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CBRNE

NEWSLETTER



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EDITOR'S CORNER



**Editorial**

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

Editor-in-Chief
CBRNE-Terrorism Newsletter*Dear Colleagues,*

Despite the car attack in Melbourne today and some rumors that NK is testing biological weapons in ICBM cruise missiles, December was a quiet month – hope to stay like this until the end of 2017 and the very first days of 2018. In the meantime the Editorial Team of the Newsletter is wishing to all of you its sincere wishes for a New Year as peaceful as possible! Take care dear colleagues, fill your batteries and spend the holy days with your families and people you love and care.



*Sincere wishes
to the few and the brave
CBRNE First Responders!*

The Editor-in-Chief

Married Pakistani doctor, 44, who molested student nurse, 21, then blamed it on 'different cultural norms' in the UK gets to keep his job

Source: <http://www.dailymail.co.uk/news/article-5106709/Doctor-molested-nurse-gets-job.html>

Nov 23 – A Pakistani doctor who molested a student nurse on a hospital ward is to keep his job after blaming the incident on 'cultural norms' in the UK.

Married locum doctor Imran Qureshi, 44, grabbed the breast of the 21-year-old and told her he wanted an affair as he considered her 'sexually available' because she'd had previous boyfriends.

The student nurse said she was 'shaken up and distraught' and told a tribunal the incident affected her studies and left her unable to trust male colleagues.

The woman, referred to as Miss A, said Qureshi - who was working as a locum senior house officer - grabbed her chest for two seconds before trying to 'make light' of it then becoming aggressive.

Qureshi admitted he made a misjudgement but said 'cultural norms' were different in the UK to his native Pakistan and he failed to spot a 'red light' warning him to make no advances towards the victim.

In June 2016 the father-of-two was ordered to sign the Sex Offender Register for five years after he was convicted of sexual assault by a jury.

He was also sentenced to a 12-month community order and subsequently lost appeals against his conviction.



But at the Medical Practitioners Tribunal Service in Manchester this week he escaped with a 12 month suspension after he offered a 'since deep hearted apology' to Miss A and insisted it was a 'moment of madness and short, brief touching.'

In June 2016 the father-of-two was ordered to sign the Sex Offender Register for five years after he was convicted of sexual assault

by a jury

He has since attended a course on maintaining professional boundaries and his position as a doctor will be reviewed next year.

Panel chairman Nicholas Flanagan told the doctor: 'The Tribunal concluded you showed a lack of empathy towards Miss A and ignored her objections to your behaviour.

'Given the length of time you had been in the United Kingdom and the fact you were fully aware of the differences in culture because of your experiences with your wife, you should have recognised Ms A's reluctance in light of your shared cultural understanding.





'The Tribunal concluded there is a low but nevertheless not insignificant risk of harm to another individual by a repetition of your behaviour.'

But the tribunal said erasing Qureshi's name from the Medical Register would be disproportionate, punitive and not in the public interest.

The incident happened at Trafford General Hospital in Davyhulme, Greater Manchester, on June 3 2015. The 21-year-old Muslim student, who was on a work placement, said Qureshi seemed 'excited to see her and well within her personal space'.

At around 3pm she asked the doctor to retrieve some patient notes to which he replied: 'I don't want to get it yet, I want to spend some time with you'.

Counsel for the General Medical Council Rebecca Vanstone, added: 'He told Miss A she was beautiful and asked whether she had a boyfriend. He then said he was not happy in his marriage and wanted an affair.'

'Shortly afterwards Miss A was in the ward kitchen when he entered the room and closed the door behind him. He asked whether she had a thyroid problem before feeling her neck.'

'She was backed into the corner when the registrant touched her chest at the top where her breasts start. She said he put his fingers there for a few seconds before she pushed them away.'

Qureshi admitted he made a misjudgement but said 'cultural norms' were different in the UK to his native Pakistan and he failed to spot a 'red light' warning him to make no advances

'Miss A says she held her hand up to signal for him to move away and told him he was a disgrace. He asked for a hug and she refused but he did it anyway.'

'Then he grabbed her right breast for a few seconds. Miss A said he was laughing and trying to make light if the situation and then became aggressive and said that friends do what he was trying to do.'

'Miss A reported the incident about an hour later to a friend who told her to inform her mentor and she did so. The mentor describes the account given to her and said she appeared to be nervous, shaken up and distraught.'

The woman said she felt 'anxiety, anger and depression' during the criminal proceedings but the trial judge said Qureshi posed 'no risk for the future.'

Miss Vanstone added: 'Miss A says she was prescribed sleeping tablets because she was struggling to sleep and since she had been wary of male doctors.'

'She took three weeks off work which could delay her qualification. She feels that the incident impacted her reputation, she is a young unmarried Muslim woman.'

But Qureshi's lawyer Lee Gledhill said: 'This was a moment of madness, a short, brief period of touching due to him misreading the signals. It has had a profound impact on his personal and financial life but he has had a long time to think about his actions and he is extremely remorseful. He has acknowledged the impact this had on Ms A and would like to issue a sincere apology to her and her family.'

EDITOR'S COMMENT: Either deport the doctor to Pakistan or let us in our misery! Do not spend tax payers' money and do not destroy what has been left from Western civilization...



Border Walls Are All the Rage Worldwide Because They Work

By Michel Gurfinkiel

Source: <http://www.meforum.org/7002/border-walls-are-all-the-rage-worldwide>

Nov 17 – One may support or oppose the Trump administration's grand design in terms of home security: the building, or the "updating," of a 3200-kilometer barrier between the United States and Mexico. One cannot deny, however, that such structures – hermetic and heavily monitored separations, instead of merely classic borders – are quite common today.

While the Iron Curtain and Bamboo Curtain separating the USSR and Red China from the rest of the world were partially dismantled, some other 20th century barriers are still extant. And new ones are being erected all over the world at steady pace.





Le Point's border barrier infographic (■ Immigration ■ Terrorism)

Le Point, a French right-of-center weekly, has published [a comprehensive map in this respect](#). According to it, and other documents, the oldest existing barriers are the outcome of wars of aggression.

The "demilitarized zone" (DMZ) between North and South Korea -- in fact, one of the most militarized fences in the world -- was created in 1953 as part of the armistice agreement that ended a three-year war initiated by the Communist North Korean regime. The 180-kilometer long Attila that separates the Muslim-Turkish populated Northern Cyprus from the Christian-Greek populated southern Republic of Cyprus was unilaterally set up by Turkey after it invaded the Mediterranean island in 1975.

The Sand Wall, a 2720-kilometer barrier put in place between 1980 and 1987 and manned by 100,000 Moroccan soldiers, marked Morocco's 1975 unilateral annexation of the former Spanish colony of Western Sahara.

Likewise, the 120-kilometer fence on the Israeli-Syrian and Israeli-Lebanese borders and the 51-kilometer fence on the Israeli-Gazan line were set up in the wake of repeated aggressions by Arab states or terrorist organizations against the Jewish State from 1948 to 2014. The almost 3000-kilometer fence on the Indian-

Pakistani border is the result of the many wars and skirmishes involving the two South Asian nations since 1947.



Clockwise from top left: The South Korean side of the DMZ, the India-Pakistan border south of Jammu, the Kuwait-Iraq security barrier, Tunisia's border with Libya.

However, the more recent barriers were built or are being built within a very different context. Their main purpose is to prevent large-scale terrorist infiltrations or to monitor mass migrations.



The largest of them are to be found in the Islamic world. This should not come as a surprise, since many Islamic countries are hotbeds of competing jihadist movements or migratory pools or both.

There is a 3300-kilometer wall between secular but Hindu-dominated India and Muslim Bangladesh. Some 2700 kilometers of walls surround Uzbekistan, 1400 kilometers lie on Saudi Arabia's borders, 1200 kilometers on Iran's Eastern borders, and 700 kilometers on Oman's borders. Jordan is completing a 500-kilometer fence on its Syrian and Iraqi borders; Tunisia a 200-kilometer fence along its Libyan border.

Israel, a Jewish islet in the Muslim ocean, operates some 550 kilometers of barriers in the West Bank and on its Jordanian and Egyptian borders in addition to its aforementioned military fences. Much smaller walls are to be found as well in the same area: Egypt built 11 kilometers on its Gaza border, and a combined 11.81 kilometers of fence separate the Spanish enclaves of Ceuta and Melilla from Morocco. More barriers dot other parts of the world.

China built a 1600-kilometer fence along the China/North Korea border. In southern Africa, a 500-kilometer fence separates Botswana from Zimbabwe. In Central America, a seashore fence cuts Guatemala from Mexico.

Border Security in the West

Many barriers have been recently implemented in Europe, essentially to curb mass immigration from Muslim countries: see the current borders of Greece, Bulgaria, Macedonia, Hungary, Slovenia, and even Norway. A 3-kilometer fence has been built at Calais in northern France around the terminal of Eurostar, the French-British underwater high-speed train tunnel.

However, enlightened citizens in Western democracies usually feel uncomfortable about wall-building -- especially when their own countries are concerned.

Individual freedom and individual achievement are the Western world's most cherished values: it is all the more difficult to admit that they have a dark side, that more freedom to pursue happiness may entail more freedom for evil people to follow their evil ways. That mass immigration without acculturation may bring about about societal disruption, with equally bad consequences for the autochthonous population and the newcomers.

Evidence about the dark side is getting overwhelming, however. There is accordingly a growing feeling that barriers may actually be needed, at least as a transitory option, and that, as such, they are fully legitimate.

In fact, the whole discussion about *border barriers* pales once proper attention is given to the surge of walls, fences, gates and security checks of any kind *within our own borders*.

Some of us may remember a time when there were no security checks on domestic flights, and when security checks on international flights amounted to no more than passport or customs control. Today, it is properly unthinkable to not to be checked, and screened, and profiled, even for a short domestic shuttle between two neighboring cities.

The reason for such a transformation is not a declining interest in individual freedom, but a rising concern about individual and collective safety due to increasing numbers of airline hijackings, bombings, and suicide attacks. More often than not, the same is true about other forms of public transportation. All manners of checks are now routinely operated on rapid trains in Europe, like TGV in France. Passengers and luggage are checked on all train and long-distance buses in Israel. Random inspection is commonplace even on regular bus and underground lines in Europe and Israel.

Similar considerations prevail about access to public buildings and even to public spaces. Electronic access control or bag checking is ubiquitous at museums, department stores, and government or business facilities in most developed nations. Many public facilities are surrounded by permanent metallic barriers or concrete cones. This has been the case for years at American embassies or Jewish facilities, including synagogues. In the wake of terrorist truck and car attacks against pedestrians, like the massacre in Nice on July 14, 2016, more barriers and concrete cones are being installed in tourist areas. Meanwhile, street or highway monitoring cameras keep a record of pedestrians and cars alike.

State of siege measures are now a quite frequent occurrence. After the terrorist attacks in Barcelona last summer, many monuments, streets, and public spaces -- including coffee



shops and restaurants -- were momentarily closed in other European cities. In Paris, where I live, it was forbidden to drive or even to walk in front of or around the Notre Dame Cathedral. Armed personnel of all kinds and of both genders were patrolling (the ordinary police, the CRS or anti-riot police, the *Gendarmerie nationale* or national constabulary, and the regular army), all of them heavily equipped with bulletproof jackets, guns, and even fully automatic guns. In places where traffic was allowed, security personnel randomly stopped private cars and trucks for inspection.

And what about private housing?

Until recently, walls and gates were not a common feature in well-to-do American suburbs. Things may be changing in this respect, with the rise of gated community projects. Likewise, the gates of most residential buildings used to remain unlocked or even open during daytime in post WW2 Paris; Parisians had no qualms then about leaving their apartment keys under the doormat. From the 1970s on, new dispensations were introduced: "digicodes" or digital locks became ubiquitous. Paying a visit to friends or

relatives in 21st century Paris frequently entails passing through one or several digitally operated gates.



The West Bank barrier has enabled Israel to reduce terrorist infiltration from Palestinian areas to virtually nil

It stands to reason that border barriers and home security are but two faces of the same coin. The true

question is how much border barriers help alleviate the burden of security *within* borders.

In my opinion, the answer is very much.

European nations, and France in particular after the jihadist killing spree of 2015-2016, are learning a lot from Israel. There, comparatively high levels of home security have been achieved without infringing personal liberties or even creating a pervading climate of fear and suspicion.

One important reason for this Israeli success is the implementation of comprehensive networks of border barriers.

Michel Gurfinkiel, a Shillman-Ginsburg Fellow at the Middle East Forum, is the founder and president of the Jean-Jacques Rousseau Institute, a conservative think tank in France.

What evolutionary biology tells us about how aliens could look

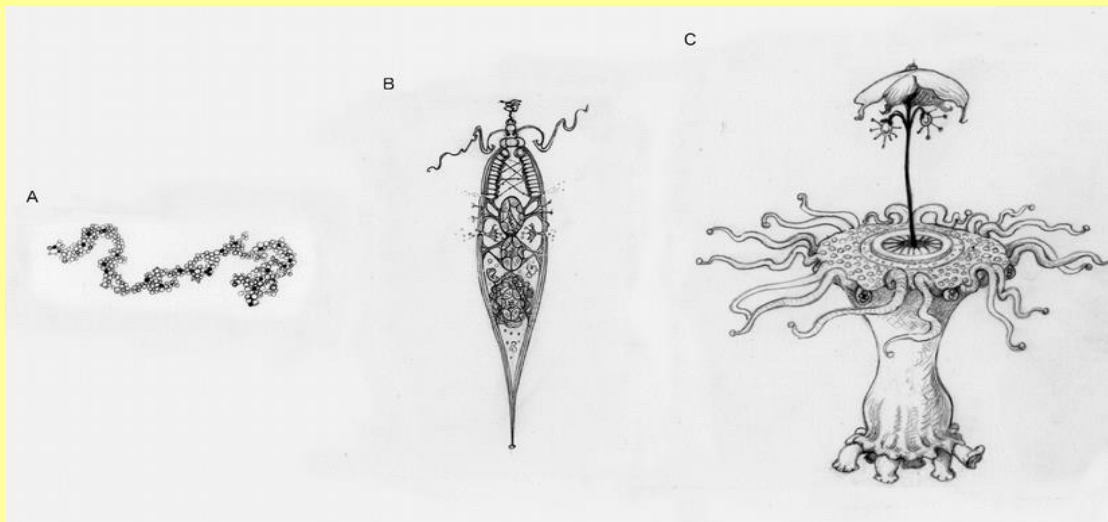
Source: <http://www.homelandsecuritynewswire.com/dr20171121-what-evolutionary-biology-tells-us-about-how-aliens-could-look>

Nov 21 – Hollywood films and science fiction literature fuel the belief that aliens are monster-like beings, who are very different to humans. But new research suggests that we could have more in common with our extra-terrestrial neighbors, than initially thought.

In a new study published in the [International Journal of Astrobiology](#) scientists from the

University of Oxford show for the first time how evolutionary theory can be used to support alien predictions and better understand their behavior. **They show that aliens are potentially shaped by the same processes and mechanisms that shaped humans, such as natural selection.**





Picture an alien. These illustrations represent different levels of adaptive complexity we might imagine when thinking about aliens. (a) A simple replicating molecule, with no apparent design. This may or may not undergo natural selection. (b) An incredibly simple, cell-like entity. Even something this simple has sufficient contrivance of parts that it must undergo natural selection. (c) An alien with many intricate parts working together is likely to have undergone major transitions.

Oxford [notes](#) that the theory supports the argument that foreign life forms undergo natural selection, and are like us, evolving to be fitter and stronger over time.

Sam Levin, a researcher in Oxford's Department of Zoology, said: "A fundamental task for astrobiologists (those who study life in the cosmos) is thinking about what extra-terrestrial life might be like. But making predictions about aliens is hard. We only have one example of life - life on Earth — to extrapolate from. Past approaches in the field of astrobiology have been largely mechanistic, taking what we see on Earth, and what we know about chemistry, geology, and physics to make predictions about aliens.

"In our paper, we offer an alternative approach, which is to use evolutionary theory to make predictions that are independent of Earth's details. This is a useful approach, because theoretical predictions will apply to aliens that are silicon based, do not have DNA, and breathe nitrogen, for example."

Using this idea of alien natural selection as a framework, the team addressed extra-terrestrial evolution, and how complexity will arise in space.

Species complexity has increased on the Earth as a result of a handful of events, known as major transitions. These transitions occur when a group of separate organisms evolve into a

higher-level organism - when cells become multi-cellular organisms, for example. Both theory and empirical data suggest that extreme conditions are required for major transitions to occur.

The paper also makes specific predictions about the biological make-up of complex aliens, and offers a degree of insight as to what they might look like.

Sam Levin added: "We still can't say whether aliens will walk on two legs or have big green eyes. But we believe evolutionary theory offers a unique additional tool for trying to understand what aliens will be like, and we have shown some examples of the kinds of strong predictions we can make with it.

"By predicting that aliens undergone major transitions - which is how complexity has arisen in species on earth, we can say that there is a level of predictability to evolution that would cause them to look like us.

"Like humans, we predict that they are made-up of a hierarchy of entities, which all cooperate to produce an alien. At each level of the organism there will be mechanisms in place to eliminate conflict, maintain cooperation, and keep the organism functioning. We can even offer some examples of what these mechanisms will be.

"There are potentially hundreds of thousands of habitable planets in



our galaxy alone. We can't say whether or not we're alone on Earth, but we have taken a small

step forward in answering, if we're not alone, what our neighbors are like."

— Read more in Samuel R. Levin et al., "Darwin's Aliens," *International Journal of Astrobiology* (1 November 2017).



'How to Beat Your Wife'

Source: <https://clarionproject.org/how-to-beat-your-wife/>

Nov 22 – Thanks to our friends at MEMRI who scour the web for videos that show the evil embedded in radical Islam, here's some advice on how to beat your wife. This is not a new video but is worth watching nonetheless.

A Marshall Plan for Gaza Is a Bad Idea

By Efraim Inbar

Source: <http://www.meforum.org/7025/a-marshall-plan-for-gaza-is-a-bad-idea>

Nov 15 – Voices inside and outside the Israel Defense Forces (IDF) are advocating for a "Marshall Plan" – a massive international mobilization – for the improvement of Gaza's living conditions. They believe that an improved Gaza economy will reduce anti-Israel violence, whereas further economic deterioration in Gaza will accelerate the radicalization process resulting in elements more extreme than Hamas taking control.

This rationale is faulty on many counts.

First, the belief that poverty leads to terrorism is an unsubstantiated liberal myth. There has been no proven connection between one's standard of living and political violence and terrorism. Poor countries, such as India, produce little terrorism. When the Second Intifada began in the year 2000, the Palestinian economic situation was on the rise.



Second, the belief that greater affluence for Gazan civilians will bring moderation to the Hamas military leadership is naïve. Radical ideology and religious fervor are unlikely to be influenced by the wealth of unarmed civilians. In a dictatorship, it is the guys with the guns who call the shots. Middle East dictators are not afraid to kill their opponents.

The argument that tackling poverty in Gaza will curb radicalization is faulty on many counts

Third, massive economic aid for Gaza is synonymous with supporting Israel's bitter

enemy, one which seeks Israel's destruction. Did the West ever consider granting economic aid to Islamic State (ISIS) for fear of greater radicalization?



We need not be concerned with the demise of Hamas rule. Hamas is an offshoot of the Muslim Brotherhood. Radical Islam will only be defeated when enough Muslims realize that radicalism leads to suffering, not deliverance.

Fourth, a weakened Hamas is in Israel's interest. This is also the desire of Egypt and the Palestinian Authority (PA). A weak Hamas presents a weaker threat to Israel as well as to the PA. And a weakened Hamas will be also more susceptible to Egyptian pressure for curtailing assistance to Islamist insurgents in Sinai.

Fifth, any strengthening of Hamas will come at the expense of the PA. Although neither are "real" partners for peace for Israel, the PA is nevertheless a less belligerent and more convenient partner for tense coexistence.

Sixth, Israel's struggle against the Iranian quest for hegemony in the Middle East will be undermined by an Israeli policy that preserves the Hamas regime.

After all, Hamas is in close cooperation with Tehran.

Saudi Arabia and its allies in the Sunni moderate camp detest the Muslim Brotherhood and Hamas. These countries fear Iranian encroachment. Better relations with these countries will not be served by a campaign to help Gaza.

In short, aid to Hamas only strengthens the position of radical Islam throughout the Middle East.

Islamism will be defeated when enough Muslims realize that radicalism leads to suffering, not deliverance.

The Marshall Plan concept is misguided and counterproductive. Israel should adhere to its longstanding approach of using sticks and carrots in the Palestinian arena; a policy that has scored impressive successes over the years, although the balance is always delicate and fraught with uncertainty. While Israel is not interested in a humanitarian disaster in Gaza, the suggestion to importune for a Marshall Plan clearly undercuts the advantageous equilibrium between punishment and incentive.

