2 CBRNE DIARY

Dedicated to Global First Responders

CBRNE-Terrorism Newsletter

November 2018

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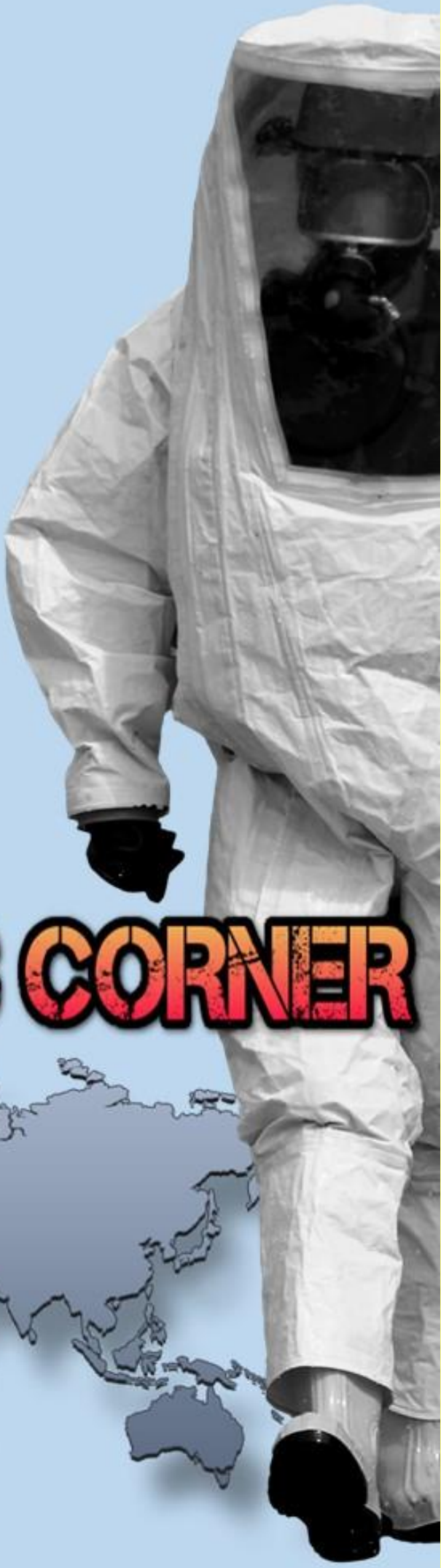

EDITOR'S CORNER

Editorial

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

Editor-in-Chief
C²BRNE Diary

Dear Colleagues,

Just another relatively "quiet" month November!

What else?

- Imprved auto-injectors for delivering antidotes against nerve agents;
- Quick, precise method to detect CWAs I"chemical black holes" on small hydrogel surfaces);
- Cholera threatens a comeback worldwide;
- DR Congo Ebola outbreak continues to kill people (319 cases; 164 dead; 97 cured) – keep in mind that the virus survivve in semen for 565 days!
- Unknwn paralyzing illness in 27 US States – what is going on out there?

Pray to have an equally quiet December as well!

The Editor-in-Chief

The few and the brave!

Common characteristics of communities where mass shootings occur

Source: http://www.homelandsecuritynewswire.com/dr20181026-common-characteristics-of-communities-where-mass-shootings-occur

Oct 26 – A trauma research team has developed a profile of commonalities among communities where mass shootings have occurred. It includes a shortage of mental health professionals, a relative lack of socialization opportunities, higher rates of income inequality, and relatively high housing costs, according to findings presented today at the American College of Surgeons Clinical Congress 2018.

The study, led by Stephen F. Markowiak, a general surgery research fellow at the University of Toledo (Ohio), used data from the Federal Bureau of Investigation, the U.S. Census, Centers for Disease Control, National Institutes of Health, and Robert Wood Johnson Foundation to study social factors of communities where 155 mass shootings in the United States occurred. This study defined mass shootings as those with four or more fatalities, excluding those with a clear motive, such as robbery or gang-related activities. "In general, the communities in which these multiple-shooting events have historically happened are much less healthy compared with national averages," Dr. Markowiak said.

Ironically, study results showed that communities in states with the strictest gun laws had a 53 percent greater risk of mass shootings. "The counties in the states that have strict gun laws, such as California and New York, actually have a high incidence of these multiple-shooting events, and that holds true even when you control for urbanicity," Dr. Markowiak said. This finding may seem to contradict other studies of gun violence, but Dr. Markowiak explained that apparent discrepancy. "Our data agrees that stricter gun laws are associated with less overall violent crimes," he added. "It's just that these multiple-shooting events appear to be an exception to that rule."

ACS says that the study researchers, however, identified two types of gun laws that stood out as having a correlation with a lower incidence of multiple shootings: mandatory reporting of mental health records to the National Incident Criminal Background Check System and restrictions on open carry of firearms. Dr. Markowiak hesitated to conclude that these laws have a protective effect in preventing mass shootings. "The other laws that we looked at really did not have an effect," he said.

Access to mental-health professionals is one of the key social determinants of communities at risk of mass shootings. **"Looking at our data, the mismatch of mental health providers per capita appears to place more urban communities at risk—greater than the national median of 490 persons per provider,"** Dr. Markowiak said.

Another key social determinant of at-risk communities was the average number of social interactions per person. "If you look at communities where these events occurred, the average individual had 10.5 to 11 people that they commonly associate with compared with an average of 13 or so close associations in communities where they didn't occur," he said. The study did not determine if this was the result of the rural or urban character of these communities, however.

The researchers also noted that people in at-risk communities engaged in less leisure-time physical activity, and the communities themselves were on average 30.7 percent less rural ($p<0.001$), 3.38 years younger ($p<0.001$), had a 3.07 percent higher incidence of overcrowding or lack of utilities ($p <0.001$), and had a higher ratio of income inequality.

"This study certainly draws attention to the consequences of physician shortages nationwide—not so much at the level of service, but at the level of the primary-care physician and mental-health practitioners," Dr. Markowiak said. "Traditionally, these shooting incidents get lot of attention because they come into the hospital as trauma, but they really need to be looked at more from a public health perspective as to the types of services we are going to provide for the community and what the implications are for the community."

The goal of the study was to not promote any political position on gun violence. "We just wanted to see where the data was going to take us," Dr. Markowiak said. "That's what led to some of the more surprising findings."

From a policy standpoint, the study pointed to a need for better national recordkeeping. "We know that research in the area of gun violence has been stifled dating back to the early 1990s due to Congressional inactions," he said, referring to the Congressional mandate that bars the CDC from studying gun crimes.

But the study also points to a need for more community involvement. "If we focus on making our communities healthier places where people have access to doctors and healthy spaces, and we restore a sense of community, then I think our project indicates we may be less likely to see these mass shooting events occurring," Dr. Markowiak said.

Why Greeks love Norgegians!

PERSPECTIVES ON TERRORISM
a journal of the Terrorism Research Initiative

Perspectives on Terrorism 2018

Volume XII 2018; issue 5 (October 2018)
Source: https://www.universiteitleiden.nl/perspectives-on-terrorism/archives/2018#volume-xii-issue-5

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What Technology Hazards are Hiding in Your Hospital?

Source: https://www.ecri.org/Resources/Whitepapers_and_reports/Haz_19.pdf

ECRI Institute's 2019 Top 10 Health Technology Hazards list identifies sources of danger and provides steps to minimize occurrence. The list serves as a starting point for patient safety discussions, helping healthcare organizations plan and prioritize their patient safety efforts. Here are the top 3 items on this year's list:

- Hackers exploiting remote access vulnerabilities
- Mattresses remaining contaminated after cleaning
- Retained surgical sponges

"Terrorism does not terrorize": Study

Source: http://www.homelandsecuritynewswire.com/dr20181101-terrorism-does-not-terrorize-study

Nov 01 – **A major review of over 400 research articles studying the association between acts of terrorism and mental health has reached the significant conclusion that "terrorism isn't terrorizing" – at least not in a way that causes increases in post-traumatic stress disorder (PTSD) greater than would be expected from any other distressing event.**

The findings, published in *The Lancet Psychiatry* from researchers at the University of Bath, run counter to much commentary on the topic, which usually suggests that an increase in terrorist attacks will have a negative impact on peoples' psychological wellbeing. Such an association, say the researchers, is overstated due to a modern day tendency to imagine the worst, particularly on matters relating to mental health.

Mapping the association between terrorism and PTSD

Bath says that by conducting an extensive review and analysis of the research published both pre and post 9/11, the team involved note that attempts to understand the links between terrorism and mental health are actually quite recent. In fact, there was almost no such focus until shortly before 9/11 following which there was a spike in articles focused on the assumed connection. The study highlights that this was encouraged by the recognition of post-traumatic stress disorder (PTSD) and its redefinition by the American Psychological Association in 1994 in a cultural climate also more attuned to emotional hurt. Most of the articles analyzed for this study were published post 9/11.

Yet, in spite of increasing attention to the subject, the researchers found no clear association between terror events and cases of PTSD in the literature. Their findings suggest that many studies were drawn to expanding what was meant by the term, allowing categories such as 'pre-PTSD' or 'PTSD-symptom' to be audited instead.

This, they argue, confuses and conflates what is meant by PTSD and has the negative effect of ignoring other significant impacts tied to terror events – not least social, economic and physical ones. They also suggest that expanding what constitutes PTSD may lead to the minority who genuinely suffer from its effects being less able to access the support they really need.

Instead, they suggest that policy-makers would do better to note how people usually cope by making use of their own networks and initiative, and to encourage responses to terrorist events that highlight social bonds and people's resilience, rather than their psychological vulnerability.

Unhelpful classiciations

Lead author, Professor Bill Durodie from the Department of Politics, Languages & International Studies explained: "**After 9/11 there was an enormous push to uncover evidence of PTSD in people who said that they had been affected by those events either directly or indirectly through the media.**

"Despite this, the reassuring conclusion of our work is that terrorism does not terrorize – at least not any more than being traumatized by any other challenging event. In that regard, our findings fly in the face of various announcements from politicians, officials, the media and even other academics that terrorist incidents impact our mental health and wellbeing adversely.

"**This is not to say that people who experience traumatic events do not need psychological support, but we believe that it is unhelpful to categorize more people than is true with PTSD.** We are also saying that there were many other effects of 9/11 that were overlooked – primarily respiratory disorders, as well as economic and social ones, such as people losing their jobs.

"There is clear evidence of people's resilience in the face of such events and so, for us, it is important for politicians, the media and commentators to take these findings on board and re-focus attention more on this in the face of such terrible events."

Impact on TV audiences

Dr. David Wainwright, Senior Lecturer in the University's Department for Health, added: "Notably, our work also drew into question the presumption that people, particularly the

young, can be traumatized merely through watching such events unfold on TV. Some researchers did rush to such conclusions but usually retracted them a few years later. Unfortunately though, it is their earlier, impressionistic assumptions that continue to be cited in many instances, despite most noting that there is no conclusive evidence on this.
"Of course, young people should be protected from events and have these explained to them. They may need to have their television viewing limited too. But this has more to do with the challenges of asserting parental authority today – a social factor - than media or medical effects that are deemed to be inevitable. The inordinate focus on children in the work we reviewed may also express an unstated desire to control adult responses through the auspices of protection."

— Read more in Bill Durodie and David Wainwright, "Terrorism and post-traumatic stress disorder: a historical review," The Lancet Psychiatry (17 October 2018) (DOI: doi: org/10.1016/S2215-0366(18)30335-3).

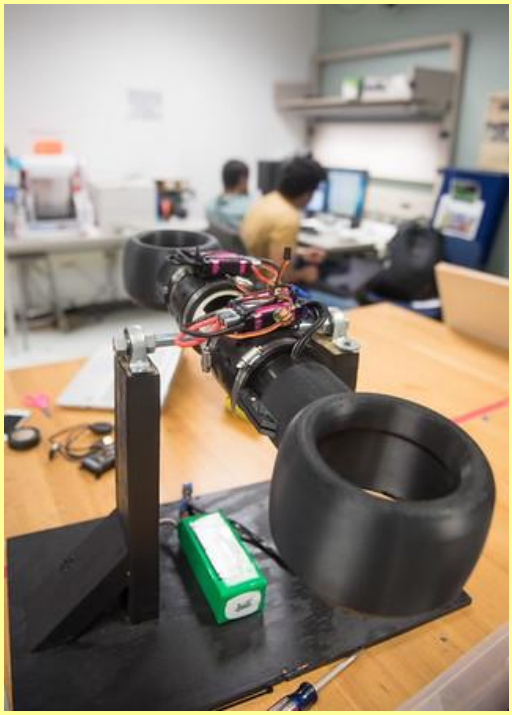
Revolutionary Bladeless Drone Under Development

Source: https://i-hls.com/archives/86382

Oct 29 – The exposed propellers found on many unmanned aircraft systems pose substantial hazards. People can easily cut themselves on the sharp, exposed motors. Bladeless drones would eliminate that risk to operators as well as to the environment around them.
Texas A&M University-Corpus Christi graduate student Daniel Valdenegro wanted to make drones safer to fly by creating a propulsion system inspired by Dyson's bladeless fan design.
Valdenegro went to work on the project with the help of Assistant Professor of Electrical Engineering Luis Rodolfo Garcia Carrillo.

Edgar Herrera proposes bladeless drone that takes maximum advantage of aerodynamics

"In a sense, this is like a quadcopter but with a completely different propulsion system," Garcia Carrillo said. "The blades are all internal. That makes it much more challenging to develop than a conventional quadcopter, but it also makes it much safer, which is the ultimate goal."
Bladeless fan cross-section geometry, airflow properties, impellers, motors, ducted fans and conventional quadcopter dynamic modeling were all used in the propulsion system's design. Based on their research into bladeless fan design, the team of four developed a nozzle that attaches to an Electric Ducted Fan (EDF) to create a bladeless thruster prototype, according to insideunmannedsystems.com.
The team has completed two tests so far. "We wanted to test to see if it could be controlled in four degrees of freedom, which is how a drone moves in aerospace," Valdenegro said. "We found out it could be controlled and we did that by creating thrusters and a platform that looks like a UAV. We put it on a tripod because we could move the tripod in all directions, like how a drone moves. We wanted to test how all those movements combined would affect the drone and if it could be controlled. We had a good result and are getting closer to it flying."



The main challenge is the fact the rotors are all internal rather than outside the system. Instead of spinning in a vertical plane like a typical quadcopter, the thrusters all spin horizontally, creating a different dynamic.

While there's enough power to control the vehicle and move it in different directions, the team hasn't been able to generate enough thrust to achieve lift, Valdenegro said.

In addition to safety, the system is easy to manipulate, even by non-expert users.

The drone could also be used for pushing objects. If you tried that with a drone equipped with traditional propellers, you'd end up damaging the object or the drone, but that's not the case with this system. "If you want to push an object with a drone you have to add a manipulator and structure for doing the pushing, and this affects the dynamic of the system because you're adding something external," Carrillo said. "A bladeless propulsion system can push with its own body."

For the time being, the team has to get the prototype flying. While they're always finding new challenges to overcome, they hope to make that happen by the end of the year. They're also in the process of submitting a patent and forming an LLC. "Now we're trying to maximize thrust so it can fly, and we can see how it will behave in aerospace."

Piracy Incidents, Number of Crew Members Held Hostage Have Risen This Year

Source: https://www.hstoday.us/subject-matter-areas/maritime-security/piracy-incidents-number-of-crew-members-held-hostage-have-risen-this-year/

Nov 01 – A total of **156 incidents of piracy** and armed robbery against ships were reported to the International Maritime Bureau's (IMB) Piracy Reporting Centre (PRC) in the first nine months of 2018 compared to 121 for the same period in 2017.

The 2018 figure is broken down as 107 vessels boarded, 32 attempted attacks, 13 vessels fired upon and four vessels hijacked—although no vessels were reported as hijacked in the

third quarter of this year. This is first time since 1994 when no vessel hijackings have been reported in two consecutive quarters.

Nevertheless, incidents persist, with the number of crew members held hostage increasing in comparison to the same period in 2017—from 80 incidents to 112 by the third quarter of 2018.

Statistically, the Gulf of Guinea accounts for 57 of the 156 reported incidents. While most of these incidents have been reported in and around Nigeria (41), the Nigerian Navy has actively responded and dispatched patrol boats when incidents have been reported promptly. There has also been a noticeable increase in the number of vessels boarded at the Takoradi anchorage in Ghana.

Thirty-seven of the 39 crew kidnappings for ransom globally have occurred in the Gulf of Guinea region, in seven separate incidents. A total of 29 crew members were kidnapped in four separate incidents off Nigeria—including a 12-crew kidnapping from a bulk carrier off Bonny Island, Nigeria, in September.

In other areas of the world, incidents of piracy and armed robbery are less frequent. No new incidents have been reported off the coast of Somalia in the third quarter of this year, while two fishermen were reported kidnapped off Semporna, Malaysia, in September.

Incidents in the remaining regions, including some Latin America countries, border on low-level opportunistic theft. Nevertheless, the IMB continues to encourage all masters and crew members to be aware of these risks and report all incidents to the 24-hour manned PRC.

Five Ways Artificial Intelligence Can Facilitate Public Safety Now

Source: https://www.hstoday.us/subject-matter-areas/law-enforcement-and-public-safety/five-ways-artificial-intelligence-can-facilitate-public-safety-now/

Oct 31 – We are privileged to live in the Golden Age of data. Head-spinning technological advances allow us to gain greater data-driven insights than ever before. To truly leverage our ability to use this new data, however, we need to make sure our thinking about how to best use this data keeps pace with its availability.

The vast majority of digital data is unstructured: a complex mesh of images, texts, videos, and other data formats. Estimates suggest 80-90 percent of the world's data is unstructured and doubles in volume every few years. To even begin to make sense of this much data, advanced technologies are required. Artificial intelligence is the means by which this data is processed today, and it's already a part of your everyday life.

Just to give you a sense of where AI is now: you may remember the debates about whether the computer Deep Blue could beat the world's greatest chess master, Garry Kasparov. Well, if you haven't been following closely, it's not even close anymore: a computer can easily outplay the greatest human minds.

At the end of the day, these advancements serve our real-world needs. AI is already helping us fulfill our public safety missions even more effectively. I recently met with Voyager Analytics, a company whose AI-driven applications include enhancing and accelerating investigations and automating risk assessment, to discuss the ways in which AI is changing the game for security and intelligence missions. Here are some examples.

Case 1: Securing a public figure

Consider the following scenario: In a major European city, public safety agencies cooperate to protect a visiting public figure. Amidst escalating threats against the dignitary and his entourage, concerns are raised regarding his security in a volatile, challenging urban landscape.

AI, and specifically cognitive computer vision and pattern recognition capabilities, help tackle this challenge by interpreting the behavior and relationships of and between suspect individuals captured in video and security camera footage. By applying cognitive analytics to voluminous visual data, AI creates an additional level of automated insights, exposing adverse behavior patterns and connections in real time. This augments the ability of agents on the ground to instantly pinpoint anomalous activities and persons demonstrating suspicious behavior and affinity within the public figure's vicinity.

Case 2: Unveiling hidden relationships

In a recent high-profile investigation, a murder suspect was known to the authorities but had an ironclad alibi. When the investigation reached a dead end, investigators turned to visual data from numerous sources to uncover connections between the suspect and other individuals who could shed light on the case.

By applying visual analysis to voluminous datasets, AI demonstrated how the suspect with the alibi was connected to the others through deep analysis of visual cues. Exposing the relationships between the original suspect, his connections, and the victim led to the eventual arrest of a new suspect.

The unearthing of hidden relationships between criminal group members spread around the globe has many potential applications relevant to those in the homeland security field, including in combating terrorism; human, arms and drug trafficking; and more.

Case 3: Identifying connections to extremist organizations and extremist tendencies

At government facilities in the United States and abroad, situational awareness is critical for securing military posts, managing interactions with local workers who provide on-site services, and preventing hostile infiltration.

By analyzing and understanding extremist content, AI can turn up narratives built around themes of interest. This flags key figures and influencers – including non-obvious ones – who may be connected to extremist organizations or displaying extremist tendencies. Unveiling this information to those charged with securing government facilities enhances the intelligence assessments needed to ensure security.

Case 4: Securing airports

With tens of millions of international arrivals and departures yearly, the potential for security breaches at airports cannot be ignored. Just one person with malicious intent acting on their extremist agenda can have an outsized impact on public safety and passengers' sense of personal security.

AI can be of tremendous value here, helping airport security personnel evaluate passenger lists, perform quick behavior/affinity analyses, and flag risks before they are realized. This ability to pinpoint risk can help ensure a smoother passenger travel experience – and might just reduce wait times in security lines along the way.

Case 5: Uncovering immediate insights in voluminous documents

The prototypical example of an unstructured data type is a large text document. Analysts are often tasked with absorbing these types of documents in full. But if the key information known or suspected to be contained in a document cannot be located, the document has little value. Using AI to parse this information can help analysts save the days or even weeks traditionally spent poring through thousands of pages of unstructured data in search of relevant information by making the

data easily and intuitively searchable and filterable.

How artificial intelligence will change what we do

AI is the facilitator that can help us make sense of a world of data that is growing exponentially all around us. We're on the cusp of a world where evildoers are flagged earlier and criminals are caught quicker – or can even be deterred from committing crimes by the knowledge that they will be caught. Down the road, we may see new jobs created, implementing missions whose essence will be determined by new information that AI brings to light. This technology can be a powerful ally to those entrusted with national security and public safety, and we're optimistic that the partnership between human and machine will yield results that outpace what we can imagine.

Chuck Brooks *is the Principal Market Growth Strategist -- Cybersecurity and Emerging Technologies for General Dynamics Mission Systems. He is also an Adjunct Professor at Georgetown University in the Graduate Applied Intelligence Program teaching Risk Management. LinkedIn named Chuck as one of "The Top 5 Tech People to Follow on LinkedIn" out of their 500 million members. He has published more than 150 articles and blogs on cybersecurity and technology issues. In both 2017 and 2016, he was named "Cybersecurity Marketer of the Year by the Cybersecurity Excellence Awards. Chuck's professional industry affiliations include being the Chairman of CompTIA's New and Emerging Technology Committee, and as a member of The AFCEA Cybersecurity Committee. In government, Chuck has served at The Department of Homeland Security (DHS) as the first Legislative Director of The Science & Technology Directorate at the Department of Homeland Security. He served as a top Advisor to the late Senator Arlen Specter on Capitol Hill covering security and technology issues on Capitol Hill. In academia, Chuck is an Adjunct Faculty member at Georgetown University in their Applied Intelligence Program was an Adjunct Faculty Member at Johns Hopkins University where he taught a graduate course on homeland security for two years. He has an MA in International relations from the University of Chicago, a BA in Political Science from DePauw University, and a Certificate in International Law from The Hague Academy of International Law.*

Innovative Tech Helping Keep Citizens Safe

Source: https://www.civicplus.com/blog/ps/innovative-tech-helping-keep-citizens-safe

The dangers facing local governments have never been more threatening. 2017 saw the largest mass shooting in American history alongside record-breaking hurricanes and wildfires. At a time when citizens have the capability of being more easily connected to one another and their local leaders than ever before, local government public safety managers are looking to leverage every possible communication channel to warn, inform, instruct, and safeguard citizens.

As technology has evolved and advanced so has the capability of communicating urgent information using a multi-channel, device-agnostic public alert strategy. What follows are the three mass notification system technology trends that are redefining how public safety managers are keeping citizens safe and informed in a world of growing threats.

Establishing More Detailed and Structured Protocols for Mass Notification Solution Use

Mass notification systems, such as the Federal Emergency Management Agency's (FEMA) Integrated Public Alert and Warning System (IPAWS), have been proven effective as technology tools that enable public safety managers to reach residents and travelers with life-saving information and instructions. In the wake of two widely discussed misuses of such systems, many local governments are taking the time to redefine their protocols and policies for mass notification use to ensure the tools are used efficaciously.

On Saturday, January 13, 2018, residents of the state of Hawaii spent an agonizing 38 minutes believing they were about to be the victims of a missile attack. The

panic was caused by an alert distributed from the state's emergency notification system— a warning that was distributed in error. After investigating the cause of the error, authorities advised that the employee who sent the notification mistakenly believed the state was truly under attack. This Hawaii missile attack miscommunication resulted in feelings of outrage among the misinformed citizens and demands to be better protected from future miscommunications.

In California, recent wildfires resulted in the opposite communication issue. Non-use of local mass notification systems delayed critical evacuation instructions, which put citizens and travelers at risk. In the fall and winter of 2017, 9,133 wildfires ripped across California, making it the most destructive wildfire season on record. The spread of the fires into towns and neighborhoods required the evacuation of many communities—yet digital notifications to citizens were not issued until hours after the blaze began in many areas leaving some residents already trapped. Even when notifications were eventually sent, far too many citizens did not receive them. 44 people were killed in the wine country fires, leaving many to wonder why notifications were not issued earlier.

As a result of these incidents in Hawaii and California, local government public safety managers with access to a mass notification systems are reviewing policies, providing staff training, redefining who is authorized to issue notifications. Their goal is to put systems of checks and approvals in place so that when an emergency does occur, staff know exactly how to access their notification system, craft a message, send a test, and then a live alert—in as few minutes as possible.

Investing in Multilingual Communication Solutions

The Center for Immigration Studies estimates that one in five U.S. residents speaks a foreign language at home. With the high frequency and unexpected nature of local threats growing, local governments can no longer rely on English-only multi-channel mass communications. With so many non-English speaking residents and travelers potentially at risk during an emergency, a growing number of local governments are seeking out mass notification systems with automate multilingual translation capabilities.

A growing number of public safety managers are choosing mass notification solutions that enable subscribers to designate their preferred language from a list of pre-defined options. When an alert is sent, public safety managers only need to craft a message in English. It is then translated, by the system, into the recipient's language of choice for all channel delivery options including email, text message/SMS, and voice notification. Such technologies eliminate the need for public safety departments to rely on internal translation resources to craft alternate message versions for mass distribution—a process that can delay the dissemination of information and put citizens at risk of human translation error.

Increased Use of Geofencing Technology

During the California wildfires, one community's public safety personnel initially chose not to issue warning messages due to a discomfort with its notification system's targeting functionality and a fear that an evacuation message would lead to mass panic and an eventual traffic jam. Further complicating safety efforts, the wine country fire warnings were only issued to those citizens who had preregistered to receive messages from their community's urgent notification system or those residents in the county's contact database. Those who had not preregistered and those traveling through the area, were uninformed, a tragic oversight that left many in danger.

To eliminate the fear of overcommunicating safety instructions to those not near the threat, and to maximize the reach of messaging to non-resident travelers entering an impacted area, an increasing number of public safety managers are choosing mass notification technology with geofencing capabilities. Geofencing technology allows authorized personnel to establish physical regions as virtual "fences" and target messages to individuals within those areas. When there is a need to warn residents of a local hazard, geofencing makes it possible to target and reach individuals based on their current location, which may or may not be their home address.

When geofencing technology is integrated into a local notification

mobile app, local governments can send notifications to app users within a designated geographic location identified by a specific area on a map indicated using a built-in radius tool. From a citizen end users' perspective, subscribing to a system with such functionality gives parents the opportunity to receive notifications if the area surrounding their child's daycare is threatened, for example. For authorities, it maximizes and hyper targets those in danger with critical, life-saving information and instructions.

For more information on how to protect your citizens and put a proactive communication plan in place in the event of a natural disaster, click below to download our comprehensive eBook, designed exclusively for public safety experts.

*As the Marketing Manager for CivicReady, **Jennifer Elliott's** focus is on understanding local government and emergency management's needs and challenges communicating to citizens. She ensures that the benefits of the CivicReady system are communicated and being leveraged by our local government clients. She leads the marketing effort for the CivicReady product and assists Product Strategy with communications and implementations. Jennifer holds a Bachelor of Arts Degree in Mass Communications and Journalism with a major in Public Relations from Kansas State University. She has over 17 years of experience in both the public and private sector, handling internal and external audience communications with a focus on marketing.*

What we know about Ian David Long, the California gunman

Source: http://www.homelandsecuritynewswire.com/dr20181108-what-we-know-about-ian-david-long-the-california-gunman

Nov 08 – Police identified the gunman who shot and killed twelve people and injured about twenty at a bar in Thousand Oaks, California, as 28 year-old Ian David Long.

Long was found dead from self-inflicting shots. The Borderline Bar and Grill, known for live country and western music peefromances, is a popular for students from neighboring colleges, among them California Lutheran University, California State University/Channel Islands, Pepperdine University, and Moorpark College. Thousand Oaks, a wealthy town of 130,000 residents is located about forty miles northwest of Los Angeles.

Greek-American Telemachus Orfanos had initially survived the Route 91 Harvest music festival in Las Vegas, which killed dozens of people and wounded hundreds more.

Thousand Oaks frequently ranks as one of the safest cities in the country. Before last night, the city of 130,000 northwest of Los Angeles had just five shootings during the past five years, according to Gun Violence Archive, resulting in a total of four deaths and two injuries.

The Borderline Bar and Grill rampage was the 307th mass shooting in 2018, according to Gun Violence Archive.

Here is what we know of Long, based om media reports:

Mental health officials visited his home earlier this year

Ventura county sheriff Geoff Dean said that in April 2018, sheriff's deputies were called to Long's home in Newbury Park, five miles west of Thousand Oaks. They found Long "somewhat irate, acting a little irrationally," Dean said. The deputies called in mental health

specialists, but the specialists, after evaluation, determined Long's mental state did not require him to be detained or involuntary hospitalized for further assessment.
One of Long's neighbors in the nearby town of Newbury Park told ABC 7 that Long suffered from PTSD, adding, "I don't know what he was doing with a gun." According to the *The Los Angeles Times*, Long drove his mother's car to the bar.

Long was a former marine
Dean said Long was a veteran of the U.S. Marine Corps. The Pentagon confirmed that Long was on active duty with the Marines from August 2008 to March 2013. The Marine Corps told CNN that Long served in Afghanistan between November 2010 and June 2011. He was a machine gunner.

The gun was legally purchased
California authorities said the .45 caliber Glock handgun Long used was legally purchased. Dean noted that Long had used an extended magazine, which is illegal in California, during the shooting. The extended magazine allowed Long to fire more rounds before needing to be reloaded.

Motive unclear
Dean said officials had been unable to find a connection between Long and the Borderline bar. "We have no idea what the motive was at this point," Dean said. Neighbors told local news channel ABC6 that Long lived with his mother, who had expressed to them her concerns over her son's behavior and mental state.

Long was assaulted in a different Thousand Oaks bar
In January 2015 Long was "the victim of a battery" at a bar in Thousand Oaks, Dean said. Long had received two minor traffic citations in recent years, Dean said. One came after he was involved in a traffic collision.

