutting and running could bode badly for the coming year.

In 2018, the war exacted a higher toll than at any time since the Taliban were ousted from Kabul more than 17 years ago.

A three-day cease-fire in June, which the Taliban and the government enforced and which prompted joyous celebration by fighters and civilians alike, offered a short respite, though fighting resumed immediately afterwards. Taliban fighters now effectively control perhaps half the country, cutting off transport routes and laying siege to cities and towns. A sharp uptick in U.S. airstrikes has not curbed their momentum.

In September, Washington appointed the veteran diplomat Zalmay Khalilzad as an envoy for peace talks—a welcome sign that it was prioritizing negotiations to end the war. Taliban leaders appear to be taking the talks seriously, though the process is stuck over their continued insistence that the United States commit to a timeline for full withdrawal of international forces as a precondition for a wider peace process involving other Afghan factions, a sequence that would be a win for the Taliban while saddling other Afghans with uncertainty.

Only days after Khalilzad's latest talks with the Taliban came Trump's bombshell. Withdrawing 7,000 troops in itself will probably not be militarily decisive. Indeed, there could be value to the United States making clear it is serious about bringing troops home. All sides understand that a rapid pullout could provoke a major new civil war, an outcome nobody, including the Taliban, wants. With a U.S. drawdown in the cards, the Taliban's suspicion about Washington's motives might ease, propelling talks forward.

Neighboring countries and others involved in Afghanistan—notably Iran, Pakistan, Russia, and China—all want the Americans out eventually, but none of them wants a precipitous withdrawal. They may be more inclined to support U.S. diplomacy if they believe that Washington will eventually give up its strategic foothold in South Asia. Trump's announcement could therefore spur them to help end the war, but regional powers could just as easily increase their meddling by doubling down on Afghan proxies to hedge their bets.

Unfortunately, the rashness of Trump's decision risks outweighing any potential silver lining. Its timing appeared to catch everyone—from Khalilzad and top U.S. military chiefs to the Afghan government—off guard. The fact that it was not coordinated with Khalilzad meant that the envoy could not extract any concessions from the Taliban in return for such a key pledge that partially addressed their core demand. In Kabul, the sense of betrayal was palpable. A few days later, Afghan President Ashraf Ghani nominated two hard-line anti-Taliban officials as his defense and interior ministers, suggesting a move away from his compromising tone of the past year.

The festivities that greeted the June cease-fire revealed broad support for peace, and there are signs that the war's core protagonists are open to a settlement. But that was always an uncertain bet. Trump's decision has only added to the uncertainty.

3. U.S.-Chinese Tensions

The standoff between China and the United States is not a deadly conflict, no matter how bitter the trade war between Washington and Beijing has become. Still, rhetoric between the two is increasingly bellicose. If relations, already at their lowest ebb since the Tiananmen protests almost three decades ago, continue to deteriorate, the rivalry could have graver geopolitical consequences than all of the other crises listed this year.

In a deeply divided Washington, one position that wins bipartisan consensus is that China is an adversary with which the United States is inexorably locked in strategic competition.

Most U.S. policymakers concur that Beijing has exploited institutions and rules to its own end—joining the World Trade Organization or signing up to the U.N. Convention on the Law of the Sea, for example, even as it acts inconsistently with the spirit of both. President Xi Jinping's ending of term limits, rapid expansion of China's military, and extension of the Communist Party's control across state and society confirm to many in Washington the dangerous turn the country has taken under his stewardship. The U.S. government's 2018 National Defense Strategy cites "inter-state strategic competition" as its primary concern, with China and Russia named as primary competitors, after many years in which terrorism took the top spot.

Heightening the sense of lawlessness is Beijing's unjust detention of three Canadians—including one of my colleagues, the Northeast Asia expert Michael Kovrig—widely seen as a tit for tat for Canada's arrest of Huawei executive Meng Wanzhou, wanted for Iran sanctions violations by the United States, with which Canada has an extradition treaty.

In reality, China likely has no short-term desire to fundamentally challenge the world order. Nor will it match Washington's global clout anytime soon, provided the Trump administration takes steps to stop hemorrhaging allies and credibility. But Beijing is ever readier to throw its weight around in multilateral institutions and its region. In Asia, it expects a Chinese sphere in which neighbors are sovereign but deferential. U.S. policymakers mostly regard such an arrangement as inimical to U.S. alliances and interests.

Mounting U.S.-Chinese tension has implications for conflicts in Asia and beyond. For the two superpowers, pooling efforts to end crises has never been easy. An increasingly bitter rivalry would make it much harder. China would be less likely to back either tougher sanctions against North Korea, if stuttering talks between Washington and Pyongyang break down, or U.S. diplomatic efforts in Afghanistan.

Risks of direct conflict remain slim, but the South China Sea is a troubling flash point. The past two decades have seen occasional run-ins between Chinese forces and U.S. planes. Beijing stakes claim to 90 percent of the South China Sea, stopping mere miles from the Vietnamese, Malaysian, and Philippine coastlines, and has aggressively built bases on strategic natural and man-made islands. From Beijing's perspective, such maneuvers are standard operating procedure for what Xi calls a "big country." China wants what the United States has: pliant neighbors, influence around its periphery, and the capacity to control its sea approaches and transport lanes. Others, of course, see it differently. The smaller Southeast Asian nations object, and some look to Washington for protection.

Beijing and Washington could reach some form of trade deal in the months ahead, which would help ease tensions. But any respite is likely to be short-lived. On both sides, leaders believe a long-festering geopolitical and economic clash has reached a point of rupture.

4. Saudi Arabia, the United States, Israel, and Iran

Much like 2018, 2019 presents risks of confrontation—deliberate or inadvertent—involving the United States, Saudi Arabia, Israel, and Iran. The first three share a common view of the government in Tehran as a threat that has been emboldened for too long and whose regional aspirations need curbing. For Washington, this has translated into withdrawal from the 2015 nuclear deal, the restoration of sanctions, more aggressive rhetoric, and threats of powerful retaliation in the event of Iranian provocation. Riyadh has embraced this new tone, and— mainly in the voice of Crown Prince Mohammed bin Salman—suggested it will fight back and seek to counter Iran in Lebanon, Iraq, and Yemen, and even on Iranian soil. Israel has focused on Syria, where it has regularly struck Iranian and Iranian-aligned targets, but it has also threatened to target the Iranian-backed militant group Hezbollah in Lebanon.

So far, Iran—confident in long-term trends and deterred by the possibility of retaliation—has opted to hunker down. While it has resumed missile testing, and the United States has accused it of using its Shiite proxies in Iraq to threaten the U.S. presence there, its response appears calculated not to invite a harsh reply. But as economic pressure builds on Iran, this posture may not last. Moreover, the risk of an accidental clash originating in Yemen, in the Persian Gulf, in Syria, or in Iraq cannot be discounted.

The main source of tension, so far, has been the U.S. withdrawal from the nuclear deal and the reimposition of secondary sanctions against countries engaged in business with Tehran. That Iran has not responded in kind to what it describes as economic warfare owes much to the efforts of the deal's other signatories, namely European countries, Russia, and China. Their attempts to preserve a modicum of space for trade coupled with their continued diplomatic engagement with Tehran have given sufficient reason for Iran's leaders to adhere to the terms of the deal. Those leaders also seem to be hoping for a one-term Trump presidency.

This calculus could change. While U.S. and Saudi hopes that sanctions will force Iran to modify its disruptive behavior or prompt regime change almost certainly will be disappointed, the economic squeeze is hurting ordinary Iranians. As more pain is inflicted on Iran's citizens, hard-line voices urging the Islamic Republic to eschew the agreement will grow louder

As more pain is inflicted on Iran's citizens, hard-line voices urging the Islamic Republic to eschew the agreement will grow louder, especially as jockeying for President Hassan Rouhani's and, possibly, Supreme Leader Ali Khamenei's posts heat up. Even if they comply with nuclear constraints, the temptation could grow in Tehran to make Washington pay a price for its actions by taking aim at its presence in the region, for example by encouraging attacks by Iraqi Shiite militias against U.S. targets in Iraq.

Hostility between Saudi Arabia and Iran is playing out in proxy struggles across the Middle East, from Yemen to Lebanon. Any of these conflicts could escalate. Yemen is arguably the most dangerous. Should a Houthi missile inflict casualties in a Saudi city or if the Houthis target international commercial shipping in the Red Sea—a move they have long threatened to make—the conflict could enter a far more dangerous phase.

In Syria, Israel has so far been adept at striking Iranian targets without prompting a wider war. Iran, no doubt aware of the potential cost of such escalation, calculates that it can absorb such attacks without endangering its deeper interests and longer-term presence in Syria. But the Syrian theater is congested, Iranian forbearance is not limitless, and the likelihood of a miscalculation or an attack gone awry remains a risk.

Hanging over these dynamics will be continued reverberations of the October assassination of Khashoggi. The murder amplified criticism in the United States of both Saudi foreign policy and the seemingly unconditional U.S. support for it. These feelings will intensify next year as Democrats assume control of the House. One can only hope this leads to stronger U.S. pressure on Riyadh to end the war in Yemen and to greater congressional scrutiny of U.S. and Saudi escalatory policies toward Iran.

A Syrian child walks past the rubble of destroyed buildings in an opposition-held neighborhood of the southern city of Daraa on Oct. 2. (Mohamad Abazeed/AFP/Getty Images)

5. Syria

As 2018 came to a close, it looked as if the Syrian conflict would continue along the same path. It seemed that the regime of Bashar al-Assad, with Iranian and Russian help, would win its battle against the opposition. The war against the Islamic State would approach the finish line. Foreign actors would maintain a fragile equilibrium in various parts of the country: among Israel, Iran, and Russia in the southwest; Russia and Turkey in the northwest; and the United States and Turkey in the northeast. But with a mid-December phone call to Turkish President Recep Tayyip Erdogan announcing the withdrawal of U.S. troops, Trump upended that balance; increased the odds of a bloody conflict involving Turkey, its Syrian allies, Syrian Kurds, and the Assad regime; and, in so doing, potentially gave the Islamic State a new lease on life by fueling the chaos on which it thrives.

The Trump administration's earlier policy of indefinitely retaining a military presence in Syria was always of questionable value. It was unclear how 2,000 U.S. troops could curb Iranian influence or create meaningful pressure on the Assad regime. The fight against the Islamic State is not over, but it need not require maintaining U.S. troops on the ground. That said, a precipitous withdrawal presents one major risk: It will leave the People's Protection Units (YPG)—the Kurdish-dominated armed group that partnered with U.S. forces against the Islamic State and now controls roughly one-third of Syrian territory—perilously exposed.

The YPG could now face an attack from Turkey (which considers it a terrorist organization due to its affiliation with the Kurdistan Workers' Party, or PKK) or by the Assad regime (which aims to reassert control over the entirety of the country, including the oil-rich northeast). Should disorder ensue, the Islamic State could seize the opportunity to stage a comeback by regrouping and recapturing some of the territory it has lost over the past two years.

In short, the real question for the United States should not have been whether to stay or go, but under what timetable and what conditions to withdraw.

Both the United States and Russia should have an interest in preventing an all-out scramble for the territory abandoned by the United States because it could revitalize the Islamic State and because (from Russia's perspective) it could result in Turkey controlling more of Moscow's ally's land. Averting this scenario will require Washington and Moscow (separately or in tandem) to persuade Turkey not to launch an assault on YPG-held territory, to persuade the YPG to lower its armed profile, and to facilitate a deal between Damascus and the YPG that entails the return of the Syrian government to the northeast coupled with a degree of Kurdish self-rule in the area. Such an outcome would simultaneously allow Syria to restore its sovereignty, reassure Turkey by

limiting YPG authority and firepower, and protect the Kurds from military attack. It might be too late to achieve this goal. It is not too late to try.

6. Nigeria

Nigerians will go to the polls in February 2019 to elect a president and new federal legislature, and again in March to choose state governors and lawmakers. Nigerian elections are traditionally violent affairs, and conditions this time around are particularly combustible.

The presidential contest between incumbent Muhammadu Buhari and his main rival, former Vice President Atiku Abubakar, will be hard fought. Relations between Buhari's ruling All Progressives Congress and Abubakar's People's Democratic Party—which governed for 16 years until Buhari came to power—are as acrimonious in the capital as they are in hots pots across the country. Disputes between Buhari and the leaders of parliament's two chambers, both of whom defected from the ruling party in July, delayed funding for the electoral commission and security agencies, hindering election preparations. The opposition's distrust of both the commission and security forces heightens risks of protests during and after the vote. Such protests have a troubled precedent: Demonstrations after the 2011 polls morphed into attacks on minorities across northern Nigeria in which more than 800 people died.

The election comes atop other challenges. Levels of violent crime and general insecurity remain high across much of the country. Civilians in parts of the northeast bear the brunt of the brutal conflict between government troops and a resilient Islamist Boko Haram insurgency. One militant faction, known as Islamic State West Africa Province, appears to be gaining ground. Violence in Nigeria's Middle Belt this past year between predominantly Muslim herders and mostly Christian farmers escalated to unprecedented levels, killing approximately 1,500 people. Though that bloodshed has calmed over past months, it has frayed intercommunal relations—especially between Muslims and Christians—in those areas, which are likely to see fiercely fought elections, as ballots from there could swing the national presidential vote.

Already, politicians are stoking divisions for political ends, including by using inflammatory, identity-based language against rivals. In the oil-rich Niger Delta, too, tensions between locals and the federal government could boil over this year, given simmering anger at the latter's failure to fulfill pledges to clean up oil pollution, build infrastructure, and increase social investment over the past few years.

The immediate priority for the government must be to avert an election crisis by beefing up security in vulnerable states and taking steps to ensure that security forces act impartially, while all parties pledge to campaign peacefully and handle disputes lawfully. That in itself will not resolve Nigeria's many problems. But it would be a necessary start.

7. South Sudan

Since South Sudan's civil war erupted five years ago, 400,000 people have died. In September, President Salva Kiir and his main rival, the former vice president-turned rebel leader Riek Machar, signed an agreement to hold fire and rule together until elections in 2022. The deal satisfies—for now at least—the two antagonists' interests and those of Presidents Omar al-Bashir of Sudan and Yoweri Museveni of Uganda, the two regional leaders with the most sway in South Sudan. Most importantly, it has reduced violence. For now, this is reason enough to support the accord. Yet the odds remain stacked against it ushering in a new era of stability.

First, the deal is worryingly similar to a pact the two men signed in August 2015, which collapsed the following year, triggering a surge in fighting. By envisaging elections in 2022, the deal perpetuates the Kiir-Machar rivalry until then, paving the way for another showdown.

It also remains a work in progress. Most alarming, security arrangements for Juba, the capital, remain contested, as do plans for unifying a national army.

In Sudan, meanwhile, Bashir faces what could be a serious challenge to his own rule. In mid-December, protesters took to the streets in many towns and cities decrying high prices and urging the president to step down. The protests' endgame is unclear. But a prolonged crisis in its northern neighbor could be hugely destabilizing for South Sudan.

Finally, donors, wary of funding deals that have collapsed in the past, are now mostly sitting on the sidelines. The United States, which until recently spearheaded Western diplomacy in

South Sudan, has stepped back. Others are waiting to see tangible steps forward by Kiir and Machar before opening their checkbooks.
Such caution is understandable. But if this deal fails, it is not clear what would replace it, and the country could collapse into major bloodshed again. Some form of third-party shuttle diplomacy among regional heads of state, who back different sides and largely focus on protecting their own short-term interests, will be necessary. An envoy, clearly backed by Western and other actors outside the region, might help keep regional leaders focused on ensuring the deal does not fall apart, as well as build consensus for a wider settlement that shares power across South Sudan's groups and regions. Without that, the fragile opportunity for peace that currently exists could evaporate.

8. Cameroon

A crisis in Cameroon's Anglophone areas is on the verge of escalating into civil war and destabilizing a country that was once considered an island of relative calm in a troubled region.
The tempo of the crisis has escalated steadily since 2016, when Anglophone teachers and lawyers took to the streets to protest the creeping use of French in the education and legal systems. Their demonstrations morphed into wider protests over the marginalization of Cameroon's English-speaking minority, which represents about one-fifth of the country's population. The government refused to acknowledge the Anglophones' grievances or engage their leaders as security forces violently repressed protests and jailed activists.
The response fueled Anglophones' anger at the central government, pushing many protesters who had initially called only for autonomy and rights into the arms of separatist groups, whose attacks started in late 2017. A disputed presidential election this October, which President Paul Biya, aged 85 and in power for 36 years, won and in which few Anglophones voted, hardly helped.
Nearly 10 separatist militias now battle government forces, while two organizations provide direction from abroad: the interim government of Ambazonia (the putative name of the self-proclaimed Anglophone state) and the Ambazonia Governing Council. The separatists are pitted not only against Cameroonian security forces, but also against pro-government "self-defense" groups. Criminal gangs in Anglophone areas have taken advantage of the chaos to expand their activities.
According to the International Crisis Group's estimates, fighting has already killed nearly 200 soldiers, gendarmes, and police officers, with some 300 injured, and killed more than 600 separatists. At least 500 civilians have died in the violence. The U.N. counts 30,000 Anglophone refugees in Nigeria and 437,000 internally displaced in Cameroon.
Defusing the crisis will first require confidence-building measures. These should include the government's release of all political detainees, including separatist leaders; a pledge from both sides to implement a cease-fire; and support for a planned Anglophone conference, which would allow Anglophones to select leaders to represent them in negotiations. These steps could pave the way for talks between the government and Anglophone leaders, followed by some form of national dialogue in which options for decentralization or federalism would be on the table.
Cameroonian authorities made a welcome move in mid-December when they released 289 Anglophone detainees, though hundreds, including separatist leaders, are still behind bars. It remains unclear whether this signal a genuine change of heart by the government, which has appeared determined to crush insurgents rather than address Anglophone concerns. Nor is it clear whether the release can, on its own, persuade hard-line separatists to talk rather than fight.
Without meaningful, mutual compromise, Cameroon is in danger of sliding toward a major and destabilizing conflict.

9. Ukraine

The war in Ukraine continues to smolder with no end in sight. Sparked by Russia's 2014 annexation of Crimea and its subsequent support for separatists in Ukraine's eastern Donbass region, it also fuels the wider geopolitical standoff between Russia and Western powers. The latest flash point is the Sea of Azov, where in November Russian and Ukrainian

vessels clashed and Russia effectively blocked access to the Kerch Strait, at the mouth of the sea. The confrontation suggests that neither side sees any advantage in compromising.

As Kiev sees it, the attack on Ukrainian military ships and seizure of two dozen sailors is the culmination of months of Russian attempts to squeeze Ukrainian boats out of those waters, violating a 2003 bilateral treaty that guarantees both countries free shipping. Moscow claims the boats were entering its coastal waters and that Ukrainian President Petro Poroshenko provoked the skirmish to shore up Western backing and his domestic base ahead of presidential elections scheduled for March 2019. Poroshenko's subsequent efforts to introduce martial law didn't help; the Kremlin, together with the president's domestic critics, painted it as a political stunt. Either way, the incident clearly showcased Moscow's newfound willingness to use overt force against Ukraine.

Meanwhile, fighting in the Donbass continues, and civilians living along front lines—abandoned by both Kiev and the separatists—are paying the price. Neither Ukraine nor Russia has taken steps to end the war. Kiev refuses to devolve power to Donbass—something it pledged to do as part of the Minsk agreements that set out a path to end the war—until Russia withdraws arms and personnel from separatist-held areas, which Moscow shows scant willingness to do. Proposals for possible peacekeeping missions have not gone far.

Absent a meaningful shift in tack by either side, 2019 will most likely see more of the same. Kiev is unlikely to budge before elections (in addition to the presidential vote, parliamentary polls are due before the year's end). Russia may chafe at the cost of keeping separatist-held areas afloat, but it is unlikely to give up influence in the Donbass any time soon. The Ukrainian elections or domestic developments in Russia might bring opportunities for peacemaking. But as the Azov spat shows, the danger of escalation is ever present.

10. Venezuela

Home to enormous oil reserves, Venezuela ought to be the envy of its neighbors. Instead Latin America is watching apprehensively as the country's implosion threatens to provoke a regional crisis.

Venezuela's economy is in freefall, with a devastating social impact. Poverty and malnutrition are rampant. Once-eradicated diseases, such as diphtheria, have made a comeback. Some 3 million of Venezuela's 31 million people have fled the country, primarily to Colombia and other neighbors. The U.N. expects that number to climb to 5.3 million by the end of 2019.

President Nicolás Maduro's ruling clique, having badly mismanaged the economy, now refuses to admit the depth of Venezuela's agony or accept most humanitarian relief. The government has dismantled the country's institutions, stripping the opposition-controlled parliament of its powers and stage-managing the election of a rubber-stamp legislature in its place. On Jan. 10, 2019, Maduro will start a second term, though neither his domestic opponents nor much of the outside world consider his re-election credible. For its part, the opposition is paralyzed by infighting, with a vocal faction (mostly in exile) calling upon foreign powers to topple Maduro by force.

Venezuela's neighbors are struggling to accommodate the influx of people fleeing and anxious at the prospect of more. One barometer of Latin American impatience is the stance of Luis Almagro, the secretary-general of the Organization of American States: In September, he said the region "should not exclude any option," implying a military intervention could be coming. The Trump administration has made similar hints. Such talk may be just that, and one of Maduro's strongest critics, new Colombian President Iván Duque, disavowed it in October—fortunately, given that external military action would almost certainly provoke further chaos.

There are few good policy options. The United States and Europe have targeted Maduro's inner circle with sanctions, with Washington adding financial restrictions, though broader trade penalties are inadvisable, as they would harm the population. Peru and others suggest cutting diplomatic ties, but that would isolate Venezuelans as their plight worsens.

If concerned outsiders are to help while discouraging talk of armed intervention, they should press for a peaceful transition, likely involving negotiations on political and economic reform between the government and opposition and some form of transitional administration. Maduro has little incentive to agree to such a step, of course. But Latin American leaders

could increase the pressure by imposing their own sanctions on top Venezuelan officials, to be lifted if the government complies (although such regional sanctions would be almost unprecedented).
Without such steps, Venezuela's collapse remains possible, and the suffering of its people looks set to continue, with the country's neighbors left to pick up the pieces.

***Robert Malley** is president and CEO of the International Crisis Group. He served as a special assistant for the Middle East under President Barack Obama.*

Venues 'Still Too Vulnerable to Attack'

Source: https://www.bbc.com/news/uk-england-manchester-48678526

June 19 – A former National Counter Terrorism Coordinator has told the BBC that the **British government is not doing enough to ensure that venues are secure.**
Nick Aldworth has warned new legislation is needed to reduce the impact of any future attack. He is supporting a campaign for more rigorous checks at venues, under the name Martyn's Law, after Martyn Hett, a victim of the Manchester Arena attack.
He said such a law could have prevented the spate of attacks in the UK in 2017. At the time, Mr Aldworth was a Metropolitan Police chief superintendent in charge of keeping Londoners safe.
At the moment, venues such as theatres, cinemas, and concert halls do not have any legal obligation to put counter terrorism security in place, or to plan for what they would do in the event of an attack.
"I think that without being specific - because there are coroners' inquests under way at the moment - I think there are definitely some places that could have benefitted from some infrastructure," Mr Aldworth continued.
"But one of the things I was told after one of the attacks by a survivor... was she was in a restaurant and nobody knew what to do."
Many places do have bag checks and security screening but Mr Aldworth said it was not the case everywhere, and that some venues were "reckless and negligent".

Source: https://www.terrorism-info.org.il/app/uploads/2019/06/E_130_19.pdf

Did you ever wonder what it was like in the head of a terrorist?

Have you ever wondered what it would be like to infiltrate the mind of a terrorist and understand his every move?
Our series *Interview with a Terrorist* explores these issues from the eyes of Younes Delefortrie, a convicted ISIS terrorist, who features in Clarion's upcoming film *Kids: Chasing Paradise*.
Click here to watch Delefortrei justify terrorism.

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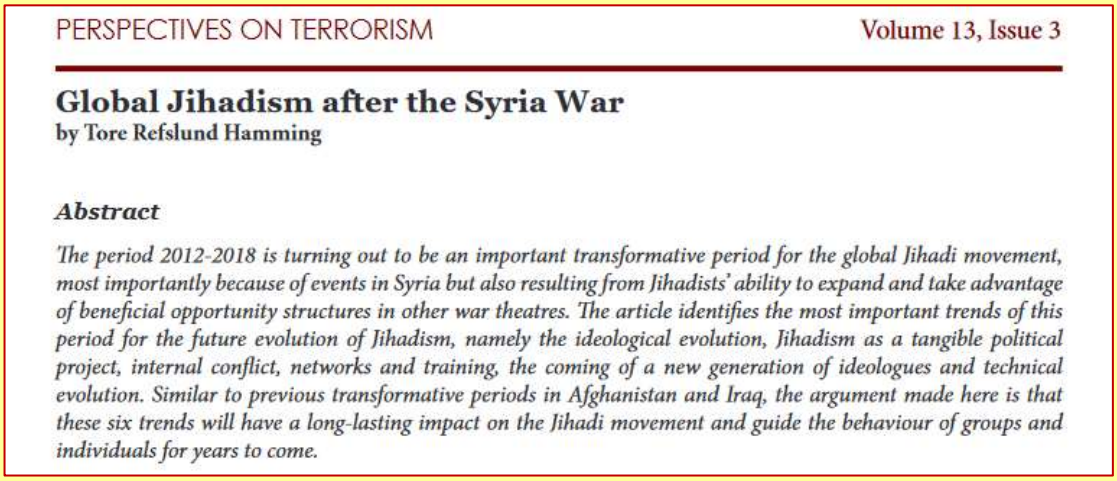
Counterterrorism Bookshelf: 62 Books on Terrorism and Counter-Terrorism-Related Subjects
Reviewed by Joshua Sinai
Book Review: J.M. Berger, Extremism. (The MIT Press, Essenial Knowledge Series 2018)
Reviewed by Daniela Scerri
Recent Online Resources for the Analysis of Terrorism and Related Subjects
Compiled and selected by Berto Jongman
115+ Academic Theses (Ph.D. and MA) on the Role of the Internet in Facilitating and Combating Radicalization, Extremism, Terrorism and Cyber-Terrorism, written in English between 1995 and 2019
Compiled and selected by Ryan Scrivens



PERSPECTIVES ON TERRORISM Volume 13, Issue 3

Global Jihadism after the Syria War

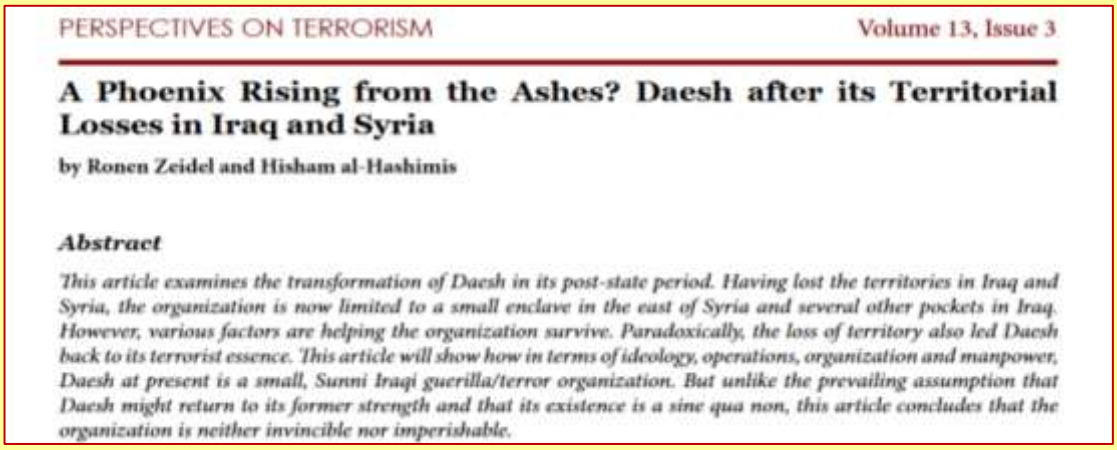
by Tore Refslund Hamming

Abstract

The period 2012-2018 is turning out to be an important transformative period for the global Jihadi movement, most importantly because of events in Syria but also resulting from Jihadists' ability to expand and take advantage of beneficial opportunity structures in other war theatres. The article identifies the most important trends of this period for the future evolution of Jihadism, namely the ideological evolution, Jihadism as a tangible political project, internal conflict, networks and training, the coming of a new generation of ideologues and technical evolution. Similar to previous transformative periods in Afghanistan and Iraq, the argument made here is that these six trends will have a long-lasting impact on the Jihadi movement and guide the behaviour of groups and individuals for years to come.

Source:https://www.universiteitleiden.nl/binaries/content/assets/customsites/perspectives-on-terrorism/2019/issue-3/01---hamming.pdf

Tore Refslund Hamming *is a Ph.D. candidate at the European University Institute working on internal conflict within the Sunni Jihadi movement.*



PERSPECTIVES ON TERRORISM Volume 13, Issue 3

A Phoenix Rising from the Ashes? Daesh after its Territorial Losses in Iraq and Syria

by Ronen Zeidel and Hisham al-Hashimis

Abstract

This article examines the transformation of Daesh in its post-state period. Having lost the territories in Iraq and Syria, the organization is now limited to a small enclave in the east of Syria and several other pockets in Iraq. However, various factors are helping the organization survive. Paradoxically, the loss of territory also led Daesh back to its terrorist essence. This article will show how in terms of ideology, operations, organization and manpower, Daesh at present is a small, Sunni Iraqi guerilla/terror organization. But unlike the prevailing assumption that Daesh might return to its former strength and that its existence is a sine qua non, this article concludes that the organization is neither invincible nor imperishable.

Source: https://www.universiteitleiden.nl/binaries/content/assets/customsites/perspectives-on-terrorism/2019/issue-3/03---zeidel--al-hashimi.pdf

Ronen Zeidel *is an Iraq and ISIS researcher in the Moshe Dayan Center, Tel Aviv University. He teaches in the University of Haifa and in the program of counter terrorism of the Interdisciplinary Center in Herzliya.*
Hisham al-Hashimi *is a senior researcher in the Al Nahrayn Center for Security and Strategic Studies, Baghdad.*

PERSPECTIVES ON TERRORISM Volume 13, Issue 3

Research Note

The Utility of Disabled Fighters in the Islamic State[1]
by Chelsea Daymon

Abstract

Traditionally, terrorism and individuals with disabilities are portrayed in roles of victimization with disabled individuals being either the target or decoy in attacks. The self-proclaimed Islamic State of Iraq and al-Sham (ISIS) has altered this concept by using individuals with disabilities for recruitment, propaganda, and mobilization purposes. This Research Note explores ISIS's use of disabled fighters through an analysis of online content, consisting of videos collected off the encrypted messaging platform Telegram, along with open-source Internet sites, bearing in mind the concepts of Entertainment-Education and the use of persuasive messaging. I argue that ISIS is using its own method of Entertainment-Education, employing persuasive narrative aimed at disabled individuals, while also using them as propaganda tools. Additionally, highlighting disabled fighters in their media products, offers disabled individuals a collective identity consisting of usefulness and agency in the group, either as recruitment spokesmen, shaming able-bodied individuals into action, or as attackers.

Source:https://www.universiteitleiden.nl/binaries/content/assets/customsites/perspectives-on-terrorism/2019/issue-3/06---daymon.pdf

Chelsea Daymonis *pursuing a Ph.D. in Justice, Law & Criminology in the School of Public Affairs at American University and is the Executive producer of The Loopcast, a podcast on national/interna-tional security, information security, and cultural affairs.*

Transparent Armor to Be Installed on Combat Vehicles

Source: https://i-hls.com/archives/92414

June 23 – Glass windows have always been a concern for defense forces. The material is simply too fragile to be confidently installed onto helicopters, airplanes, armored vehicles and other combat vehicles. Many efforts to eliminate windows as a necessity have been tested such as unmanned vehicles or manned windowless vehicles, and many of them have shown some sort of promise. In another attempt to solve the glass window problem,

the Air Force Research Laboratory have developed a transparent ceramic armor that can be fitted as windows.
The transparent armor can be installed as windows in both ground and air vehicles, and provides better ballistic protection than its traditional glass laminate counterpart. The transparent armor also comes in at less than half the weight and thickness of traditional glass laminates.
In the above picture you can see on the left the exit whole created by a projectile in ballistic glass. On the right you see a bulge, yet no exit hole created by the projectile on the transparent armor.
The transparent ceramic armor is known as ALON. The name comes from the materials it is made

from, aluminum, oxygen, and nitrogen. The material starts out as a powder that is later formed into certain shapes. In order for the material to become transparent, it goes through very high temperatures and pressure.
Phys.org reports that the United States Air Force Research Laboratory have been working on this material since 2006.
Up until fairly recently the largest ALON printed was less than 3 feet. However now, a small company known as Surmet Corporation manufactures the ALON windows. The windows manufactured today are often up to eight square feet in size.
The transparent armor is currently used on several U.S. Army helicopters such as the Black Hawk. Even NASA have been interested in using the material for windows on the International Space Station.
The next phase in ALON's evolution will be creating a curved window, however different materials will have to be used in order to accomplish this, thus probably giving ALON a different name.

US Air Force Makes Plans to "Grow" Runway Using Bacteria

Source: https://i-hls.com/archives/92361

June 21 – Aircraft carriers play an important role in supporting the United States aerial superiority. Being able to grant aircraft the accessibility to take off and land anywhere from sea is a major benefit for any military operating near coastal areas. As useful as aircraft carriers are, they are limited. Not every plane can take off and land on the limited runway space, not to mention the fact that carriers cannot operate on land.
Being able to "pop up" a makeshift runway would be a major advantage to any air force, granting that air force the ability to safely deploy and refuel aircraft deep behind enemy lines. The United States Air Force is attempting to do just that. As part of Project Medusa, the U.S. Air Force is making efforts to "grow" aircraft runways out of bacteria.

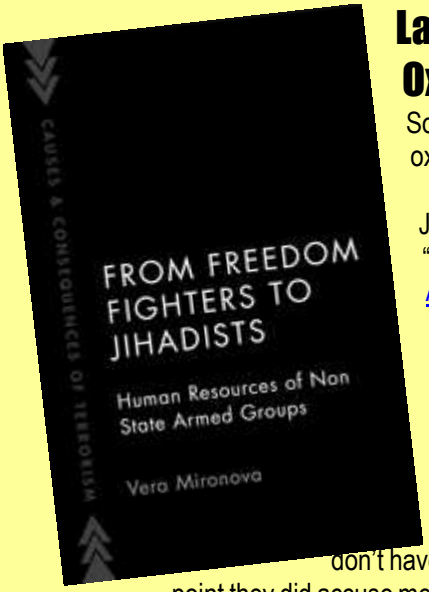
Similar to the mythological creature Medusa, that turns people into stone, the project aims to take simple materials such as dirt and bacteria, and turn it into a hard sturdy

Blue Horizons, a think tank within the U.S. Air Force, researched the feasibility of creating hardened objects out of biomatter. Blue Horizons is working with a biomanufacturing company to further the project.

The biomanufacturing company, known as BioMASON, has managed to develop a technique that **turns sand and soil into hard, sturdy surfaces.** The technique involves pouring sand into molds and adding certain bacteria. Water enriched with nutrients is then poured into the molds in order to feed the bacteria and help it grow. The bacteria then create calcium carbonate crystals that bind the sand together, making a reliable and durable brick.

The concept has gone through a few tests. Aside from the small scaled, laboratory tests to test the concept, researchers have managed to construct a 2,500 square foot prototype. The prototype proves the military feasibility of the concept, however there is no word regarding how long it would take to build a fully sized runway.

The concept is not limited only to runways. The bacteria could work as a makeshift alternative to concrete and other heavy building material that costs a lot of money to transport and use. Af.mil mentions that the biomanufacturing process can replace the need for cement, heavy equipment, and dozens of construction workers.



Launch of new book series from START and Oxford University Press

Source: https://www.start.umd.edu/news/launch-new-book-series-start-and-oxford-university-press

June 25 – The first title in the START-Oxford University Press book series, "From Freedom Fighters to Jihadists: Human Resources of Non State Armed Groups," was released this month.

The book, written by Vera Mironova, draws on her experiences being embedded with Iraqi special forces, and interviewing members of the Islamic State. Mironova uses labor market theory to explore why extremist Islamist groups were able to recruit and retain fighters.

"I have embedded in special forces units all over the world," Mironova said. "I went to Iraq, and I made an agreement with the Iraqi generals. They wondered, 'Who the heck are you?' I'm this blonde Russian girl, and they don't have women in the military. Over time their trust in me increased, though at one point they did accuse me of being an ISIS spy. I don't blame them for not trusting me, the atmosphere was so tense."

Mironova also talked about interviewing ISIS fighters before and after she was in Iraq.

"It was not hard to make contacts in ISIS," Mironova said. "There are Russian speakers among the foreign fighters on the ISIS side. First we talked about what we had in common

to build trust—where we went to school, things like that. It was a time-consuming exercise. I was in the U.S., sleeping all day and texting them all night because of the time difference to Syria."
Mironova's colleagues at START were enthusiastic about her book being the first book in the series.
"We are very excited to see the publication of Vera Mironova's 'From Freedom Fighters to Jihadists'—the first book in the new START-Oxford book series on the causes, conduct and consequences of terrorism," START Founding Director Gary LaFree said.
The book examines the internal organization of armed groups and, in particular, their human resources. Analyzing the growth of these groups through the prism of a labor market theory, the book shows that extreme Islamist groups were able to attract fighters away from more moderate groups because they had better internal organization, took better care of fighters both physically and monetarily, experienced less internal corruption, and effectively used their Islamist ideology to control recruits.
The book also builds on some of Mironova's work as a START Terrorism Research Awardee, "Labor market for rebel recruitment in Syrian Civil War," which she conducted while a doctoral candidate at the University of Maryland and a graduate research fellow at Harvard Law School, having already completed all required coursework for a doctorate in Economics at Stony Brook University, SUNY.
"Thanks to funding from DHS S&T Office of University Programs, START was able to invest in promising doctoral students through the Terrorism Research Award program," said Marcus Boyd, director of Graduate Studies at START. "Vera was one of those promising students, who is already making impactful contributions to counterterrorism policy and practice just two years following the successful completion of her degree program."