Efraim Inbar is president of the Jerusalem Institute for Strategic Studies, professor emeritus of political studies at Bar-Ilan University, and a Shillman-Ginsburg fellow at the Middle East Forum.

Anti-Islamophobia' Motion Taking More Fire

By Tarek Fatah

Source: <http://www.meforum.org/7018/anti-islamophobia-motion-taking-more-fire>

Nov 14 – A professor of linguistics at the University of Ottawa, commenting on the so-called **anti-islamophobia motion, M103**, has urged the Trudeau government "to start an international Commission on how to handle the violence in the Qur'an," which, he says exists, without doubt.

Professor Karim Achab gave his presentation on Nov. 8 to the Standing Committee on Canadian Heritage regarding the motion on systematic racism and religious discrimination, which focuses on "Islamophobia." Using a PowerPoint presentation, Achab, who is of North African Amazigh (Berber) ancestry in Algeria, said "Islamophobia" is an inappropriate, unjustifiable word.

He then focused on the definition of "Islamophobia" offered by many Islamist activists: "The irrational fear or hatred of Muslims that leads to discrimination or actual acts of harassment or violence."

Achab suggested the word was an example of "academic lexical creation" and, even though people have the right to create such words, they should have no place in parliament or law.

Dissecting "Islamophobia," the linguistics professor told MPs, "phobia (is) a medical term referring to one type of mental disorder." And yet, he noted, no one speaks of Coptophobia, even though, "Copts are slaughtered daily in Egypt."

Alluding to anti-black racism and the genocide of the Yazidis by Islamic State, the professor asked why there were no words for "Blackophobia" or "Yazidiphobia"?



If the clarity and explicit language of Ahab gave the Liberal MPs and their NDP wingmen heartburn, what was to follow left them gasping for a politically correct response.

The next speaker was my friend, Yasmine Mohammed, another Canadian of North African Arab heritage. She was born in Canada in a strict Islamic environment but has today stepped back from the faith.

Mohammed introduced herself to MPs on the committee with these words: "I was born and raised in Canada. I both attended and taught in publicly funded Islamic schools in Canada. I wore a hijab from the age of nine in Canada. And later, when I was forced into a marriage with a Jihadi, I wore a niqab, here in Canada as well."

Getting straight to her point, Mohammed said: "M103 is doing the exact opposite of its intent. Rather than quelling bigotry, it is feeding the fire because it includes the word "Islamophobia" that is not about protecting people — Muslims — it is about protecting the ideology — Islam."

She addressed the fear of Canadians whom, she acknowledged, have "been naturally uneasy and suspicious about how a so-called peaceful ideology (Islam) could be spilling so much blood."

Then she told her story. It moved even Liberal MPs who, for the most part, have insulted Muslims who have opposed M103 before the committee.

Mohammed said: "But to people like me, people with backgrounds in the Muslim world, this is blasé. We have been dealing with Muslims killing in the name of religion for 1,400 years. We are accustomed to Islamists, like the Muslim Brotherhood, and Jihadis like al-Qaida and ISIS.

"I was married to a member of al-Qaida. I had his baby. None of this is a mystery to me. None of this is new."

Later, not one Liberal or NDP MP asked her a single question. It was as if she had never been there.

Maybe the professor and the ex-niqabi should have worn multi-coloured socks and placed their feet on the table.

Hell, even the mainstream media would have covered that.

Tarek Fatah, a founder of the Muslim Canadian Congress and columnist at the Toronto Sun, is a Robert J. and Abby B. Levine Fellow at the Middle East Forum.

No, the Swedish Church has **not** banned the male pronoun for God

Source: <https://www.thelocal.se/20171124/no-the-swedish-church-has-not-banned-the-male-pronoun-god>

The Swedish Church has hit out at 'fake news' after reports it had decided to stop calling God 'he' or 'Lord'. 'It is not true,' a spokesperson told The Local.

The Church of Sweden will only refer to God in gender-neutral terms, reported several of the world's biggest news outlets on Friday, saying it had made the decision in an update of its 31-year-old handbook.

"It's not true," were a spokesperson's first words when The Local called to ask.

File photo of a Swedish church. Photo: Christine Olsson/TT



"It's not true," repeated Sofija Pedersen Videke, head of the Church's service of worship committee, which was heavily involved in the work on

the new handbook before it went before the Church Assembly.



The Church Assembly, a 251-member decision-making body, voted on Thursday with a large majority to update the handbook, which includes the Church's aim to use language that is "more inclusive".

"The old handbook is from 1986 and the new edition is much more in line with the Swedish Bible translation made in 2000," Pedersen Videke told The Local. "God is beyond 'she' and 'he', God is so much more."

"We want variation when it comes to how you express yourself, just like in the Bible."

Some of the updated language includes three alternatives for the words to use at the start of worship services, including one which is gender-neutral: "In the name of the Father and Son, and the Holy Spirit," "In the name of God, the Father and Son, and the Holy Spirit", and "In the name of the triune God".

The Church Assembly also agreed to use the female grammatical gender for the Holy Spirit, as it the case in Hebrew as well as in the 2000 Swedish Bible translation ('den heliga anden' as opposed to 'den helige ande').

"Everyone who wants to call God 'Lord' can remain calm. It is still there in many places in the new handbook. We have replaced 'he' with 'God' in one place, that's all," Pedersen Videke told The Local.

She said she had been fielding calls from journalists all day, and the Swedish Church also replied to several comments on its social media accounts, emphasizing that the change is not all-encompassing.

When The Local repeats the headline "Church of Sweden to stop referring to God as 'he' or 'Lord'", which appeared in a major mainstream international newspaper on Friday, to Pedersen Videke, she sighs:

"It's not true, it's fake news. I am aghast and wonder where it's coming from?"

The decision to update the handbook, which was last revised in 1986, was taken at a Church Assembly meeting in 2009. The pronoun 'he' has been removed in one place, one sentence in the Gloria, where the Assembly voted on Thursday to replace it in: "Åra åt Gud i höjden och frid på jorden bland människor som han älskar" ("Glory to God in the highest, and on earth peace among humans whom he loves").

The change was adopted on the initiative of Kenneth Nordgren, who represents the Free Liberals group in the Church Assembly. He argued: "This is in order to take it one step further with regard to inclusive language and to indicate direct liturgical talk about God, which is preferable to an indirect pronoun. Stylistically, we are also of the opinion that this works well in terms of liturgy."

Sweden's gender-neutral pronoun 'hen' does not appear in the new Church handbook at all.

EDITOR'S COMMENT: This time it was just fake news. But sometimes fake news are releases in order to check people reflects on a specific issue. If well taken then the change is installed. If not, it is attributed to a mistake or a misunderstanding etc. So do not be surprised if this is the new change following sex enrichments, "parent 1" and "parent 2" expressonas and many more to come based on a specific universal plan aiming to change the world the way we know it.

Technology helped fake news. Now technology needs to stop it

By John Cook

Source: <https://thebulletin.org/technology-helped-fake-news-now-technology-needs-stop-it11285>

Nov 17 – Heavily criticized for their role in spreading lies that influenced the 2016 US presidential election, the social media giants have begun to acknowledge what happened. In October, representatives of Google, Facebook, and Twitter [testified before Congress](#) and pledged to improve their response to the problem. The companies have even taken action to flag misinformation when it appears on their sites.

This is a welcome development. It is imperative that social media outlets push back against fake news, both as it relates to future elections and

on critical scientific issues like vaccines and climate change. But it is also important to keep in mind that with the wrong strategies, the fight against false statements could be ineffective or even undermine its own goals. Efforts to counter misinformation should be informed by scientific research into the efficacy of various approaches. Fortunately, psychological research on misinformation goes back decades. The solution lies in pairing psychology with technology.



Tech tries to undo the damage

There is no question that social media have played a large role in amplifying the impact of misinformation over the last decade. A stunning one-fifth of online discussion about the 2016 US election originated from [automated social media bots](#). (Bots are automated scripts that generate content and interact with people online.) Pro-Trump bots were significantly more prolific than pro-Clinton bots, with the result that most of this automated content [supported Trump](#). To make matters worse, fake news stories were [more widely shared](#) than real stories, underscoring the harsh reality that truth is at a disadvantage when competing with often inflammatory fake news.

All these issues remain unresolved. To be sure, the social media giants are attempting to turn the fake news Titanic, developing tools and algorithms to counter the corrosive influence of misinformation. Google [now includes](#) authoritative fact-checks in its search results. Facebook has begun labelling links to fake news sources as false, and says it can [reduce the spread of an untrue story](#) by 80 percent.

However, efforts to counter misinformation can be ineffective, or worse, even counterproductive. When conspiracy theorists encounter debunking posts on Facebook, they [double down](#) by increasing their likes and comments on posts that support their conspiracies. General warnings about fake news cause people to have less trust in true headlines, showing that even well-intended efforts to fight fake news can [boomerang unexpectedly](#).

Further, new research indicates another subtle but dangerous side effect of fact-checking. As fake news labels become more commonplace on social media outlets like Facebook and Google, people are coming to expect fake news to be labelled as such. As a result, when a fake news post is not tagged, people are [more likely to believe it is true](#) than if they had not been exposed to fake news labels in the first place. Researchers call this the “implied truth effect”—

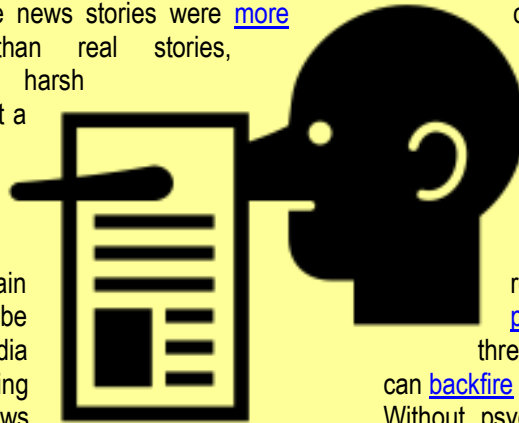
a reminder of the psychological minefield that is the human mind when dealing with misinformation.

Time for technocognition

While fake news rocketed into public consciousness just over the last year, researchers have studied [how to counter misinformation](#) for many years, discovering myriad potential pitfalls along the way. When debunkings are designed poorly, they can be ineffective or [even make matters worse](#) by reinforcing the misinformation. For example, if a debunked myth is not replaced with a fact—in the same way that a defense lawyer tries to provide an alternative suspect in a murder trial—the myth is likely to return and [continue to influence people](#). When a debunking threatens a person’s personal beliefs, it can [backfire](#) and strengthen the misconception.

Without psychological research, we wouldn’t know any of this. While such research is essential, though, it cannot alone stop post-truthism from swamping society. The tech world needs psychology to design effective, evidence-based strategies, but psychology needs technology in order to reach the masses. This has led to an interdisciplinary approach known as “[technocognition](#).” The idea behind technocognition is that information architecture should incorporate principles from psychology, behavioral economics, and philosophy to undo the damage and polarization that fake news has inflicted through social media. Technology contributed to the problem, and is an important part of the solution.

One of the most exciting areas of research into misinformation seeks the holy grail of fact-checking: the ability to automatically detect a claim in real-time and instantly assess its accuracy. In a study published in 2015, researchers at Indiana University developed a [novel method](#) to computationally assess the accuracy of a given claim. The method involves turning information from Wikipedia infoboxes (the least-disputed sources on the site) into a network of subjects—such as “Socrates”—and objects—such as “person.”



Any statement of fact, such as “Socrates was a person,” is represented by a link between the two nodes in the network. Once this network was constructed, researchers were able to assess the veracity of any new claim by measuring how long you would have to travel through the network to join two nodes. For instance, the computer program found a long path length between the terms “Obama” and “Muslim,” so rated the claim “Obama is a Muslim” as having low truth value. (While the scientists built their system based on Wikipedia, they write that they could “leverage any collection of factual human knowledge.”)

Advances in automatically detecting misinformation should be coupled with research into the [relative effectiveness](#) of ways to present the results of fact checking. For example, [experiments show](#) that explaining the rhetorical techniques used to mislead people is an

effective way to counter misinformation, but this strategy has yet to be tested in a social media context. Another useful research finding is that [fact-checks are more effective](#) when they come from a friend. Based on this knowledge, a tech company could devise a way to make it easy for people to share the results of fact checking with their social network.

It is still early days, but interdisciplinary approaches incorporating technology and psychological research could yield ways to reduce the damage caused by online misinformation. Scholarly research, unfortunately, moves slowly, and elections over the next few years face a fake-news threat similar to what we saw in 2016. But our understanding is growing. More than ever, we now need collaboration between the social media giants and researchers on misinformation.

John Cook is a research assistant professor at the Center for Climate Change Communication at George Mason University. In 2007, he founded Skeptical Science, a website which won the 2011 Australian Museum Eureka Prize for the Advancement of Climate Change Knowledge and 2016 Friend of the Planet Award from the National Center for Science Education. John co-authored the college textbooks Climate Change: Examining the Facts and Climate Change Science: A Modern Synthesis and the book Climate Change Denial: Heads in the Sand. In 2013, he published a paper finding 97 percent scientific consensus on human-caused global warming, a finding that was highlighted by US President Barack Obama and UK Prime Minister David Cameron. He currently co-hosts, with Peter Jacobs, the podcast Evidence Squared on the science of science communication.

Daniel Pipes on Recent Saudi Reforms

International Policy Digest

November 21, 2017

Source: <http://www.meforum.org/7030/daniel-pipes-on-recent-saudi-reforms>

Is the recent Saudi permission for women to drive cars and enter a stadium to watch men in sports competitions merely a political maneuver or a real reform?



All signs point to Mohammad bin Salman, the effective ruler of Saudi Arabia, being very serious about basic changes. So, I see this as a real reform.

Middle East Forum President Daniel Pipes: Saudi Crown Prince Mohammad bin Salman appears "very serious about basic changes."

Let's discuss the reason for these reforms at this moment: Do the rulers feel at risk?

Yes, the leadership realizes the current path will lead to poverty and weakness. Avoiding that fate requires making fundamental changes in nearly every aspect of life.



Or was the Saudi decline in income what led the government to increase women's participation in the economy?

Yes, the need to bring women more into the economy is the larger implication of the permission to drive. But it's less the immediate decline in income that scares the leaders than the long term. For example: Should electric cars prevail, one estimate expects the price of oil to decline to [US\\$10 per barrel](#).

Or was it the Yemen crisis and Saudi Arabia's failure to achieve its goals there?

That may have had a small role in the decision but the urgent need to change the fundamentals of Saudi life strikes me as key.

Women will be driving but many other restrictions remain in place – such as permission from a mahram (unmarriageable kin) to marry or leave country. Will the government take further steps to abolish patriarchal laws?

Yes, that is inevitable. Saudi defiance of universal modern norms, norms that prevail in all neighboring countries, has been impressive but it cannot last. Too many Saudi women and men have experienced the outside world to maintain the *mahram* system.

What do you think of the theory that these changes are part of a US-sponsored project to unite Saudi Arabia with other Arab countries against Iran.

That misses the point: These changes are by Saudis to save their country, not by Americans. It's time to move on beyond such conspiracy theories that assume Middle Easterners are but the play things of Westerners.

Does Saudi Arabia present a different form of Islamism than those in Iran and Turkey?

Yes, the government of these three countries each follows a distinctive Islamist tradition. The Saudi one is Hanbali and traces its origins to Ibn Taymiya and Ibn Abd al-Wahhab. The Iranian one to Ayatollahs Borujerdi and Khomeini; and the Turkish one to Said Nursi and Erdoğan.

Crown Prince Mohammad bin Salman says Saudi Arabia will return to moderate Islam. But Wahhabi Islam and Salafism generally are rooted in Saudi Arabia. So, isn't MbS saying something internally contradictory? Could Saudi Arabia even in theory serve as a model of moderate Islam?

Mohammad bin Salman is referring to the changes that took place about 40 years ago, especially in the aftermath of the Iranian Revolution and Mecca mosque seizure of November 1979. In the fifty years before that, the monarchy sponsored an Islamism that by today's standards was more moderate. While MbS is using that as a reference; in fact, I expect he wants to abandon Islamism altogether. I can imagine Saudi Arabia becoming a center of moderate Islam; stranger things have occurred.

Mohammad bin Salman apparently wants to attract more foreign investment and foreign visitors to compensate for the country's decline in oil revenues. But Saudi Arabia is a conservative and traditional society, not a second Dubai, so is this achievable?

Coincidentally, I am replying to your question while in Dubai: I assure you that it too is a conservative and traditional society. But its leadership has created a dynamic, open structure in which foreigners primarily can engage in a hyper-capitalistic venture. If Sheikh Mohammed bin Rashid Al Maktoum could do this in Dubai, MbS can do it in Saudi Arabia.





For all its hyper-modern economy, Dubai remains in many ways a conservative and traditional society.

Will long-term austerity policies and cuts to subsidies increase dissatisfaction in Saudi Arabia and so, increase the likelihood of revolution?

You are pointing to the major difficulty facing MbS, namely the need to wean Saudi nationals off easy money. Whether he succeeds depends in good part on his political skills. I am skeptical that he has them.

Does Mohammad bin Salman have the necessary power to achieve his plans? How adept is he as a politician? Is he a traditional ruler or a modern dictator?

He has the power but we don't yet know how skilled he is; ask me in five years. He's a mix of traditional and modern, a traditional ruler with modern goals.

Both the Mohammad Reza Shah era in Iran and Saudi Arabia today have experienced rapid social and economic modernization as well as the opening of social space without commensurate political openness. Do you agree with the theory that KSA is therefore headed for revolution?

No, because another possibility exists, that of Singapore, post-Mao China, and the "Asian model," where the regime achieved extraordinary economic growth within a repressive polity. Perhaps the tensions will one day cause an implosion, but this unlikely mix has worked for decades with few signs of collapse. Accordingly, I do not see that the KSA is doomed to revolution; indeed, this model is working very well next door in Dubai.

Recent weeks have seen the arrest of journalists and political activists in Saudi Arabia, despite the government calling for an open social environment; is this not a contradiction?

Yes, it is. But as one sees in China, Singapore and Dubai, this model [works better](#) than anyone expected a half century ago.

More than 20 clerics have been arrested for protesting government decisions. Can the Saudi government persuade clerics to accept reforms about women and youth, or will it have to repress them?

As with journalists and human rights activists, the government will likely have to use crude force to quiet religious leaders.

How much influence does the clergy have over Saudi society? Can it or will it inspire an uprising against Saudi family?

The ulema are powerful but less so than the government. They can inspire an uprising, just as happened in Mecca in 1979, but they cannot prevail.





Nice logo, good ideas. But will it all work?

Mohammad bin Salman plans to end Saudi Arabia's dependence on oil by 2030. Is this feasible or a dream?

That's a too short timetable. Saudi Arabia will still depend on hydrocarbon revenues in thirteen years. But the country can take significant steps to lessen that dependence.

Can MbS [Mohammad bin Salman] create a national Saudi identity where now exists a tribal identity?

A national Saudi identity already exists, apart from tribal identities. The modern state came into being in 1930; as so many other states have demonstrated, that's sufficient time to indoctrinate generations of youth in the existence of a national identity.

Are you optimistic about Saudi Arabia's future and reforms in the country?

The country's future is open, for the first time since the 1920s. I simply do not know enough to predict its course with confidence.

Tehran Is Winning the War for Control of the Middle East

By Jonathan Spyer

Source: <http://www.meforum.org/7034/tehran-is-winning-war-for-middle-east>

Nov 21 – Saudi Arabia appears to be on a warpath across the Middle East. The Saudi-orchestrated resignation of Lebanese Prime Minister Saad Hariri, and Saudi officials' bellicose rhetoric after the launch of a [ballistic missile](#) targeting Riyadh from Yemen, appear to herald a new period of assertiveness against



Iranian interests across the Middle East.

Saudi Crown Prince Mohammed bin Salman is aggressively challenging Iranian ambitions in the Middle East. But is he up to the task?

Crown Prince Mohammed bin Salman's sudden moves on a variety of fronts may superficially have the feel of Michael Corleone's swift and

simultaneous strikes at his family's enemies in the closing frames of *The Godfather*. Unlike in the film, however, the credits are not about to roll. Rather, these are the opening moves



in an ongoing contest — and it is far from clear that the 32-year-old crown prince has found a formula to reverse Iran's advantage.

Let's take a look at the track record so far. The confrontation between Saudi Arabia and Iran is taking place across a swath of the Middle East in which, over the last decade, states have partially ceased to function — Iraq and Lebanon — or collapsed completely, as in the case of Syria and Yemen. A war over the ruins has taken place in each country, with Riyadh and Tehran arrayed on opposing sides in all of them.

So far, in every case, the advantage is very clearly with the Iranians.

In Lebanon, Hezbollah vanquished the Saudi-sponsored "March 14" alliance of political groups that aimed to constrain it. The events of May 2008, when Hezbollah seized west Beirut and areas around the capital, showed the helplessness of the Saudis' clients when presented with the raw force available to Iran's proxies. Hezbollah's subsequent entry into the Syrian civil war confirmed that it could not be held in check by the Lebanese political system.