What mass shootings do to those not shot: Social consequences of mass gun violence

By Arash Javanbakht
Source: http://www.homelandsecuritynewswire.com/dr20181109-what-mass-shootings-do-to-those-not-shot-social-consequences-of-mass-gun-violence

Nov 09 – Mass shootings seem to have become a sad new normal in the American life. They happen too often, and in very unexpected places. Concerts, movie theaters, places of worship, schools, bars and restaurants are no longer secure from gun violence.
Often, and especially when a person who is not a minority or Muslim perpetrates a mass shooting, mental health is raised as a real concern or, critics say, a diversion from the real issue easy access to firearms.
Less is discussed, however, about the stress of such events on the rest of the society. That includes those who survived the shooting, those who were in the vicinity, including the first responders, those who lost someone in the shooting, and those who hear about it via the media.

I am a trauma and anxiety researcher and clinician psychiatrist, and I know that the effects of such violence are far-reaching. While the immediate survivors are most affected, the rest of society suffers, too.

First, the immediate survivors
Like other animals, we humans get stressed or terrified via direct exposure to a dangerous event. The extent of that stress or fear could vary. For example, survivors may want to avoid the neighborhood where a shooting occurred or the context related to shooting, such as outdoor concerts if the shooting happened there. In the worst case, a person may develop post-traumatic stress disorder, or PTSD.
PTSD is a debilitating condition which develops after exposure to

serious traumatic experiences such as war, natural disasters, rape, assault, robbery, car accidents, and of course gun violence. Nearly 8 percent of the U.S. population deals with PTSD. Symptoms include high anxiety, avoiding reminders of the trauma, emotional numbness, hyper-vigilance, frequent intrusive memories of trauma, nightmares and flashbacks [https://www.ptsd.va.gov/professional/treat/essentials/dsm5_ptsd.asp]. The brain switches to fight and flight mode, or survival mode, and the person is always waiting for something terrible to happen.

When the trauma is man-made, the impact can be profound: the rate of PTSD in mass shootings may be as high as 36 percent among survivors . Depression, another debilitating psychiatric condition, occurs in as many as 80 percent of people with PTSD.

Survivors of shootings may also experience survivor's guilt, the feeling that they failed others who died, did not do enough to help them survive, or just because they survived. PTSD can improve by itself, but many need treatment. We have effective treatments available in form of psychotherapy, and medications. The more chronic it gets, the more negative the impact on the brain, and the harder to treat.

The effect on those close by, or who arrive later

PTSD not only can develop through personal exposure to trauma, but also via exposure to others' severe trauma. Humans are evolved to be very sensitive to social cues and have survived as a species particularly because of the ability to fear as a group. We therefore learn fear and experience terror via exposure to trauma and fear of others. Even seeing a black and white scared face on a computer, will make our amygdala, the fear area of our brain, light up in brain imaging studies.

People in the vicinity of mass shooting may see exposed, disfigured or burned dead bodies, injured people in agony, terror of others, extremely loud noises, chaos and terror of post shooting, and the unknown. The unknown – a sense of lack of control over the situation – has a very important role in making people feel insecure, terrified, and traumatized.

I, sadly, see this form of trauma often times in asylum seekers exposed to torture of their loved ones, refugees exposed to casualties of war, combat veterans who lost their comrades, and people who lost a loved one in car accidents, natural disasters, or shootings.

Another group whose trauma is usually overlooked is the first responders. When we all run away, the police, the firefighters, and the paramedics rush into the danger zone, and frequently face uncertainty, threats to themselves, their colleagues, and others, as well as terrible bloody scenes of post shooting. This exposure happens to them too frequently. PTSD has been reported in up to 20 percent of first responders to man-made mass violence.

How does it affect those who were not even near the shooting?

There is evidence of distress, anxiety, or even PTSD symptoms among people who were not directly exposed to a disaster, but were exposed to the news, including post-9/11 . Fear, the coming unknown (is there another shooting, are other co-conspirators involved?) and reduced faith in our perceived safety may all play a role in this.

Every time there is a mass shooting in a new place, we learn that kind of place is now on the not-very-safe list. When at the temple or church, the club or in the class, someone may walk in and open fire. People not only worry about themselves but also the safety of their children and other loved ones.

Media: the good, bad, and the sometimes ugly

I always say American cable news are "disaster pornographers." When there is a mass shooting or a terrorist attack, they make sure to add enough dramatic tone to it to get all the attention for the duration of the time they desire. If there is one shooting in a corner of a city of millions, the cable news will make sure that you feel like the whole city is under seige.

Besides informing the public and logically analyzing the events, one job of the media is to get viewers and readers, and viewers are better glued to the TV when their positive or negative emotions are stirred, with fear being one. Thus, the media, along with the politicians, can also play a role in stirring fear, anger, or paranoia

about one or another group of people.
When we are scared, we are vulnerable to regress to more tribal, and stereotyping attitudes. We can get trapped in fear of perceiving all members of another tribe a threat, if a member of that group acted violently. In general, people may become less open, and more cautious around others when they perceive a high risk of exposure to danger.

Is there a good side to it?
As we are used to happy endings, I will try to also address potentially positive outcomes: we may consider making our gun laws safer and open constructive discussions, including informing the public about the risks. As a group species, we are able to consolidate group dynamics and integrity when pressured and stressed, so we may raise a more positive sense of community. One beautiful outcome of the recent tragic shooting in the Tree of Life was the solidarity of Muslim community with the Jewish . This is especially productive in the current political environment where fear and division are common.
The bottom line is that we get angry, we get scared and we get confused. When united, we can do much better. And, do not spend too much time watching cable TV; turn it off when it stresses you too much.

***Arash Javanbakht** is Assistant Professor of Psychiatry, Wayne State University.*

The End to Death By Friendly Fire?

Source: https://i-hls.com/archives/86616

Nov 09 – During training and even operational missions, an unfortunately common occurrence among troops is death by friendly fire. The situation is even more difficult for technologically unsophisticated armies, lacking command and communications equipment, operating alongside U.S. troops. Therefore, it is essential to come up with a reliable means of preventing this phenomenon.
The idea is similar to **Identification Friend or Foe (IFF) transponders on aircraft** that emit signals that enable radars to identify these planes as friendly: without them, it would be too easy to mistake a friendly plane as hostile.
"Currently there is difficulty identifying mounted and dismounted partner forces in the combined air and ground battlespace during both day and night operations, and in all weather conditions," according to a SOCOM research solicitation.
SOCOM wants a cheap, expendable technology that can be given to allied forces so that U.S. troops can identify them.

BAE Systems AN/APX-41 (C) is the standard U.S. Navy integrator

"The solution must be detectable by existing Special Operations Forces, U.S. military and Coalition observation and targeting systems, both ground and aerial, out to a tactically relevant range, be compatible with a standard and non-standard military uniforms, soldier carried equipment and vehicles."
Additionally, such a device will emit an infrared recognition signal. Developers should "address viable system concepts that provide an infrared signature in bands visible to existing U.S. Army, Air Force, Navy and Marine Corps aviation platform-mounted and ground based targeting sensors during all-weather, day, and night conditions."

The equipment should be capable of operating for up to eight hours without needing a battery recharge. "Minimum weight, small form factor, simplicity, and durability are desirable characteristics."
The emphasis of technological simplicity implies its intended use by armies such as the Afghans, Kurds, Syrian rebels and African troops, and even similar applications to law enforcement, border patrol and search and rescue teams, as reported in taskandpurpose.com.

EDITOR'S COMMENT: If I remember well, some years ago I read somewhere that US troops in Afghanistan had a kind of insignia on their uniforms that allowed drones to identify them. Jackets of captured soldiers or agents were used by insurgents to trick the drones. The new system bears the same threat: what if it ends up in wrong hands?

Here's How Many People Have Died In The Wars In Afghanistan And Iraq

By Daniel Brown (Business Insider)
Source: https://taskandpurpose.com/afghanistan-iraq-death-toll/

Nov 09 – Of the 76 countries in which the U.S. is currently fighting terrorism, at least three have been incredibly deadly: Iraq, Afghanistan, and Pakistan.
Brown University's Costs of War Project recently released a report detailing just how deadly they've been. It counts how many people have been killed by the "United States' post-9/11 wars" in these three countries.
The report accounts for deaths in Afghanistan and Pakistan between October 2001 and October 2018, and in Iraq between March 2003 and October 2018.
In October 2001, the U.S. invaded Afghanistan to defeat the al-Qaeda and the Taliban, but little progress has been made after more than 17 years of war. In March 2003, the US invaded Iraq and overthrew Saddam Hussein's regime under the pretense that the regime had weapons of mass destruction, most notably nuclear weapons. The U.S. pulled out in 2011, paving the way for the rise of ISIS and the re-deployment of US troops.
Pakistan is a little murkier. Since 9/11, the U.S. has conducted hundreds of drone strikes in Pakistan and used the country as a military staging area — but Islamabad has been accused of harboring terrorists as well.

The Costs of War report (which compiled data from governments, NGOs, media, and more) notes that the actual number of deaths is low because of the limits documenting death in conflict zones.
"For example, tens of thousands of civilians may have died in retaking Mosul and other cities from ISIS but their bodies have likely not been recovered," the report said.
It also notes that the death toll is only direct deaths — not indirect deaths, such as "loss of access to food, water, health facilities, electricity or other infrastructure."

Here's what they found.

6,951 U.S. military deaths
Iraq: 4,550 deaths.
Afghanistan: 2,401 deaths.
Pakistan: 0 deaths.
There were also 21 civilian DoD deaths, including six in Afghanistan and 15 in Iraq, the Cost of War report notes.

7,820 U.S. contractor deaths.
Iraq: 3,793 deaths.
Afghanistan: 3,937 deaths.
Pakistan: 90 deaths.

109,154 national military and police deaths.
Iraq: 41,726 deaths.
Afghanistan: 58,596 deaths.
Pakistan: 8,832 deaths.

1,464 Allied troop deaths
Iraq: 323 deaths.
Afghanistan: 1,141 deaths.
Pakistan: 0 deaths.

244,124 — 266,427 civilian deaths
Iraq: 182,272 — 204,575 deaths.
Afghanistan: 38,480 deaths.
Pakistan: 23,372 deaths

109,396 — 114,471 opposition fighter deaths
Iraq: 34,806 — 39,881 deaths.
Afghanistan: 42,100 deaths.
Pakistan: 32,490 deaths.

362 journalists and media worker deaths
Iraq: 245 deaths.
Afghanistan: 54 deaths.
Pakistan: 63 deaths

566 humanitarian and NGO worker deaths
Iraq: 62 deaths.
Afghanistan: 409 deaths.
Pakistan: 95 deaths

479,858 — 507,236 total deaths
Iraq: 267,792 — 295,170 deaths.
Afghanistan: 147,124 deaths.
Pakistan: 64,942 deaths.

▶▶ **Read the full report** here.

EDITOR'S COMMENT: Perhaps more important than numbers and immense cost (read below), is to **understand the visible gains** justifying the cause both in Iraq and Afghanistan (and Syria).

Government War Spending Since 9/11 Exceeds $5.9 Trillion

Source: https://gallery.mailchimp.com/33c6e6fc9f63792ebcbb7ef9d/files/42cb5e73-fc2f-4173-bbf3-8419cc3a0818/Costs_of_War_2018_News_Release_FINAL_11132018.pdf

Nov 14 - Today, officials from the Costs of War Project held a press briefing at the Senate Armed Services Committee hearing room and released its 2018 Report detailing how the U.S. government has spent and obligated over $5.9 trillion for wars in Iraq, Syria, Afghanistan, Pakistan, and other places around the world following the 9/11 terrorist attacks. The Report, *United States Budgetary Costs of the Post-9/11 Wars Through FY2019*, by Boston University Professor of Political Science, Dr. Neta Crawford, is part of the Costs of War Project at the Watson

Institute for International & Public Affairs at Brown University. Also participating in the briefing was Steven Aftergood, a Director at the Federation of American Scientists (FAS), who discussed obstacles within the government that prevented greater understanding of the federal budget process.

The Report summarizes the direct war costs—all Department of Defense Overseas Contingency Operations (OCO) funding and State Department war expenditures—war-related costs including increases in military spending, care for veterans, Department of Homeland Security spending, and interest payments on borrowing for these wars. The estimate for total U.S. war-related spending through FY2019 is $4.9 trillion. Additionally, because the U.S. is contractually and morally obligated to pay for health care for post-9/11 veterans through their lifetimes, it is imperative to estimate costs for veterans for the next several decades at $1 trillion, bringing the total expenditures to $5.9 trillion.

During the briefing, Dr. Crawford discussed how the Report was compiled and which cost categories were included in the overall figure. "The Costs of War Report includes more information than the occasionally-released summaries from the Pentagon," stated Dr. Crawford. "This Report goes beyond the Pentagon's numbers because war costs are more than what we spend in any one year on what's called the 'tip of the spear.' There are many other cost categories behind the spear that need to be included in the overall calculation," she continued.

Researchers working on the 2018 Report confronted an increased lack of transparency and clarity from resources within the Departments of Defense, Homeland Security, State, Veterans Affairs, and the White House. FAS Director Aftergood commented on the national security classification system and the recent 'over-classification' of defense budget documents and a hindrance to public access. He stated, "the ability of the public to 'follow the money' expended by its government is understood to be an essential prerequisite to self-rule. Budget data that are secret, unreliable, or otherwise unavailable are incompatible with constitutional democracy." Mr. Aftergood cited recent instances where the Pentagon over-classified materials they didn't want the public to see and withheld the numbers of US troops deployed in Afghanistan, Syria, and Iraq, thus obscuring and diminishing public awareness of current military operations.

To obtain a copy of the Costs of War Project Report for 2018, go to:
https://watson.brown.edu/costsofwar/papers/2018/united-states-budgetary-costs-post-911-wars-through-fy2019-59-trillion-spent-and

Cops on flying bikes to patrol Dubai by 2020

Source (video): https://gulfnews.com/uae/crime/video-cops-on-flying-bikes-to-patrol-dubai-by-2020-1.60260681

Nov 09 – Dubai Police have started training two officers on flying motorcycles with a view to introducing the vehicles into service by 2020, according to a tweet by the Dubai Media Office on Friday.

The futuristic step forward in policing was confirmed by Brigadier Khalid Nasser Al Razooqi, director of the Artificial Intelligence Department at Dubai Police, who said the hoverbike will be used in policing work across the city.

"We have two crews already training to use

the hoverbike and we will increase the number. The vehicle will be used by 2020 in first-responder roles because of its ability to access hard-to-reach locations," Brigadier Al Razooqi told Gulf News. The new crime-fighting "hoverbike" was part of the remarkable display of advanced technology unveiled by Dubai Police at the Gitex Technology Week 2018.

" It works on electricity and can fly at five metres height and carry a policeman during emergency situations and heavy traffic. The bike can also fly without a passenger and can go up to 96km/h. It can fly for 25 minutes with a pilot and for 40 minutes when controlled by an operator," Brigadier Al Razooqi said earlier in Gitex week.

The hoverbike can be used for quick response to traffic accidents and emergencies.

"We are still studying how many hoverbikes we will use in the future," he added.

The electric vertical take-off and landing (eVTOL) vehicles are made by California-based startup Hoversurf, which had an agreement with Dubai to supply the flying vehicles. The police force has now received delivery of the first production unit of the S3 2019 Hoverbike.

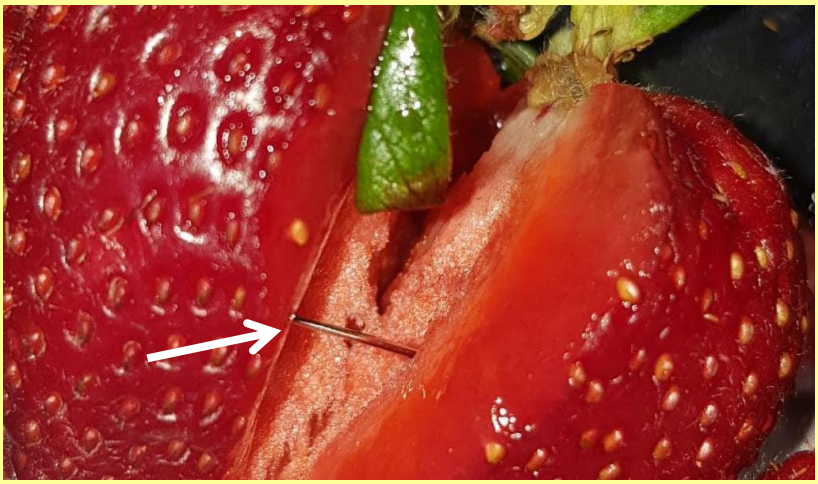
It takes two-and-a-half hours for the bikes to reach full charge.

Hoversurf published videos on its Instagram page showing the training in progress.

Strawberry needle investigation leads to Australian woman's arrest

Source: https://www.foxnews.com/world/needles-in-strawberries-investigation-leads-to-australian-womans-arrest-police-say

Nov 11 – An Australian woman was arrested over the weekend after a two-month investigation into needles hidden in strawberries that sparked contamination fears in the region.



The 50-year-old woman was charged Sunday with seven counts of contaminating goods, Queensland police said. The charges stem from one of the first cases of sewing needles found in strawberries by the fruit company Berry Licious.

"The Queensland Police Service has arrested a 50-year-old woman following a complex investigation into the alleged contamination of strawberries in Queensland in September," police said in a statement. "After the discovery of punnets of strawberries contaminated with needles, Queensland authorities notified the public of the safety risk on September 12."

Residents in Australia were urged to cut up their strawberries after several consumers reported finding sewing needles in the fruit. A man, Hoani Hearne, was hospitalized in September after swallowing half a needle hidden in a strawberry.

"I bit into it, felt it break, my knee-jerk reaction was to swallow, and what was left over was half of a sewing needle," Hearne told Australian Broadcasting Corporation (ABC).

More than 100 cases of contaminated strawberries were reported in Australia, as well as one incident in New Zealand, ABC reported.

The incidents, which affected several fruit suppliers in the country, sparked fears among consumers and a drop in strawberry prices, Reuters reported. Queensland police also offered a $70,000 reward in September for information leading to an arrest.

U.S. doctors slam NRA for telling them to "stay in their lane"

Source: http://www.homelandsecuritynewswire.com/dr20181113-u-s-doctors-slam-nra-for-telling-them-to-stay-in-their-lane

Nov 13 – **U.S. doctors have denounced the National Rifle Association (NRA) on social media after the pro-gun lobby group told doctors they were unqualified to comment on firearms policy.**

The NRA wrote on Twitter earlier this week that "someone should tell self-important anti-gun doctors to stay in their lane." It was responding to a paper by the American College of Physicians (ACP) recommending steps for reducing gun violence.

Twitter storm ensues

DW reports that some U.S. doctors were quick to express their anger over the comment on Twitter, with several using the hashtag "#ThisIsOurLane."

"Do you have any idea how many bullets I pull out of corpses weekly? This isn't just my lane. It's my f***g highway," wrote Dr. Judy Melinek. The Tweet was shared 158,000 times and more than half a million users liked it.**

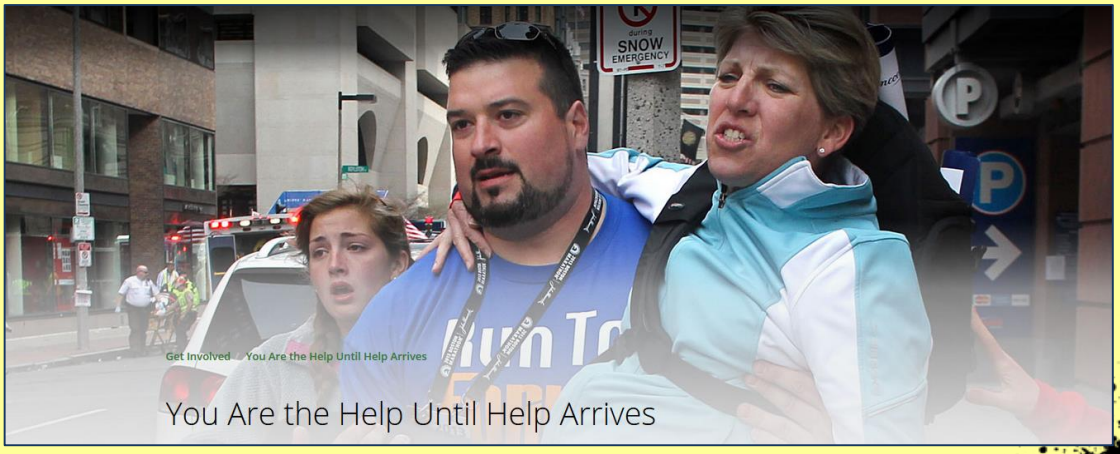
"As physicians, we need to be more active in the fight for sensible gun laws," wrote Dr. Leah Torres in another Tweet.

Several physicians shared graphic pictures of surgery rooms where they had treated gunshot victims. Others described failed attempts to save the lives of patients with severe wounds.

Dr. Eugene Gu described how one patient treated for a gunshot wound to the stomach died from blood loss despite doctors' best efforts to save him.

Dr. Melinek, a forensic pathologist, told U.S. broadcaster CNN that doctors were well qualified to take part in discussions about gun violence as a "public health problem" and ways to tackle it.

"We are seeing the day-to-day carnage", she said, adding: "What we want to see is less death."



(click on photo)

Propaganda posters

Nov 2018 – Release of new tranches of Islamic State propaganda posters either directly threatening or calling for supporters to carry out attacks in the US, Britain, France, Italy and Australia. Of the 13 new posters released, two directly referenced vehicle ramming attacks.

Russia jammed GPS signals over Scandinavia during recent NATO exercises, Norway claim

Source: https://www.dailymail.co.uk/news/article-6390365/Russia-jammed-GPS-signals-Scandinavia-recent-NATO-exercises-Norway-claim.html

Nov 16 – The Russians are the likely culprits behind disruption to GPS systems over northern Scandinavia during recent NATO exercises, Norway's defence minister said on Tuesday. Finland's air navigation services were forced to issue an air traffic warning last week due to the massive GPS interruption in the north of the country.

Norway made a similar warning last month, days before the start of **Trident Juncture**, **NATO's largest military exercise since the Cold War involving 50,000 troops** in an area stretching from the Baltic Sea to Iceland.

Finnish Prime Minister Juha Sipila said on Sunday it was 'possible that Russia has been the disrupting party in this. Russia is known to possess such capabilities.'

The Kremlin dismissed Finland's allegations on Monday as groundless.

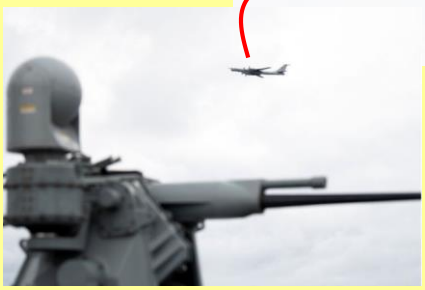
'We have the same problem (as Finland). We think it can also be part of a Russian exercise,' Norwegian Defence Minister Frank Bakke-Jensen said in an interview with Reuters on Tuesday.

'The first time it happened was during Zapad,' he said, referring to a 2017 military exercise conducted by Russia and Belarus. 'Also on later occasions ... including during Trident Juncture,' he said.

Norway's defence ministry later told Reuters that jamming took place between October 16 and November 7, and was registered as coming from 'Russian land forces on the Kola Peninsula,' a Russian region dotted with naval bases and restricted military zones.

Trident Juncture ran for two weeks from October 25, while a command post exercise, involving commanders and their staff, will continue through to November 23.

On November 2, a Russian reconnaissance warplane was spotted flying low close to USS Mount Whitney off the Norwegian coast.



Marines gathered on deck to take photos of the **Tupolev TU-142** as it soared over Norwegian waters.

Nordic countries are tightening military cooperation at a time when security challenges are becoming more complex and demanding, according to a signed pledge.

Norway, Denmark and Iceland are NATO members. Sweden and Finland are not, but have been cooperating more closely with NATO and their troops are taking part in Trident Juncture.

Finnish Defence Minister Jussi Niinisto said he was concerned about the danger the GPS jamming posed to civilian traffic.

'It worries us that civilian airplanes suffered from this problem,' he said, adding that he had raised the GPS issue at Tuesday's meeting.

EC: Frigate KNM Helge Ingstad (Norway) – could it be cyber attack?

Norway had done the same, Bakke-Jensen said, adding that Oslo was worried because GPS is used by civilians such as fishermen, shippers and ambulance planes.

Denmark's Defence Minister Claus Hjord Frederiksen said Russian denials of their involvement were not convincing and said the GPS jamming incident was another sign of Russia's 'aggressive' behaviour towards neighbouring countries.

'If falls in line with the intimidation that they use all the time in the Baltic States, but also when we have ships in the Baltic Sea, and they sometimes simulate attacks against the ships,' Frederiksen said.

Mercy Hospital Shooting: 4 dead, including Chicago Officer Samuel Jimenez and gunman

Source: https://abc7chicago.com/mercy-hospital-chicago-shooting-4-dead-including-officer-gunman/4720765/

Nov 20 – **Four people were killed - including a Chicago police officer, ER doctor, hospital worker - - Monday afternoon in a shooting at Mercy Hospital on the city's Near South Side.**

The gunman, identified to the ABC7 I-Team as Juan Lopez, 32, was also killed.

The victims were identified as Dr. Tamara O'Neal and Chicago police officer Samuel Jimenez. A pharmaceutical assistant was also shot and killed, Mayor Rahm Emanuel said during a press conference.

Gunfire erupted inside and outside the hospital after 3 p.m. at the main hospital, located at South Michigan Avenue and West 25th Street.

Chicago Police Superintendent Eddie Johnson said late Monday that the shooting began in the parking lot outside Mercy Hospital as part of a domestic dispute between O'Neal and Lopez.

During the argument, Lopez pulled out a gun and shot O'Neal.

Relatives said O'Neal had been set to marry Lopez in October, but called off the wedding in September.

Hospital officials said she was dedicated to caring for her community, and was also dedicated to her church and never worked on Sundays. In a news conference officials described her as, "The best person ever, really."

Are hospitals prepared to deal with an active shooter?

After shooting his former fiancee, Lopez ran into Mercy Hospital and continued firing as initial responding officers gave chase. Inside the hospital police exchanged gunfire with Lopez, Johnson said.

Hospital officials said inside the hospital Lopez shot a 25-year-old first-year pharmaceutical resident Dayna Less. She was taken to the hospital in critical condition where she later died.

Less was a graduate of Purdue University and was planning to go home to Indiana on Tuesday to spend Thanksgiving with her family. She was planning to get married in Indiana in 2019.

Johnson said during the exchange of gunfire inside the hospital, the shooter was fatally struck, though it was not immediately clear if he was struck by police fire or if it was a self-inflicted gunshot.

Officer Jimenez was taken in critical condition to the University of Chicago Hospital, where he died just after 7:30 p.m., CPD spokesman Anthony Guglielmi said.

Jimenez, a married father of three, had been with CPD for just 18 months. His body was taken by ambulance from University of Chicago Hospital to the Cook County morgue, saluted along the way by dozens of police officers standing at solemn attention along the side of the road.

"Today the Fraternal Order of Police lost a valued brother, a courageous police officer who got up this morning went to work and wanted to protect the city of Chicago," said Kevin Graham, president of the Fraternal Order of Police. "He did just that, but he did so with his life."

Jimenez joined the force in February 2017, and had only been a full-fledged officer for a few months. He served at the 2nd Police District on the city's South Side.

"Lot of shootings going on here and police are there. I wanted to be here," said Roxanna Blake, resident, who came out to watch the procession.

"Every one of us will celebrate time with our family in the holidays," said Mayor Rahm Emanuel. "We have a member of the Chicago family who, on this holiday and other milestones of their family, will not be there."

A second officer was also shot at, but the bullet struck his holster and embedded itself in his gun. The officer was not injured.

Airport security threats: combating the enemy within

By David BaMaung

Source: http://theconversation.com/airport-security-threats-combating-the-enemy-within-106271

Nov 15 – Since the 9/11 al-Qaeda attacks on the US, most travellers have got used to the sight of fortified airports around the world. Few people these days are surprised to see barriers and other physical protection measures around them, as well as the presence of armed police patrols.

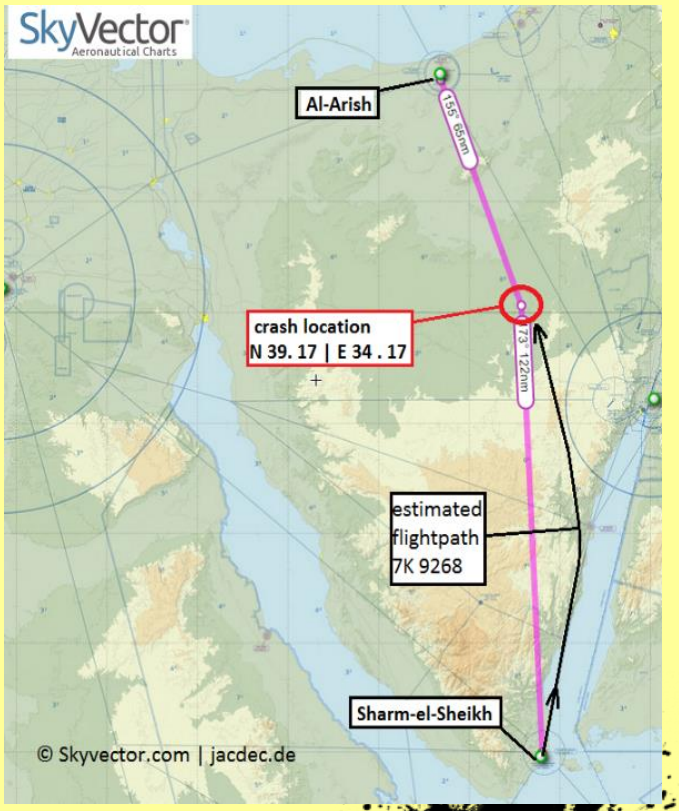
An airport is an enormous, complex operation, and while on the surface one that is more physically secure is reassuring for travellers – and acts as a bulwark against a possible terror attack – there is also a hidden threat from inside the airport environment. This threat has no boundaries and exists across all airports and countries. Here, the "insider" has the ability to overcome many of these overt security measures if they want to target and threaten passengers or the wider population.

As soon as the term insider is used, people think of terrorism in the context of the "radicalised" or "terrorist" insider. But the subject is far more complex: insiders can include individual criminals, organised crime gangs, disgruntled employees or even unwitting members of staff who, through failure to follow proper security processes, leave airports vulnerable to external threats.

Terrorists, smugglers, gangs and thieves

Probably one of the best-known UK terrorist insiders in recent times is Rajib Karim. Karim was a British Airways software engineer who had been radicalised, and plotted to place a bomb on board a BA plane. His plot was subsequently foiled, and he was sentenced to 30 years in prison for terrorist activities.

Unfortunately, there have also been terrorist insider successes. On October 31, 2015, Russian Metrojet flight 9268 crashed over the Sinai Peninsula after taking off from Sharm el-Sheikh, Egypt. A bomb hidden in a drinks can is believed to have caused the aircraft to crash, and a group associated with Islamic State claimed the attack, which killed 224 people. It is suspected the bomb may have been placed onboard by an airport employee at Sharm el-Sheikh airport.