Three new research briefs offer insight to building programs that prevent violent extremism

START
NATIONAL CONSORTIUM FOR THE STUDY OF TERRORISM AND RESPONSES TO TERRORISM

June 25 – With funding from the National Institute of Justice, START affiliates at the University of Illinois at Chicago (UIC) evaluated the Muslim Public Affairs Council's (MPAC) Safe Spaces program and found that the program as implemented was not successful, but some aspects showed potential and offered lessons that could help guide other programs and policies.
In addition to a full NIJ report and forthcoming scholarly article, the researchers worked with START employees at the University of Maryland to produce three new research briefs which address:

- How can a public health framework be applied to preventing violent extremism?
- What should program designers consider to successfully develop and implement a public health approach to preventing violent extremism?
- What does a community-based organization need to successfully implement a public health approach to preventing violent extremism?

This project was conducted by Stevan Weine, Chloe Polutnik Smith, William Braniff, Max Erdemandi and Liberty Day under Award Number NIJ 2015-ZA-BX-0003.

Israeli cyber intel helped foil attacks in "dozens" of countries

Source: http://www.homelandsecuritynewswire.com/dr20190627-israeli-cyber-intel-helped-foil-attacks-in-dozens-of-countries

June 27 – Israeli cyber intelligence has helped thwart "major" terrorist attacks in "dozens" of countries, Israeli Prime Minister Benjamin Netanyahu said at a cyber-security conference in Tel Aviv on Wednesday.
Israel alerted Australian authorities about a planned Islamic State attack on an Etihad Airways flight from Sydney to Abu Dhabi, foiling an explosion in the air. Etihad is the national airline of the United Arab Emirates.

"That plane from Sydney to Abu Dhabi was going to be exploded in midair," Netanyahu said. "We found out through our cyber activities, we found out that ISIS was going to do this and so we alerted the Australian police and they stopped this, before it happened."
Israel shares information about cyber-threats and attacks with 85 countries, he explained.
"This particular incident," Netanyahu said, referencing the Etihad terror plot, "if you multiply that 50 times, that will give you an idea of the contribution that Israel has made to prevent major terrorist operations, especially from ISIS, in dozens of countries and most of those cases were foiled because of our activities in cyber-security."
Last month, Israeli intelligence services tipped off the United States on an impending Iranian attack on "U.S. interests in the Gulf." In November, Israel's intelligence agency, Mossad, provided Denmark and Sweden with the information to stop the attempted assassination of the leader of the Danish branch of an Iranian opposition group.
It was the second time in just a few months that Iran has been accused of planning a terrorist attack against an exiled Iranian opposition group on European soil. In June 2018, France, Germany, and Belgium foiled a planned attack against a meeting of thousands of Iranian opposition supporters just north of Paris that was also attended by leading U.S. figures. An Iranian diplomat, accredited to Tehran's mission in Austria, was implicated in the plot.
Following the thwarting of the Paris terror plot, Israeli media reported that the Mossad provided crucial intelligence that led to the arrest of the cell planning the attack.

Does Europe need migrants?

Source: http://www.homelandsecuritynewswire.com/dr20190626-does-europe-need-migrants

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June 26 – Decision makers often assume that higher fertility or more migration will bring solutions to the EU's demographic challenges. Yet, "an older age-structure of the population is an inevitability, but this need not be a serious problem if people in the future are better educated and participate more in the workforce than today," says Wolfgang Lutz, IIASA World Population Program director and lead scientist of the Centre of Expertise on Population and Migration (CEPAM).
CEPAM was founded by the European Commission and IIASA in response to the migration events of 2015. Despite its origins in the dramatic scenes that seized global attention, CEPAM's mission has been to focus on the long-term, providing analyses of the gradual, but consequential demographic changes taking place across the EU and the wider world.
IIASA says that CEPAM research has found that even scenarios with unrealistically high increases in fertility (+50%) or double immigration (approximately 20 million every 5 years) do not have the ability to fundamentally change the European population's age structure.
"Despite clear momentum towards aging, it is important not to overlook the increasing average number of years of active and healthy life, greater productivity, and possible loss of jobs due to technological advancements – all of which have profound implications for the future work force," explains Lutz. These changes call into question the conventional approach of only looking at the age structure of the population. By using state-of-the-art demographic modeling, CEPAM could test scenarios of various volumes and migrant education levels based on Canadian, Japanese, and other approaches. One of the main relationships to emerge from this investigation shows that migration can significantly increase total population size, but as with age structure, it has much less influence over the ratio of non-workers to workers. By contrast, expected rises in EU female labor force participation have the power to counterbalance potential increases in dependency.
The new report also covers dynamics within the EU, including movement west. Some southern and eastern Member States have already experienced marked population declines, and if trends continue, by 2060 the populations shrink by a substantial 30% or more. Such changes raise concerns about 'brain drain', or sending countries losing their talent – relevant not only in the EU, but for many countries around the world.

Globally, the report illustrates how the future of population growth largely depends on what happens with education in Africa – by far the world's most rapidly growing region. Education is a key prerequisite for empowering women to make conscious decisions about fertility.
Fertility rates in Africa are slowly moderating, but remain very high (4.7 children per woman on average) compared to all other continents. If education trends continue as they have in recent years, the world population will reach 9.6 billion people in 2060. If education stalls, followed by a similar delay in the fertility decline, the world population could reach around 11 billion. Depending on its speed, population growth has the potential to outpace infrastructure expansion, leading to an Africa that has a less educated population than it does today.
"The hope is for Africa to enter a self-reinforcing cycle of lower mortality, lower fertility, and higher development – brought on by education," says Lutz, adding, "This is exactly the recipe called for, if we are serious about sustainability and international development".
Migration policy and related fields require basic demographic foundations and fluency. To this end, the report concludes with identifying existing blind spots that can be minimized by improving demographic data and research capacity at the European level, particularly in terms of multidimensional analysis and giving more attention to Africa and other neighboring regions. This report has sought to shift migration policy away from short-term thinking, in favor of realistic and science-based planning for the long run.

— Read more in W. Lutz et al., "Demographic Scenarios for the EU: Migration, population and education," IIASA (2019).

EDITOR'S COMMENT: Just another scientific bla-bla article. I am looking to read a paper on why Africans (and not only) have so many children and Europeans do not.

Europol: Terrorism threat level in EU remains high

Source: https://sofiaglobe.com/2019/06/27/europol-terrorism-threat-level-in-eu-remains-high/

June 27 – Thirteen people died as a result of terrorist attacks in the EU in 2018. All the attacks were jihadist in nature and committed by individuals acting alone, targeting civilians and symbols of authority, Europol's 2019 EU Terrorism Situation and Trend Report, released on June 27, said.
Often, the motivation of the perpetrator and the links to other radicalised individuals or terrorist groups remained unclear. Mental health issues contributed to the complexity of the phenomenon. Completed jihadist attacks were carried out using firearms and unsophisticated, readily available weapons (for example, knives), the report said.

In addition to the completed attacks, EU member states reported 16 foiled jihadist terrorist plots in 2018, illustrating the effectiveness of counter-terrorism efforts.
"The significant number of thwarted attacks and the so-called Islamic State's continued intent to perpetrate attacks outside conflict zones indicate that the threat level across the EU remains high," Europol said.
Three disrupted terrorist plots in the EU in 2018 included the attempted production and use of explosives and chemical or biological materials. There was also an increase in the use of pyrotechnic mixtures to produce explosive devices in jihadist plots. A general increase of CBRN terrorist propaganda, tutorials and threats was observed and the barrier for gaining knowledge on the use of CBRN weapons has decreased. Closed forums proposed possible modi operandi, shared instructions to produce and disperse various agents and identify high-profile targets.
In total, EU member states reported 129 foiled, failed and completed terrorist attacks in 2018. The total number of attacks decreased after a sharp spike in 2017 (205), primarily

because of the decrease in the reported ethno-nationalist and separatist-related incidents. Still, ethno-nationalist and separatist terrorist attacks continue to greatly outnumber other types of terrorist attacks (83 out of 129).

In total 1056 individuals were arrested in the EU in 2018 on suspicion of terrorism-related offences (2017: 1 219). One fifth of them were women. The number of arrests linked to right-wing terrorism remained relatively low (44 in 2018) and was limited to a small number of countries but increased for the third time in a row, effectively doubling for the second year in a row (2016: 12, 2017: 20). Right-wing extremists' prey on fears of perceived attempts to Islamicise society and loss of national identity. The violent right-wing extremist scene is very heterogeneous across EU member states.

The number of European foreign terrorist fighters travelling, or attempting to travel to conflict zones was very low in 2018. The focus of jihadist networks has shifted towards carrying out activities inside the EU. The number of individuals returning to the EU also remained very low.

Hundreds of European citizens – including women and minors, mainly of very young age- remain in detention in the Iraqi and Syrian conflict zone. All men and some women are believed to have received weapons training, with men also acquiring combat experience. While minors are essentially victims, there are concerns among EU member states that they may have been exposed to indoctrination and training in former IS territories and may pose a potential future threat.

There is continued concern that individuals with a criminal background, including those currently imprisoned, are vulnerable to indoctrination and might engage in terrorist activities, Europol said.

Despite the shrinking of its physical footprint, IS succeeded in maintaining an online presence largely thanks to unofficial supporter networks and pro-IS media outlets. Pro-IS and pro-al-Qaeda channels promoted the use of alternative platforms and open source technologies.

While IS online propaganda remained technologically advanced, and hackers appeared to be knowledgeable in encrypted communication tools, the groups' cyber-attack capabilities and techniques were rudimentary. In addition, no other terrorist group with a demonstrated capacity to carry out effective cyber-attacks emerged in 2018.

EU member states assess that the diminishing territorial control of IS is likely to be replaced by increased al-Qaeda efforts to reclaim power and influence in some areas. Al-Qaeda affiliates exploited political grievances on the local and international level, including in messages directed at European audiences, Europol said.

Security Technology will be Tested at Bayern München Stadium

Source: https://i-hls.com/archives/92515

June 26 – There is a growing demand for automating weapon detection at scale, be it at airports, shopping malls, or sports stadiums. In fact, the weapons detection systems industry is expected to hit $7.5 billion by 2025, up from $4.9 billion today, with public venues constituting around one fifth of the market, according to a HSRC research.

Artificial intelligence could play a role in preventing gun crime, particularly mass shootings. X-ray is already used in many security scenarios, such as for scanning bags in airports or other venues, and it can also provide 2D scans of a person's exterior. Millimeter wave scanners are also used in some locations for 3D body scans. But a new radar imaging technology leverages AI and deep learning to identify concealed weapons.

Hexwave 3D imaging technology, developed by Liberty Defense, will be beta-tested with German soccer giant FC Bayern München inside the Allianz Arena stadium in Munich.

The company claims that it has secured an exclusive license from Massachusetts Institute of Technology (MIT), in addition to a technology transfer agreement, for patents relating to 3D radar imaging technology.

The technology can detect potentially dangerous weapons while an individual is in motion.

It's all about speed.

Hexwave provides 3D imaging at a rate that is in real time — it can assess for threats while the person is still walking, which means it is well suited for higher, faster throughput," says CEO Bill Riker.

Remember?

10 / INTERNATIONAL

THE INDEPENDENT

The Saudi businessman who recruited mujahedin now uses them for large-scale building projects in Sudan. Robert Fisk met him in Khartoum

Anti-Soviet warrior puts his army on the road to peace

'What I lived in two years in Afghanistan, I could not have lived in a hundred years elsewhere,' said Osama Bin Laden

Osama Bin Laden surveys the 600km road he is building in northern Sudan

Al-Qaeda Is Stronger Today than It Was on 9/11

By Christian Taylor

Source: http://www.homelandsecuritynewswire.com/dr20190702-alqaeda-is-stronger-today-than-it-was-on-9-11

July 02 – Al-Qaeda has recruited an estimated 40,000 fighters since Sept. 11, 2001, when the Osama bin Laden-led extremist group attacked the United States, according to the not-for-profit Council on Foreign Relations.

Despite a United States-led global "war on terror" that has cost $5.9 trillion, killed an estimated 480,000 to 507,000 people and assassinated bin Laden, al-Qaeda has grown and

spread since 9/11, expanding from rural Afghanistan into North Africa, East Africa, the Sahel, the Gulf States, the Middle East and Central Asia.
In those places, al-Qaeda has developed new political influence – in some areas even supplanting the local government.
So how does a religious extremist group with fewer than a hundred members in September 2001 become a transnational terror organization, even as the world's biggest military has targeted it for elimination?
According to my dissertation research on the resiliency of al-Qaeda and the work of other scholars, the U.S."war on terror" was the catalyst for al-Qaeda's growth.

Bin Laden and the 'war on terror'

Al-Qaeda was founded in Afghanistan in 1988 in response to the Soviet invasion of that country.
For decades, it was a small, weak and uninspiring movement. Bin Laden sought to raise an Islamic coalition of forces to establish a caliphate – an Islamic state governed with strict Islamic law – across the Muslim world. But as late as 1996 he had just 30 fighters willing to die for the cause.
For years, bin Laden tried to merge with such extremist groups as Egypt's Ibn al-Khattab and the Libyan Islamic Fighting group, hoping to create a global Islamist movement.
These organizations rejected bin Laden's overtures. These disparate groups lacked a common enemy that could unite them in al-Qaeda's fight for an Islamic caliphate.
So bin Laden shifted his strategy. He decided to make the United States – a country most Islamic extremist groups see as the enemy of Islam – his main target.
In 1998 al-Qaeda waged successful attacks on the U.S. embassies in Tanzania and Kenya. In 2000, it bombed the USS Cole, a military ship refueling in a Yemen harbor, killing 17 sailors.
Bin Laden hoped the U.S. would respond with a military invasion into Muslim majority territory, triggering a holy war that would put al-Qaeda at the forefront of the fight against these unholy invaders.
After al-Qaeda operatives flew planes into the World Trade Center and the Pentagon on Sept. 11, 2001, killing 2,977 people, bin Laden got his wish. The United States invaded Afghanistan on Oct. 7, 2001. Eighteen months later, it invaded Iraq.

How al-Qaeda grew

Islamic groups and individual extremists flocked to bin Laden's cause after 9/11. Al-Qaeda became the nucleus of a global violent Islamist movement, with affiliates across the Middle East and Africa swearing their allegiance.
At the same time, the war in Afghanistan was decimating al-Qaeda's core operations.
Leaders were killed by drone strikes or driven into hiding. The Bush administration claimed killing 75% of al-Qaeda leadership. Bin Laden and other al-Qaeda leaders sought refuge in places like the Federally Administered Tribal Areas of Pakistan and Yemen – remote areas outside the easy reach of U.S. ground forces.
To evade U.S. detection, al-Qaeda had to limit communication between its newly decentralized fronts. That meant the group's global leadership had to have autonomy to operate relatively independently.
Bin Laden expected al-Qaeda affiliates to adhere to certain core values, strategies and, of course, pursue the objective of establishing an Islamic caliphate.
But newly minted regional al-Qaeda leaders – people like Abu Musab al-Zarqawi in Iraq, Ahmed Abdi Godane in Somalia and Nasir al-Wuhayshi in Yemen – enjoyed enough autonomy to pursue their own agendas in these unstable places.
Al-Qaeda Iraq, al-Shabaab and al-Qaeda in the Arabian Peninsula, as their groups came to be known, embedded themselves in the local political scene. They began building credibility, establishing alliances and recruiting fighters.
By 2015, when bin Laden was killed, al-Qaeda was a network of regional caliphates. Today its territory spans from Afghanistan and Pakistan to North Africa, the Middle East and beyond.

Manipulation of a sectarian divide

Al-Qaeda in the Arabian Peninsula, headquartered in Yemen, is a case study in how the group now wields its power more locally.

Yemen has been in civil war since 2015, when a Houthi Shiite armed group declared war against the country's Sunni Muslim government.

Although this conflict appears sectarian in nature, the Yemen scholar Marieke Brandt argues it is largely about political power – namely, the Yemeni government's longstanding neglect of the Houthi minority, who come from northern Yemen.

Nonetheless, al-Qaeda – a Sunni terror group – saw political opportunity in Yemen's civil war.

The group has played up religious divisions in the civil war. Using its Arabic magazine, martyrdom videos, poetry and popular songs, al-Qaeda has endeared itself to the local Sunni people and Yemen's powerful Sunni tribal leaders. It has also ingratiated itself to Yemen's Saudi Arabia-backed government and fought alongside Sunni tribal militias to battle the Houthi incursion.

The strategy has been remarkably effective for al-Qaeda.

Al-Qaeda in the Arabian Peninsula had hundreds of fighters at its founding in 2009. It now has about 7,000 fighters in Yemen, most of them Sunnis recruited from territory the Houthis have attempted to take over.

It has planted landmines and bombs across Yemen that have killed hundreds, held journalists hostage and, in 2015, orchestrated the massacre at the offices of the Charlie Hebdo newspaper in Paris.

The U.S. government considers al-Qaeda in the Arabian Peninsula to be the most sophisticated and threatening branch of al-Qaeda.

Adapt the tactic, keep the mission

In adapting its methods to Yemeni culture, al-Qaeda in the Arabian Peninsula has made some missteps. In 2011, the group attempted to impose extremely strict Islamic rule over two areas it controlled in south Yemen. Al-Qaeda instituted rigid punishments of the sort common in Afghanistan, such as cutting off the hands of a thief and banning the chewed stimulant plant called khat.

These extreme rules got al-Qaeda run out of town by Sunni tribal militias.

The next time al-Qaeda in the Arabian Peninsula asserted its political power over parts of Yemen left ungoverned in the chaos of civil war, in 2015, it did not rule directly over these territories. Rather, it allowed a local council to govern according their own norms and customs. And it kept the khat market open.

Al-Qaeda also paid for long-neglected public services like schools, water and electricity – effectively becoming the state.

According to the International Crisis Group, a humanitarian organization, this softer stance helped garner the acceptance of the local population. That, in turn, ensured al-Qaeda could keep using Yemen as a regional headquarters.

A similar shift from global to local has occurred in al-Qaeda affiliates in Somalia, Iraq and Syria.

Al-Qaeda is no longer a hierarchical organization taking orders from its famous, charismatic leader, as it was on 9/11.

But it is stronger and more resilient than it was under bin Laden. And the "war on terror" has helped, not hurt it.

***Christian Taylor** is Doctoral Student, George Mason University.*

Germany Has a Neo-Nazi Terrorism Epidemic

Source: http://www.homelandsecuritynewswire.com/dr20190703-germany-has-a-neonazi-terrorism-epidemic

July 03 – Tanjev Schultz, a professor of journalism at the Johannes Gutenberg University in Mainz and the author of a prizewinning book about right-wing terrorism in Germany, says that in Germany's public imagination terrorism tends to be associated with the left.

Memories of the Red Army Faction and the series of political assassinations it undertook are still in the foreground of many Germans' minds. Meanwhile, neofascistic terrorist attacks like

the bombing of a Munich beer garden in 1980 have been largely forgotten. Peter Kuras writes in *Foreign Policy* that Schultz told him that this blindness to right-wing terrorism is one of the reasons that it took authorities so long to recognize that the 10 murders carried out by the National Socialist Underground (NSU) beginning in 2000 were the work of a terrorist organization. Indeed, as Jacob Kushner has documented in *Foreign Policy*, authorities largely tried to restrict the investigation into the group's three core members, Uwe Mundlos, Uwe Böhnhardt, and Beate Zschäpe, despite the fact that there was strong evidence that they had substantial support from other right-wing extremists, as well as some indication that some of that support may have come from within the government.

Greece: 33 million Captagon pills worthing 660 million dollars

Confescated in the Port of Pereaus - 20 people were counting the pills for one week!

Detecting real-time threats remotely

Source: https://www.fsmatters.com/detecting-real-time-threats-remotely

July 03 – One of the beauties of reporting on new technologies is watching them develop. In May last year I was able to report the development of the Patriot One PATSCAN cognitive microwave radar enabled hidden threat detection capability. A bit of a mouthful but essentially it allowed a crowd to be surveilled discretely as it passed a certain point and anyone carrying a concealed gun or a knife or an explosive device would be identified.

'Cognitive microwave radar' is designed to identify concealed weapons in a discrete way and allow real time analysis of people entering any public space such as an office building, a stadium, a train station and tell if they're carrying something they shouldn't.

The core research behind it, came out of McMaster University in Ontario and was funded by the Canadian Federal Government and by NATO for seven years. Martin Cronin the CEO of Patriot One Technologies, who are taking the technology to market under the name PATSCAN, told Philip Ingram, "*It is basically a type of low powered radar, pulsing a thousand times a second between 300 MHz and 4.8 GHz, but a whole lot less power than what comes off your cell phone."*

Timings couldn't have been better as in February this year the Joint Security and Resilience Centre (JSaRC), part of the Home Office launched alongside the new £100 million Government strategy to tackle violent crime a project to explore, with a range of experts and professionals, whether there are new technologies, innovations and approaches that can support the prevention of knife crime and detection of other smaller offensive weapons.

The Patriot One PATSCAN CMR covert weapons detection system was almost built for this task. This technology will allow the discreet screening of large numbers of people and individuals to be selectively targeted for search if the system alarms.

Explaining how the alarming process works Martin Cronin says. "*What low powered radar signals do is cause conceal objects to resonate with a distinct signature based on the material composition. That signature is compared to a database of 'classifieds' that we have and are continuing to develop. The classifieds are for bladed weapons, hand guns or long rifles, or explosive devices*."

However, the PATSCAN CMR capability is just one sensor in a suite describes as the PATSCAN Multi-Sensor Covert Threat Detection Platform. The other sensors include an AI enabled video surveillance solution that leverages feed from existing camera systems and uses the feed to monitor suspicious behaviour automatically sending alerts when appropriate.

Providing the 'icing on the cake' for detection is the PATSCAN STS multi-chemical threat detection sensor that can 'sniff' out volatile organic compounds such as those in some chemical warfare agents, explosives and other substances you wouldn't normally associate with normal activity.

Putting all three systems together gives a layered multi-system, multi-threat stand-off discreet security system that is just quietly operating in the background. Development has not been without its challenges. Martin said, *"there have been massive real-world technical challenges with so many variables to be factored in. Essentially, it's all about two things, background subtraction and feature extractions. We are*

teaching the system all the stuff we're not interested in and so that's all different body shapes, all different clothing, types of bags, cell phones, tablet computers, prosthetic limbs; teaching the algorithms that these are all things that we have no interest in and then feature extraction is the stuff we are interested in." It is clear why AI is key to this new and developing technological capability.

Martin Cronin summed up when he described the PATSCAN suite as, *" a tool designed to live within a broader security architecture and is all about pushing the security parameter out further and have early warning of a potential threat."*

Given what I have seen develop in just over a year Patriot One, who by the way will be at this year's International Security Expo at Olympia on 3 and 4 December 2019, probably have a few other tricks up their sleeves.

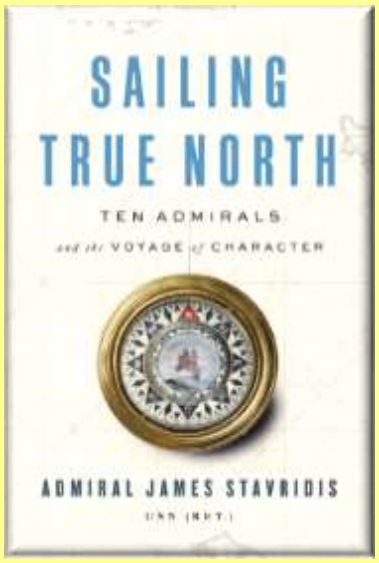
Sailing True North

New book out in October, 2019

Ten Admirals and the Voyage of Character

By Admiral James Stavridis, USN (Ret.)

Source: https://www.penguinrandomhouse.com/books/580115/sailing-true-north-by-admiral-james-stavridis-usn-ret/9780525559931/



From one of the most distinguished admirals of our time and a former Supreme Allied Commander of NATO, a meditation on leadership and character refracted through the lives of ten of the most illustrious naval commanders in history.

In his acclaimed book *Sea Power*, James Stavridis reckoned with the history and geopolitics of the world's great bodies of water. Now in *Sailing True North*, he offers a much more intimate, human accounting: the lessons of leadership and character contained in the lives and careers of history's most significant naval commanders. Admiral Stavridis brings a lifetime of reflection to bear on the subjects of his study–on naval history, on the vocation of the admiral with its special tests and challenges, and on the sweep of global geopolitics. Above all, this is a book that will help you navigate your own life's voyage: the voyage of leadership of course, but more important, the voyage of character. Sadly, evil men can be effective leaders sailing toward bad ends; ultimately,

leadership without character is like a ship underway without a rudder. *Sailing True North* helps us find the right course to chart.
Simply as epic lives, the tales of these ten admirals offer up a collection of the greatest imaginable sea stories. Moreover, spanning 2,500 years from ancient Greece to the twenty-first century, *Sailing True North* is a book that offers a history of the world through the prism of our greatest naval leaders. None of the admirals in this volume were perfect, and some were deeply flawed. But from Themistocles, Drake, and Nelson to Nimitz, Rickover, and Hopper, important themes emerge, not least that there is an art to knowing when to listen to your shipmates and when to turn a blind eye; that serving your reputation is a poor substitute for serving your character; and that taking time to read and reflect is not a luxury, it's a necessity.
By putting us on personal terms with historic leaders in the maritime sphere he knows so well, James Stavridis has in *Sailing True North* offered a compass that can help us navigate the story of our own lives, wherever that voyage takes us.

To Stem the Flow of Refugees, Address the Conflicts at Its Core

Source: http://www.homelandsecuritynewswire.com/dr20190710-to-stem-the-flow-of-refugees-address-the-conflicts-at-its-core

July 10 – The growing number of Central American refugees reaching the U.S. southern border adds to the unfathomable record of 70.8 million people counted globally as of December who had fled their homes as a result of war, persecution, and other conflict, according to a new report from the United Nations. The figure represented an increase of 2.3 million from a year earlier. More than 41 million sought sanctuary within their own countries. And almost 26 million had crossed borders and were officially classified as refugees, half of them children. The remaining 3.5 million of the total were awaiting decisions on applications for asylum to find refuge abroad. Viola Gienger writes in *Just Security* that the report by the U.N. refugee agency on 19 June drew wide attention from news media. But, as has been the case for years, most of the talk of possible solutions — including for the current migration crisis at the southern border of the United States – focuses on how to handle the never-ending flow of people: how to resettle them, how to secure their rights, whether to build a wall or send them back. "What oddly gets short shrift is the most durable solution of all: resolving the violent conflicts and persecution that are driving people from their homes in the first place," Gienger writes.

Securing India's cities: Remembering 26/11, learning its lessons

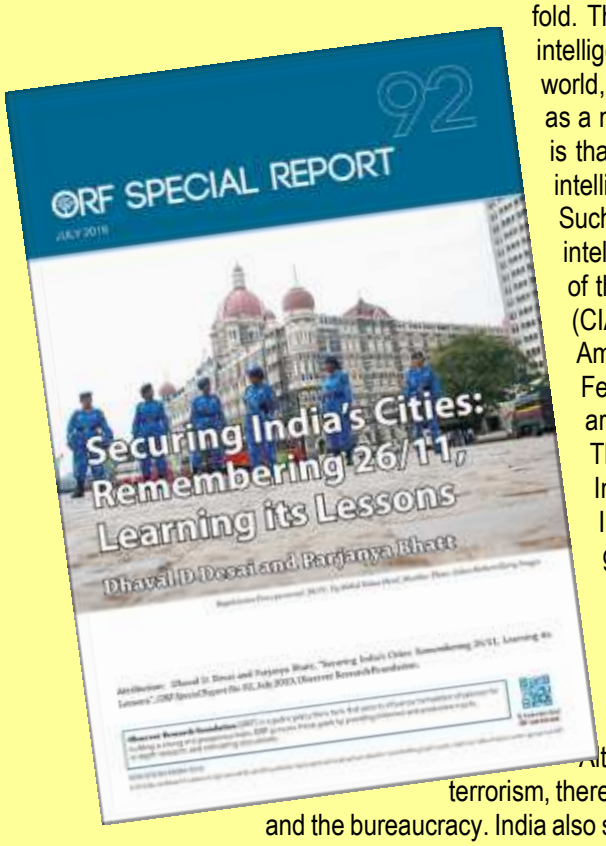
By Dhaval Desai and Parjanya Bhatt
Source: https://www.orfonline.org/research/securing-indias-cities-remembering-2611-learning-its-lessons-53066/

July 16 – The terrorists who attacked Mumbai on 26 November 2008 (or 26/11) came via sea, taking advantage of the gaps[1] in India's national security ecosystem. Over ten years since, India's policymakers are heeding the lessons of 26/11, and constant changes are being undertaken to strengthen the country's security systems. At the same time, however, the manifestations of terrorism have evolved.[2] Terrorist groups are making effective use of technology,[3] social media and other innovative tactics not only to evade arrest and prosecution but to disseminate their propaganda and recruit foot soldiers.[4] Recognising the difficulty of militarily defeating state forces, terrorists are aiming to create spectacle.[5]
The challenge for India's security organisations, therefore, is to combat an enemy whose aim is not only to kill, but to win minds. Cities, by their supposedly cosmopolitan and inclusive nature, provide the theatre where terrorists can garner their global audience.
This special report builds on the insights shared during a conference organised by the Observer Research Foundation (ORF)-Mumbai. The conference gathered key stakeholders, principally in the country's security matrix, who exchanged views on the question of whether or not the country is prepared to deal with increasingly unpredictable and deadlier forms of terrorism in the urban landscape.

India's Counterterrorism Apparatus Post-26/11: Key Challenges

1) Intelligence capabilities and inter-agency coordination

Reliable and actionable intelligence is a pillar of any effective counter-terrorism apparatus. Following the 26/11 Mumbai attacks, it was discovered that there was a failure of intelligence and a lack of ability to communicate information to the relevant stakeholders. The weaknesses of India's intelligence are three-fold. The first is when there is no intelligence at all. Second, the available intelligence is too general, vague in nature and not actionable.[6] Across the world, law enforcement agencies blame the lack of actionable intelligence as a major obstacle to the prevention of terror attacks. The third challenge is that different agencies fail to effectively communicate the details of the intelligence received by them to the relevant law enforcement agency.



Such a pattern is repeatedly seen amongst the security forces and intelligence agencies of many different countries. For instance, in the case of the 9/11 attacks in the United States, the Central Intelligence Agency (CIA) had some knowledge about the presence of hijackers within American territory, but the information was not communicated to the Federal Bureau of Investigation (FBI).[7] Indeed, intelligence agencies are today dependent on technical intelligence on non-state actors. There is also a huge volume of information which cannot be deciphered.

In the decade following the 26/11 Mumbai attacks, the Government of India has taken important measures to improve the state's intelligence gathering mechanism and enhance inter-agency coordination amongst the various security agencies. These measures have resulted in a marked reduction of terror attacks in urban centres. India's security apparatus has been reinforced with the establishment of Multi-Agency Coordination Centres (MACCs) and Subsidiary Multi-Agency Coordination Centres (SMACCs).

Although these steps have led to a qualitative improvement in combating terrorism, there is limited coordination amongst intelligence agencies, security forces, and the bureaucracy. India also suffers from inadequate inter-agency coordination which, in turn, leads to lack of effective intelligence monitoring and security response. Concerns also exist over the fact that the information is not disseminated to the security forces at the tactical level at the speed and effectiveness with which it should ideally occur. To improve the level of coordination, inter-operability amongst the agencies must be enhanced and military officers must be periodically sent on deputation to cooperating agencies to ensure that the country's entire intelligence apparatus precisely understands the specific requirements of the consumers of their intelligence.

Terrorism has moved beyond the physical space to the digital space. In this context, the gathering of intelligence needs to become multi-faceted as well. The old debate on whether human intelligence is better than technical intelligence is no longer relevant. It would be a more effective strategy for India to complement efforts of information gathering through technical means with human intelligence to enhance the state's capabilities in meeting the evolving challenges posed by terror groups.[8]

2) The role of social media

Individuals and groups with terrorist agenda are making use of social media platforms to widen their reach, spread their ideology, and recruit followers and cadre. For instance, Al-Qaeda's websites carry manuals on how to construct explosive devices.[9] Social media also provides anonymous avenues for terror groups to communicate with each other. Indeed, terrorists have been proving themselves adept at using technology for a long time now. During the 26/11 Mumbai attacks, all the 10 terrorists involved, were in constant communication with their handlers in Pakistan through satellite phones.[10] Those handlers in Pakistan, in turn, were using the live television coverage of the state response to pass on messages to the terrorists, almost in real time.[11],[12]

The impact of social media on the spread of terrorism can be seen in the conflict in Kashmir, where there is a growing trend of increased radicalisation[13] especially amongst the youth.[14] India's security forces must create effective counter-narratives and build an environment that does not lead to marginalisation and radicalisation as is increasingly seen in the case of homegrown jihadis in the Valley.

This increased radicalisation is one aspect of the Kashmir conflict that is more difficult to counter than combatting terrorism by military means. For instance, in the case of Sri Lankan suicide bombers of 2019, some of the bombers were foreign educated and came from affluent backgrounds.[15] In India, there exists a large grooming infrastructure which is involved in "talent spotting" and radicalisation activities. These talent spotters, it was observed, work openly, yet are not easy to prosecute owing to lack of clear "criminality" in their actions. Radicalism must be dealt with by intelligently balancing "soft" and "hard" approaches.

3) Vulnerabilities of India's maritime and coastal security architecture

In the last few years, the thrust of India's maritime strategy has been to leverage the advantages of the country's vast coastline for economic activities.[16],[17] For instance, a substantial portion of India's domestic energy production comes from the Mumbai High offshore fields on the western coasts.[18] There are similar endeavours underway to extract energy from offshore oil and gas fields on the eastern coasts. With these economic activities in mind, the Government of India has initiated the Sagarmala Programme[19] to enable port-led development by devoting significant fiscal resources for the modernisation of existing ports and the establishment of new ones.[20] Additionally, under this programme, 14 coastal economic zones have been identified to promote port-led industrialisation in different maritime states and Union Territories.[21] The Sagarmala Programme, when combined with Bharatmala—[22] the ambitious centrally-sponsored roads and highways project—will facilitate trade and the movement of resources between ports and mainland cities and thus bridge the regional economic disparities across the country.

Trade between India and other countries is largely conducted through sea routes. India's ports handle 70 percent of its external trade in terms of value.[23] As the value and numbers of India's maritime assets increase in the coming years, their vulnerability to attacks by terrorist groups will also heighten.

Maritime and coastal security has its own set of challenges. The 26/11 Mumbai attacks and the 1993 serial bomb blasts in Mumbai[24] in many ways exposed the vulnerabilities in India's maritime security architecture. To begin with, given the nature of the seas being porous, policing is difficult. As multiple agencies are trying to get into the domain of coastal security there is a need to ensure that their duties are spelt out and there is a clear-cut sense of command, control, responsibility, and coordination.

One significant reform undertaken post-26/11 was the clear designation of coastal security responsibilities to different agencies. The Indian Navy would be primarily responsible for ensuring security of areas beyond 12 nautical miles, assisted by the Coast Guard. The Coast Guard would be responsible for ensuring the coastal security between five to 12 nautical miles, while the marine police will ensure security between the base-line to five nautical miles. At an organisational level, the Indian Navy has been designated in-charge of all aspects of maritime security.[25] Coordination between various agencies has improved, joint exercises are being regularly conducted to familiarise with the standard operating procedures (SOPs), and the levels of surveillance has been enhanced as well.[26] Joint trainings are also integral to this effort.

Another challenge related to coastal security is that the perception of coastal states on matters pertaining to their security varies. Many of the port or maritime-based infrastructure coming up in India's coastal cities are largely technology-dependent. This means their vulnerability to cyber-attacks increases substantially.

The fleet strength of the Coast Guard (ship and air elements) has been enhanced to ensure increased coastal security. The Coast Guard is employing electronic means to increase maritime surveillance.[27] They have also increased their joint exercises with the relevant agencies and state marine police forces.

After 26/11, countries around the Indian Ocean Region have expressed willingness to work with India on the aspects of maritime and coastal security. This development must be strengthened by putting more thought into bilateral and multilateral scenario-building

exercises. Civil servants posted in coastal districts should have more maritime consciousness, and retired experts must get involved in capacity building within the maritime domain.

4) Cyber security

There has been an increasing trend towards cashless modes of financial transactions in recent years.[28] This is amongst the Indian government's policy priorities,[29] as citizens are being encouraged to conduct cashless transactions to ensure greater transparency and accountability.[30] Additionally, advances in information technology have enabled various infrastructural and industrial capacities to become technology-driven. The government is also putting greater emphasis on expanding the coverage of digitisation across the country to enable the central and state governments to deliver their services and ensure governance.[31],[32] The increasing dependence on technology for governance, delivery of services and financial transactions will bring in transparency, swiftness and increasing accessibility to services. It also brings its own set of vulnerabilities.

Indeed, the digital domain has become a target for India's adversaries in the last few years. To ward off these threats, India should build robust systems to ensure uninterrupted and safe operations of the country's digital infrastructure. Many other countries are also grappling with the threats posed by state and non-state actors by using technology-driven information warfare. The multiple challenges emanating from the cyber domain include interference in elections through the use of propaganda in social media, fake news leading to panic, and digital disruption of energy assets and transportation systems.

Tackling these cyber challenges will require a great deal of coordinated effort as well as innovative approaches at the inter-agency level. To begin with, it is imperative to address the structural and organisational issues pertaining to the country's cyber security apparatus. The challenges are enormous, and greater financial investments are needed. India must tap into its rich pool of human resources in the domain of information technology, data science and cyber issues.