The establishment of a cabinet dominated by Hezbollah in December 2016, and the appointment of Hezbollah's ally, Michel Aoun, as president two months earlier, solidified Iran's grasp over the country. Riyadh's subsequent withdrawal of funding to the Lebanese armed forces, and now its push for Hariri's resignation, effectively represent the House of Saud's acknowledgement of this reality.

In Syria, Iran's provision of finances, manpower, and know-how to the regime of President Bashar al-Assad has played a decisive role in preventing the regime's destruction. The Iranian mobilization of proxies helped cultivate new local militias, which gave the regime access to the manpower necessary to defeat its rivals. Meanwhile, Sunni Arab efforts to assist the rebels, in which Saudi Arabia played a large role, ended largely in chaos and the rise of Salafi groups.

In Iraq, the Islamic Revolutionary Guard Corps (IRGC) has developed an officially-sanctioned, independent military force in the form of the 120,000-strong Popular Mobilization Units (PMU). Not all the militias represented in the PMU are pro-Iranian, of course. But the three core Shiite groups of Kataeb Hezbollah, the Badr Organization, and Asaib Ahl al-Haq answer directly to the IRGC.

[Kataeb Hezbollah commander Abu Mahdi al-Muhandis \(right\)](#) with [Iranian Quds Force commander Qassem Suleimani \(center\)](#) and [Imam Ali Brigade leader Shebl al Zaydi \(left\)](#).



Iran also enjoys political

preeminence in Baghdad. The ruling Islamic Dawa Party is traditionally pro-Iranian, while the Badr Organization controls the powerful interior ministry, which has allowed it to blur the boundaries between the official armed forces and its militias — thus allowing rebranded militiamen to benefit from U.S. training and equipment.

Saudi Arabia, meanwhile, has been left playing catch up: Prime Minister Haider al-Abadi visited Riyadh in late October to launch the new [Saudi-Iraqi Coordination Council](#), the first time an Iraqi premier had made the trip in a quarter-century. But it is not clear that the Saudis have much more up their sleeve than financial inducements to potential political allies.

In Yemen, where the Saudis have tried their hand at direct military intervention, the results have been mixed. The Houthis and their allies, supported by Iran, have failed to conquer the entirety of the county and have been kept back from the vital Bab el-Mandeb Strait as a result of the 2015 Saudi intervention. But Saudi Arabia is bogged down in a costly war with no end in sight, while the extent of Iranian support to the Houthis is far more modest.



This, then, is the scorecard of the Saudi-Iranian conflict. So far, the Iranians have effectively won in Lebanon, are winning in Syria and Iraq, and are bleeding the Saudis in Yemen.



Saudi King Salman receives Iraqi Prime Minister Haider al-Abadi in Jeddah, June 19, 2017.

In each context, Iran has been able to establish proxies that give it political and military influence in the country. Tehran also has successfully identified and

exploited seams in their enemy's camp. For example, Tehran acted swiftly to nullify the results of the Kurdish independence referendum in September and then to punish the Kurds for proceeding with it. The Iranians were able to use their long-standing connection to the Talabani family, and the Talabanis' rivalry with the Barzanis, to orchestrate the retreat of Talabani-aligned Peshmerga forces from Kirkuk in October — thus paving the way for the city and nearby oil reserves to be captured by its allies.

There is precious little evidence to suggest that the Saudis have learned from their earlier failures and are now able to roll back Iranian influence in the Middle East. Saudi Arabia is no better at building up effective proxies across the Arab world, and has done nothing to enhance its military power, since Mohammed bin Salman took the reins. So far, the crown prince's actions consist of removing the veneer of multiconfessionalism from the Lebanese government, and threatening their enemies in Yemen.

Those may be important symbolic steps, but they do nothing to provide Riyadh with the hard power it has always lacked. Rolling back the Iranians, directly or in alliance with local forces, would almost certainly depend not on the Saudis or the UAE, but on the involvement of the United States — and in the Lebanese case, perhaps Israel.

It's impossible to say the extent to which Washington and Jerusalem are on board with such an effort. However, the statements last week by Defense Secretary James Mattis [suggesting](#) that the United States intends to [stay](#) in eastern Syria, and by Prime Minister Benjamin Netanyahu that Israel will continue to [enforce](#) its security interests in Syria, suggest that these players may have a role to play.

Past Saudi behavior might encourage skepticism. Nevertheless, the Iranians here have a clearly visible Achilles' heel. In all the countries where the Saudi-Iran rivalry has played out, Tehran has proved to have severe difficulties in developing lasting alliances outside of Shiite and other minority communities. Sunnis, and Sunni Arabs in particular, do not trust the Iranians and do not want to work with them. Elements of the Iraqi Shiite political class also have no interest of falling under the thumb of Tehran. A cunning player looking to sponsor proxies and undermine Iranian influence would find much to work with — it's just not clear that the Saudis are that player.

Mohammed bin Salman, at least, appears to have signaled his intent to oppose Iran and its proxies across the Arab world. The game, therefore, is on. The prospects of success for the Saudis will depend on the willingness of their allies to engage alongside them, and a steep learning curve in the methods of political and proxy warfare.

Jonathan Spyer, a fellow at the Middle East Forum, is director of the Rubin Center for Research in International Affairs and author of The Transforming Fire: The Rise of the Israel-Islamist Conflict (Continuum, 2011).





Christians should pray for Prince George to be gay, says minister

Source: <https://www.theguardian.com/uk-news/2017/dec/01/christians-should-pray-for-prince-george-to-be-gay-says-c-of-e-minister>

Dec 01 – Christians should pray for Prince George to be gay to force support for same-sex marriage in the Church of England, a senior Scottish Episcopal church minister and LGBTQ campaigner has said.

The **Very Rev Kelvin Holdsworth, provost of St Mary's Cathedral in Glasgow**, made the comments in a blog he reposted about LGBTQ inclusion in the Church of England following the announcement of Prince Harry and Meghan Markle's engagement.

[In the post](#), he writes that Christians should pray "for the Lord to bless Prince George with a love, when he grows up, of a fine young gentleman".

A former chaplain to the Queen, the Rev Gavin Ashenden, has described the comments as "unkind" and "profoundly un-Christian", and said the prayer was the "theological equivalent of the curse of the wicked fairy in one of the fairytales".

Speaking to Christian Today, Ashenden said: "To pray for Prince George to grow up in that way, particularly when part of the expectation he will inherit is to produce a biological heir with a woman he loves, is to pray in a way that would disable and undermine his constitutional and personal role.

"It is an unkind and destabilising prayer. It is the theological equivalent of the curse of the wicked fairy in one of the fairytales. It is un-Christian as well as being anti-constitutional. It is a very long way from being a blessing for Prince George."

The full post by Holdsworth about Prince George is part of a list of nine suggestions to force LGBT inclusion in the Church of England.

"If people don't want to engage in campaigning in this way, they do in England have another unique option, which is to pray in the privacy of their hearts (or in public if they dare) for the Lord to bless Prince George with a love, when he grows up, of a fine young gentleman," it reads.

"A royal wedding might sort things out remarkably easily, though we might have to wait 25 years for that to happen. Who knows whether that might be sooner than things might work out by other means?"

EDITOR'S COMMENT:

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AI-Based Drone Vs. Human Pilot

Source: <https://i-hls.com/archives/80027>

Nov 30 – Researchers at NASA's Jet Propulsion Laboratory (JPL) in California put their work to the test recently. Timing laps through a twisting obstacle course, they raced drones controlled by artificial intelligence (A.I.) against a professional human pilot.

The race capped off two years of research into [drone](#) autonomy funded by Google. The company was interested in JPL's work with vision-based navigation for spacecraft — technologies that can also be applied to drones. To demonstrate the team's progress, JPL set up a timed trial between their A.I. and world-class [drone](#) pilot Ken Loo.



According to nasa.gov, the team built three custom drones and developed the complex algorithms the drones needed to fly at high speeds while avoiding obstacles. These algorithms were integrated with Google's Tango technology, which JPL also worked on.

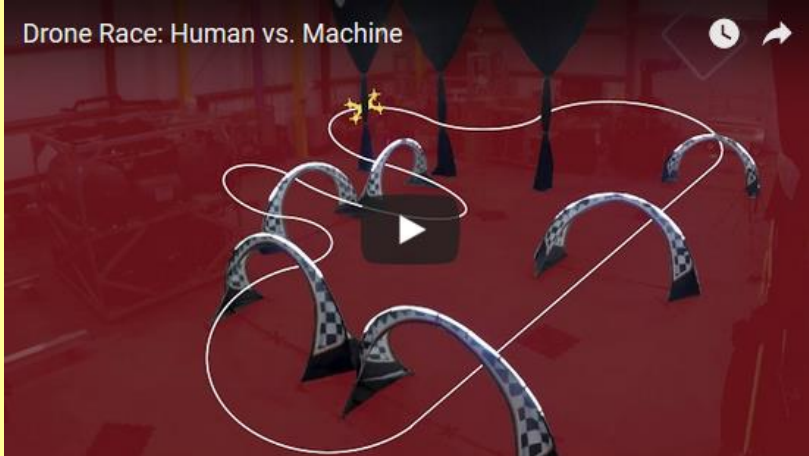
"We pitted our algorithms against a human, who flies a lot more by feel," said Rob Reid of JPL, the project's task manager. "You can actually see that the A.I. flies the [drone](#) smoothly around the course,

whereas human pilots tend to accelerate aggressively, so their path is jerkier."

Compared to Loo, the drones flew more cautiously but consistently. Their algorithms are still a work in progress. For example, the drones sometimes moved so fast that motion blur caused them to lose track of their surroundings.

Loo attained higher speeds and was able to perform impressive aerial corkscrews. But he was limited by exhaustion, something the A.I.-piloted drones didn't have to deal with.

While the A.I. and the human pilot started



out with similar lap times, after dozens of laps, Loo learned the course and became more creative and nimble. For the official laps, Loo averaged 11.1 seconds, compared to the autonomous drones, which averaged 13.9 seconds.

But the latter was more consistent overall. Where Loo's times varied more, the A.I. was able to fly the same racing line every lap.

Without a human pilot, autonomous drones typically rely on GPS to find their way around. That's not an option for indoor spaces like warehouses or dense urban areas. A similar challenge is faced by autonomous cars.

Camera-based localization and mapping technologies might allow drones to check on inventory in warehouses or assist search and rescue operations at disaster sites. They might even be used eventually to help future robots navigate the corridors of a space station.

US pulls out of UN's Global Compact on Migration

Source: <https://www.journalducameroun.com/en/us-pulls-out-of-uns-global-compact-on-migration/>



Dec 03 – **The administration of President Donald Trump has withdrawn the United States from a United Nations pact to improve the handling of migrant and refugee situations, deeming it “inconsistent” with its policies,** the US mission to the global body announced Saturday.

“Today, the US Mission to the United Nations informed the UN Secretary-General that the United States is ending its participation in the Global Compact on Migration,” the Americans said in a statement.

In September 2016, the 193 members of the UN General Assembly unanimously adopted a non-binding political declaration, the New York Declaration for Refugees and Migrants, pledging to uphold the rights of refugees, help them resettle and ensure they have access to education and jobs.

“The New York Declaration contains numerous provisions that are inconsistent with US immigration and refugee policies and the Trump Administration’s immigration principles. As a result, President Trump determined that the United States would end its participation in the Compact process that aims to reach international consensus at the UN in 2018,” the US statement said.

US Ambassador Nikki Haley said the country would continue its “generosity” in supporting migrants and refugees around the world, but that “our decisions on immigration policies must always be made by Americans and Americans alone.”

“We will decide how best to control our borders and who will be allowed to enter our country. The global approach in the New York Declaration is simply not compatible with US sovereignty.”

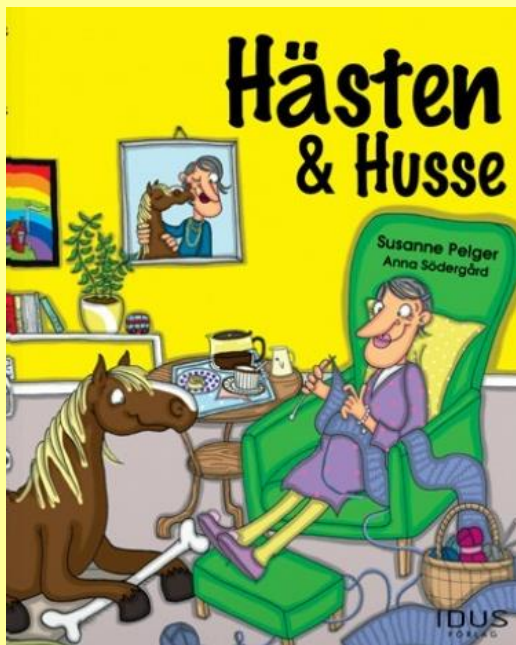
Under Trump and his “America First” policies, the United States has withdrawn from several global commitments made under the administration of president Barack Obama, including the Paris climate deal. More recently, American pulled out of the Paris-based culture and education body, UNESCO, accusing it of “anti-Israel bias.”



New Swedish Children’s Book Promotes Transgenderism to Preschoolers, Features Trans Species Horse-Dog

Source: <http://www.breitbart.com/london/2017/11/21/swedish-transgender-book-toddlers/>

Nov 21 – **A book promoting transsexuality to toddlers and preschoolers, about a transgender man and his horse who claims to be a dog, has been published in Sweden.**



The stars of *Hästen & Husse* are a man and a horse that lives with him. The man is depicted as a transgender who wears women’s clothing and lipstick when he returns home from work, while the horse is “trans-species” and believes that he is a dog.

Author and **university lecturer** Susanne Pelger says that she hopes the book will allow toddlers and preschoolers to “be who they want”, SVT reports. Pelger, who has a PhD in genetics and biology, says she was inspired to write the 32-page picture book after meeting several students at Lund University who had gone through gender transition.

She also said that she felt the subject of gender transition was a more taboo subject for children while same-sex couples had become more mainstream.

When asked if the book was just about a man who dresses as a woman and wears lipstick, Pelger said: “It’s not that simple. **Just because you**

have XX or XY chromosomes, the gender is not determined, there are other variants. Hormones play a role as well as the environment, and the personality. It is very complex.”



According to Pelger, several groups of preschool children have already been introduced to the book. When asked if men can wear dresses and wear lipstick, the children answer “Yes!” Pelger claims. “You are as you are. That’s when you’re the best,” she said.

Earlier this year, Breitbart London reported there has been a **huge spike in the number of children wanting to be transgender in Sweden**. According to child psychiatrist Louise Frisén, the number has been rising by 100 per cent each year.

In Canada, child transgender issues are not only encouraged but a recently passed law in Ontario could allow for the government to take away children whose parents do not allow them to transition claiming that such an action could be child abuse.

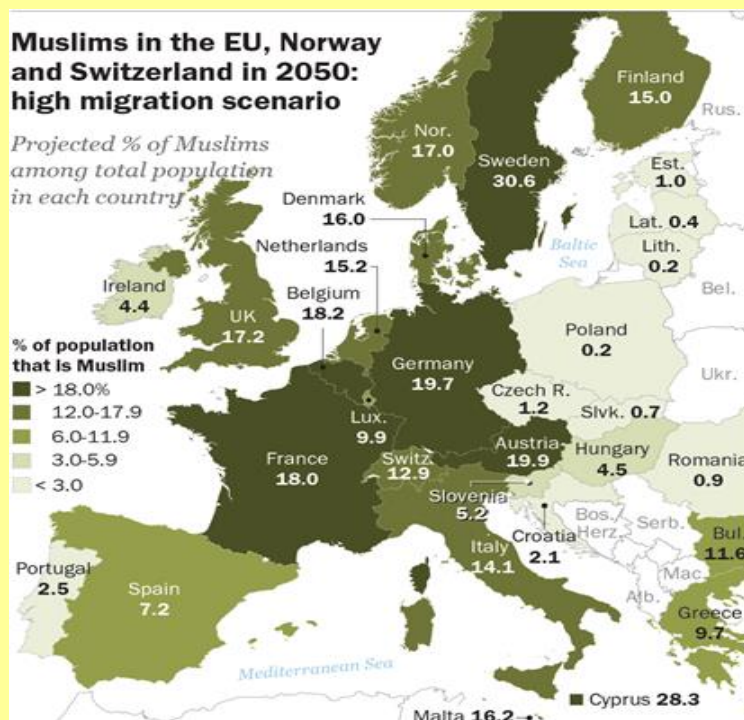
In San Francisco, U.S.A., this summer, a camp which centres around transgender children announced they would accept children as young as four years old into the programme. Despite the push for transgender issues directed toward children across multiple countries, some doctors have come out against it. Last month, several doctors at a Heritage Foundation event claimed that transgender ideology abuses children.



EDITOR'S COMMENT: Another proof of a hidden plan to change our word. Genders is not an issue; our global apathy is! Even my dogs got ungry and stated that being a dog is all they dreamed of! And if we let these people teach in our universities things will become worst...

Europe's Growing Muslim Population

Source: <http://www.pewforum.org/2017/11/29/europes-growing-muslim-population/>



future, but rather a set of *projections* about what could happen under different circumstances.

Nov 29 – In recent years, Europe has experienced a record influx of asylum seekers fleeing conflicts in Syria and other predominantly Muslim countries. This wave of Muslim migrants has prompted debate about immigration and security policies in numerous countries and has raised questions about the current and future number of Muslims in Europe.

To see how the size of Europe's Muslim population may change in the coming decades, Pew Research Center has modeled three scenarios that vary depending on future levels of migration. These are not efforts to *predict* what will happen in the



The baseline for all three scenarios is the Muslim population in Europe (defined here as the 28 countries presently in the European Union, plus Norway and Switzerland) as of mid-2016, estimated at 25.8 million (4.9% of the overall population) – up from 19.5 million (3.8%) in 2010.

Effects of migration on European population

Projected population counts by 2050

	2010	2016	2050 zero migration	2050 medium migration	2050 high migration
Muslims	19,520,000	25,770,000	35,770,000	57,880,000	75,550,000
Non-Muslims	495,280,000	495,060,000	445,920,000	459,070,000	463,040,000
Total	514,810,000	520,830,000	481,690,000	516,950,000	538,600,000

Note: Europe is defined here as the 28 nations of the EU plus Norway and Switzerland. In zero migration scenario, no migration of any kind takes place to or from Europe. In medium migration scenario, regular migration continues and refugee flows cease. In high migration scenario, 2014 to mid-2016 refugee inflow patterns continue in addition to regular migration. Estimates do not include those asylum seekers who are not expected to gain legal status to remain in Europe.

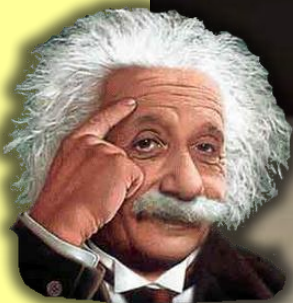
Source: Pew Research Center estimates and projections. See Methodology for details.
"Europe's Growing Muslim Population"

PEW RESEARCH CENTER

►► Read the complete study at source's URL.

Teacher reports mute Muslim boy, six, with Down's Syndrome to police - for 'terrorism'

Source: <http://www.mirror.co.uk/news/world-news/teacher-reports-mute-muslim-boy-11633983>



Dec 03 – A teacher called the police on a Muslim child who has Down's Syndrome fearing he could be a "terrorist" - even though he cannot speak.

Mohammed Suleiman, six, allegedly kept repeating the words "Allah" and "boom" in class, prompting investigations from the police and Child Protective Services.



But his parents, from Pearland, Texas, say this cannot be true because he has the mental capacity of a one-year-old and is unable to talk.

"It's not true, he doesn't speak at all," his dad, Maher Suleiman, told Fox News 26.

Now that his family have been cleared of any terrorist activity, Mr Suleiman added his family went through "hell".

"The last three weeks, four weeks, have been the hardest of my life," he said.

"A few days ago, I told my family 'Okay, everything is fine'."

But although his ordeal is over, Mr Suleiman claims discrimination is at play.

"She claimed he was a terrorist," he added. "This is so stupid, it's discrimination. Actually, it's not implied discrimination. It's actual discrimination."

The Pearland Police Department confirmed they found no need for police involvement, but the Child Protective Services investigation remains open.

The Pearland Independent School district said it could not name the teacher who made the call due to privacy laws.

EDITOR'S COMMENT:

This box was intentionally left blank!

What is Britain First, and what it stands for

Source: <http://www.homelandsecuritynewswire.com/dr20171130-what-is-britain-first-and-what-it-stands-for>



Nov 30 – Early on Wednesday morning, President Donald Trump retweeted three anti-Muslim videos — one entitled "[Islamist mob pushes teenage boy off roof and beats him to death](#)"; the second entitled "[Muslim Destroys a Statue of Virgin Mary](#)!" — and the third entitled "[Muslim migrant beats up Dutch boy on crutches](#)!" — which had earlier been posted by Jayda Fransen, the deputy leader of the vehemently anti-Muslim British hate group Britain First. Fransen was [convicted](#) last year by a British court for harassing a woman wearing a hijab – in front of the woman's children.