The most common examples of insider threat lie with individual members (or groups) of staff who commit low-level crime in the airport. This can range from smuggling drugs to theft from bags as they are processed through the handling system. Organised crime networks also see airports as a legitimate route to traffic drugs from South America to the rest of the world.

A recent case at Heathrow involved corrupt baggage handlers who were part of a criminal network planning to smuggle at least £16m worth of drugs into the UK from Brazil. The gang was caught after a surveillance operation and sentenced to more than 139 years in prison.

But it's not only drugs that are smuggled through airports. In the US, a firearms smuggling plot by five men, including an

employee and an ex-employee of Delta Airlines, was foiled by authorities. These individuals were involved in the trafficking of over 150 firearms (including assault weapons) from Atlanta to New York. This plot took advantage of a security vulnerability which involved access passes which were available to the insiders, and enabled the transportation of firearms by the group of employees.

Dealing with threats

While it is important to highlight past examples of insider activity within the aviation sector, it is also essential that suspicious behaviours and indicators are recognised. Research has been carried out to identify behavioural indicators, and use this as a predictive technique to detect current and future insider threats.

Suspicious acts by employees may include nervous or secretive behaviour, turning up for work in uniform on days off, showing interest in security matters outside their normal scope, and undertaking hostile reconnaissance for future exploitation of airport weaknesses.

Insider threat has now been recognised as a clear and present danger within the international aviation sector and organisations such as the International Air Transport Association (IATA) has produced guidelines on how to manage this threat. The threat from insider activity within the aviation sector has also been recognised by governments and law enforcement agencies.

Everyone has an opportunity to do more to combat the aviation insider threat, through a "community approach" at airports. This involves everyone from operators, airlines and third party contractors, to law enforcement working in collaboration and sharing key information (such as Project Servator, which seeks to "detect, deter and disrupt" criminal activity, including terrorism). Addressing personnel security weaknesses in airports which could allow hostile insiders to gain work there, is essential. And, of course, this approach also includes the general public who are encouraged to report anything suspicious to the counter-terrorist hotline or airport authorities.

Pre-employment screening, vetting and ongoing security management of employees can all be improved. Training programmes for management and supervisors are essential for airports, and will provide them with skills to identify, manage and resolve these threats. The value of managing the insider risk should not be underestimated. By acknowledging and identifying the threat and developing measures to combat it, we can make our airports safer places for all passengers and the staff who service them.

David BaMaung *is Honorary Professor Human Resource Development, Glasgow Caledonian University. He also works for Camor, a specialist aviation security company.*

New Technology to Revolutionize Combat Divers Operations

Source: https://i-hls.com/archives/86854

Nov 21 – Military combat divers often conduct underwater missions in hazardous and zero visibility conditions. Critical to mission success is having accurate underwater compass and depth readings to assist with navigation while minimizing the risk of detection.

Current handheld or tactical swim board mounted compasses, depth gauges, and chronometers are obsolete in a zero-visibility environment. Traditional compasses can be virtually useless in these conditions even with auxiliary illumination.

Developed by JFD in collaboration with the US Military, an advanced combat diver navigation module called Shadow NAV provides a practical solution for divers operating in low visibility conditions, ensuring that the divers have continual visibility of accurate information. The technology could also be offered to the commercial diving industry.

The US Naval Surface Warfare Center – Panama City Division (NSWC PCD), teamed with JFD to develop the device that brings a hands-free underwater navigation capability.

How does it work? The system is fitted to a diver's standard half mask and provides a clear visual display of a combat diver's compass heading, depth, and time even in near-zero visibility conditions. Through using a mask-mounted head-up display, combat divers are not

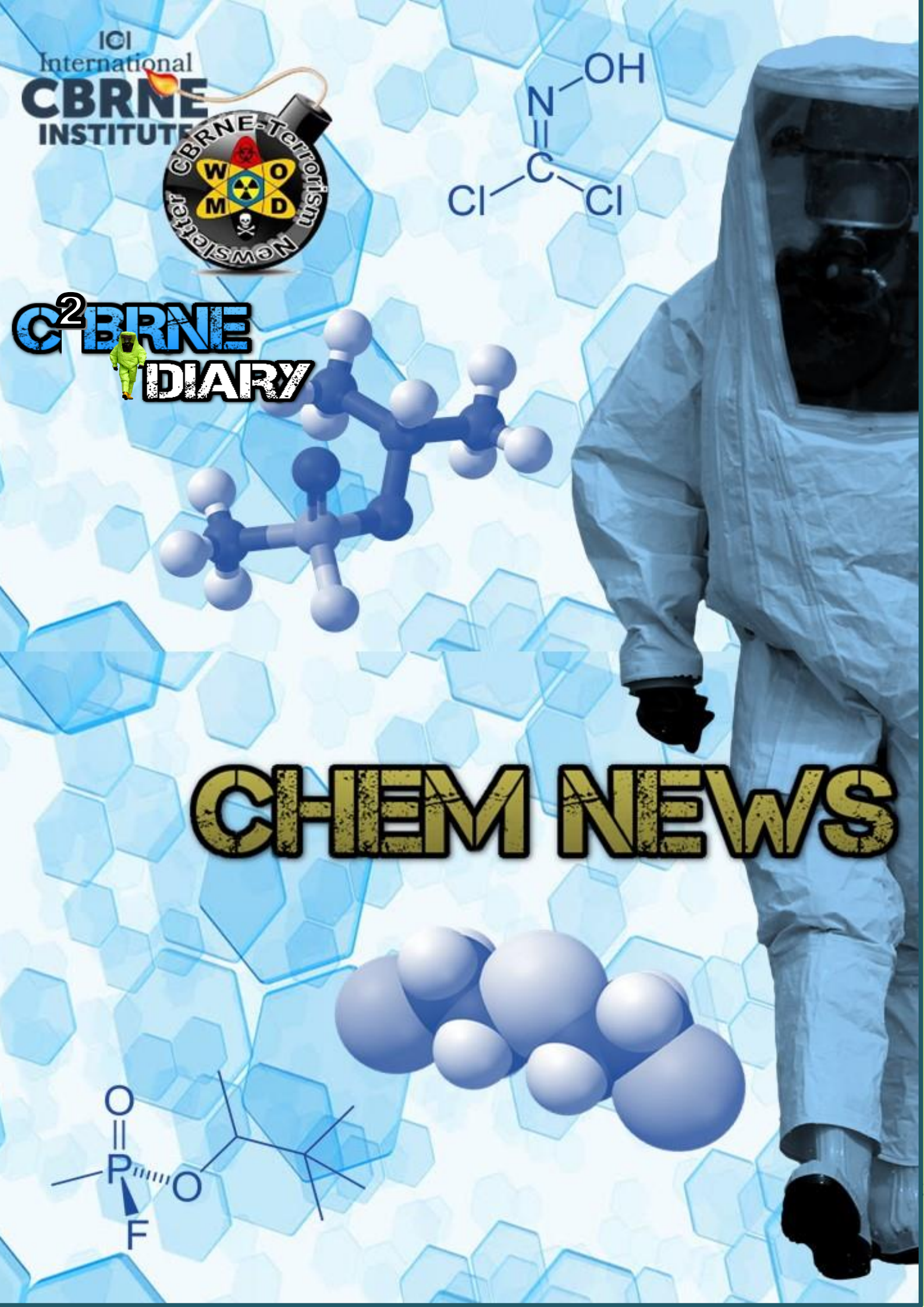
restricted by the poor visibility mission environment and may not require carrying a tactical swim board, according to navaltoday.com.

"Traditional kit such as the compass and depth gauges not only increases the amount of equipment required, but, more critically, they are of little, or no use in water with very limited visibility, even with auxiliary illumination. This puts the diver at too great a risk of injury or even fatality," Danny Gray, products & support director at JFD, commented. "To address these challenges for potentially dangerous underwater combat missions, the Navy expert technical team worked to develop a small, low-cost, low-power enhanced navigation capability to significantly improve safety standards for military divers and give them the best possible chance of successfully completing their missions."

ICI International CBRNE INSTITUTE

CBRNE-Terrorism Newsletter

C²BRNE DIARY



CHEM NEWS

HHS enlists AktiVax to develop improved auto-injector for nerve agent antidotes

Source: https://www.phe.gov/Preparedness/news/Pages/autoinjector.aspx

June 25 – One of the drugs stockpiled by the U.S. government to save lives from chemical nerve agents needs a new auto-injector so the drug can be used quickly and safely without specialized training if an attack occurs in the United States. The U.S. Department of Health and Human Services (HHS) will work

with AktiVax, Inc., of Boulder, Colorado, on developing a new device to easily administer a drug that reverses damage inflicted by organophospates, a class of chemicals that include nerve agents such as Sarin and VX.

"Chemical agents can kill within hours," said Rick Bright, Ph.D., director of the Biomedical Advanced Research and Development Authority (BARDA), part of the HHS Office of the Assistant Secretary for Preparedness and Response. "To save lives, we need products at the ready that allow local first responders to act immediately."

Organophospates damage the enzymes that control the human nervous system. The results include paralyzing muscles needed to breathe, damage to parts of the brain that control breathing, and uncontrollable seizures. Together these effects can lead rapidly to death. U.S. health security measures include stockpiling nerve agent antidotes such as 2-PAM, pralidoxime chloride, to combat these effects.

2-PAM is administered using an auto-injector. Auto-injectors are prefilled, pen-style drug delivery devices commonly used to administer lifesaving medication to people experiencing severe allergic reactions, or by diabetics for insulin shots. Auto-injectors for 2-PAM are no longer manufactured and were originally designed for military use.

Under an 18-month, $15 million contract with BARDA, AktiVax will advance the development of its ARAI platform technology, combining the ARAI auto-injector with the drug 2-PAM to create ARAI-2PAM. The contract can be extended up to a total of $55 million over four years and could support putting other medications into the ARAI platform.

The ARAI platform technology has the potential to be used for administering drugs other than 2-PAMor for administering multiple drugs at once to adults or children and is designed with modern technology that can be used safely by members of the public.

Development of the new device also could diversify the supply chain for auto-injectors to administer drugs in the HHS Strategic National Stockpile.
BARDA continues to seek proposals for development of effective products to treat injuries caused by chemical agents, including new products or new indications for products already in clinical use. The products must be easy to use in a mass casualty situation and safe and effective for all segments of the population. Proposals are accepted through the Broad Agency Announcement BARDA-CBRN-BAA-16-100-SOL-00001 at the Federal Business Opportunities website, www.fbo.gov.

PPE: CQC Raptor 2 Tagra 2

Source: http://www.cqc.co.uk/cbrn/cbrn-oversuits/raptor-2/

The Raptor 2 is a two-piece overgarment system that utilises a lightweight carbon liner, combined with a highly breathable and rugged rip stop outer. It offers comfort, functionality and low physiological burden for the wearer, whilst allowing simple and rapid donning procedures to be established.
Offering basic flame retardancy and repellency to liquids, this two-piece system is CQC's most widely used and is suitable for all users within both Civil & Military CBRN units.
The Raptor 2 system is tested to NATO Standards, offering 24 hours protection against Sulfur Mustard (HD) and exceeds the Man In Simulant Test (MIST) and requirements for Class 3/Category C ensemble.

Key Features:

- Conforms to NATO standards
- 20% lighter than conventional systems
- High breathability
- Low physiological burden
- Compatible with a wide range of CBRN ancillaries
- Up to 15 year shelf life
- Flame retardant with POL repellency (petrols, oils, lubricants)

TAGRA 2

The Targa 2 is a two-piece overgarment system utilising the same design as used in the Raptor systems. It offers low physiological burden to the wearer and is the most lightweight and protective suit available in today's market. Setting new levels in breathability, functionality and comfort for the wearer, the Targa 2 is also extremely easy and quick to don.
Our Targa Systems use the same lightweight carbon liner as the Raptor systems but utilise a harder wearing ARAMID outer layer. This offers the wearer inherent Fire Retardancy combined with an extremely rugged and hard wearing breathable outer, allowing functionality in even the most challenging of CBRN environments.
Utilising the well proven 2 piece design of the Raptor 2, this two-piece system is suitable for both Civil & Military CBRN units, especially those that require a higher level of FR.
The Targa 2 System is tested to NATO Standards, offering 24 hours protection against Sulfur Mustard (HD), and exceeds the protection factors required for a class 3 CBRN ensemble.

Key Features:

- Conforms to NATO standards
- 30% lighter than conventional systems

- High breathability
- Low physiological burden
- Compatible with a wide range of CBRN ancillaries
- Up to 15 year shelf life
- Inherently fire retardant
- POL repellent (petrol, oils & lubricants)

Shield - Chemical protective Undergarment (CPU)

Our Shield CPU is available in either a one or two-piece. It is highly protective and has been designed and developed specifically to provide a covert and versatile solution to CBRN protective garments. It provides comfortability and functionality and, it is used by military and civil security services around the world.

It has been developed as a vapour barrier system that protects individuals against chemical and biological agents and provides protection in accordance to NATO standards. It is designed to be worn next to the skin, covertly, under civilian clothing, and can be worn with the CQC separate Hood & Cowl System.

Key Features:

- Conforms to NATO standards
- High protection undergarment
- High air permeability
- Lower physiological burden
- 20 times launderable
- Compatible with a wide range of ancillaries
- Up to 15 year shelf life
- 24 hours protection

CBRN Protective Socks

Our protective socks are designed to give additional CBRN protection to the foot and lower leg area. The length of the sock allows a secure interface with any CBRN under garment or over garment. The socks are made from an activated carbon fabric which therefore offers extreme comfort and can be worn with a combat boot or butyl overboot. Full size range is available.

Key Features:

- Lightweight
- High air permeability
- Compatible with a wide range of CBRN protective clothing
- Up to 15 year shelf life
- 24 hours protection

Hood & Cowl

Designed to be worn with any CBRN respirator, the Hood & Cowl offers the ideal solution for rapid respiratory protection when a sudden threat is realised. Perfect for use on its own or with a full system, it is constructed using a lightweight carbon liner and a rugged flame retardant outer fabric. The H & C is quick donning and is designed to be used in a high threat environment where immediate respiratory protection is required. When used with the Shield CPU, protection levels exceed the current NATO requirements.

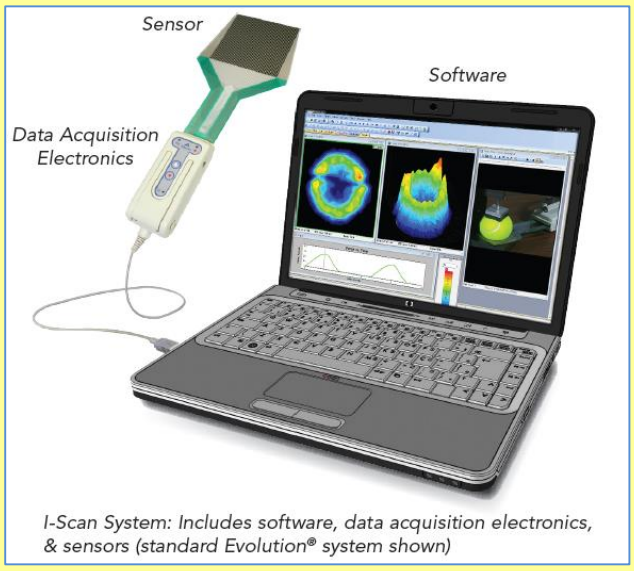
Key Features:

- Extremely compact
- Compatible with a wide range of CBRN respirators
- Up to 15 year shelf life
- Flame retardant
- Water/oil repellent

Versatile Pressure Mapping System

Source: https://www.tekscan.com/products-solutions/systems/i-scan-system

I-Scan™ is a powerful tool that accurately measures and analyzes interface pressure between two surfaces, utilizing a thin and flexible sensor. The system is comprised of data acquisition electronics, sensors, and software. Measuring both force and pressure, the exceptionally thin tactile sensor provides minimal interference between the objects being measured, allowing the true interface pressure data to be obtained. The interface pressure data collected offers vital information and insight to enhance product design, manufacturing, quality, and research.



I-Scan System: Includes software, data acquisition electronics, & sensors (standard Evolution® system shown)

Key Benefits

Product Design

- In-depth understanding of surface behavior
- Verify forces and peak pressures between two components
- Measure external forces
- Reduce failures & associated costs

Manufacturing

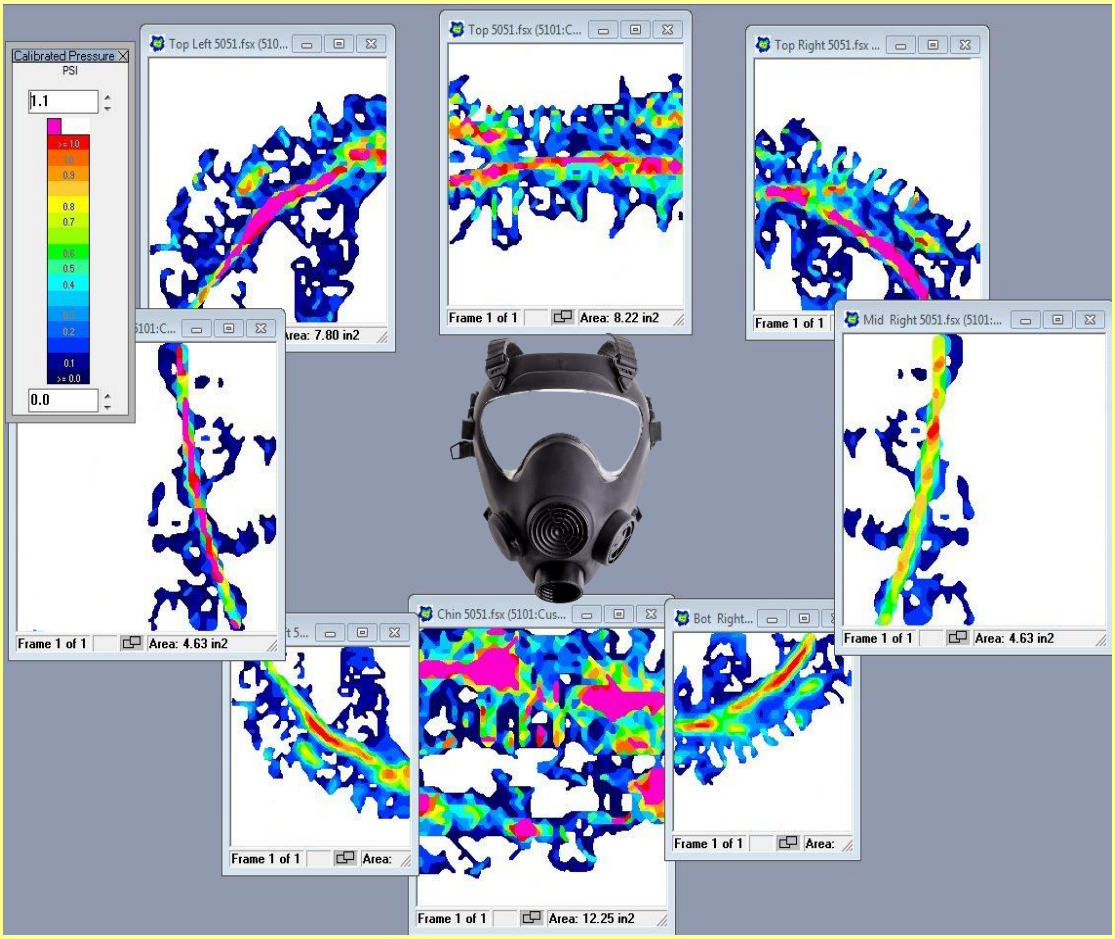
- Verify calibration of machinery
- Improve repeatability of processes
- Reduce downtime & improve yields

Quality Control:

- Identify potential failure modes
- Quality inspection & control
- Competitive benchmarking

Research

- Understand the physical properties of the objects being measured
- Understand the pressure distribution between two surfaces



Key Data

- Total force
- Pressure distribution
- Peak pressure
- Center of forceForces in different areas

Utilization

- Test & measurement
- Research & development
- Design validation
- Machine set-up
- Quality control

What are the most common HazMat threats for first responders?

By Steven Pike

Source: https://www.argonelectronics.com/blog/what-are-the-most-common-hazmat-threats-for-first-responders

Oct 08 – The unintentional release of toxic chemicals can pose a wide range of physical, health, and environmental hazards. And when it comes to the storage, handling or transport of hazardous materials (HazMat), safety is paramount.

The US Environmental Protection Agency (EPA) defines HazMat as any substance that is potentially harmful to human health or the environment.

While there are a multitude of precautions that industries will take to stay safe, in the event of accidental spillage due to a road traffic accident or as the result of an industrial incident, highly trained HazMat crews will be called on to mitigate the threat.
In this blog post we explore eight of the most common hazardous materials that first responders are likely to encounter in the event of an industrial accident or road transport incident.

1) Carbon Dioxide

Refrigerated carbon dioxide is a colorless, odorless, non-flammable gas used to chill or freeze food products as part of the process of transport to market.
Although non-toxic, when carbon dioxide displaces oxygen in confined spaces the carbon dioxide vapors can cause headache, nausea, dizziness or asphyxiation. And when carbon dioxide comes into contact with skin it can also cause severe burns.
When responding to incidents where C02 is stored, firefighters need to be alert to the possibility of leakages. A low oxygen meter should be used to determine that an area is safe for occupancy.

2) Chlorine

Chlorine is a key component in the production of key industrial and consumer products including the vast majority of pharmaceutical production and virtually all crop protection chemicals.
It is a highly reactive and volatile substance, particularly when in the presence of heat, and is considered to be among the most dangerous of hazardous materials.
Chlorine is classified as both a Toxic Inhalation Hazard (TIH) and a Poison Inhalation Hazard (PIH).

3) Fireworks

Both the transport and storage of consumer fireworks pose a high fire risk. In the UK, the physical movement (transfer) of explosives from one place to another (excluding those moved within a site) requires a Recipient Competent Authority (RCA) document.
According to the UK's Health and Safety Executive (HSE) a license is required from an appropriate licensing authority in order to be able to store explosives, however depending on their hazard type certain quantities of explosives can be kept for a short time without the need for a license.
In the US, the Consumer Product Safety Commission (CPSC) has issued mandatory safety regulations for fireworks devices that are regulated under the Federal Hazardous Substances Act.

4) Gasoline

Typical gasoline contains approximately 150 different chemicals including benzene, toluene, ethylbenzene and xylene.
The highly flammable nature of gasoline, the ease with which it evaporates and its explosive potential in air, makes it a high exposure risk. Gasoline exposure can occur through the breathing of gasoline vapours, via the drinking of contaminated water or by coming into contact with contaminated soil.
Gasoline should only be stored in approved containers and must not be handled near any ignition source.

5) Argon

A refrigerated liquid, Argon is most commonly used in the production of fluorescent light bulbs and in welding.

Argon is classed as neither flammable nor toxic, however it can cause significant tissue damage if it comes into contact with skin and it can be extremely harmful if inhaled. To avoid sudden releases Argon is transported in upright cylinders.

6) Sulfuric Acid

Sulfuric acid (also known as "battery acid", "hydrgen sulfate" and "oil of vitriol") is one of the most important compounds in the chemical industry. The annual production of sulfuric acid worldwide has been predicted to hit 260 million tonnes by the end of 2018.

Sulfuric acid is used widely in the production of phosphate fertilizers, metal processing, lead-based batteries, fiber production and chemical manufacturing (including paints, pigments, dyes and synthetic detergents.)

It is a highly corrosive substance which is destructive to skin, eyes, teeth and lungs. Severe exposure can be fatal.

7) Propylene

Propylene is a volatile, flammable gas used as a crucial product in the petrochemical, packaging and plastics industries.

It is often used in the place of propane in high-velocity oxygen fuel (HVOF) processes. Propylene gas poses a fire hazard when it is handled in the vicinity of any equipment capable of causing ignition.

8) Liquefied Petroleum Gas (LPG)

Comprising a combination of propane and butane, LPG is commonly used as both a fuel (to heat vehicles and appliances) and as a refrigerant. Its mixture of hydrocarbon gases poses a major fire risk which means it must be stored in pressured vessels.

Toxic chemicals can pose a wide range of potential health and physical hazards to those employees operating within industrial plants and to the personnel charged with handling or transporting these substances. And as such they are heavily regulated.

In the rare case of accidental release, the knowledge of HazMat crews can provide life-saving assistance in identifying the threat, containing the area and mitigating the effects of the incident.

How prepared do firefighters feel to handle HazMat incidents?

By Steven Pike

Source: https://www.argonelectronics.com/blog/how-prepared-do-firefighters-feel-to-handle-hazmat-incidents

Oct 01 – From transport accidents involving hazardous compounds, to the mishandling of household chemicals, or the deliberate release of hazardous materials, fire department crews across the country need to be equipped and trained to respond to a myriad of potential HazMat events.

So just how prepared do firefighters really feel when it comes to responding to the unique challenges of HazMat incidents?

In a bid to answer this question, the online resource for fire professionals, FireRescue1, conducted a survey of its readers to gauge their views on the best ways to achieve safe and effective HazMat response.

The survey drew on the experiences of 250 firefighters and comprised a combination of serving officers, volunteers and municipal agents. More than 90% of respondents were US or Canadian fire safety personnel, with a handful originating from eight other countries including Saudi Arabia, Venezuela, Sri Lanka and Ghana.

Among the subject areas the survey highlighted were:

- the average number of HazMat calls fire crews were called on to respond to each year
- how many fire departments use HazMat detectors or identification technology as part of their response procedures
- the types of HazMat threats that were most typically encountered

- the top challenges that fire crews experienced in the course of HazMat incidents
- what personnel felt they needed in order to be able to enhance their responsiveness

This blog post summarizes the key findings of the FireRescue1 report and highlights the crucial areas where fire crews believe there is still room for improvement.

How confident do fire crews feel?

Just under half of the survey's respondents stated that they felt "adequately prepared" for HazMat incidents.

Sixty-eight percent of respondents said that they rely on local standard operational procedures (SOP's) for HazMat response.

What's the annual frequency of HazMat calls?

Fifty-eight percent reported that the average frequency for HazMat incidents was one to four times per year, with 21% reporting calls between six and twelve times a year.

Eighteen percent indicated they were required to respond to HazMat calls more than once a month. While a mere three per cent of those surveyed reported that they'd never been required to respond to an incident involving hazardous materials.

How can HazMat response be improved?

The top three needs for HazMat response were listed as: further training (70%), additional funding (64%) and greater access to detection tools (46%).

The importance of HazMat training has also been highlighted in a separate FireRescue1 article authored by professional firefighter Jim Spell, in which he describes the benefits of training at the awareness and operations level and the value that the higher tier of technical training provides for firefighters.

Technology for HazMat

Detection or identification technology was identified as a significant factor for the majority of respondents. Fifty-eight percent of personnel reported that they rely on the use of detectors in order to determine the nature of a substance or substances encountered in a HazMat incident.

Types of HazMat

The types of HazMat most often encountered fell into three main categories:

- 79% comprised flammables (such as gasoline or diesel fuel)
- 51% comprised airborne particulates (fumes, gases, vapours and particles)
- 42% concerned the release of corrosives (including hydrochloric acid, sulfuric acid, nitric acid or acetic acid)

The biggest concern

Just over a third (35%) of respondents highlighted accidental exposure to the powerful and illicitly manufactured synthetic opioid, fentanyl, as one of their biggest concerns when it came to maintaining personal safety in the line of duty.

Fentanyl is well documented as posing a substantial threat to fire and EMS personnel when accidentally ingested or inhaled and US fire departments have recorded a string of 'close calls' in recent years.

Street versions of fentanyl are known to take on many forms - including powder, spray, pill or blotter paper - and are reported to be 30-50 times more potent than heroin.

As the FireRescue1 report reveals, while HazMat incidents tend to be lower in frequency in comparison to other fire department calls, they are nonetheless high-threat events that can have huge consequences. Safe and successful resolution relies on a measured and deliberate approach from fire crews. And on personnel having access to the right training and the right equipment.

What are the linchpins of effective HazMat response?

By Steven Pike

Source: https://www.argonelectronics.com/blog/what-are-the-linchpins-of-effective-hazmat-response

Sept 18 – Hazardous materials (HazMat) incidents most commonly occur as the result of the transportation or industrial use of large production volume hazardous substances.

Incidents that involve chemical warfare agents or terrorism, however, can also not be ignored. While events of this nature are still comparatively rare, the impact on human life, environment and infrastructure presents a demanding set of challenges for first response personnel.

The manufacture of illegal drugs, is another growing issue for HazMat incident response. The fentanyl epidemic, for example, poses a significant health risk to firefighters, paramedics and law enforcement officers who may inadvertently come into contact with contaminated surfaces.

Standardized operating procedures (SOPs), access to the right equipment and comprehensive training are three crucial requirements for safe and effective HazMat response.

In this blog post we explore each in turn.

Operational procedures

Initial HazMat response relies on a set of clearly defined actions:

1. Isolating the area in question
2. Controlling access to the site
3. Establishing formal on-site command and communications
4. Establishing emergency decontamination

5. Identifying materials labels and placards
6. Identifying the integrity of product containers
7. Identifying the product amount
8. Confirming the timeline and equipment for formal HazMat response
9. Determining the staging locations and decontamination setup (including warm zone entry and exit)

Equipment and resources

When it comes to detecting odourless or invisible contaminants, having access to the right equipment and resources is paramount.

With the plethora of hazardous substance incidents that first responders may be required to respond to, the ability to quickly and accurately identify the chemical is crucial.

In the initial stages of HazMat incident response, the following go-to resources can be invaluable to help narrow down the possible options:

- The ERG Field Guide - This is a useful guide for first responders during the initial phase of a dangerous goods/HazMat transportation incident. While it is primarily applicable to hazardous materials transported by road and railway, it is also relevant for chemical substances that are transported via air, waterway or pipeline.
- The NIOSH Pocket Guide to Chemical Hazards - This is a resource for workers, employers and occupational health professionals that details information about workplace chemicals and their hazards. The guide provides industrial hygiene information on hundreds of chemicals and substance groupings including cyanides, fluorides and manganese compounds. It also details more specific features such as flashpoints, water solubility and permissible exposure limits.
- The Wiley Hazardous Chemicals Desk Reference - Providing an overview of more than 5000 of the most significant hazardous chemicals. Unique Chemical Safety Profiles provide a summary of the hazards, physical properties and synonyms of each substance. The guide also details government agency standards and recommendations on the handling of specific materials.
- Electronic resources such as the Wireless Information System for Emergency Responders (WISER) and the CAMEO software suite.

Air monitoring tools will aid first responders as they approach the scene in order to be able to determine where the hot/warm/cold zones are, the location of the chemical and the direction in which it is moving.

Identifiers such as an infrared spectrometer or Raman spectrometer can be useful in the case of an unknown or abandoned chemical or to be able to identify what has been spilled.

Once a hazardous substance has been identified, the next key challenge for HazMat personnel is to deploy the appropriate decontamination solution for the environment.