Some states have already initiated concerted steps to ramp up their cyber capabilities. Besides enacting cyber legislations, the government has also undertaken organisational measures by establishing new centres for cyber security such as the National Critical Information Infrastructure Protection Centre and the National Cyber Coordination Centre; creating a division covering Cyber and Information Security within the Ministry of Home Affairs; and improving institutional capacity building through training of personnel and generating awareness.[33]

Recommendations for the Way Forward

1) Collaboration between government, media and public

There should be greater cooperation and dialogue between the public and decision-makers. It is time for India to give serious thought to the idea of creating neighbourhood 'Awake Cells' comprising youth activists and concerned citizens. These 'Awake Cells' would ensure that citizens who are conscious on aspects of security would act as feeders of information to the security agencies – particularly on any unusual and suspicious activity in their areas. Inputs from these sources would enable the security agencies to have better domain awareness. It is also important for law enforcement agencies to acquire information from the people in proximity of the attack site. Here, the media can play an important role in providing critical information at the site of a terrorist attack. Given that media practitioners reach a terror-attack site faster and interact with people around the area, it is important to quarantine such early information and pass them on to the security forces that have been deployed to respond.

2) Containing the attack and the perpetrators

The first response during a terrorist attack is to contain the terrorists. Till the time the specialised forces reach the site, the local police forces must be capable and equipped to engage the terrorists through the use of force. In this regard, following 26/11, state forces in Mumbai have substantially improved their capabilities. The local police stations, combat vehicles and the Quick Reaction Teams (QRT) are all available to provide an immediate and a "graded" response to any future incident.

3) Enabling timely transportation of security forces during terrorist attacks

It is essential that responders are able to reach the site of the attack in the shortest time. This is a serious challenge in India's urban spaces, given the heavy congestion and their

haphazard layouts. The imperative is for the seamless movement of forces and their equipment through planning and physical power to manage, restrict and divert traffic movement. In turn, traffic management faces challenges owing to budgetary constraints and lack of human resources. The problems are compounded by jurisdiction issues caused by a multiplicity of controlling agencies within the state and city administrations.

The current investments in mass public transport systems such as Mumbai's Metro are a step in the right direction. It is also pertinent to consider creating infrastructure such as water transport to ferry people, ponder disincentivising the purchase of more cars, and phase out old vehicles.

4) Increasing the capabilities of security forces

The National Security Guard (NSG) has been involved with capacity building of different state forces, including conducting joint exercises with various agencies. There is a need to consolidate their efforts and graduate from single-agency, standalone exercises to multi-agency ones. The NSG exercise held in 2017 at Jamnagar, where 12 agencies participated in elaborate exercises over two days, is a good model to scale-up and replicate across the country. Continuous and incremental improvement in the availability of firepower and protection equipment across all police stations must be considered with adequate funding for such capacity building. India must integrate all its resources for deployment to combat any future contingency. Essential equipment and weapons systems must be acquired.

5) Institutionalising swift decision-making

There is a need for swiftness in decision-making on security issues. Decision-makers must be given the mandate to use their discretion while taking key and quick decisions. The rules, regulations, guidelines and circulars give broad outlines for the competent authorities and they must be empowered to interpret these rules and guidelines and proactively decide on the appropriate course of action. Counterterrorism strategies should be formed in an integrated manner. For example, terrorism cannot be seen from the perspective of whether the matter falls under the ambit of Home Affairs or Defence Ministry, or the state or centre.

The perception regarding India as a country being a "soft state" needs to be changed. The surgical strikes by India's special forces in 2016 and the air strikes on terrorist camp in Balakot in Pakistan following the attack on the CRPF convoy in Pulwama in February 2019 marks a change in India's strategy in responding to cross-border terrorism.[34],[35]

6) Building the overall resilience of cities

The planned development of cities is a prerequisite for any sound internal security apparatus. Given the increasing clustering of populations in the cities as well as the concentration of economic output largely within urban areas, the terrorism landscape is also undergoing transformation. Security preparedness, therefore, needs to also evolve in these contexts. There is a need to think more about holistic urban planning as cities are places wherein development transformation can be made or disrupted. Historically, cities have demonstrated remarkable resilience and have bounced back from catastrophes.

Conclusion

Over ten years since the 26/11 Mumbai attacks, there has been a discernible improvement in India's counterterrorism mechanisms. Complex challenges, however, continue to confront India. These include the lack of inter-agency coordination and inefficient decision-making. As the manifestations of terrorism continue to change rapidly and become increasingly technology-centric, State forces responsible for the country's counterterrorism response will have to adapt to these shifts and build the resilience of India's security ecosystem.

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Agro-terrorism Triggers and Tripwires

By JoAnn Alumbaugh

Source: https://www.dairyherd.com/article/agro-terrorism-triggers-and-tripwires

July 16 – The goal of agroterrorism is unique. It is meant to disrupt the economy by specifically targeting animals and crops with diseases that may not have a direct effect on human health. These are considered "low-skill" or "low-tech" threats, but the effects can include significant impacts on agricultural production, export markets, food security and economic and national security.

Stephen Goldsmith, DVM, and Kathleen Giles, both with the Federal Bureau of Investigation (FBI) Biological Countermeasures Unit, spoke at the 2018 U.S. Animal Health Association Annual Meeting, where they shared insights on espionage and terrorism threats to agriculture.

"'If you can't buy it, steal it; if you can't steal it, buy it.' That's the mantra of espionage," Goldsmith says. "We have to look at any unexplained, unusual disease incident, and we have to know. That's something [veterinarians and producers] should be concerned about."

- Due to current world threats, the speakers said, the U.S. must differentiate disease incidents between:
- Expected (normal) background levels or variations of endemic production diseases'
- Accidental introductions
- Natural introductions
- Intentional disease introductions: criminal, terrorism, espionage or sabotage should be considered as possibilities

Although accidental or natural sources are more likely, officials still have to rule-in or rule-out all possibilities.

Tools of the trade

Law enforcement officials use tripwires and triggers frequently, Goldsmith says. Triggers are the first signs or traces of unusual behavior, activities, threats, or disease incidents that are recognized as abnormal or suspicious. Tripwires are specific, agreed-upon threshold levels of jointly recognized triggers that criminal-epidemiological investigators use to activate notification and information-sharing of standard operating procedures, he explains. An example might be the simultaneous or rapidly spreading outbreak of a novel, emerging, or recognized animal disease or plant pathogen in multiple geographic locations with no epidemiological link (like porcine epidemic diarrhea virus [PEDv]).

"Interagency tripwire initiatives are community outreach tools for reporting triggers and investigating suspicious incidents," he says.

Animal- and plant-health tripwires include:

- Presumptive or confirmed laboratory diagnosis of notifiable high consequence animal/plant diseases

- Initial investigations of highly suspicious, unusual, or suspected foreign or emerging animal or exotic plant diseases
- Simultaneous or rapidly spreading outbreaks of a novel, emerging or recognized animal disease or plant pathogen in multiple geographic locations with no epidemiological link (like PEDv)
- Reports of suspicious activity, threats or criminal actions at agricultural facilities
- Unusual, unexplained disease incidents with mass morbidity/mortality in livestock, wildlife, domestic animals, zoo animals, crops, orchards or forests
- Ag intellectual property, biotech and research are critical national-security resources no less important that other defense strongholds, Giles says. A large-scale threat to the agriculture sector may arise via multiple routes:
- Agro-terrorism (intentional): Intent to cause economic and social disruption, which may also threaten public health, depending on agent used
- Foreign animal diseases (unintentional): Non-domestic diseases, endemic overseas, may affect food animals, horses or wildlife, with increased threat due to large-scale movement of animals; illicit trade; climate change; and vector movement
- Emerging animal diseases and zoonoses: Emerging infectious disease events continue to increase.

Information-sharing is critical

Collaboration is the key to efficient, effective response to agro-terrorism activities, Giles says.

- Law enforcement or intelligence information serves many purposes:
- Warns animal and plant health investigators of possible threats
- Identifies and protects possible targets
- Prevents or detects a biological attack
- Reduces the effects of an outbreak
- Identifies the disease source and how it was introduced Information on animal and plant health information helps law enforcement officials:
- Detect and interrupt on-going acts of bioterrorism
- Identify and apprehend perpetrators for prosecution and conviction in court
- Identify threat agents to protect safety of investigators
- Identify/preserve a crime scene and forensic evidence

The benefits of early information-sharing can't be overstated.

"That's why we're here," Giles says. "If you're not sharing information, we can't stop a potential attack. That's why we have all these working groups – there aren't enough of us. I'm going to gain from [veterinarians' and producers'] expertise. Those of us in the field need your veterinary [and farm] expertise when we do interviews."

How do terrorists fund their activities? Some do it 'legally'

By Sylvia Laksmi

Source: https://www.todayonline.com/commentary/how-do-terrorists-fund-their-activities-some-do-it-legally

July 17 – Indonesians were surprised when Para Wijayanto, leader of the Jemaah Islamiyah (JI) terrorist network, was arrested earlier this month. The South-east Asia terrorist network, responsible for the 2002 Bali bombings, is still alive and kicking.

JI was thought to be decimated after leaders such as Abu Bakar Ba'asyir and Umar Patek were arrested, and Noordin Top and Azahari killed.

The latest arrest revealed JI was using a palm oil plantation business to fund its terrorist activities. Previously, JI's came mainly from illegal activities, such as through robbery and cybercrime.

Is using legal businesses as a front to fund terrorism part of a new trend?

I study the dynamics of terrorist organisation funding. Terrorism networks employ both legal and

illegal ways to fund their activities — whether these are terror attacks, propaganda, recruitment or military training.

According to the Indonesian anti-terrorist financing law, terrorist financing refers to assets that are recognised, or reasonably alleged, to be used directly or indirectly for terrorism-related activity, organisations or individuals.

There are three stages of terrorist financing: fund-raising, fund-moving and fund-using. They can use banks or other means to move the money.

According to Indonesian police, the JI leader, Para Wijayanto, conducted the plantation business while recruiting more members to the group. The goal was to set up a caliphate in the country.

The plantation business is huge in Indonesia, which is the world's biggest exporter of palm oil. It can generate large incomes. Based on my research, the plantations are also usually in remote locations, which makes them ideal for shelters and military training.

Owning a plantation provides an opportunity to purchase large amounts of chemical products, such as fertiliser, which can be used to craft bombs.

The JI network has long been doing legal business to finance terrorism. In the early 2000s, JI members raised money through robbery and hacking. But they also set up book publishing companies in Central Java. JI used these to spread propaganda and raise money.

The Islamic State (ISIS) has also influenced most of the Indonesian-grown terrorist groups after ISIS declared its existence in the country in 2014. JI-linked groups have pledged their loyalty, with JI leader Abu Bakar Ba'asyir swearing allegiance to Isis leader Abu Bakr Baghdadi in the same year.

ISIS inspired new ways of financing. Investigators found they set up businesses including herbal medicine and chemical stores.

Technology, especially social media and instant messaging, help these terrorist-owned businesses. They allegedly use Facebook, Twitter and Whatsapp to spread propaganda, generate income from online businesses, and to ask for and accept donations.

Here are some examples of legal businesses conducted by members of violent extremist organisations:

1. Travel agency

In late 2016, police arrested suspects affiliated with the Katibah Nusantara network, the South-east Asian ISIS unit based in Syria and purportedly lead by Bahrun Naim. Police also found a travel agency run by Rafiqa Hanum, Naim's wife who is believed to be responsible for the 2016 Jakarta attack.

Police said the travel agent manager helped two ethnic Uighurs, who were part of the East Turkestan Islamic Movement, come to Indonesia illegally and hid them in Batam. The company also helped foreign terrorist fighters travel to Syria under the cover of migrant workers or religious pilgrims.

2. Herbal medicine

Two cases have identified that terrorists have profiles as herbal medicine sellers. A raid in 2013 on terrorists linked jihad activities in Poso, Central Sulawesi, found suspects in Kebumen, Central Java, who themselves as herbal medicine sellers to the locals.

Another case in 2018 involved Dita Oepriyanto, the Surabaya suicide bomber, who run a candlenut herbal oil business. He bought chemicals for creating bombs from an online supplier.

3. Electronics store

In 2017, an alleged terrorist from the Jamaah Ansharut Daulah group was arrested in Bekasi, West Java. He owned a cellphone store. At his store, police found pipe bombs, electronic equipment, and guide books for crafting bombs.

Factors influencing terrorists in selecting their methods for financing include what skills they have in the groups and the counter-terrorism measures they are facing — for example close monitoring by government on cross-border fund movement.

The anti-terrorist financing law has complemented the capabilities of law enforcers in reducing Indonesian terrorist networks linked to those of South-east Asian countries. The many arrests of terrorists in the past five years is proof of this.

As law enforcement has become more robust, terrorists have changed tactics, including the use of legal business to cover movements and avoid detection.

Recently, another fascinating method has been found: use of the microfinancing service Baitul Maal.

Baitul Maal is an Islamic informal community-based microfinancing service that uses an economic and socio-religious approach by offering financial services to impoverished people, including collecting donations and providing soft loans for small-scale businesses.

The government should remain vigilant to the changes in terrorist financing methods. Not only are fund-raising methods changing, the ways the money has been used recently has also evolved.

Funds have been used not only for to prepare for attacks, but also for social support systems for the families of terrorist inmates, widows and children. For example, providing scholarships to the children, and health services for the widows and wives of terrorist inmates.

This issue is highly important because the financial flow becomes much less visible when it's not used directly for terrorist activity. But it remains hazardous to society.

In my analysis, the people supplying financial support maintain loyalty to the groups and nurture new generation of jihadists. There are few government programmes providing social and economic incentives to jihadist families.

The ones that do show no clear success and lack of monitoring and control. I believe sophisticated disengagement programmes are urgently needed.

There is a greater need to investigate terrorist financing because money is always at the centre of all terrorist groups' strength.

They are dependent on funding; our capabilities should be reworked towards addressing this. THE CONVERSATION

Sylvia Laksmi *is a researcher focusing on financing terrorism and now a PhD Candidate at National Security College, The Australian National University.*

Hundreds of women from Asia and Africa to be trained by UAE Armed Forces as peacekeepers

Source: https://www.thenational.ae/uae/government/hundreds-of-women-from-asia-and-africa-to-be-trained-by-uae-armed-forces-as-peacekeepers-1.887965

July 18 – Female peacekeepers are seen as crucial in tackling sexual violence and supporting victims in conflict zones

Hundreds of women from countries affected by conflict will be trained to become peacekeepers by the UAE Armed Forces next year.

Women from nations in Africa and Asia will undergo medical and combat training before returning home as part of a UN drive to create a force of female peacekeepers in potentially unstable countries.

After completing their training, the women can be sent to military and civilian areas to provide support, protect women's rights and help reduce sexual violence.

The UN programme was brought to the UAE last year after an agreement between the Ministry of Defence, the UN and General Women's Union.

"The UAE will continue to advocate for the full empowerment of women," Sheikh Abdullah bin Zayed, Minister of Foreign Affairs and International Co-operation, said at the time.

The first cohort of 134 female cadets, from seven Arab countries, were trained in Abu Dhabi this year. They completed three months of basic military training and two weeks of peacekeeping instruction, graduating on May 10.

A second batch expected to be about 400 women from 10 countries across Asia and Africa is scheduled to begin training in Abu Dhabi in January. It will be the first time civilians are trained by a country's army under the Military and Peacekeeping Training Programme.

This week, the ambassadors of participating countries and members of the peacekeeping programme met in Abu Dhabi to discuss the latest training.

It will take place at Khawla bint Al Azwar Military School under the patronage of Sheikha Fatima bint Mubarak, Chairwoman of the GWU, President of the Supreme Council for Motherhood and Childhood and Supreme Chairwoman of the Family Development Foundation.

"The UAE supports initiatives that enable women to participate in peacekeeping operations across the world, because we believe in the significant role of women working in the security sector," said Maj Gen Pilot Sheikh Ahmed bin Tahnoon, Chairman of the National Service and Reserve Authority, who attended the meeting.

"We look forward to supporting the expansion of the programme to include participants from African and Asian countries, and to ensure the success of these initiatives and maximise their impact across the world."

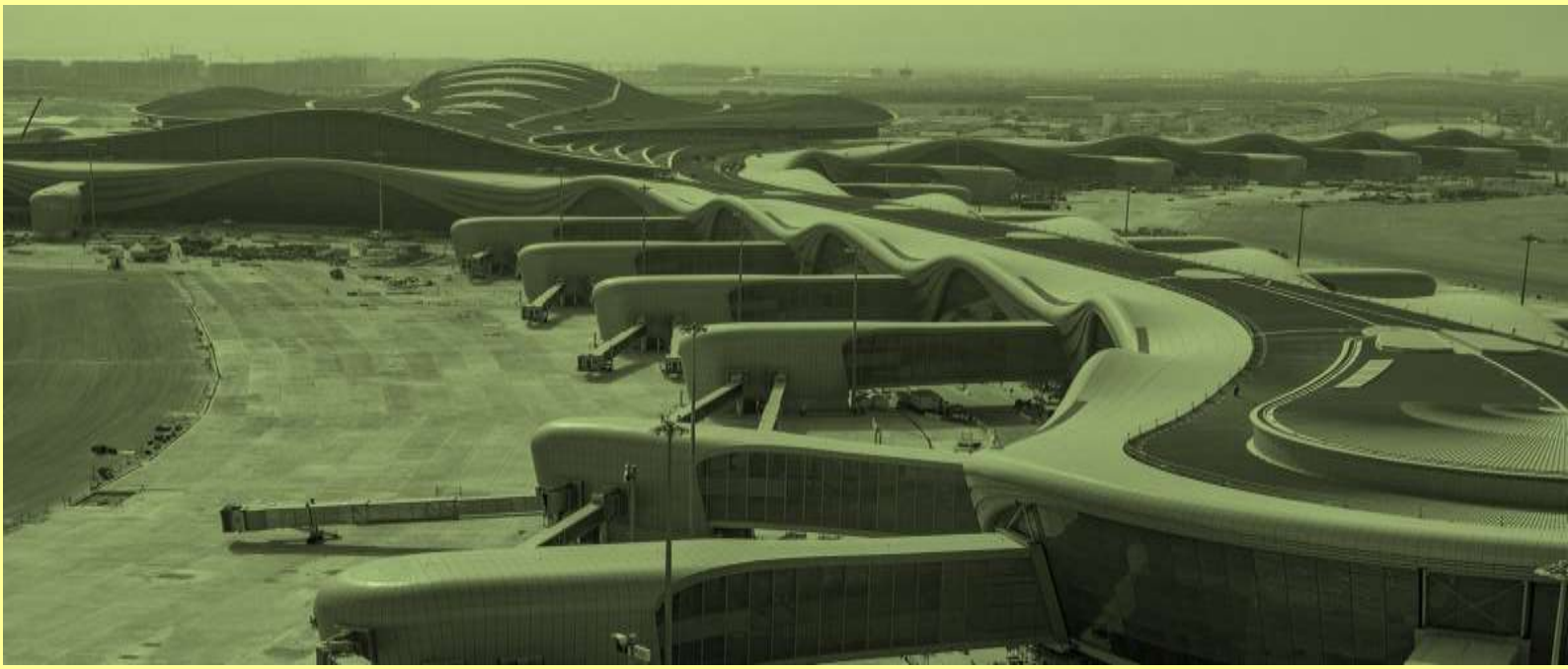
The latest group of prospective peacekeepers will learn conflict resolution tactics and receive medical training, urban combat, field engineering and fitness training, as well as learning jiu-jitsu and military marching. After completing the programme, they will qualify to join their country's military.

Currently women make up only 22 per cent of the 16,507 civilians working in peacekeeping missions. In total, there are 7,682 women peacekeepers across Africa and the Middle East — of which 3,623 are civilians.

The military and peacekeeping initiative aims to change this.

"The success of this experience extends beyond the local and regional levels of participating countries," said Dr Mouza Al Shehhi, director of the UN Women UAE Liaison Office for the GCC.

"We hope that the graduates will contribute directly and significantly to increasing the representation of women in UN peacekeeping forces with military policing duties as currently only about 5,000 from a total of more than 87,000 forces are women."



UAE: Full-scale operational tests carried out at Abu Dhabi's new Midfield Terminal

Source: https://www.thenational.ae/uae/transport/full-scale-operational-tests-carried-out-at-abu-dhabi-s-new-midfield-terminal-1.888797

July 21 – The opening of Abu Dhabi's long-awaited Dh19.1 billion Midfield Terminal has moved a step closer.

Almost 800 volunteers and two Etihad jets put the building through its paces as part of an operational test on June 30 to assess how ready the building is for real passengers.

From 9.30am, the volunteers streamed through the terminal. They passed through security, checked baggage and boarded the aircraft as if they were regular passengers. The two jets – an Airbus A330-200 and A330-300 – simulated a full 80-minute turnaround on the aircraft, including loading, refueling and safety checks.
The performance of immigration desks, security, baggage-handling and customs was also assessed.
News of the test was revealed on Sunday, but no official opening date for Midfield Terminal was given.
Bryan Thompson, chief executive of Abu Dhabi Airports, did not elaborate on predictions that the terminal would open later this year, but said it would happen "soon". It was originally scheduled to open in 2017.
"Trials are an important step in the delivery of the project, as we safely and securely assess the terminal's operational capacities and processes," he said regarding last month's tests.
Through conducting trials of this scale and fully assessing the results therein, we will be able to make sure that passengers enjoy an efficient and smooth journey ... from the very first day of operation."
Mr Thompson also thanked the volunteers who made the test possible.
"The [Midfield Terminal] is a magnificent piece of engineering and its distinctive architectural profile will soon be synonymous with the incredible city of Abu Dhabi," he said.
When open, Midfield Terminal is designed to process 8,500 people an hour, tens of millions of passengers a year and a baggage-handling system that can process about half a million bags a day.
It will also increase the capacity of the airport to more than 45 million passengers a year. It serves about 20 million a year currently.
The long-awaited opening also comes as Etihad, the UAE's national airline, continues its turnaround plan to recover from losses sustained since 2016.
In March, Mr Thompson said the terminal was "on plan" but there was no rush to move as Etihad was still in the middle of this plan. He also said he wanted to increase the airport's point-to-point traffic.
"We don't want to let Abu Dhabi down when we open Midfield. We will make sure we're 100 per cent ready at the time of the opening, for ourselves and the airline to present Abu Dhabi in the best light," he said. "It is not just the airport's reputation that's at stake, so we want to do this right."
The terminal is designed with sweeping curves in an X-shape and spans 742,000 square metres. Larger plans for the airport include more hotels, shops and an aviation district in Al Falah.

EDITOR'S COMMENT: Let us all hope that in the future we will read about an operational test of the CBRN defense capabilities of the new airport. But why care about a threat that is so exotic to bother? As if the unexpected always happens!

Qatar: HMC's Hazm Mebaireek General Hospital begins surgical services

Source: https://www.qatarliving.com/forum/health-fitness/posts/hmc%E2%80%99s-hazm-mebaireek-general-hospital-begins-surgical-services

July 20 – On a continuous journey to expand healthcare services across the country, Hamad Medical Corporation (HMC) has started offering surgical services at its newest hospital, Hazm Mebaireek General Hospital (HMGH).
HMC said that the first phase of implementation of these services has been completed with two operating theatres for elective general surgery and urology procedures now open.
Under this initial phase, more than 15 surgeries are expected to be performed each week.
The medical director of HMGH, Dr. Hani Kilani called the launch of the new service a noteworthy accomplishment.
"With the opening of our new operating theatres, we can now offer an even wider range of services at our state-of-the-art facility. By offering both clinics and surgery from within a single dedicated location, patients can access high-quality surgical treatment and follow-up

care without needing to travel to different locations for pre- and post-surgery care and appointments," said Dr. Kilani.

The new service at HMGH is expected to free up operating theatre capacity across HMC's network of hospitals, he added.

The second phase of the implementation of the services, to be rolled out in the next few months, will see more operating theatres, increased capacity for elective surgical procedures in addition to providing emergency surgery and other specialties, such as orthopedics and hand surgery.

The Executive director of HMGH, Hussein Ishaq, said last year's opening of the community-based hospital has brought care closer to where it is needed in the community.

The hospital has helped relieve pressure across HMC's hospitals and clinics, particularly emergency services at the Hamad General and Al Wakra hospitals.

"By offering community-based quality healthcare to those living and working in the Industrial Area of Doha, patients who used to have to travel further afield to access clinical, emergency and surgical care within a hospital setting, can now access the care they need on their doorstep. This is not only far more convenient for them but also helps lessen the load on our busy hospitals in Doha," said Ishaq.

Located in the Doha Industrial Area, Hazm Mebaireek General Hospital provides care for adult male patients, in particular to those living and working in that part of Qatar.

The hospital, which was officially opened in December 2018, offers a range of outpatient, inpatient, and emergency care services.

EDITOR'S COMMENT: A new hospital or a new department is always good news. I am not expecting all hospitals to have a CBRN Response Unit but it would be clever to have as many hospitals as possible with such capabilities. Because if a real incident happens in the future, victims will seek medical advice in ALL hospitals available without discriminate who is ready and who is not!

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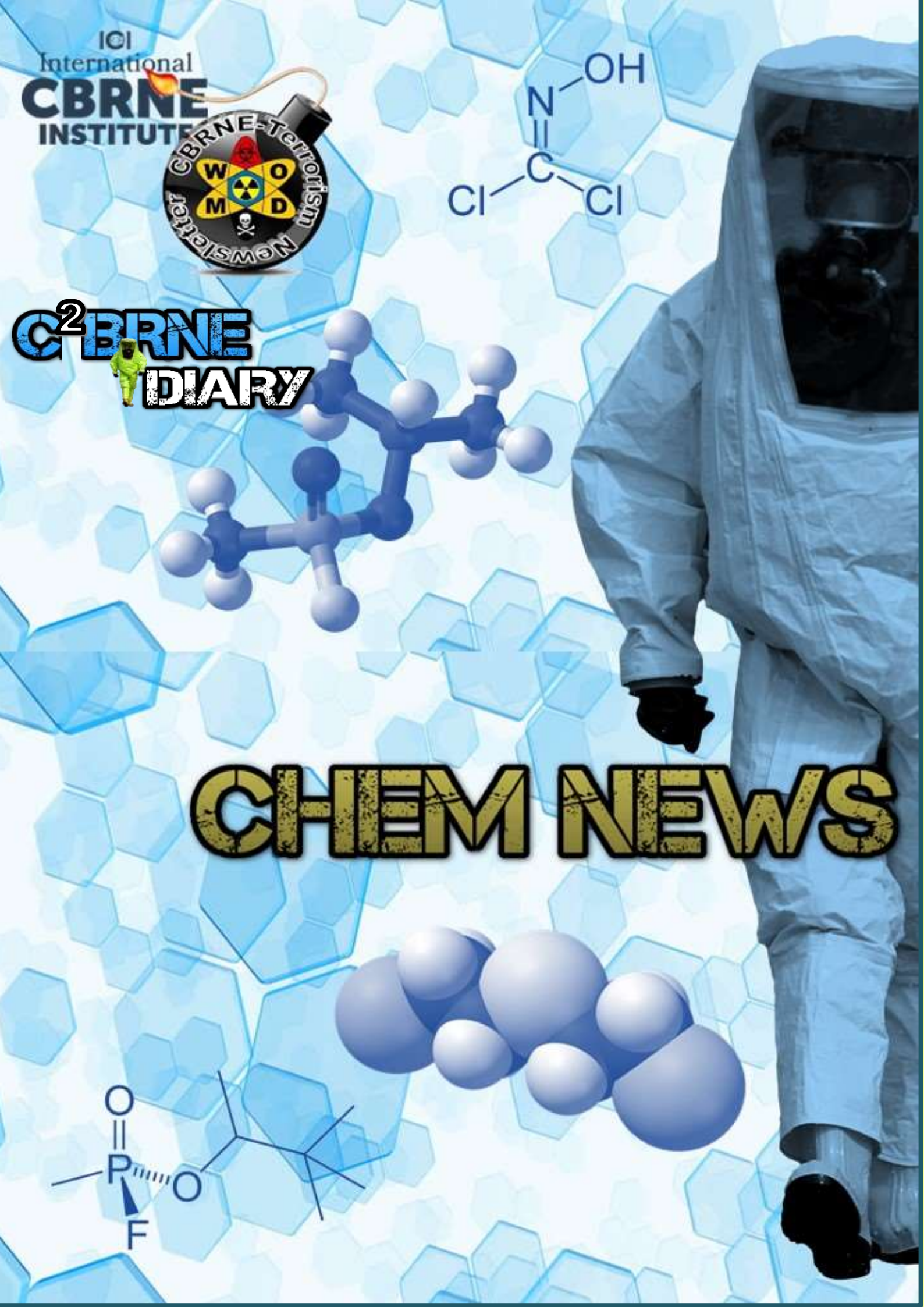

CHEM NEWS

CBRN Preparedness in Dutch Ambulance Teams, Effect of Training

By Luc JM Mortelmans, Dirk De Vries, Greet Dieltiens and Kurt Aneeuw

Conference: WCDEM 2015, At Cape Town, Volume: Prehosp Disaster Med 2015;30(Suppl. 1): s55
Source:https://www.researchgate.net/publication/275275299_CBRN_Preparedness_in_Dutch_Ambulance_Teams_Effect_of_Training

Abstract

Study/Objective: To evaluate CBRN preparedness of Dutch ambulance teams and the effect of training.
Background: Holland is a densely populated country in Northern Europe. With heavy petrochemical industry, nuclear plants and possible terrorist targets the risk for CBRN incidents is eminent. In such an incident ambulance personnel will be the first to be confronted with victims but are they prepared to? The Dutch Ambulance Academy organised a pilot course on working in CBRN circumstances.
Methods: An online survey on demographics, perceived knowledge, capability, willingness to work and training was completed by 50 participants the year after the course and offered online to other ambulance personnel. The answers were controlled with theoretical/practical questions.
Results: 318 untrained respondents completed the survey. Demographics for both groups were comparable except for a higher mean age in the trainees. The trained group had a sig- nificantly higher knowledge and capability to deal with nuclear incidents (3.61/10 vs 2.92/10 and 3.59/10 vs 2.28/10). Also, the practical knowledge on decontamination (4.48/10 vs 3.35/10) and PPE use (4.02/10 vs3.22/10) as well as the score on the theoretical test (5.98/10 vs 4.69/10) was significantly better for the trained group. Capability to deal with chemical incidents was slightly higher after training (4.63/10 vs 4.07/10) but insignif- icant. There were no significant differences in willingness to work. In case of a nuclear incident 24% will report to work uncondi- tionally and up to 22% will not go to work. The rest works under conditions, mainly availability of appropriate PPE's (97%) and radiodetection equipment (88%), previous training convinces 67%. In case of chemical incidents up to 33% works uncondi- tionally with 13% refusing to work. Availability of appropriate PPE's convinces 97%, previous training gets 65% to work.
Conclusion: We can conclude that our population is rather prepared with a positive effect of the training.

Are Belgian, Military Trained Medical Officers Better Prepared for CBRN Incidents than Civilian Emergency Physicians?

By Luc JM Mortelmans, jente lievers, Marc Sabbe and Greet Dieltiens

Conference: WCDEM 2015, At Cape Town, Volume: Prehosp Disaster Med 2015;30(Suppl. 1): s99
Source:https://www.researchgate.net/publication/275275657_Are_Belgian_Military_Trained_Medical_Officers_Better_Prepared_for_CBRN_Incidents_than_Civilian_Emergency_Physicians

Abstract

Objective: To explore the effect of military training on medical officer's CBRN preparedness. Background: Belgium is a densely populated European coun- try with heavy petrochemical industry, several nuclear installa- tions and potential terrorist targets. The risk for a CBRN incident is realistic.
Methods: An online survey on disaster training; estimated risk, - knowledge and – capability and, at last, willingness to work was presented by mail to all military active officers trained in medical sciences. These results were compared with the scores of civilian emergency physicians. Results: The response rate was 39% with a mean age of 42. 47% had some training in disaster management and 11% stated they were ever confronted with a chemical incident. Estimated risk for incidents ranged from 2.07/10 for nuclear to 2.98/10 for chemi- cal. Personal knowledge ranged from 3.89/10 for nuclear to 4.35/ 10 in chemical incidents. Estimated capability to deal with these incidents ranged from 2.96/10 (nuclear) to 3.44/10 (chemical). 46% was trained to use radiodetection material and 83% for per- sonal protective equipment. 78% felt to be sufficiently trained to decontaminate potential victims. Concerning willingness to work 50% would not report in case of a nuclear incident,

24% in a chemical incident. 13% works unconditionally in chemical inci- dents and 7% in a nuclear scenario. Conditions that convince those in doubt are: availability of appropriate PPEs (91%) and radiodetection equipment (86%), previous training (64%). If we compare our data with the results of the EP's we find similar demographics. Although more EP's were trained in disaster medicine their scores on knowledge and capability are much lower. The scores on decontamination, PPE and radiodetection are dramatically low. Although they have higher risk estimation the EP's are more willing to respond to work as our militaries.
Conclusion: The military background makes our population clearly better prepared than the Emergency Physicians.

Are Dutch Hospitals Prepared for Chemical, Biological, or Radionuclear Incidents? A Survey Study

Mortelmans LJM , Gaakeer MI , Dieltiens G , Anseeuw K , Sabbe MB . Are Dutch hospitals prepared for chemical, biological, or radionuclear incidents? A survey study. Prehosp Disaster Med. 2017;32(5):1-9.
Source:https://www.researchgate.net/publication/316804440_Are_Dutch_Hospitals_Prepared_for_Chemical_Biological_or_Radionuclear_Incidents_A_Survey_Study

Abstract

Methods: A descriptive, cross-sectional study was performed. All 93 Dutch hospitals with an emergency department (ED) were sent a link to an online survey on different aspects of CBRN preparedness. Besides specific hospital information, information was obtained on the hospital's disaster planning; risk perception; and availability of decontamination units, personal protective equipment (PPE), antidotes, radiation detection, infectiologists, isolation measures, and staff training.
Results: Response rate was 67%. Sixty-two percent of participating hospitals were estimated to be at-risk for CBRN incidents. Only 40% had decontamination facilities and 32% had appropriate PPE available for triage and decontamination teams. Atropine was available in high doses in all hospitals, but specific antidotes that could be used for treating victims of CBRN incidents, such as hydroxycobolamine, thiosulphate, Prussian blue, Diethylenetriaminepentaacetic acid (DTPA), or pralidoxime, were less frequently available (74%, 65%, 18%, 14%, and 42%, respectively). Six percent of hospitals had radioactive detection equipment with an alarm function and 22.5% had a nuclear specialist available 24/7 in case of disasters. Infectiologists were continuously available in 60% of the hospitals. Collective isolation facilities were present in 15% of the hospitals.
Conclusion: There is a serious lack of hospital preparedness for CBRN incidents in The Netherlands.

Are Belgian military students in medical sciences better educated in disaster medicine than their civilian colleagues?

By Luc JM Mortelmans, Jente Lievers, Greet Dieltiens and Marc Sabbe
Journal of the Royal Army Medical Corps 162(5) · January 2016
Source:https://www.researchgate.net/publication/290086460_Are_Belgian_military_students_in_medical_sciences_better_educated_in_disaster_medicine_than_their_civilian_colleagues

Abstract

Introduction: Historically, medical students have been deployed to care for disaster victims but may not have been properly educated to do so. A previous evaluation of senior civilian medical students in Belgium revealed that they are woefully unprepared. Based on the nature of their military training, we hypothesised that military medical students were better educated and prepared than their civilian counterparts for disasters. We evaluated the impact of military training on disaster education in medical science students.

Methods: Students completed an online survey on disaster medicine, training, and knowledge, tested using a mixed set of 10 theoretical and practical questions. The results were compared with those of a similar evaluation of senior civilian medical students.
Results: The response rate was 77.5%, mean age 23 years and 59% were males. Overall, 95% of military medical students received some chemical, biological, radiological and nuclear training and 22% took part in other disaster management training; 44% perceived it is absolutely necessary that disaster management should be incorporated into the regular curriculum. Self-estimated knowledge ranged from 3.75 on biological incidents to 4.55 on influenza pandemics, based on a 10-point scale. Intention to respond in case of an incident ranged from 7 in biological incidents to 7.25 in chemical incidents. The mean test score was 5.52; scores improved with educational level attained. A comparison of survey data from civilian senior medical master students revealed that, except for influenza pandemic, military students scored higher on knowledge and capability, even though only 27% of them were senior master students. Data on willingness to work are comparable between the two groups. Results of the question/case set were significantly better for the military students.
Conclusions: The military background and training of these students makes them better prepared for disaster situations than their civilian counterparts.

EDITOR'S COMMENT: We repeat again and again that the CBRN threat is real but it seems that the health sector thinks otherwise forgetting that in case of a real CBRN incident hospitals will be flooded by victims and worried-well seeking medical assistance. But then, it would be too late to organize and defend the emergency department and the hospital itself. As of December 2018, all Belgian Emergency Department will include CBRN training in their curricula – by law! And this a very good idea because if you rely on medical people to decide they will always find a good excuse not to do so… Baause even exotic things happen from time to time – and yes, in our shift!

Top 10 Most Dangerous Chemicals in the World

Source: https://interestingengineering.com/top-10-most-dangerous-chemicals-world-rw

June 22 – There a quite a few candidates for the most deadly substance. But one of the most potent poisons on the planet is the Botulinum toxin.
Naturally produced by the Clostridium botulinum bacterium, it is also used for cosmetic surgery in very small doses. But more on this later.
There are some other seriously dangerous chemicals out there.
These include things like:

- **Substance N** - Developed by the National Socialists during WW2.
- **Chlorine trifluoride** - Another nasty Nazi development. It can actually make asbestos burn apparently - more on this later.
- **Azidoazide Azide** - This is the most explosive compound ever created by man. It also has a pretty cool name.
- **Dimethyl Cadmium** - This could be considered the most toxic chemical in the world. It's pretty nasty all in all.
- **Fluoroantimonic Acid** - This is the most powerful acid every devised by mankind, apparently. Not something to be messed with!