The third video was fake: Dutch law enforcement said that the "migrant" in the video was not a Muslim migrant at all, but a Dutch teenager who was sent to jail for his actions. The White House spokesperson, Sarah Huckabee Sanders, said on Wednesday that it made no difference whether the videos were real or fake: The important thing, she said in her daily briefing, was that they drew attention to the risks Muslim immigration posed for Europe.

Trump has a history of disseminating, amplifying, and appearing to endorse the messages of various racist, bigoted, and white supremacist hate-groups (see Jennifer Mercieca, "There's an insidious strategy behind Donald Trump's retweets," [The Conversation](#) [29 November 2017], and Peter Beinart, "Trump's Anti-Muslim Political Strategy," [The Atlantic](#) [29 November 2017]). He has been praised by the leaders of these groups – among them the KKK's David Duke; the alt-right white supremacist Richard Spencer; and Fransen herself – for using the White House imprimatur to legitimize and mainstream their organizations' extremist, racist positions.

The ADL [says](#) offers a brief background on Britain First based on information from [Hope Not Hate](#), an organization based in London.

Origins of Britain First

Britain First (BF) is a populist, far-right, anti-Muslim, anti-immigrant group founded in 2011 by former members of the British National Party (BNP), a far-right political party with neo-Nazi sympathies. BF is estimated to have about a thousand members. It was founded by Jim Dowson and Paul Golding in Northern Ireland. Dowson was known for his fervent religious views (he had trained to be a Calvinist minister) and his stance against Islam.



Golding was closely associated with Nick Griffin, the leader of the BNP from the late 1990s until 2014.

Current leadership

The group is currently led by Paul Golding who has made the BF the leading U.K.-based anti-Muslim, “counter-jihad” street movement. Jim Dowson left the group in 2014. Jayda Fransen, a Roman Catholic activist, is now the deputy leader of BF.

Ideology

The founders of BF hoped to fill a vacuum left by the decline of the BNP and the splintering of the English Defense League (EDL), a virulently anti-Muslim hate group. BF sees itself as a Christian “army” preparing to confront Muslims directly at their homes, mosques, and in the streets in order to elicit a violent reaction from the Muslim community. According to a report by the British anti-hate group, [Hope Not Hate](#), some activists in Britain First actually attended a series of bloody “fight clubs” and a sports academy overseen by ex-military personnel to get “military training” in order to carry out their activities.

Tactics

In May 2013, two Muslim converts murdered a British soldier, Lee Rigby on the streets of South London. They had been allegedly radicalized by Anjem Choudary founder of the radical Muslim group, Al Muhajiroun. After this incident, Golding issued a video warrant warning that BF would arrest Choudary if they could find his address. The groups also targeted other Muslim radicals in their homes. They launched “Christian Patrols” and intimidated Muslims in east London. The group also has “invaded” mosques. In August 2016, Golding and Fransen were banned from entering Luton and, later, all mosques and Islamic centers in England and Wales. In 2016, Fransen was charged and convicted of intimidating a Muslim woman. That same year, Golding was charged with entering premises in Wales despite a court order preventing him from doing so. He was sentenced to eight weeks in prison for breaking the court order.

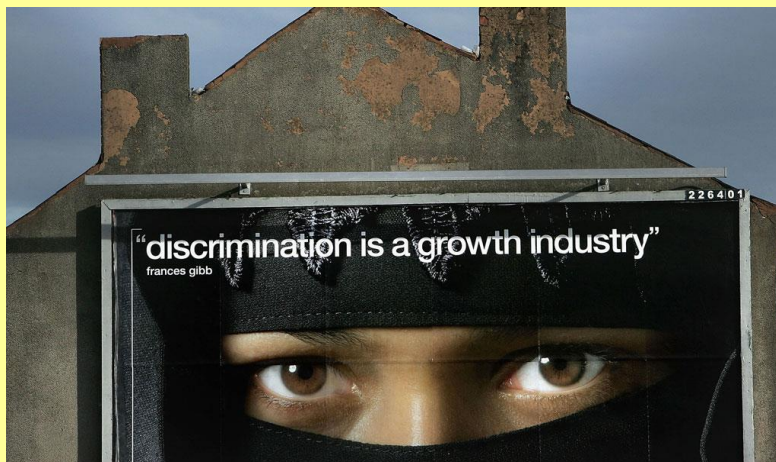
Spreading propaganda

BF’s street demonstrations are relatively small. The group has used social media to spread its anti-Muslim and anti-immigrant propaganda on Twitter, Facebook, and YouTube.

Muslim Women’s Rights in the UK Going Down the Tube

Source: <https://clarionproject.org/muslim-womens-rights-uk-going-tube/>

Dec 04 – On November 19, 2017 I accompanied my wife, Raheel Raza, to London, England. My aim was to visit Piccadilly Circus, enjoy Christmas lights on Oxford Street, check out a pub or two, visit family and



watch women from the Persian Gulf shop exhaustively while my wife was at meetings.

All this was not to be as I was invited to give a talk on a man’s perspective on [sharia](#)-related issues that have gone horribly wrong in the UK.

Here, I met and heard stories of the survivors and victims of sharia-related abuse.

Tina (not her real name) was married through a sharia council, but the marriage was never legally registered, as seems is the norm. Later her husband divorced her, the sharia council



says they have no record, and now she is in limbo as she has nowhere to go while her kids have been taken away from her.

Roma is in a very abusive marriage and wants a divorce, but since her marriage is not legal (again not registered), she can't move on with her life. These were only few of the stories I heard.

The next day was the launch of the Channel 4 documentary "[The Truth about Muslim Marriage](#)." This documentary only reiterated the extent of the problem facing Muslim women.

As a Muslim man, I find it appalling that **over 85 sharia councils have been allowed to exist in UK for as long as they have and have not done an iota of good for the three million Muslims of the UK.**

Knowing well that patriarchy and misogyny exist in our communities, these councils have been allowed to entrap women, keep polygamy alive and deprive women from their basic human rights.

I also heard the story of [Sarah Champion](#), MP for Rotherham (where the scandal of grooming and rape of British girls took place). Champion quit her frontbench role as the opposition minister for women and equalities after a backlash for saying, "Britain has a problem with British Pakistani men raping and exploiting white girls."

Its time Britain woke up from its slumber. Unless the Western world realizes this soon, the lights of Oxford Circus and Piccadilly will turn into the darkness of ignorance and the nightmare for women will continue.

The visual line-of-sight rule is perhaps the most important limitation to widespread commercial use of drones.

By Louis Ziskin

Source: <http://www.nextgov.com/ideas/2017/12/new-testing-rules-will-2018-finally-be-year-drone/144297/>



Dec 05 – In Mao's China, the order of the day was to "let a thousand flowers bloom" ([actually a misquote](#)) but today the Chinese are more likely to say "let a thousand drones fly." [China's SF Express](#) is one of the first companies in the country, and in the world, to deliver packages using drones, in what the company calls a "huge moment in drone development."

The question for Americans, of course, is when we will get our version of a thousand drones overhead. To bring that day closer, President Donald Trump recently released an [executive order](#) asking aviation authorities to "further integrate" drones into the skies over the U.S.

The order instructs officials to develop new guidelines "to promote the safe operation of unmanned aircraft systems (UAS) and enable the development of UAS technologies for use in agriculture, commerce, emergency management, human transportation, and other sectors."

Indeed, 2018 could be the year of the drone. In 2017, drones earned their chops by coming to the aid of rescue services and insurance companies dealing with the aftermath of the devastating hurricanes in Florida, Texas and Puerto Rico. Aid groups used



drones to assess damage, and insurance companies used them to process claims. It's clear that they are up to the job; now, the regulators have to be convinced.

Regulations in the United States have prevented the use of drones for anything beyond aerial observation, with the Federal Aviation Administration placing significant restrictions on drone operations. Those regulations—among them a requirement that drones always be within the line of sight of operators and that each drone has its own operator—need to be changed in order to enable operators to use drones on a commercial basis. In order for that to happen, though, drones need to be able to operate in a manner that will reassure regulators that they can relax the rules and allow drones to fly, even in the cities.

The vision that Amazon, Walmart and many other companies have for drones that can deliver packages in urban environments will require drones that will be able to navigate crowded urban airspaces safely—and once those drones are widely available, regulators will feel comfortable easing the rules that limit their use. Only then will we see a true “blooming” of the potential of drones—for package deliveries, aerial inspections and security, farming, and a thousand and one other uses that companies are already planning to use drones for.

The visual line-of-sight rule is perhaps the most important limitation to widespread commercial use of drones, but in order for the FAA to lift that rule, drones need to be able to navigate in a manner that will enable them to avoid hazards like rooftop antennas, birds and other drones. Another rule impeding the commercial use of drones is the single operator rule, which requires that each drone be operated by a single individual. That rule, too, needs to be adjusted, in order to enable companies like Amazon to deploy the fleets of drones they envisage

dropping off packages at the homes of customers.

For those rules to be changed, drones need to be capable of autonomous navigation—and the way to do that is to load them up with technologies like machine vision, sensor tech, cameras and communication technology that will enable them to stay in touch with headquarters. With machine vision—technology that uses cameras to enable drones to electronically “see” what is around them—drones will be able to navigate crowded skies, avoiding direct hits and even near misses. Sensors will also contribute, ensuring that drones are able to detect obstacles. And with communication technology on board, operators will be able to lay out routes for drones, ensuring that, like airplanes, they each fly in their own air routes in a grid that allows each safe passage through the skies. Thus will drones come into their own, being used commercially for a wide variety of purposes that companies are preparing to use drones for but haven't been able to due to FAA rules.

The best part of all this is that these technologies exist right now. Machine vision is already used on military aircraft, missiles and other airborne craft, while sensors are used nowadays for everything from automated vacuum cleaners to helicopters. Grid technology to enable drones to fly in their own airspace has gotten a big boost in recent years from technology developed for autonomous vehicles. Unlike with automated vehicles, however, which will affect society in a profound manner, there's no need to “sell” society on the advantages of drones. Drones won't require any behavioral changes on the part of the people using them or benefiting from them. It's just a matter of time before drones are ready for commercial prime time—and until regulators realize that it's time to let drones bloom.

Louis Ziskin is the chief executive officer of DropIn.

In first, 3-D printed objects connect to WiFi without electronics

Source: <http://www.washington.edu/news/2017/12/05/in-first-3-d-printed-objects-connect-to-wifi-without-electronics/>



The Dubai Miracle Has Become Real

By Daniel Pipes

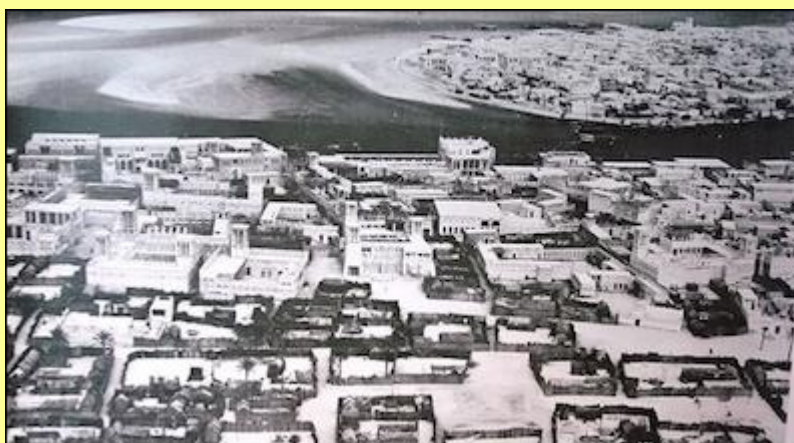
Source: <http://www.meforum.org/7082/the-dubai-miracle-has-become-real>

Dec 07 – The Great Recession of 2008-09 convinced me, like many other observers, that the city-state of Dubai's razzmatazz – Go skiing in the boiling heat! Gaww at the world's tallest building! – was but a desert mirage. I lambasted Dubai in a [2009 article](#) for "hucksterism and fast talk," running a "trompe l'oeil economy," and suckering outsiders with Ponzi-scheme real estate deals. It appeared to be only a matter of time until the whole edifice collapsed.



The [Dubai Miracle Garden](#), a 72,000-square-meter attraction that opened in 2013, is the world's largest natural flower garden.

But that did not happen. The leaders learned from their mistakes, addressed major flaws, and oversaw Dubai's roaring back bigger, bolder, and brassier than ever. To learn how this happened, I have annually



visited Dubai (one of seven polities making up the United Arab Emirates, somewhat like the United Kingdom's four countries) since 2015.

Dubai in the distant 1950s

There I found not hucksterism but something rarer and far more impressive: capitalism. And not just capitalism but

raw, unfettered capitalism with few regulations, minimal taxes, and emasculated trade unions.

The emirate sits among some of the richest oil and rentier states in the world; nearby Qatar has a per capita annual hydrocarbon income of about US\$500,000 per Qatari national. Neighboring Abu Dhabi's income per national is over \$400,000.



But Dubai has few hydrocarbons and revenue from them amounts to a measly 2 percent of the emirate's income. The rest comes from hustling. The commercial ventures come on fast and furious: real estate, air traffic, tourism, free zones, media, ports, transshipment and smuggling, education, financial services,

high-tech, and scientific research.



One of Dubai's super-fancy police cars

The result has been a huge increase in people and wealth. Fifty years ago, the [population](#) was about 60,000; now it is just [under 3 million](#), an increase of 50 times, perhaps the largest demographic growth on the planet. Meanwhile, per capita income (including

the [94 percent](#) of the population that is foreign) has reached [\\$29,000](#). This is what locals call the Dubai Miracle. The analyst [Mehran Kamrava](#) calls Dubai an "emerging global city." I call it an entrepôt, comparable to Hong Kong and Singapore.

As befits capitalist boosterism, emirate leaders obsess over breaking world records, such as the most [buildings above 300 meters](#), the busiest airport for [international passenger traffic](#), and the [fastest police car](#). As a vulnerable emirate surrounded by rapacious states like Iraq and Iran and filled with disenfranchised expatriates, it has sought safety in soft power, from tourism to [international arbitration](#).

Yet, this is capitalism with a difference, where the state plays a major role. Dubai's leaders, and especially

Emir Mohammed bin Rashid Al Maktoum (b. 1949), have directed the economy through direct ownership and a strong guiding hand. As a foreign money manager described the situation to me, "Dubai has mixed origins. The mother, a capitalist, manages the expats and small companies. The father, a socialist, manages the locals and big companies."

[Mohammed bin Rashid Al Maktoum, the emir of Dubai, at the Royal Ascot races in England](#)



The rights of subjects are strictly limited and those of the expatriates virtually nil; foreigners can be dealt with however the government chooses. Tough laws are [unpredictably enforced](#), meaning that

nearly everyone is susceptible to arrest at any time though, so long as discretion is maintained (one Emirati told me, "Here, hotel rooms are the dating scene"), punishment remains more potential than actual. The prevailing sentiment leaves politics to the wisdom of the ruling family – which, all things considered, has been wise.

Thus does Dubai fit the "Asian model," where the "tigers" of Hong Kong, Singapore, Taiwan, and South Korea grew rich with limited freedoms and pervasive government involvement in the economy.



Then came the People's Republic of China; Deng Xiaoping's 1962 declaration that "It doesn't matter whether the cat is black or white, as long as it catches mice" became the spirit behind the "Socialism with Chinese characteristics" that he launched in 1978.



If other tigers democratized, the Chinese Communist Party maintained its dictatorship through four decades of remarkable economic growth. The success of its state capitalism has proven so impressive a competitor to the free market that regimes in Russia, India, and Turkey have [emulated China](#), as *Time* puts it, by "building systems where government embraces commerce while tightening control over domestic politics, economic competition, and control of information." This is also what Crown Prince Mohammad bin Salman's [Vision 2030](#) aspires to for Saudi Arabia.

Dubai boisterously fits this new model of undemocratic wealth-building. Its distinctive outer trappings matter less than its core structure, which fits a well-established and regrettably viable model.

Daniel Pipes is president of the Middle East Forum.

'Refugee quotas are nonsense': Poland, Hungary & Czech Republic ready to fight Brussels in court

Source: <https://www.rt.com/news/412385-refugee-quotas-european-court/>

Dec 09 – **Hungary, Poland, and the Czech Republic have defended their sovereign "right" to reject EU-imposed refugee quotas after the European Commission referred the "breach of their legal obligations" to the European Court of Justice.**

The EU introduced migrant quotas in September 2015. It was conceived as a temporary emergency scheme to relocate some 160,000 refugees across the bloc's 28 member-states, in order to help Greece and Italy who were suffocating from a refugee influx. At the time, Hungary, the Czech Republic and Slovakia voted against the relocation mechanism, with Budapest and Prague refusing outright to accept the EU-mandated number of refugees. Poland also declined to take in its share of immigrant quotas.

"Hungary has not taken any action at all since the relocation scheme started, Poland has not relocated anyone and not pledged since December 2015. The Czech Republic has not relocated anyone since August 2016 and not made any new pledges for over a year," the European Commission (EC) said in a [statement](#).

Despite repeated EU Commission warnings and pressure, the dissenting trio continue to pursue a course of non-compliance, arguing that migrants pose a direct threat to their public



security. On Thursday, Brussels rejected these concerns and decided to sue the troublesome threesome over the “breach of their legal obligations.”

“The replies received were again found not satisfactory and three countries have given no indication that



they will

contribute to the implementation of the relocation decision. This is why, the Commission has decided to move to the next stage of the infringement procedure and refer the three Member States to the Court of Justice of the EU,” the commission's statement said.

Speaking to the press, the EC's deputy chair, Frans Timmermans, noted that Poland, Hungary and Czech Republic can still resolve the situation out of court if Brussels sees a change of attitude on the part of these countries. All three Eastern European countries, however, said they would rather fight Brussels in court.

“Poland is ready to defend its position in the Court,” Reuters quoted Deputy Foreign Minister Konrad Szymanski as saying. *“No one will lift the duty of providing public safety from the Polish government.”*

Meanwhile, Polish Interior Minister Mariusz Blaszczak accused Islamic migrant communities in Europe of serving as fertile grounds for terrorists. *“Experience shows that the [migrant] relocation system has not worked. It is a system that poses a threat. It degrades states, entire cities, city districts because the communities that are flowing into Europe not only do not integrate with Europeans, but form a hinterland for Islamic terrorists,”* Blaszczak [noted](#).

The office of Czech President, Milos Zeman, [reiterated](#) its long standing position that quotas represent interference in the country's internal affairs. The new Prime Minister, Andrej Babis, [said](#) he wants to hold negotiations with the EC to withdraw from the mechanism, claiming that *“quotas are nonsense and only encourage the popularity of extremist parties in Europe.”*

Reacting to the EC's latest decision at a news conference in Brussels, Hungary's Foreign Minister Peter Szijarto called the mandatory resettlement quotas a threat to the nation.

“The Government rejects illegal immigration and mandatory settlement quotas, and will continue to fight for the interests and security of the Hungarian people,” Szijarto stressed, claiming that Budapest's interests are different from Brussels'.

“Our thoughts with regard to the nation, respecting traditions, border protection and security are totally different,” he [said](#). The EU *“is facing the most serious threat of terrorism ever,”* and Hungary is already contributing to the wider security of the bloc, he added.

The refugee relocation scheme has been mostly unsuccessful. Only around 32,000 refugees had been relocated as part of the program, which initially set a target of 160,000 migrants.

The continued disagreement over the refugee quota scheme will be addressed during EU leaders summit in Brussels on December 14-15.



“Let me very clear; this issue will be with us for at least another generation if not two. So anybody who thinks that a short-term crisis is over, the issue of migration can sort of fade into the background, they are mistaken,” Timmermans said Thursday. “We now need to move from ad hoc crisis response to structural solutions that can provide a safety net to any EU country that is acutely exposed to very high migration pressures.”

EDITOR’S COMMENT: How much I envy countries without sea borders! How much I envy countries that care about their own first and then about the EU! How much I envy countries surrounded by friendly neighbors!

New Pistol to Revolutionize Close-Quarter Combat

Source: <https://i-hls.com/archives/80132>

Dec 07 – US Army soldiers fighting in Iraq and Afghanistan have been gaining more than a decade of experience in close-quarter combat, an ability to maneuver with increased lethality in caves, tunnels, crawl spaces, attics or buildings which allows soldiers to access life-impacting firepower more effectively.



While longer, larger rifle may not be available for use in “tight quarters” situations, the new M17 and M18 pistols that will soon be supplied to the soldiers were specifically designed to comply with to the requirements of confronting fast emerging targets and quick-changing circumstances, fundamental to close-quarter combat, which naturally require rapid decision making and on-the-spot flexibility amid military



confrontation, as US Army developers emphasized.