While many HazMat materials can be removed with something as simple as soap and water, there are always going to be incidents where this method simply isn't enough.

In these cases, it can be necessary to confirm, via an electronic means, that decontamination has been correctly carried out.

This might be achieved through the use of an air monitor (such as a photoionization detector) to detect gross contamination - or through more advanced analysis using gas chromatography/mass spectrometry (GC/MS) equipment to identify volatile and semi-volatile organic compounds including solids, liquids, aerosols and vapours.

Innovative HazMat training methods

Planning exercises that replicate modern HazMat risks relies on the ability of instructors to develop a wide variety of scenarios - from threat assessment and decontamination procedures to clandestine laboratory search and the detection of chemical improvised explosive devices.There is a strong argument for providing first responders with exposure to realistic and engaging hands-on learning experiences that prepare them for a wide variety of HazMat threats.

Traditional HazMat safety training methods often comprise using classroom or field-based exercises – typically with small quantities of live materials or check sources - which trainees then need to locate using conventional detection instruments.
While there is value in being given the opportunity to handle real-life detectors, simulant-based HazMat training methods have inherent limitations.
Structured web-based or classroom teaching should ideally be supported by access to realistic, practical, live-incident training to ensure that HazMat teams are confident in the safe handling of hazardous substances and in the correct protocols to follow in the event of a release.
Simulation training that incorporates the use of intelligent, computer-based simulation tools is a highly effective method of replicating how real devices react when they exposed to a range of chemical substances.
Such training can be undertaken invirtually any location, including public buildings and larger training areas can be quickly and easily set up with zero environmental impact

Chemical terrorism: developing a global security network

Souce: https://www.interpol.int/ar/News-and-media/News/2018/N2018-128

LYON, France – International experts working to counter the threat of chemical and explosive terrorism are gathering to develop a comprehensive network to improve global chemical safety and security.
With increasingly sophisticated methods and technologies used to carry out devastating atrocities, this first Global Congress on Chemical Security and Emerging Threats convenes a new community working to counter chemical and explosive terrorism by non-state actors and their access to chemical warfare agents, toxic industrial chemicals, explosive precursors and other emerging chemical materials.
The three-day (29 - 31 October) conference is hosted at INTERPOL's General Secretariat headquarters and will explore specialized case studies highlighting emerging trends, identify lessons learned and best practices relating to chemical incident attribution and response, and evolving technologies and tactics. It is organized by INTERPOL, the US Department of Homeland Security and the FBI, in coordination with the G7 Partnership Against the Spread of Weapons and Materials of Mass Destruction.
"This Congress comes at a pivotal time in the international security climate. We are seeing an increase in chemical weapon usage by non-state actors both in and outside theatres of conflict. We are also seeing a steady increase in the diversion or legitimate procurement of chemical precursors used to deploy explosive devices which harm law enforcement, military and civilian populations worldwide," said INTERPOL Secretary General Jürgen Stock.
"Whether we are from law enforcement, the military, government or industry, we all have a role to play in preventing and responding to the persistent and emerging threats in relation to chemical security," added Mr Stock.
Experts at the Global Partnership's Chemical Security Working Group, along with the Global Congress, have emphasized how no single country or industry is immune to terrorism, nor can either effectively deal with chemical weapons and terrorism alone. Therefore, cooperation between all related stakeholders including governments, industries, scientific institutions, and international partners using a whole-of-society approach is required.
Co-chairs of the Global Partnership Chemical Security Working Group, Trevor Smith and David Wulf said in a joint statement: "Collaboration across governments, academia, the chemical industry, and multinational organizations is essential to strengthening our collective ability to prevent future uses of weapons of mass destruction and building the necessary response capabilities."
Bringing together some 200 delegates from nearly 40 countries, the Congress is part of efforts by INTERPOL's CBRNE programme to help address the global threat landscape through multi-agency collaboration.
It provides a significant opportunity to close the coordination gap between law enforcement and industry in order to improve security throughout the lifecycle of chemicals of concern and develop an overarching chemical security culture.


Something
NEW
is coming to
Qatar!

Sahel and West Africa States Formulate Legal Approaches to Countering Chemical Terrorism

Source: https://www.opcw.org/media-centre/news/2018/10/sahel-and-west-africa-states-formulate-legal-approaches-countering

Oct 29 — National Authority representatives along with security and legal experts from the Sahel and West Africa identified possible ways of strengthening their capacities for addressing chemical terrorism during the workshop on the role of implementing legislation of the Chemical Weapons Convention (CWC) in addressing threats posed by non-State actors, held at the Economic Community of West African States Parliament complex in Abuja, Nigeria, from 16-18 October.

In his opening remarks, Permanent Secretary, Political and Economic Affairs Office and Chairman of the National Authority on the Chemical and Biological Weapons Convention, Mr Gabriel Aduda, pointed out that the risk of non-State actors misusing chemicals constitutes a serious threat to the peace and security of Africa.

"While there may not be many large chemical industries based in Africa, our growing economies bring an influx of chemical imports. These need to be secured from potential misuse, especially by terrorist groups bent on conducting attacks against innocent civilians," stated Mr Aduda. He noted the critical role of CWC national implementing legislation in addressing this threat, adding that Nigeria anticipates adoption of such measures by early 2019

The participants delved into discussions on chemical terrorism, focusing on coordination among relevant national stakeholders and analysing the factors necessary for risk assessments. They also examined synergies between the obligations under the CWC and under various multilateral treaties on countering terrorism. Consideration was given to domestic penal legislation concomitant with the CWC.

The OPCW Technical Secretariat gave an overview of its activities linked to countering chemical terrorism, discussed the contribution of Article VI of the CWC in preventing the possible hostile use of toxic chemicals, and outlined the national legal provisions that effectively address the threat of chemical terrorism.

The participants stressed the importance of the OPCW's role in raising awareness as well as providing technical assistance in drafting legislation, customs procedures, developing emergency preparedness and response plans, and laboratory analysis.

Representatives of the UN Office on Drugs and Crime, 1540 Committee, World Customs Organization, Interpol and the US Defense Threat Reduction Agency provided information about their programs in support of their States Parties efforts to counter chemical terrorism.
In addition to Nigeria, representatives from Algeria, Burkina Faso, Cameroon, Cote d'Ivoire, Guinea, Mauritania, Morocco, Niger and Sudan participated in the workshop.

Background
As the implementing body for the Chemical Weapons Convention, the OPCW, with its 193 Member States, oversees the global endeavour to permanently eliminate chemical weapons. Since the Convention's entry into force in 1997, it is the most successful disarmament treaty eliminating an entire class of weapons of mass destruction.
Over 96% of all chemical weapon stockpiles declared by possessor States have been destroyed under OPCW verification. For its extensive efforts in eliminating chemical weapons, the OPCW received the 2013 Nobel Peace Prize.

Salisbury poisoning: Sinister 'Town of Chemists' where Russia made novichok

Source: https://www.express.co.uk/news/world/1039530/latest-russia-salisbury-poisoning-town-of-chemists-novichock

Armed soldier checks traffic at a security gate in the 'closed' town in remote Russia (Image: Andy Stenning/ Daily Mirror)

Nov 01 – Visitors to remote Shikhany, 500 miles south-east of Moscow, are welcomed with the sinister sign: "The Town of Chemists".
It is here where the poison used by Ruslan Boshirov and Alexander Petrov in the assassination attempt on Sergei and Yulia Skripal was created and stored.
As one of the infamous and notorious Russian closed towns, Shikhany is normally strictly off-limits.
Even Russians need to apply for official passes to visit and foreigners are completely banned. There is only one road in and only one road out.
But using a car with local number plates, an investigation team drove past a police control post and into the middle of the town.

It is bustling with military activity. Green army trucks speed by and uniformed soldiers walk the streets. Only members of the military who work at the bases within the town limits live here.
Potent The town is made up of three separate settlements - Shikhany 1, Shikhany 2 and Shikhany 4. The reporting team drove around with ease up to the gates of Shikhany 2 where the chemists, some of the most brilliant minds in the world of science, developed novichok in the 1970s.
One man sitting at a bus stop on the main street said: "This is still a closed town. Even people who live and work in the town do not know about all the goings-on here. Some of it was top secret."

There is a statue of Lenin and some of the streets are named after Soviet war heroes.
Apartment blocks are run down but there are also carefully manicured flower beds by the roadside.
Novichok is not made here any more. But it has been stockpiled somewhere in Russia - possibly still in Shikhany.

Run-down apartment blocks in the town which still has a statue of Lenin (Image: Andy Stenning/ Dialy Mirror)

The Russian authorities realise it is such a potent weapon they have kept stocks for use for such difficult missions such as the attempt to murder the Skripals.
Mayor Andrei Tatarinov denied his town had anything to do with the Skripal attack. He said: "Claims that novichok was manufactured here, in Shikhany, are absurd. We perceive it as a lie, as a hoax."
But pressed about chemical weapons, he admitted: "The lab used to be involved in their development but there were no chemical weapons depots here."

Propaganda photo shows researchers at work in Shikhany chemical laboratory (Image: Andy Stenning/ Daily Mirror/ East to West)

British expert Hamish de Bretton-Gordon said: "I'm very surprised you managed to get in to Shikhany and I'm even more surprised you managed to get out.
"There is no doubt that Shikhany was where novichok was produced. It's their Porton Down."

The former Nato commander said: "Laboratories in Shikhany were destroyed as recently as April. They were flattened. Nobody knows where the novichok is now."

But he added: "As the East-West confrontation hots up chemical weapons become more and more important to use in towns and cities.

Sign marks town of Shikhany (Image: Andy Stenning/ Daily Mirror)

"Novichok is a super weapon of mass destruction. And Russia has the better capability. Russia's capability is frightening and novichok is a frightening weapon. Salisbury still hasn't been cleaned up yet - and that's just one quarter of an egg cup full, that's how lethal it is."

British intelligence chiefs have confirmed they have evidence Shikhany was the home of novichok.

But Mayor Tatarinov has insisted all the work here now is for civil purposes.

The town is still one of dozens of closed towns and cities that can be traced back to the Cold War.

Some were military bases but some such as Shikhany were involved in classified research and development programmes.

The town features chemical works which are the backbone of the local economy (Image: Andy Stenning/ Daily Mirror/ East to West)

But the mayor said he hoped the city's future lay in the production of fertilisers and similar chemicals.
Russia recently announced that Shikhany would cease to be a closed town from next year. Mayor Tatarinov insisted it was safe, bizarrely claiming people there could " pick mushrooms without fear of being poisoned".
He declared he was intending to register a trademark for locallymanufactured household chemicals. The word chosen, he said, was: "Novichok".

Secret plan to use chemical weapon gun during Northern Ireland Troubles

By Christopher Woodhouse
Source: https://www.belfasttelegraph.co.uk/sunday-life/secret-plan-to-use-chemical-weapon-gun-during-northern-ireland-troubles-37486441.html

Nov 06 – The government's top secret chemical and biological warfare lab tried to develop a knock-out gas for use during the Troubles, Sunday Life can reveal.
Trials of the secret stun spray weapon - **a sort of chemical Taser** - to aid arrests were carried out by boffins in the 1970s at the government's Chemical Defence Establishment (CDE) in Wiltshire.
Previously classified government documents seen by this newspaper state the trials took place at the Porton Down centre in 1973.
The spray was to be used to render a hostile person "partially or completely unconscious" to aid "internal security" (IS) operations.
IS was the term used by the CDE at the time for policing and military deployments in Northern Ireland.
The details of the tests are contained in a report declassified in May 2007 and supplied to Sunday Life by Cold War chemical and biological warfare researcher Mike Kenner.
Titled "Feasibility study of the possible use of volatile anaesthetics as aids to arrest", it details the trials which were carried out at the secret facility in January 1973.
The study was launched after a CDE research and development report the previous year spoke of the "urgent need for devices for IS operations in Northern Ireland".

It forecast that the CDE would increase the number staff in its development section in 1972/73 to meet the demand due to certain factors, including the conflict in Northern Ireland.
The report by "F. McC. Blewett" says the tests were carried out to assess the "feasibility of using a 'squirt' of **volatile anaesthetic** to attack a hostile person in order to arrest him by rendering him partially or completely unconscious".

Images from the Belfast Telegraph Troubles Gallery. Belfast IRA man on patrol in West Belfast 1987 - Pacemaker

A head and shoulders dummy was built, dressed in a "cotton shirt and corduroy jacket", and placed in a wind tunnel in the CDE's Physics Division with the nose facing into the wind.
Diethylamine, a highly flammable liquid which can cause temporary loss of vision, was then sprayed on the dummy from a polystyrene wash bottle instead of the real chemical agent.
In later tests a hand-held riot spray gun made by Philip B Waldron Co was used for "higher doses".
Five tests were carried out, first directly spraying the chemical through the nose, then splashing the face, head and shoulders and samples taken to see how much had been "breathed" through the nose.
The discussion of the results of the test state that "only very low doses would arise from contaminated clothing" and that a "**direct attack of the face itself would be essential**".
Results showed that the maximum doses "likely to be breathed in brief (2-3 second) gasps was between 100 to 500mg every minute in a cubic metre of air. The study then compared the figures with the dosages of actual anaesthetics needed to knock somebody out.
It said the best such chemical for the spray would be **Halothane** as it "offers by far the most desirable combination of properties" including "rapid induction of unconsciousness".
But the report concluded that even with Halothane the dose required to knock a man out was 500,000mg every minute in a cubic metre.
"Thus showing that a use of a liquid squirt to anaesthetise a man is quite infeasible," said the report.
Porton Down, now known as the Defence Science and Technology Laboratory, was established in 1916 to develop chemical and biological weapons and methods of defence against them.
Among them is one of the most potent nerve agents ever, VX (Venomous Agent X) which is believed to have been used to kill the half brother of the North Korean dictator Kim Jong Un in Malaysia last year.

The facility also conducted secret chemical warfare simulation exercises over towns in southern England in the 1970s to determine how quickly a ship or aircraft could spread a biological weapon.

The document was only declassified following a request from a member of the public.

Chemical hazard training - comparing the LCD3.3 and the LCD3.3-SIM

By Steven Pike

Source: https://www.argonelectronics.com/blog/chemical-hazard-lcd3.3-lcd3.3-sim

Nov 08 – The ability to deliver consistent, engaging, and true-to-life chemical hazard detection training scenarios relies on regular access to realistic, hands-on equipment.

What's vital is that these training tools replicate not only the readings and the responsiveness of real detectors, but that they also provide trainees with an authentic experience that recreates the potential challenges that they will face in actual incidents.

Training for CBRNe and HazMat threats

Planning exercises for modern-day CBRNe and HazMat threats has never been more complex, with the need to respond to anything from clandestine laboratory searches to major industrial incidents, chemical improvised explosive devices or terrorist threats.

And key to the success of any training scenario is the capacity for instructors to be able to create compelling training experiences that are straight-forward to set up and easy to repeat.

While training with Live Agents (LAT) can still have a role to play, it introduces a substantial degree of risk to instructors, students, their equipment and the environment - not to mention incurring greater cost, increased administrative effort and a heavier regulatory burden.

Simulant training is often viewed as presenting a safer "middle ground" for CBRNe and HazMat exercises, bringing with it the advantages of a more credible, real-life experience but at the same time reducing risk through the use of smaller, controlled quantities of substances.

But even in the most carefully managed of exercises, the use of simulants brings with it certain disadvantages. It can often restrict the breadth and variety of scenarios - for example, when they are required to be used in confined spaces, or where wind, temperature or training location can impact negatively on the learning experience.

It is also increasingly common for modern detectors to provide limited response to simulant sources, due

to their highly developed interference rejection (IR) capabilities.
The good news though is that safe, high-quality and easily repeatable CBRNe/HazMat training needn't be so complicated.

Simulator detectors for CBRNe and HazMat training

One solution that has revolutionized modern approaches to chemical detection training is the adoption of innovative and safe detector training aids that replicate the functionality of real devices.
These intelligent, electronic training tools place instructors in control, they are environmentally friendly, they can be set up in an unlimited variety of indoor and outdoor locations and they offer powerful after action review features.
Let's now take a closer look at one specific example of a chemical hazard detector - the Smiths Detection LCD3.3 - and its simulator equivalent - the LCD3.3-SIM, also known in the USA as the M4A1 JCAD and M4A1 JCAD-SIM respectively.

The Smiths Detection LCD3.3

The Smiths Detection LCD3.3 is a person-worn device which is reported to be the most widely deployed chemical detector in use today.
It is used for the detection of Chemical Warfare Agents (CWAs) - including nerve, blood, blister and choking agents - as well as for the identification of a selected library of Toxic Industrial Chemicals (TICs). The detector also incorporates different operating modes ensuring optimal detection capability.
The detector is simple to operate, requires no calibration or routine maintenance and can log up to 72 hours of mission data for further analysis while user replaceable sieve packs reduce the need for factory based overhaul. A key benefit of this detector is its ability to specifically identify CWAs, however this advanced selectivity and makes simulant based training challenging.

The Argon LCD3.3-SIM

The LCD3.3-SIM is a training device that has been designed replicate the features and functionality of the actual LCD3.3.
The simulation detector responds to electronic sources that imitate the effects of chemical vapors, toxic substances and false positives and that realistically replicate the effects of wind direction and temperature, the depletion of sieve packs and batteries, confidence testing and the use of a survey nozzle.

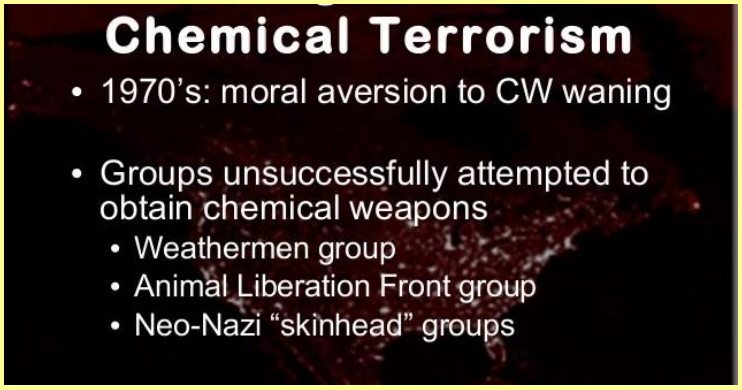
With no requirement for simulants as part of training, there is zero possibility of environmental contamination or health and safety risk to instructors or students.
The device is compatible with a wide variety of other simulators (including simulators for the AP2C, AP4C, CAM, LCD3.2 and the RAID-M100) which means that multi-detector and multi-substance training can take place within the same scenario.
The inclusion of a remote control feature provides CBRNe and HazMat instructors with complete management of the exercise - from deciding on the effectiveness of decontamination drills, to simulating the effects of wind, temperature and persistency and the ability to instantly reset a scenario in readiness for a new exercise.
After Action Review (AAR) enables instructors to confirm that their students have set up and used the detector in accordance with the procedures for the real-life device. In the event of student error, the student performance reporting feature provides a

detailed breakdown of their actions to assist with learning.
The use of innovative simulator detector training systems significantly increases personnel safety, as well as enhancing learning and easing regulatory pressures.
Such devices also place the instructor firmly in control of the exercise to ensure you're delivering consistent, verifiable and measurable CBRNe/HazMat training outcomes.

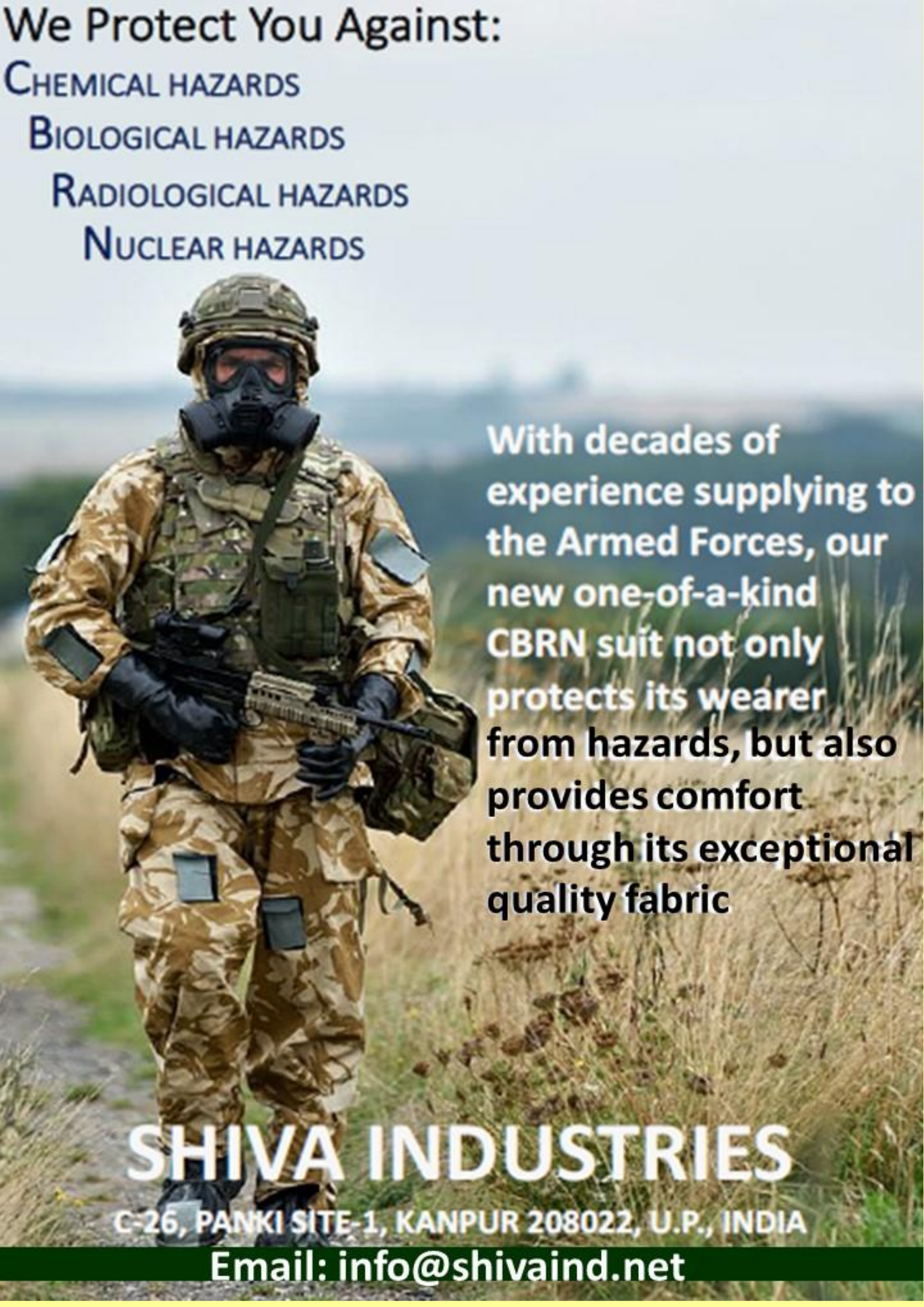
Chemists expresses worry over misuse of chemicals for terrorism

By Mustapha Sumaila
Source: https://sundiatapost.com/2018/11/08/chemists-expresses-worry-over-misuse-of-chemicals-for-terrorism/

Nov 08 – The Institute of Chartered Chemists of Nigeria (ICCON) on Wednesday expressed concern on misuse of chemicals as instruments of terror to perpetuate evil in the country.
Mr Jwalshik Wilford, the Registrar and Chief Executive Officer of the institute, said this at a workshop, membership induction and investiture in Abuja.



The News Agency of Nigeria (NAN) reports that ICCON is a parastatal of the Federal Ministry of Health established by ICCON act of 2004.
It is charged with the responsibility of regulating the teaching, learning and standards best practice of the chemistry profession in the country.
Wilford however noted that it was sad that chemicals which were meant to be substances of immense benefit had become instruments of terror and wanton bloodshed in the country and across the globe.
He said that it was a sad reality that the dearth of adequate chemical education had contributed immensely to the wave of "chemical terrorism" that had pervaded the country in recent time especially the North-East.
He charged chemists to play their roles in bringing the much needed chemical knowledge to bear on a largely chemical ignorant society.
"It is our desire and hope that this workshop will not only help in addressing what is obviously an issue of urgent national and global concern, but will draw attention to the neglected role chemists can play in tackling societal challenges.
"From industries, to agriculture to medicines, we rely on chemicals to improve our lives but also those chemicals have the potential to cause tremendous harm to us and the environment.
"Poor chemical security is a threat globally and we are committed to helping chemists and other related professionals improve their abilities to safely and responsibly handle chemicals to reduce their potential negative impacts," he said.
The registrar disclosed that the institute would soon carry out a National Chemical Personnel Audit to entrench professionalism and standards.
NAN also reports that 42 members were conferred with fellowship award while Dr Abubakar Jimoh, Director, Public Communication Affairs of National Agency for Food and Drug Administration and Control (NAFDAC) bagged honorary fellowship award of the institute. (NAN)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Immigration fears foreigners using study in New Zealand to make weapons of mass destruction

Source: https://www.newshub.co.nz/home/new-zealand/2018/11/immigration-fears-foreigners-using-study-in-new-zealand-to-make-weapons-of-mass-destruction.html

Nov 08 – **Newshub can reveal Immigration New Zealand (INZ) and the Security Intelligence Service (SIS) are investigating "several" post-graduate students over concerns their studies here could be used to make weapons of mass destruction.**

Some students have already been kicked out of the country over the issue.

Newshub has learned of one student who's being scrutinised currently – but his lawyer says it's absurd when his client's research is all about improving New Zealand's water quality.

Clean water and a healthy environment is an issue close to the hearts of many Kiwis, but it's raised a red flag for INZ, who believe the student could use knowledge gained here to make weapons of mass destruction.

"It's absolutely absurd. This person should be at the very front of the queue of people we need in this country," the student's lawyer, Alastair McClymont, told Newshub.

"His employer described him to me as being in the top 0.1 percent of this particular area of expertise in the world."

Newshub has agreed not to identify the student, but he's had to quit his research as a result of INZ's investigation.

"I had to terminate my research and studies. I lost my job because INZ gave me an interim visa with visitor conditions," he told Newshub.

"The long-term stress, pressure and uncertainty was not close to the peaceful life that we expected in New Zealand.

"Even worse, INZ won't give us any timeframe for the investigation, or say exactly what the problem is."

Mr McClymont says as a New Zealander, he finds the situation "extremely depressing".

"We have a brilliant young scientist who wants to settle here and contribute to one of most important parts of our environment being our clean, green environment - yet he's being persecuted and hounded," he explained.

"We are targeted the same as a number of countries for people to come and get knowledge and take that knowledge back to their own countries to develop weapons of mass destruction," INZ assistant general manager Peter Elms said.

Weapons of mass destruction include nuclear weapons, like atomic bombs, and chemical weapons, including the nerve agent Sarin or deadly biological weapons like Anthrax.

"Every assessment that we do has at heart our obligations to meet our international treaties and to protect the New Zealand public," Mr Elms said.

So how many post-graduate students are being investigated? According to Mr Elms, it's a "small number".

"I would estimate that we deal with several cases each year where a real risk exists," he said.

Other agencies help INZ in inquiries like this.

"The SIS would definitely be involved because it is tasked with helping agencies like Immigration with counter proliferation issues," former Green Party foreign affairs spokesperson Keith Locke said.

The SIS told Newshub it has a well-established role in respect of immigration matters, and "it supports the Department of Internal Affairs and Immigration NZ through security screening of individuals applying for citizenship and some visas".

Bill Gates put his mouth on the line a few years ago, drinking water from a sewage purifying plant.

And it's Mr Gates' money, along with another Government research institute, that's helped fund the research that INZ is investigating.

In addition, it was the university - not the student - that suggested the topic which has attracted so much scrutiny.
"The most ludicrous thing is he has to sit and wait for nine months or more for Immigration to make any decisions on his visas," Mr McClymont said.
Mr Elms said that if that takes a long time "we make no apologies for that" - so a stand-off over a suspect student may drag on for some time yet.

Terrorism response tested in national multi-agency exercise

Source: https://www.gov.uk/government/news/terrorism-response-tested-in-national-multi-agency-exercise

Nov 08 – The emergency services, other public services, and the government this week undertook a three-day exercise to rehearse their response to a major terrorist attack.

The simulated incident, which involved live activity in **Westcott, Buckinghamshire**, on Tuesday tested the multi-agency approach to responding to an attack involving hazardous materials. It was designed to ensure the right plans are in place to respond quickly and effectively.
The UK has the capability to respond to a range of chemical, biological, radiological and nuclear (CBRN) incidents. This week's exercise simulated a chemical incident.
Security Minister Ben Wallace, who chaired a meeting of the government's emergency committee COBR as part of the exercise, said:

- ✓ Exercises like these take place throughout the year to ensure that the emergency services and government are prepared to respond should an attack take place. They form one part of our comprehensive counter-terrorism strategy.
- ✓ We don't conduct these exercises to cause alarm. They should be a source of reassurance that we have plans in place to deal with the diverse range of threats we face.
- ✓ It is our ambition to stop attacks long before they happen and our police and security service have disrupted 13 Islamist and 4 extreme right wing plots since the beginning of 2017, however, anyone that has concerns or suspicions should report them to the police.

The exercise which involved more than 40 different agencies and more than 500 people is the largest of its kind to take place this year but is one of dozens of exercises organised annually.

Observers from police forces around the UK and representatives from governments around the world watched the exercise which showcased the UK's well-developed response to a terrorist incident.
Thames Valley Police Deputy Chief Constable John Campbell, who is the exercise director and also the national CBRN lead for policing, said:

- ✓ Sadly, our country is no stranger to terrorism and it is vital that we are prepared to respond if the worst happens. Exercising is a key part of our preparedness for any major incident and we test in extreme circumstances to ensure that our combined capabilities match whatever situation we could face.
- ✓ Day to day our efforts are focused on prevention and disruption of these threats but on the rare occasion that an attack happens we need to be able to minimise the impact, protect the public from further harm and provide the necessary help and support to those affected.

Tuesday's live activity test was followed by 2 days of workshops to assess the actions necessary in the days, weeks and months following an attack to ensure that those affected continue to receive the support they need.
News about terrorism or counter-terrorism exercises can be difficult for those that have been affected in the past. There is more information on the advice and support available on GOV.UK.

"Finis coronat opus"

Coronat Mask 2018: The largest European CBRN Field Exercise

By Anna Paternnosto

Source: http://nct-magazine.com/october18/finis-coronat-opus-coronat-mask-2018/

Last month, Germany led CORONAT MASK 2018, a training exercise that took place from the 14th to the 27th of September. The extensive multinational exercise brought together 14 allied nations and over 1300 personnel, making it the largest CBRN defense exercise to take place within the EU to date. Due to the increased interest in CBRN defense on a global scale, NATO members have made significant contributions to the development of these annual exercises. CORONAT MASK allowed participating states to train their CBRN capabilities across a wide array of exercises in different CBRN scenarios.