What is the most dangerous gas in the world?

Much like the previous question, there are a lot of very dangerous gases in the world. Some of the most hazardous include the following:

- **Hydrogen sulfide** - In high enough concentrations, inhaling this gas results in a coma and death.
- **Arsine** - This gas attacks the hemoglobin in your red blood cells. At concentrations of **250 ppm**, Arsine is fatal.

- **Chlorine** - Inhalation of chlorine at concentrations in excess of **1000 ppm** is usually fatal.

There are, of course, many more nasty gases out there.

What are ten of the most dangerous chemicals?

There are many chemicals out there that can potentially cause serious harm or even death. Here are but 10 of them.

1. Batrachotoxin isn't very good for you

Batrachotoxin is the most potent non-peptide based poison known to man. It is commonly used in poison darts from, funnily enough, poison-dart frogs.

It is a highly potent cardiotoxic and neurotoxic steroidal alkaloid. To date, no antidote has been developed.

Interestingly, the frogs are unable to synthesize the chemical themselves, but rather acquire and secrete it from the Melyrid beetles they consume.

2. Chlorine Trifluoride is highly corrosive

Chlorine Trifluoride is famous for its ability to actually corrode glass. It is a so-called interhalogen compound that is colorless, highly-corrosive and an extremely reactive chemical.

It is mainly used as a component of rocket fuel and can only really be stored in fluorine-treated metal containers. When this nasty chemical meets water, it results in a highly explosive reaction.

3. Potassium Cyanide has killed some notable people in the past

Potassium Cyanide is a highly poisonous chemical that kills in minutes. For this reason, it has historically been used as a suicide pill by many prominent people in history.

Victims include the likes of Eva Braun (Hitler's longtime partner), Joseph Goebbels, Heinrich Himmler, Alan Turing and many more. It is also used by professional entomologists as a killing agent in collecting jars for, particularly fragile insect specimens.

4. VX is used in chemical weapons

VX, or Venomous Agent X, is a nasty nerve agent specifically designed for use in war. It was created by British military researchers and is deadly in doses as low as 10 mg.

VX can enter the body through the skin and doesn't easily break down in the environment. Exposure to VX kills by constantly activating glands and muscles. Death comes when the respiratory system fails.

5. Botulinum toxin A

Botox, or Botulinum Toxin A, is a very common cosmetic chemical that also happens to be one of the most toxic things in nature. This neurotoxic protein is produced by the bacterium Clostridium botulinum and other related species.

It is so toxic that just **1.3-2.1 ng/kg** of it would be enough to kill someone if injected. So you might well ask, why is it used in cosmetic surgery?

Because of its ability to paralyze muscles, it is ideally suited for treating things like wrinkles, and muscle spasms in extremely small doses.

6. Ricin is pretty nasty

Ricin is widely known as a highly dangerous chemical. Yet it can be readily found in the seeds of castor oil plants.

It is a highly potent toxin and a dose the size of just a few grains of table salt will kill a human outright. Ricin was investigated for a time for its potential applications in war, but interest was ultimately turned to the weaponization of sarin.

7. Sarin will kill you in minutes

Sarin is a highly potent nerve agent that will kill exposed victims in less than ten minutes. It kills you through suffocation as your lung muscles become paralyzed as a result of inhaling it.
According to Wikipedia, "Sarin is generally considered a weapon of mass destruction. Production and stockpiling of sarin was outlawed as of April 1997 by the Chemical Weapons Convention of 1993, and it is classified as a Schedule 1 substance."

8. Strychnine has been rumored to have killed Alexander the Great

Strychnine is an old favorite for assassins and murderers throughout history. While it is usually employed to dispatch unwanted pests it can be used on humans too.
It has been rumored in the past that it might have been used to kill historical figures like Alexander the Great and Robert Johnson the famous Blues musician.

9. Nicotine is actually pretty potent

Nicotine was developed by plants as a defense mechanism against pests. For this reason, it happens to be one of the most potent toxins in the world.
For humans, apart from being highly addictive in low doses, if you exposed yourself to enough of it - it would actually be fatal. According to the National Institute for Occupational Safety and Health (NIOSH), exposure to **5 mg/m³** of nicotine is "immediately dangerous to life and health".

10. Sodium Cyanide will kill you in seconds

Sodium Cyanide is routinely used as an industrial reactant. But exposure to it will result in the smell of almonds followed by death within seconds.
Cyanide binds to cytochrome c oxidase, a protein in the mitochondria, and stops the cells from using oxygen.

read.

RESEARCH ARTICLE

Health perspectives among Halabja's civilian survivors of sulfur mustard exposure with respiratory symptoms—A qualitative study

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Source: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0218648

In 1988, Halabja came under heavy chemical warfare attack using chemicals such as sulfur mustard (SM). Thousands of survivors of SM exposure in the city today live with multiple health complaints, such as severe, long-lasting respiratory symptoms; but their perceptions

of health have never been adequately researched. We aimed to explore current major health concern topics in civilian survivors with long-term respiratory symptoms.

Method

Sixteen subjects (f:m10:6, mean age 45.5 years (range 34–67)) were interviewed. Study participants were recruited in 2016 via a purposive sampling strategy among civilian survivors of chemical warfare in the city of Halabja in Kurdistan-Iraq. A qualitative research design was applied including semi-structured, face-to-face interviews. Data was analyzed using systematic text condensation.

Results

The analysis yielded fourteen themes related to: *(1)* General health: all participants described a deterioration in physical and psychological health, following the SM exposure, foremost involving respiratory symptoms, fatigue, sleeping disorders, ocular problems, depressive symptoms, and anxiety; *(2)* Quality of life: most notably, they reported a limited family life, limited social relations, lack of work ability, and concern about their financial situation. Moreover, many lived in constant fear of a renewed attack; *(3)* access to health care services: all participants reported that they had no, or only poor, access to health care services and limited access to specialist care, and all reported lack of financial resources to obtain treatment.

Conclusions

The post-exposure somatic and psychosocial effects such as respiratory symptoms of CWA are plausible contributor to poor general health and quality of life among survivors. We conclude that multidisciplinary interventions are needed to tackle the biopsychosocial complications in survivors of SM exposure to minimize further health damage in the future, as well as to promote their health-related quality of life.

EDITOR'S COMMENT: Back in 2003 while preparing for the 2004 Olympic Games in Athens, I participated in an OPCW course held in Tehran. There, next to the military hospital there was a smaller outpatient clinic dedicated to the chemical victims of the Iran-Iraq war (1980s). We examined and chat with real victims that during the war were in their early childhood. All of them, expressed the same agony, fears and life dissatisfaction as those included in the study above. This paper remind us that medical operations last more than the one hour the response operations will last!

European CBRNE Summit 2019 – Salisbury & Manchester

By Bobby Baker

Birmingham, United Kingdom – Over the past few years, the term "asymmetry" has been applied many times to the emerging threat landscape to first responders and military personnel around the world. Asymmetrical means that two sides do not match or are uneven. Intelligence SEC's 2019 European CBRNE Summit recently held in Birmingham, United Kingdom, highlighted two of the largest and most prominent chemical, biological, radiological, nuclear, high-yield explosive (CBRNE) incidents in the world: The 2018 Salisbury nerve agent attack and the 2017 Manchester concert arena bombing. Intelligence-SEC will be presenting the 2019 Asian CBRNE Summit to be held 3-5 December 2019 in Bangkok, Thailand.

Source: https://www.domesticpreparedness.com/journals/june-2019/

Captain Bobby R. Baker Jr., *(RET.) Dallas Fire Rescue, is a senior training specialist with the Counter Terrorism Division with Mission Support Test Services LLC, the primary contractor to the Nevada National Security Site and the Department of Energy based in Las Vegas, Nevada. He recently joined CTOS after serving 20 plus years, retiring as a captain with Dallas Fire Rescue in 2018 as the WMD/hazmat coordinator for the Type 1 Dallas Fire Rescue Hazmat Team. He was responsible for the daily regulatory compliance, training and response competencies for the Type 1 DFR Hazmat Team servicing the City of Dallas and the 16 county North Central Texas Council of Governments. He holds numerous critical infrastructure protection certifications from the Department of Homeland Security specializing in adopting countermeasures to prevent and deter large-scale CBRNE mass casualty events. He is a frequent speaker and guest lecturer on all matters concerning CBRNE consequence management for local response agencies, emphasizing the need for multiple agency unified command and training among all first responders. He recently presented "Asymmetric Threats to First Responders" at the European CBRNE Summit in Birmingham, United Kingdom, in April 2019. He is a 2003 graduate of Dallas Baptist University with a Bachelor of Science in History and World Religion*

Iran calls for destruction of US chemical weapons arsenal

Source: https://en.mehrnews.com/news/146973/Iran-calls-for-destruction-of-US-chemical-weapons-arsenal

June 28 – Iran believes that a world free of weapons of mass destruction is only viable through the destruction of the US arsenal, Iran's Foreign Minister Mohammad Javad Zarif said on Friday.

In a message on the anniversary of the chemical bombing of the western Iranian city Sardasht in 1987,


گزارش روز

* بمباران شیمیائی شهر سردشت در هفتم تیرماه گذشته منجر به شهادت ۶۰ تن و جراحت ۲۰۰۰ تن از مردم غیرنظامی شد

به مناسبت صدمین روز بمباران شیمیائی شهر سردشت

«سردشت»، نخستین شهر قربانی سلاح شیمیائی در جهان

* گروههای کثیری از مردم سردشت بهنگام آغاز بمباران بنا به عادت همیشگی به پناهگاهها رفتند، اما استشمام بوی تند و فریادهای دیگران، آنان را وادار به ترک شهر و پناه گرفتن در ارتفاعات کرد.

Sardasht Kurdistan Photo: Omid Farrokhi

the Iranian foreign minister said, "Iran, once more, emphasizes its principal policy of condemning the use of chemical weapons anywhere, anytime and under any circumstances."

The 1987 chemical bombing of Sardasht by former Iraqi dictator Saddam Hussein during the Iraqi-imposed war on Iran left over 100 people dead and thousands of others severely injured.

Zarif went on to add that Iran believes that the main step toward having a world free of weapons of mass destruction (WMD) is "to completely destroy the chemical weapons arsenal of the US as the only owner of such weapons in the world."

Criticizing the US for "being addicted to using inhumane tools of economic sanctions and terrorism" against Iran, Zarif said that the US sanctions have made the access of the Iranian victims of the chemical attack to the required medication much more difficult.

The Iranian foreign minister said the US sanctions are imposed on Iran in violation of the international humanitarian law, and the spirit of non-proliferation conventions, and called on the Organization for the Prohibition of Chemical Weapons (OPCW) to find an immediate solution for removing obstacles on the way to supplying the medications needed by the patients.

"The intentional negligence and ignorance of the international community and the member states of the chemical weapons convention in the face of such moves by the US is deeply regrettable, much like their silence thirty-one years ago toward the savage attack of the Baath dictator, backed by the US, against the defenseless civilians in Sardasht," he added.

Zarif also said that failure to hold accountable the perpetrators of the chemical attacks along with their accomplices and supporters has given way to the extremist groups in the Middle East region to commit similar crimes.

Recounting some related achievements and measures on the treatment of the chemical attacks' victims taken by Iran at the international level, he affirmed that Tehran will spare no effort in restoring the rights of the injured through legal and international channels.

read.

Pralidoxime in Acute Organophosphorus Insecticide Poisoning — A Randomised Controlled Trial

By Michael Eddleston, Peter Eyer, Franz Worek, et al.

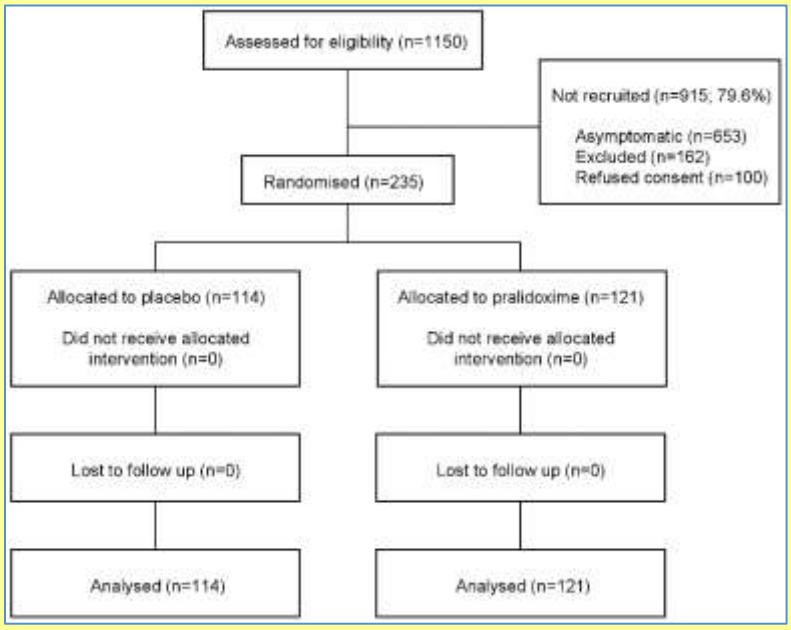
PLoS Med 2009; 6(6): e1000104

Source:https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000104

Poisoning with organophosphorus (OP) insecticides is a major global public health problem, causing an estimated 200,000 deaths each year. Although the World Health Organization recommends use of pralidoxime, this antidote's effectiveness remains unclear. We aimed to determine whether the addition of pralidoxime chloride to atropine and supportive care offers benefit.

Methods and Findings

We performed a double-blind randomised placebo-controlled trial of pralidoxime chloride (2 g loading dose over 20 min, followed by a constant infusion of 0.5 g/h for up to 7 d) versus saline in patients with organophosphorus insecticide self-poisoning. Mortality was the primary outcome; secondary outcomes included intubation, duration of intubation, and time to death. We measured baseline markers of exposure and pharmacodynamic markers of response to aid interpretation of clinical outcomes. **Two hundred thirty-five patients were randomised to receive pralidoxime (121) or saline placebo (114).** Pralidoxime produced substantial and moderate red cell acetylcholinesterase reactivation in patients poisoned by diethyl and dimethyl compounds, respectively. **Mortality was nonsignificantly higher in patients receiving pralidoxime**: 30/121 (24.8%) receiving pralidoxime died, compared with 18/114 (15.8%) receiving placebo (adjusted hazard ratio [HR] 1.69, 95% confidence interval [CI] 0.88–3.26, $p=0.12$). Incorporating the baseline amount of acetylcholinesterase already aged and plasma OP concentration into the analysis increased the HR for patients receiving pralidoxime compared to placebo, further decreasing



the likelihood that pralidoxime is beneficial. The need for intubation was similar in both groups

Baseline Characteristic	Subcategory	Placebo (*n* = 114)	Pralidoxime (*n* = 121)
Age, y, median (IQR)		29.5 (23 to 42)	31 (22 to 48)
Males, *n* (%)		92 (80.7)	96 (79.3)
Systolic BP, mmHg, mean (SD)		116 (19.8)	118 (22.7)
Diastolic BP, mmHg, mean (SD)		76 (13.4)	76 (17.2)
Pulse mean, bpm, mean (SD)		101 (22)	97 (21)
Time since ingestion, h, median (IQR)		4.4 (2.9 to 7.4); *n* = 112	4.3 (2.9 to 7.8); *n* = 116
Time since ingestion using categorical variable derived from times provided, *n* (%)	<4 h	53 (46.5)	51 (42.2)
	4–12 h	41 (36.0)	45 (37.2)
	>12 h	18 (15.8)	20 (16.5)
	Unknown	2 (1.8)	5 (4.1)
Charcoal allocation for those in RCT, *n* (%)	Multiple dose activated charcoal	8 (7.0)	13 (10.7)
	Single dose activated charcoal	11 (9.7)	14 (11.6)
	No activated charcoal	10 (8.8)	13 (10.7)
	Not in RCT	85 (74.6)	81 (66.9)
Charcoal treatment, *n* (%)	Multiple dose activated charcoal	8 (7.0)	13 (10.7)
	Single dose activated charcoal	31 (27.2)	42 (34.7)
	No activated charcoal	75 (65.8)	66 (54.6)
GCS score, median (IQR)		15 (12 to 15)	14 (10 to 15)
GCS score on admission, *n* (%)	GCS 14 or 15	79 (69.3)	73 (60.3)
	GCS<14	35 (30.7)	48 (39.7)
	GCS 11–13	15 (13.2)	16 (13.2)
	GCS 7–10	5 (4.4)	6 (5.0)
	GCS 3–6	15 (13.2)	26 (21.5)
Intubated at baseline, *n* (%)		16 (14.0)	24 (19.8)

doi:10.1371/journal.pmed.1000104.t001

Baseline Characteristics	Subcategory	Placebo (*n* = 114)	Pralidoxime (*n* = 121)
OP insecticide class at randomisation, *n* (%)	Dimethyl	47 (41.2)	46 (38.3)
	Diethyl	49 (43.0)	54 (45.0)
	Unknown	18 (15.8)	20 (16.7)
OP insecticide class after lab analysis, *n* (%)	Number	112	121
	Dimethyl	33 (29.5)	39 (32.2)
	Diethyl	50 (44.6)	62 (51.2)
	S-alkyl	2 (1.8)	0
	Mixed	2 (1.8)	1 (0.8)
	Unknown	21 (18.8)	16 (13.2)
	No OP detected	4 (3.6)	3 (2.5)
BuChE activity on admission, mU/ml	Number	103	106
	Median (IQR)	110 (9 to 746)	86 (6 to 920)
	Dimethyl, median (IQR) (*n*)	431 (20 to 1606) (*n* = 41)	733 (73 to 1876) (*n* = 39)
	Diethyl, median (IQR) (*n*)	15 (0 to 144) (*n* = 46)	10 (0 to 99) (*n* = 49)
	Other or unknown, median (IQR) (*n*)	122 (34 to 818) (*n* = 16)	121 (10 to 740) (*n* = 17)
Red cell AChE activity before treatment, mU/μmol Hb	Number	92	102
	Median (IQR)	28 (7 to 59)	44 (12 to 97)
	Dimethyl, median (IQR) (*n*)	9 (2 to 32) (*n* = 36)	17 (6 to 70) (*n* = 37)
	Diethyl, median (IQR) (*n*)	47 (27 to 65) (*n* = 40)	60 (34 to 116) (*n* = 47)
	Other or unknown, median (IQR) (*n*)	20 (6 to 115) (*n* = 16)	33 (4 to 68) (*n* = 17)
Aged red cell AChE before Rx, %	Number	92	101
	Median (IQR)	59 (34 to 96)	46 (29 to 89)
	Dimethyl, median (IQR) (*n*)	97 (61 to 100) (*n* = 36)	89 (56 to 99) (*n* = 36)
	Diethyl, median (IQR) (*n*)	34 (20 to 45) (*n* = 40)	35 (21 to 45) (*n* = 48)
	Other or unknown, median (IQR) (*n*)	84 (47 to 92) (*n* = 16)	72 (34 to 100) (*n* = 16)

Data were collected on admission to hospital; recruitment occurred soon after.
Abbreviations: AChE, acetylcholinesterase; BuChE, butyrylcholinesterase.
doi:10.1371/journal.pmed.1000104.t002

(pralidoxime 26/121 [21.5%], placebo 24/114 [21.1%], adjusted HR 1.27 [95% CI 0.71–2.29]). To reduce confounding due to ingestion of different insecticides, we further analysed

patients with confirmed chlorpyrifos or dimethoate poisoning alone, finding no evidence of benefit.

Conclusions

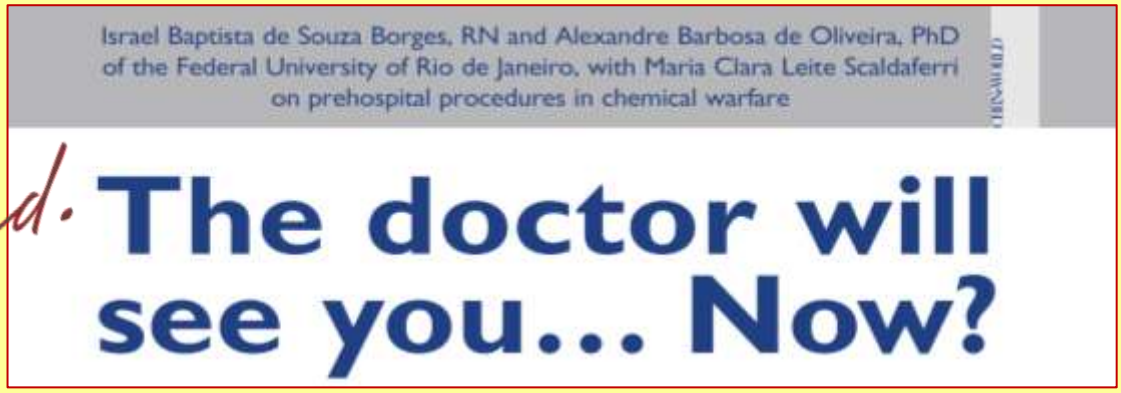
Despite clear reactivation of red cell acetylcholinesterase in diethyl organophosphorus pesticide poisoned patients, we found no evidence that this regimen improves survival or reduces need for intubation in patients with organophosphorus insecticide poisoning. The reason for this failure to benefit patients was not apparent. Further studies of different dose regimens or different oximes are required.

EDITOR'S COMMENT: Although the results of this study are very revealing and useful, how ethical is to provide saline to victims exposed to organophospates?

CBRNe World

April 2019 issue

Source: http://www.cbrneworld.com



Tularemia bacterium hibernates but can be traced in terror attacks

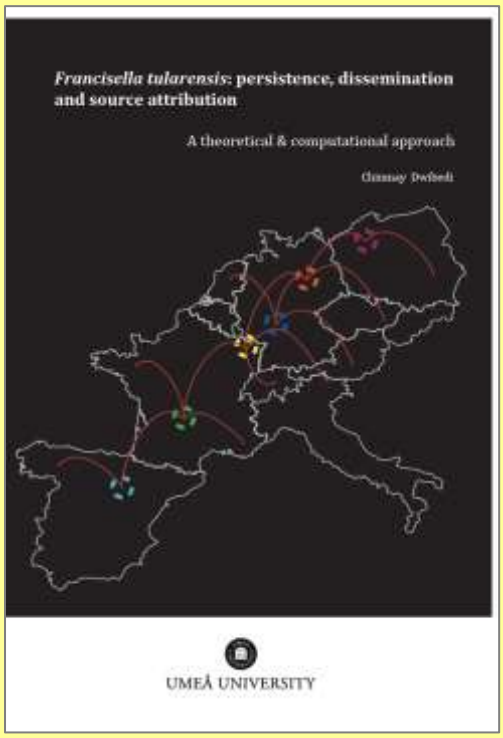
Source: https://www.umu.se/en/news/tularemia-bacterium-hibernates-but-can-be-traced-in-terror-attacks_7649881/

February 2019 – The bacterium that causes tularemia in animals and humans can survive in a dormant state in nature for a long time before causing new outbreaks. This according to a new doctoral thesis at Umeå University. The thesis also shows a method for tracing if the bacterium is used as a biological weapon in, for example, terrorist attacks.

"Its potency to become dangerous in small amounts unfortunately makes this bacterium an ideal candidate as a biological weapon. Therefore, it is important that we have found a way to trace the origin of different bacterial cultures," says Chinmay Dwibedi, doctoral student at the Department of Clinical Microbiology at Umeå University and the Swedish Defence Research Agency, FOI.

In his thesis, Chinmay Dwibedi has studied outbreaks of tularemia, also called 'rabbit fever', in Sweden and other European countries. Tularemia is caused by the bacterium Francisella tularensis and is a disease that infects both animals and humans. In Sweden, people have so far only suffered from a mild form of tularemia. Already at a modest dose, variants of the bacterium can cause more serious disease attacks with deadly outcomes. Therefore, during the Cold War, the superpowers experimented with Francisella tularensis as a biological weapon.

In one study, the Francisella tularenis bacterium was analysed in infected people and animals during repeated outbreaks in Örebro County in mid-Sweden. It was then discovered that the bacterial genome remained identical for up to nine years. Furthermore, the bacterium could survive for four years without nutrition in a laboratory experiment. In another study, the researchers could see that the bacterium could migrate several thousand kilometres through continental Europe with little change in its genome.



"The results indicate that there is a natural storage effect for the bacterium that can be compared to a microbial seed bank, so that it enters a dormant state between outbreaks before reactivating and causing new infections. It also appears that the bacterium has the ability to migrate rapidly for long distances leaving little evolutionary signals to map its movement," says Chinmay Dwibedi.

In his thesis, Chinmay Dwibedi shows a promising method that Umeå researchers have developed to trace the bacterium in its steps. By enhancing certain genetic signals, it could be seen that some genetic variants and mutations, present in low numbers, benefited from life in the laboratory. These mutations were strategically enriched and could be used as signatures. **These bio-signatures made** it possible to determine whether an outbreak was caused by a natural infection or whether it was, for example, the cause of a terrorist attack in which bacteria had been cultivated in laboratories.

Chinmay Dwibedi *has previously obtained an engineering degree in bioinformatics from VIT University in India. After his doctoral degree, he plans to continue studying bacteria in human gut microbiome at the University of Gothenburg.*

To the doctoral thesis

CBRNet®

Source: https://www.bruker.com/products/cbrne-detection/cbrnet.html

CBRNet® provides Bruker Detection clients with the world's first purpose designed network of chemical, biological, radiological and explosive detectors, backed by world class experts providing constant help and advice. Deadly CBRNe agents are easily hidden, hard to detect and their components difficult to identify. Understanding how to react to their use requires scientific expertise of the highest level, available exactly when you need it.

Bruker's CBRNet® powered by SafeZone, meets these needs. Three core pillars of activity are provided: An operational pillar, designed to support day to day activity and incident response. A Training pillar, designed to help you train your people and to exercise your teams collectively. A Fleet Management pillar providing supply, maintenance, repair and asset tracking capabilities as well as updating core software when needed.

The availability, integrity, authentication, confidentiality and non-repudiation of your data is critical to our success.

CBRNet® consists of three core components:

- The sensor layer offers the world's most advanced instruments, specially designed for the network. Legacy sensors from Bruker and other manufacturers can be added to ensure our customers get value from existing equipment.
- The dedicated Information System, SafeZone, displays data from sensors in a Recognised CBRNe Picture delivered to your operations rooms.
- CBRNet® scientific and technical staff in our dedicated Operations Facilities are available at all times to offer support and advice. Professional expertise is at your finger tips, wherever and whenever you need.

▶▶ For more detailed information on CBRNet® click here.

Portable Bio Detector

Source: https://www.bruker.com/products/cbrne-detection/bio-detection/pbdi/overview.html

The Bruker pBDi is a portable detection platform for rapid and sensitive on-site identification of biothreat agents. Developed for use by non-scientific personnel, the pBDi is easily operated, even while working in protective equipment under extreme conditions.

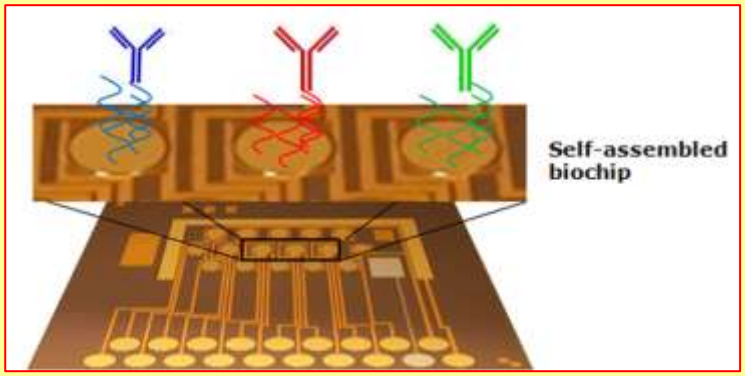
Fully portable and operating from internal batteries, pBDi can be used in the hot zone. Equally pBDi can be integrated with various mobile platform solutions, where it can be powered from an external supply. The pBDi employs a sensitive electrochemical biochip technology for multiplex ELISA-based (enzymelinked immunosorbent assay) detection of biothreat agents.
The pBDi builds on the technology of the Bruker portable Toxin Detector and offers new features such as integration with a mobile suitcase, battery operation, Bluetooth connection to a ruggedized tablet PC and assays for bacteria, viruses and toxins identification.

Technical details

The detection principle of the pBDi is based on the well-established ELISA procedure combined with an electrochemical readout.

Capture antibodies immobilized on gold electrodes facilitate the specific binding of corresponding biothreat agents. Detection of bound biothreat agents is realized by application of a detector-antibody-enzyme conjugate and measurement of the electrical current of an enzymatic redox reaction.

The electric signal is strongly amplified in this system and allows very sensitive biothreat agent detection in approx. 20 minutes. First, the high turnover of enzymatic reaction contributes to the signal amplification and second, a redox cycling procedure built into the experimental procedure, provides an additional signal amplification. The straightforward workflow starts with resuspension of a liquid or solid sample in a supplied sample buffer.



pBDi Features

- **Broad application range:** Universal and reliable detection of up to 6 toxins, bacteria and viruses in parallel assayed in duplicates along with internal assay controls
- **Easy-to-use ELISA-based technology:** Special cartridge and reagent holder design enable safe handling by unskilled operators.
- **Automated sample processing and data evaluation:** Wizard-based control software with fully-automated data processing and "traffic light" based result display.

Principle of electrochemical immunoassay

- **Outstanding test time combined with high sensitivity:** Receive test results in about 20 mins with sensitivities down to pg/ml range for toxins; 10^3 CFU/ml for bacteria and 10^4 PFU/ml for viruses.
- **Portability and possibility to decontaminate:** Battery-based operation modus and suitcase integration enable field and mobile applications by first responders.
- **Freeze dried ready-to-use kits:** Enable long-time storage up to 12 months and reduce ownership costs.
- **Open array concept:** Self-immobilization protocols enabling users to create their own assays.

Kits

Bruker offers ready-to-use test kits for on-site detection and identification of diverse biothreat agents, pathogens and toxins. All pBDi test kits contain optimized reagents to perform multiplex electrochemical ELISA in a stable and time-saving process. Developed for ease of use by non-scientific personnel, the kits can be operated and the samples handled while working in protective equipment under field conditions.

Benefits of our test kits and reagents:

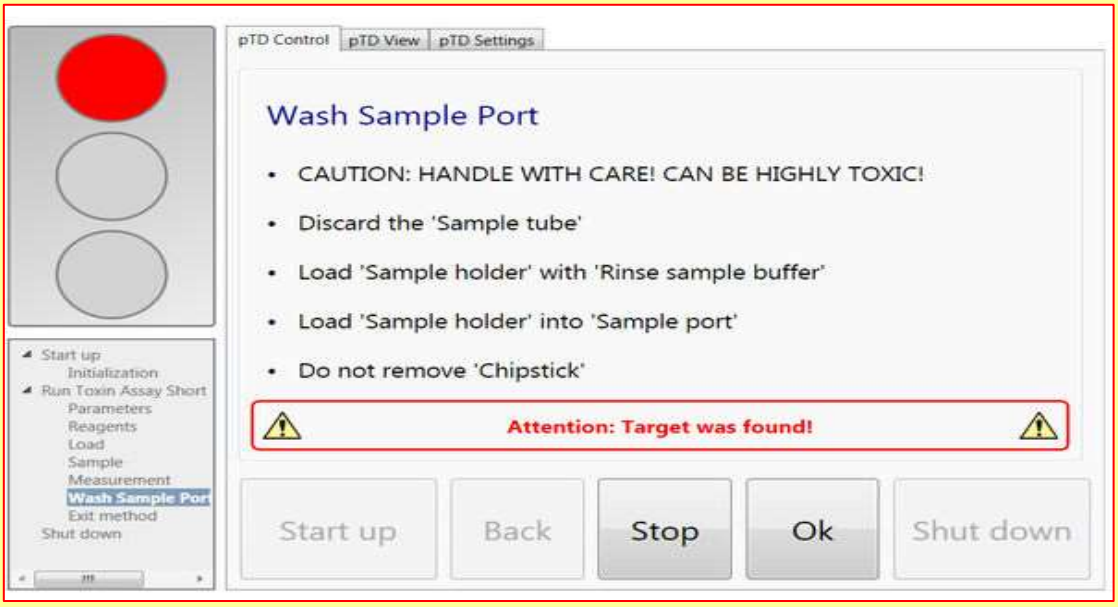
- Freeze dried agents for easy use
- Optimized for electrochemical biochip technology
- Unique cartridge design for easy handling
- Shelf life of 12 months
- Unique colour-coded reagents to avoid confusion

Available Test Kits and detectable agents:

Biothreat Test Kit 1	Toxin Test Kit 1	Toxin test Kit 2	Training Kit
Bacillus anthracis	BoNT/A	BoNT/C	Training Sample
Yersinia pestis	BoNT/B	BoNT/D	
Francisella tularensis	BoNT/F	BoNT/E	
Brucella spp.	SEB	SEA	
Burkholderia mallei/ pseudomallei	Ricin	Abrin	
Orthopox viruses			

Software

pBDi Control is the control and analysis software of the pBDi system. Results of a test run are displayed simplest by a traffic light-based color code and in more detail by graphs and normalized slopes. A red light along with a warning message indicates a target substance found.



Screenshot of Control Software

Hair Today, Gone Tomorrow? The Evolving Response to Mass Casualty Chemical Incidents

By Prof. Robert P. Chilcott

Toxicology Research Group, University of Hertfordshire, UK

Source: http://nct-magazine.com/nct-magazine-july-2019/hair-today-gone-tomorrow-the-evolving-response-to-mass-casualty-chemical-incidents-by-robert-chilcott/

The intentional, large-scale release of a hazardous substance may result in a "mass casualty" situation, potentially affecting several thousand individuals - as was the case following the release of nerve agent on the Tokyo underground transport system in 1995.

Many countries have well-established incident response plans that aim to deliver decontamination facilities, antidotes, medical supplies and supportive care to affected individuals. In the case of major public gatherings such as sports events and music festivals, such emergency response assets can be pre-deployed to ensure their immediate availability. This is a proportional safeguard, as many toxic chemicals are rapidly acting and so a delayed response will have an adverse effect on casualty survival. However, it is simply not practical nor economically feasible to maintain such a state of readiness in anticipation of an attack which could potentially occur at any time, in any place and involve any toxic substance. Therefore, an alternative approach is required to address the earliest phase of a chemical incident prior to the arrival of specialist resources. The generic term for this strategy is the Initial Operational Response, or IOR, which can be considered a form of first aid for chemically contaminated casualties.

Several countries have formally established an IOR to chemical incidents including France, the UK and the USA, a common feature of which is to evacuate casualties from the source of exposure followed by immediate removal of clothing ("disrobe") and instigation of dry decontamination using any readily available absorbent material such as tissue paper or wound dressings. Whilst such an ad hoc approach lacks sophistication, these simple actions may save lives and will substantially reduce exposure to toxic chemicals. Incidentally, dry decontamination is the default option for an IOR as water may enhance the skin absorption (and thus toxicity) of certain chemicals. Dry decontamination is also less likely to result in the inadvertent spreading of a contaminant over the skin surface.

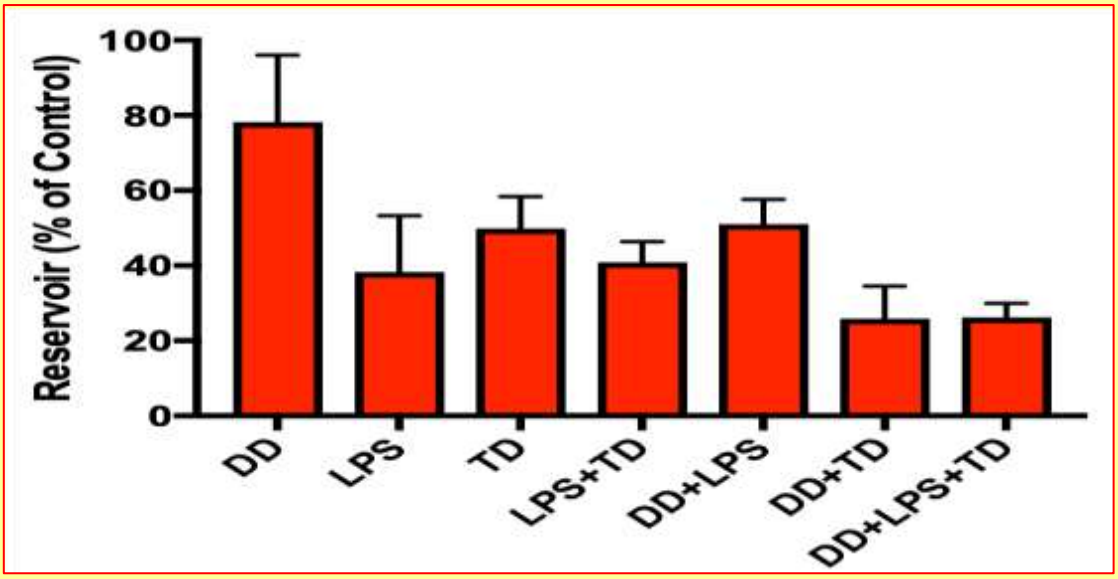
There is ample evidence to support the implementation of an IOR: scientific studies have consistently demonstrated the clinical benefit of rapid skin decontamination. However, this ignores a startlingly obvious feature of the human body – scalp hair.