Soldiers with the US Army’s 101st Airborne Division have been the first to receive the services’ new high-tech 9mm pistol engineered to give dismounted infantry a vastly increased ability to fight and close with an enemy in caves, tunnels, crawl spaces, houses and other close quarter combat scenarios, according to nationalinterest.org.

Service weapons developers and soldiers say the new M17 and M18 pistol, designed as a next-generation handgun, is expected to substantially change combat tactics, techniques and strategies for dismounted soldiers on-the-move.

The new pistols are variants of the striker-fired P320 pistol made by Sig Sauer. They are expected to replace all of the Beretta M9 pistols that are currently in service with the US Army in a process that will take up to 10 years to complete, according to thefirearmblog.com.

The new pistol is built with a more ergonomic configuration to better accommodate the widest possible range of hand grip techniques for soldiers and enable rapid hand switching as needed in combat. The M17 is said by developers to bring much tighter dispersion, improved versatility and next-generation accuracy.



The new handguns are built with an external safety, self-illuminating sights for low-light conditions, an integrated rail for attaching enablers and an Army standard suppressor conversion kit to attach an acoustic/flash suppressor, service developers said.

The Army is now acquiring thousands of full-size XM17 and compact XM18 versions of the new 9mm pistol.

The new features add “a whole new dynamic to close-quarter combat. A standard pistol cannot change grips or allow a soldier to switch from a right-handed shooter to a left-handed shooter. This is a great capability for us to put in play,” said Sgt.1st Class Andrew Flynn, 101st Division Master Gunner. Close quarter combat, while considered indispensable to successful counterinsurgency warfare, is also something of significant relevance to large-scale force-on-force, mechanized combat against a potential near-peer adversary.

The Army’s M17 acquisition effort unfolded on a massively accelerated timeframe, moving to contract within 10 months. The fast-tracked acquisition effort, which merged work from the Army Research Lab and the Army’s Armament Research, Development and Engineering Center, drew heavily from modeling and simulation to expedite development of the new weapon. The Army has been closely coordinating with the Special Operations community regarding training and development of the new handgun, given the consistency with which close-quarter combat is utilized by SOF.

The M17 and M18 pistols are manufactured by Sig Sauer, who earned the \$580 million contract to produce the weapons in January of this year. Other competitors included Glock, FN America and Beretta USA.

Why Europe can't be trusted to do what's right

By Michael Rubin

Source: <http://www.washingtonexaminer.com/why-europe-cant-be-trusted-to-do-whats-right/article/2643111>

Dec 11 – There’s a peculiar tendency among many progressives and leftists to blame the United States for all the world’s ills. Consider Iraq: In the wake of the ouster of Saddam Hussein, critics of American actions suggested that the United States had killed hundreds of thousands of Iraqis. The only problem, with such a suggestion, is it is blatantly untrue.

Former Baathists, Islamist terrorists, and Shi’ite militias killed tens of thousands of Iraqis, if not more. U.S. forces, meanwhile, worked with Iraqi security forces to defeat the insurgents and terrorists who, unlike American forces, were targeting schools, markets, churches, and mosques. When the going got tough, however, most European contingents left.

Many progressives and human rights activists will castigate the United States for much more. While they are right to say that the Reagan administration sought rapprochement with Saddam Hussein (and publicized once and future Defense Secretary Donald Rumsfeld [meeting](#) the Iraqi dictator as Reagan’s envoy), too many make the logical leap to suggest that the United States was therefore complicit with Saddam’s subsequent use of chemical weapons against the Kurds.

Perhaps they should put their knee-jerk anti-Americanism aside and consider the facts. It wasn’t actually the Americans who provided Saddam’s government with the chemicals which he used against Iraq’s Kurds. Rather, it was [Frans van Anraat](#), a Dutch businessman, whom a Dutch court sentenced in 2005 to 15 years in prison for aiding genocide. While many in the Netherlands knew what Van Anraat was doing, it was the U.S.-led invasion of Iraq which made his guilt undeniable and forced the Netherlands to act.

There’s a couple logical fallacies to those who [want to blame](#) the United States anyway for Saddam’s use of chemical weapons. Mostly, they argue the U.S. government knew or should have known Saddam would use chemical weapons and therefore should be considered guilty by association, even if it was the Dutch (and perhaps also the Germans) who were enabling Saddam’s genocide for profit.

What is unclear is if the same progressive activists would argue that the United States should have gotten militarily involved at that point, despite the war raging between Iran and Iraq and despite the still-



existent Soviet Union acting as Iraq's patron. Human rights activists like to criticize with hindsight, but as atrocities occur they are often more concerned with criticizing those who would advocate for military action than those whose atrocities they are trying to prevent.

Indeed, this is currently the case with the Islamic Republic of Iran, whose regime suppressed minorities, has actively sought to acquire weapons of mass destruction and, even after the 2015 Iran nuclear deal, maintains an industrial-scale nuclear program. The Iran case isn't just theoretical, nor is it simply a problem of progressives [cozying up](#) to a repressive regime. Again, the Dutch come front and center. In a story the Jerusalem Post's Benjamin Weinthal [relayed](#), the Dutch ministers of defense, foreign affairs, and foreign trade reported to the Dutch parliament that "Dutch technology was used in programs of weapons of mass destruction and means of delivery in Iran, Pakistan or Syria."

So as it was with Iraq, it now is with Iran: When it comes to the problem of weapons of mass destruction, if the money is right, Dutch businessmen will side with the dictators that would use them rather than the victims who would suffer at those dictators' hands.

Now, this isn't to suggest that all Dutch businessmen are morally vacuous or would enable murder if the money was right. But the culture of Dutch commerce is a problem, especially when it comes to the Middle East. And it's not just the Dutch.

The ultimate irony, of course, is that among European diplomats and human rights activists, there is no shortage of condescension and spite directed toward the United States and its foreign policy when, arguably, the European prioritization of its business interests above nonproliferation in the Middle East which has cost thousands of lives, and threatens to cost millions more.

Indeed, if European leaders want to understand why so few policymakers in the United States trust European peace initiatives, they need look no further than the Netherlands. Or Germany, where former Chancellor Gerhard Schröder arguably used his position to privilege Russian oil interests, before [taking a leadership role](#) in Russia's major oil company after his political retirement.

It's easy to blame America. But when push comes to shove, the United States more often provides the solution, while European businessmen seek to profit off the problem.

Michael Rubin is a contributor to the Washington Examiner's Beltway Confidential blog. He is a resident scholar at the American Enterprise Institute and a former Pentagon official.

What a complete lock-up! Calais wall built to stop UK-bound migrants from crossing the Channel is fitted with UNLOCKED doors along its length

Source: <http://www.dailymail.co.uk/news/article-5174717/Calais-wall-fitted-UNLOCKED-doors-length.html>

Dec 13 – A concrete wall in Calais designed to stop UK-bound [migrants](#) from crossing the Channel has been fitted with unlocked doors along its length, it has been revealed.

The multi-million pound barrier runs half a mile along the N216 motorway near the [French](#) town's ferry terminal.

But the 13ft wall, which was supposed to stop refugees from boarding lorries heading for the UK, has doors that can be opened without a key from the motorway side.

According to Oliver Pritchard for the [Daily Star](#), who revealed the bizarre design after an investigation, migrants revealed it is possible to walk to the end of the wall where it reaches a roundabout and then walk back to open the door from the other side.

On the motorway side, the steel doors have handles and a catch which can be opened without a key. It is thought the idea was to provide access for emergency services and maintenance workers.

The Daily Star quoted one aid worker in the area as saying: 'The wall is totally pointless.'





A Home Office spokesman added: 'Security for the wall is a responsibility for the French authorities.'



Work started on the controversial wall, which cost British taxpayers more than £2million, in September 2016 and was completed in December of that year.

French charities and politicians from both left and right said they were disgusted by the prospect of the 13ft high structure, which was dubbed the 'Wall of Shame'.

It runs along the site of the former Calais Jungle where thousands of migrants once camped in squalid conditions before the shanty town was destroyed.

Greek anarchists target Saudi embassy over Yemen conflict

Source: <http://www.middleeasteye.net/news/greek-anarchists-target-saudi-embassy-over-yemen-conflict-684539844>

Dec 14 – A Greek anarchist group threw paint at Saudi Arabia's embassy in Athens at dawn on Thursday to protest against Riyadh's "medieval" repression and its involvement in the Yemen conflict.

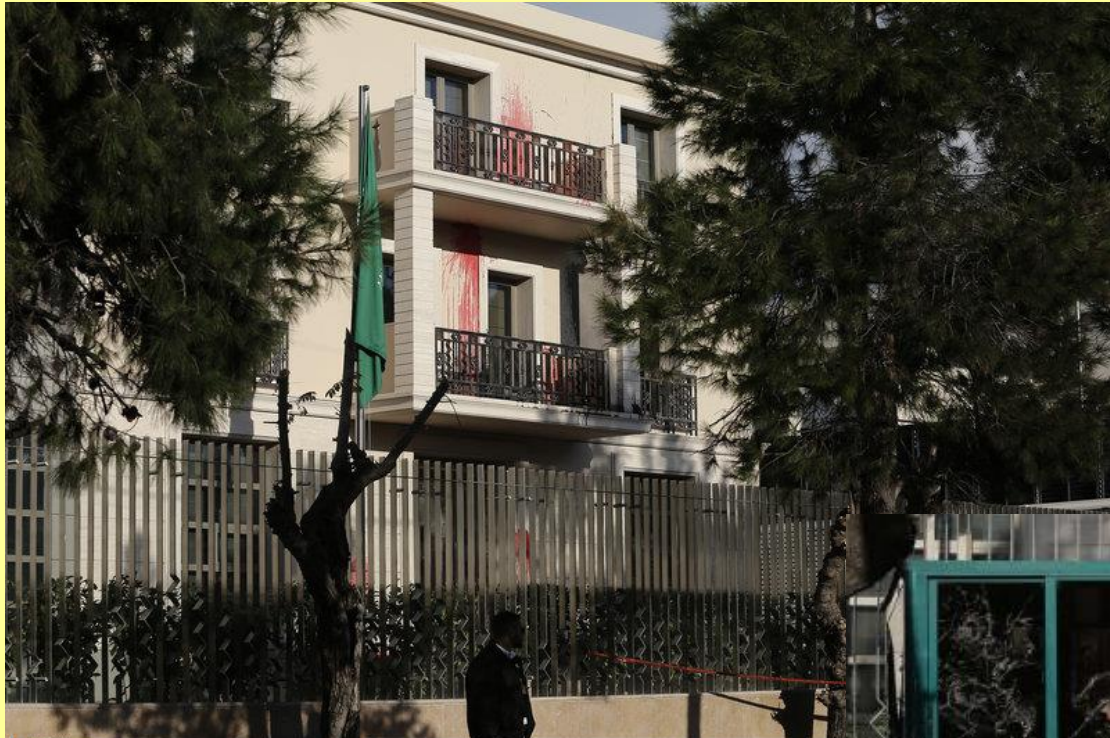


A video by the group, Rouvikonas, showed at least three persons wearing motorcycle helmets smashing the windows of a guard post outside the embassy, while another stands watch.

There was no effort to stop the assault, and no arrests were made.

"At about 0400 GMT, a few people caused damage to the outside of the embassy... They threw some paint," a police source told AFP, adding that an inquiry was underway.

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"At about 0400 GMT, a few people caused damage to the outside of the embassy... They threw some paint," a police source told AFP, adding that an inquiry was underway.

In a statement posted online, the group, whose name means Rubicon in Greek, said the Saudi royal family had imposed a "medieval dystopia" on its people and was now seeking to export it abroad.

"What IS has been doing, which rightly caused global revulsion, has been happening in Saudi Arabia for decades, in broad daylight, and it is accepted by the 'civilised' world," the statement said, referring to the Islamic State group.

"Adulteresses are beheaded in the middle of street, thieves are amputated in front of howling crowds, women are totally subjugated, dissidents and gays disappear and are executed."

'Adulteresses are beheaded in the middle of street, thieves are amputated in front of howling crowds, women are totally subjugated, dissidents and gays disappear and are executed'

Rouvikonas statement

The group also accused the leftist Greek government of "hypocrisy" over a botched attempt to sell Greek army tank shells to Saudi Arabia earlier this year.

Rouvikonas, which emerged in 2015, regularly stages such actions targeting embassies, businesses and government offices.



Group members are often detained on the spot, but with no charges pressed against them. None have been jailed.

In October, several of its members broke into the Spanish embassy in a show of support for Catalonia's independence bid.

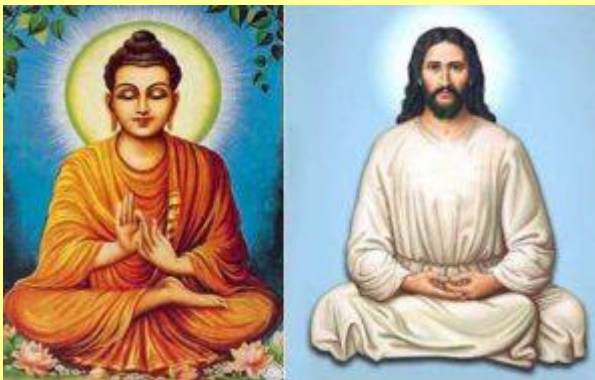
A [UN envoy said in January 2017](#) that at least 10,000 people have been killed in Yemen since Saudi Arabia and its allies joined the government's fight against Houthi rebels in 2015, triggering what the UN has called the world's worst humanitarian crisis.

EDITOR'S COMMENT: Rouvikonas is a group of young people covertly "supported" by gov members including ministers. In that respect, they enter premises and make a lot of noise just because they know that nobody will touch them or sent to court or prison. Apart from the embassies they enter the Ministry of Defense. On the other hand, embassies should be better protected and perhaps it is time to change the rules of engagement when anarchists of any kind attack security forces. If not, just wait for the dead officer of tomorrow!

Jesus was a Buddhist monk and was not crucified according to a BBC documentary

Source: <https://theweeklyobserver.com/jesus-buddhist-monk-not-crucified-according-bbc-documentary/30233/>

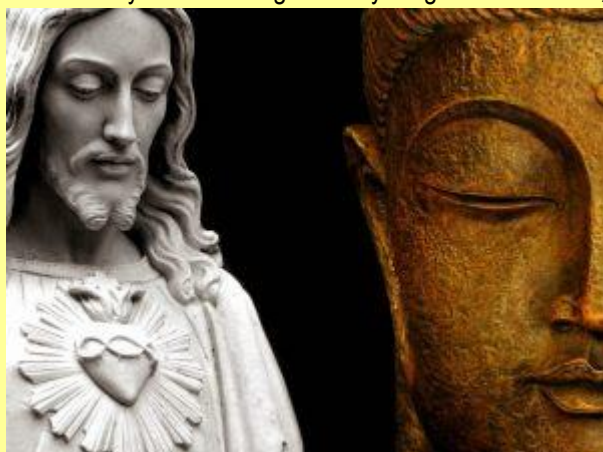
Dec 17 – Strong reactions has caused a BBC documentary on Jesus' life and action. The documentary claims that Jesus was not crucified and spent decades traveling around the world until he arrived at the Roza Bal Temple in Srinagar, Kashmir, where he stayed until His death.



By pointing to the lack of evidence for Jesus' life from the age of 13 to the age of 29, the research presented in the documentary states that the reason why there is no biblical record of the place where Jesus lived was because at that time had begun to accept influences from Buddhism.

The BBC screened documentary claims that Jesus Christ was not crucified and that he was a Buddhist monk. In particular, the documentary states that Jesus spent many years teaching in many long distance cities,

such as Jagannath, Rajagriha and Benares, and eventually resorted to the Himalayas where he continued his studies in Buddhism. Many writers, including a German scholar named Holger Kersten, wrote about Jesus and his life, indicating that he had settled in the Sydney region, one of the provinces of Pakistan. The documentary screened by the BBC shows that Jesus escaped death in Afghanistan, along with several Jews. Local stories projected in the documentary seem to confirm the theory that Jesus spent some years of his life in the Kashmir valley and remained there until he died at the age of 80.



EDITOR'S COMMENT: Nothing polite enough...



Sex robot expo in venue switch after 'terror threat from OFFENDED Islamic extremists'

Source: <https://www.dailystar.co.uk/news/latest-news/668123/sex-robot-conference-UK-terror-threat-goldsmiths-university-muslim-extremists>



Dec 20 – **The Third International Congress in Love and Sex with Robots has been rocked by terror threats from Muslim extremists.** The two-day conference, which started today, was supposed to take place at Goldsmiths University, where it was held last year. But organisers have been forced to move the controversial meeting of computer scientists, AI experts and robot ethicists to a secret venue for security reasons.



The second annual conference was due to be held in Iskandar, a Malaysian state, in 2015, but was banned by police for being "illegal".



Police chief Tan Sri Khalid Abu Bakar said the event was "ridiculous", adding: "There's nothing scientific about having sex with machines."

Now, ahead of this year's event, organisers have been told about terror threats from an "international group".

As a precaution, organisers have hired security to patrol the new venue, in north London, for the duration of the conference.

Speaking to Daily Star Online, Adrian David Cheok, co-founder of the conference and computer scientist, said Malaysian police tipped him off about threats on the event.

He said: "The event was originally supposed to be held at Goldsmiths University."

"There were some threats that police had found from Muslim extremists.

"We took precautions because those groups are international.

"Robot sex is against the Muslim religion, it's equated to homosexuality.

"Police in Malaysia got in touch with us ahead of the conference.

"We have a very good relationship with them after our conference got banned from the country in 2015.

"The church has hired security just in case. In 2017 you can't be too careful."

Cheok, 46, believes the threats may have come from "students" in the UK, but said he could not elaborate.

"London is totally for free speech so it's surprising," he added.

"I think the way to combat those attitudes is being more open."

The first conference, held in Portugal in 2014, saw about 40 academics present their research on robots and human relationships.

A spokesman for Goldsmiths, University of London, said: "While we are disappointed that, due to circumstances outside our control, this conference is not being held at Goldsmiths this year we fully support this important area of research and continue to host events on this topic."

Daily Star Online has contacted the Metropolitan Police over the alleged Islamist threat.





CHEM NEWS



Interview - Decontamination during incidents: Dr Ghuwaya Al Neyadi, manager, ADNOC Medical Services Unit

Source: <http://www.arabianoilandgas.com/article-17656-interview-decontamination-during-incidents-dr-ghuwaya-al-neyadi-manager-adnoc-medical-services-unit/>

Sept 06 – Abu Dhabi National Oil Company (ADNOC) has commissioned **three Mobile Decontamination Units into service** to provide clinical decontamination during any chemical, biological, radiation, nuclear and explosives (CBRNE) incidents. **Dr Ghuwaya Al Neyadi, manager, ADNOC Medical Services Unit**, explains the purpose of these innovative units, in an interview given to Martin Menachery.



What is the objective of the Mobile Decontamination Units demonstrated by ADNOC?

The ADNOC Mobile Decontamination Units have the capability to carry out clinical decontamination from chemical, biological, radiation, nuclear and explosives incidents. Healthcare facilities close to oil and gas production and nuclear sites have a higher possibility of receiving contaminated patients due to the presence of numerous hazardous materials associated with the industry.

Apart from serving ADNOC's operations in the Al Dhafra (formerly Western) region, ADNOC's Ruwais Hospital is designated as the primary receiving healthcare facility for major incidents, involving the Barakah Nuclear Power Plant. With the addition of the Mobile Decontamination Units, it is now fully equipped to manage and provide clinical decontamination during any chemical, biological, radiation, nuclear and explosives incidents.

Are these units already deployed into service?

All three Mobile Decontamination Units are operational and fully functional at the Ruwais Hospital. Construction work on the hospital's decontamination building is also nearing completion.

Can you elaborate on how does it function?

The Mobile Decontamination Unit is a licensed healthcare facility designed in-house and specifically engineered to suit the hot, remote and desert environment in which we operate. It is the first of its kind in the region, built by merging healthcare technology with ADNOC oil and gas industry technology.

Each Mobile Decontamination Unit consists of a clinical decontamination area (de-robe, decontamination and re-robe) and is based on a 40ft container, mounted on a trailer fitted with side-lifters, hitched to a six-wheel drive truck capable of accessing the desert terrain. Each unit contains a wide array of equipment, including medical treatment equipment, radiation and chemical detection equipment, wind speed and direction monitors, hydrogen sulphide detectors, decontamination personal protective equipment, re-robe kits, specimen sample kits etc.

Each Mobile Decontamination Unit carries 1,000 US gallons of water for around four to six hours of decontamination, and a 1,500 US gallon wastewater system for collecting decontamination water. Each unit has its own generator with fuel to run continuously for 48 hours, air-conditioning, curtain fans and high efficiency particulate air filtration units, providing room pressure and air-flow controls, and toilets that drain separately to holding tanks. The units are capable of being connected to electrical and water supplies and drains, thereby enabling extended operations, if required.