CORONAT MASK is part of the multinational initiative called Framework Nations Concept (FNC), which was introduced to NATO in 2013 by Germany. Within NATO, the FNC is one of the driving forces of multinational defense cooperation. Following the 2008 financial crisis, NATO Member States sought after ways in which forces could be more effective using an already available amount of resources. The FNC structure attempted to bring the topic of defense cooperation among NATO countries to the foreground in order to develop multinational units that are capable of sustaining and preserving military capabilities on a fixed budget. By providing a pragmatic approach to cooperation, states are able to cooperate in a highly agile format while simultaneously retaining their sovereignty. Since its inception, the FNC has been driven, funded and designed by the individual nations. As a result, participating states are able to hold training exercises that coincide with the changing security and defense climate. With these pillars in place, the opportunity to establish the CORONAT MASK exercise became available to NATO member states, in addition to non-member states.

EDITOR'S COMMENT: Some old questions on donning PPEs: (1) are there rubber gloves under surgical gloves? (2) Surgical gloves over or under the sleeves? (3) ChemTape necessary or not? (4) Are stripe and belt decontaminable?

This training exercise program was a Level One tactical FNC, Cluster Chemical Biological Radiological Nuclear (CBRN) Protection Field Training Exercise (FTX) and was conducted as a Non Art. 5 Crisis Response Operation in a complex, pointed environment. The activities simultaneously involved four different multinational CBRN Task Forces, deployed in Italy, Germany and Czech Republic. The four Task Forces practice in the same framing scenario under the sole direction of the CBRN Command of the German Army. The deployed task forces were evaluated by the NATO Joint CBRND Centre of Excellence in Vyskov, Czech Republic. The training was aimed at developing concrete operative skills that can be performed by a Combined Joint CBRN Defense Task Force—a specialized unit created year by year for NATO. The exercise CORONAT MASK was tailored to support future training opportunities, including major strategic exercises. Ultimately, the trainings aim to show that collectively, NATO's

collective CBRN defense mechanisms are capable of withstanding both small and large scale CBRN-related attacks in today's defense and security environment.

An example of how contributing nations benefit from such a multinational exercise was showcased on September 24th at the Joint Distinguished Visitors Day which took place at the Santa Severa Training Area (Civitavecchia) where both static and dynamic displays demonstrated the CBRN capabilities provided by the Task Force led by Italian 7th Regiment "NBC Cremona".

The 7th Regiment, a specialized and unique unit of the Army dedicated to CBRN defense tasks prepared its troops to organize a CBRN-related event on either Italian soil or abroad, in conjunction with teams from other NATO countries and other armed forces. The Italian Regiment is in the process of training its specialized units to operate in more complex and diversified scenarios. This project came into fruition on the 20th of September, when the Regiment established a Task Force (TF) in the Santa Severa firing range's training area. The TF had a "Regimental" level status and had specialized assets dedicated to CBRN identification, decontamination, sampling and various other complex systems, such as reconnaissance vehicle VBR-NBC Plus, Mobile CBRN Field Laboratories, and NBC decontamination stations. The TF thus provided a platform within Italy, where the 7th Regiment "NBC Cremona", together with a team from the German Army, specialized CBRN units from the Italian Air Force, EOD teams, a K9 team, Army Aviation and assets from the 232nd Regiment transmissions were able to train interoperability in a variety of different CBRN scenarios.

The national forces participating in CORONAT MASK 2018 had another opportunity to demonstrate their capabilities during the final part of the exercise in Bruchsal (Germany). On 26 September, during the Joint Distinguished Visitors Day, the multinational formations had the chance to demonstrate their achieved capabilities during both static and dynamic displays. The final day of the exercise confirmed the ability of the Cluster "CBRN Protection" to generate qualified CBRN formations on a multinational level, to train them and to coordinate large scale transnational exercises.

EDITOR'S COMMENTS: (1) Ordinary or chemical boots? [responder on the left] (2) Jacket has a flap over zipper but not used [same responder]; (3) Gloves over or under the sleeves [both in this snapshot]. I am not sure how tight the top of the jacket under the chin is.

CORONAT MASK 2018 was officially closed on the 27th of September during a ceremony led by the Chief of the Bundeswehr Joint Support Service, Lt. General Martin Schelleis. During the ceremony Lt. Gen. Schelleis stated: "There continues to be growing interest in CBRN defence globally, and very much so in our alliance and this has been reflected in the

media attention given to Exercise CORONAT MASK 2018…With Germany as the framework nation, NATO member contributions have been significant and I am delighted with the high degree of cooperation throughout, culminating in this excellent Distinguished Visitors Day". During the ceremony, Col. Henry Neumann, Commander of the Bundeswehr CBRN Defense Command underlined how the "Exercise CORONAT MASK 18 has allowed us to demonstrate a full spectrum of defensive CBRN capabilities across a variety of scenarios where this exercise has tested all participants in key CBRN disciplines and shown how capable our collective skills can be…" He concluded the closing ceremony stating that: ''We have reinforced on Exercise CORONAT MASK 2018 an already high degree of interoperability and continuously learned from each other through cross training. This exercise has been a huge success and we must build upon it."

***Anna Paternnosto** is Head of Government Affairs, IB Consultancy*

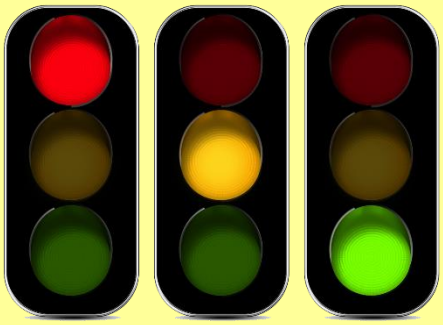
EDITOR'S COMMENT: This might be the largest CBRN defense exercise to take place within the EU to date but studying some photos the comments of the Editor of CBRNe World Gwyn Winfield following the June 2010 Exercise Milo held at East London on the way to London2012 Olympiad automatically came to my mind: *"Yet, If you cannot do it in exercises and get it right, there is little chance it can be done on the day! " B-"London! Good effort, but must try harder."*

Terrorism and Homeland Security: Hot, Warm and Cold Zones

By Chief Kevin McGee and Chris Reilly

Source: https://www.iafc.org/on-scene/on-scene-article/terrorism-and-homeland-security-hot-warm-and-cold-zones

Nov 08 – Picture this: You are dispatched to a motor-vehicle collision with pedestrians struck at 10:20 PM on a Friday evening in the heart of the thriving downtown area. Your unit is an ALS response unit, staffed with you and one other paramedic. You are only two minutes from the scene and are the first-arriving EMS unit. No other information is available for this dispatch.



As you arrive on scene, you observe a white minivan positioned through a guardrail, with what looks like bystanders rushing around. Your senses are heightened; there appears to be multiple casualties on a bridge over a major river. You radio back to dispatch your observations and request for additional units. What do you do next?

With your senses heightened, you don your department-issued ballistic PPE (vest and helmet). Imagine exiting your unit and being immediately barraged with wounded and their loved ones. One victim screams for your help to save her husband, who was struck and thrown from the bridge into the river below.

Off in the distance you hear the sound of gunshots. The gunshots are later found to be from police officers engaging terrorists, but at the time, there is no way to know who is shooting at whom.

You instantly recognize you are in the hot zone. You and your partner take defensive postures but quickly realize, from the number of injured and the large and growing gathering of bystanders, that there is no exit from the scene.

You and your partner have trained for this situation. You crouch back to back to create a 360-degree area of visibility while continuing triage. The only things to do is to treat the wounded, communicate your observations to dispatch, including the reported man over the bridge, and prepare the incoming units for the scene they are about to enter, including information for the boat crew for the river rescue.

This real-life scenario played out for the London Ambulance Service (LAS) on June 3, 2017.

These LAS paramedics demonstrated great courage and sound decision-making, concluding that

◈ Victims may direct violence toward them if they were to retreat from the hot zone.

- Viable victims will die if they place their own safety above the lives of their multiple severely injured patients.

This attack was one of five terrorist attacks that occurred in the United Kingdom in 2017, including the Westminster Bridge vehicle ramming and knife attack on March 22; 8 people were killed and 45 injured in this attack.

The London attack involved three terrorists who conducted a vehicle ramming attack across the span of London Bridge and into the Borough Market. After crashing, the terrorists switched to knife attacks through the Borough Market, randomly stabbing people in and around the pubs. These terrorists, wearing hoax suicide vests, taped knives to their hands so those knives wouldn't slip when they were covered with blood.

It was later found that their vehicle was laden with Molotov cocktails for fire-bombing the area. The fire-bombing was foiled after the vehicle jumped the curb and crashed through a massive wrought iron fence.

Operating within the Different Zones

The terms *hot, warm* and *cold zones* (some jurisdictions may refer to these zones as *red, yellow* and *green zones*) describe the degree of hazard.

The hot zone typically describes an IDLH environment; the warm and cold zones describe less-hazardous environments. Depending on the type of event, we may or may not train or be equipped to operate in the hot zone. Hazmat incidents, structure fires, motor-vehicle crashes and technical rescues require specialized training to operate within the hot zones. Conceivably, any response can and arguably should have hot-, warm- and cold-zone designations to describe the possible level of hazard, controlled entry and associated SOPs.

Consider the scenario above and how quickly an MVC-response turned into a scenario with medics in the hot zone of a vehicle-ramming attack and possibly an active-shooter event, which may have risen to a complex, coordinated terrorist attack. The United Kingdom refers to these types of attacks as *marauding terrorist firearm attacks* (MTFA), that include their own SOPs.

What's to say a terrorist won't jump out of the traumatized crowd or from the crashed minivan to unleash the Molotov cocktails they had hidden in their vehicle, targeting the first responders arriving on scene.

Or, worse yet, what if the minivan was a vehicle-borne improvised explosive device with enough explosives to level a portion of the city.

Now, consider in these three different scenarios the different-sized hot zones. In these scenarios, how do responding units define the cold-, warm- and hot-zone perimeters? Who makes the decision?

Do your department's policies and procedures for responding to these different scenarios include the identification of actions first responders should be trained to perform when they unknowingly find themselves within the hot zone of a high-risk event or MTFA? Have you trained for these types of scenarios? Have you incorporated members from law enforcement, emergency management and your public-safety answering point?

Preincident preparation that includes the development of policies and procedures for a range of terrorist tactics, PPE and other high-threat response equipment, along with interagency training, is critical to successfully executing the tactics needed when a situation arises. Unfortunately, agency leaders no longer have the luxury of ignoring the possibility of a terrorist act or active-shooter incident in their jurisdiction.

These low-probability, high-impact events are occurring everywhere with greater frequency and no regard for the size or status of the jurisdiction. As first responders and leaders of our departments, we are left with the duty to respond to these types of incidents whenever they occur, ensuring our people and communities are protected by mitigating the potentially devastating results.

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The Jihadist CBRN Threat

By Scott Stewart
Source: https://worldview.stratfor.com/article/jihadist-cbrn-threat

Feb 10 – In an interview aired Feb. 7 on CNN, U.S. Secretary of State Hillary Clinton said she considers weapons of mass destruction (WMD) in the hands of an international terrorist group to be the largest threat faced by the United States today, even bigger than the threat posed by a nuclear-armed Iran. "The biggest nightmare that many of us have is that one of these terrorist member organizations within this syndicate of terror will get their hands on a weapon of mass destruction," Clinton said. In referring to the al Qaeda network, Clinton noted that it is "unfortunately a very committed, clever, diabolical group of terrorists who are always looking for weaknesses and openings." Clinton's comments came on the heels of a presentation by U.S. Director of National Intelligence Dennis Blair to the Senate Select Committee on Intelligence. In his Annual Threat Assessment of the U.S. Intelligence Community on Feb. 2, Blair noted that, although counterterrorism actions have dealt a significant blow to al Qaeda's near-term efforts to develop a sophisticated chemical, biological, radiological and nuclear (CBRN) attack capability, the U.S. intelligence community judges that the group is still intent on acquiring the capability. Blair also stated the obvious when he said that if al Qaeda were able to develop CBRN weapons and had the operatives to use them it would do so. All this talk about al Qaeda and WMD has caused a number of STRATFOR clients, readers and even friends and family members to ask for our assessment of this very worrisome issue. So, we thought it would be an opportune time to update our readers on the topic.

Realities Shaping the Playing Field

To begin a discussion of jihadists and WMD, it is first important to briefly re-cap STRATFOR's assessment of al Qaeda and the broader jihadist movement. It is our assessment that the first layer of the jihadist movement, the al Qaeda core group, has been hit heavily by the efforts of the United States and its allies in the aftermath of 9/11. Due to the military, financial, diplomatic, intelligence and law enforcement operations conducted against the core group, it is now a far smaller and more insular organization than it once was and is largely confined geographically to the Afghan-Pakistani border. Having lost much of its operational ability, the al Qaeda core is now involved primarily in the ideological struggle (which it seems to be losing at the present time). The second layer in the jihadist realm consists of regional terrorist or insurgent groups that have adopted the jihadist ideology. Some of these have taken up the al Qaeda banner, such as al Qaeda in the Islamic Maghreb (AQIM) and al Qaeda in the Arabian Peninsula (AQAP), and we refer to them as al Qaeda franchise groups. Other groups may adopt some or all of al Qaeda's jihadist ideology and cooperate with the core group, but they will maintain their independence for a variety of reasons. In recent years, these groups have assumed the mantle of leadership for the jihadist movement on the physical battlefield. The third (and broadest) component of the jihadist movement is composed of grassroots jihadists. These are individuals or small groups of people located across the globe who are inspired by the al Qaeda core and the franchise groups but who may have little or no actual connection to these groups. By their very nature, the grassroots jihadists are the hardest of these three components to identify and target and, as a result, are able to move with more freedom than members of the al Qaeda core or the regional franchises. As long as the ideology of jihadism exists, and jihadists at any of these three layers embrace the philosophy of attacking the "far enemy," there will be a threat of attacks by jihadists against the United States. The types of attacks they are capable of conducting, however, depend on their intent and capability. Generally speaking, the capability of the operatives associated with the al Qaeda core is the highest and the capability of grassroots operatives is the lowest. Certainly, many grassroots operatives think big and would love to conduct a large, devastating

attack, but their grandiose plans often come to naught for lack of experience and terrorist tradecraft. Although the American public has long anticipated a follow-on attack to 9/11, most of the attacks directed against the United States since 9/11 have failed. In addition to incompetence and poor tradecraft, one of the contributing factors to these failures is the nature of the targets. Many strategic targets are large and well-constructed, and therefore hard to destroy. In other words, just because a strategic target is attacked does not mean the attack has succeeded. Indeed, many such attacks have failed. Even when a plot against a strategic target is successfully executed, it might not produce the desired results and would therefore be considered a failure. For example, the detonation of a massive truck bomb in a parking garage of the World Trade Center in 1993 failed to achieve the jihadists' aims of toppling the two towers and producing mass casualties, or of causing a major U.S. foreign policy shift. Many strategic targets, such as embassies, are well protected against conventional attacks. Their large standoff distances and physical security measures (like substantial perimeter walls) protect them from vehicle-borne improvised explosive devices (VBIEDs), while these and other security measures make it difficult to cause significant damage to them using smaller IEDs or small arms. To overcome these obstacles, jihadists have been forced to look at alternate means of attack. Al Qaeda's use of large, fully fueled passenger aircraft as guided missiles is a great example of this, though it must be noted that once that tactic became known, it ceased to be viable (as United Airlines Flight 93 demonstrated). Today, there is little chance that a flight crew and passengers of an aircraft would allow it to be seized by a small group of hijackers.

CBRN

Al Qaeda has long plotted ways to overcome security measures and launch strategic strikes with CBRN weapons. In addition to the many public pronouncements the group has made about its desire to obtain and use such weapons, we know al Qaeda has developed crude methods for producing chemical and biological weapons and included such tactics in its encyclopedia of jihad and terrorist training courses. However, as STRATFOR has repeatedly pointed out, chemical and biological weapons are expensive and difficult to use and have proved to be largely ineffective in real-world applications. A comparison of the Aum Shinrikyo chemical and biological attacks in Tokyo with the March 2004 jihadist attacks in Madrid clearly demonstrates that explosives are far cheaper, easier to use and more effective in killing people. The failure by jihadists in Iraq to use chlorine effectively in their attacks also underscores the problem of using improvised chemical weapons. These problems were also apparent to the al Qaeda leadership, which scrapped a plot to use improvised chemical weapons in the New York subway system due to concerns that the weapons would be ineffective. The pressure jihadist groups are under would also make it very difficult for them to develop a chemical or biological weapons facility, even if they possessed the financial and human resources required to launch such a program. Of course, it is not unimaginable for al Qaeda or other jihadists to think outside the box and attack a chemical storage site or tanker car, or use such bulk chemicals to attack another target — much as the 9/11 hijackers used passenger- and fuel-laden aircraft to attack their targets. However, while an attack using deadly bulk chemicals could kill many people, most would be evacuated before they could receive a lethal dose, as past industrial accidents have demonstrated. Therefore, such an attack would be messy but would be more likely to cause mass panic and evacuations than mass casualties. Still, it would be a far more substantial attack than the previous subway plot using improvised chemical weapons. A similar case can be made against the effectiveness of an attack involving a radiological dispersion device (RDD), sometimes called a "dirty bomb." While RDDs are easy to deploy — so simple that we are surprised one has not already been used within the United States — it is very difficult to immediately administer a lethal dose of radiation to victims. Therefore, the "bomb" part of a dirty bomb would likely kill more people than the device's "dirty," or radiological, component. However, use of an RDD would result in mass panic and evacuations and

could require a lengthy and expensive decontamination process. Because of this, we refer to RDDs as "weapons of mass disruption" rather than weapons of mass destruction. The bottom line is that a nuclear device is the only element of the CBRN threat that can be relied upon to create mass casualties and guarantee the success of a strategic strike. However, a nuclear device is also by far the hardest of the CBRN weapons to obtain or manufacture and therefore the least likely to be used. Given the pressure that al Qaeda and its regional franchise groups are under in the post-9/11 world, it is simply not possible for them to begin a weapons program intended to design and build a nuclear device. Unlike countries such as North Korea and Iran, jihadists simply do not have the resources or the secure territory on which to build such facilities. Even with money and secure facilities, it is still a long and difficult endeavor to create a nuclear weapons program — as is evident in the efforts of North Korea and Iran. This means that jihadists would be forced to obtain an entire nuclear device from a country that did have a nuclear weapons program, or fissile material such as highly enriched uranium (enriched to 80 percent or higher of the fissile isotope U-235) that they could use to build a crude, gun-type nuclear weapon. Indeed, we know from al Qaeda defectors like Jamal al-Fadl that al Qaeda attempted to obtain fissile material as long ago as 1994. The organization was duped by some of the scammers who were roaming the globe attempting to sell bogus material following the collapse of the Soviet Union. Several U.S. government agencies were duped in similar scams. Black-market sales of military-grade radioactive materials spiked following the collapse of the Soviet Union as criminal elements descended on abandoned Russian nuclear facilities in search of a quick buck. In subsequent years the Russian government, in conjunction with various international agencies and the U.S. government, clamped down on the sale of Soviet-era radioactive materials. U.S. aid to Russia in the form of so-called "nonproliferation assistance" — money paid to destroy or adequately secure such nuclear and radiological material — increased dramatically following 9/11. In 2009, the U.S. Congress authorized around $1.2 billion for U.S. programs that provide nonproliferation and threat reduction assistance to the former Soviet Union. Such programs have resulted in a considerable amount of fissile material being taken off the market and removed from vulnerable storage sites, and have made it far harder to obtain fissile material today than it was in 1990 or even 2000. Another complication to consider is that jihadists are not the only parties who are in the market for nuclear weapons or fissile material. In addition to counterproliferation programs that offer to pay money for fissile materials, countries like Iran and North Korea would likely be quick to purchase such items, and they have the resources to do so, unlike jihadist groups, which are financially strapped. Some commentators have said they believe al Qaeda has had nuclear weapons for years but has been waiting to activate them at the "right time." Others claim these weapons are pre-positioned inside U.S. cities. STRATFOR's position is that if al Qaeda had such weapons prior to 9/11, it would have used them instead of conducting the airline attack. Even if the group had succeeded in obtaining a nuclear weapon after 9/11, it would have used it by now rather than simply sitting on it and running the risk of it being seized. There is also the question of state assistance to terrorist groups, but the actions of the jihadist movement since 9/11 have served to steadily turn once quietly supportive (or ambivalent) states against the movement. Saudi Arabia declared war on jihadists in 2003 and countries such as Yemen, Pakistan and Indonesia have recently gone on the offensive. Indeed, in his Feb. 2 presentation to the Senate committee, Blair said: "We do not know of any states deliberately providing CBRN assistance to terrorist groups. Although terrorist groups and individuals have sought out scientists with applicable expertise, we have no corroborated reporting that indicates such experts have advanced terrorist CBRN capability." Blair also noted that, "We and many in the international community are especially concerned about the potential for terrorists to gain access to WMD-related materials or technology." Clearly, any state that considered providing WMD to jihadists would have to worry about blow-back from countries that would be targeted by that material (such as the United States

and Russia). With jihadists having declared war on the governments of countries in which they operate, officials in a position to provide CBRN to those jihadists would also have ample reason to be concerned about the materials being used against their own governments. Efforts to counter the proliferation of nuclear materials and technology will certainly continue for the foreseeable future, especially efforts to ensure that governments with nuclear weapons programs do not provide weapons or fissile material to jihadist groups. While the chance of such a terrorist attack is remote, the devastation one could cause means that it must be carefully guarded against.

North Korea's other weapons of mass destruction

By Alexandra Bell and Abby Pokraka

Source: https://thebulletin.org/2018/08/north-koreas-other-weapons-of-mass-destruction/

Inspectors from the Organization of the Prohibition of Chemical Weapons walking in the desert in Libya, October 2010. The same organization could play a role in North Korea. Image courtesy of OPCW, under Creative Commons License

Aug 2018 – Achieving the final, fully verified denuclearization of North Korea will require the most complicated and rigorous security agreement ever negotiated. That means that the Trump Administration has an unprecedented challenge ahead of it, before even getting to other threats like North Korea's conventional forces and ballistic missile program. Adding to the complications are the rumored North Korean chemical and biological weapons programs. The Trump Administration is right to focus on the North Korean nuclear program first, but it cannot ignore the chemical and biological threats for long, as they too present a serious large threat to the region. The political, legal, and technical obstacles to capturing these programs under any agreement are certainly manifold, but not insurmountable. There are previous programs and efforts that can provide a blueprint.

While the exact nature of Pyongyang's chemical and biological weapons programs are unknown, the Kim regime hasn't exactly been trying to tamp down speculation about his possible assets. In the winter of 2017, Kim Jong-un's half-brother, Kim Jong-nam, was attacked in the Kuala Lumpur airport in Malaysia by two women who smeared his face with a cloth. Unbeknownst to the women, the cloth was covered in VX, the deadliest nerve agent

ever created. Even a fraction of a drop absorbed through the skin can fatally affect the nervous system. Speculation abounds that Kim Jong-un ordered the attack. This incident may well have been a message about his capabilities; after all, there are many subtler ways to assassinate someone, a fact likely not lost on Chairman Kim.

US intelligence assessments from 2002 found North Korea possessed a sizable stockpile of chemical weapons. Officials believe there are **six major storage sites** and weapons reserves, of at least **180-to-250 tons of stockpiled chemical weapons.** Bulk quantities of nerve, blister, choking, and blood agents could be delivered by ballistic missiles, conventional artillery, or aircraft. There are also at least **eight industrial facilities** that can produce chemical agents that could be used to support a chemical weapons program. North Korea is **not a signatory** to the nearly-universal Chemical Weapons Convention which bans the possession, production, stockpiling, and use of chemical weapons.

North Korea's biological weapons program has reportedly been around since the 1960s. It is believed North Korea's infrastructure **could produce and weaponize** biological agents such as anthrax, cholera, and the plague. Some assessments have suggested that North Korea might consider the use of bioweapons in a conflict. Significantly, North Korea acceded to the Biological Weapons Convention but has not made its biological research and development activities public.

To reduce and eliminate the threats posed by these programs, the United States, working with allies and regional partners, needs to establish the full size and scope of North Korea's weapons stockpile and infrastructure. The next steps include full accession to and implementation of applicable international agreements; agreement on a plan for dismantlement of the programs; the establishment of acceptable verification and monitoring methods; and tools to aid implementation.

Fortunately, the United States has experience in dealing with the rollback of chemical and biological weapons programs. The most successful example is the Cooperative Threat Reduction Program, or CTR. Created after the Cold War to destroy Russian chemical and biological agents, and convert infrastructure and personnel into civilian roles, CTR implementation can provide lessons for negotiations with the North Koreans. The program's creators, former Senators Sam Nunn and Richard Lugar, have already called for the Trump Administration to look into how the CTR model can be applied more broadly in North Korea.

We have an even more recent example, in the form of the international effort to remove and destroy Syria's declared chemical weapon stockpile. On September 27, 2013, the Chemical Weapons Convention's implementing body, the Organization for the Prohibition of Chemical Weapons, announced that Syria would accede to the treaty and be bound by its commitments. With that legal mandate in place, the United States, Russia, and a community of nations managed to safely remove and destroy 1,300 metric tons of chemical weapons and their precursors from the middle of a war zone. That stockpile was a threat to every man, woman, and child in the region.

Unfortunately, undeclared stocks remain in Syria and continue to be used. It is a stark reminder that efforts to prevent the spread and use of weapons of mass destruction are never really finished. Each effort can, however, inform and help improve the next.

Even with challenges like undeclared stocks, dealing with North Korea's chemical weapons program is aided by the fact that the Chemical Weapons Convention has a formidable compliance regime. North Korean accession to the treaty should be a goal. Once it becomes a party to the agreement, Pyongyang would be subject to the kind of oversight that can help ensure that its chemical weapons program is indeed, and will remain, shuttered.

Unfortunately, **the Biological Weapons Convention—which, remember, is the agreement that North Korea *did* sign**—can provide no such assurance. In order to verify that the North Koreans are not producing or stockpiling biological weapons, US negotiators would need to build an acceptable framework for inspections of all suspected facilities, including those of a dual-use nature. This will require some creative technical thinking and again, a long look at how CTR-era practices can be applied in North Korea.

To be sure, Kim Jong-un's nuclear weapons program is the most pressing threat to the region and the world. But given the unimaginable havoc and destruction that could be unleashed in either a chemical and biological attack, the Trump Administration should not lose sight of what should also be high on the list of priorities.

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Abby Pokraka graduated from the University of New Hampshire in December 2017 with a BA in Political Science and a minor in Security Studies. She is currently enrolled in a one-year accelerated master's program at the University of New Hampshire, studying Political Science. Her interests include nuclear weapons, non-proliferation, and American nuclear policy.

Testimony CT-486: Assessing North Korea's Chemical and Biological Weapons Capabilities and Prioritizing Countermeasures

By John V. Parachini

Source: https://www.rand.org/content/dam/rand/pubs/testimonies/CT400/CT486/RAND_CT486.pdf

Testimony presented before the House Foreign Affairs Committee, Subcommittee on Terrorism, Nonproliferation and Trade, and the Subcommittee on Asia and the Pacific on January 17, 2018.

CBRN Response Simulator

Source: http://www.prometech.eu/products/cbrn-response-simulator/

First responders face huge challenges while responding to CBRN incidents. To be able to overcome these challenges they need to conduct regular training with CBRN scenarios. But how can first responders realistically train for scenarios that deal with toxic substances? Live-agent training is expensive and difficult to organize. So what would an ideal CBRN training environment look like? Firstly, the CBRN exercise should be realistic and dynamic. An exercise should be based on a simulated threat that is calculated in real-time, while allowing for flexibility with regard to location and scenario setup. Secondly, train as you fight. And finally, trainees should be focused on performing their duties and should not be concerned with the training system. A training tool is needed that is easy to set up and is capable of simulating threats in the real world while being unobtrusive in use. This is the Prometech CBRN Response Simulator.

Prometech uses an innovative approach to tackle the aforementioned issues. The REALM platform models CBRN sensors on mobile devices. Off-the-shelf proven technology is used – such as tablets/smartphones and their built-in positioning and networking capabilities – to organize exercises. One such mobile device can be used to simulate different types and brands of sensors, without requiring additional (and costly) hardware. To make the training exercise realistic, the actual threat must be properly simulated. Prometech accomplishes this by modeling a CBRN source, which produces an agent during the exercise. An instructor can determine the location and size of the source and is

able to change these properties on-the-fly. The training tool will let the agent disperse over the training area, while taking into account local concentration fluctuations, urban terrain and heavy gasses (when required).
Using the location of the first responders and the simulated CBRN source, it is possible to calculate what concentration they encounter during the exercise. The sensor simulated on the mobile device carried by field users will display this concentration reading. The first responder can then perform his duties based on these sensor readings. Furthermore it is possible to predict whether the first responder (or civilians in the training area) would get toxic effects because of the dose of agent he or she encountered during the training. The mobile device can display what his physical well-being should be during the training. The training tool incorporates GIS-based instructor and debriefing tools with playback capability.
This is a first step towards the development of a true augmented reality training simulator. By using augmented reality, the simulation is able to manipulate the trainee's perception of reality through the use of hand-held or wearable technology. For example, by wearing a heads-up display (HUD) the trainee would not only see his environment, but also another 3D reality projected on top of it. This is the future of disaster management training.

Russia Uses These Crazy Antique Jet Engine-Equipped Trucks To Blast Away Chemical Agents

Source (video): http://www.thedrive.com/the-war-zone/24906/russia-uses-these-crazy-antique-jet-engine-equipped-trucks-to-blast-away-chemical-agents

Nov 13 – Russia's Nuclear, Biological and Chemical Protection Troops, also known collectively by the acronym RKhB, are celebrating the 100th anniversary of their formation in 2018 and the country's Ministry of Defense has recently released a video montage of these units in action to mark the occasion. Among the more unusual systems on display is a truck with a jet engine mounted in the back, called the TMS-65U, which crews can use to clean vehicles coated in chemical agents or create massive smokescreens to hide friendly movements on the battlefield.
The RKhB traces its history to 1918 and the formation of chemical warfare units in what was then the fledgling Soviet Union. Today, these elements are focused largely on identifying nuclear, biological, and chemical hazards and decontaminating on friendly forces and impacted areas. They're on hand to provide similar services after any terrorist attack involving weapons of mass destruction or man-made or natural disasters involving similar threats.

As is the case with chemical units in other modern militaries, including that those in the United States, they are responsible for the deployment of large smokescreens during major combat operations, as well. Historically, flamethrowers have also been the provenance of military chemical warfare elements and in Russia, the RKhB is still responsible for the TOS-1 self-propelled thermobaric artillery rocket system and the man-portable RPO-series of thermobaric rocket launchers. The Russians define both of these weapons as "flamethrowers," despite them having virtually nothing in common with traditional weapons of that type.