Getting to the Root of the Hair Problem

The top of the head represents the anatomical location which is likely to accumulate the highest levels of contamination following an overhead exposure to liquids or aerosols. The hair physically acts as a protective layer, reducing exposure of the underlying scalp skin by up to 95%. A further advantage of hair is its affinity to strongly absorb oily (lipophilic) chemicals. In this respect, hair can also act (to a limited extent) as a decontaminant, absorbing chemical contaminants from the surface of the underlying skin. Both characteristics are seemingly advantageous for the more hirsute members of the population. However, there is a yang to every yin. **The affinity of the hair for lipophilic chemicals results in the rapid movement of such contaminants from the surface of each hair strand to within, forming an internal reservoir.** As the contaminant is no longer on the hair surface, it becomes relatively impervious to both wet and dry forms of decontamination (see graph below).

By unfortunate coincidence, some of the more toxic chemicals of concern (e.g. nerve agents and sulfur mustard) are lipophilic, and so these are likely to form a reservoir within the hair strands and become resistant to decontamination. A second problem relating to the formation of the hair reservoir is off-gassing: the production of toxic vapors from volatile contaminants. It has been demonstrated that chemicals such as sulfur mustard can off-gas from the hair reservoir for several days following decontamination. This represents a secondary hazard through inhalation of the resulting vapor. A final consideration is the bioavailability of the hair

reservoir. The roots of each hair strand penetrate deep into the dermis. A chemical diffusing from the reservoir down the hair strand will, in theory, be able to avoid the barrier layer of the skin and directly enter the systemic circulation. The toxicological significance of this route of absorption is poorly understood at present.



Reservoir of a lipophilic chemical (a non-volatile organophosphorus compound similar to VX) recovered from within the hair after different forms of decontamination, expressed as a percentage of that recovered from control (non-decontaminated) hair. Treatments included dry decontamination (DD), ladder pipe system (LPS), technical decontamination (TD) and various combinations thereof. These data show that even after extensive treatment involving dry, ladder pipe and technical decontamination (DD+LPS+TD), there is a persistent reservoir of material within the hair.

Wash and go or stop and chop?

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

Recommended Reading

"The United Kingdom's initial operational response and specialist operational response to CBRN and HazMat incidents: a primer on decontamination protocols for healthcare professionals", 2019, Emergency Medicine Journal. 36, 2, p. 117-123 (https://emj.bmj.com/content/36/2/117).

Primary Response Incident Scene Management: PRISM Guidance, Volume 1, Second Edition, 2019, Office of the Assistant Secretary for Preparedness and Response, Biomedical Advanced Research and Development Authority, Washington DC (2018). Available from https://www.medicalcountermeasures.gov/barda/cbrn/prism/

"The chemical, biological, radiological and nuclear (CBRN) chain of survival: a new pragmatic and didactic tool used by Paris Fire Brigade", 2019, Crit Care. 2019;23:66. doi: 10.1186/s13054-019-2364-2. Available from https://www.researchgate.net/publication/331368792_The_chemical_biological_radiological_and_nuclear_CBRN_chain_of_survival_a_new_pragmatic_and_didactic_tool_used_by_Paris_Fire_Brigade

The undeclared war America is losing

By L. Rick Bremseth

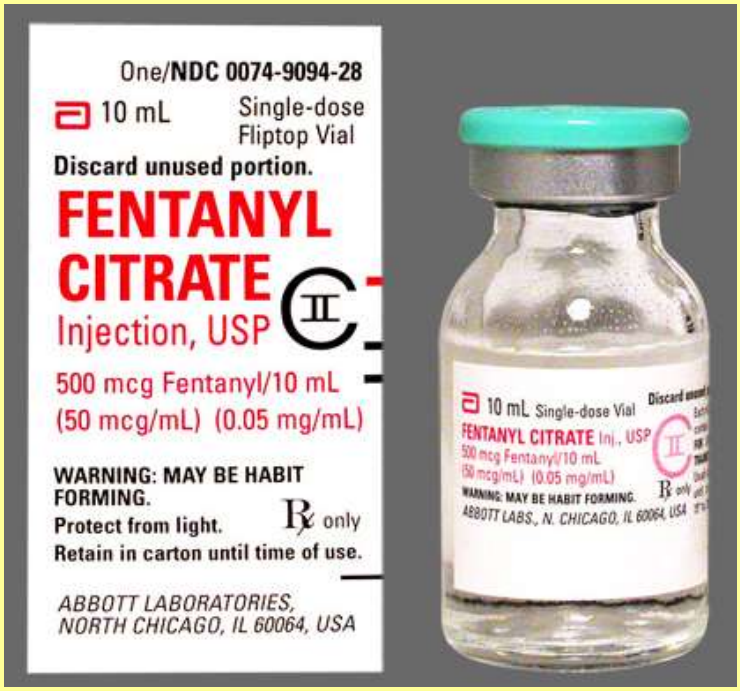
Source: https://www.washingtontimes.com/news/2019/jul/4/why-fentanyl-must-be-designated-a-weapon-of-mass-d/

July 04 – As recently reported in The Washington Times, the Department of Homeland Security is considering designating the opioid drug fentanyl as a weapon of mass destruction. We view this as a viable decision and one that may be overdue; but doing so

will require both an enhanced accuracy of terms and conditions and an acceptance of responsibility to act once such a declaration is made. Fentanyl's potency is without doubt: It is approximately 100 times more powerful than morphine and 50 times more potent than heroin.

To date, the number of Americans who have died from opioid overdoes not only approaches 100 times the number of American fatalities in the 9/11 attacks but also surpasses all direct U.S. combat deaths incurred during World War II, and fentanyl overdoses strongly contribute to that number. Several months ago, authorities seized about 234 pounds of fentanyl in Nogales, Arizona, a supply estimated to be enough to kill more than 100 million people.

Recent estimates purport that there is enough fentanyl in the United States to kill every American numerous time over. The opioid impact is also economic. For example, in 2015 the opioid-related U.S. taxpayer cost was reported to be approximately $5,04B, an amount greater than that year's Department of Defense budget. In this respect, the threat to our economy, public health and national security is clear and present.



The majority of fentanyl in the United States is illegally smuggled from Mexico, and China is playing a profound, albeit subtle role in providing Mexican cartels with the chemical ingredients required to synthesize fentanyl and its derivatives. The Mexican cartels are illegally moving drugs — as well as people — across our southern border, and in doing so, are preying upon our current social, political and economic vulnerabilities and volatilities.

This begs the question: If China is allied with the cartels for moving drugs into the United States, might these other vulnerabilities also be "targets" for China's disruptive engagements? And, if so, toward what goals and objectives? Further, is China using the Mexican cartels as proxies, similar to the way the Soviets used Cuban forces in Africa and elsewhere during the Cold War?

Much of modern China's national identity and political narrative is rooted in its so-called "Century of Humiliation" (mid-1800s-mid-1900s) which was a consequence of the West's importation of opium from India into China. Reacting to this perceived national denigration and subjugation, China's assumption of status as a — if not the — dominant global superpower involves a sense of payback to the West which is manifest across several vectors.

Keep in mind, however, that weapons are not only used in traditional warfare. By definition, a weapon is an instrument that can be utilized to leverage influence in a variety of ways. Increasingly, these ways are becoming non-combative ("non-kinetic"). For instance, the production, importation and distribution of lethal drugs are among several non-kinetic engagements that China effectively employs against the United States to disrupt, to diminish, and/or to destroy key elements of our national stability.

Yet, the history of America's wars and longstanding military doctrine established by the Department of Defense have made conventional ("kinetic") warfare the mode of engagement most familiar to both civilians and the military. When addressing, mitigating or preventing non-kinetic threats, especially those that occur during pre-conflict conditions, the principles and rules of kinetic warfare do not necessarily or appropriately apply.

Non-kinetic engagements often lack the grossly evident destructive outcomes of conventional warfare. They also are not intended for "destruction" in the classic sense but rather can and should be regarded as weapons of mass "disruption" to destabilize nations, societies, populations, and balances of power.

Since economic, cyber, precision biochemical, psychological and narcoterrorism engagements do not readily fit into the U.S. model of warfare, they often remain unrecognized, and if and when identified, prove difficult when determining type and proportionality of response. If the recipient nation "does nothing," then the destructive effects of the non-kinetic engagements increase, and the adversary becomes even more emboldened.

If the recipient nation responds combatively, such actions may be viewed as overly aggressive and may, in fact, incur justifiable retaliation from the nation waging the non-kinetic activity. This creates a "grey zone" of hostility, influence, and effect, which, under current conditions and criteria, can be seen as an undeclared — if not un-declarable — asymmetrical war of intent and will.

And this is precisely the point. In his treatise "The Art of War," Chinese philosopher Sun Tzu states that the truly victorious achieve victory before going to war or secure victory without ever having to go to war at all. Indeed, the Western warfare concepts of von Clausewitz, and the Augustinian precepts that guide "just war" and "just conduct in warfare" do little to directly respond to a non-kinetic or undeclared war.

The void between kinetic and non-kinetic threats warrants closure if we are to effectively counter the full range of unrestricted engagements currently being executed with disruptive, eventually destructive, and inarguably devastating consequences. As the title of this article indicates, this is a clandestine conflict America is losing — but why? We propose three main reasons:

First — Our failure to recognize non-kinetic engagements as highly effective forms of "disruptive" conflict. Via intentionally induced ambiguity, our adversaries enjoy freedom of action.

Second — Adroitly, our adversaries keep engagements clandestine and short of a U.S. kinetic response. They want us to remain unaware and/or complacent until the time for conducting kinetic warfare is to their advantage.

Third — Our adversaries recognize that our rigidity of institutionalized processes and thinking inhibit and/or prevent timely responses. Further, resulting from our lack of imagination, creativity, and foresight regarding non-kinetic engagements, we have no sense of urgency and a delayed hrecognition of the threats.

Based upon the aforementioned points, we advocate designating fentanyl as a weapon of mass destruction/disruption. But this is merely part of a larger response to a growing problem. By addressing our existing shortcomings and recognizing the opportunities for developing clandestine non-kinetic offensive capabilities and defensive counter-measures, we can seize the initiative and begin winning in this domain. As former Secretary of State Henry Kissinger warned, "History punishes strategic frivolity sooner or later."

L. Rick Bremseth *is the senior Special Operations Forces (SOF) adviser for CSCI, Springfield, Va. He is a retired U.S. Navy captain, (SEAL). James Giordano is professor of neurology and biochemistry and co-director of the O'Neill-Pellegrino Program in Brain Science and Global Law and Policy at Georgetown University, He serves as Donovan senior fellow in biowarfare and biosecurity at the U.S. Special Operations Command.*

Bringing Out the Dead: Mass Fatality Management in the CBRNE Context

Source: http://www.cbrneportal.com/bringing-out-the-dead-mass-fatality-management-in-the-cbrne-context/

"Our dead are never dead to us, until we have forgotten them" – George Elliot
"The dead cannot cry out for justice. It is a duty of the living to do so for them"- Lois McMaster Bujold

April 2015 – A *mass fatality incident or event* is any circumstance resulting in mass deaths which exceed local death investigation resources. The challenges posed by fatality management and death/medicolegal investigations in the context of CBRNE terrorism are multifaceted and resource intensive.

The commonalities present in mass fatality management of CBRNE events, include:

1. *The event presents as a crime scene with inherent forensic considerations, and involves a complex investigative response. EVERY mass fatality event should be treated as a crime scene until proven otherwise by competent investigative and forensic authorities.*
2. *The event may generate a large casualty load with various mechanisms of harm leading to mass fatalities requiring identification of human remains.*
3. *As in all cases of natural and unnatural death, the cause of death is of paramount importance.*
4. *CBRNE events create the need for special precautions and decontamination of fatalities.*
5. *Community, survivor, first responder and first receiver crisis intervention and disaster mental health services will be required.*
6. *Mass fatality management resources must be integrated into community emergency preparedness and operational response plans.*
7. *Faith-based assets must be included in all aspects of mass fatality management and be readily available to provide pastoral counseling and critical event chaplaincy services.*
8. *Cultural and ethnic differences in handling and disposition of human remains must be respected, as much as possible.*

The overall response to a mass fatality even is comprised of the following three phases:

1. Arrival of responders, implementation of Incident Command System (ICS) structure, scene size-up and assessment, critical incident/event plan activated, and coordination of multiagency assets.
2. After activation of the Emergency Response Plan (ERP), the second phase of response begins. The ICS becomes operational, assuming more of a joint Unified Command (UC), involving multiple agencies and a undertaking of lead public safety roles.

Law enforcement and fire-rescue service personnel create secure inner and outer perimeters, provide hazard assessments and control, and conduct initial rescue operations. EMS providers perform triage, provide stabilizing medical care and decontamination, and transport survivors to designated health care facilities (HCFs). Additional resources are requested, as needed.

1. The final phase is the resolution phase, which involves on-going crime scene and criminal investigation, removal and transport of human remains, coordination of morgue services, next of kin notifications, forensic identification process, and community-wide support services.

The last phase of medicolegal death investigation, identification and mortuary operations utilizes the Medical Examiner or coroner, as the Incident Commander (IC) to coordinate these activities.

After the overall IC/UC, deems that the incident site is safe and secure, the initial evaluation team, usually comprised of an operations officer, crime scene investigators and a lead forensic medicolegal investigator/death investigator will proceed to the location to initiate the preliminary phase of death scene/crime scene processing and documentation. All personnel conducting mass fatality operations in a CBRNE environment must don and wear adequate personal protective equipment (PPE) and maintain situational awareness at all times.

The ME's or coroner's office must interface with the site Incident Commander as needed for periodic updates regarding scene conditions, safety/hazard assessment issues, including ascertaining the appropriate level of PPE that is required for any hot-zone/incident site operations, as well as receiving a brief on the particulars/circumstances which generated the mass fatality event.

The ME or coroner must also reciprocate and advise the Incident Commander on current capabilities and what information and resources are required to conduct and optimize the fatality management mission, e.g. mobile refrigeration units, additional personnel, cadaver dogs, etc.

The three major operational areas of mass fatality management are: *search and recovery, morgue operations, and family assistance*. *Scene operations* involve search and recovery operations and initial evidence collection/recovery, *morgue operations* include identification and processing of human remains, including the determination of cause of death, e.g. exsanguination, multiple trauma, toxic chemical inhalation/pulmonary edema, anoxia, etc.

The *family assistance center* of the medical examiner's or coroner's office provides antemortem information, identification notification, and the care of families, including grief counseling and assistance with disposition of any processed remains .

Thus, local funeral directors and their services become of supreme importance in mass fatality events, and during the continuum of the postmortem period. Provisions for the full participation of funeral and mortuary services in community-wide emergency preparedness efforts must be made by each locality, and close liaisons be formed between funeral and mortuary services and other stakeholders in crisis and emergency management.

Information that is relayed to the ME or coroner during notification of a mass fatality event includes:

- *Type of incident i.e.(explosion, structural collapse, toxic chemical or biohazardous material, radioactivity, fire)*
- *Location*
- *Estimated number of fatalities*
- *Condition of bodies (i.e., burned, fragmented)*
- *Demographics of deceased, and including any hazardous conditions (i.e., entrapment, chemical or radiological contamination, exposure to infectious etiologic agents)*
- *Ongoing response activities*
- *Response agencies currently engaged in operational response*

In search and recovery operations, locating and removing the decedents, anatomical parts, and personal effects, and maintaining accountability and chain of custody are mission -critical.

Human remains must be treated with the utmost respect and dignity. The remains should be covered or shielded from public view, and any fatality collection point or temporary morgue, should be set up away from any triage, treatment and medical transport areas, as well as protected from media inquiry.

In general, decedents are not to be moved from the incident site/death scene until cleared by the ME or coroner's office. The decedents' body position and location, coupled with any distinguishing features should be noted and documented by emergency response personnel, and the remains should not be moved until crime scene and on-scene medicolegal investigators have completed their duties, cleared and released the scene.

Morgue operations involve several different divisional functions designed to record and provide information about the decedent for comparative analysis with the ante mortem data, e.g. dental records. The use of sophisticated DNA assays will yield valuable information regarding the identity of decedents. For example, in providing mass fatality management services in the aftermath of the September 11, 2001 terrorist attacks on the World Trade Center, most human remains were crushed, severely burned/charred, fragmented or commingled.

Innovative DNA methods for DNA analysis were implemented using novel software to facilitate the identification process. The morgue holds an in-processing area and specialty areas and laboratories for forensic anthropology, forensic odontology, fingerprint cataloguing and analysis, forensic photography and radiology stations, personal effects stations, anatomic /gross and microscopic/histology capabilities, DNA analysis; including mitochondrial DNA, serology, forensic toxicology and chemistry and a mortuary science section where remains may be embalmed and otherwise prepared for appropriate dispositions, including repatriation.

There will be a need for grief counseling and interface with relatives for final dispositions, as the bodies are released to families or other responsible parties.
There are two pressing concerns here: identification and establishing cause of death. Death investigations and forensic examination, generally establish a physiological reason for death, e.g. asphyxiation/anoxia, and correlate it with the surrounding circumstances to establish causality, e.g. carbon monoxide poisoning or strangulation, and will rule on the legal status of the death: natural, accidental, intentional or indeterminate.
In CBRNE events, most assuredly, mass fatalities would equate mass homicide as a very workable, and evidence -rich ruling. To some, especially the perpetrators of political violence and terrorism, and their defense attorneys, would go so far as to argue that some fatalities, may indeed have been caused by "natural " or "accidental" causes, i.e. an elderly man with pre-existing heart disease succumbs to the squamae of a myocardial infarction in the aftermath of a terrorist attack, or first responders who sustain injuries while en route to an incident site or stumble and fall onto a jagged debris pile, or suffer from environmentally-induced respiratory disease due to toxic dust inhalation and succumb to mesothelioma or pulmonary fibrosis.
Are these not equivalent to casualties of asymmetric warfare, whether the deaths were related to direct or indirect impacts, whether psychological or physiological, whether acute, delayed or chronic illnesses or injuries acquired later in life, yet attributable to terrorist action? Does it not all become "intentional"?
The family assistance center (FAC) becomes the central hub in mass fatality operations for families of terrorism victims. The FAC provides various support services, crisis intervention and mental health, religious/spiritual needs, volunteer resources such as Red Cross , Salvation Army and other NGOs.
In large events that prove to be resource constrained, state and Federal resources, such as specialized mortuary teams, e.g. Disaster Mortuary Operational Response Teams (DMORTs) which are US National Disaster Medical System assets specializing in mass fatality operations, may be deployed to augment local and state resources, and lend specialized capabilities such as decontamination of mass fatalities and expanded, mobile forensic and mortuary services in the US or abroad, when requested. Similarly, the US Armed Forces Office of the Medical Examiner (OAFME) and the FBI may be involved in cooperative mass fatality management operations.
Chemical and radiological contamination and exposures are unique characteristics which are relevant to mass technological disasters, e.g. Chernobyl, Fukushima or chemical manufacturing/petrochemical and environmental disasters, i.e. Deep Horizon oil spill, and events utilizing CBRN /weaponized agents. Decedents that have been internally and /or externally contaminated with radionuclides, for example, present a threat to emergency responders and other personnel, including those involved in mass fatality operations. Adequate levels of PPE must be worn by all responders dealing with all phases of emergency incident response by consultation with health and safety officers and the Incident Commander, and selecting the appropriate level of PPE.
For radiological-nuclear events a radiation safety officer/health physicist must be available as a Technical Specialist /Advisor to the IC. He or she must be consulted regarding personal protective countermeasures, dosimetry and "stay times", for example.
Decontamination may be achieved by removing contaminated clothing and apparatus, use of warm water and soap solution and for decedents washing bodies with soap or sodium hypochlorite solution (bleach) prior to performing autopsies or embalming.
Decontamination run-off must be controlled and decontamination operations must be performed away from embalming procedures due to the possibility of some decontaminating solutions and solvents, such as bleach, may generate toxic reactants when mixed with embalming fluid. The process is closely monitored utilizing survey and sampling equipment, such as chemical agent monitors (CAMs) and / or radiac survey meters.
In summary, mass fatality events involving CBRNE agents are highly complex and multifaceted, requiring an astute multidisciplinary and coordinated effort. With every passing day, CBRNE attacks and other high acuity events involving hazardous materials become more prevalent, and endangering not just localities, but regions and diverse, unprotected populations.

The recent experiences in the war torn nations of Iraq and Syria, have shown the heinous devastation and carnage generated by the use of high order Improvised Explosive Devices (IEDS) and chemical warfare agents (CWAs) such as chlorine and sarin nerve agent on combatants and non-combatants, including children.
What do we say to the dead? How do we garner justice for the deceased and their grieving loved ones? How will we speak for them? While we bury and mourn our dead, here and abroad, due to barbaric acts of political, religious ultraviolence and asymmetric warfare, we offer solace, dignity, reverence for the countless souls lost in war, conflict and terror, and we will continue to seek justice against the sub- species known as "terrorists".

Frank G. Rando *possesses over 30 years of real world experience as a public safety professional,clinician, educator ,emergency and crisis manager ,author and consultant in the areas of tactical ,disaster and operational medicine, weapons and tactics, law enforcement /criminal investigations ,counterterrorism, hazardous materials management and emergency response ,toxicology, environmental safety and health,and health care and public health emergency management .*

European Space-based Information Management System for CBRN (EuroSIM CBRN) - Next Generation CBRN Information Management System

Source: https://business.esa.int/projects/european-space-based-information-management-system-for-cbrn-eurosim-cbrn

EuroSIM CBRN aims to provide users with a rich suite of CBRN IM modelling capabilities that takes advantage of the latest developments in cloud computing and Modelling and Simulation as a Service (MSaaS) to provide a highly flexible and customisable service offering specifically tailored to each user community's needs. This enables the provision of flexible pricing models and deployment options such as a scalable pay-as-you-go subscription offering which will enable users to select the services and capabilities that they require access to and pay as they use them. A key feature of the proposed system is the use of space assets to provide automated acquisition and updating of input data streams to enable rapid setup and deployment in any geographical region and adaption to dynamically changing environmental parameters (see figure 1). The system aims to provide both indoor and outdoor hazard modelling, source term estimation and data fusion, with further options to provide automated sensor placement, and processing capabilities to incorporate ground based and space-based sensor data. The new capability aims to provide access to modelling at a range of different levels of fidelity to enable the user to select the output and response time that best meet their requirements.

Users and their needs

With the evolving threat of terrorism and the consequences of industrial accidents producing life endangering toxic materials, there is an increasing need for improved local control of CBRN incidents. Consequently, there is an increasing need for first responders, local government and other agencies, as well as commercial entities concerned with risk management and insurance to have access to the type of CBRN IM capabilities available to the military. From a first responder and local government perspective, having immediate access to trusted and affordable CBRN information would significantly improve their situational awareness and enable more effective response strategies to be developed. From a commercial perspective, understanding the risk from potential CBRN scenarios and planning effective mitigation strategies is a vital part of business continuity which would be significantly enhanced with access to a CBRN IM system.
From our stakeholder engagement, it was evident that the majority of user groups have a need for greater situational awareness when dealing with CBRN incidents. In particular, the

ability to rapidly and reliably predict and share information relating to the spread and hazardous effects of an airborne CBRN material over time was seen as being of the upmost priority in terms of saving lives and safeguarding response personnel. Information needs to be made available to users in the field as well as back at base and should be displayed in a form that ensures its meaning is immediately accessible to all user types but at the same time not result in information overload. Due to the wide range of different user and stakeholder groups, there is a clear need to ensure flexibility in solution offering both in terms of system architecture and deployment. Many users expressed the need for a system that would integrate with existing emergency response tools, while others required a complete end-to-end solution.
The developed service is targeted at users in the UK, EU and NATO countries.

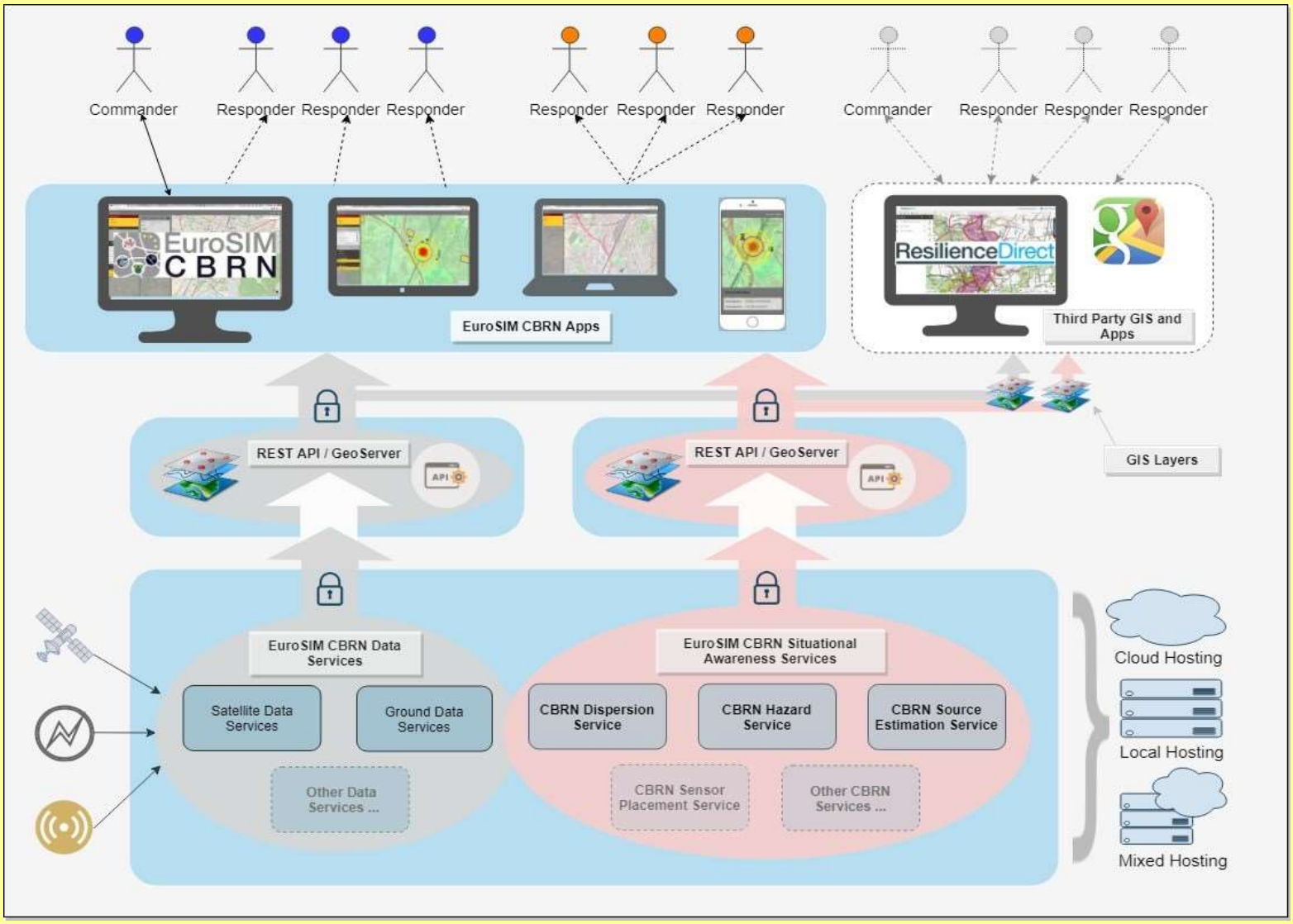


Figure 1: High level pictorial of EuroSIM architecture concept

Service/ system concept

The primary operational concept of EuroSIM CBRN is for an Information Management system that delivers shared situational awareness and decision support within the context of an unfolding CBRN incident. While the system is designed to be flexible in terms of its deployment, the primary offering will consist of a centralised modelling and information fusion service suite, providing dispersion modelling, information fusion and hazard forecasting, supported by a Consolidated Base Data Service, accessible via a desktop web app and first responders'

handheld platforms, either via a mobile app or a mobile-friendly web interface. The system will also function as a shared workspace in which a team or multiple teams operating within the context of an incident share situational information and access services that build their understanding of the unfolding situation, providing actionable information in a readily assimilable form.
Within this overall vision, three key headline services have been identified, all of which will be provided within an overarching, primarily cloud-hosted system, delivered via web-based user interface accessible via desktop and handheld devices. Two additional supporting services provide coupling with operational workflows and with available data sources. The key headline services we propose to deliver within the initial offering are Dispersion Modelling, Information Fusion and Hazard Modelling and Definition of Key Population Risks. Within the flexible framework we propose, these could be augmented by further services, all delivered within the common service architecture as shown in Figure 1 below.
Some of the key aspects of the system vision are outlined below. The descriptions also make initial reference to areas where the proposed feasibility study will help to refine understanding of the system architecture:

- Cloud Hosted Service-Oriented System
- Common Work Area
- Common Algorithm and Modelling Integration Architecture
- Data Fusion Algorithms
- Common Data Architecture
- Space Based Data Service Provision

A screenshot of the concept demonstrator is provided in Figures 2 and 3

Figure 2 – EuroSIM CBRN Dashboard Multi-Screen Display

Space Added Value
It is clear that the range of modelling and decision support algorithms proposed will require significant amounts of input data in order to provide actionable information. A key element of our concept is to make extensive use of both existing and emerging space-based data throughout our partnership with Thales Alenia Space. The system architecture concept includes a space-based data service that collates and cleans relevant space-based data that can be accessible through a space-based data server application programming interface (API). Although this concept is focused at providing data for the CBRN IM capability, the space-based data service would also be applicable to other type user and could be offered as a service independent of the CBRNe Information management system.
The technical demonstrator shown in Figure 2 and 3, and developed as part of this Feasibility Study utilised the following EO data sources:

- **Copernicus Urban Atlas data:** https://land.copernicus.eu/local/urban-atlas/urban-atlas-2012

- **Copernicus Building Height**: https://land.copernicus.eu/local/urban-atlas/building-height-2012
- **SEDAC Gridded population**: http://sedac.ciesin.columbia.edu/data/set/gpw-v4-population-density-rev11
- **Planet Labs Imagery and Tiles:** https://developers.planet.com/docs/api/psscene3band/
- **EUMETSAT imagery** https://www.eumetsat.int/website/home/Data/Products/Climate/index.html

To support the additional aim and to provide ease of integration, where possible the space-based data will comply with common data standards such as OGC (Open Geospatial Consortium), NetCDF (Network Common Data Form), etc. Examples of the type of data to be utilised is shown in figure 4. During this study, the Technic

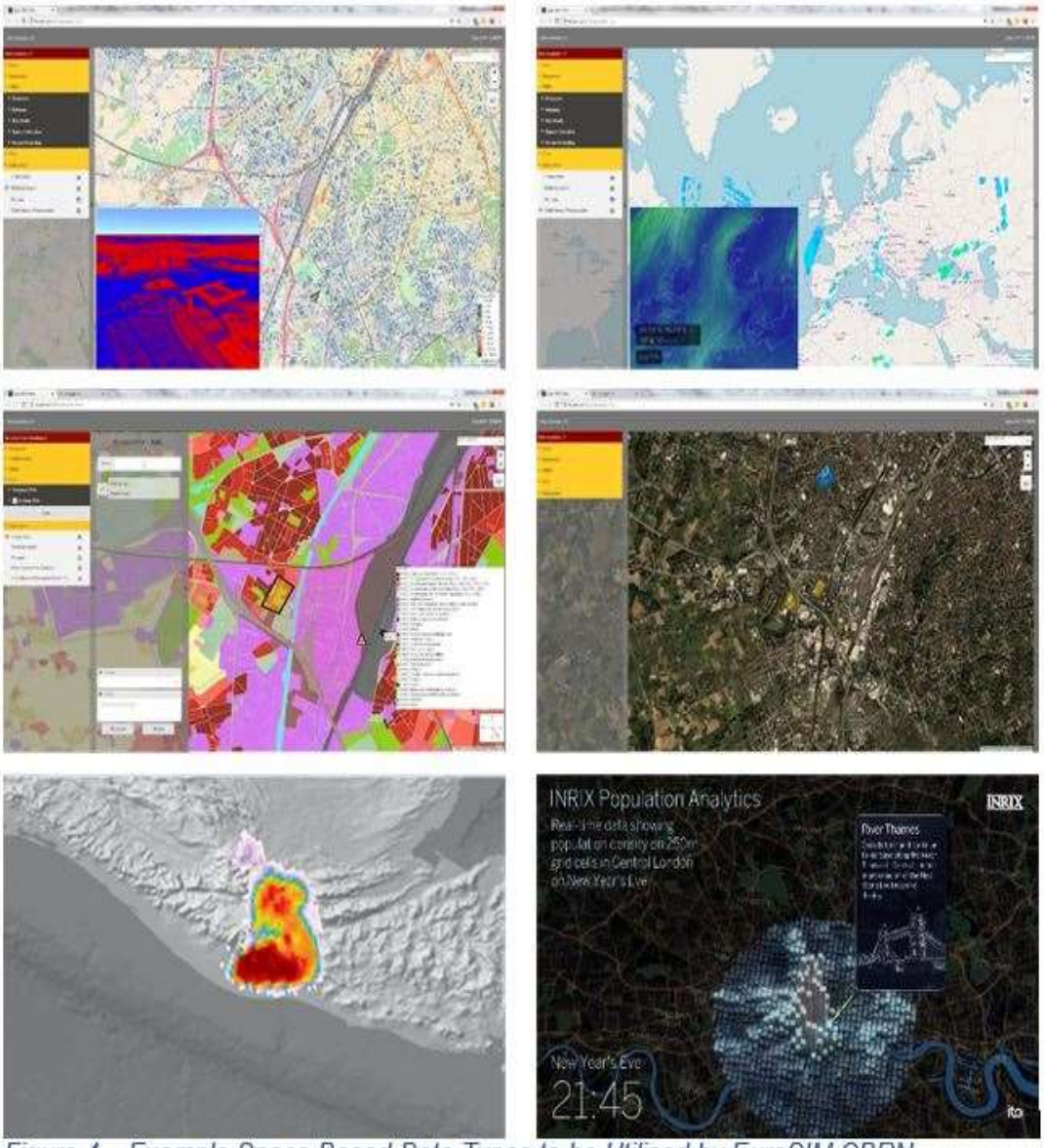


Figure 4 – Example Space Based Data Types to be Utilised by EuroSIM CBRN (bottom-right image credit, INRIX)

Current Status

The Feasibility Study has been successfully completed and the Final Review took place on 17th January 2019. The consortium aims to take the study forward to the demonstration phase. The next step will be to secure additional stakeholder support.

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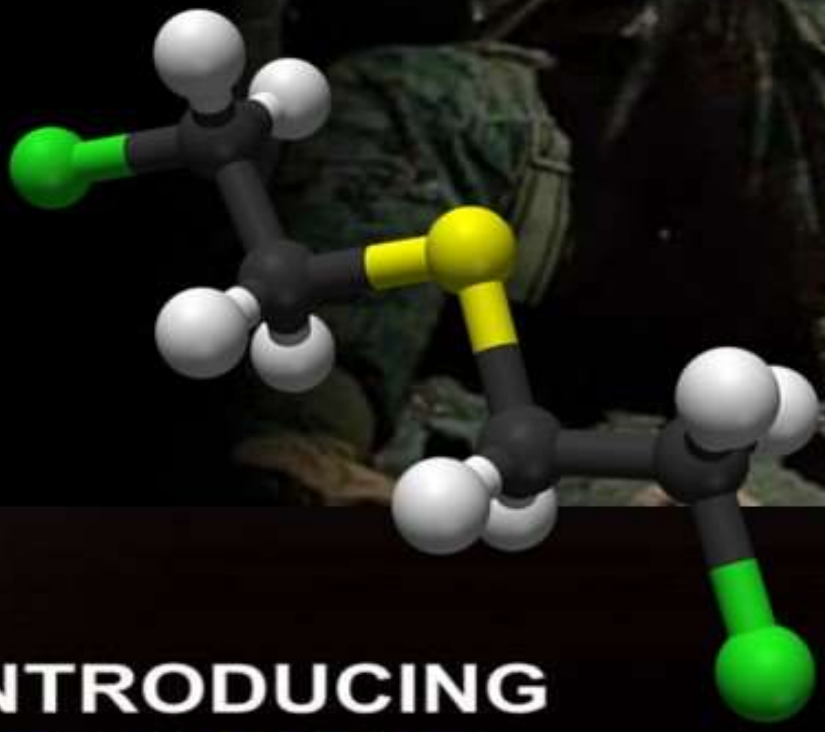


INTRODUCING DERMOSTYX

Strengthening protection against CWA and TICs

Rekah Pharmaceutical Industry Ltd

The Forensic Challenge

By Dan Kaszeta

PRISM Volume 7, no.3

Source: https://cco.ndu.edu/News/Article/1520188/the-forensic-challenge/

May 2018 – The suspected use of chemical, biological, radiological, and nuclear (CBRN) weapons or materials adds complexity to any international or internal conflict. It is critical that responses to such use are based on good information. The relatively new field of CBRN forensics, which is emerging out of domestic terrorism investigations, seeks to establish scientific facts through analysis of rigorously collected evidence. CBRN forensics are important to establishing actual facts, but are inherently difficult for a variety of reasons. The question of whether military forces, particularly Special Operations Forces (SOF), can conduct CBRN forensics in an adequate fashion is debatable; however, there are numerous pathways to improve the status quo.

Why CBRN Forensics Matter

In their traditional setting the forensic sciences provide the government and the populace a degree of confidence that the courts are making informed decisions based on all available information. The notion that forensics are solely for legal processes and not relevant or important outside the courtroom, however, does not withstand serious scrutiny. The scientific and procedural aspects of CBRN forensics are important in the context of international security. Were CBRN materials used? If so, was their use deliberate, accidental, or some kind of natural phenomenon? Confirmed acts of CBRN warfare might be used as justification to drop a bomb or wage war on another country. Even the suspected use of CBRN weapons or materials adds complexity to any international or internal conflict. Not every CBRN incident is obvious or discernable from natural phenomena. When deployed soldiers turn up in the field hospital with injuries from exposure to toxic industrial chemicals, this could be an indicator of hostile attack. Alternatively, they could have been exposed to toxic waste or contaminated debris from a chemical factory that had been damaged earlier in the conflict. Skyrocketing radiation counts on detection instruments could mean a "dirty bomb" has been detonated. But it is equally possible that an old commercial or medical radiological source has been encountered.