How many units are already with ADNOC? And, how many are in the pipeline?

All three Mobile Decontamination Units are in service with ADNOC. The three units are sufficient for our operations.

Have these units been deployed in any recent incident?



The units have been deployed in numerous training exercises, but they have not been used in real-time emergencies, involving either ADNOC's operations, or the Barakah Nuclear Power Plant.

How much time will it take for decontamination per person?

It takes around seven to eight minutes to decontaminate a person, depending on whether he, or she, is capable of walking, or not. The Mobile Decontamination Unit is designed to carry out decontamination of both walking and non-walking patients who may be on trolley, or spinal board, or stretcher.

Dr. Ghuwaya Al Neyadi Founded Manzil Health Care Services L.L.C. in 2011 and serves as its Chief Executive Officer. Dr. Al Neyadi took over a variety of responsibilities throughout her career at Health Authority Abu Dhabi (HAAD) and Abu Dhabi National Oil Company (ADNOC) Medical Services. She served as Public Health Program Manager, Head of Health Facility Licensing at HAAD and Manager Division of Ruwais Hospital Medical Services at ADNOC. She holds certificate of Arab Board of Medical Specialization in Family and Community Medicine. She holds MBBS degree and Executive Master of Healthcare Administration.

Enzymes versus nerve agents: Designing antidotes for chemical weapons

Source: <https://theconversation.com/enzymes-versus-nerve-agents-designing-antidotes-for-chemical-weapons-75986>

April 2017 – A chemical weapons attack that killed [more than 80 people, including children](#), triggered the Trump administration's [recent missile strikes](#) against the Syrian government. The use of illegal nerve agents – apparently by the Assad regime – violated [international law](#); President Trump said he was [moved to act by images](#) of the victims' horrible deaths.

But there's another path to mitigate the danger of chemical weapons. This route lies within the domains of science – the very same science that produced chemical weapons in the first place. Researchers in the U.S. and around the world, including here at the University of Washington's [Institute for Protein Design](#), are developing the tools needed to quickly and safely destroy nerve agents – both in storage facilities and in the human body.

Nerve agents, a class of synthetic phosphorous-containing compounds, are [among the most toxic substances known](#). Brief exposure to the most potent variants can lead to death within minutes. Once nerve agents enter the body, they irreversibly inhibit a vitally important enzyme called acetylcholinesterase. Its normal job within the nervous system is to help brain and muscle communicate.



When a nerve agent shuts down this enzyme, classes of neurons throughout the central and peripheral nervous systems quickly get overstimulated, leading to [profuse sweating, convulsions and an excruciating death by asphyxiation](#).

U.S. Marine Corps specialists performing decontamination procedures. Sgt. Keonaona Paulo

Chemical weapons are often associated with wars of the previous century –

mustard gas in WWI, Zyklon B in WWII. But the worst variety, nerve agents, were [never deployed in the world wars](#), though Nazi scientists developed the first generation of these



compounds. Gerhard Schrader, the so-called [father of nerve agents](#), didn't begin life as a Nazi scientist – he was developing new pesticides to combat world hunger when he accidentally synthesized the first organophosphorus nerve agent. Later, he led the research team that produced sarin, or GB, the most toxic of the all the so-called G-series nerve agents. The U.S. government stated with [“very high confidence” that sarin was used](#) in the recent attack near Idlib, Syria.

Beginning in 2013, teams from the Organization for the Prohibition of Chemical Weapons went to Syria and, with help from the Danish, Norwegian, Russian, Chinese and [U.S. government](#), [destroyed all declared stockpiles](#) of Syrian chemical weapons. It seems that either not all of Assad's stockpiles were in fact [declared and destroyed, or that new nerve agents arrived](#) in Syria – either via the black market or chemical synthesis – in the intervening years.



[Empty sarin containers at Pine Bluff Arsenal. U.S. Army](#)

Clearing chemical weapons

Twenty-first-century chemists, biochemists and computer scientists are working right now to sap chemical weapons of their horrifying power by designing counter agents that safely and efficiently destroy them.

Sarin sitting in a container – as opposed to in a human body – is relatively easy to destroy. The simplest method is to add a soluble base and heat the mixture to near-boiling temperatures. After several hours, the vast majority – more than 99.9 percent – of the deadly compound can be broken apart by a process called hydrolysis. This is how [trained specialists](#) dispose of chemical weapons like sarin.

Nerve agents that make their way inside the body are a different story. For starters, you clearly cannot add a near-boiling base to a person. And because nerve agents kill so quickly, any treatment that takes hours to work is a nonstarter.

There are chemical interventions for warding off death after exposure to certain chemical weapons. Unfortunately, these interventions are costly, difficult to dose properly and [are themselves quite toxic](#). The chemical antidotes pralidoxime and the cheaper atropine [were deployed](#) after recent attacks in Syria, but [doctors in the area worry](#) their dwindling supplies offer little protection against possible future attacks.

For a medical intervention to work after nerve gas exposure, it has to work fast. If a first responder administers a sarin-destroying molecule, each therapeutic molecule must be



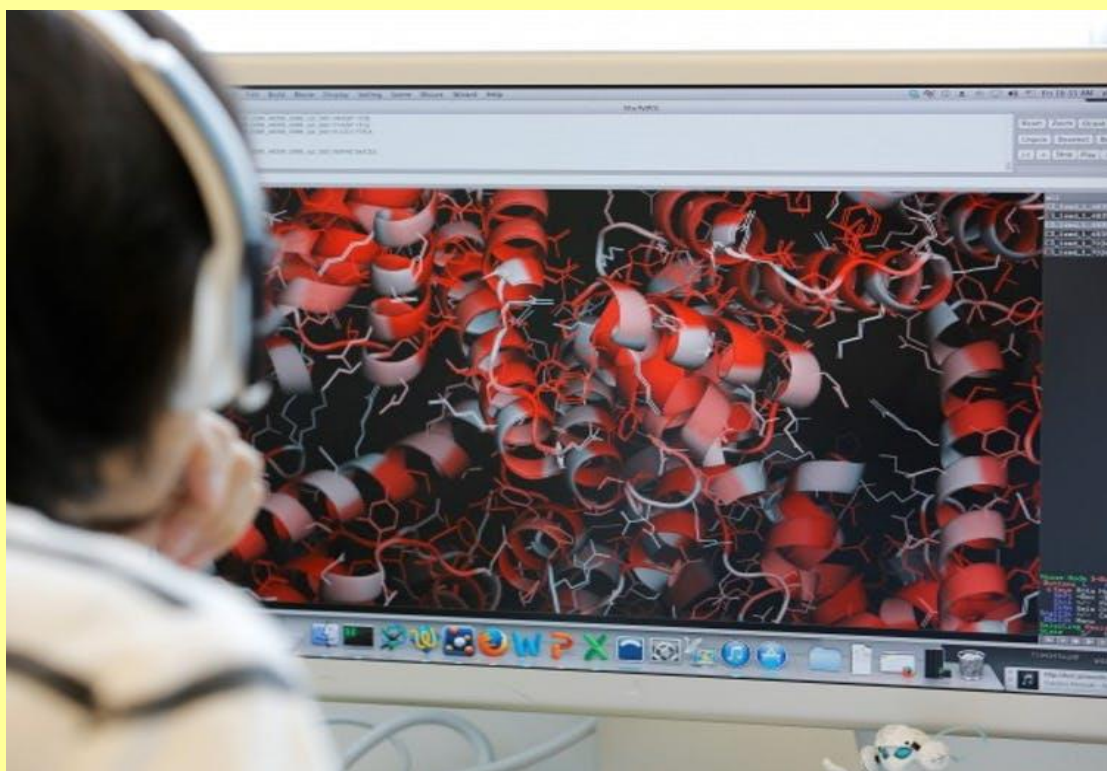
capable of breaking down through hydrolysis [hundreds of nerve agent molecules per second](#), one after another.

Enzymes, the genetically encoded catalysts of biology, are up for such a task. Famous enzymes include lactase, which breaks down milk sugars in those who are lactose tolerant. Another known as RuBisCO is vital to the process of carbon fixation in plants. The most efficient enzymes in your body can perform [a million reactions per second](#), and do so under chemically mild conditions.

Aside from their astonishing speed, enzymes often display an equally impressive selectivity. That is, they react with only a small number of structurally similar compounds and leave all other compounds alone. Selectivity is useful in the context of the chemical soup that is the cell but problematic when it comes to xenobiotics: those compounds which are foreign to one's biology. Man-made organophosphates such as sarin are xenobiotics. There are no enzymes that hydrolyze them well – or so we thought.

When farmers spray pesticides, much of it ends up on the ground. Soil bacteria living nearby are challenged by high doses of these potent foreign chemicals. It turns out that [efficient detoxifying enzymes have recently evolved](#) inside some of these microbes as a result.

Scientists have identified and isolated a small number of these enzymes and tested them on a range of nasty compounds, including nerve agents, which are structurally similar to some pesticides. A select few did indeed show hydrolytic activity.



Scientists are using computers to design a new generation of proteins to solve 21st-century problems. UW Institute for Protein Design, CC BY-ND

Improving on the discovery

Researchers have taken these naturally occurring enzymes as raw material. Then, using [computer modeling and controlled evolution in the lab](#), we've bolstered the efficiency of the originally found anti-nerve agent enzymes. Enzymes that initially showed only modest activity have been turned into potential therapeutics against VX – a chemical cousin of sarin and the most toxic nerve agent of all. In a proof-of-concept study conducted jointly by researchers in Germany and Israel in late 2014, guinea pigs under anesthesia were exposed to lethal doses of VX, followed by optimized VX-destroying proteins. Low doses of the protein drug, even after a 15-minute delay, resulted in [survival of all animals](#) and only moderate toxicity.



Despite these promising advances, no enzyme yet exists which is efficient enough for lifesaving use in people. Scientists are [refining these microscopic machines](#), and [new paradigms in computer-aided protein engineering](#) are unlocking the door to this and other applications of biomolecular design. We may be only a few years away from developing the kind of therapeutics that would make chemical weapons a worry of the past.

As the world grieves over the latest attacks in Syria, it is worth keeping in mind the awesome and often complex power of science. In trying to combat hunger, one might accidentally invent liquid death. In studying soil microbes, one might discover a tool to prevent atrocities.

Slow Burn — 11 Terrifying Facts About Mustard Gas

Source: <http://militaryhistorynow.com/2014/02/11/slow-burn-11-terrifying-facts-about-mustard-gas/>



Mustard gas wasn't the most lethal chemical weapon of the First World War, but it was perhaps the most feared.

"Here are some little-known facts about one of history's most terrible weapons of mass destruction."

TO THE MILLIONS OF MEN FIGHTING IN FLANDERS in 1917, it would be hard to imagine how the hell of trench warfare could be made any worse. But worse it would get that year, thanks to the introduction of a new and especially horrifying chemical weapon.

On July 12, German gunners lobbed more than 50,000 artillery shells containing an experimental poison gas into the British and Canadian lines [near Ypres](#). Unlike the widely used chlorine or phosgene agents, which attacked the eyes and lungs, this new terror burned its victims bodies both inside and out. And because of the unmistakable pungent aroma that accompanied its release, soldiers in the trenches began soon began calling the the weapon mustard gas.

At first, those in the path of the unfamiliar and faintly yellow vapour had little idea they were even in danger. But within hours, the gas' lethal effects would be all too obvious. Shortly



after its first use, dressing stations up and down front were overflowing with more than 2,000 victims suffering from excruciating and untreatable blisters on their arms, legs and torsos. Most were blinded; others were slowly suffocating. Nearly 100 of the casualties succumbed to their wounds within a few days. Over the next several weeks, 1 million mustard gas shells would land on the Allied lines near Ypres leaving thousands writhing in agony, disfigured and unfit for duty. More than 500 deaths would be recorded. [1]

By the autumn, mustard gas was in use up and down the Western Front. It would continue to be released right up until [the Armistice](#), eventually becoming one of the most powerful symbols of the horrors of trench warfare. Here are some little-known facts about this terrible weapon of mass destruction.



British army gas victims, circa 1918. (Image source: WikiCommons)

- **Sulphur Mustard or mustard gas** was originally called “LOST” in reference to the last names of the German chemists that first engineered it — Wilhelm Lommel and Wilhelm Steinkopf. [2] It was also code named “Yperite” after the Belgian town where it was first used, “Yellow Cross,” “Mustard T” or simply “H.”
- **The gas is classified as a “cytotoxic” agent**, meaning that it attacks all living cells in comes into contact with. Made of sulphur dichloride and ethylene, the thick, oily, brown liquid gives off a weak garlic, horseradish or mustard odour when released.
- **Although introduced to the battlefield in 1917**, the nasty effects of sulphur mustard were known as far back as the 1860s. A German chemist named [Albert Niemann](#) (the same individual who discovered cocaine in 1859), was among the first to document the poison’s characteristics. In 1913, British and German civilian researchers studying sulphur mustard were accidentally exposed during lab work and had to be hospitalized. The German military obtained the notes about the incident and promptly explored weaponizing sulphur mustard. [3]
- **Germany eventually developed** an array of delivery systems for mustard gas including artillery shells, mortar rounds, rockets, free fall bombs and even land mines. [According to one estimate](#), the British army alone suffered 20,000 mustard gas casualties in the last year of the war.
- [According to the U.S. Centers for Disease Control](#), the first sign of mustard gas poisoning is a mild skin irritation that appears several hours after exposure. Affected areas gradually turn yellow and eventually agonizing blisters form on the skin. Eyes become red, sore and runny — extreme pain and blindness follows. Other symptoms include nasal congestion, sinus pain, hoarseness, coughing and in extreme cases respiratory failure. Sustained exposure can





produce nausea, diarrhea and abdominal pain. Fatalities typically occur within a few days, but it can take weeks, even months for survivors to fully recover. And some never do; permanent blindness, scars, long-term respiratory damage and heightened risk of cancer are just some of the long-term effects of mustard gas poisoning. To this day, there is no antidote for mustard gas. The CDC reports that treatment options are limited to “supportive care.”



A photo of a military experiment studying the effects of mustard gas on exposed skin. A test subject's arm is exposed to trace amounts of the toxin. The effects are startling.



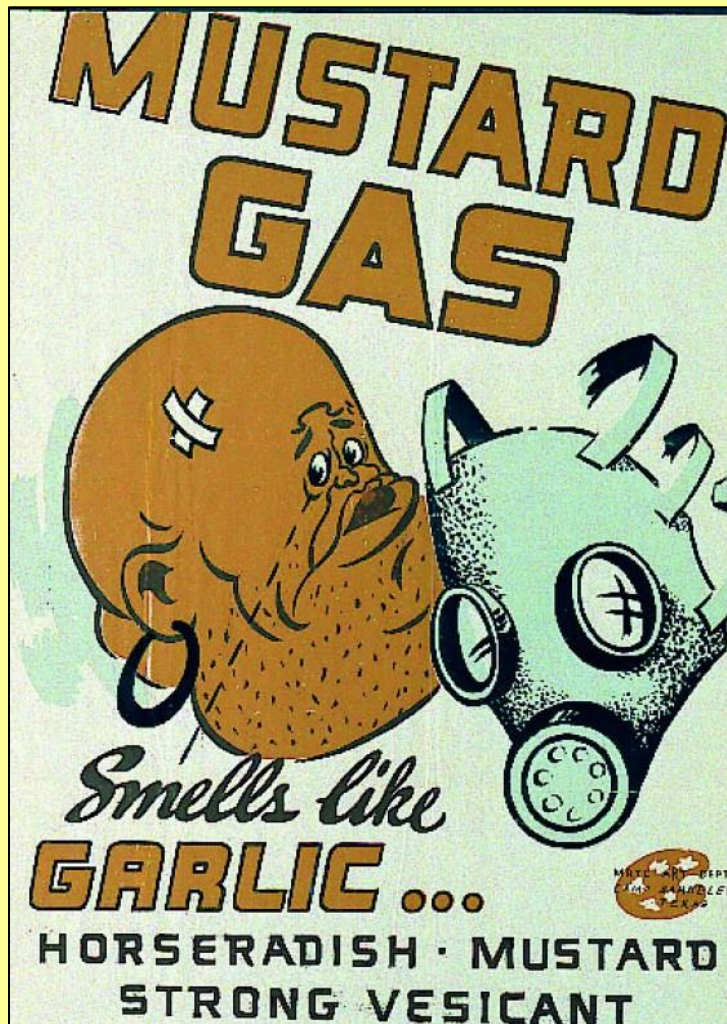
- **Amazingly, mustard gas wasn't the deadliest** poison gas to be used in the First World War. Only between 1 and 5 percent of those exposed to the agent died as a result. [4] Nevertheless, it terrified soldiers because unlike other chemical weapons, victims were often unaware they were being poisoned. What's more, gas masks and respirators only protected the lungs from the toxin; everything else burned, even skin beneath clothing. Once discharged on the battlefield, sulphur mustard could take days to dissipate. Since it was heavier than air, vapours would settle into shell-holes, craters and trenches and taint the water that collected in No Man's Land. According to veterans, men frequently tracked contaminated mud back into their dugouts before turning in and unknowingly poisoned themselves and their comrades while they slept.

- **Despite the outrage that followed** Germany's use of mustard gas in 1917, the Allies immediately engineered their own stockpiles of the stuff. By November, the British were dropping sulphur mustard onto German trenches [at Cambrai](#). In fact, the [breakout through the Hindenburg Line in 1918](#) was aided by a massive Allied mustard gas attack. America's [Dow Chemical](#) manufactured the poison during the last year of the war. [5]

- **Although the use of mustard gas** was universally condemned after the war and later banned by the [Geneva Protocol of 1925](#), armies the world over continued to use it long after 1918. British forces

participating in the [intervention in Russia](#) used sulfur mustard shells against the Bolsheviks. Both the Spanish and French air corps dropped the agent from planes onto [Rif insurgents in Morocco during the 1920s](#). Italians used mustard gas against [Abyssinian guerrillas](#) while the Japanese gassed Chinese armies and civilians alike in Manchuria during the 1930s.

A World War Two-era training poster about the signs of a mustard gas attack.



- **During World War Two**, the Allies stockpiled millions of tons of mustard gas and other chemical weapons just behind the frontlines in the event of an Axis gas attack. In December of 1943, [an American supply ship](#) laden with 2,000 mustard gas shells was damaged in an air raid off [Bari, Italy](#). Much of the deadly cargo seeped into the waters. More than 600 American personnel were exposed to the gas and 60 died. An unknown number of Italian civilians also perished. Allied commanders suppressed the whole story for fear the Germans might resort to chemical weapons in response.

- **Mustard gas was used in anger** during the 1960s in the [North Yemen civil war](#). Twenty years later, Saddam Hussein outraged the world by dropping it on both the Iranian army and Iraq's own Kurdish population. More than 5,000 civilians died in a [mustard gas attack on the city of Halabja in 1988](#).

- **Mustard gas continues to do harm to this day**. Abandoned stockpiles of the agent are frequently discovered and often injure those who stumble

across it. In 2002, archeologists [unearthed a lost consignment of mustard gas](#) while performing an excavation at the [Presidio in San Francisco](#). In 2010, [a fishing trawler inadvertently dredged up some vintage gas shells from the bottom of the Atlantic](#) off New York. Several of the crew were burned by the toxin and hospitalized.



• **Despite its fearsome reputation** as a weapon, mustard gas has also *saved lives*. After World War Two, medical researchers who were aware of sulfur mustard's cell-destroying properties fashioned the first cancer-fighting chemotherapy treatments from mustard gas. [6] Yet, these limited benefits hardly outweigh the weapon's legacy of horror.

1. Gilbert, Martin. "The First World War. 1994. Pg. 346.
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Sodium ethanemonothiophosphonate. A weak antidote to mustard gas

By E. R. Holiday, J. St L. Philpot, and L. A. Stocken

Biochemical Journal Nov 01, 1950, 47 (5) 637-639; DOI: 10.1042/bj0470637

Source: <http://www.biochemj.org/content/47/5/637>

Defence Science Journal, Vol 48, No 2, April 1998, pp. 155-162
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REVIEW PAPER

Treatment for Sulphur Mustard Poisoning – A Review

K. Sugendran, Pravin Kumar and R. Vijayaraghavan

Defence Research & Development Establishment, Gwalior - 474 002.