When it comes to cleaning down vehicles and personnel who might be covered in chemical agents, an issue you can read about in far more depth here, Russia has various options, including truck-mounted and individual spray systems that personnel can use to wipe away hazardous materials. They also have the Soviet-era TMS-65U.

"TMS" in this case stands for "*teplovoi mashinii spetzialnoi*," which literally translates as "special heat engine." There's probably no better way to describe the system, which consists of a Ural-375 6x6 4.5-ton truck with a modified Klimov VK-1 turbojet engine – first used in the MiG-15 fighter jet in 1947 – mounted inside a turret on the rear of the vehicle.

The complete system feeds decontamination fluid into the exhaust to rapidly clean vehicles or structures. An operator in turret can maneuver the jet engine left and right and up and down in order to best aim the blast at the intended object.

The entire process is far faster than personnel using hand-held hoses or brushes to scrub away potential chemical weapons. A common procedure involves setting up TMS-65Us along a path as a sort of impromptu battlefield car wash, quickly cleaning vehicles in turn as they pass through.

It's certainly a time-efficient system, but one has to wonder how much fuel is required to run the aging VK-1 for extended periods of time. The vehicle itself carries less than 240 gallons of jet fuel for the engine. The TMS-65U also has a secondary role as a smokescreen vehicle. Crews can fill the same tank that holds the decontamination solution with a smoke-creating liquid, such as fuel oil, instead. The hot exhaust gasses then turn this fluid into a thick white smoke that can obscure friendly forces, at least to the naked eye and certain visual sensors. Unless there are specialized additives, this would not be able to prevent hostile forces from observing those movements using infrared optics.

But perhaps the most interesting thing about the vehicle is the continuing use of the VK-1. This jet engine is an absolutely antique design and is itself a derivative of the Rolls-Royce Nene, which first ran in 1944. In addition to the MiG-15, the Klimov engines also powered the MiG-17 fighter jet and the Il-28 light bomber.

As the Soviet Union began to remove those aircraft from service, it found itself with a surplus of VK-1s and the production lines to continue making spare parts. The TMS-65s, and

improved TMS-65Us, were just some of a slew of military and civilian vehicles, along with specialized railroad cars, that continued to employ the engine in non-traditional roles.
Many of these other vehicles, such as ones that use their jet engines to rapidly clear snow from aircraft at airports or from railroad tracks, are or were still in operation until very recently – an impressive service life for an engine design more than seven decades old. The Russian military even has versions that use the VK-1's exhaust to blast away potentially hazardous debris from airfields and the deck of its lone aircraft carrier, the *Admiral Kuznetsov*.

Though uncommon, there are other examples of jets in use on the ground in novel roles around the world, including snow removal and fire-fighting. Few, though, recycle old engines to the degree the Soviets did with the TMS-65U and other vehicles.
The Hungarians, however, did use the Klimov engine as a truck-mounted fire-fighting apparatus to choke off huge blazes, especially burning oil wells. Hungary also developed a larger system, called Big Wind, using modified World War II-era T-34 tank chassis equipped with a turret packing a pair of Tumansky turbojets taken from retired MiG-21 fighter jets. Both the VK-1-equipped trucks and the fire-fighting tanks went to Kuwait in 1991 to help put out oil field fires that Iraqi dictator Saddam Hussein's forces had set as they fled the country in the face of a U.S.-led coalition.
When it comes to the TMS-65U, there is no indication that Russia intends to replace these vehicles any time soon. They clearly have a firm role within the Russian military's chemical warfare defense doctrine. But there may come a time when the Russians decide the VK-1s are finally too dated and inefficient to keep using in this and other ground-based roles.

Preventing chemical weapons as sciences advance and converge

Source: http://www.homelandsecuritynewswire.com/dr20181116-preventing-chemical-weapons-as-sciences-advance-and-converge

Nov 16 – Revolutionary advances in science and technology are threatening the ability of the Chemical Weapons Convention to prevent the development, possession, and potential use of chemical weapons. Scientists warn of this increased chemical weapons risk, which is the result of rapid scientific change.
Alarming examples of the dangers from chemical weapons have been seen recently in the use of industrial chemicals and the nerve agent sarin against civilians in Syria, and in the

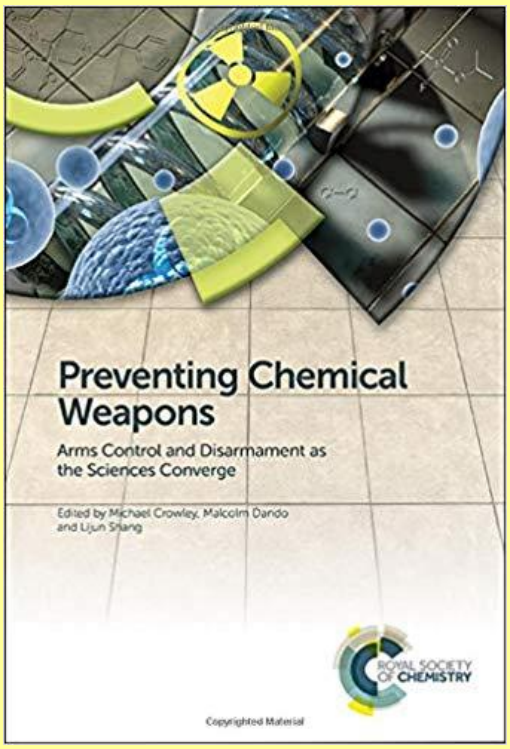
targeted assassination operations using VX nerve agent in Malaysia and novichok nerve agent in the U.K. The threat of future chemical attacks is exacerbated by the current unstable international system and also by the potential misuse of developments in science and technology. The States Parties to the Chemical Weapons Convention gathering in the Hague on 21st November for their 4th Review Conference must ensure the prohibition regime is fit to meet these challenges.

Bradford says that this argument is set out by three academics from the University of Bradford in a Policy Forum article titled "Preventing chemical weapons as sciences converge" in the present issue of *Science*. In the article Dr. Michael Crowley, Dr. Lijun Shang, and Professor Malcolm Dando address key scientific aspects of the issues that the Conference will have to address to prevent the re-emergence of chemical weapons during this period of very rapid scientific change.

Crowley said: "The unstable international security environment and the changing nature of armed conflict could fuel a desire by certain States to retain and use existing chemical weapons, as well as increase interest in creating new weapons. These groups may well seek to harness the revolutionary advances in the chemical and life sciences and associated disciplines such as nanoscience and neuroscience for their malign ends. The international governmental and scientific communities must collectively review, update and strengthen the global measures in place to protect us all from chemical attack."

Dando said**: "One area of growing concern has been State interest in the aerosolized application of a range of toxic chemical agents potentially including pharmaceutical chemicals, bioregulators, and toxins that attack the central nervous system of those targeted. Ostensibly promoted for use in extreme law enforcement scenarios, such as large scale hostage situations, to incapacitate an individual or a group rapidly and completely without causing permanent disability or fatality, their use in practice poses grave dangers to health and well-being of all those affected. Furthermore, research and development in this area potentially opens up the door to new forms of chemical weapon and warfare."**

Shang said "It is important to emphasize that scientists' work on the detection, protection and treatment of chemical weapons is important in the overall effort to prevent the misuse of toxic chemicals, but scientists also need to be more aware of the possible misuse of their benignly-intended work."



In their article the authors conclude that chemical and life scientists, health professionals and wider informed activist civil society need to play their part in protecting the prohibition of poison and chemical weapons. They must work with States to build effective and responsive measures to ensure that the rapid scientific and technological advances are safeguarded from hostile use and are instead employed for the benefit of all.

In June 2018, the Royal Society of Chemistry published a book by the three authors of the *Science* article. The book — **Preventing Chemical Weapons: Arms Control and Disarmament as the Sciences Converge** — highlights the increasingly diverse threats of the hostile use of toxic chemicals, by an ever broader range of State and non-State actors, some employing existing capabilities, others potentially being facilitated by rapid advances in the life and chemical sciences. Consequently the authors urge the international community to use the opportunity of the 4th Review Conference in November to strengthen implementation of the Chemical Weapons Convention (CWC) to meet these challenges.

Publication of the book came in the wake of a Special Session of the Conference of States Parties to the CWC which met in late June to attempt to address the unprecedented challenges to the integrity of the Convention posed by the use of chemical weapons in Syria, Iraq, Malaysia and the UK.

makes the case that the chemical and life sciences, and associated disciplines, such as neuroscience and nanotechnology, are in the midst of a period of rapid and revolutionary

development and convergence. And while this will bring societal benefits, it will also have potentially malign applications.
The book analyses these transformational advances and the significant challenges the international governmental and scientific communities face to ensure they are safeguarded from hostile use, and are not harnessed in the development of chemical weapons.
The authors examine the current capabilities, limitations and failings of the existing international arms control and disarmament architecture – notably the CWC and its implementing body, the Organisation for the Prohibition of Chemical Weapons (OPCW) – in preventing the development and use of chemical weapons. And they see a major opportunity for concerted global action in November this year when all 193 OPCW Member States gather at the CWC Review Conference in The Hague. However achieving progress here will be highly challenging given the open and deep disagreements between Member States on fundamental issues most notably how to respond to the continuing chemical weapons attacks in Syria. Recognising the current discord within the OPCW, and employing an innovative Holistic Arms Control approach, the book urges the global governmental and non-governmental communities to explore the full range of international law, international agreements and regulatory mechanisms potentially applicable to weapons employing toxic chemical agents, in order to develop recommendations for more effective routes to combat their proliferation and misuse.

— Read more in Michael Crowly et al., "Preventing chemical weapons as sciences converge," Science 362, no. 6416 (16 November 2018) (DOI: 10.1126/science.aav5129); and Michael Crowly et al., Preventing Chemical Weapons: Arms Control and Disarmament as the Sciences Converge (Royal Society of Chemistry; 1 edition, 26 June 2018).

CBRN Security & Safety Technologies Market Development with Focus On Europe 2017 To 2022

Nov 15 – This CBRN Security & Safety Technologies & Market Focus on Europe 2017-2022 report is a valuable resource for executives with interests in the industry. It has been explicitly customized for industry and decision-makers to identify business opportunities, emerging technologies, market trends and risks, as well as to benchmark business plans.
The "CBRN Security & Safety Technologies & Market Focus on Europe 2017-2022" report is the most comprehensive review of the market available today. It provides a detailed and reasoned roadmap of this growing market.

The Europe CBRN Security & Safety Technologies Market – 2017-2022 report forecasts that this industry's revenues will grow at a 2015-2022 CAGR of 9% Driven by Bio-Chem Terror Threats.

Avail a sample copy:
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Countries Covered in the report – UK, France, Netherlands, Belgium, Sweden, Norway, Finland, Denmark, Germany, Austria, Switzerland, Italy, Spain, Poland, Hungary, Czech Republic, Russia, Rest of Europe.

These Chemical, Biological Radiological and Nuclear risks have been highlighted as follows:
At the 2017 Munich security conference, Bill Gates warned that new genetic engineering methods can produce biological agents and Tens of millions could be killed by bio-terrorism. Whether it occurs by a quirk of nature or at the hand of a terrorist, epidemiologists say a fast-moving airborne pathogen could kill more than 30 million people in less than a year. And they say there is a reasonable probability the world will experience such an outbreak in the

next 10 to 15 years.US and UK intelligence agencies have said that the Islamic State has been trying to develop biological weapons in its bases in Syria and Iraq.
The German Federal Criminal Police Office (BKA) has announced in January 2017 that Muslim terrorists are planning to use chemical weapons to poison drinking water supply systems in Germany. . On January 2017, British Minister of State for Security Ben Wallace warned that ISIS has no moral qualms about carrying out a mass casualty attack with chemical weapons in Britain, and pointed to a December 2016 Europol report warning that ISIS may use chemical and biological (CB) weapons against European targets.

Detailed CBRN Defense market analysis:
- CBRN Security Market drivers & inhibitors.
- Business opportunities.
- SWOT analysis.
- Competitive analysis.
- Europe CBRN defense business environment.
- The 2015-2022 CBRN security and safety market

The report includes the following appendices:
- Appendix A: European Homeland Security & Public Safety Related Product Standards.
- Appendix B: The European Union Challenges and Outlook.
- Appendix C: CBRN Terror.
- Appendix D: CBRN Decontamination Technologies.
- Appendix E: Europe Migration Crisis & Border Security.
- Appendix F: Abbreviations.

Avail complete report of this research with TOC and List of Figures at
https://www.marketinsightsreports.com/reports/0810823/cbrn-security-safety-technologies-market-focus-on-europe-2017-to-2022?source=browselivenews&Mode=34

Questions answered in this 223-page report include:
- What will the CBRN security market size is in 2017-2022?
- What are the main CBRN security & safety technologies trends?
- Where and what are the CBRN security & safety technologies market opportunities?
- What are the CBRN securities & safety technologies market drivers and inhibitors?
- What are the challenges to the CBRN security & safety technologies market?

Quick, precise method for detecting chemical warfare agents

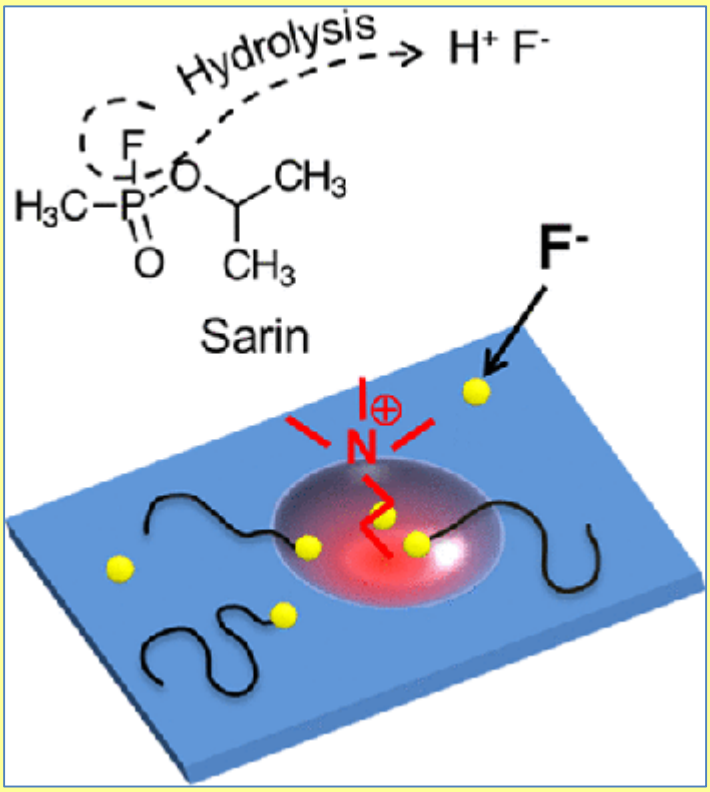
Source: http://www.homelandsecuritynewswire.com/dr20181126-quick-precise-method-for-detecting-chemical-warfare-agents

Nov 26 – Sarin is a man-made nerve agent that can spread as a gas or liquid. According to the Center for Disease control, exposure to large doses will over-stimulate glands and muscles, and can lead to loss of consciousness or respiratory failure. Even small doses can cause a long list of distressing and dangerous symptoms.
“Low-level nerve agent exposure leads to ambiguous signs and symptoms that cannot be easily discriminated from other conditions, which may result in a delay in treatment and permanent damage,” said Paul Braun, professor of materials science and engineering, and director of the Illinois Materials Research Laboratory. “If trace amounts can be detected quickly, you can prevent permanent damage to human health.”
“There are sophisticated sensors available, but they are large and expensive, and thus some individuals may be exposed to sarin without knowing it, and that’s too late,” he said. “Current

miniature sensors only shown the presence of a toxin, not the amount of exposure." Existing small sensors also may not be sufficiently sensitive to provide adequate protection.

U-I says that the technology established in this new paper built on previous work from the Braun group, which had developed "chemical black holes" on a small hydrogel surfaces that drew molecules toward a point sensor via a chemical potential gradient.

Braun's group knew the technology had potential but needed further development.



"The problem was that the molecules moved too slowly," said Braun. "It would take an hour to a day to move molecules a centimeter, and we didn't have a great way to do quantitative detection."

However, the chemical black hole technique proved that the science behind a chemical gradient would work, and the next step was to figure out a "detection technique that could make a real impact."

Chemical black hole-based chemical warfare agent detector

Knowing that they needed something smaller than slow-moving molecules, the researchers exposed a safe version of a sarin-like molecule to the enzyme DFPase, causing the molecule to undergo hydrolysis, and break up into several parts. One of these parts was a negatively charged fluoride ion.

"The fluoride ion is easy to detect electrochemically," said Mohammad Amdad Ali, a postdoctoral researcher in Braun's group, and first author on the paper. "And, because it is so small, it moves much more quickly than a molecule. If we have a surface with positively charged gradient focusing a point in the center of the sensor that really likes (attracts the fluoride ion), instead of taking hours, it takes only minutes for all the fluoride ions to end up at one point."

"We were able to create a gel film that not only broke the molecule down, but pulled the negatively charged fluoride ions into an embedded fluoride ion specific sensor at the center point, and read how much fluoride we had. Once we know how much fluoride we have, we know how much sarin the sensor was exposed to," Braun said.

"The fluoride ion specific electrochemical sensor has a low detection threshold, and thus can detect a very low level of fluoride ions," said Ali. "With the current state of our prototype sensor, we could detect aerosol deposited sarin-like molecule from a vapor concentration as low as 0.01 mg/m^3 within 10 min," he added.

The next step is to test the sensors in an environment that is set up to handle the actual nerve agent.

"The ultimate goal is to manufacture something small enough, like a postage stamp, that may be worn on a uniform to detect gas or can be removed to test a surface that within minutes will tell if the agent is present and how much of the agent is there," said Braun.

"It is not going to tell you about all toxins, but it will tell you about a limited set of compounds very quickly," he said. "If you find out that sarin is present, you have a much better chance of getting the proper antidote."

This work was supported by the Defense Threat Reduction Agency and the Department of Defense/US Army.

— Read more in Mohammad A. Ali et al., "Amplified Detection of Chemical Warfare Agents Using Two-Dimensional Chemical Potential Gradients," ACS Omega 3, no. 11(1 November 2018).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Scientists have estimated the cost of stopping 11 diseases that could kill millions in a pandemic

Source: https://www.vox.com/future-perfect/2018/10/22/17999676/vaccine-ebola-pandemic-disease-zika-epidemic-sars

Oct 22 – One of the best ways to save humanity from a global pandemic in the future is by developing infectious disease vaccines now. But research has been sluggish, partly because no one knows how much producing such vaccines would cost.

That changed last week when researchers from the Coalition for Epidemic Preparedness Innovations (CEPI) published a study in *Lancet* estimating the cost of developing vaccines for diseases that have the potential to escalate into global humanitarian crises.

Preventing pandemics is extremely important work: In the next two decades, experts believe, there is a reasonable probability of a pandemic that kills more than 30 million people worldwide. Compare that to the 2014 Ebola outbreak, which killed more than 11,000 people across three countries — partially because we didn't have a vaccine at the time.

But vaccines are expensive and hard to get off the ground: Getting them from development to market can cost billions of dollars, can take over a decade, and the process has a 94 percent failure rate on average. It's a risky investment not many people want to make — until, of course, there's a deadly outbreak like in 2014. By then, it's often already too late.

Thanks to CEPI's research, we now know the minimum cost of developing at least one vaccine for each of the 11 diseases experts have highlighted as pandemic risks: $2.8 billion to $3.7 billion. That sounds expensive, but so are pandemics: The 2003 SARS outbreak in East Asia cost $54 billion. Moreover, if early development prevents us from experiencing another Spanish flu, which killed nearly one of out of every 20 people in 1918, then it's actually a bargain.

It's hard to get funding for rare diseases until there's an epidemic

The researchers chose the pathogens based on a list the World Health Organization developed after the 2014 Ebola outbreak of the 11 pathogens that it believed were the most likely to cause severe outbreaks in the near future. The list included:

- Crimean Congo hemorrhagic fever
- chikungunya
- Ebola
- Lassa fever
- Marburg
- Middle East respiratory syndrome coronavirus
- Nipah
- Rift Valley fever
- severe acute respiratory syndrome
- severe fever with thrombocytopenia syndrome
- Zika

That list changed a bit when it was updated this year, but all of the diseases remain of "considerable epidemic preparedness importance."

These are mostly relatively rare diseases that tend to strike poorer countries. Chikungunya occurs mostly in Africa and Asia, and while Sudan had a recent outbreak, deaths from the disease aren't common. Lassa fever only exists in West Africa, and there have been periodic outbreaks in Nigeria for the past few years, including the worst outbreak in March that killed more than 100 people.

Rift Valley Fever doesn't even affect humans usually. It's a disease that primarily affects animals in sub-Saharan Africa and major outbreaks have occurred in Kenya, Somalia, and Tanzania. It's not common, but humans can get it from mosquito bites or from handling the tissue of infected animals, and when they do, it's deadly.

Because these diseases cause relatively few deaths (for now) and primarily strike the poor, it's hard to get funding for them, especially the billions required for vaccine development.

But that could change. Ebola was a relatively obscure tropical disease, until it wasn't. We also saw what happened when Zika went from obscurity to international public health concern. We don't know

what the next Ebola will be, or how bad it will be. The best thing we can do now is find a vaccine before we do.

How likely is a global pandemic? Pretty likely.

The risks of a global pandemic may seem remote but it's no lower now than it was 100 years ago, writes Klain. While advances in modern medicine, like antibiotics, protect us from disease, other realities of modern life don't. "Global transportation networks can bring a virus from a remote corner of the world to one of its most populous cities in less than 24 hours. The clustering of more people into cities — especially supercities in Asia — creates fertile grounds for such diseases to spread quickly," says Klain. Climate change also means mosquitos are reaching new populations, and growing antibiotic resistance threatens to reverse public health gains.

We've seen the way pandemics can spiral out of control: as with the HIV/AIDS epidemic, SARS in 2002, H1N1 flu in 2009, MERS in 2012, and Ebola in 2014.

It wasn't until Ebola started escalating — at one point projected to infect one million people — that vaccine research kicked into gear. The public and private sector poured resources into developing the vaccine and the typically lengthy approval process was fast-tracked.

And it worked. When an outbreak struck the Democratic Republic of Congo earlier this year, vaccines were deployed to the country and were instrumental in containing the outbreak.

But a lot of people had to die before there was enough pressure to develop the vaccine.

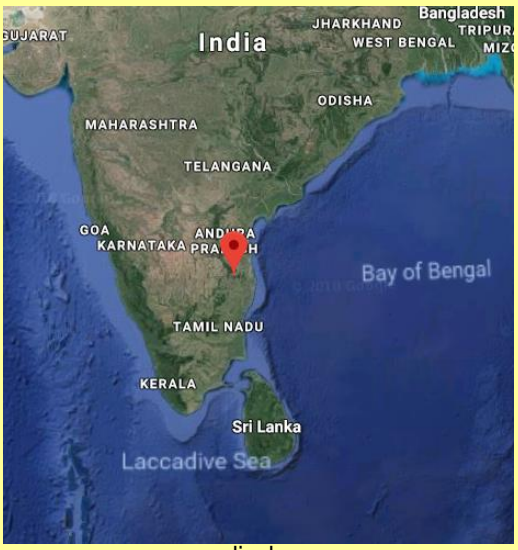
"Had a vaccine been available earlier in the Ebola epidemic, thousands of lives might have been saved," said Dr. Jeremy Farrar, the director of the Wellcome Trust, a global charitable foundation that funds research on Ebola after the effective vaccine was developed in 2016. "We have to get ahead of the curve and make promising diagnostics, drugs, and vaccines for diseases we know could be a threat in the future."

Knowing the cost of developing these vaccines could help prompt an important paradigm shift: preventing pandemics before they start.

Anthrax – India: Livestock & human cases

Source: https://www.thehindu.com/news/cities/Vijayawada/seven-persons-diagnosed-with-anthrax-in-chittoor-district/article25339805.ece

Oct 26 – A total of 7 villagers of Kodandarama Puram in Karveti Nagaram mandal, 65 km [approx. 40 mi] from here, were diagnosed with having anthrax (*Bacillus anthracis* infection) at the government hospital at Puttur on [Fri 26 Oct 2018]. A 50-year-old person, who slipped into coma following infection of the digestive tract, was shifted to SVRR Hospital in Tirupati, where his condition is serious.



Personnel of the Animal Husbandry Department confirmed that 18 cows and buffaloes and 6 sheep had died during the last fortnight. About 6 stray dogs that had contracted the bacteria were on the prowl in the village, they said. It all started when a group of youth had skinned the carcass of 2 cows found dead in the fields in the village a fortnight ago and shared the meat among their families, the officials said. They further said that 18 head of cattle had died between [10 and 26 Oct 2018], and the villagers consumed the meat of the dead animals. The villagers had also reportedly sent dried meat to their relatives at S.R. Puram, Vedurukuppam, Nagari, and Pallipattu (Tamil Nadu), the officials said.

When the 7 people, aged between 18 and 45 years, developed blisters on their bodies, they approached the Primary Health Centre located at Karveti Nagaram between [20 and 25 Oct 2018]. As the 2 medical officers at the PHC were not present as they had been deputed to undertake swine flu awareness drive elsewhere in the district, the villagers (all men) approached the Community Health Centre at Puttur, 15 km [approx. 9 mi] from the village.

Senior Medical Officer P. Ravi Raju, after conducting preliminary tests, confirmed the outbreak of anthrax at Kodandarama Puram. All the 7 people were diagnosed with anthrax, Dr. Raju added. Dr. Raju, who rushed to the village along with the paramedical staff, conducted a medical camp there and urged the villagers not to panic. He asked them to either bury or burn the stored meat. He also instructed them to bury the carcass in a pit after spraying bleaching powder in it.
In coordination with the MPDO staff and the Karveti Nagaram police, Dr. Raju searched the houses in the village and destroyed the meat stocks. Special parties had been dispatched in search of dried meat sent to the neighbouring villages. [Wise as this dried meat would be full of anthrax spores. - Mod.MHJ]
Anthrax was 1st detected in Karveti Nagaram mandal in the year 2000 following the death of 3 people. It resurfaced in 2003 when a few villagers of the mandal consumed the meat of animals after exhuming their carcass.
Meanwhile, district Collector P.S. Pradyumna spoke to DMHO Ramagiddiah and SVRR Hospital authorities and took stock of the situation. He also asked people to desist from consuming stored meat.

Hong Kong: Cosmetic use of botulism

Source: http://outbreaknewstoday.com/hong-kong-investigates-probable-case-iatrogenic-botulism-15153/

The Hong Kong Centre for Health Protection (CHP) of the Department of Health reports investigating a probable case of botulism, and again reminded the public that botulinum toxin injections should only be prescribed and performed by registered doctors.
The female patient, aged 41 with underlying illness, developed generalised weakness, difficulty in swallowing and hoarseness since 28 Sep 2018. She was admitted to Pamela Youde Nethersole Eastern Hospital on 29 Oct 2018. The clinical diagnosis was suspected iatrogenic botulism. She is now in a stable condition. "According to the patient, she received botulinum toxin injection in both calves at her home on 24 Sep 2018 from a beautician who came from the mainland. Investigations are ongoing," a spokesman for the CHP said.
Due to the weakening of associated muscles and the fact that botulinum toxin may spread and affect other areas beyond the injection site, affected patients may have drooping of the eyelids, double vision or blurred vision, problems with chewing, hoarseness or even difficulties in swallowing, speaking or breathing, which may happen in hours, days or weeks after the injection.
Health officials urge the public to observe the health advice below before receiving botulinum toxin injections:

- injections should only be performed by locally registered doctors;
- understand the procedure, potential risks and complications before receiving injections. Consult a doctor for an informed decision;
- do not receive an injection in case of history of allergy to botulinum toxin, or infection or inflammation on the injection site;
- request the full name of the doctor in writing if referred by a beauty service provider for the procedure, as well as the professional qualifications and relevant experience; and
- if symptoms develop, such as fever or feeling unwell, seek medical attention immediately.

At least a dozen cases of systemic botulism from the cosmetic use of botulism toxin were reported in 2016 from Hong Kong, most acquired from injections done on the mainland.

A 2008 petition to have a black box warning on botulinum toxin for Injection is summarized below documenting systemic effects and deaths from these injections in the USA.
Botulinum toxin is one of several proteins produced by the bacterium, *Clostridium botulinum*. Botulinum toxin acts by blocking the transmission of nerve impulses to muscles, causing those muscles to relax resulting in a loss of muscle control. In the case of food poisoning from botulinum toxin, in which the toxin spreads widely around the body, early symptoms include dry mouth, difficulty swallowing, slurred speech, drooping eyelids, and muscle weakness.
Subsequent paralysis of respiratory muscles can lead to death. In the case of injected therapeutic or cosmetic use of botulinum toxin, if the product spreads from the injection site

to another area of the body, this loss of muscle control can be similarly harmful. For example, when muscle control to the esophagus is lost (dysphagia), one loses the ability to control swallowing; food and drink can then accidentally reflux and be aspirated into the respiratory tract and lungs, causing a serious complication, aspiration pneumonia, and occasionally lead to death.
Botulinum toxins are classified as distinct serotypes, with different potencies but the same mechanism of action. Types A and B have been developed commercially for use as drugs. In the USA, there are 2 approved products: Botox (Allergan), which is type A, and Myobloc (Solstice Neurosciences), which is type B. The 2 broad indications for the use of botulinum toxins are therapeutic and cosmetic. FDA-approved therapeutic uses include cervical dystonia (contractions of the neck and/or shoulder muscles that cannot be controlled), strabismus (crossed eyes), blepharospasm (spasmodic blinking of the eyes), and primary axillary hyperhydrosis (excessive underarm sweating; Botox only). Botox has one approved cosmetic use (Myobloc has none), and that is for temporary improvement of glabellar lines (wrinkles between the eyebrows). Most cosmetic use of botulinum toxin is unapproved by the FDA and is therefore considered off-label.

Therapeutic uses
Significant rates of dysphagia were documented in the medical officer's clinical reviews of both Myobloc (October 1999) (12) and Botox therapeutic (November 1999) (13). In most studies, patients had previously been exposed to botulinum toxin. Since those with previous adverse events would presumably be less likely to enroll in subsequent trials, the incidence of dysphagia may be underestimated.
Botox: There was only one RCT [randomized controlled trial] for Botox therapeutic that was placebo-controlled (Study 140). The rates of dysphagia were 7 per cent vs. 4 per cent (treated vs. placebo). Severity grades were only provided for the 6 cases in the treated group: 3 moderate and 3 mild cases of dysphagia (14).
Myobloc: The 3 RCTs for Myobloc consisted of one phase II range-finding study (Study 009) and 2 phase III trials (Studies 301 and 302). The only difference between studies 301 and 302 was that subjects in the former had cervical dystonia symptoms that were still responsive to Botox, while those in Study 302 had ceased to respond to Botox. The data below summarize the incidence of dysphagia in all placebo-controlled trials of this product, based on only one dose. (Doses of Botox and Myobloc cannot be compared directly, as they are different botulinum toxins.)