CBRN forensics also help to identify provenance (where did the bad stuff come from?) and attribution (who did it?). This is especially important for distinguishing state action from that of non-state actors, or non-state actors who are state proxies. Terrorists might develop an indigenous capability—e.g. the Aum Shinrikyo cult sarin attacks in Japan in 1995—or acquire abandoned munitions—e.g. Islamic State of Iraq and the Levant seizure of Saddam-era munitions. Provenance may also help to identify state proxies, as was likely the case in early 2017 with the assassination of North Korean leader Kim Jong Un's estranged half-brother in a Malaysian airport with the nerve agent VX.

Confirmation, attribution, and provenance help to calibrate judicial, policy, and operational responses. Use of chemical and biological weapons is against international law. Prosecution of war crimes and acts of terrorism should occur wherever possible if the rule of law and international norms are to be maintained. Justice requires trials; prosecution requires evidence. The collection, preservation, and analysis of physical evidence must offer a high-degree of assurance so that the prosecutor can defend the evidence. Imagine a SOF team that visits ten different buildings and collects samples of material from each during a two-day operation. Trace evidence of anthrax from one of the buildings is subsequently used to prosecute a terrorist. A wise defense attorney will question whether the SOF operators changed their gloves and boots between buildings. Were they sterile when the operators entered the building? How can you prove it? What about the bag they put the sample into? Was it clean? Did they take that empty bag to the other buildings? If these simple questions are not answered satisfactorily, there is no way to prove the anthrax came from the building in question or from a different building or location previously visited by the SOF team. Perhaps the team has detained the wrong person. Or if they got the right person, charges may not stick because the evidence has been discarded. CBRN forensics must also be ironclad to combat alternative narratives, fake news, propaganda, and conspiracy theories. Every instance of real or alleged use of CBRN

materials in recent years has led to allegations, alternative explanations ranging from the plausible to the esoteric, denials, and conspiracy theories. Perpetrators of such attacks have every incentive to muddy the waters and sow discord in order to create doubt and allow for deniability. One need only look at the well-documented miasma of stories and opposing narratives that have surrounded each use of sarin nerve agent in the war in Syria to see how this can look.1 Sowing diverse stories is a tactic in information warfare and serves various ends, such as diluting public support for armed conflict or reducing morale. Even the seemingly clear-cut case last year in Khan Sheikhoun, Syria wherein a bomb filled with nerve agent fell out of the sky in a conflict where only one side has airpower, spawned an amazing array of alternative explanations.

Hard facts are needed to refute alternative explanations. As one of the expected effects of CBRN warfare is psychological, military commanders may have to explain what is going on to their unit, in order to preserve morale. If military personnel start to believe conspiracy theories and myths, it will tax morale and discipline. Commanders armed with solid information in which they have confidence are better placed to combat this threat.

CBRN forensics also have important implications for force protection. Knowledge of the physical characteristics of the CBRN materials actually used in attacks will allow defense measures that are based on practical first-hand knowledge rather than generic guidelines. For example, artillery shells filled with a nerve agent may be poorly designed and destroy much of their contents, and many of the shells are duds, and therefore do not disseminate the nerve agent. Therefore, the hazard area associated with such an artillery strike will be much smaller than the generic warning template in a manual that was written during the Cold War and assumes a high degree of munition efficiency. In practical terms, this means a much smaller hazard zone on the commander's map and more mobility options as there are fewer areas to be avoided. But this is the sort of information that requires knowledgeable forensic analysis, with someone actually looking at the site of an artillery strike and assessing the impact craters and fragments of the shells.

CBRN Forensics is Challenging

The CBRN forensic discipline is difficult for environmental, technical, procedural, and organizational reasons. First, the nature of CBRN materials is such that the environments where they are present are inherently dangerous. Forensic operations must be performed while wearing protective clothing and respiratory protection commensurate with the threat, which if previously unknown, first requires an initial survey or reconnaissance to characterize the threat environment before detailed work can even begin.

"Time versus safety" is a paradox inherent in CBRN forensics. Much of the evidence at the crime scene is either fragile or short-lived. Gas and vapor can waft away without leaving a trace. Liquids can evaporate or react with the environment; for example, the nerve agent sarin is a liquid that can quickly evaporate from a liquid into a vapor and blow away with the wind. Powders, such as spores, can blow away. And sunlight can destroy bacteria and viruses. The bodies and clothing of victims may also contain evidence that is degraded by life-saving decontamination procedures.

Each CBRN material requires different sample collection techniques. Sample categories can be broadly divided into gas and vapor; liquid; and solid, which includes soil, surface trace, and biomedical as subcategories. It is not always obvious where a gas or vapor might reside since some are lighter than air. Liquid and solid sampling are relatively straightforward conceptually, but sampling while wearing cumbersome protective gear or conducting the operation in the wind or on the water can be a challenge. Additionally, trace samples are usually taken with wipes or swabs, which can require numerous different techniques and solvents, depending on the nature of the surface and material being tested. Biomedical samples—e.g. body fluid, hair, and tissue—are taken from live or deceased hosts, which is inherently complex. Samples from dead animals and body fluid samples from surviving victims have been probative in investigations in Syria.

CBRN forensics also requires the collection of conventional evidence. In many scenarios, this evidence will be more useful than the actual CBRN materials. For example, documents and fingerprints collected from a suspected clandestine laboratory may have far more investigative or intelligence value than a vial of a chemical warfare agent precursor

compound. The explosive components of a "dirty bomb" may prove to have evidence value, post-detonation.
Preserving the integrity of all samples is administratively and logistically burdensome. Used and unused sample tools and containers need to be sterilized, documented, and analyzed. Protective gear must be changed frequently—a technician can use 50 pairs of gloves in one day—and the gear must be disposed of, treated as evidence, or cleaned before reuse to reduce the threat of cross-contamination.
Conventional evidence that may be contaminated by CBRN materials is problematic. A laboratory that can process chemical warfare materials may not be suited to collect fingerprints from a bottle, or exploit a smartphone, and vice versa. The laboratory that can exploit a laptop or mobile phone is not likely to be able to do so if the item is contaminated, or even suspected to be contaminated. This conundrum is poorly resolved in most parts of the world.
Finally, CBRN expertise and capabilities reside in disparate organizations. In many parts of the world, CBRN response is a fire department function, very similar to responses to industrial and commercial hazardous materials accidents. Fire services are indeed well-equipped for most aspects of CBRN response; however, apart from arson investigation, fire departments do not collect forensic evidence.2 In the United States, much of our expertise resides in clandestine narcotics law enforcement teams and environmental regulatory agencies that pursue criminal and regulatory enforcement of pollution and toxic waste rules. State and local law enforcement (and indeed most other countries) have very limited capability for CBRN forensics, for which the National Guard only recently started to develop and provide military support to civil authorities. There is the real question as to whether the level of care and precision required for CBRN forensics can reasonably be expected in a non-permissive environment, such as an active conflict zone.

CBRN Forensics in the Military Environment

CBRN forensics barely fits into the classic military CBRN mission set, which includes contamination avoidance (detection, hazard area prediction, warning, and reporting), individual protection (suits, gloves, and boots), collective protection, decontamination (of people and equipment), reconnaissance, and medical countermeasures. Military CBRN protective equipment is designed to keep the soldier in the fight for days or weeks, not for rapid changes of garments and gloves upon every entry and exit from a contaminated building. Conventional CBRN units, such as the U.S. Army Chemical Corps, are not equipped or trained for evidence collection to a forensic standard.3 Soldiers are issued one, perhaps two sets of gloves—far short of the 20 or more required in an evidence collection mission. Additionally, military decontamination is all about "good enough" and not about "sterilized to a legal standard" for evidence collection. When is the last time, if ever, a soldier sterilized a tool (shovel) in the field? Military detection equipment is designed to provide rapid warning to military personnel, not for the collection of samples in sterile containers. CBRN reconnaissance is focused on finding the extent of contamination and checking if routes and axes of advance are safe, rather than the painstaking work of evidence collection.
The Defense Department recently gave the U.S. Special Operations Command (USSOCOM) more responsibilities in countering weapons of mass destruction, a term that generally implies all of the CBRN threats. However, CBRN forensics run contrary to key SOF axioms. CBRN forensics are slow, heavy, and manpower-intensive, while special operations generally are fast, light, and emphasize economy of force.4 It is one thing to send in a small team to enter a house and seize a prisoner and a few laptops. Such a mission might be accomplished in minutes. If the same house had been a suspected clandestine laboratory, a thorough forensic exploitation might last a day or longer and require five times the personnel, as well as several cargo pallets of equipment.
Additionally, while domestic law enforcement operations that collect CBRN evidence may be an hour or two from the laboratory that will process the evidence, SOF often operate at some distance from their support. The transport of prohibited substances (potentially found on corpses) across international boundaries presents moral and legal issues. Also, any chain of custody document for a covert operation is likely to be highly classified and will never see a courtroom. Such evidence could still be made available to policymakers, but they will be in the position of telling the public to "trust us, but we cannot show you the paperwork"—that

could help to promulgate the very propaganda, fake news, and conspiracy theories that CBRN forensics aim to combat.5

The Way Forward

If CBRN forensics are to be done, they need to be done well or not at all. An effort that is performed at an 80 percent standard might as well not have been undertaken. Evidence that is tainted, cross-contaminated, spoiled, or mishandled could support erroneous conclusions.

There is no insurmountable reason why military forces, and especially SOF, could not conduct CBRN evidence collection. As a first step, military doctrine should express a requirement for forensic operations. CBRN forensic evidence collection will otherwise remain in the unfunded requirement or "nice to do" category and SOF units will not prioritize CBRN training.

Competent military CBRN specialists and SOF operators could easily be trained in CBRN forensics. Specialty courses offer the necessary skills and already exist within the civilian sector, but the military needs to commit to sending its personnel through this kind of training. Another way to bridge the expertise gap is to embed law enforcement or regulatory personnel within SOF. This likely will raise a host of other concerns, but might still be easier (and more effective) than the alternative of trying to turn SOF operators into CBRN forensic technicians.

Similarly, while existing military gear is indeed largely inadequate to the task of CBRN forensics, adapting existing forensic equipment to a military environment is certainly feasible. This has been done extensively in the realm of counter–improvised explosive device operations and biometrics, and there is no technical barrier to adapting the wide variety of commercial off-the-shelf equipment for SOF operations.

Traditional forensic labs need to be equipped with CBRN capabilities and traditional evidence collection technicians need to learn how to operate in a CBRN environment. There is no fundamental technical obstacle preventing the development of CBRN forensics laboratories that can be moved closer to the samples. Mobile CBRN laboratories already exist, albeit not specifically for forensic analysis. The skills and equipment exist. Training is available. The key issue is putting capabilities together into specialized teams and training and exercising these teams so that they can achieve competence. SOF have the justified reputation for quickly adapting to new missions and integrating new technologies into their operations, so adapting to CBRN forensics should not be too far a stretch, as long as command emphasis is given to it. Prism

Notes

1 George Monbiot "A Lesson from Syria: It's Crucial Not to Fuel Far-Right Conspiracy Theories," The Guardian, November 17, 2017, available at <https://www.theguardian.com/commentisfree/2017/nov/15/lesson-from-syria-chemical-weapons-conspiracy-theories-alt-right>.

2 The author has seen training exercises where valuable evidence was literally flushed down the drains by firefighters.

3 There are pockets of competence, however, including the U.S. Army's Technical Escort unit. Comparable capabilities in other militaries are exceedingly rare. As a disclaimer, the author cannot categorically state that there are or are not specialized units within USSOCOM or the Intelligence Community that are already well-trained for CBRN forensics, given the secretive nature of this line of business. There may be special teams unbeknown to the author because of secrecy and classification. If there are, then the United States is ahead of the curve and has taken the advice of this article already. The author's own experience is that these capabilities barely exist with some of the United States' European allies. CBRN forensics was never mentioned during the author's Chemical Corps training in the early 1990s.

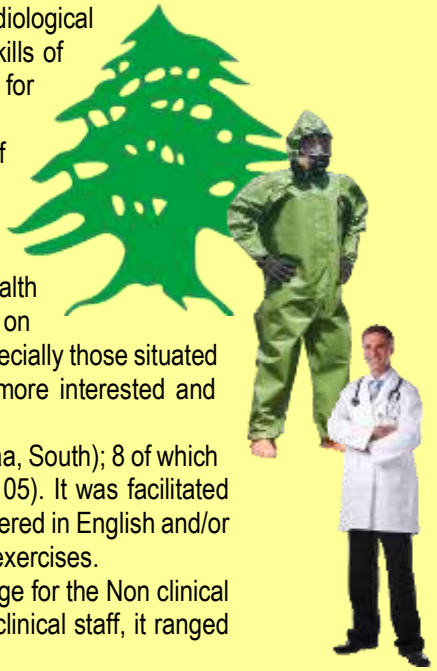
4 A colleague at the U.S. Secret Service had been a noncommissioned CBRN officer with a Special Forces group. CBRN protective equipment was often at the very bottom of the priority list for missions. Where the load is heavy and every ounce counts, and speed is of the essence, masks, suits, and gloves got left behind. And if you habitually leave it behind, training with it will not be a high priority.

5 Critics and conspiracy theorists have criticized the apparent lack of chain of custody in the Syrian sarin investigations, although the Organization for the Prohibition of Chemical Weapons clearly did the best that they could under the circumstances.

The Managing Director at Strongpoint Security, ***Mr. Dan Kaszeta*** *previously served as a physical security specialist with the U.S. Secret Service and as a disaster preparedness advisor to the White House Military Office.*

Training and Preparedness for CBRN Emergencies in a Conflict Zone, Lebanon

By Nagi Souaiby
Faculty of Medicine, St Joseph University, Beirut/Lebanon
Prehosp Disaster Med 2017;32(Suppl.
Source: https://www.cambridge.org/core/services/aop-cambridge-core/content/view/6B2842D778C1A79DF53AB18346809FE3/S1049023X17000413a.pdf/div-class-title-training-and-preparedness-for-cbrn-emergencies-in-a-conflict-zone-lebanon-div.pdf



Study/Objective: Providing training and preparedness for Chemical, Biological, Radiological and Nuclear (CBRN) emergencies to local actors, will increase knowledge and skills of the disaster response community and health care providers, and prepare them for undertaking future responses, while providing
training to both local and international actors, will increase the response capacity of humanitarian relief workers who have a large presence in border areas of and among Syrian refugee populations.
Background: Following the chemical attack in Syria, with the resulting mass casualties, Lebanese Ministry of Health, with the support of the World Health Organization and in cooperation with the Lebanese Syndicate of Hospitals, worked on increasing the preparedness and response capabilities of healthcare providers, especially those situated near Syrian borders. Concerned parties and responsible stakeholders became more interested and aware of the importance of training field workers on CBRN emergencies.
Methods: Eleven workshops were offered throughout Lebanon (North, Beirut, Bekaa, South); 8 of which were dedicated to non clinical staff (total of 207) and 3 to clinical ones (total of 105). It was facilitated using multiple methods to engage participants and reinforce messages. It was delivered in English and/or Arabic. Tools included videos, PowerPoint presentations, case studies and group exercises.
Results: The pre/post tests allowed for evaluating trainees; the evolution percentage for the Non clinical staff ranged from a minimum of 19% (Beirut) to a maximum of 49% (Tyr). As for clinical staff, it ranged from 8% (Tripoli 3) to 45% (Beirut 3).
Conclusion: Following the international community and the Non-Governmental Organizations (NGOs) effort and urgent need, the CBRN National Team in Lebanon was founded. It is headed by the Secretary General of the Higher Council of Defense and composed of representatives from all relevant parties. CBRN incidents present various challenges at all levels, including decision makers and first responders. Continuous training and preparations with strong cooperation and coordination between all parties, may decrease the impact of such event. A lot remains to be done in this regard where further research is needed.

Two men suspected of releasing CS gas on London tube train

Source: https://www.theguardian.com/uk-news/2019/jul/20/two-men-suspected-of-releasing-cs-gas-on-london-tube-train?CMP=Share_iOSApp_Other

July 20 – Police are looking for two male suspects after gas was released in a tube train carriage in central London.
A number of people were treated at the scene by paramedics at Oxford Circus station for coughing and lack of breath.

British Transport Police said their symptoms "would suggest the gas is CS gas" and there were no further concerns for their health.
Officers hunting for the perpetrators have released CCTV images of two young white men they want to trace after the incident, which was reported at 9.13am.
A Transport for London spokeswoman said the train had been taken out of service and to a depot for quarantine.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What is Agroterrorism- Historical Perspective of Bioterrorism & Food Terrorism?

By Pranesh Lavania and Geeta Sharma

Source: https://krishijagran.com/featured/what-is-agroterrorism-historical-perspective-of-bioterrorism-food-terrorism/

June 20 – With this arena of development, many things have changed. Agriculture after the green revolution has changed by various degrees aiming for higher productivity infusing intensive land and crop management practices. Trade after globalization has changed aiming exchange of food produced across borders. Research and development have changed aiming for practical use of each object and has touched milestones in this century. With these changes, principles of mass destruction have also changed. Terrorists, to gain control over territories, have also changed their ways of attack. Agricultural terrorism is what they now aim to conduct. With the aforementioned development of various sectors, the threat of agro-terrorism has also increased but it's never too late. This article will allow us to actively have a glimpse of furious past at a global level, history and recent developments of agro-terrorism, analysis of the real incidents or attacks of the past. Also, inferences from this article will allow us to understand our preparedness towards this crisis, identification of potential threats, the ability of involved actors, their motives and strategies of attack and will strengthen our knowledge about agroterrorism in general.

Introduction

Terrorism across time has changed in the form of both – the concept and the method. Concept of early terrorism was based on the fact that to shake off the nation's security system, a whole lot of investment is required. Now, cheap, easy to launch an economy centered terrorist activities are at a peak. The methods that terrorists adopt are based on its concept and thus require regular monitoring. Similarly, agriculture across the landscape has also changed its form due to global trade. The economic pattern that the countries follow is based on the law of advantage and thus monocultures retaliated.

This is the highest price we will pay to tackle any agroterrorism in future. We are now equally exposed to people around us as we are to nature and this indeed will drag us to the dearth of human life.

Activities such as bombing, nuclear attack, using tactical weapons and hijacking planes are not their recent trends. Bioterrorism to weaken up the economy and hit the backbone of the country by disrupting services in the country is their new strategy. Bioterrorism is the deliberate use of pathogenic strains affecting humans, animals, and plants. It is an umbrella term that can be easily understood by its classification. Bioterrorism can be broadly divided into two categories based on the species it is aimed at. It can either affect human beings directly or affect human beings indirectly by attacking animals and plants. As animals and plants serve to be a category of food for us, this category can be explained as Food Terrorism. It can pose a challenge to food safety and security of any political entity.

The act of contamination of food with an intention to cause health hazards or death of civilian populations in order to create social or economic challenge leading to civil unrest or political instability is known as **Food Terrorism.** This attack can be practiced with certain injurious chemicals, exposure to radio-nuclear agents and inoculation of destructive biological agents. The threat can be posted at any time from the production of food in agricultural fields to its supply in the ready market after processing. Food terrorism can be further classified into categories, of which Agricultural Terrorism is widely practiced. Terrorists targeting food during post-harvest operations such as processing, storage, and distribution is often referred to as terrorism targeting processed food. Another case is contamination of food i.e. agricultural crops and livestock in agricultural fields or during harvesting, transport and storage are called Agricultural terrorism. This is often also shortened as Agroterrorism.

The agents used for agricultural terrorism are easy to acquire and relatively cheap. They also do not need too much knowledge to handle and are easy to launch. Laws being not so strong, if caught these types of activities are not immensely punishable and security system being not so aware checks the risk of easily being caught. Very sophisticated labs and instruments are not important to obtain or transport them. It is often very difficult to differentiate between agricultural terrorism attacks and naturally occurring epidemics. This indeed sets a stage ready for activities like Agricultural terrorism to thrive.

Historical overview and development of Agroterrorism

Agroterrorism started dates back when scientific study gained importance. Some literature relates early actions of agroterrorism to the scientific study of plant pathology. With scientific progress of Plant Pathology and identification of Late Blight of Potato after Irish famine, certain cases of agroterrorism including stockpiling of fungal spores and its release in other territories to harm agricultural economy during the cold war were reported. Later, evidence from World War 1 was profound enough to support historical cases of agroterrorism.

During World War I, Germany in order to rise as a world power tried many times to paralyze other countries and inhibit them to either support opposite countries or defeat them in battles. Germany attacked draft horses, both involved in active and passive war using biological agents like Bacillus anthracis and Burkholderia mallei causing anthrax and glanders, respectively.

Historical evidence also reveals that time period between both world wars showed involvement of war participating countries like Germany and France in extensive study and research of agricultural pathogens like Puccinia spp. (causal organism of wheat rust), rinderpest virus, Phytophthora infestans (causal organism of late blight in potato) and various other insect pest spp. Immense research, however, did not add any advantage to Germany in World War 2 in terms of biological warfare. However, continuous efforts by the United Kingdom fueled this matter in media when it dumped 5 million cattle cakes infected with Bacillus anthracis on Germany. The United Kingdom in its early warfare techniques focused on antianimal and anticrop agents to be used against enemies. Other powerful nations were also involved in research and development of biological weapons especially anticrop agents during this period. Japan poured a considerate amount of funds to study and strengthen various agroterrorism agents to be used in disturbing peace conditions in China.

Russia was found to be secretly involved in the study of numerous antianimal agents namely FMD virus (causal organism of foot and mouth disease in cattle), Brucella spp. (causal organism of brucellosis), Newcastle disease virus (causal organism of Newcastle disease), Bacillus anthracis (causal organism of anthrax disease), Burkholderia mallei, Mycoplasma mycoides (causal organism of contagious bovine pleuropneumonia), avian influenza virus, Chlamydophila psittaci (causal organism of psittacosis or Avian chlamydiosis), Orf virus (causal organism of contagious ecthyma in sheep), Rinderpest virus (causal organism of Distemper), Venezuelan equine encephalitis virus, vesicular stomatitis virus, African swine fever virus. Apart from these

various anticrop agroterrorism agents were used during cold war like potato virus Y (causal organism of mild viral disease), Magnaporthe grisea (causal organism of rice and rye blast), barley streak mosaic virus (causal organism of barley leaf streak), Puccinia sorghi (causal organism of maize rust),brown grass mosaic virus, Puccinia graminis (causal organism of wheat stem rust) and tobacco mosaic virus.

Period of 1943 to 1969 marked study and strong weaponization of agroterrorism in United States of America. Fort Detrick of Maryland was the research centre used by scientists and government to conduct such researches. Study of biological agents like Bacillus anthracis, FMD virus, Brucella spp., Phytophthora infestans, Chlamydophila psittaci, Avian influenza virus (causal organism of fowl plague), Magnaporthe oryzae Triticum (MoT) pathotype (causal organism of wheat blast), Puccinia graminis, B. mallei (causal organism of Glanders), Magnaporthe oryzae (causal organism of rice blast) and Bipolaris oryzae (causal organism of brown spot of rice), rinderpest virus and Newcastle disease virus were conducted on a large scale. Gulf countries like Iraq weaponized itself with fungal spores of covered smut/bunt of wheat by extensive research work. Production houses and large storage tanks of aflatoxins were also established in this era. Period after World War 2 marked sincere progress in research activities towards development of anticrop and antianimal agents especially plant pathogens in various other countries.

In 1969, a strong unilateral decision of then President Richard Nixon ended U.S. Biological Warfare Program in one go and led to destruction of already prepared agents of agricultural terrorism. This included destruction of huge quantities of wheat rust spores and other pathogens which were being stockpiled to attack Asian nations. In later stages strong policies were built to promote global peace and harmony which basically included International Biological and Toxic Weapons Convention (BTWC) of 1972 Analysis of case studies.

Agricultural terrorism has occurred from very early ages to strengthen own country or to disrupt political structure of other countries. Food serves as a backbone of human activities and agriculture and allied activities tend to regulate food supplies. Thus collapse of any structure can be related to situations like food inadequacy, food unavailability or food crisis. Situations resulting from past reflects evident examples based on agricultural terrorism throughout history but very less is available in terms of literature. Here we will discuss about it:

Case 1: Incident of poisoning cattle in Kenya during 1952

This historical incident relates to the national liberation movement against British colonial rule in Kenya in 1952. The Mau Mau Movement activists took advantage of locally available African milk bush plant (Synadenium grantii) to use its extract as a toxin to poison cattle in British station. This caused chaos and moral breakdown of local British leaders and farmers. However, in later reports, the poisoning was found to be rare due to certain unspecified reasons. An inference can be drawn that this action was an attack of available opportunities to sabotage British farmers and ultimately challenge British rule. It was later verified by Veterinary research Laboratory in Kabete (Kenya) that the extract of African milk bush plant was used as an agent of Agroterrorism.

Case 2: Poisoning of exported grapes from Chile to US during 1989

A phone call to the U.S. Embassy in Santiago reported a complaint about grapes being poisoned by cyanide which was exported from Chile. This created fear among US officials and all the imports were then investigated by the Food and Drug Administration. However,

no such evidence of large scale agro terrorism planning was found but some grape packages were found to be poisoned from cyanide that was shipped from Chile to Philadelphia. This was dealt strongly by US authorities and suspecting of other fruits being contaminated allowed them to destroy 45 million crates of fruits including plums, peaches, nectarines, apples, raspberries, blueberries, pears and table grapes accounting to a total loss of $ 50 million. This shook Chile's economy as the exports were also rejected by other countries.

Case 3: Activity of releasing sewer water in Palestinian agricultural fields during 2000

The mass agitation in 2000 during Palestinian-Israeli conflict reported unusual activity in the national daily. The report stated claims of Palestinian farmers against the Israeli settlers in the West Bank of releasing huge quantities of sewage water into their agricultural fields in order to weaken their occupation and vacate their lands. This was done in recurring cycles in order to deteriorate the quality of their land. This was another impulsive issue of agricultural terrorism during a local conflict.

Case 4: Threatening US and UK livestock with spread of foot-and-mouth disease virus during 2011

Another activity of 2011 caught news attention when a South African man claimed to acquire possessions of Foot and Mouth Disease virus. He threatened governments of United States of America and Great Britain to pay a ransome amount of US$ 4 million. The news sources reported of a great economic setback for GDP in general and Agriculture and allied economy in specific, if, this biological agent was released in open. This posed challenge for both the governments to safeguard their nation from loss of property and economy. Later during investigations after his arrest for terrorism activity involvement he was found with no possession of claimed virus samples. He offered threat due to a personal frustration on both governments not taking actions when 'white farmers' were banished from their lands in Zimbawe.

Case 5: Food contamination by Malathion insecticide in Japan during 2014

Japanese factory worker Toshiki Abe was found guilty for intentional involvement in agricultural terrorism activity by contaminating frozen food products with an insecticide called as Malathion. The insecticide is widely used against agricultural insect pests in open fields especially against fruit flies and mosquitoes. As this chemical is not used by industries very often, it was easier to detect such higher dozes, nature of the chemical and act was found to be intentional. Reports express that doze was found to be 2.6 million times higher than recommended by law. About 2500 people across Japan were sickened by this act and it was termed as one of the most alarming acts of Japan's history. Hotels claimed products like pizzas, pancakes, croquettes and other such items were contaminated at a large scale and >6 million packed products were destroyed. The person caught in the act was found to be guilty and was sentenced to prison for about 3.5 years.

Conclusion

Although the development and use of biological weapons, especially agents used for agricultural terrorism, is prohibited in most countries and there are strict laws enacted by the governments to gain control of peace in their territories, yet voluntary involvement of people to disturb peace and launch attack against civilians can never be ignored. The Biological and Toxin Weapons Convention of 1972 has been signed and ratified by more than 165 countries to restore peace and stabilizing global harmony. But the tensions still prevail, as some countries have not agreed to some or all points of the accord and are still engaged in research on biological weapons. If these countries are not suspected to create chaos at international level yet they may fall a prey to global terrorist organizations that may be successful in hijacking their systems and creating nuisance in the society. In fact ambitious politicians can also use these resources in their favour which can lead to proximities of war. However, official list of the countries is not yet declared and there is little or no open source information about them or their up to date achievements regarding status of research and development of biological weapons and their warfare potential presently.

Secret reliable sources reveal that some countries are secretly involved in building bio weapons for offensive use against other nations. Syria, North Korea and Iran are some

countries whose names are mentioned in these illicit connections. Also, Russia maintained huge lines of bio weapons under govt. orders of former Soviet Union produced in the past. There is no information about what has been done to dispose of prepared weapons but some scientists suspect them to be in circulation with knowledge of the state.

With time and space things have changed. Development across the globe has also developed agenda, instruments and practices of terrorism. Direct economic and indirect social impacts like panic and fear among civilians, challenged trade relations, political instability and havoc within territories can easily agitate masses and reform systems. Low cost and efficient agents of Agricultural terrorism do not require scientific knowledge and thus can be used easily at all levels without fear of being punished. Motivations like revenge can easily enable people to fight back against governments yielding greater losses. Globalization with increased food trade has exposed us to agricultural terrorism and more vulnerable attacks.

This brief examination of history will make it possible to identify patterns of attack, preparedness required against the attack and also understand motives and agendas of terrorism organization, scale of their attack and risks and mitigation practices associated to tackle such situations. However the article explains that agricultural terrorism was not a fear at a global level till date and all such activities were done to influence local leaders and gain control over political system and these activities were not frequent in nature yet the article does not deny any such activity in near future and allow us to understand, react and prepare in advance for the attacks of agricultural terrorists.

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Negative Pressure Ambulance (NPA) to face Ebola Pandemic

Source: http://www.4dji.com/negative-pressure-ambulance-npa-to-face-ebola-pandemic/

KFB-Extramobile have a longstanding reputation for the delivery of specialist medical vehicles in support of pandemic management systems. Perhaps KFB-Extramobile is best known for the ambulances originally designed to transport SARS patients in China. KFB-Extramobile clean-room filter technology prevents viruses from escaping and contaminating areas outside of the Ambulance itself. The Chinese Government requirement and specification match those imposed by experts in the field when facing similar pandemic threats to SARS such as the EBOLA virus.

KEY FEATURES

- The patient compartment enclosure is isolated from the outside a
- nd from the driver compartment using a negative pressure system.
- A suction filter is provided (ceiling mounted) with a capacity of approximately 200 m³/hour with an infinitely variable suction rate of up to 400Pa.
- Air is introduced to the vehicle through a filtration system maintaining more than 20 air changes per hour eqating to 200 m³/hour.
- There is an optical/electrical disinfection system that supports the active filters.
- Ambulance body negative pressure exhaust gas flow is directed through a highly efficient filter that sterilizes the air before entry to the atmosphere. The exhaust filter provides aerosol efficiency exceeding 99.5% > 0.3µm
- Body design and construction has been developed to maximise the vacuum draws down times which must not exceed 3 minutes to -10 Pa.

VEHICLE SPECIFICATION
KFB engineers are experienced at installing the NPS in all types of base vehicles (Body and Panels vans). We have more than 240 units operating.

ADDITIONAL INFORMATION
The KFB- Extramobile NPA (Negative Pressure Ambulance) transports the patient with the head towards the front. Opportunities for the virus to contaminate the patient compartment is substantially reduced because the patient is lying directly under the extractor system (with swivel arm and special mouth and filter) The ambulances medical equipment can be the same as for the standard model. Accompanying personnel still need to maintain established medical barrier control but will benefit from the greater protection provided by the system. This system is a patented product that has been widely used in many sectors. It has been used extensively by the Chinese SARS pandemic crisis team.

Another Negative Pressure Ambulance (China)

Source: http://weiku836797.company.weiku.com/item/Negative-Pressure-Emergency-Ambulance-Ford-transit-chassis-15308293.html

15 Ambulance Vehicle Concepts of the Future

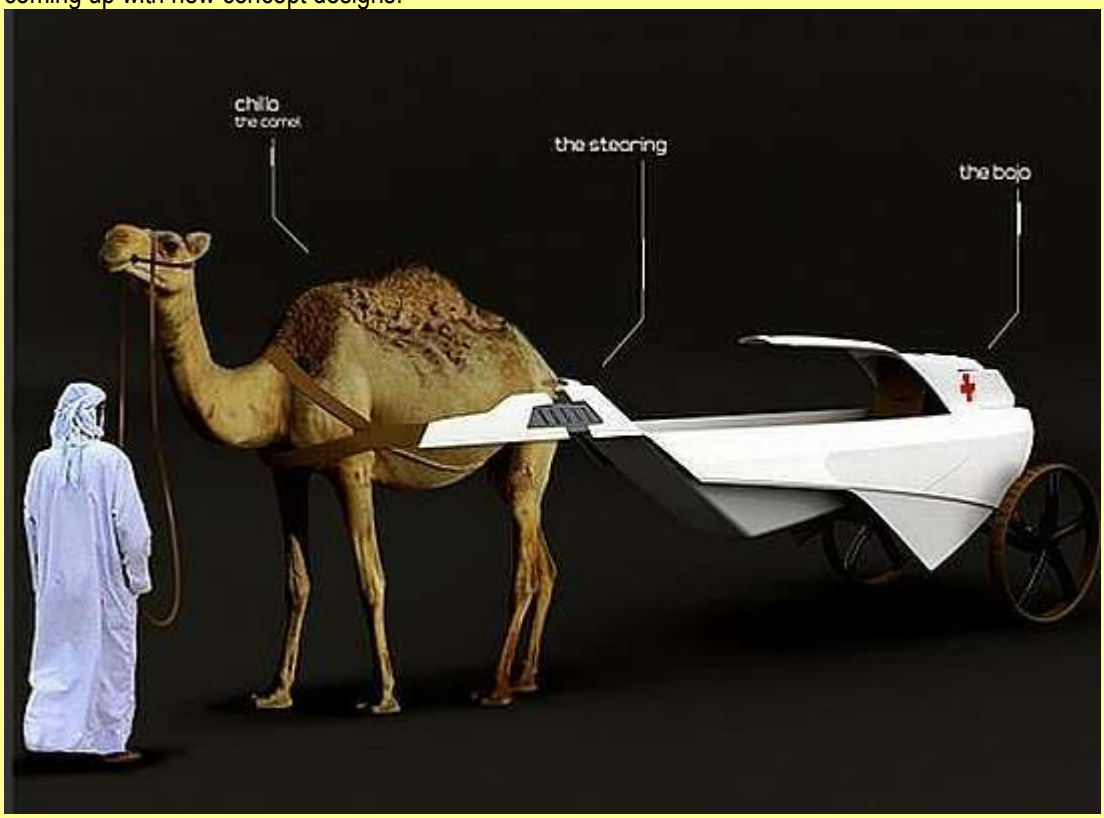
Source: https://www.cmspecialistvehicles.co.uk/15-ambulance-vehicle-concepts-future/

Ambulance vehicles have evolved considerably since their inception in the 1800's. These days, modern ambulance builds have to meet minimum compliance levels including, crash resistance, equipment levels, and exterior marking. But despite these compliances being in place, ambulance vehicles still face everyday challenges that hinder their effectiveness such as:

- Accessing remote places
- Driving on difficult terrain
- Maneuvering through traffic congestion

- Poor road infrastructure unsuitable for ambulance vans
- Interior space limitations
- Equipment, technology and personnel carrying limitations

In attempt to overcome the challenges that ambulances face, projects around the world are regularly coming up with new concept designs.



Camel ambulance – Cambulance'

Cocoon concept

Here (source URL) is a selection of innovative ambulance concepts, designed to adapt to the changing world we live in. Who knows, one day we may actually see an ambulance with James Bond like ejector seats!

U.S. in 'Worse Shape' to Face Flu Pandemic Than 15 Years Ago, Warns Steven Hatfill

By Bridget Johnson

Source: https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/u-s-in-worse-shape-to-face-flu-pandemic-than-15-years-ago-warns-steven-hatfill/

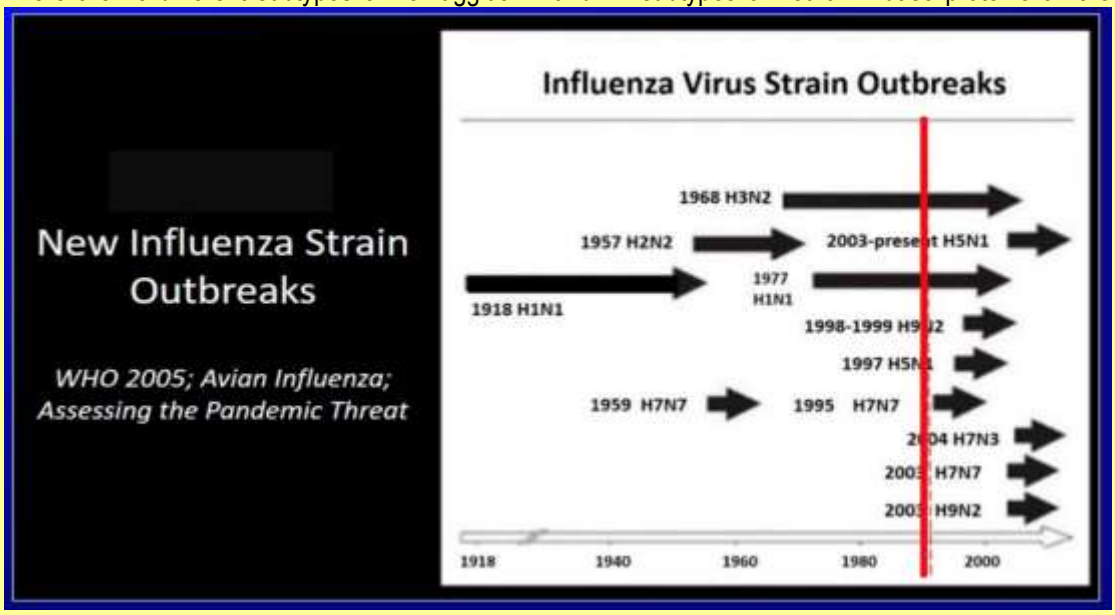
June 21 – The United States is "in worse shape than we were 15 years ago" in the ability to respond — particularly at the critical community level — to a potential pandemic that could be foreshadowed by a pattern of new influenza strain outbreaks, biodefense expert Steven Hatfill warned.