ABSTRACT

Sulphur mustard (SM) is a chemical warfare agent of historical and current interest. It is a well known blistering agent or vesicant. SM was extensively used in world war I as a chemical weapon and has been stockpiled by several countries since that time. SM serves as an ideal war gas and is favoured militarily for its ability to incapacitate rather than to kill. Its use resulted in large numbers of casualties requiring prolonged and intensive medical care. Despite Geneva Protocol of 1925, which categorically banned the production, stockpiling and use of chemical weapons in wars, SM has been used in several wars, including the Iran-Iraq war during the 1980s, which renewed interest in it. Though, the chemical weapons convention was signed by more than 160 countries in 1993 and was subsequently ratified by several countries, the threat from this agent persists due to its clandestine usage during war and also by terrorist groups. There is no effective and specific antidote for local and systemic toxicity of SM despite scientific research for more than 75 years. Many compounds were tested as antidotes for SM, but very few of them have been shown to provide some protection. The present review is aimed at evaluating the treatment regime and other clinical measures used to treat SM victims and the various drugs and chemicals screened as antidotes for SM poisoning in experimental animals.

Source: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1020.8700&rep=rep1&type=pdf>



Protection of Half Sulfur Mustard Gas-Induced Lung Injury in Guinea Pigs by Antioxidant Liposomes

By Shyamali Mukherjee, Hongsong Yang, William L Stone and Milton G Smith

Source: https://www.researchgate.net/publication/24278759_Protection_of_Half_Sulfur_Mustard_Gas-Induced_Lung_Injury_in_Guinea_Pigs_by_Antioxidant_Liposomes

Abstract

The purpose of this study was to develop antioxidant liposomes as an antidote for mustard gas-induced lung injury in a guinea pig model. Five liposomes (LIP-1, LIP-2, LIP-3, LIP-4, and LIP-5) were tested with differing levels of phospholipid, cholesterol, phosphatidic acid, tocopherol (alpha, gamma, delta), N-acetylcysteine (NAC), and glutathione (GSH). A single dose (200 microL) of liposome was administered intratracheally 5 min or 1 h after exposure to 2-chloroethyl ethyl sulfide (CEES). The animals were sacrificed either 2 h after exposure (for lung injury study) or 30 days after exposure (for histology study). The liposomes offered 9%-76% protection against lung injury. The maximum protection was with LIP-2 (71.5% protection) and LIP-4 (75.4%) when administered 5 min after CEES exposure. Delaying the liposome administration 1 h after CEES exposure decreased the efficacy. Both liposomes contained 11 mM alpha-tocopherol, 11 mM gamma-tocopherol, and 75 mM NAC. However, LIP-2 contained additionally 5 mM delta-tocopherol. Overall, LIP-2 and LIP-4 offered significant protection by controlling the recruitment of neutrophils, eosinophils, and the accumulation of septal and perivascular fibrin and collagen. However, LIP-2 showed better protection than LIP-4 against the accumulation of red blood cells in the bronchi, alveolar space, arterioles and veins, and fibrin and collagen deposition in the alveolar space. The antifibrotic effect of the liposomes, particularly LIP-2, was further evident by a decreased level of lipid peroxidation and hydroxyproline in the lung. Thus, antioxidant liposomes containing both NAC and vitamin E are an effective antidote against CEES-induced lung injury.

AEOL 10150

Source: <https://www.aolsrx.com/product-pipeline/aeol-10150>

AEOL-10150 is currently the subject of multiple programs funded by the U.S. Government aimed at developing the compound as a medical countermeasure against national security threats. AEOL 10150 has already performed well in animal safety studies, been well-tolerated in two human clinical trials and demonstrated efficacy in two species in acute radiation syndrome ("ARS") studies. AEOL 10150 has also demonstrated efficacy in validated animal models for chlorine gas exposure, and sulfur mustard gas exposure.

Acute Radiation Syndrome – Lung

Our lead compound, AEOL 10150, is being developed as a medical countermeasure for the pulmonary effects of Acute Radiation Syndrome ("Lung-ARS") under a \$118MM, 5 year contract from the Biomedical Advanced Research and Development Authority ("BARDA"), a division of the U.S. Department of Health and Human Services. The contract was awarded in February 2011 and fully funds all development activities required for FDA approval under the Animal Rule. In addition, the BARDA contract funds the development of large scale manufacturing capability sufficient to meet potential large orders from the government. If the development program is successful, AEOL-10150 would be a candidate for procurement for the U.S. Strategic National Stockpile.

Efficacy has been demonstrated in Lung-ARS in both monkey and mouse studies with AEOL 10150 treated groups showing significantly reduced weight loss, inflammation, oxidative stress, lung damage and, most importantly, mortality. Therapeutic efficacy was demonstrated when administered after 24 hours after exposure to radiation. Radiation exposure is considered a Priority Threat by the U.S. Government.



AEOL-10150 is a metalloporphyrin specifically designed to neutralize reactive oxygen and nitrogen species. The neutralization of these species reduces oxidative stress, inflammation, and subsequent tissue damage-signaling cascades resulting from radiation exposure.

We have an active [Investigational New Drug Application](#) ("IND") on file with the FDA for AEOL 10150 as a potential treatment for [amyotrophic lateral sclerosis \("ALS"\)](#). Extensive toxicology and pharmacology packages are already in place. We have already completed two Phase 1 safety studies in 50 humans demonstrating the drug to be safe and well tolerated. Significant [Chemistry, Manufacturing, and Controls](#) ("CMC") work has been completed and we plan to manufacture registration batches of GMP bulk drug in the first half of 2015.

Chemical Gas – Vesicants

The [National Institutes of Health's](#) ("NIH") [Countermeasures Against Chemical Threats](#) ("CounterACT") has tested, and continues to test, AEOL 10150 as a medical countermeasure for exposure to chemical vesicants such as chlorine gas and sulfur mustard gas. Efficacy has been demonstrated in multiple trials in rodent models. We intend to meet with the FDA to discuss a large animal model for sulfur mustard gas exposure and a pathway to approval under the [Animal Rule](#).

Chemical Gas – Nerve Gas

The [National Institutes of Health's](#) ("NIH") [Countermeasures Against Chemical Threats](#) ("CounterACT") has tested, and continues to test, AEOL 10150 as a medical countermeasure for exposure to nerve gas, such as sarin. Results from animal studies under this program demonstrated that AEOL 10150 improves survival when added to the current standard of care in animals exposed to a nerve agent surrogate for sarin gas. Successful development under this program (and the chemical vesicant program) would make AEOL 10150 a treatment for multiple national security threats (radiation, vesicants, nerve gas), increasing its attractiveness as a candidate for procurement into the U.S. Strategic National Stockpile. Nerve gas exposure is considered a Priority Threat by the U.S. Government.

Radiation Oncology

We are leveraging the significant investment made by U.S. government agencies to develop this promising compound for use in oncology indications, where it would be used in combination with radiation therapy. Data has already been published showing that AEOL 10150 does not interfere with the therapeutic benefit of radiation therapy in prostate and lung cancer preclinical studies. Based on the work completed under the BARDA contract, we believe that we will be positioned to begin Phase II studies in radiation oncology in 2015. We intend to develop AEOL-10150 concurrently with the BARDA program for use in radiation oncology.

Colorado doctor researching antidotes for chemical weapons like ones used in Syria

Source: <http://www.thedenverchannel.com/lifestyle/health/colorado-doctor-researching-antidotes-for-chemical-weapons-like-ones-used-in-syria->

April 2017 – A University of Colorado School of Medicine doctor is doing groundbreaking research to find antidotes for chemical weapons like the ones used in the deadly attacks in Syria. "These kids are having seizures. They're unresponsive. This does look like a chemical attack," said Dr. Vik Bebartha, while watching videos that have recently come out of Syria. He has seen the symptoms first-hand during four tours of duty. During a tour in Jordan, he

trained doctors in the region how to treat victims of chemical weapons attacks.

"Foaming at the mouth, trouble breathing, seizing, these exact same effects," he said, shaking his head quietly.

Now, Bebartha is an ER Doctor at University of Colorado Hospital and a Medical Toxicologist for the CU School of Medicine doing groundbreaking research on better



antidotes for chemical weapons such as mustard gas, cyanide and hydrogen sulfide.

"They need to be simple. They need to be injectable, and they have to be very safe," said Bebarta, who wants to get more effective antidotes into the hands of first responders, who can immediately save lives. "If the paramedics don't have those antidotes in their pockets, the patients will probably die before they ever reach

the hospital, and we need to be better about that."

Bebarta said some chemical agents, such as Cyanide, have antidotes, but they have to be administered intravenously, which can be difficult in the field, let alone a war zone.

His research focuses on creating antidotes that can be taken orally, inhaled or injected into muscles.

Vietnam: The Chemical War

By David Biggs

Source: <https://www.nytimes.com/2017/11/24/opinion/vietnam-the-chemical-war.html>



American sprayer planes spread defoliant over South Vietnam. Credit United Press International

Nov 24 – Just before dawn on Nov. 18, 1967, the men of the Army's 266th Chemical Platoon awoke to reveille and assembled in formation. The platoon was attached to the First Infantry Division, and the men were stationed at the division's base, deep in the red-clay hills north of Saigon.

The men had a typically busy day ahead of them. Their tasks included obtaining 15 drums of Agent Orange to defoliate the base perimeter, firing mortars at an area just outside the base for an evening chemical drop, working at the bomb yard to prepare 24 drums of CS tear gas, making 48 white phosphorus fuses to detonate the drums, loading the drums onto a CH-47 cargo

helicopter, and finally, that afternoon, dropping 24 drums of the gas from the helicopter's rear hatch onto a target site. It was, by 1967, just another day in the life of the 266th Chemical Platoon, and in the American war in Vietnam — a war that was, in many respects, a chemical war.

It didn't start that way. But as the conflict deepened, it became obvious that chemical weapons could play a critical role. In the case of the First Division, that realization came as the Viet Cong dug in north of Saigon with a network of underground bunkers and tunnels that were forbidding, dangerous



spaces where conventional weapons would have limited effect. That fall, the 266th and other chemical platoons began training to use CS and other chemicals to support combat operations. CS wasn't the only tool in the platoon's arsenal, and going after tunnels wasn't its only mission. It handled anything related to chemicals, from spraying for mosquitoes to burning trash. It sprayed defoliants like Agent Orange and prepared napalm. Chemicals were everywhere, and their proliferation in the American war effort raised concerns that the United States was crossing a line in Vietnam, violating the 1925 Geneva Protocol's prohibition against the first use of chemical weapons in war.

Chemical weapons didn't suddenly appear in America's Vietnam arsenal. In 1918, in response to German gas attacks in World War I, the military created the Chemical Warfare Service (renamed the Chemical Corps in 1947) to develop gas and biological weapons as a response to enemy attacks. They developed defensive measures to protect soldiers from chemical, biological or radioactive weapons via decontamination agents. The armed forces also developed nonmilitary uses of nonlethal chemicals. It supplied tear gas (xylol bromide) to police forces in the 1920s and '30s to disperse angry mobs. (British military scientists developed CS as a more potent replacement in During World War II, the military played a pivotal role in pioneering new chemicals that were both horrifically destructive and lifesaving. After successfully testing gelled gasoline on Harvard's soccer field, the military coordinated production of napalm in incendiary grenades, flamethrowers and the bombs dropped over cities such as Tokyo and Dresden, Germany. Chemical units spread a newly discovered insecticide, DDT, across Italian towns and in soldiers' sleeping bags to control mosquitoes and ticks that carried malaria and typhus. In 1943, the military opened a chemical and biological weapons lab at Fort Detrick, Md., to centralize research.

It was there that scientists in the Crops Division tested combinations of herbicides, including a precursor to Agent Orange made with a blend of the herbicides 2,4-D and 2,4,5-T. Scientists in the 1930s had discovered that those chemicals mimicked a plant's growth hormone, but they had been unsuccessful in harnessing its growth-

inducing powers. Then in 1943, a botanist notified the Army that increased dosages turned the chemical into a plant killer, and the synthetic organic herbicide was born. Scientists at Fort Detrick tested the herbicides for possible use over the tropical vegetation covering Japanese-held islands in the Pacific, but the war ended before they could ramp up production.

While the Chemical Corps continued to test all chemicals for military uses in the 1950s, it did so amid a postwar economic boom during which many of the same products became commercially available. Farmers, gardeners and groundskeepers used the newly available chemicals in their domestic "wars" against pests.

The two herbicides in Agent Orange, 2,4-D and 2,4,5-T, were not secrets; rather, they were two of the most popular, widely available herbicides on the market. The government declassified its research on pesticides almost immediately in 1945, opening development for commercial markets. In May 1945, a chemist at the American Chemical Paint Company near Philadelphia received a patent simply titled "Herbicides," listing over a dozen preferred chemical formulas including a 50-50 mix of 2,4,5-T and 2,4-D similar to Agent Orange. (He later claimed that he developed this blend to kill poison ivy, as his son was acutely allergic.) In 1948, the Department of Agriculture registered those new herbicides and insecticides as "economic poisons" and sales quickly took off. Because of this crossover identity in the 1960s, their use as offensive weapons in Vietnam drew little public reaction.

Although the consequences of using herbicides like Agent Orange later became clear, they were always intended as nonlethal chemical weapons. The line was less clear with CS gas. Though it was officially intended to flush out tunnels, those caught inside were often asphyxiated, and even survivors suffered respiratory lesions.

And there was no blurring of lines when it came to napalm.

Men from the 266th platoon would net a dozen or more barrels of the gelled gasoline under a helicopter, which then flew several thousand feet above a target such as a bunker or camp. Once on target, the crew released



the barrels. Fuses or strafing from nearby jets ignited the barrels just above the ground, releasing a giant fireball. Anything or anyone within several hundred yards was instantly incinerated while the firestorm sucked the oxygen out of tunnels and bunkers below. Chemical platoons began training in this new form of “combat support” in 1967, but after the Tet offensive in 1968 they were igniting thousands of gallons in “flame drops” every day. They had crossed the line.

This rapidly intensifying use of chemicals in combat brought widespread international criticism, first from Communist countries but increasingly from American allies and eventually officials in the United States. Criticism had been building for years: When South Vietnamese helicopters began using 2,4,5-T to kill crops in Communist-controlled areas of the Vietnamese highlands in 1963, North Vietnam’s Liberation Radio accused the United States of violating the 1925 Geneva Protocol and likened the “poisonous spray” to Nazi gas chambers. But American leaders and their allies abroad paid little attention to these “poison” protests; military leaders countered the radio propaganda with South Vietnamese broadcasts explaining that the herbicides were harmless to humans and used commercially around the world.

The international response, however, grew more serious with the CS drops. In 1966, a delegate from Hungary at the United Nations complained that the tactical use of the herbicides and CS in Vietnam was a blatant violation of the Geneva Protocol; he also noted that the United States had yet to join the protocol. With the advent of flame drops in 1968, the charges of chemical warfare continued to amplify and rattled the newly elected President Nixon. In November 1969, he pushed the Senate to ratify America’s commitment to the protocol, and he renounced first use of lethal chemicals (except napalm on military targets). While Nixon tried to assure the American public that napalm was not falling on civilians and that

the herbicides in Agent Orange were safe, a report had surfaced in 1968 suggesting that the herbicide 2,4,5-T was highly toxic to animal fetuses. (Later research determined the toxicity stemmed from traces of the contaminant dioxin.) While chemical platoons continued pushing thousands of drums of CS and napalm out of helicopters in Vietnam, Nixon moved quickly to stem what he feared would be a domestic and international protest over a potentially toxic herbicide. The White House announced a partial ban on 2,4,5-T on April 15, 1970, and the Defense Department followed suit, banning all Agent Orange missions in Vietnam.

Thousands of drums of the herbicide piled up at ports in the United States, at air bases in Vietnam and in small quantities at the drum yards of chemical platoons at Army camps. The military transferred the stockpile of Agent Orange in Vietnam, more than 25,000 drums, to Johnston Island in the Pacific in 1972, but the fate of CS and other chemicals at the camps was less clear. When American forces evacuated their camps and firebases at the war’s end, they again followed disposal manuals of the day: burning or burying unused or corrupted chemical stocks including CS, decontaminating agents, solvents and pesticides.

The American military has never again used chemicals as extensively as it did in Vietnam. American military units no longer burn or bury chemical waste. But the legacy remains. Agent Orange destroyed the lives of thousands of Vietnamese and Americans. The international response to CS drops and flame drops set off heated discussions about the nature of chemical war that continues with debates over red lines, incendiaries and barrel bombs today. And caches of chemical weapons remain buried around Vietnam and on disused American sites around Southeast Asia and in the Pacific. America and Vietnam may be allies today, but few people on either side are willing to tackle the war’s total chemical footprint.

David Biggs, an associate professor of history and public policy at the University of California, Riverside, is the author of the forthcoming book “War in the Land: History and the Militarized Landscape in Vietnam.”



Smiths Detection Educates First Responders on Technology to Protect Against the Dangers of Fentanyl

Source: http://www.cbrneworld.com/news/smiths_detection_educates_first_responders_on_technology_to_protect_against#axzz4zW8NiddK

Nov 10 – Smiths Detection Inc. (SDI) is pioneering a series of educational workshops to inform first responders on how to use technology to protect themselves against fentanyl exposure. The series of workshops will explore scenarios where responders can utilize field-based detection and identification systems to mitigate the threat of exposure to the potentially lethal opioid.

“Sharing our expertise with first responders about how technology can be used to help reduce the risk of fentanyl exposure is critical in the face of this growing epidemic” said Stephen Esposito, VP of Business



Development and Sales at SDI. “Smiths Detection remains committed to using leading-edge technology to help ensure the safety and security of emergency responders and the communities that they protect.”

SDI offers a range of products capable of detecting and/or identifying fentanyl, and several of its analogues. These include:

HazMatID Elite, an infrared handheld chemical identifier which performs chemical analysis on solids and liquids;

ACE-ID, which utilizes laser Raman spectroscopy

to test unknown substances without contact, including through clear plastic and glass containers; and

IONSCAN 600, a portable system that detects and identifies trace amounts of suspected narcotics in seconds.

SDI also provides ReachBackID, a 24/7/365 hotline, which gives first responders access to Ph.D. scientists to support the field-based analysis of a range of chemicals including fentanyl and several of its analogues.

SDI has recently held mission-based workshops in Dallas, TX, Baltimore, MD, Suffolk County, NY, and Gainesville, FL with more workshops planned in communities across the country.



Risks of use of chemical weapon remain, warns OPCW

Source: http://news.xinhuanet.com/english/2017-11/28/c_136783502.htm

Nov 28 – Though almost all declared chemical weapons have been either destroyed or converted for peaceful use, risks of use of chemical weapons remain due to re-emerging uses of such weapons, and the threat of chemical terrorism, warned the Organization for the Prohibition of Chemical Weapons (OPCW) at the annual conference of its members which opened here on Monday.

“Despite the near complete elimination of declared stockpiles of chemical weapons and a robust verification regime, all threats have not entirely disappeared while new ones are posing unprecedented challenges,” said OPCW Director-General Ahmet Uzumcu.

Uzumcu hailed the recent completion of the full destruction of the 39,967 metric tons of chemical weapons possessed by the Russian Federation as “another milestone in the implementation” of the Chemical Weapons Convention (CWC).



As the implementing body for the Convention, the OPCW oversees the global endeavour to permanently eliminate chemical weapons. Over 96 percent of all chemical weapon stockpiles declared by possessor parties have been destroyed under OPCW verification.

At the same time the OPCW chief warned that the international community continues to be confronted with the on-going and systematic use of chemical weapons. He affirmed the importance of continuous engagement with the chemical industry and scientific community, and of strengthening cooperation with the OPCW members in Africa.

"It is vital and in the interests of all States Parties to the Convention that the long held international norm against chemical weapons remains strong and the perpetrators held accountable," stressed Uzumcu.

The Turkish diplomat, whose eight year tenure completes in July 2018, also called on OPCW members to strengthen global chemical security to ensure that toxic chemicals do not fall into the wrong hands.

The OPCW has warned that Islamic State (IS) foreign fighters returning from Syria to their countries of origin could carry out chemical weapons attacks after learning how to use the toxic substance in the battle zones.



On Thursday, the five-day conference will appoint Ambassador Fernando Arias of Spain as the new Director-General of the Technical Secretariat of the OPCW. Arias will start his four year term on July 25 2018.

Islamic State's tryst with chemical weapons in Syria and Iraq

By Animesh Roul

CBW Magazine

Source: https://idsa.in/cbwmagazine/islamic-state-tryst-with-chemical-weapons-in-syria-and-iraq#.WhVsn_lgi-A.linkedin

Dec 2017 – The sporadic and indiscriminate use of chemical weapons in Syria and Iraq's conflict zones in the last five years by both State and non-state actors have posed a great challenge to the international arms control and non proliferation regimes. The use of these deadly weapons of mass destruction targeting civilians not only violates international law, but is also a crime against humanity. However, the perpetrators of the chemical weapons attacks including the Bashar al-Assad regime are still on the loose and have successfully evaded international scrutiny. The worst part of this otherwise multi dimensional conflict is the use of chemical weapons or agents by non-state jihadi group -- the Islamic State in Iraq and Syria (ISIS) or Daesh. It has not only used the weapons in its violent campaigns, but has attempted to build full-fledged chemical arsenal within its controlled territories.