Incidence of dysphagia in all Myobloc placebo-controlled studies (15)	
Dosage / number of patients / percentage dysphagia	
Placebo dose	/ 123 / 2
Less than 2500 U	/ 92 / 9
2500-7500 U	/ 67 / 10
7500-10 000 U	/ 106 / 25

A summary of the severity of dysphagia for all Myobloc-exposed patients, both those in placebo-controlled and open-label studies, is shown below.

Severity of dysphagia in all Myobloc studies (n=531) (16). All toxin treated subjects = 29 per cent with dysphagia

- 19 per cent of all therapy - mild dysphagia
- 8 per cent of all therapy - moderate dysphagia
- 1 per cent of all therapy - severe dysphagia

Although these trials were small and consisted only of a single dose, the results have a consistency that lends them added weight. The medical officer noted that dysphagia was consistently the 2nd most common adverse event after dry mouth and "...the most common important adverse effect of Botox treatments for cervical dystonia reported in the medical literature (17)." While not having as high an incidence of serious cases as dry mouth, serious

dysphagia cases "can be more medically risky" and "even moderate grade events in these 2 categories have been responsible for patients discontinuing repetitive injections... (18)."

Cosmetic uses

The Botox cosmetic reviews found the incidence of muscle weakness in treated patients in 2 placebo-controlled clinical trials to be one per cent and 3 per cent. There were no cases of muscle weakness in the placebo groups and no cases of dysphagia in either the treated or placebo groups (19). Thus, dysphagia was a common adverse event in the clinical trials conducted prior to approval and occurred in a dose-related fashion. Although most cases were mild, some severe cases did occur.

FDA analysis of adverse events

The FDA [Food and Drug Administration] subsequently highlighted the dangers of botulinum toxin in a published 2005 analysis of adverse events covering the period from 1989 to May 2003 (20). These adverse event data add to the clinical trial information, because severe cases of dysphagia were not common in the clinical trials, and the adverse event data would tend to include more severe cases of dysphagia. The adverse event data also emphasize that, although dysphagia was more common in therapeutic than cosmetic clinical trials (presumably due to higher doses and, for many indications, greater proximity to the esophagus), cosmetic cases have been reported, and some have been serious. Therapeutic use: The FDA analysis found 406 adverse event reports related to therapeutic use, 217 of which met the FDA's definition of serious. There were 26 reports of serious adverse events involving dysphagia (including one death due to aspiration pneumonia) and 13 reports of non-serious dysphagia.

Cosmetic use: There were 36 serious reports related to cosmetic use, including 2 reports of dysphagia, but no deaths. There were, in addition, 995 non-serious reports for cosmetic use, the most frequent of which was "lack of intended effect" (63 per cent). Four of the non-serious reports were for dysphagia. The agency also noted that "numerous departures from FDA-approved recommendations for drug use, dilution, handling, site of injection, and storage were noted in these AE [adverse event] reports."

Public Citizen analysis of adverse events

We have done our own analysis using the FDA adverse event database for cases submitted to the agency by drug manufacturers between 1 Nov 1997 and 31 Dec 2006. We found 658 cases of adverse events for all searched Preferred Terms, of which 180 (27 per cent) were

associated with aspiration, dysphagia, or pneumonia. Of these 180, 106 had an indication listed: 18 cosmetic only and 87 non-cosmetic only. 87 of the cases associated with these 3 Preferred Terms were hospitalized, and 16 died (including 4 children less than 18 years of age). Table 1 presents the cases broken down by Preferred Term and Outcome, while Table 2 contains a description of the 16 deaths, one of which was associated with cosmetic use.

Table 1

Adverse event cases of dysphagia, aspiration or pneumonia where botulinum toxin was the primary suspect, 1 Nov 1997 - 31 Dec 2006

Reaction / All cases / Deaths (deaths of minors) / Non-death hospitalizations
All cases / 180 / 16 (4) / 87
Dysphagia / 129 / 1 (0) / 55
Aspiration and/or pneumonia / 31 / 9 (3) / 18
Both / 20 / 6 (1) / 14

Table 2

Deaths associated with dysphagia, pneumonia or aspiration in patients administered botulinum toxin, 1 Nov 1997-31 Dec 2006

Age / Sex / Preferred Term(s) / Indication Drug
-- / M / Dysphagia / Torticollis / Botox
6 / M / Dysphagia & aspiration / No data / Botox
12 / M / Aspiration / No data / Botox
15 / M / Aspiration / Muscle spasticity / Botox
16 / M / Pneumonitis & aspiration / No data / Botox
31 / M / Aspiration / Torticollis / Myobloc
47 / F / Pneumonia / Skin wrinkling / Botox
48 / F / Pneumonitis & aspiration / No data / Myobloc
52 / F / Bronchopneumonia / Hypertonic bladder / Botox
70 / M / Dysphagia/pneumonia aspiration / Muscle spasticity / Botox
72 / M / Pneumonia / Muscle spasticity & off-label use / Myobloc
74 / F / Pneumonia / No data / Myobloc
77 / F / Dysphagia, pneumonitis & aspiration / No data / Botox
82 / F / Dysphagia & pneumonia & aspiration Muscle spasm / Botox
82 / M / Dysphagia & aspiration / Drooling / Botox
85 / M / Dysphagia & pneumonia aspiration / Muscle spasticity / Botox

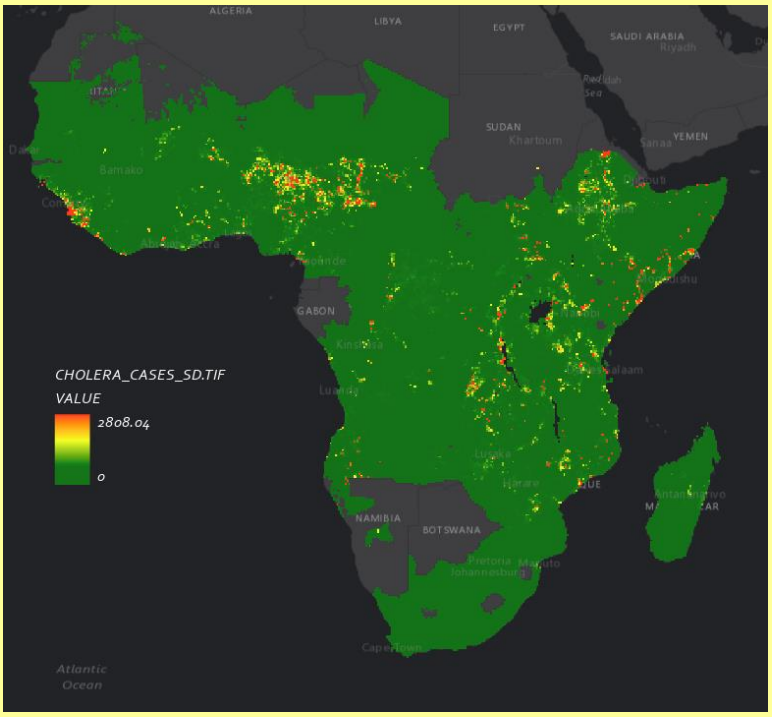
It should be noted that these data come from voluntary reports submitted to the FDA, which have been estimated to represent about 10 per cent of the actual occurrences. Additional limits to our data include: causality cannot be proved, other Preferred Terms may exist that might increase our counts, some fields such as Outcome are not consistently filled in, and reports from individual consumers were not included.

Africa: Cholera Threatens a Comeback Worldwide

By Anna Kucirkova
Source: https://allafrica.com/stories/201811020636.html

Nov 02 — Cholera outbreaks across history regularly killed a hundred thousand or more. It isn't well known today because it was essentially eliminated in the Western world.
It last erupted in the U.S. in the 1800s, eradicated by water and sewage treatment systems that prevented it from spreading via contaminated water. However, cholera is making a comeback around the globe, and it could again become a major killer.

Cholera is caused by eating or drinking something contaminated with the Vibrio cholera bacteria. Because it is waterborne, Western cases tend to occur when someone eats contaminated sea food.
In the developing world, people drinking water from rivers where others bathe and defecate contribute to its spread. That is why the World Health Organization (WHO) records around 150,000 cholera cases per year.
Cholera remains common in places with poor sanitation systems or where they do not yet exist. That is why cholera is considered epidemic in places like Africa, Latin America and South Asia.



Tropical climates that don't get cold enough to kill the bacteria, wet soil that breeds it, and unsanitary groundwater that mixes with drinking water can cause one patient's effluent to spread to an entire community.
The literal environment prevents the bacteria from being truly eradicated, resulting in it being found in overcrowded slums. Storms and flooding can interfere with local water supplies, bringing in contaminated water that people then drink.
It periodically erupts in active war zones and overcrowded refugee camps that cannot maintain a clean water supply. The lack of proper hygiene in these places certainly contributes to its spread. Yemen and Syria, both in the midst of civil wars, are the worst examples of this.
The cholera outbreak in Haiti has shown that cholera can come roaring back after other natural disasters that disrupt clean water delivery. Globalism contributes to cholera's spread, as well.
For example, the Haiti outbreak was likely precipitated by U.N. peacekeepers that picked up cholera in Nepal, arrived in Haiti and then infected the local water supply through poor hygiene. The outbreak killed over ten thousand and infected hundreds of thousands more.
Now a country already struggling to deal with critically damaged infrastructure has to manage cholera, too. This is a tragic blow, since Haiti worked for years to eradicate the disease.
The infection and death rates were made worse by the under-developed medical system that the disaster rendered inoperable. In nations with underdeveloped medical systems, they can't keep up with the load of the epidemic, spreading faster and killing many more than it would in a better equipped region.
Bangladesh struggles with endemic cholera. One of their solutions was vaccination against the disease. Vietnam, too, has set up a vaccination program to prevent humans from becoming a transmission vector. Both countries have set up programs to curtail their devastating effects, as well.

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.

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.

Connecting your Detectors with CBRNet®

CBRNet® is a networked system in which sensor instruments are digitally linked to your key decision makers and to professional CBRNe advisers. Decision makers will have access to a real time Recognised CBRNe Picture of your operation, showing the location of your sensors, the data they are collecting and the way they are performing, all supporting the ability to make quick, accurate decisions.

The data from CBRNe sensors is brought into SafeZone via the Internet, thus allowing you to access it wherever you need. At all stages it is fully protected so that it guarantees high confidence levels in measures of availability, integrity, authentication, confidentiality and non- repudiation.

CBRNet® enables the exchange of data between your operations rooms and deployed CBRNe sensors, using the dedicated information system, SafeZone. At the front-end, data collected by your instrument detectors passes over whatever tactical communications system you choose. The networking technology allows for the use of mobile telephony, terrestrial and satellite radios and can harness the power of Bluetooth and WiFi connections. These advanced communication technologies are provided by Cubic Mission Solutions, world leaders in the industry and widely used by NATO special forces and government agencies.

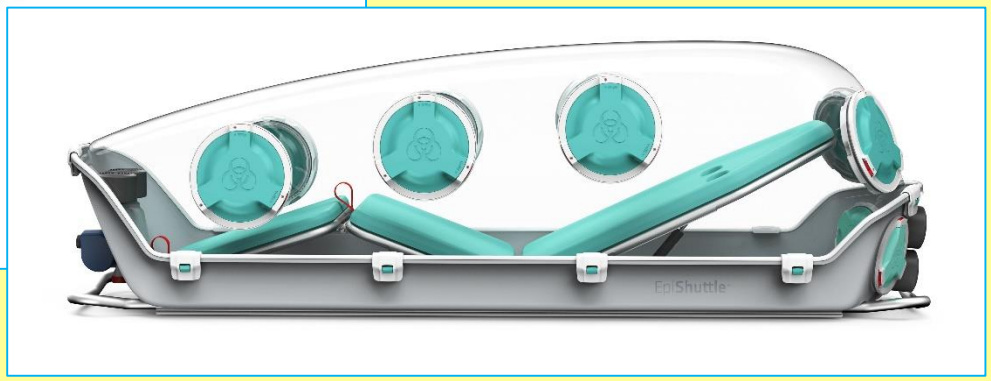
EpiGuard

Source: http://nct-magazine.com/november18/company-profile-epiguard/

In late 2014, a group of medical doctors in Norway faced the challenge of managing Ebola patients on the field. During their work, they realized that existing equipment available on the market made it virtually impossible to safely and comfortably transport patients with highly contagious diseases.

This experience fresh in mind, EpiGuard was founded in 2015 with the purpose to become the market leader in the field of high-end special isolation units (SIU). After three years of hard work and millions of Euros in capital investment, the company recently launched their first product: the EpiShuttle.

«The EpiShuttle is a single-patient isolation system, specially designed for transport of patients. The unit protects the environment from an infected patient, but can also be used to protect the patient from a contaminated environment.»



The product represents a leap forward in the state of the art: The novel ergonomic design permits execution of medical emergency procedures not possible with competing solutions. It has unique medical ports allowing all kinds of intensive care treatment of the patients through the barrier. It is the first polycarbonate hard top, hard base SIU improving safety for

both patients and personnel. The device is also reusable, reducing costs and limiting the amount of contagious waste to be disposed of. The ergonomic design makes it more comfortable for the patient with adjustable inner stretcher and a less claustrophobic transparent dome.

The group of doctors that established EpiGuard have first-hand experience in providing advanced treatment, transportation and management of patients with highly infectious diseases, e.g. Ebola. Indeed, the team has extensive clinical and scientific experience, with over 100 original scientific papers in high-impact journals; as well as significant collaboration with TOP international institutions. EpiGuard is co-founded by a team of award-winning designers and engineers, and the EpiShuttle has already been awarded the Chinese DIA silver design award and the Norwegian DOGA design award.
The EpiShuttle is disrupting a market dominated by single use devices not optimally designed for treatment, safety or comfort for the patient. Key features have been developed together with users to enhance sustainability and lower the risks of global epidemic spreads through areas like; reusability, on-site intensive care treatment, EMS system combability, quick patient loading time and being able to set the device for both positive and negative pressure modes.

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

Pittsburgh trauma surgeon: "Stop the Bleed" training saved lives after shooting, but stopping the need must be next

By Matthew D. Neal

Source: http://www.homelandsecuritynewswire.com/dr20181105-pittsburgh-trauma-surgeon-stop-the-bleed-training-saved-lives-after-shooting-but-stopping-the-need-must-be-next

Nov 05 – I am a trauma surgeon who cared for many of the critically wounded victims of the Tree of Life synagogue shooting. As we raced to find the source of blood loss in one of the most severely injured patients, one of my trauma surgeon partners, a U.S. Army veteran of multiple tours, joined me in the operating room to assist.
His first comment upon seeing the injuries that we were managing struck me. He said he last saw such destruction from military weaponry when he was serving in Afghanistan.
Two doors down, a second badly injured patient arrived to the operating room with extensive injuries to multiple extremities from a burst of gunfire.
Although the patient's blood pressure was perilously low, the bleeding had been stopped prior to surgery by tourniquets applied to the limbs. Additional victims arrived, again with

potentially life- and limb-threatening injuries rendered by an assault rifle, but all had received lifesaving care even prior to arrival at the hospital.
Some of this is due to an approach called tactical emergency care, where specially trained teams of physicians and emergency medical service practitioners respond and provide care along with law enforcement. A brave team of providers entered Tree of Life under active fire, along with the SWAT team.

The early identification of injured victims allowed for rapid transport from the scene to our trauma center, providing the opportunity to save lives that would have otherwise been lost.
While all of the patients who arrived at our trauma centers in Pittsburgh are alive today, the sense of accomplishment and pride associated with this is blunted and seemingly selfish in the face of the carnage that occurred. No one will say "it could have been worse," because the magnitude of this massacre that impacted the world and my hometown of Pittsburgh is incomprehensible.
Nonetheless, many of the surviving victims who will live to amplify and strengthen the message of unity that emerged in the days that followed are alive because of the evolution of a system of pre-hospital care that has necessarily changed the way the lay public, law enforcement and emergency medical care respond to intentional mass injury events.

Stop the Bleed

In the wake of the shooting at Sandy Hook Elementary School, the "Stop the Bleed" program emerged as a way to empower the public to act as immediate responders. Dr. Lenworth Jacobs, a trauma surgeon at the Hartford Hospital, recognized that the skills and tools to stop bleeding could not help when confined to a hospital setting during a mass casualty or intentional mass injury event.
That's because a person can bleed to death in as little as five minutes, and thus time is critical in bleeding control.
Jacobs led the effort to create Stop the Bleed, a program to enhance survivability after such events. It is an initiative of the American College of Surgeons and the Hartford Consensus, and it seeks to promote the message that anyone can save a life.
Supported by the White House, Stop the Bleed originated in October 2015 with the goal of making education on bleeding control as common as CPR training.
Stop the Bleed teaches basic bleeding control techniques and provides tools, such as wound packing and tourniquets, to the general public should they need to respond to life-threatening bleeding.

Pittsburgh had prepared for such an event

Having faced intentional mass injury events in the Pittsburgh region, both in schools and our own hospital system, our team of trauma surgeons immediately began to push this public health initiative.
Through generous philanthropic support by the University of Pittsburgh Medical Center and a partnership with the Copeland Regional Trauma Council, we embarked upon the ambitious task of teaching Stop the Bleed throughout the region, with a goal of providing a tourniquet to every law enforcement officer and a bleeding control kit in every public school building.
We recognized that teachers and law enforcement are frequently the immediate responders to horrific events such as shootings, and we sought to empower those people with the tools

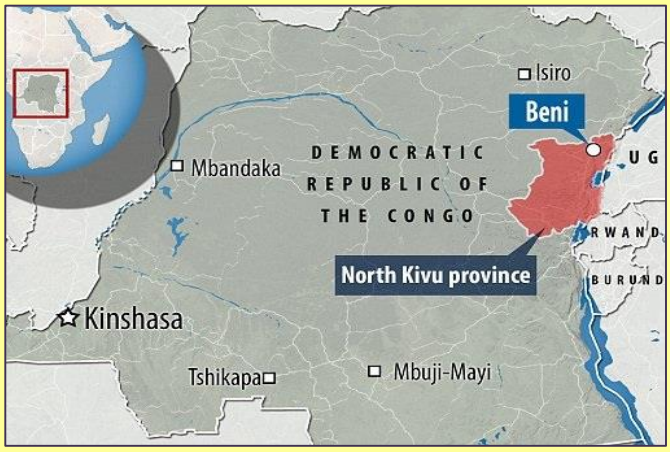
and techniques to save a life. The program has grown rapidly in our region, with over 37,000 people trained, over 500 bleeding control kits distributed, and over 9,000 tourniquets provided to law enforcement officers, including the Pittsburgh Bureau of Police and the Pennsylvania State Police.
My trauma colleagues and I estimate that tourniquets applied by police officers and emergency medical services at the scene of the massacre at Tree of Life saved the lives of at least three victims.

Synagogue members in Squirrel Hill asked for training
Early in our regional initiative, the Jewish Healthcare Foundation recognized the critical importance of Stop the Bleed.
In a forward thinking and proactive manner, they supported the training of the Jewish community and purchased bleeding control kits for every synagogue in the city of Pittsburgh.
I vividly remember teaching the classes at synagogues in the Squirrel Hill neighborhood of Pittsburgh. I would lead every class with the disclaimer that we hoped this training would never be necessary but that the community needed to be prepared.
Finding that some members of the public were at times overwhelmed by the training, I would frequently take my 9-year-old son along with me. Volunteering his time to teach and understand the issues was a valuable lesson for him, but it also provided strong evidence that "everyone" can indeed save a life by having a young child expertly demonstrate the basic skills of bleeding control. My son taught with me in Squirrel Hill synagogues, and while he taught community members how to apply tourniquets, they taught him about their place of worship, their community and their faith.
When I finally returned home from the hospital the night of the Tree of Life synagogue shooting, I faced the challenge that all parents faced that day: how to explain what happened to my young child. With more resilience and poise than I could maintain, he asked me important questions. He asked me if this had happened where he had taught Stop the Bleed.
I said yes.
He asked me whether Stop the Bleed had helped people. I said yes.
He asked whether people had died. Through tears, I told him that many had.
And then the question to which I had no simple answer: "Daddy, why wasn't Stop the Bleed enough to help them?"

Matthew D. Neal *is Roberta G. Simmons Assistant Professor of Surgery, University of Pittsburgh.*

DR Congo Ebola update

Fri 9 Nov 2018. Epidemiological situation report
DRC Ministry of Health
Source:https://us13.campaign-archive.com/



The epidemiological situation of the Ebola virus disease in the provinces of North Kivu and Ituri dated 8 Nov 2018:
■ A total of **319 cases** of haemorrhagic fever were reported in the region, of which 284 confirmed and 35 probable.
■ Of the 284 confirmed, **164 died** and 97 are cured. The others are hospitalized in the different Ebola treatment centers (ETCs) installed.
■ **52 suspected** cases under investigation.
■ 7 new confirmed cases, including 3 in Beni, 2 in Butembo, 1 in Kyondo, and 1 in Vuhovi. A new confirmed case has been identified in a new Kyondo health zone, located next to Butembo health zone [North Kivu]. The investigations are in progress.
■ 7 new confirmed deaths, including 3 in Beni, 2 in Butembo, 1 in Kyondo, and 1 in Mutwanga.
■ 6 new recoveries, including 5 in Beni and 1 in Butembo.

Dr. Sydney Routley: Understanding anthrax

By Sydney Routley

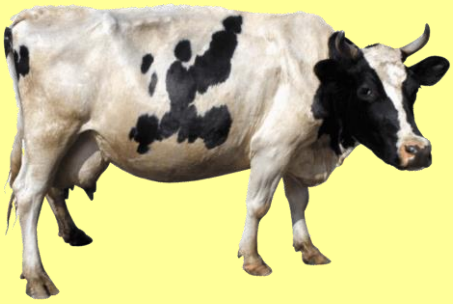
Source: https://www.alaskahighwaynews.ca/opinion/columnists/dr-sydney-routley-understanding-anthrax-1.23489865

Nov 09 – When most people hear anthrax, they think of the deadly human bioterrorism agent. Thankfully, what occurs in nature is nothing of the sort.

The form of anthrax seen on the news has been specially modified so that it can be inhaled. The biggest actual risk for anthrax is for ruminants like cows and bison.

Anthrax is a bacteria that lives in the soil. In its spore form, it is very hardy and can stay in the soil for decades. When animals like cows, bison, deer, horses, goats, sheep, and pigs ingest the soil that contains anthrax, they usually die within two to three hours. Birds and carnivores, like dogs, are very resistant to the disease.

Anthrax has been around for most of human history, and is found in most countries in the world. Anthrax is not considered contagious in the typical sense, and is more of an environmental disease as it occurs in the soil. There are certain environmental conditions that can predispose an anthrax outbreak. Spring flooding followed by summer drought and disruption of the soil through digging are the most common predispositions.



The good thing about the disease is that there is a very effective vaccine for large animals, so if there is an area that has a history of anthrax in the soil, the anthrax vaccine can be added to the regular yearly vaccines the animals already receive. Since this is not considered a contagious disease, there are no trade implications for the animals.

With anthrax in large animals, most often there are no symptoms as the disease course is so short-lived. If there is any suspicion of an animal anthrax death, be sure to contact your veterinarian about the next steps for diagnosis, body care, and handling. The human health risk for picking up anthrax is very low in this regular setting. The inhalational form seen with bioterrorism is not a risk in a natural setting. As long as none of the infected material is ingested, normally a skin infection is the only potential concern for humans in direct contact.

Normally skin infections of anthrax occur when the infected material enters in through an abrasion on a person's skin. Thankfully, anthrax is usually very sensitive to antibiotics and typically treated effectively.

The take home points are that anthrax is a bacteria that forms spores and naturally lives in soil in certain areas. The soil has to be consumed by species that are susceptible to it, with cows and bison being the most common species affected. Death from anthrax occurs very quickly in livestock, but the disease is not considered contagious.

The risk to humans is very low, especially if body care is done appropriately. If there are any concerns, be sure to contact your veterinarian.

Dr. Sydney Routley *is a 2012 graduate of the Western College of Veterinary Medicine. She was raised in Fort St. John and first started working at the North Peace Veterinary Clinic as a student back in 2004.*

Biothreat Magnifies Critical Need to Ensure Appropriate Laboratory Security

By Robert Smith

Source: https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/perspective-biothreat-magnifies-critical-need-to-ensure-appropriate-laboratory-security/

Nov 09 – Over 100 years ago, the planet was ravaged by the 1918 Spanish Flu pandemic. This grim anniversary could serve to remind us of the magnitude of the catastrophe. The mortality rate was 20 times higher for 15- to 34-year-olds than previous years' flu outbreaks and actually depressed the average lifespan in the U.S. by 10 years (Tautenberger 1997). People died within hours of developing symptoms due to the rapid onset of secondary pneumonia infection, many with horrible effects (Grist, 1979). The recurring waves of outbreaks during the pandemic took the lives of 50 million worldwide (National Center for Immunization —). It is likely that most people cannot fully appreciate the level of suffering from a pandemic. The passage of time helps us to heal, helps us to forget.

Since the emergence of Highly Pathogenic Avian Influenza, experts have warned about a probable return of pandemic flu due to the continuous genetic recombination within the virus. Experts generally agree that a 1918-type pandemic could be one of the most disastrous events to befall the planet. Besides the tragic loss of lives and wide-ranging human impacts, a pandemic could also overwhelm limited resources from mass care, emergency response, public health and medical service sectors. In addition, the cascading effects of lost productivity and economic impacts could divert attention and consume resources from other critical sectors such as agriculture, natural resources, public safety and national security (FEMA 2016).

Still, the average person would not likely place this risk at the top of their daily concerns. Similar to other emerging health threats such as global warming and antibiotic resistance, the causative factors and warning signs for a pandemic may not rise to a sufficient level of significance in the cognitive consonance and the public demand for action may not occur short of the event horizon. We have been fortunate not to suffer the re-emergence of a killer flu in human populations.

However, a natural flu outbreak is far from our only biothreat. In recent decades, the likelihood of a new pandemic caused by the intentional release of a dangerous biological agent has increased. In this regard, we potentially face dual-threat scenarios – namely, international conflict and terrorism. The deliberate use of biological agents for terror and warfare dates back nearly 1,000 years. In recent history, the Japanese waged biowarfare against China during WWII using plague, cholera and typhus. The U.S. initiated a bioweapon development program in 1960 and terminated it in 1969 (Frischknect, 2003). The Soviet Union is reported to have developed biowarfare agents from plague, anthrax, and smallpox (Frischknect 2003). Prior to the first Gulf War, Iraq under Saddam Hussein built a biological weapon program (Zalinskas 1997) and there is reason to believe that North Korea, Syria, and Iran may have developed biowarfare programs. The risk persists despite international agreements against the development and use of biological weapons (UNOG 2018; UNODA 2018).

It is also well known that non-state actors seek access to biological agents for terrorist agendas (Coats 2018; Wagner 2017, Harris 2002). Rogue nations that conduct dark-web transactions in bioagents or failing states that lose track of bioassets during periods of political or economic instability are potential sources. The Defense Threat Reduction Agency (U.S. Department of Defense) works to reduce the prevailing likelihood of this threat (DTRA 2018). Perhaps an even more likely source for access to potential bioterror agents is inadequate biosecurity in laboratories. Many U.S. labs store biological agents considered dual use, defined as having legitimate scientific purpose but also characteristics that could be used for bioterror. The 2001 anthrax attack (Amerithrax), the most lethal and widespread act of bioterrorism in the U.S., is believed to have originated in a U.S. lab (FBI 2010).

There have been other bioterror attempts in the U.S., some limited in scale and others failed or thwarted by authorities. Following the anthrax attack, concerned scientists identified the biological agents most likely to be successfully employed for bioterror according to certain characteristics such as high infectivity, high mortality rate, long prevalence in the environment, and inadequate medical prevention and countermeasures. Laboratories maintain viable bioagents with these characteristics in sufficient concentration, properly preserved, and capable of generating a reproducing and infectious population within a few days.

In 2002, Congress passed the *Public Health Security and Bioterrorism Preparedness and Response Act* providing the authority for the Select Agent Rule, which requires registration and strict security measures at laboratory facilities possessing these types of agents (Federal Register 2007). Since then, security in U.S. laboratories improved significantly but, in many cases, not sufficiently. Frequent security assessments have demonstrated that it is possible to surreptitiously remove select agents from some laboratories without detection. Despite enhanced laboratory security, the theft and diversion of pathogenic and toxic agents from laboratories remains a likely scenario for individuals, groups or organizations with intent to access potential bioterror agents (NTI 2007, Coats 2018, Holgate 2017). It raises the question of whether enough time has passed since Amerithrax to make us forget the lost lives and the masses of people in line for the antibiotic ciprofloxacin.

One might think that the complex, scientific knowledge and processes required to prepare and disseminate biological disease agents to enable their survival and infectivity would reduce the threat probability. However, it is troublesome to consider that, of 13 separate biological attacks or attempted attacks in the U.S. from 1984 to 1996, nine were committed by individuals with scientific knowledge and laboratory access (professor, physicians (5), nurse, dentist and a lab technologist). The 2001 anthrax attack is believed to have been committed by a federal laboratory researcher (FBI 2010). The insider threat overcomes many traditional biosecurity protections. The Nuclear Threat Initiative states that "biosecurity remains an under-emphasized and under-financed global security priority (NTI 2007)."

Several modern realities elevate the probability of the bioterror risk:

- Proliferation of laboratories possessing select agents in the U.S. and in other countries
- Advancements in genetic engineering technology
- Simplified Do-It-Yourself (DIY) biotechnology kits and equipment
- The wide dissemination of terrorist organizations such as al-Qaeda and the Islamic State and their unconventional terror tactics
- Unstable foreign governments with unsecure laboratories and manufacturing facilities
- Dark web trafficking in unconventional weapons
- Greater international travel
- Declining funding for laboratory security
- Funding needs for increased incidence in emerging disease outbreaks and other emergencies
- Complacency on the part of laboratory organizations regarding the threat

Each of the above factors merits full analysis in a current biothreat assessment. However, for many biosecurity experts, recent technology in genetic modification (also called gene editing) could produce the most worrisome consequences (Coats 2018; NSABB 2018). In 2005, scientists collaborating from several research organizations used reverse genetics to reconstruct the 1918 Pandemic Influenza virus containing all eight viral gene segments (required for pathogenicity) (Tumpey 2005). Other researchers in 2017 reconstructed horsepox, a relative of smallpox, the agent of several horrific pandemics eradicated in 1980 through vaccination. It is believed that the smallpox virus could be reconstructed by the same technique (Kupferschmidt, 2017). Other genetic modification research called 'gain of function' creates or enhances disease-causing characteristics in otherwise harmless biological agents. The recent development of CRISPR-Cas9, a technology adapted from a naturally occurring gene editing

process in bacteria, has significantly increased the speed and accuracy of genetic editing (Slaymaker et al 2016).