Hatfill, a onetime biodefense researcher at Fort Detrick, was wrongly accused of sending the 2001 anthrax letters and subsequently received a multimillion-dollar settlement from the U.S. government and official public exoneration from the Justice Department. He is currently an adjunct assistant professor in the Department of Microbiology, Immunology, and Tropical Medicine at George Washington University.

In a presentation Tuesday at the Biodefense World Summit in Bethesda, Md., Hatfill emphasized that rapid detection of emerging outbreaks is useless without an effective rapid-response plan — and in terms of the pandemic influenza threat, "we're stuttering." A "consequence management" approach, he said, will tell emergency managers what rapid diagnostic tools are necessary.

He explained that "when you have the flu, it's not just one flu," and no matter what vaccine is generated the virus strains are subject to seasonal and genetic changes. "These viruses undergo a lot of viral trafficking in nature," he added.

There are 18 different subtypes of hemagglutinin and 11 subtypes of neuraminidase proteins on the



surface of the flu virus, accounting for combinations such as the H1N1 flu pandemic that killed as many as 100 million people worldwide, the H5N1 strain that for the first known time infected humans in 1997, and the H7N9 strain that emerged in humans in 2013 but has already surpassed total H5N1 cases and in China has a 50 percent mortality rate. While a lethal outbreak hit Kansas in March 1918, an even greater pandemic wave hit globally in September as the virus mutated.

Hatfill noted that, while H7 avian flu and the H1N1 strain that emerged in 2009 have an affinity for infecting people through virus contact with their eyes, it's not mentioned in national pandemic planning.

The influenza virus is spread when a carrier — infected people can shed the virus 24 hours before showing any symptoms — coughs and infected droplets are inhaled or come into contact with the eyes. A person can also acquire the virus from touching an infected surface and then touching his or her face, or through infected bird droppings or nasal secretions.

Once microdroplets carrying the virus are released, they can remain suspended in the air for hours with low humidity offering protection to the virus.

If a person has the flu, 23 to 59 percent of the objects in his or her home will be contaminated with the influenza virus, which lasts up to two days on nonporous surfaces and up to 12 hours on porous surfaces — the H5N1 strain can last up to six days on some surfaces. The H1N1 strain can survive on paper money for 10 days and the H3N2 virus can last on bills for 17 days; Hatfill noted that little research is being conducted on paper treatments, such as colloidal silver, that might keep currency from being contaminated.

Another situation that sets up "viral trafficking" can be seen in China, where polyculture mixes species such as waterfowl and fish, chickens and pigs in close quarters. "You have this constant circulation going on of any strains coming from the waterfowl or migratory birds," Hatfill said.

Hatfill called "alarming" the emergence of micro-outbreaks of new influenza strains in recent years, and the predicted debut of new pathogenic viruses in the coming years.

The death toll from the 1918 flu made it one of the worst three pandemics in history, joining the 6th Century Justinian Plague and the Medieval Black Death. If the 1918 flu pandemic struck the world today with the same strain and mortality rate, it could kill up to 380 million people worldwide. Today, though, there is more urbanization with prime conditions to spread illness in high-density cities — many without the means to properly prepare or respond to an outbreak.

"Influenza is going to strike low-resource areas first and the hardest, and these are the areas that are going to transmit it to the rest of society," Hatfill said.

The National Strategy for Pandemic Influenza, released in 2005 and most recently updated by Health and Human Services in 2017, warned that "the next pandemic is likely to come in waves, each lasting months, and pass through communities of all size across the nation and world," and "while a pandemic will not damage power lines, banks or computer networks, it will ultimately threaten all critical infrastructure by removing essential personnel from the workplace for weeks or months."

The pillars of the strategy are preparedness and communication, surveillance and detection, and response and containment. The 2017 update added the domains of surveillance, epidemiology, and laboratory activities; community mitigation measures; medical countermeasures; diagnostic devices, vaccines, therapeutics, and respiratory devices; healthcare system preparedness and response activities; communications and public outreach; scientific infrastructure and preparedness; and domestic and international response policy, incident management, and global partnerships and capacity building.

"For all these entities, budgetary, legal, and other administrative actions pose opportunities and operational challenges. Identifying and addressing such practices as staffing, contracting, procurement, and statutory authorities that can be used during an emergency are critical to efficient and effective response activities even when funding is limited," said the update.

The Strategic National Stockpile, managed by the Centers for Disease Control and Prevention, can deliver emergency supplies to a requesting state within 12 hours. But with three months to produce a new influenza vaccine, initial doses will be rationed to those needed to ensure continuity of government and critical services as well as the military, first responders, and high-risk populations with pregnant women, infants and toddlers getting first priority. That means about 123 million Americans ages 19-64 may not receive any vaccine through the peak of the pandemic; in the 1918 pandemic, the most fatalities were seen among those ages 14 to 50 years old.

"They may be reduced to the same non-pharmaceutical interventions as 1918" — stay home, wash your hands, cover coughs and sneezes, clean surfaces, etc., Hatfill noted.

Faced with consequences such as hospital beds past capacity with a flu surge, and the reality that quick diagnostics will be of greatest use at the community level, Hatfill said local communities bear the brunt of pandemic preparedness but as of now are notably unprepared — "they've had a couple of tabletop meetings and that's it."

A flu pandemic would "simultaneously affect communities all over the U.S.," possibly interrupting supply chains, he said. Communities need to get one step ahead by establishing neighborhood emergency help centers that could pop up in the event of a pandemic, run rapid diagnostics (ideally with emerging breathalyzer technology, enabled with Bluetooth to

quickly share data), and triage confirmed cases to home care — with detailed instructions for families — or a treatment center, where hospitals could also take stable patients. The separating of the infected from the well must be rapid, he stressed, because waiting rooms are essentially incubators for the virus. Community outreach teams could make home visits, test and educate families about home care; portable technology would be essential.

"Something's going on in the world, and it's not good," Hatfill said of the new influenza strain micro-outbreaks. "We're not prepared. I've spent five years going over this stuff… we're in worse shape than we were 15 years ago."

Bridget Johnson *is the Managing Editor for Homeland Security Today. A veteran journalist whose news articles and analyses have run in dozens of news outlets across the globe, Bridget first came to Washington to be online editor and a foreign policy writer at The Hill. Previously she was an editorial board member at the Rocky Mountain News and syndicated nation/world news columnist at the Los Angeles Daily News. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is a Senior Risk Analyst for Gate 15, a private investigator and a security consultant. She is an NPR on-air contributor and has contributed to USA Today, The Wall Street Journal, New York Observer, National Review Online, Politico, New York Daily News, The Jerusalem Post, The Hill, Washington Times, RealClearWorld and more, and has myriad television and radio credits including Al-Jazeera and SiriusXM.*

Vigilance Needed to Protect U.S. from Swine Fever and Agroterrorism, Warns USDA Homeland Security

By Bridget Johnson

Source: https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/vigilance-needed-to-protect-u-s-from-swine-fever-and-agroterrorism-warns-usda-homeland-security/

June 19 – The U.S. Department of Agriculture's point person on homeland security warned that border vigilance against Chinese pork imports — even a visitor bringing back a pack of infected jerky — is crucial to keep a pathogen from causing economic ruin here in America.

"African swine fever has the potential to completely topple pork markets in the U.S. if it ever showed up here," David Stiefel, a national security policy analyst in the USDA's Office of Homeland Security and lead USDA author on last year's National Biodefense Strategy, told the Biodefense World Summit in Bethesda, Md., on Tuesday.

The hemorrhagic virus, which one researcher at the conference dubbed "Ebola for pigs," cannot be spread to humans but China, which has been battling a swine fever outbreak since August, has had to cull hundreds of thousands of pigs as pork prices jumped 18 percent and inflation rose to a 15-month high.

Stiefel noted that the virus can survive up to 180 days in low-temperature-cured jerky. The USDA is working with the intelligence community to track where swine fever cases are increasing; at points of entry, an increased Customs and Border Protection "Beagle Brigade" trained to sniff out food material is doing its part to keep travelers from bringing in infected pork.

Trying to keep the fever off U.S. shores isn't easy: Stiefel cited the recent interception of a container ship from China that was supposed to be carrying auto parts but instead was full of pork products.

This "creates huge risk for the U.S. and global community," he said.

With more than 100,000 employees, the USDA's Office of Homeland Security is small by comparison with fewer than 60 staffers and three people working full-time on homeland security policy. Homeland Security Presidential Directive 9, issued by President George W. Bush in 2004, allowed the USDA to have its defensive-posture intel shop — including

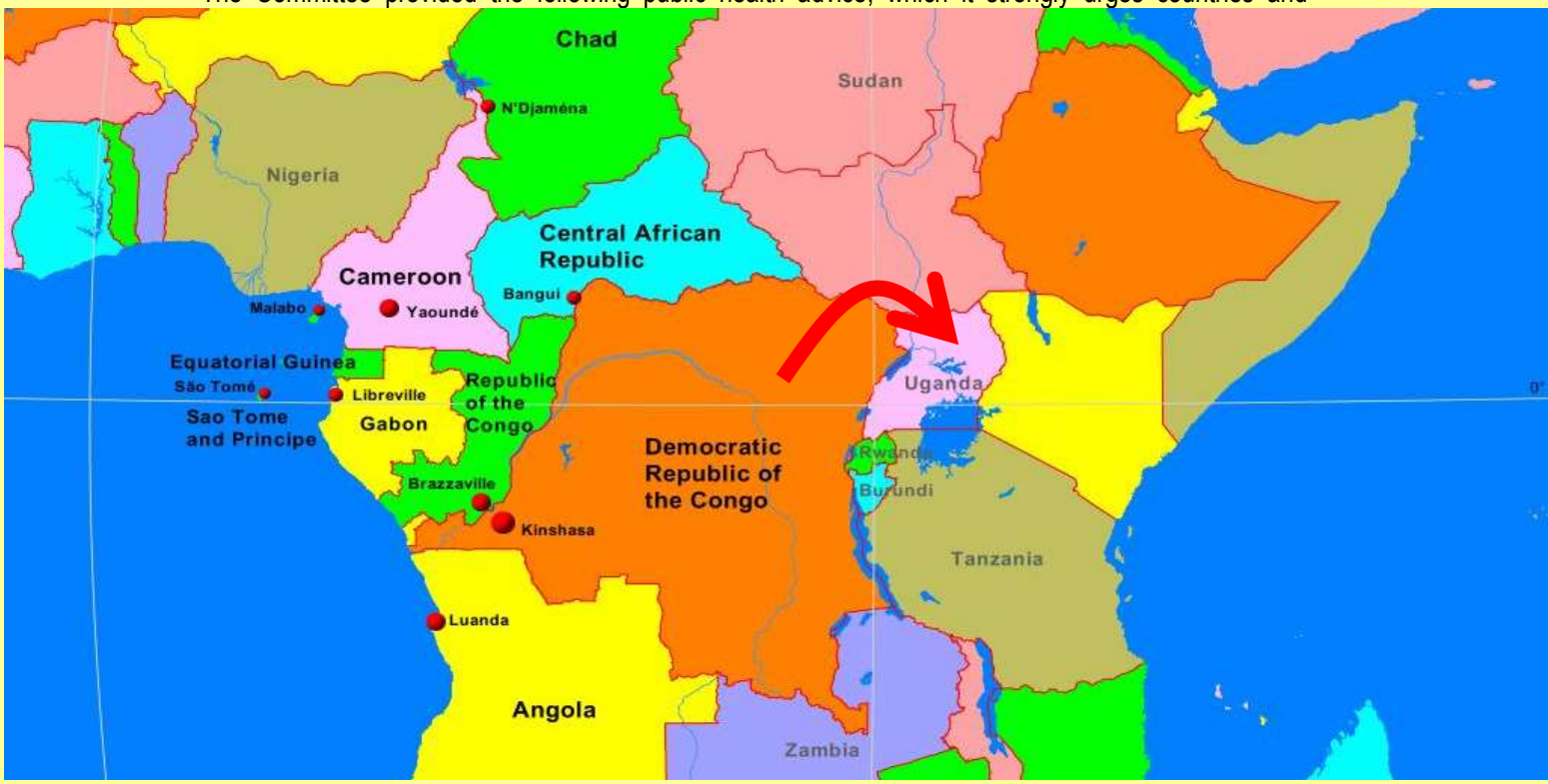
biosurveillance, foreign animal disease investigations, interagency coordination, intelligence support, outbreak assistance, and criminal epidemiological investigations.
The Defense Against Agroterrorism Working Group (DAAWG), with 36 chartered members, makes sure channels of communication, cooperation and collaboration are open to confront any deliberate act or threat to food or agriculture intended to intimidate, coerce or affect health, influence governments or inflict economic losses. The Title 50 chair is the National Counterterrorism Center, and the non-Title 50 chair is the Department of Homeland Security's Countering Weapons of Mass Destruction Office.
But the challenges are daunting. As the agency is tasked with ensuring food security and supply resiliency for a growing population, the USDA must track, intercept, prevent and respond to potentially devastating pathogens.
"It's a lot easier to infect animals and plants because fewer people are watching," Stiefel said, adding that "this is something that could be attacked intentionally or unintentionally."
Sixty-one percent of diseases that affect humans have a zoonotic origin, and zoonotic diseases account for 70 percent of emerging diseases.
The 2015 outbreak of Asian highly pathogenic avian influenza in the United States cost more than $800 million; the agriculture sector accounts for 5.5 percent of U.S. gross domestic product.
Containing agricultural disease can include enforcement measures that require law enforcement assistance; a memorandum of understanding with the FBI means that agents can secure the area around a potential disease investigation, then vets or other USDA personnel can go in and clear the scene — such as when an outbreak of virulent Newcastle disease was traced back to fighting cocks on Southern California gang turf.
Stiefel stressed that a particular concern of the USDA is multiple small-scale attacks with widespread impact, such as 10 different episodes in 10 different states.
"It would be a very difficult situation if a lot of small attacks looked natural," he said.

WHO: Uganda Cases Underscore How DRC Ebola Outbreak Can Cross Borders

Source: https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/who-uganda-cases-underscore-how-drc-ebola-outbreak-can-cross-borders/
June 16 – The meeting of the Emergency Committee convened by the WHO Director-General under the International Health Regulations (IHR) (2005) regarding Ebola virus disease in the Democratic Republic of the Congo (DRC) took place on Friday, 14 June 2019, from 12:00 to 17:00 Geneva time (CEST).
The Committee expressed its deep concern about the ongoing outbreak, which, despite some positive epidemiological trends, especially in the epicenters of Butembo and Katwa, shows that the extension and/or reinfection of disease in other areas like Mabalako, presents, once again, challenges around community acceptance and security. In addition, the response continues to be hampered by a lack of adequate funding and strained human resources.
The cluster of cases in Uganda is not unexpected; the rapid response and initial containment is a testament to the importance of preparedness in neighboring countries. The Committee commends the communication and collaboration between DRC and Uganda.
At the same time, the exportation of cases into Uganda is a reminder that, as long as this outbreak continues in DRC, there is a risk of spread to neighboring countries, although the risk of spread to countries outside the region remains low.
The Committee wishes to commend the heroic work of all responders, who continue to work under extremely challenging and stressful conditions.
The Committee extensively debated the impact of a PHEIC [public health emergencies of international concern] declaration on the response, possible unintended consequences, and how these might be managed. Differing views were expressed, as the Committee acknowledged that recent cases in Uganda constitute international spread of disease.
It was the view of the Committee that the outbreak is a health emergency in DRC and the region but does not meet all the three criteria for a PHEIC under the IHR. While the outbreak

is an extraordinary event, with risk of international spread, the ongoing response would not be enhanced by formal Temporary Recommendations under the IHR (2005).

The Committee provided the following public health advice, which it strongly urges countries and



responding partners to heed:

- At-risk countries should improve their preparedness for detecting and managing exported cases, as Uganda has done.
- Cross-border screening in DRC should continue and its quality improved and sustained.
- Continue to map population movements and sociological patterns that can predict risk of disease spread.
- All priority countries should put in place approvals for investigational medicines and vaccines as an immediate priority for preparedness.
- Optimal vaccine strategies that have maximum impact on curtailing the outbreak, as recommended by WHO's Strategic Advisory Group of Experts (SAGE), should be implemented rapidly.
- The Committee is deeply disappointed that WHO and the affected countries have not received the funding and resources needed for this outbreak. The international community must step up funding and support strengthening of preparedness and response in DRC and neighboring countries.
- Continue to strengthen community awareness, engagement, and participation. There has been a great deal of progress in community engagement activities. However, in border communities, where mobility is especially likely, community engagement needs to be more sharply targeted to identify the populations most at risk.
- The implementation by the UN and partners of more coordinated measures to reduce security threats, mitigate security risks, and create an enabling environment for public health operations is welcomed and encouraged by the Committee as an essential platform for accelerating disease-control efforts.
- The Committee strongly emphasizes its previous advice against the application of any international travel or trade restrictions.

- The Committee does not consider entry screening at airports or other ports of entry to be necessary.

The Committee advised the WHO Director-General to continue to monitor the situation closely and reconvene the Emergency Committee as needed.

■ ■ ■ and everybody lived happyly ever after!

Rodolphe Mérieux Laboratory of Beirut

Source: https://www.fondation-merieux.org/en/what-we-do/increasing-access-to-diagnostics/developing-infrastructure/rodolphe-merieux-laboratory-of-lebanon/

The Rodolphe Mérieux Laboratory of Beirut is an observatory for pathogenic agents and infectious diseases in Lebanon and a member of the GABRIEL network. Located in the Health Technology Center of Saint-Joseph University in Beirut, which owns the laboratory, it addresses an urgent need in the field of infectious diseases in Lebanon and the region. Professor Marianne Abi Fadel is Director of the laboratory.

Diagnostics to help the most vulnerable communities

Working with several Lebanese hospitals, the laboratory provides diagnostics testing (especially for hepatitis, HIV, tuberculosis and STIs), in addition to research and training. It seeks to combat infectious diseases and epidemics among the country's most vulnerable communities.

A reference lab with BSL 1, 2 and 3 facilities

The laboratory includes biosafety level (BSL) 1, 2, and 3 zones with:

- A microbiology unit;
- A molecular biology unit for the extraction of nucleic acids, DNA amplification, post-amplification analysis and biological sample storage;
- A unit for mycobacteria and other airborne pathogens (BSL3).

Thanks to these unique facilities and high-tech equipment, it represents a reference center in Lebanon, where no national laboratory is currently operating.

Training and support in line with the highest standards

The lab's scientists receive training in biosafety (BSL3) and quality control. They also learn how to performs the *Streptococcus pneumoniae* typing test. The Mérieux Foundation is providing support to set up Laboratory Quality Stepwise Implementation (LQSI), a free tool developed by the World Health Organization to help meet the ISO 15189 standard.

The laboratory was designed to meet the specifications of the ISO 14644 standard, parts 1 and 4 ("Cleanrooms and Associated Controlled Environments").

Scientific research with an impact in Lebanon and the region

A medical microbiologist from the Mérieux Foundation works with the laboratory to develop research projects.

Research activities at the Rodolphe Mérieux Laboratory fall into two categories.

First, the Rodolphe Mérieux Laboratory conducts research projects in connection with the GABRIEL network's programs, including the PEARL project (Pneumonia's Etiology Among Refugees and Lebanese Population). This project, launched in late 2016, studies the etiology of respiratory infections in Syrian refugees in Lebanon in order to improve patient care.

The second category of projects focuses on scientific topics that impact Lebanon and the region:

- Observation of pathogenic agents and bacterial resistance to antibiotics in Lebanon;
- Study of the genetic factors of resistance in bacterias in Lebanon;
- Study of the activity of new antibacterial molecules (antimicrobial peptides).

Biothreats, Real and Imagined

By Emily Leproust

Source: https://blogs.scientificamerican.com/observations/biothreats-real-and-imagined/

June 21 – Nature is the ultimate problem-solver. Through evolution, organisms adapt to changing environments, gain competitive advantages and develop better survival tools.

This can be quite inspiring. Consider the human immune system's balanced complexity. Cytotoxic T cells seek out and destroy harmful invaders, while regulatory T cells are poised to step in and shut down their aggressive cousins before they generate an autoimmune response. Biological systems evolved over billions of years, which is why human researchers often try to emulate them. Gene editing with CRISPR-Cas9 was cribbed from bacterial immune defenses. PCR was also appropriated from nature. And there are many other examples.

Nature has a dark side as well, of course. In the mid-14th century, bubonic plague—the Black Death—wiped out more than half of Europe. The 1918 influenza pandemic killed more than 50 million worldwide.

As new biological techniques advance, there are justifiable concerns these technologies could be used to create manmade pandemics. These worries often center on synthetic biology. Some policymakers and pundits believe these techniques are too simple; that virtually anyone with basic lab skills could leverage them to develop an effective biological weapon. The reality is far more complex and encouraging.

Weaponizing biology is hard

Synthetic biology simplifies some research but does little to enable homemade biological weapons. It's difficult to convince biological systems to do mass harm, and doing it efficiently requires sophisticated, and specialized, scientific knowledge.

Amateurs have consistently come up short. In the 1990s, the Japanese doomsday cult Aim Shinrikyo tried to weaponize botulinum toxin and failed to concentrate enough to kill a mouse. Even if they had isolated botulinum, delivering it as a weapon would have been daunting.

Aim Shinrikyo's efforts were particularly sloppy, but even nations with sophisticated biological weapons programs have found nature can be difficult to master. The Soviet Union spent years trying to weaponize antibiotic resistant anthrax. As they added resistance genes, they found the bacteria lost virulence, ease of

transmissibility and other "desirable" traits. The Soviets, as sophisticated as they were, could not have it all. Biological systems evolve to survive, and a microbe that quickly kills its host violates that central goal.

In any quest to weaponize biology, DNA synthesis is just a first step in a long, complex

process. Weaponizing microbes requires even more complex, specialized work, such as milling particles to a specific size. Effective dispersal—through aerosolization or sprayers—poses further challenges. It's difficult to accomplish without killing or disabling the microbe.

Each series of steps requires intense expertise in molecular and cell biology, chemistry and engineering—not to mention a building full of expensive equipment. In short, it's extremely difficult to do in a garage.

These barriers still apply to microbes engineered with synthetic biology techniques. Could a group of bad actors use CRISPR-Cas9 gene editing or other tools to increase a microbe's pathogenicity? It's not impossible, but synthetic biology offers no advantages when weaponizing or dispersing the toxin.

Nature is the most pressing biological threat

Most technologies have the potential for benefit or harm, and synthetic biology is no different. But looking at the trade-off between risk and benefit, these technologies mitigate many more threats than they create.

We've recently experienced SARS, Ebola, Zika and other deadly outbreaks. These didn't come from a lab, they came from nature. As humans encounter new pathogens, nature will continue to evolve microbes to more efficiently infect us. Importantly, nature has mastered an incredible tool: evolution. Compound this with transoceanic air travel, and our modern lifestyle is almost perfectly tuned to spread natural infectious agents.

Fortunately, we are developing new tools to address these potent threats, among them synthetic biology and directed evolution. For example, researchers at the Broad Institute have developed a low-tech, CRISPR-based tool to rapidly identify pathogens in the field. Called **SHERLOCK, this paper-based test** (photo) can detect a single RNA molecule to identify Zika, dengue and other pathogens. And, there is a second CRISPR-based platform for disease detection in h from Mammoth Biosciences.

These techniques could also help prevent pandemics through more active surveillance. For instance, enhanced oversight, powered by deep genomic sequencing, helped contain a recent monkeypox outbreak in Nigeria.

Synthetic biology can also accelerate our ability to develop new therapies. Once a viral protein is isolated, it can take six months or longer to incubate it in eggs and produce enough antibodies to create a vaccine. A DNA-based vaccine could be synthesized far faster. A piece of DNA, smartly delivered, could generate the necessary immune response and might take only a few weeks to develop.

Last year, Vanderbilt University Medical Center received a $28 million DARPA grant to test new approaches. Using synthetic genes from Twist Bioscience, Vanderbilt is developing a rapid response platform that could provide therapeutic antibodies for a completely novel pathogen in as little as 60 days.

Good policy decisions on emerging technologies are informed by a solid understanding of risks and benefits. Bioterrorism plots may make for good pulp novels and Hollywood movies, but in reality, virulent, natural pathogens pose a far greater danger to human life. Fortunately, we can leverage the emerging collection of synthetic biology tools to detect, mitigate and halt these outbreaks and save lives.

The views expressed are those of the author(s) and are not necessarily those of Scientific American.

***Emily Leproust** is CEO of Twist Bioscience.*

International community unprepared to deal with catastrophic biological event

Source: http://www.homelandsecuritynewswire.com/dr20190624-international-community-unprepared-to-deal-with-catastrophic-biological-event

June 24 – The risks of a global catastrophic biological event are growing, intensified by an increasingly interconnected world, terrorist and state interest in weapons of mass destruction, global political instability, and rapid advances in biotechnology. International leaders and organizations today are unprepared to react with the kind of effective, coordinated response needed to investigate and identify the pathogen, prevent the spread of disease, and, most importantly, save lives.

NTI says that without the right procedures and tools in place, there's little doubt that a rapidly spreading high-consequence biological event would place overwhelming stress on the people and institutions responsible for response. The lack of established procedures would very likely undermine the trust and cooperation needed between the health professionals, humanitarian responders, and security officials who would be aiming for a coordinated, effective international response.

To address this preparedness deficit, the Nuclear Threat Initiative, Georgetown University's Center for Global Health Science and Security, and the Center for Global Development convened senior health, humanitarian, security, and political leaders to participate in a tabletop exercise designed to explore command, control, and coordination of an international response to an unusual and rapidly spreading biological event that began in the fictional country of "Vestia." NTI says that the exercise uncovered major gaps in international coordination, information sharing, and attribution between health and security officials. It sparked disagreements among leading experts over whether a permanent United Nations-based coordinator is needed to facilitate coordination among the various entities responsible for pandemic response. And it uncovered divisions over committing attention and resources to finding the perpetrators as a way to deter future attacks.

A new NTI Paper, A Spreading Plague: Lessons and Recommendations for Responding to a Deliberate Biological Event, presents key findings and recommendations for urgent improvements to avoid catastrophic consequences of deliberate and other high-consequence biological events.

In addition to key findings from the tabletop exercise, the report offers recommendations from the event organizers, shaped around four emergent themes:

- ◈ International Coordination
- ◈ Information Sharing
- ◈ Investigation and Attribution
- ◈ Financing for Response and Preparedness

NTI notes that while the report's recommendations were informed by the discussion during the tabletop exercise, they should not be attributed to the event participants.

— Read more in Elizabeth Cameron et al., A Spreading Plague: Lessons and Recommendations for Responding to a Deliberate Biological Event (NTI : Bio, 2019).

BIODEFENSE: The Nation Faces Long-Standing Challenges Related to Defending Against Biological Threats

Source: https://www.gao.gov/assets/710/700014.pdf

GAO's past work has identified a number of challenges related to the nation's ability to detect and respond to biological events that transcend what any one federal department or agency can address on its own. They include, among others:

•Assessing enterprise-wide threats. In October 2017, GAO found there was no existing mechanism across the federal government that could leverage threat awareness information

to direct resources and set budgetary priorities across all agencies for biodefense. GAO said at the time that the pending biodefense strategy may address this.

•Situational awareness and data integration. GAO reported in 2009 and 2015 that the Department of Homeland Security's (DHS) National Biosurveillance Integration Center (NBIC)—created to integrate data across the federal government to enhance detection and situational awareness of biological events—has suffered from longstanding challenges related to its clarity of purpose and collaboration with other agencies. DHS implemented GAO's 2009 recommendation to develop a strategy, but in 2015 GAO found NBIC continued to face challenges, such as limited partner participation in the center's activities.

•Biodetection technologies. DHS has faced challenges in clearly justifying the need for and establishing the capabilities of the BioWatch program—a system designed to detect an aerosolized biological terrorist attack. In October 2015, GAO recommended that DHS not pursue upgrades until it takes steps to establish BioWatch's technical capabilities. While DHS agreed and described a series of tests to establish capabilities, it continued to pursue upgrades.

•Biological laboratory safety and security. Since 2008, GAO has identified challenges and areas for improvement related to the safety, security, and oversight of high-containment laboratories, which, among other things, conduct research on hazardous pathogens—such as the Ebola virus. GAO recommended that agencies take actions to avoid safety and security lapses at laboratories, such as better assessing risks, coordinating inspections, and reporting inspection results. Many recommendations have been addressed, but others remain open, such as finalizing guidance on documenting the shipment of dangerous biological material.

In September 2018, the White House issued the National Biodefense Strategy and associated plans, which could help to address some of the ongoing challenges GAO has previously identified. However, because implementation of the strategy is in early stages, it remains to be seen how or to what extent the agencies responsible for implementation will institutionalize mechanisms to help the nation make the best use of limited biodefense resources. GAO is currently reviewing the strategy and will report out later this year.

Should measles vaccination be made compulsory?

Source: http://www.homelandsecuritynewswire.com/dr20190626-should-measles-vaccination-be-made-compulsory

June 26 – As measles cases in Europe hit their highest levels this decade, should the U.K. adopt compulsory vaccination? Experts debate the question in a recent issue of *BMJ*.

"We need to increase uptake of this vaccine, as we run the risk of measles becoming endemic," argues Eleanor Draeger, sexual health doctor and medical writer.

Uptake of the measles, mumps, and rubella (MMR) vaccine in the U.K. is 94.9 percent for the first dose, but this drops to 87.4 percent for the second dose, which falls short of the 95 percent needed to produce herd immunity, she explains.

She points out that mandatory vaccination has increased uptake in other countries, and that in U.K. society, many things are already legislated to improve individual or public health. "We would argue that the U.K. now needs to legislate to increase vaccination rates, as current measures aren't keeping rates high enough to ensure herd immunity."

Many parents wrongly believe the rhetoric that vaccines are harmful, unnatural, and an infringement of civil liberties, she says.

BMJ notes that ethicists have argued that compulsory vaccination is acceptable because people who don't vaccinate their children are potentially putting other people's health at risk, particularly those who can't be vaccinated and are therefore more vulnerable.

"Passing a law that stops children attending nursery or school unless their vaccinations are up to date or they are medically exempt would allow free choice while protecting vulnerable children," she concludes.

But Helen Bedford and David Elliman at UCL Great Ormond Street Institute of Child Health and Great Ormond Street Hospital argue that rather than mandatory vaccination, the U.K. should concentrate on other methods to increase vaccine uptake, such as improving access to services.
For example, ensuring that general practices have an immunization lead and adequate appointment reminders in place, making immunization settings child and family friendly, and ensuring staff have adequate time to talk to parents, and have been trained to tackle any issues that arise.
"Only when these components are in place should we consider mandatory vaccination," they say.
Even then, they warn of potential unintended consequences. For instance, would parents still trust the NHS and healthcare professionals if GP data were used to decide whether a child was admitted to school or whether a family were allowed certain welfare benefits?
If school entry were denied, some parents may resort to home-schooling, and if vaccination were attached to welfare benefits it would be the less well off, but determined, parents who would suffer disproportionately, they add.
They welcome a recent House of Lords debate that favored improving services rather than compulsion, and say "we believe that the U.K. should concentrate on improving its infrastructure and not risk alienating parents unnecessarily."

— Read more in "Should measles vaccination be compulsory?" BMJ (5 June 2019).

We must prepare for the next pandemic

By Bruce Schneier
Source: http://www.homelandsecuritynewswire.com/dr20190628-we-must-prepare-for-the-next-pandemic

June 28 – When the next pandemic strikes, it is more likely than not that we will be fighting it on two fronts. The first is what we immediately think about: understanding the disease, researching a cure and inoculating the population. The second front is new, and one we may not have thought about as much: fighting the deluge of rumors, misinformation and flat-out lies that will appear on the internet.
Bruce Schneier is a fellow and lecturer at the Harvard Kennedy School. His latest book is *Click Here to Kill Everyone: Security and Survival in a Hyper-connected World*, writes in the *New York Times* that "The second battle will be like the Russian disinformation campaigns during the 2016 presidential election, only with the addition of a deadly health crisis and possibly without a malicious government actor. But while the two problems — misinformation affecting democracy and misinformation affecting public health — will have similar solutions, the latter is much less political. If we work to solve the pandemic disinformation problem, any solutions are likely to also be applicable to the democracy one."
Schneier continues:

> Pandemics are part of our future. They might be like the 1968 Hong Kong flu, which killed a million people, or the 1918 Spanish flu, which killed over forty million. Yes, modern medicine makes pandemics less likely and less deadly. But global travel and trade, increased population density, decreased wildlife habitats, and increased animal farming to satisfy a growing and more affluent population have made them more likely. Experts agree that it's not a matter of if — it's only a matter of when.
>
> When the next pandemic strikes, accurate information will be just as important as effective treatments. We saw this in 2014, when the Nigerian government managed to contain a subcontinent-wide Ebola epidemic to just twenty infections and eight fatalities. Part of that success was because of the ways officials communicated health information to all Nigerians, using government-sponsored videos, social media campaigns and international experts. Without that, the death toll in Lagos, a city of 21 million people, would have probably been greater than the 11,000 the rest of the continent experienced.
>
> There's every reason to expect misinformation to be rampant during a pandemic. In the early hours and days, information will be scant and rumors will abound. Most of us are not health professionals or scientists. We won't be able to tell fact from

> fiction. Even worse, we'll be scared. Our brains work differently when we are scared, and they latch on to whatever makes us feel safer — even if it's not true.
>
> Rumors and misinformation could easily overwhelm legitimate news channels, as people share tweets, images and videos. Much of it will be well-intentioned but wrong — like the misinformation spread by the anti-vaccination community today — but some of it may be malicious. In the 1980s the KGB ran a sophisticated disinformation campaign — Operation Infektion — to spread the rumor that H.I.V./AIDS was a result of an American biological weapon gone awry. It's reasonable to assume some group or country would deliberately spread intentional lies in an attempt to increase death and chaos.

Schneier notes that it is not just misinformation about which treatments work (and are safe), and which treatments do not work (and are unsafe).

> Misinformation can affect society's ability to deal with a pandemic at many different levels. Right now, Ebola relief efforts in the Democratic Republic of Congo are being stymied by mistrust of health workers and government officials.
>
> It doesn't take much to imagine how this can lead to disaster. Jay Walker, curator of the Tedmed conferences, laid out some of the possibilities in a 2016 essay: people overwhelming and even looting pharmacies trying to get some drug that is irrelevant or nonexistent, people needlessly fleeing cities and leaving them paralyzed, health workers not showing up for work, truck drivers and other essential people being afraid to enter infected areas, official sites like CDC.gov being hacked and discredited. This kind of thing can magnify the health effects of a pandemic many times over, and in extreme cases could lead to a total societal collapse.
>
> This is going to be something that government health organizations, medical professionals, social media companies and the traditional media are going to have to work out together. There isn't any single solution; it will require many different interventions that will all need to work together. The interventions will look a lot like what we're already talking about with regard to government-run and other information influence campaigns that target our democratic processes: methods of visibly identifying false stories, the identification and deletion of fake posts and accounts, ways to promote official and accurate news, and so on. At the scale these are needed, they will have to be done automatically and in real time.

Since the 2016 presidential election, there has been much talk about propaganda campaigns, influence operations, and about how social media amplifies fake news and allows damaging messages to spread easily. "It's a hard discussion to have in today's hyperpolarized political climate," Schneier writes. "After any election, the winning side has every incentive to downplay the role of fake news."

He adds: "But pandemics are different; there's no political constituency in favor of people dying because of misinformation. Google doesn't want the results of peoples' well-intentioned searches to lead to fatalities. Facebook and Twitter don't want people on their platforms sharing misinformation that will result in either individual or mass deaths. Focusing on pandemics gives us an apolitical way to collectively approach the general problem of misinformation and fake news. And any solutions for pandemics are likely to also be applicable to the more general — and more political — problems."

He concludes:

> Pandemics are inevitable. Bioterror is already possible, and will only get easier as the requisite technologies become cheaper and more common. We're experiencing the largest measles outbreak in twenty-five years thanks to the anti-vaccination movement, which has hijacked social media to amplify its messages; we seem unable to beat back the disinformation and pseudoscience surrounding the vaccine. Those same forces will dramatically increase death and social upheaval in the event of a pandemic.
>
> Let the Russian propaganda attacks on the 2016 election serve as a wake-up call for this and other threats. We need to solve the problem of misinformation during pandemics together — governments and industries in collaboration with medical officials, all across the world — before there's a crisis. And the solutions will also help us shore up our democracy in the process.

Read the article: Bruce Schneier, "We must prepare for the next pandemic," New York Times (17 June 2019)

Teens of "anti-vaxxers" can get their own vaccines, some states say

Source: http://www.homelandsecuritynewswire.com/dr20190628-teens-of-antivaxxers-can-get-their-own-vaccines-some-states-say

June 28 – A young man who had just turned 18 showed up at the Virginia office of Drs. Sterling and Karen Ransone earlier this month and asked for the vaccines for meningitis and human papillomavirus. It was his first opportunity to be vaccinated. As a minor, he needed permission from his parents, and they wouldn't grant it because they didn't think the vaccines were medically necessary. Now, as a legal adult, he could get the shots on his own. This year there have been at least 1,044 measles cases in 28 states — the largest outbreak since 1992. Michael Ollove writes in *Stateline* that public health officials blame parents who have refused to have their kids vaccinated. One way to boost immunization rates is to narrow school vaccination exemptions, which four states have done this year. Another is to take the decision out of parents' hands and let their kids choose for themselves. A handful of states already have given teens some vaccination rights.