These new technologies place extraordinary power in the hands of the researchers with relevant expertise as well as increase the consequence of an intentional release. Considering the high stakes of a worldwide outbreak of a genetically engineered pathogen that is highly communicable, lethal, and unknown to our immune system, and for which we have no adequate prevention or countermeasures, our national leaders, regulators, and biodefense industry must stay ahead of the technology and events, and develop top-down and ground-up preventative and response strategies and controls. Locally, laboratory directors, biosecurity managers, and Institutional Biosafety Committees (IBCs) must be frequently retrained and reinvigorated to keep pace with new technologies and research objectives (Note: the NIH Guidelines are currently under revision) (NIH Guidelines, 2018).

The National Science Advisory Board for Biosecurity (NSABB), established by Congress through the *Public Health Service Act* (GPO 2011) and amended by the *Pandemic and All-Hazards and Preparedness Act* (U.S. Congress 2006), serves as a federal advisory committee that addresses issues related to biosecurity and dual-use research at the request of the United States government. This organization provides "advice, guidance and leadership regarding biosecurity oversight of dual use research." However, the NSABB's advisory oversight role is limited to federally conducted or supported research (NSABB 2018).

Many have called for the complete cessation of gain of function research that could have severe impacts. This may not be prudent. Even if all reasonable nations, scientific organizations, and researchers agree to abandon this genetic exploration, a single rogue actor would be sufficient to engineer a novel and lethal pathogen and the world's responders could be helpless to counteract it, at least not before considerable human loss. The only practical approach is to anticipate the risk, own the technology, and develop specific and effective countermeasures – i.e. we need the new microbe to develop the new vaccine. This approach is consistent with the NSABB charter, which takes into consideration "both national security concerns and the needs of the research community to foster continued rapid progress in public health and agricultural research" (NSABB 2018).

The ever-increasing pace of biotechnology compounds the need to ensure appropriate laboratory biosecurity. After all, some of this research is equivalent to creating precursors to bioweapons. The scientists that worked the U.S. Bioweapon Program in the 1960s were required to have top security clearance.

Of the aforementioned 'modern realities' contributing to bioterror risk, complacency is the one vulnerability that could be readily rectified. Although laboratories are more secure since the 2001 anthrax attack, there may be increasing reason for concern that some organizations have become lax. First, it is common for laboratory organizations to downplay the likelihood of a bioterror event since few have occurred, and to direct their limited resources where they perceive the greatest need. There has been no major bio attack since the 2001 Anthrax attack. A small number of isolated attempts have occurred, mostly by individuals with personal or political agendas (Holgate 2017, James 2018). This should not downplay the threat. Although our terror-sponsoring enemies and their homegrown aspirants have recently resorted to low-investment, high-probability-of-success attacks such as vehicle ramming of pedestrians and random shootings and stabbings, they have always proven themselves to be adept and creative in transforming their terror game plan when they have detected new vulnerabilities. They have declared their interest in obtaining biological weapons (Coats 2018; Wagner 2017, Harris 2002).

Second, federal funding for emergency preparedness has declined since the 2001 Anthrax attack and the $3.8 billion allocation in 2005 to counter the threat from bird flu (CIDRAP 2005). Recent allocations to battle Ebola in Africa have been effective but are due to expire in 2019 (Yong 2018). Declining funding limits our medical response to intentional bioterror attacks as well as natural disease outbreaks as they produce similar

consequences. U.S. investments to improve medical infrastructure and medical capabilities in developing and undeveloped nations, facilitate timely response to localized outbreaks, and prevent international spread of disease protects human health with the added benefit of reducing the future risk of bioterror. Most experts would agree that we need to do more to strengthen our medical and scientific capabilities to handle the unexpected.

Most laboratory organizations have developed security and emergency plans. However, far too many have not adequately maintained their plans with current information, have not provided regular security training to employees, and/or have not regularly exercised their plans to identify gaps and vulnerabilities. This lesson was obvious when Ebola crossed our borders in 2014 and CDC and local medical centers needed to quickly enhance laboratory infrastructure, equipment, and training (NHSC 2015; Bell 2016). It is clear that unprepared and poorly trained responses to medical crises could readily create new biosecurity vulnerabilities that result in diverted biological agents. Like most emergencies, the diversion of biological agents for terrorist ambitions will likely originate at a single location and, therefore, prevention and response must have a local focus.

Therefore, there may be a need for a more refined national biodefense strategy that goes beyond high-level national security standards by providing more specific direction to research and diagnostic laboratory organizations. The Select Agent Rule requires regular assessments of laboratory organizations and enforcement of infractions through fines and possible criminal convictions. However, there are too many ways to circumvent these security requirements, especially for the insider threat.

New ideas and additional incentives are needed to achieve practical stopgaps against theft and diversion of dual-use agents and equipment. I offer **some general laboratory recommendations for consideration.**

- Government or the scientific industry should establish incentives for biosecurity through a biosecurity certification, accreditation or a rating system to reward those facilities with high achievement in security and preparedness and to encourage others to meet standards. Model biosecurity programs should be publicized and socialized within the industry.
- An Inter-organizational Biosecurity Working Group should be established for sharing information, processes, and ideas that have proven successful at the laboratory level (to some extent, this already occurs within some associations and during certain industry conferences).
- Government and industry should ensure sufficient funding for biosecurity to lessen vulnerability and prevent the accidental or intentional release of dual-use agents. At the same time, the level of annual operational funding for laboratory facilities could be contingent upon meeting biosecurity standards in full. This represents a conundrum and a potential for vulnerability unless laboratory directors and their funding organization maintain effective dialogue toward resolution.
- Within organizations, Institutional Biosafety Committees could take on the additional mantle of biosecurity planning and validation, or the organization could develop a separate Institutional Biosecurity Committee under the guidance of the National Science Advisory Board on Biosecurity.

For genetic modification research

- Government and the scientific industry should sanction and appropriately fund research programs to expand the realm of scientific research on genetic recombination that could lead to gain of function products. At the same time, a separate scientific body should be responsible for exploring the potential risks as well as monitoring the effectiveness of governmental controls. Researchers engaged in this program or any research or analysis of genetic recombination or reconstruction of microbes with the potential for catastrophic outbreaks should be required to obtain a Top Secret classification prior to initiation.
- Government should require regular re-assessment of the full range of potential security risks within laboratory environments. The Federal Select Agent Program is limited to 'listed agents' only, does not cover emerging pathogenic

agents and does not effectively cover novel agents due to genetic manipulation.
- The public should be continuously engaged in the discussion and the processes of considering approval of research in genetic modification of biological agents if their accidental release could have a significant impact on public health, agriculture, food security, or the ecosystems.

It is essential for the U.S. to continue to strengthen our biosecurity within U.S. laboratories, hospitals, and manufacturing facilities as well as develop better strategies for surveillance and countering unsanctioned development and application of bioterror weapons. The recommendations offered here may not be popular among laboratory directors and managers who already struggle with limited resources and time for regulatory compliance. However, the stakes are too high to permit continuing gaps in security and incident response planning. We should not wait until the next disaster occurs to complete the job of securing our nation's laboratories possessing dual-use materials. And we should understand that providing sufficient funding to prevent or respond effectively to the next major public health challenge inside and outside the U.S. is the most cost-effective approach in the long run. The process of biosecurity requires careful analysis of the spectrum of current and emerging biological threats and their impacts as well as the effectiveness of disease prevention, identification, monitoring, and medical response.

Throughout all these functions, regulators, public health planners, and responder agencies must analyze the complexities of cost and benefit, and make effective decisions on investments and actions. **While the stakes are potentially very high from bioterror attacks, they still must be analyzed with proper perspective to the higher probability and equally high impact of natural disasters.**

As the Director of Emergency Programs at Communications Resource Inc. (CRI), ***Robert E. Smith*** *manages and provides expertise for federal departments and agencies in emergency preparedness, emergency response, continuity of operations, continuity of government, security risk assessment, and security planning. Mr. Smith joined CRI in 2002 to improve security and resilience at federal laboratory facilities throughout the U.S. following the 2001 anthrax attack. Mr. Smith specializes in consultative services for projects with chemical, biological, radiological, and explosive (CBRE) risk components. Since 2002, he has conducted on-site security risk assessments for over one hundred federal laboratories, irradiator facilities and High Hazard dams. Mr. Smith obtained a Bachelor of Science degree in biological sciences and a Master of Sciences degree in microbiology from the University of Maryland, and a Master of Science degree in Biodefense from George Mason University.*

More US kids in 27 states get paralyzing illness, cause is still unknown

By Mike Stobbe (AP Medical Writer)

Source: https://kutv.com/news/nation-world/more-us-kids-in-27-states-get-paralyzing-illness-cause-is-still-unknown

Nov 13 — More children have been diagnosed with a mysterious paralyzing illness in recent weeks, and U.S. health officials said Tuesday that they still aren't sure what's causing it.

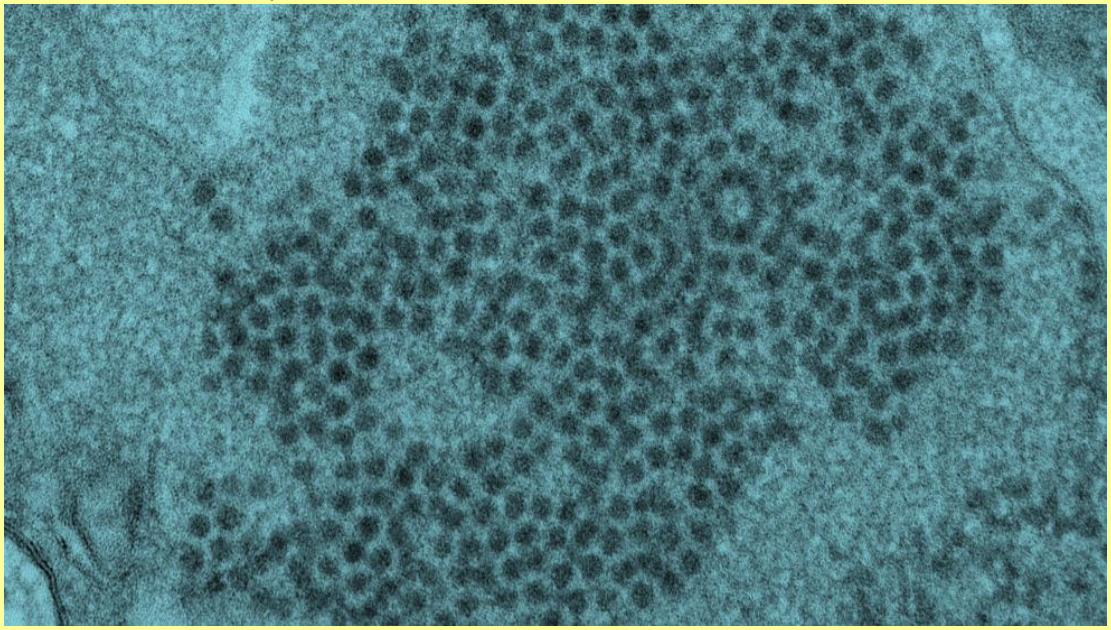
This year's count could surpass the numbers seen in similar outbreaks in 2014 and 2016, officials said. Fortunately, the disease remains rare: This year, there have been **90 cases spread among 27 states**, the Centers for Disease Control and Prevention said.

It's not clear what's causing some children to lose the ability to move their face, neck, back, arms or legs. The symptoms tend to occur about a week after the children had a fever and respiratory illness.

Health officials call the condition **acute flaccid myelitis**. No one has died from it this year, but CDC officials say **at least half the patients do not recover from the paralysis and some have serious complications.**

Polio and West Nile virus have been ruled out. Doctors have suspected the cause might be some kind of enterovirus, which in most people causes cold symptoms. But CDC officials say that's not clear.

The first mysterious wave of paralysis cases in 2014 coincided with a wider spike in illnesses connected to an enterovirus called EV-D68, CDC officials said. But there was no such spike when another wave occurred in 2016, or this year.



This 2014 electron microscope image made available by the Centers for Disease Control and Prevention shows numerous, spheroid-shaped Enterovirus-D68 (EV-D68) virions. Doctors have suspected a mysterious paralyzing illness, acute flaccid myelitis, might be tied to a kind of enterovirus, such as EV-D68 or EV-A71. A spike in EV-D68 illnesses coincided with the first mysterious wave of paralysis cases in 2014. (Cynthia S. Goldsmith, Yiting Zhang/CDC via AP)

There's also a lack of clinical evidence: CDC officials have checked the spinal fluid of about three-quarters of the 90 patients, and found EV-68 in only one. Another type of enterovirus called EV-A71 was found in only one other patient.

But there are questions about that, too. If a virus is the cause, it's possible the test is not good enough, or the germ cleared the spinal fluid by the time the tests were taken, or the culprit is hiding elsewhere in the body, said the CDC's Dr. Nancy Messonnier.

It's also possible the paralyzing illnesses are caused by some new germ for which no lab test has been developed. Or maybe there's some predisposing factor in some patients that cause their immune systems to react so severely to a germ or other trigger that the immune response causes paralysis, CDC officials said.

Parents and even some scientists have criticized the agency for not solving the riddle.

"I understand why parents are frustrated. I'm frustrated. I want answers too," said Messonnier, who is overseeing the agency's outbreak investigation. CDC officials have pledged to do more to notify doctors to look for possible cases and to more thoroughly review cases from years past for further clues.

About 120 cases were confirmed in 2014, the first time such a wave occurred. Another 149 were reported in 2016. In 2015 and 2017, the counts were far lower, and it's not clear why.

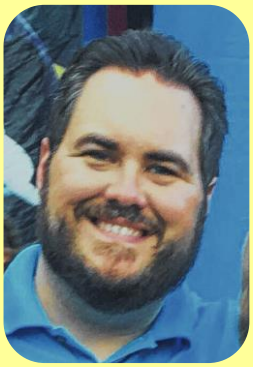
The illnesses have spiked in September each year there's been a wave and then tailed off significantly by November. But it can take weeks to determine if they should be counted in the outbreak. More than 160 cases are being investigated, and some of those may join the count, CDC officials said.

When science becomes a crime

By John Judkins

Source: https://www.timesgazette.com/opinion/32711/when-science-becomes-a-crime

Nov 13 – On May 11, 2004, Dr. Steven Kurtz's wife died of a heart attack.



Dr. Kurtz was a professor at the University of Buffalo who also dabbled in unique art exhibits involving the display of bacteria. At the time of his wife's death, Dr. Kurtz had been working on a project regarding particular strains of genetically modified bacteria used in common store-bought food. His exhibit was to be displayed at the Massachusetts Museum of Contemporary Art.

When police and paramedics responded to the 911 call about his wife's heart attack, they found Dr. Kurtz's home office containing several Petri dishes and various pieces of lab equipment related to his upcoming exhibit.

Dr. Kurtz's wife died before the authorities arrived at his home. Having no expertise in science, the police spent the remainder of the day questioning Dr. Kurtz about the contents of his home. The following day as Dr. Kurtz was leaving a funeral home where he had begun to make arrangements for his wife, four FBI vehicles surrounded him in the parking lot, and he was arrested upon suspicion of bioterrorism. While Dr. Kurtz was being detained, the FBI ransacked his home. A week later, Dr. Kurtz was allowed back into his house where he found mounds of detritus including used chemical test kits, discarded hazmat suits, stacks of pizza boxes and a pile of empty bottles of sports drinks. Much of his personal property had been taken.

Shockingly, the government even seized the body of his dead wife.

The investigation dragged on for nearly two months, but while the entire affair was offensive to Dr. Kurtz, he was not very worried about being charged with bioterrorism. The bacteria in his home was completely harmless. That was, in fact, the whole point of his art exhibit. Dr. Kurtz wanted to demystify and help to curtail the inappropriate fear of genetically modified bacteria found in food. As one leading biochemist ultimately testified, "there are likely more dangerous organisms found on the cheese in your refrigerator" than were used in Dr. Kurtz's exhibit.

Unfortunately, when the government's investigation of bioterrorism came up empty, it decided to pursue an indictment against Dr. Kurtz and a colleague, Dr. Robert Ferrell of the University of Pittsburgh, on charges of mail fraud and wire fraud.

The government alleged that Dr. Kurtz had used Dr. Ferrell to purchase bacteria for his art exhibit fraudulently. Dr. Ferrell purchased the bacteria from an academic supplier, and Dr. Ferrell's contract stated that the bacteria was not to be transferred to anyone else. Because Dr. Kurtz and Dr. Ferrell had discussed the purchase by email, and the bacteria had shipped by ordinary mail, the government alleged that a crime had been committed due to their alleged conspiracy to breach Dr. Ferrell's contract and defraud the academic supplier. For this alleged crime the government sought to imprison both professors for up to twenty years and fine them each up to one million dollars.

Drs. Kurtz and Ferrell vowed to fight the absurd charges, and both of their universities along with many of their colleagues raised a substantial legal fund to aid in their defense. Even so, the prosecution ultimately proved too much for Dr. Ferrell. Three years into the prosecution, Dr. Ferrell had suffered a stroke. That along with a previous diagnosis of Non-Hodgkin's Lymphoma led Dr. Ferrell to ask his attorney to seek a plea bargain from the federal prosecutors so he could be done with the whole affair. Dr. Ferrell pleaded guilty to a single misdemeanor count related to mailing the bacteria. He was sentenced to one year of unsupervised probation and ordered to pay a $500 fine. At sentencing, the judge almost apologetically explained that the sentence was "the most lenient" he could give.

Dr. Kurtz continued to fight the charges and in 2008, a full four years after his wife's death, he prevailed. All charges against him were thrown out by the court. However, the victory was bittersweet. He had been denied the opportunity to properly mourn

his wife. His defense had cost him more than six figures in personal expense. His research had been stymied, and the criminal charges against him had sent repercussions throughout the scientific community.

Many researchers sent letters to the prosecutors during the four-year prosecution. Most were anonymous due to fear that they too might be charged criminally.

One missive stated, "You are interfering with my work on finding the cause of a cancer because of your prosecution."

Another noted that the prosecution had stymied many American labs' efforts to recruit foreign scientists due to fear of arrest for ordinary research practices.

A letter which identified the author only as a prominent scientist employed by the government stated that the actions which formed the basis of the charges occur every day throughout the scientific community, and that basic research would grind to a halt throughout the nation if colleagues were not allowed to procure and mail bacterial samples to one another.

Nevertheless, because the criminal statutes had been worded so broadly so as to allow for a criminal prosecution of what was essentially a breach of contract, the government continued to pursue its case through to its bitter end.

Most defendants who face such serious charges accept plea bargains to avoid the risk of lengthy prison sentences. Very few individuals have the stamina or resources that Dr. Kurtz had to fight the charges. Your government has unlimited resources which go right along with its unlimited fatuousness. If you find yourself in the crosshairs of an unjust prosecution, pray that your case ends up as an exception which proves the rule.

Finally, as a continuation of my efforts to inform on more of the absurd laws of our nation, please be aware that it is a federal crime to sell wine with a brand name which includes the word "zombie." 27 U.S.C. §207, §205(e) & 27 C.F.R. §4.39(a)(9).

***John Judkins** is a Greenfield attorney.*

The counties where the anti-vaccine movement thrives in the U.S.

By Peter J Hotez

Source: http://www.homelandsecuritynewswire.com/dr20181114-the-counties-where-the-antivaccine-movement-thrives-in-the-u-s

Nov 14 – As a pediatrician-scientist who develops new vaccines for neglected diseases, I spent most of my career in the Boston-Washington, D.C. corridor.

While working in the Northeast, I had heard a few things about the anti-vaccine movement. As both a vaccine scientist and a father of four, including a daughter diagnosed with autism and intellectual disabilities, I followed the emergence of doubt over vaccine safety in the general public. Ultimately, in scientific circles, any debate ended when an overwhelming body of scientific evidence demonstrated there was no association between vaccines and autism.

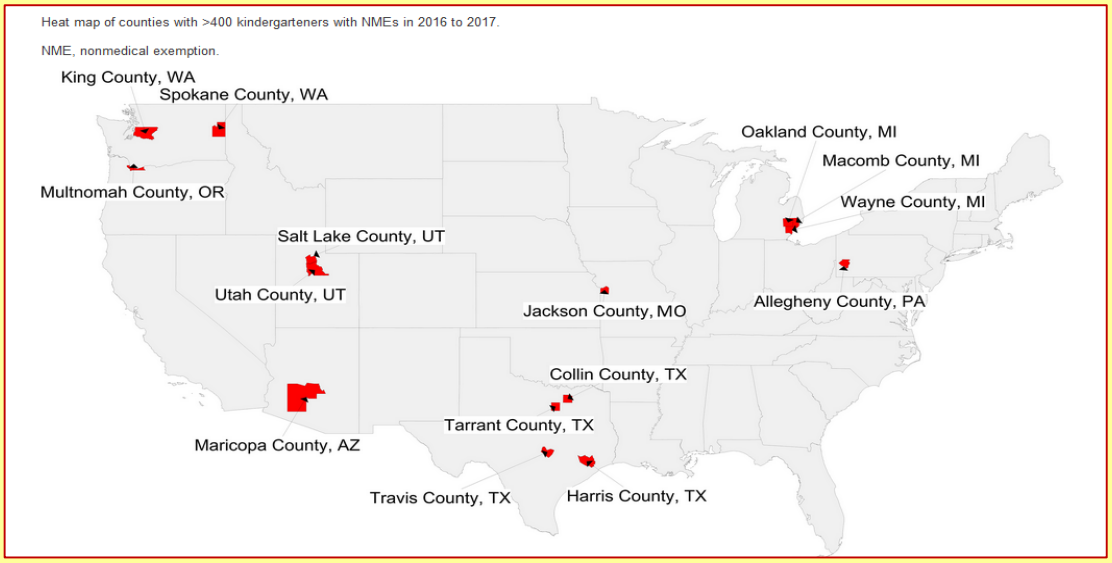
But then, in 2011, I relocated to Houston's Texas Medical Center. I soon learned that, unlike in the Northeast, where the anti-vaccine movement so far seems restricted to small groups, the Texas anti-vaccine movement is aggressive, well-organized and politically engaged.

There are now at least 57,000 Texas schoolchildren being exempted from their vaccines for nonmedical reasons, about a 20-fold rise since 2003. I say "at least" because there is no data on the more than 300,000 homeschooled kids.

I'm worried these children, who are mostly concentrated either in the Austin area and towns and cities in north Texas, including Plano and Forth Worth, are at high risk of acquiring serious or even deadly childhood infections such as measles or whooping cough. Texas also ranks near the bottom in terms of adolescent girls getting their HPV vaccine to prevent cervical cancer – only four states had lower vaccination rates.

I then began to wonder about other parts of the U.S. Together with colleagues from Baylor College of Medicine and Texas Children's Hospital, where I work, we did an in-depth study of kindergarten schoolchildren who receive vaccine exemptions across the country. Currently, 18 states allow nonmedical vaccine exemptions for either "conscientious objector" or "philosophical/personal belief" reasons. We were able to obtain information on 14 of those states.

Currently, 18 states allow nonmedical vaccine exemptions for either "philosophical" or "personal belief" reasons. In the highlighted counties, there were more than 400 kindergarteners with non-medical exemptions for vaccinations in the 2016-2017 school year (see PLOS/Medicine map).



A clear picture emerged: Vaccine exemptions are on the rise in 12 of the states we looked at. Indeed, anti-vaccine activities appear to be more of a western phenomenon, especially in the Pacific Northwest (Idaho, Oregon and Washington) and the American Southwest (Arizona, Missouri, Oklahoma, Texas and Utah).

What exactly is going on in the West, where many parents shun vaccines and take their children out of vaccination programs? Researchers are still at the early stages of understanding the reasons behind the anti-vaccine movement. A couple of these states, Oklahoma and Texas, host well-organized political action committees that lobby their legislatures and even raise campaign funds for candidates to endorse anti-vaccine positions. These committees appeal to parental fears of unwarranted government interference.

What's more, some studies suggest that vaccine refusal is linked to affluence, and possibly with affluence there is greater access to the internet. There are now hundreds of anti-vaccine websites on the internet, many of which still allege that vaccines cause autism or that autism is a form of "vaccine injury," neither of which is true.

The anti-vaccine movement also effectively uses social media to share their message. Some studies show that anti-vaccine social media has created an "echo chamber" effect that strongly reinforces negative attitudes towards vaccines.

Of course, scientists have proven the safety of vaccines over and over again. As the father of a daughter with autism, I have recently written "Vaccines Did Not Cause Rachel's Autism." My book details both how and why vaccines cannot cause autism based on the scientific literature, as well as the challenges my wife Ann and I face daily as parents and guardians of Rachel, now an adult living with significant intellectual disabilities.

The effects of anti-vaccine websites and social media, together with the PACs, are quite powerful. They include a terrible measles outbreak in Minnesota in 2017; measles outbreaks in New York and Missouri this year; and almost 200 influenza deaths of unvaccinated children.

However, my newest concern are the counties in the American West, where a high percentage of kids are being opted out of vaccination programs. I believe that these are the areas most vulnerable to terrible measles or pertussis outbreaks in the coming years. In the past year, Europe has been inundated with measles, including dozens of deaths, due to large declines in vaccine coverage. I'm concerned the U.S. could suffer a similar fate.

Peter J Hotez *is Dean of the National School of Tropical Medicine and Professor of Pediatrics and Molecular Virology & Microbiology, Baylor College of Medicine.*

Vaccination myths must be debunked: Experts

Source: http://www.homelandsecuritynewswire.com/dr20181114-vaccination-myths-must-be-debunked-experts

Nov 14 – An analysis of anti-vaccine witness statements presented during the Texas Legislature's 2017 session revealed recurring misconceptions that need to be challenged, according to an expert at Rice University's Baker Institute for Public Policy.

Kirstin Matthews, a fellow in science and technology policy in the Center for Health and Biosciences at the Baker Institute and Baker Institute graduate intern Melody Tan are the authors of two new issue briefs that examine the common anti-vaccine arguments and misconceptions presented during public hearings for two Texas House bills on vaccinations.

Matthews also discusses these issues on the Baker Institute's most recent "Policy Matters" podcast.

Rice says that according to Matthews and Tan, the five recurring misconceptions are vaccines are ineffective, herd immunity is a myth, vaccines "shed" and cause the spread of disease, the impacts of vaccine-preventable diseases are minor and vaccine-exempt children are not spreading disease. "Each of these myths is inaccurate and unscientific," the authors wrote. "Furthermore, the witnesses failed to use accurate scientific data to justify them. The few witnesses who did try to cite research grossly misunderstood or misinterpreted the data."

Given these misconceptions, **there is a clear need to increase awareness among policymakers and the public of vaccines' positive impact, the negative consequences of an under-vaccinated population and how policies can help influence vaccination rates in Texas**, the authors said.

"One way is to encourage broad public participation in discussions on vaccines that involve physicians, scientists, parents and students — especially those who are at risk by being around under-vaccinated children," the authors wrote. "In addition, scientists and doctors should share and discuss publicly available data and research on vaccines and their impacts on public health."

The authors said that without strong public support for vaccines and vaccine research, Texas runs the risk of allowing more people to opt out for nonmedical reasons, thereby increasing the risk of vaccine-preventable disease.

"Vaccines are low-cost solutions to often expensive and debilitating illnesses," the authors wrote. "They reduce the public financial burden and increase public health. They are a critical tool for public health and should be encouraged and promoted by the state Legislature by increasing access, not disparaged by allowing myths to perpetuate unchallenged."

Machine Learning to Predict Injuries

Source: https://i-hls.com/archives/86596

Nov 14 – Ground-breaking research recently used big data analysis and machine learning to develop a model in order to predict the development of **pressure injuries** among critical care patients. Such models, once successful, have vast potential and could be tailored to

serve in military medical facilities in order to predict similar pressure injuries. Perhaps in the future it could be further utilized to predict and coincidently better treat other types of injuries, whether in soldiers or civilians.

The research was published in the November issue of American Journal of Critical Care (AJCC). The research team examined five years of data on patients admitted to the adult surgical or surgical cardiovascular intensive care units at the University of Utah Hospital in Salt Lake City.

Among the sample of 6,376 patients, hospital-acquired pressure injuries of stage 1 or greater developed in 516 patients, and injuries of stage 2 or greater developed in 257 patients.

With these two outcome variables identified by the team, the researchers proceeded to use machine learning to analyse the large amount of clinical data readily available in the patient records, and examine the relationships among the available predictor variables.

They used a technique called random forest, which is relatively unaffected by moderate correlations among variables common in health research.

The researchers believe their study is the only one in which machine learning was used to predict development of pressure injuries in critical care patients.

According to Principal investigator Jenny Alderden, "current risk-assessment tools classify most critical are patients as high risk for developing pressure injuries and therefore do not provide a way to differentiate among critical care patients in terms of pressure injury risk."

She adds that "eventually, our model may offer additional insight to clinicians as they develop a plan of care for patients at highest risk and identify those who would benefit most from interventions that are not financially feasible for every patient."

Eventually, the model could help identify which patients are at the greatest risk for developing pressure injuries and who would benefit from interventions such as specialty beds or more frequent skin inspection. The next step will be to validate and evaluate the model in a new sample of patients, as published in newswise.com.

A website worth visiting

Source: http://www.promedmail.org/aboutus/

ProMED INTERNATIONAL SOCIETY FOR INFECTIOUS DISEASES

ProMED - the **Program for Monitoring Emerging Diseases** - is an Internet-based reporting system dedicated to rapid global dissemination of information on outbreaks of infectious diseases and acute exposures to toxins that affect human health, including those in animals and in plants grown for food or animal feed. Electronic communications enable ProMED to provide up-to-date and reliable news about threats to human, animal, and food plant health around the world, seven days a week.

By providing early warning of outbreaks of emerging and re-emerging diseases, public health precautions at all levels can be taken in a timely manner to prevent epidemic transmission and to save lives.

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A central purpose of ProMED is to promote communication amongst the international infectious disease community, including scientists, physicians, epidemiologists, public health professionals, and others interested in infectious diseases on a global scale. ProMED encourages subscribers to participate in discussions on infectious disease concerns, to respond to requests for information, and to collaborate together in outbreak investigations and prevention efforts. ProMED also welcomes the participation of interested persons outside of the health and biomedical professions.

ProMED was established in 1994 with the support of the Federation of American Scientists and SATELLIFE. Since October 1999, ProMED has operated as an official program of the International Society for Infectious Diseases, a nonprofit professional organization with 60,000 members worldwide.

ProMED is also available in several languages and as regional networks:

- ProMED-PORT (Portuguese language posts focusing on Latin America)
- ProMED-ESP (Spanish language posts focusing on Latin America)
- ProMED-RUS (Russian language posts focusing on the independent states of the former Soviet Union)
- ProMED-MBDS (English language posts focusing on the Mekong Basin region of Southeast Asia)
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- ProMED-MENA (English language posts focusing on the Middle East)
- ProMED- SoAs (English language posts focusing on South Asia)

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ProMED collaborates closely with HealthMap at Children's Hospital Boston. We also gratefully acknowledge HealthMap for providing website and hosting services to ProMED.