EDITOR'S COMMENT: This reminds me the "Vote at 17" as if the majority of young men and women will have the background and maturity to decide about the future of their country the moment that are totally out of the working force spending the money of their parents. Now they will decide whether to accept vaccination or not. Then in case of a pandemic or a bioterrorism attack people will have their own opinion not trusting their authorities and scientific community and many might refuse to be vaccinated or take the proposed antibiotic. And we are currently making plans on how to contain a deadly pandemic or the deliberately release of a categoray "A" pathogen.

North Korea Has Two Weapons of Mass Destruction: Nukes and Tuberculosis

By Nicole Fisher

Source: https://www.forbes.com/sites/nicolefisher/2019/06/30/north-korea-has-two-weapons-of-mass-destruction-nukes-and-tuberculosis/

June 30 – **There is a joke in China that the North Korean's have two weapons of mass destruction: nukes and tuberculosis (TB).** And not just TB, but multidrug resistant TB – which knows no boundaries or borders, and is spread person-to-person through the air. The country is also experiencing exceptionally high rates of malaria and hepatitis B.

On Sunday afternoon (EST) President Trump became the first sitting U.S. president to cross from South Korea into North Korea (in a demilitarized zone dividing the two countries). The goal was to meet with North Korean leader Kim Jong Un in a diplomatic effort to discuss the denuclearization of North Korea. But the country poses much more of a global deadly force and significant security concern than just nuclear weapons.

Despite claims from North Korean media that the country developed a cure-all drug that has eradicated HIV/Aids, cancer and Ebola from the entire country, the truth is that there are millions of lives hanging in the balance, needing access to basic necessities like clean water, food and vaccinations. And without those, an estimated 60,000 children will starve, millions of adults will live with communicable diseases other regions of the world have eradicated, and the world will continue to fight North Korean weapons that are only a part of a much more deadly problem.

Of the 25 million citizens of the Democratic People's Republic of

Korea (North Korea), more than 40% of citizens (10.5 million people) are considered undernourished, and millions more have little food. Thus, humanitarian aid could go a long way in fighting the health decay of North Koreans and the mass human rights violations that occur by direct order of the Kim family. Aid that could help prevent the spread of infectious and contagious diseases to other countries, including the U.S.

Despite President Trump saying that he received another "beautiful" letter from Kim Jung Un, and hoped that the connection would lead to an agreement over nuclear weapons. But threats from North Korea extend far beyond nuclear weapons. And it is imperative that biologic threats are also on the negotiating table, as a means of diplomacy.

A Long And Troubling Past

North Korea has undoubtedly faced many natural and man-made disasters in recent decades. The greatest of which appear to stem from the economic collapse in the 1990s and subsequent deterioration of the citizens in the country. Since that time there has been a sharp decline in life expectancy – 12 years less than their genetic peers in South Korea. The North Koreans are also estimated to be 1-3 inches shorter than South Koreans, primarily due to chronic malnutrition and extreme poverty. At The Center for Strategic & International Studies (CSIS), experts contend that health decline is a direct result of choices and priorities made distinctly by the Kim family to create politically defined castes and introduce famine to the masses so that military efforts could be funded.

To understand a culture and a people, you must understand more than the military – which is what most of the world seeks to understand about North Korea. Nuclear and biological weapons are of global security priority. But the focus cannot be limited to those weapons alone. It must also be on the status of the citizens, culture, economy, and most importantly, what happens during and after the Kim dynasty. What happens to North Koreans now, could have global implications when they leave their country's borders in the near future.

While many health-related organizations have been able to skirt restrictions about entering the country for the purposes of health care, all signs point to a growing number of destructive diseases and shrinking number of professionals that can help. Which in turn means a growing body of diseases and human destruction just waiting to spill over the North Korean borders.

In fact, multiple sources have confirmed over the years that the political regime had strategically used food and starvation as tactics to control the people and get the United Nations and other visiting personnel to see whatever the North Korean elite wanted them to see. However, an early 2018 defector gave the world some insights into the status of the people, including the military, as it stands today. The soldier in question was cared for after crossing into South Korea with multiple bullet wounds. But what doctors found inside the man shocked even the most experienced doctors: dozens of parasites in his intestines and roundworms up to a foot long. It is believed that because North Korea does not have chemical fertilizer, farmers use human excrement – infamous for spreading parasites like the ones in the defectors stomach.

Can Diplomacy Make A Difference?

Though humanitarian exemptions are written into all sanctions against North Korea, recent years have seen mass exodus (ie: voluntary departures and expulsion) of nonprofit, nongovernmental (NGO) and aid organizations because basic principles of humanitarian action were forbidden. Even banking transfer systems have collapsed. And it's been consistently reported by organizations like Medecins Sans Frontieres/Doctors Without Borders that for decades medical supplies and food aid were not delivered to those who needed it. As recently as April of 2018 commodities funneled through China have been met with resistance, and the Global Fund reached a breaking point, declaring that it will be pulling out of the country within weeks.

However, as President Trump and Kim Jong-Un prepare for a potential meeting to discuss nuclear disarmament, the implications for global health hang in the balance. Even if nuclear weapon discussions go well (which few expect) the biologic situation is North Korea will likely grow worse. UN and humanitarian efforts will continue to be scaled back (meaning even less food, clean

water and medical aid), and multidrug resistant TB and malaria stand to spread rapidly across the nation. Conversely, if diplomacy prevails – or talks are even allowed to advance – sanctions against North Korea could be decreased, and a flood of humanitarian aid and health care could enter the country. A victory for the entire world.

***Nicole Fisher** is the founder and President of Health & Human Rights Strategies, a health care and human rights-focused advising firm in Washington, D.C. She is also a health policy advisor on Capitol Hill and expert on health innovation, technology, and brain health - specifically as they impact vulnerable populations. Fisher contributes to Forbes, contextualizing health, and highlighting ideas, companies and people that are changing the health landscape. She also curates an international dinner series, 'A Seat at the Table,' bringing together thought leaders for off-the-record discussions for moving research, policy and planning forward. Fisher co-runs the nonprofit Brain Treatment Foundation, and is pursuing a doctoral degree at the University of North Carolina. Her writing has appeared in numerous journals and publications, and her talks can be found on the United Nations website and various news and sports outlets. Before pursuing her doctorate, Fisher earned a master's degree in public policy from the University of Chicago and an undergraduate degree from the University of Missouri.*

Re-thinking Biological Arms Control for the 21st Century

Source: http://www.homelandsecuritynewswire.com/dr20190702-rethinking-biological-arms-control-for-the-21st-century

July 02 – International treaties prohibit the development and use of biological weapons. Yet concerns about these weapons have endured and are now escalating. Filippa Lentzos writes in a paper issued by the U.S. Marine Corps that a major source of the growing concern about future bioweapons threats stem from scientific and technical advances. Innovations in biotechnology are expanding the toolbox to modify genes and organisms at a staggering pace, making it easier to produce increasingly dangerous pathogens. Disease-causing organisms can now be modified to increase their virulence, expand their host range, increase their transmissibility, or enhance their resistance to therapeutic interventions. Scientific advances are also making it theoretically possible to create entirely novel biological weapons, by synthetically creating known or extinct pathogens or entirely new pathogens. Scientists could potentially enlarge the target of bioweapons from the immune system to the nervous system, genome, or microbiome, or they could weaponize 'gene drives' that would rapidly and cheaply spread harmful genes through animal and plant populations.

***Filippa Lentzos, Ph.D.,** is a Senior Research Fellow at King's College London specializing in biosecurity and biological arms control. She is also an Associate Senior Researcher within the Armament and Disarmament Programme at the Stockholm International Peace Research Institute (SIPRI), a biosecurity columnist at the Bulletin of the Atomic Scientists, an Associate Editor of the journal BioSocieties, and the NGO Coordinator for the Biological and Toxin Weapons Convention.*

Global Public Health Scientists Launch New Challenge to Anti-Vaxxers

Source: http://www.homelandsecuritynewswire.com/dr20190702-global-public-health-scientists-launch-new-challenge-to-antivaxxers

July 02 – The Salzburg Statement on Vaccination Acceptance lays down several recommendations to combat the global fall in vaccination rates fueled by a powerful worldwide "anti-vax" movement. The statement, which pledges to "support the development of new, effective and fact-based communications programs" to help parents, community and government leaders make

appropriate decisions on childhood immunization, has already been endorsed by more than sixty public health leaders from the Americas, Europe, Asia, Africa, and Australia.

Taylor & Francis notes that the statement calls upon major search engines and social media organizations to better monitor the vaccine information they provide so that they can improve the identification of disproven or inaccurate false claims about vaccine safety — just as they do for sexually explicit, violent and threatening messages.

At the same time, advocacy groups, educators and health professionals should join forces to correct misleading vaccine information and disseminate reliable, accurate information via mass and social media and through trusted sources at all levels of society, including celebrities, faith-based leaders and parents.

Governments and policymakers should support laws that limit exemptions from mandatory vaccinations and treat childhood vaccination like other essential services such as police, firefighters and public sanitation, the statement also says.

"We are alarmed that the WHO this year declared vaccine hesitancy a top-ten international public health problem. This is a human-made, dangerous and wholly unnecessary crisis. We intend to keep up a steady drumbeat of accurate vaccine communications until the traditional public consensus in support of childhood immunization is restored," said Dr. Scott Ratzan, founding editor of the *Journal of Health Communication* and founder of the International Working Group (IWG) on Vaccination and Public Health Solutions.

Vaccines have prevented hundreds of millions of infectious diseases, including polio, measles, hepatitis B and meningitis, saving up to 3 million lives yearly. Every US dollar spent on childhood immunization returns up to $44 in benefits . However, immunization rates globally are threatened by misinformation spread by the "anti-vax" movement. Vaccine coverage has waned in many populations, and the U.S. and 34 countries in the WHO's European region no longer have the 95 percent immunization rate that provides the "herd immunity" necessary to protect against highly contagious diseases such as measles.

Prof. Lawrence Gostin, Director of the WHO Collaborating Center on National and Global Health Law and co-director of the IWG, said: "The resurgence of potentially life-threatening diseases like measles, which the US Centers for Disease Control declared eliminated in the United States in 2000, undermines the integrity of childhood protections that thousands of dedicated scientists, doctors, and public health officials spent the better part of the last century putting in place. Parents do have rights to make informed decisions about vaccinating their children, but they do not have the right to place their children, or other children, at risk of a serious infectious disease. We need to do a far better job of reaching out to vaccine-hesitant parents."

— Read more in Scott C. Ratzan et al., "The Salzburg Statement on Vaccination Acceptance," Journal of Health Communication (2 July 2019).

Biological Sensors to Increase Warrior Survivability

Source: https://i-hls.com/archives/92662

July 02 – Increasing soldier's survivability is a major concern for armed forces. The US Defense Department has been making progress on genetically engineered microorganisms that can detect and even repel a host of invisible threats to US troops, from radiation to poison gas, from environmental toxins to mosquitos.

For example, sensors and defenses can be infused into soldiers' uniforms without ever injecting a foreign substance into their bodies, by using engineered microbes which are tiny and need no electricity, instead of bulky battery-powered sensors.

Another challenge faced by US troops deployed around the world is mosquitos. The Army's insect-repellent program includes technologies for soaking uniforms in toxic DEET.

According to Battelle scientist and DARPA alumnus Justin Sanchez, it is possible to use the gene-editing enzyme CRISPR-Cas9 to alter a microorganism's DNA so it exudes a volatile substance — i.e. an odor — that repels insects. It is possible to infuse a soldier's uniform with that microbe instead of an artificial chemical.

The US Navy is looking at similar biotech protections, said Sarah Glaven, a Naval Research Lab biologist. Humans naturally produce the chemical melanin to protect their skin against solar radiation, and scientists have figured out ways to produce it artificially. **But the best way to produce melanin, without messing with human bodies or industrial chemistry, is to get bacteria to make it, then infuse it into uniforms.**

Microorganisms can also act as living sensors to protect Navy divers, Glaven told breakingdefense.com. While the Navy's increasingly investing in unmanned mini-subs, divers remain the best way to defuse floating mines or check ships' hulls for the kind of limpet mines used by Iran in the recent tanker attacks. But putting a human underwater is inherently dangerous, and there's currently no way to quickly test the water for toxins that might harm the diver — a real concern in polluted Third World waters or war zones where damaged ships leak all sorts of poisonous substances.

So, they are **developing microorganisms that are sensitive to specific toxins and will rapidly react to their presence to warn the divers.** If you engineer the bacteria to exude a conductive substance when they detect the threat, something that transmits electricity, that can close a circuit and trigger a warning light on a small, wearable sensor.

This biological solution could replace bulky sensors currently worn on divers' suits or even test the water before any human got in it.

Microbes are effectively natural sensors, far more compact and precise than man-made instruments that often generate false positives.

You could even surround a military bases with genetically engineered plants, that react to environmental contaminants — say, a chemical weapon — in ways soldiers could notice before they strayed into a danger zone.

The sentry plants, of course, would live off water, sunlight, and dirt, none of which has to be brought to them by convoys of supply trucks. The goal is a sensor that not only requires no batteries but sustains itself from the nutrients in its environment, with no need for logistical support, and can even regenerate itself when damaged.

GHS declares public health emergency following detection of poliovirus type-2

Source: https://www.ghanaweb.com/GhanaHomePage/NewsArchive/GHS-declares-public-health-emergency-following-detection-of-poliovirus-type-2-762297#

The Ghana Health Service (GHS) has declared a public health emergency following the detection of the poliovirus type-2 in the Northern Region capital, Tamale.

A public health emergency, according to the WHO, is "an occurrence or imminent threat of an illness or health condition, caused by bioterrorism, epidemic or pandemic disease, or (a) novel and highly fatal infectious agent or biological toxin, that poses a substantial risk of a significant number of human facilities or incidents or permanent or long-term disability."

The declaration of a state of public health emergency allows the government to suspend state regulations and change the functions of state agencies.

Following the declaration, the GHS has detailed field investigations to identify the possible source of infection and determine the extent of geographic spread.

Dr Anthony Nsiah-Asare, Director of the GHS, explained in a statement issued on Wednesday, July 10 that the detection of the poliovirus type-2 was made possible through

the collaboration between GHS and the Noguchi Memorial Institute of Medical and Research Centre (NMIMR) during routine surveillance.
Ghana in April 2019 marked 10 years of the country's polio-free status.
Although polio has been reduced to its barest minimum in the history of the world, in countries like Pakistan, Nigeria and Afghanistan the disease was still high.

Ebola in Congo update

Source: http://bit.ly/2JNtrSK

The epidemiological situation of the Ebola Virus Disease dated July 13, 2019:

- Since the beginning of the epidemic, the cumulative number of cases is 2,489, of which 2,395 confirmed and 94 probable. In total, there were **1,665 deaths** (1,571 confirmed and 94 probable) and 698 people healed.

FINALLY

WHO Declares Ebola Outbreak in Congo an Emergency of "International Concern"

Source: http://www.homelandsecuritynewswire.com/dr20190717-who-declares-ebola-outbreak-in-congo-an-emergency-of-international-concern

July 17 – WHO Director-General Dr. Tedros Adhanom Ghebreyesus on Wednesday declared the Ebola virus disease (EVD) outbreak in the Democratic Republic of the Congo (DRC) a Public Health Emergency of International Concern (PHEIC).
"It is time for the world to take notice and redouble our efforts. We need to work together in solidarity with the DRC to end this outbreak and build a better health system," said Tedros. "Extraordinary work has been done for almost a year under the most difficult circumstances. We all owe it to these responders — coming from not just WHO but also government, partners and communities — to shoulder more of the burden."
The declaration followed a meeting of the International Health Regulations Emergency Committee for EVD in the DRC. The Committee cited recent developments in the outbreak in making its recommendation, including the first confirmed case in Goma, a city of almost two million people on the border with Rwanda, and the gateway to the rest of DRC and the world.
This was the fourth meeting of the Emergency Committee since the outbreak was declared on 1 August 2018.
The Committee expressed disappointment about delays in funding which have constrained the response. They also reinforced the need to protect livelihoods of the people most affected by the outbreak by keeping transport routes and borders open. It is essential to avoid the punitive economic consequences of travel and trade restrictions on affected communities.
"It is important that the world follows these recommendations. It is also crucial that states do not use the PHEIC as an excuse to impose trade or travel restrictions, which would have a negative impact on the response and on the lives and livelihoods of people in the region," said Professor Robert Steffen, chair of the Emergency Committee.
Since it was declared almost a year ago the outbreak has been classified as a level 3 emergency – the most serious – by WHO, triggering the highest level of mobilization from WHO. The UN has also recognized the seriousness of the emergency by activating the Humanitarian System-wide Scale-Up to support the Ebola response.

In recommending a PHEIC the committee made specific recommendations related to this outbreak.
"This is about mothers, fathers and children - too often entire families are stricken. At the heart of this are communities and individual tragedies," said Tedros. "The PHEIC should not be used to stigmatize or penalize the very people who are most in need of our help."
Public health authorities in the DRC have failed to contain the second-deadliest outbreak of Ebola, with more than 1,550 confirmed deaths since it emerged last year. The virus has since been detected in neighboring Uganda.
Emergency response teams have been unable to provide adequate support to combat the outbreak, in part due to poor security in the region and community resistance to their work.
Armed groups have even attacked Ebola treatment centers, prompting Doctors without Borders (MSF) to suspend its activities.

'Alexa, what are the symptoms of cyberchondria?'

Source: https://www.thenational.ae/opinion/alexa-what-are-the-symptoms-of-cyberchondria-1.886466

July 15 – The UK's National Health Service recently announced that it would be partnering with Amazon. This odd alliance aims to empower Alexa, Amazon's virtual assistant, to give NHS-verified medical advice. Alexa uses natural language processing, so you can ask her to turn on the lights, play a song, find your nearest Greek restaurant and no end of other menial tasks. Soon, however, we will also be able to receive credible answers to questions such as "Alexa, how do I treat a migraine?"; "Alexa, what are the symptoms of flu?"; and "Alexa how do I know if I have chickenpox?"
A close friend of mine once had an abscess on his leg. He read online somewhere that honey has unique antibacterial properties that can help heal wounds. After following this advice, however, he almost died. Critically ill, he had to be admitted to an intensive care unit, where the medical team eventually diagnosed botulism. While honey can be used in wound care, wound-care professionals use medical-grade honey, not the stuff that's been hiding in a kitchen cupboard for months. The webpage my friend accessed had omitted this important little detail. Hopefully, by eliminating poor quality and unverified health information, the Alexa-NHS partnership will protect us from some of the half-baked and downright dangerous advice presently available online. Beyond merely providing high-quality health information on verbal demand, a principal aim of this initiative is to ease pressure on busy doctors and pharmacists. Additionally, it will help make NHS-verified advice more easily

accessible to the blind, the elderly and those living in remote parts of the UK, far from healthcare facilities.

Over the past few decades, we have been increasingly turning to the internet for medical advice

Over the past few decades, we have been increasingly turning to the internet for medical advice. A study published by the American Medical Informatics Association estimated that, globally, we made around 6.75 million health-related searches per day, and that was back in 2003. Data reported by Google earlier this year suggests that Google alone now receives more than a billion health-related enquiries daily, which is around 7 per cent of all searches it performs. Furthermore, a 2019 study published in the British Medical Journal found that in the week before presenting at a hospital's emergency department, patients' health-related Google searches doubled. We search first and visit later, so it appears that we are already very comfortable receiving internet-mediated health advice. It also appears that voice search has become increasingly popular, set to account for around 50 per cent of searches by 2020. The Alexa-NHS partnership, if nothing else, is timely. However, on the dark side of this innovative partnership, I can envisage a situation where some of us repeatedly interrogate Alexa about every ambiguous symptom or minor ailment we experience. Giving perceived problems excessive and undue attention tends to magnify them, and health concerns are no exception. It's common enough to have become a cliche that many medical students begin imagining they have the symptoms of the latest illness they read about. Easier access to health information, which is what the Alexa-NHS partnership provides, is likely to further elevate health anxiety in the vulnerable. This is already becoming the case, with some clinicians labelling a pattern of excessive online health-related search activity, subsequent worry and help-seeking behaviour as cyberchondria – a kind of hypochondria for the information age.

Another potentially problematic aspect of this partnership concerns data governance. In other words, who owns all the data generated, where will it be stored, for how long, and how might it be used, now and in the future? If millions of people are routinely divulging their symptoms and health complaints to Alexa, we need to know she is not a gossip. On a personal level, we might not like others knowing that we have been quizzing Alexa about our embarrassing rash. At the big data level, this information would be invaluable to companies with health-related products or services to sell, allowing them to better target market their wares: "People who asked Alexa X also bought Y."

Amazon has clear intentions to expand into the healthcare industry and has already established several key partnerships. For example, the tech giant is

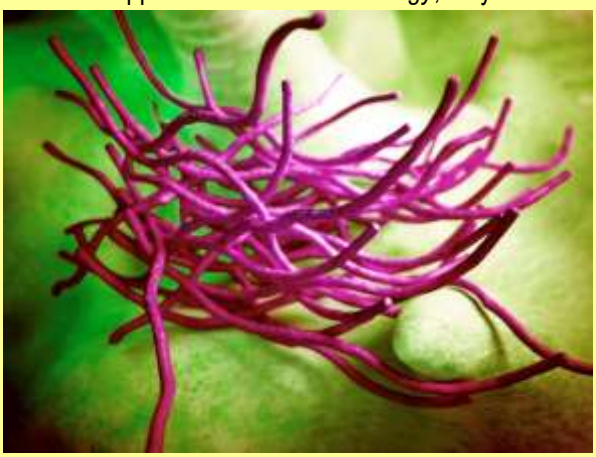
collaborating with Omron Healthcare to give Alexa control of a blood-pressure-monitoring device. Concerning the much bigger Alexa-NHS partnership, however, the company has provided assurances that it would not sell products or make product recommendations based on the data collected as part of this particular collaboration.

Ultimately, we are already reliant on the internet for health information and, short of a global cataclysm, that is not going to change any time soon. In many ways, the internet has empowered patients, giving everyday people access to information that once only resided in the heads of medical experts. The Alexa-NHS partnership simply allows us to do the online searching via voice rather than keyboard. More importantly, it provides assurances that the information we receive is credibly sourced and based on the best available scientific evidence.

Removing Anthrax Bacterial Armor May Lead to New Therapies

Source: https://www.genengnews.com/news/removing-anthrax-bacterial-armor-may-lead-to-new-therapies/

July 15 – Researchers at the VIB-VUB Center for Structural Biology report that removing the armor of the bacterium that causes anthrax slows its growth and negatively affects its ability to cause disease. The study ("Structure of S-layer protein Sap reveals a mechanism for therapeutic intervention in anthrax"), which will appear in *Nature Microbiology*, may lead to new, effective ways of fighting anthrax and various other diseases, according to the scientists.



Anthrax is a deadly and highly resilient disease, caused by the spore-forming bacterium *Bacillus anthracis*. The toughness of the spores and the lethality of an anthrax infection via inhalation spurred its development as a biological weapon in the mid-twentieth century. Although the development and stockpiling of anthrax as a bioweapon has been banned by the international community, these regulations are violated at times. Because treatment options are limited and not effective in most cases, this means anthrax remains a potential bioterrorism threat.

As part of its strategy to evade the weapons of the immune system, the anthrax bacterium cloaks itself with a complex, dynamic armor. A poorly understood component of this armor is the Sap S-layer, a single layer of protein that forms a shell around the bacterium.

In this study, researchers successfully applied Nanobodies® (small antibody fragments) to control the assembly of the bacterial armor and study its structure. The Nanobodies were not only effective in preventing the armor from forming, but also proved highly efficient in breaking down existing S-layers. When applied to live bacteria, breaking down the armor slowed bacterial growth and led to drastic changes in the surface of the bacterial cell.

"At present, anthrax mostly affects wildlife and livestock, although it remains a concern for human public health, primarily for people who handle contaminated animal products and as a bioterrorism threat due to the high resilience of spores, a high fatality rate of cases and the lack of a civilian vaccination program. The cell surface of *B. anthracis* is covered by a protective paracrystalline monolayer, known as surface layer or S-layer, that is composed of the S-layer proteins Sap or EA1. Here, we generate Nanobodies to inhibit the self-assembly of Sap, determine the structure of the Sap S-layer assembly domain (Sap^{AD}) and show that the disintegration of the S-layer attenuates the growth of *B. anthracis* and the pathology of anthrax in vivo," write the investigators.

"Sap^{AD} comprises six β-sandwich domains that fold and support the formation of S-layers independently of calcium. Sap-inhibitory nanobodies prevented the assembly of Sap and depolymerized existing Sap S-layers in vitro. In vivo, nanobody-mediated disruption of the

Sap S-layer resulted in severe morphological defects and attenuated bacterial growth. Subcutaneous delivery of Sap inhibitory Nanobodies cleared *B. anthracis* infection and prevented lethality in a mouse model of anthrax disease. These findings highlight disruption of S-layer integrity as a mechanism that has therapeutic potential in S-layer-carrying pathogens."

Antonella Fioravanti, PhD, who led the research, said that "I created these Nanobodies as a tool to study the Sap S-layer, but that they would also inhibit bacterial growth was an unexpected bonus."

The effects were so striking, she added, that the Nanobodies were tested as a treatment in mice infected with *B. anthracis*. "The results were amazing, all treated mice recovered from lethal anthrax within days," said Filip Van Hauwermeiren, PhD, who performed the infection studies. "We had been studying ways to stop the lethality of anthrax but had never seen such striking effects as with these Nanobodies," added his supervisor Mohamed Lamkanfi, PhD, (previously at the VIB-UGhent Center for Inflammation Research, now at Janssen Pharmaceutica and Ghent University).

Therapeutics derived from the Nanobodies discovered in this study may one day fill the currently existing treatment gap, say the scientists. Moreover, targeting the S-layer with nanobodies may be successful in the fight against other bacteria with an S-layer armor. For example, the lab is currently exploring S-layer targeting Nanobodies in *Clostridium difficile* which causes life-threatening colitis.

The success of the experiments in this study have motivated the researchers to look for other vulnerable targets on bacterial cell surfaces.

"Proteins on the surface of bacteria are interesting antibacterial targets because they are directly accessible. Targeting these proteins means that we have to worry less about that various ways that bacteria are preventing drugs from getting into the cell," pointed out Han Remaut, PhD, from VIB-VUB.

German law would require measles vaccination to attend schools, kindergartens, daycare

Source: http://www.homelandsecuritynewswire.com/dr20190717-german-law-would-require-measles-vaccination-to-attend-schools-kindergartens-daycare

July 17 – **German children will have to prove they have had a measles vaccination before they would be allowed to attend kindergarten or go to school. A new draft law imposes steep fines on parents who refuse to immunize their children.**

Germany's Cabinet on Wednesday approved a draft law which would make it compulsory for all children at kindergartens, schools, and daycare centers to be vaccinated against measles.

The measure will go into effect on 1 March 2020, and it still needs to be passed by the Bundestag.

Under the proposed bill, children at daycare and education institutions, as well as employees there, have until 31 July 2021 to offer proof of vaccination.

The *Local* reports that children who are not immunized will not be allowed to attend daycare, while parents who refuse to vaccinate their school-aged children could face a fine of up to $2,800 per child.

The draft law also imposes heavy fines on facilities which allow unvaccinated children to attend.

"We want to protect all children from measles infection," Health Minister Jens Spahn said. "Measles is extremely contagious and can take a very nasty, sometimes deadly, turn."

He said he also hoped to boost voluntary vaccinations in schools for other infectious diseases such as tetanus, diphtheria, and whooping cough.

The law also applies to medical staff, and residents and workers at asylum seekers and refugee facilities.

Bild newspapers cite figures from the German Health Ministry which show that law would compel about 600,000 children and adults in Germany who are currently no vaccinated, to get a measles vaccination.

The only exemptions the draft law allows are for people born before 1970; those who cannot tolerate the vaccination on medical grounds; and those who prove they have already had the disease.

Experts have noted that although almost all children in Germany have had the first measles vaccination, not all had received the second jab, which is required for 95 percent immunization coverage — the rate recommended for "herd immunity," which is necessary to stop the disease from spreading.

The Conspiracy Theory That's Got a Congressman Demanding a Probe into Weaponized Ticks

Source: https://news.vice.com/en_us/article/neaxdq/the-conspiracy-theory-thats-got-a-congressman-demanding-a-probe-into-weaponized-ticks

July 17 – A New Jersey congressman is asking the Pentagon to finally investigate a decades-old conspiracy that the government weaponized ticks — and ended up creating Lyme disease.

Republican Rep. Chris Smith presented an amendment calling for the Department of Defense's Inspector General to probe whether the military "experimented with ticks and other insects regarding use as a biological weapon between the years of 1950 and 1975."

Smith's amendment came after he read *Bitten: The Secret History of Lyme Disease and Biological Weapons*, by Stanford University-based science writer Kris Newby. In the book's introduction, she describes the effect of Lyme as "an American Chernobyl."

"I think [the congressman's] state is at ground zero of this outbreak and his constituency has been impacted severely. I hope people can understand weaponized ticks are bad and we need to know what happened at the height of the Cold War bioweapons program," Newby told VICE News.

New Jersey reported 5,092 cases in 2017, the most it's seen in two decades.

But experts say the probe won't amount to anything because the conspiracy doesn't hold up to science.

"There's evidence in the U.S. that Lyme disease was here before Columbus came around," Phil Baker, executive director for the American Lyme Disease Foundation, told VICE News. Plus, Lyme disease isn't life-threatening, so it's not a good candidate for a biological weapon, he said. Fatigue and flu-like symptoms are the most common warning signs of Lyme, though it can cause facial paralysis, arthritis, fever and rash without antibiotics.

"Both the tick and the bacterium that causes Lyme disease are ancient creatures," said Richard Ostfeld, a Ph.D. in disease ecology at the Cary Institute of Ecosystem Studies, to VICE News.

"There is strong scientific evidence that the present-day forms of the [Lyme disease] bacterium diverged from a common ancestor at least 60,000 years ago," said Ostfeld. Even a 5,300-year-old mummy discovered in the Eastern Alps had traces of Lyme disease in his DNA.

Battling Biothreats: A Workshop Sheds Light on Health Security Issues

By Saskia Popescu

Source: https://www.contagionlive.com/contributor/saskia-v-popescu/2019/07/battling-biothreats-a-workshop-sheds-light-on-health-security-issues

July 18 – The spectrum of biological threats is often much wider than many realize. From the current Ebola virus disease outbreak in the Democratic Republic of the Congo to CRISPR-designed babies, there are a lot of biological issues that trickle over into health care and public health. This week, I attended the Summer Workshop on Pandemics, Bioterrorism, and Global Health Security: From Anthrax to Zika, where conversations ranged from protecting the bioeconomy to vaccine development. Here are the key takeaways:

First, it's a startling truth, but biological threats aren't just black and white, but a vast spectrum of gray. We no longer live in a world

where it's just pandemics and bioterrorism, but also conversations surrounding dual-use research of concern (DURC), gene drive worries with CRISPR-modified mosquitoes, pandemic response, vaccine development, and so much more. FBI Supervisory Special Agent Edward You discussed concerns of garage biohacking and how the US government has policies on oversight for life sciences DURC. Furthermore, you discussed synthetic biology and how the price for DNA synthesis kits (ie, biohacking kits) have dramatically dropped over the years.

Perhaps one of the most inspiring and illuminating aspects of the workshop was the representation of women within the field of biodefense, health security, and public health. Beth Cameron, PhD, vice president for global biological policy and programs at Nuclear Threat Initiative, spoke on global health security policy and the challenges of engaging busy policy-makers and politicians in the threat of infectious diseases, and Kendall Hoyt, PhD, assistant professor at the Geisel School of Medicine at Dartmouth, broke down the challenges of vaccine development and the role of war and outbreaks in the roll-out of such medical countermeasures.

Lastly, Nancy Connell, PhD, senior scholar at the Johns Hopkins Center for Health Security, broke down the problem-based explorations of biothreat research, discussing her experiences as a scientist working in a BSL 3 and on select agents. Overall, it was inspiring to have such a diverse and dynamic group of women from the top of the biodefense/biosecurity world discussing their experiences and the innate challenges of reducing risk in the world of infectious diseases.

Lastly, biosecurity guru and director of the workshop, Gregory Koblentz, PhD, associate professor in the Schar School of Policy and Government and director of the Biodefense Graduate Program at George Mason University, discussed the implications of the CRISPR-modified babies from Chinese scientists, biosecurity in the age of genome editing, and the harsh implications of the horsepox synthesis.

In the midst of these conversations regarding science and oversight, it also became quite apparent the diverse group of people within the workshop. From universities to the Department of Defense, biotech companies, hospitals, the Defense Threat Reduction Agency, Future of Humanity Institute, and Taiwan's Center for Disease Control, the diversity of the people in the workshop made each topic that much more engaging and, frankly, informative. I spoke to Koblentz about the workshop and how it's difficult to even fit these issues into 3.5 days and he noted, "From the role of armed conflict in preventing an effective response to the Ebola outbreak in DRC to the development of medical countermeasures for biodefense to dual-use research with pox viruses, we are seeing the unprecedented convergence of medical and public health challenges and national security concerns. Threats to health security are too complex and diverse for any one agency or organization to tackle on their own. This workshop provides a forum for members of the medical, public health, and security communities to learn more about these risks and how to work together to manage these risks."

Biological threats come in all shapes and sizes and although many of us see them only as the potential pandemic or bioterrorism incident, the truth is that they're much broader and diverse. Health care workers, public health, and clinicians alike should have an awareness of what the current biological threats are and the challenges for improving global health security.

Saskia v. Popescu, *PhD, MPH, MA, CIC, is a hospital epidemiologist and infection preventionist. During her work as an infection preventionist, she performed surveillance for infectious diseases, preparedness, and Ebola-response practices. She holds a doctorate in Biodefense from George Mason University where her research focuses on the role of infection prevention in facilitating global health security efforts. She is certified in Infection Control and has worked in both pediatric and adult acute care facilities.*

In the U.S. Capital, Prepping for an Anthrax Attack

Source: https://www.usnews.com/news/healthiest-communities/articles/2019-07-19/workers-prep-for-anthrax-attack-in-us-capital

People participate in an emergency response exercise at the King Greenleaf Recreation Center in Washington, D.C. on Friday. (Brett Ziegler for USN&WR)

July 19 – The teams positioned on a basketball court inside a recreation center in the nation's capital Friday weren't getting ready to shoot hoops.

Instead, they were testing the ability to distribute medicine to area residents in response to a potentially deadly anthrax attack.

The bioterror simulation – part of an umbrella effort across the Washington metropolitan area – aimed to evaluate how local government officials would help "the 2 million people who could be part of our daytime population" if such an event were to occur, D.C. Department of Health Director LaQuandra Nesbitt says.

"When there are manmade disasters that happen that require us to provide what we call medical countermeasures, such as medications, providing antibiotics, to a broad number of members of the population who are determined to be at risk, we need to be able to do that in the most efficient and effective way as possible," Nesbitt said from the exercise held at the King Greenleaf Recreation Center in southwest Washington.

The regionwide exercise – called Capital Fortitude – involved volunteer residents and public health, emergency management and other officials going through the motions of an emergency health response at "points of distribution" sites. Officials and volunteers from 24 jurisdictions in Maryland, northern Virginia, and Washington participated in the exercise.

Friday marked the third day of the full-scale systems test, which began Wednesday with area officials examining their capabilities to recognize and assess that a bioterrorism event has happened. Simulations then progressed to using conference calls and alert systems to communicate with regional partners, and getting equipment to recognizable locations – such as schools or rec centers – where high numbers of people in need of treatment could be reached.

In Washington on Friday, the goal was to simulate the provision of anthrax-fighting medicine to **750 households within an hour.** Participants acting as members of the public filled out

forms with the names of people in their household and marked any allergies to listed medications, and workers gave them bags containing empty but labeled medication bottles, along with verbal and printed instructions.

"We've been planning for years to respond to anthrax or any other type of biological incident, including pandemic flu," says Patrick Ashley, senior deputy director of the D.C. Department of Health's Emergency Preparedness and Response Administration. "This gives an opportunity for all the partners to practice and exercise their skill sets to identify gaps in planning and what types of resources we might need to respond to this."

A hypothetical aerosolized anthrax attack was chosen to create "the worst-case scenario" in which officials would need to set up a site to dispense medicine, says Dr. Stephen Haering, director of the Alexandria Health Department in Virginia, which was involved in a parallel dispensing drill on Friday. "Anthrax gives us a very short window of opportunity to succeed. After inhalation of anthrax, we have 48 hours to respond," Haering says. "We have to figure out who's been exposed, get communications out, get operations up and running."

While Haering says the risk is low of such an attack, inhalation anthrax is around 90% fatal when not treated, according to the Centers for Disease Control and Prevention. Haering says his health department would need to distribute antibiotics to about 150,000 people in that two-day timeframe.

"We're stressing ourselves and the systems to know what to do if a real-world event were to occur," he says.

While the Alexandria exercise aimed to include members of the public who wanted to participate, the drill at the Washington recreation center did not include people who didn't work for a government agency.

Still, Ashley Callaham, a vital records data analyst for the D.C. Department of Health's Center for Policy, Planning and Evaluation, says she opted to participate "because it is preparing the residents for what may happen."

"If something was to happen, I would already be prepared to help my family and help (fellow) residents," says Callaham, who has lived in the district for about 10 years. Her participation allows her to "be 10 steps ahead," she says.

Nesbitt agrees that the practice is important.

"It takes a lot of great and well-orchestrated processes with strategic partners to make this type of work happen at the local, state and federal level, and this is a type of work of public health that people don't tend to see on a regular basis," she says. "But it's the type of work that it's critical for us to do, and it's critical for us to plan for on an ongoing basis, because it could save many people's lives when we have to use it."