Historically, no organized and designated terrorist groups have perpetrated mass fatality or disruptive attacks using any categories of weapons of mass destruction. Since the capability and intentions of jihadi groups such as Al Qaeda and ISIS have changed over the years, they opt for the most destructive and spectacular methods with available weapons

system, materials or technology to maximize the impact and fear factor. The ISIS, the violent Sunni Jihadist movement that has dominated large swathes of territory had achieved some tangible success in employing these destructive and disruptive weapon systems or materials in Syria and Iraq.

Ideologically, Islamic State in Syria and Iraq has strong roots in the ideals of Abu Mushab al Zarqawi of Jordan, who was identified as Al Qaeda's chief biochemical engineer before his death in 2006. It was widely believed that Zarqawi imparted training to a special terror cell in Afghanistan and Iraq on the use of biological and chemical agents for possible attacks in Europe and the Middle East. Zarqawi's lingering influence as a founding father of ISIS leads us to believe that this violent group won't hesitate to use these categories of weapons mass destruction and disruption against its civilian or military targets.

It is also believed that the IS leadership has received religious approval from various Islamist clerics for the use of such weapon systems. One such jihadi cleric named Nasir al-Fahd, who is currently imprisoned in Saudi Arabia, issued a religious edict or



fatwa sometime in 2003 saying, "If the Muslims can't overwhelm the infidels in any other way, they are allowed to use weapons of mass destruction to kill everyone and erase them and their descendants from the earth." Al-Fahd has authored a book that approves the use of weapons of mass destruction against the non-believers.¹ So use of chemical or biological weapons by Jihadist groups against adversaries is not any more un-Islamic. In other words, the use of these weapons is no more prohibited in Islam as perceived earlier.

ISIS faced massive territorial and military reversal in Syria and Iraq recently. However, in the initial years of territorial consolidation phase, the Islamic State captured secret labs and factories in Iraq and Syria that may have helped it to pursue chemical weapon production activities. In all probability, Islamic State exploited the existing stockpiles belonging to the Iraqi or Syrian regimes, which had extensive CW programs.² In June 2014, there were reports about the capture of Saddam Hussein era chemical facility at Muthanna, near the city of Samarra, by Islamic State militants. However, the claim from the IS side regarding the possession of chemical weapons, such as mustard agents, came in late August 2015 from a Dutch soldier turned IS fighter identified as Omar Yilmaz, who indicated that the group has acquired chemical weapons once belonging to Syrian President Bashar al-Assad's government. Yilmaz's revelations came with a series of suspected incidents of mustard gas attacks in northern Iraq and Syria.

In February 2016, the capture of Suleiman Daoud al-Afari, a senior engineer of ISIS' chemical weapons program, from Badoosh in north-west of Mosul, then a IS stronghold, unearthed the evil designs of IS and how it planned to use chemical agents against its adversaries in Syria and Iraq.³ Some Iraq affair experts had informed then that al-Afari was the technical expert on the chemical weapons project, but the real ideological driver behind the program was Taha Rahim al-Dulaimi. It is important to note here that al-Afari had been a member of the military under Saddam Hussein and had joined the Islamic State later.

With significant territorial losses in Iraq and Syria in mid 2017 (between June -August), the IS may have abandoned its chemical

weapons/agent production by now. However, before abandoning its embryonic chemical weapons program, IS has left a mark using this insidious weapon several times since 2014 mostly with industrial chemicals like chlorine and phosphine. Independent sources such as Conflict Armament Research (CAR) and the Syrian Observatory for Human Rights (SOHR) have claimed that the ISIS has used chemical weapons several times against Kurdish forces between January-June 2015. In August 2015, the German Defence Ministry too reported IS's chemical weapon use in Erbil in Iraqi Kurdistan.⁴ The same month, the United States officials stationed in Iraq claimed that IS used sulphur-mustard in a mortar attack on Kurdish forces in Makhmour town located in northern Iraq.⁵ Also, few reports of mustard agent use in al-Hasakah and Marea towns in Syria surfaced that month and the IS was suspected behind these strikes. In early 2016, the IS activities involving use of chemical weapons surfaced frequently as CW attacks spiked till January 2017 in Iraq and Syria.

In April 2016 the Islamic State group used mustard gas on Assad regime troops at an air base near the city of Deir el-Zour.⁶ Again between September and December 2016, chemical agents, mostly sulphur mustard, were used by the Islamic State group against targets in Aleppo and Hama Governorates. The last reported chemical attack by the Islamic State in Syria occurred in Talla al-Maqri, Aleppo in January this year (2017).⁷

In May 2016, Islamic State militants targeted Bashir in Kirkuk in northern Iraq releasing toxic mustard gas.⁸ Few months earlier, Islamic State fighters launched two chemical attacks in Kirkuk targeting the town of Taza.⁹ In 2017, there were few cases of suspected chemical weapons use by ISIS in Iraq's Mosul.¹⁰

The IHS Markit's Conflict Monitor suggests that there were over 70 alleged chemical weapons attacks perpetrated by the ISIS- 41 in Iraq and 30 in Syria.¹¹ With a series of attacks to its credit, the Islamic State virtually became the first non-state actor to develop and deploy banned chemical warfare agents for military purposes. However, with the loss of its last few bastions in Iraq and Syria, the Islamic State, which is now virtually on the run and



seeking safe haven for its leaders and loyal foot soldiers, may abandon this weapons program. But so far there is no publicly available evidence

to suggest that the Islamic State has dumped or concealed its chemical arsenals or transferred any CW materials from its earlier strongholds.

Animesh Roul is a founding member and presently, the Executive Director of research at the Society for the Study of Peace and Conflict, New Delhi.

South Sudan to join Chemical Weapons Convention body

Source: <http://www.sudantribune.com/spip.php?article64164>

Dec 03 – **South Sudan announced Friday that it has all, but concluded the process of joining the Organisation for the Prohibition of Chemical Weapons (OPCW).**

The director general for international cooperation at South Sudan's foreign affairs ministry, Moses Akol

Ajawin said this while delivering a statement, on behalf of the minister, to the Twenty-Second Session of the Conference of the States Parties (CSP) to the Chemical Weapons Convention (CWC) at The Hague, Netherlands.

A child's arm shows off circular wounds consistent with chemical poisoning (Amnesty International photo)



"The images of victims of chemical weapons make us all the more appreciative of the goals and objectives of OPCW. As such, we, in South Sudan, would unreservedly like to associate ourselves with the noble goals and objectives of this great organisation", said Ajawin.

Upon joining the CWC, countries eventually become member states of the OPCW and this enjoy the full benefits of the convention.

Ajawin said South Sudan's council of ministers, acting on the recommendations of the minister of justice and constitutional affairs, resolved on 25 August 2017 to

"approve membership in the OPCW".

"South Sudan has no reason to sit on the fence," he said, adding that the nation looks forward to becoming OPCW' newest member.

OPCW's director-general, Ambassador Ahmet Üzümcü, welcomed the anticipated accession of South Sudan to the convention.

"Today, we are one step closer to universal membership. I urge the other nations that have yet to join the Convention – Egypt, Israel and North Korea – to unite with the rest of the world in eliminating all chemical weapons forever," he said.

As the implementing body for the CWC, the OPCW oversees the global endeavour to permanently and verifiably eliminate chemical weapons. Since the convention's entry into force in 1997 and with its 192 states parties, it is reportedly the most successful disarmament treaty eliminating an entire class of weapons of mass destruction.

Meanwhile, more than 96% of all chemical weapon stockpiles declared by possessor states have reportedly, under OPCW verification, been destroyed.



After the Dive: The Decontamination Process

By Steven Barsky

Source: <https://www.tdisdi.com/after-the-dive-the-decontamination-process/>



If you dive in contaminated water, and most public safety divers will, then you must be aware of the procedures to be followed for decontamination, i.e., the cleaning of the diver and his gear following a dive. As a dive team member, you will undoubtedly be called upon to make the dive, to decontaminate your team mates, and to run the dive. There are specific procedures to be followed no matter what your responsibilities are while conducting a contaminated water dive.





My first contaminated water dive took place while I was attending commercial diving school in Santa Barbara. Our task was to inspect the diffuser ports on a sewer outfall where the level of water treatment was minimal. At the time, I'm sure that none of the students or the faculty understood the serious nature of the dive, since we all made the dive in scuba gear. In retrospect, I am sure the dive was used as a test to wash out students who weren't really serious about the program. Today, the school does not allow the students to dive inside the harbor after a heavy rain for fear of exposure to contaminants that have accumulated in the closed confines of the docks.

In actuality, most bodies of water have some level of contaminants in them, even when the water looks "clean." A few years back, I was invited to lecture to the Canadian military in Toronto and the attitude of many of their divers was that there was nowhere that they went diving that was not contaminated.

In looking at the process of decontamination of divers in the field, I have consistently found that this is the area where most dive teams fall down on the job. The two

areas where we see problems are 1) properly protecting the tender, and 2) properly decontaminating the diver. Probably the only reason we don't hear more about issues here is that in most cases, divers are facing biological hazards that don't cause death or permanent disability, but rather infections of the ears or short term intestinal infections. However, there are probably many lost work time cases that we just don't hear about.

For example, the official U.S. Navy photo here shows a diver allegedly being decontaminated following a dive, yet the tenders who are working with him are completely unprotected. [If you take a look at this video](#) of a diver working inside a sewage treatment plant in Mexico City, notice the complete lack of decontamination of the diver and the failure to protect the tenders.

Equipment Decontamination

The decontamination of diving equipment can be problematic, depending on what it has been exposed to. Exposure to biological contamination is not normally a problem in most cases, but exposure to strong chemical agents can be a serious issue. Although they don't like to admit it, most diving equipment manufacturers have not invested the money to test their gear against some of the more



aggressive chemicals in the world to determine their chemical compatibility or what is an effective and safe solution to use for decontamination. This is understandable for several reasons. First, there are millions of chemical compounds in the world and it's not financially feasible for diving equipment manufacturers to test their gear against them and determine acceptable decontaminants. Secondly, the manufacturers are very concerned about the liability issues surrounding decontamination, and with good reason.

Risks Present During Decontamination

If you're scrupulous about how you decontaminate the diver, there are still risks that you face post-dive, including contamination of the diver and heat exhaustion or heat stroke. These issues can pose serious hazards for both the tender and the diver. Many years ago while I was filming a decontamination procedure one of our divers almost passed out due to heat stress.

Contamination occurs when divers or tenders are improperly protected, when the diver's suit or gloves are compromised due to careless handling, or when insufficient attention is paid to the decontamination procedure. Even if you have all the right gear and materials to decontaminate the diver, if you're sloppy about your technique, exposure can occur.

Preparation Up Front

By itself, a dive in contaminated water isn't really much different from dives made under other circumstances. What truly sets this type of diving apart, however, is all of the prep work that goes into being ready for the decontamination following the dive. Some of the items you must think about before the dive include:

- What cleaning equipment will you need, including brushes, fluids, and showers?
- What will be the source of water you will use during decontamination?
- How are you going to capture and contain spent decontamination fluids?
- How are you going to contain diving equipment if it needs definitive decon (i.e., disassembly to get into all of the small parts)?
- How are you going to decontaminate the diver if his system is compromised during the course of the dive or during decontamination?
- How are you going to keep the diver cool during the decontamination process?
- What steps are you going to take to medically monitor the diver?
- What level of protection do you need to adequately protect the tenders who are handling the hose and decontaminating the diver? Protection must be appropriate and may be as simple as a Tyvek suit and a face shield, or as complex as an encapsulating suit and an SCBA.
- Do you have a plan for how to deal with a diver who passes out during the decontamination process?
- What support can you expect from your local haz-mat team? (Hint, if the answer is none and you have not trained extensively for this type of diving, maybe you shouldn't be conducting the dive.)
- How are you going to control traffic at the site?
- How are you going to use the zone management system to set up your equipment, i.e., support zone, contamination reduction corridor, contamination reduction zone, and contamination control line.
- What direction is the wind from and will spray carried by the wind affect the support crew or other people on the site?



On Site Decontamination

If you have planned for your decontamination procedures, and prepared for any contingencies, then your decontamination process should go pretty smoothly. If you have not thought your operation through, and practiced it regularly, then you had best be prepared for a potential catastrophe.



Gross decontamination, i.e., a simple wash down, can start as the diver exits the water. Provided you're dealing with nothing more than "minor" biological contamination, a rinse with fresh water is usually sufficient to start the process. From there, the diver can proceed to a bath or shower using chemicals to neutralize contaminants. It is essential to keep the diver moving and to keep him cool to avoid the dangers of heat exhaustion or heat stroke. If the diver is wearing a diving helmet rather than a full-face mask, the weight of the helmet will be significant out of the water. Care must be taken to help the diver support this weight



without injury. Extra care must be taken during the removal of the helmet to prevent damage to the diver's neck.

In cases of decontamination after exposure to dangerous biological or chemical hazards, the greatest risk occurs when the diver must remove the mask or helmet. The interface between these two pieces of gear must be given special attention to ensure it is clean. Of course, once the diver has removed all of his equipment, he will need to go through a definitive decontamination shower.



Not for the Faint of Heart

Making a contaminated water dive should be anticlimactic if you have followed all of the proper procedures up front and during the dive. Yes, it takes more time, money, equipment, and training, but it's far better than having a team member suffer injury, sickness, or death. While we can never eliminate all of the risks from diving, especially diving in contaminated water, we can certainly reduce these risks with good preparation.

Steven M. Barsky is a former commercial diver, TDI instructor, diving consultant, underwater photographer and author. He retired to Utah in 2014 and spends most of his days reloading, shooting archery, target shooting, hunting and hiking in the mountains nearby.

HAZMAT Diving

Source: <http://aquairind.com/news/The-Dangers-and-Procedures-of-HAZMAT-Diving>

Hazardous materials (Hazmat) divers have exceptionally dangerous jobs. They work in precarious conditions, and regularly expose themselves to radioactive material. However, the extreme dangers these divers face are minimized through intense training, durable commercial dive gear, and thorough decontamination processes.

Here's how:



HAZMAT Dangers

Many bodies of water contain some sort of contamination, whether it be minimal or consequential. HAZMAT divers, due to their high level of contaminant exposure, require specialized commercial dive gear, as well as intensive decontamination procedures, to ensure their general safety.



For divers working in mildly-contaminated water, gloves, a utility belt, and a simple [dry suit with a sealed neck](#) should suffice. For water that is 'lightly' contaminated, a [full face mask](#) is recommended.

Divers working in exceptionally dirty and/or hazardous conditions require a full dive helmet, a stronger suit, and other specialized commercial dive gear. For example, the [Thor Contaminated Water Diving Suit](#) is built for highly contaminated water, and features vulcanized rubber that is strong enough to resist contaminants, and pliable enough to accomplish critical underwater tasks.

For full-on hazardous material tasks, like those involving radioactive material, a full HAZMAT-ready suit may be required.



The Decontamination Process

No matter how strong your protective suit, and commercial dive gear may be, decontamination procedures are crucial. Not only are these processes necessary to ensure the diver's safety, but they also protect the team, and anyone else who may be within chemical or radioactive reach of the decontamination area. Decontamination procedures vary from job to job as the chemical, and HAZMAT profile for each dive area will be different. The more hazardous the elements in the water, the more thorough the decontamination process will be. However, the process also depends on the type of equipment used, and the level of protection the equipment offers.

Here are a few things to remember about the decontamination process:

- Decontamination areas should be set up in zones: High-contamination zones to remove the bulk of HAZMAT materials; Low-contamination zones to work as a buffer; and a final safe zone, ideally located upwind, that will be entirely free of hazardous materials.
- The high-contamination zone needs to be in a water-impermeable area where potential contaminants can be captured, and properly disposed of. During this stage, the diver will be rinsed with fresh water from a high-pressure system. If fresh water is unavailable, salt water can be used as a substitute.
- A cleaning solution may be required. Although the exact mixture depends on the contaminants present, a 5% bleach solution is most frequently used.
- Either long or short-handled wire brushes are used to clean the diver. Short-handled brushes are ideal for more intricate cleaning.
- Generally, the decontamination process involves more than one person--one to spray and clean the diver, and another to look for holes or other compromises in the dive suit fabric.

Ready, Set, Dive

Although HAZMAT divers face several dangers within their profession, safety risks can be minimized through proper HAZMAT commercial dive gear, and decontamination procedures. With the proper training and certification, potential issues or concerns can be put at ease.



The right man for the job: Guy Roberts' journey to becoming USA's lead man the field of CBRNe.

By Martijn van Ballekom

Source: <http://www.cbrneportal.com/the-right-man-for-the-job-guy-roberts-journey-to-becoming-usas-most-important-government-representative-in-the-field-of-cbrne/>

Dec 05 – The nomination as Assistant Secretary Of Defense For Nuclear, Chemical and Biological Defense Programs (ASD(NCB)) will be the crown jewel of Mr. Guy Roberts' already impressive career. Looking back at his track-record, the White House chose a suitable candidate in these times of duress, where threats from all sides of the CBRNe spectrum are widespread. It is no surprise that a careful vetting procedure preceded before the nomination of the United States' next ASD(NCB). This article will take a closer look at the man who will lead US policy-making against CBRNE threats and which challenges he will be facing.

The tasks and responsibility attached to the position of ASD(NCB) should not be understated in the current climate. Mr. Guy Roberts will act as the principal advisor to the Secretary and Deputy Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) on nuclear energy, nuclear weapons, chemical and biological defense. The Department of Defense's (DoD) dual mission of sustaining a safe, secure and effective nuclear deterrent, in addition to countering the threat of nuclear terrorism and nuclear proliferation, will at large be dependent on the tasks carried out by Mr. Guy Roberts.

Challenges within CBRNe today are numerous: the use of chemical agents for political assassinations has again proven to be a popular method; recent epidemics have shown that disaster relief response is too slow; North Korea's nuclear policy is becoming increasingly volatile and terrorist organizations are seeking to develop their own nuclear capabilities. His confident answers during the hearing in front of Senator John McCain, Chairman of the Senate Committee on Armed Services, indicate that Mr. Roberts is well aware of the threats that need to be dealt with. From the aforementioned, nuclear deterrence will be amongst his top priorities.

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

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Meeting of training centres on chemical weapons starts

Source: <http://www.gulf-times.com/story/573948/Meeting-of-training-centres-on-chemical-weapons-st>

Dec 07 – The third meeting of training centres on assistance and protection under Article X of the Chemical Weapons Convention, organised by National Committee for the Prohibition of Chemical Weapons, in collaboration with the Organisation for the Prohibition of Chemical Weapons (OPCW), through Doha Regional Center for the Training on Weapons of Mass Destruction, started yesterday.

The two-day meeting is held under the patronage of HE the Deputy Prime Minister and Minister of State for Defence Affairs Dr Khalid bin Mohammed al-Attiyah.

The meeting will include a discussion on the training programmes provided by the Assistance and Protection Branch of the OPCW with the support of states parties, a review of future projects and the development of states' capacities in the area of assistance and protection against such weapons.

General Secretary of the National Committee for the Prohibition of Weapons, Lt Abdulaziz al-Ahmad said the meeting, which coincides with the 20th anniversary of the chemical



Weapons Convention coming into force, is the core for the establishment of an international network of training centres associated with the OPCW under Article X of the chemical Weapons Convention. These will develop the capacity of states parties to respond to chemical incidents, providing an opportunity for field training for participants in the advanced course.

Speaking at the meeting, al-Ahmad highlighted the role of the State of Qatar in the field of maintaining international peace and security and combating terrorism, in addition to its policies that respect international charters and conventions.

He added that the State of Qatar initiated the signing of the chemical Weapons Conventions and ratifying it the same year it came into force in 1997.

The State also is keen on joining the other treaties related to eradicating weapons and aim to achieve peace and stability in the world, al-Ahmad said.

He added that the State of Qatar is an important partner in implementing the convention and is one of the dedication members in cooperation with OPCW, referring to its embracement to Doha Regional Center for the Training of Weapons of Mass Destruction, where the National Committee for the Prohibition of chemical Weapons expanded its activities to cover all the mass destruction weapons.

Al-Ahmad added that the aim of the centre is training all those related in the private and public sectors as well as researchers to heighten their capabilities in the field of effectively implementing weapons of mass destruction conventions.

The centre also aims to establish co-operation with regional and international organisations and states parties to the convention to develop training programmes on a sustainable basis in the areas of chemical assistance, protection, safety and security, he said.

Al-Ahmad said the centre has so far organised more than 50 national and international training and awareness programmes for high school and university students, workers in chemical industries, customs, chemical trade and civil defence companies.

He called on the international community to do more to strengthen national measures and optimise the use of the chemical Weapons Convention and to support the organisation's efforts to eliminate these weapons and to prevent them from reaching terrorists and proscribed groups.

On his part, Head of the OPCW's Assistance and Protection Branch, Shawn DeCaluwe, valued the fruitful co-operation of the State of Qatar with the organisation and its efforts in the training field to implement the conventions related to weapons of mass destruction.

He said the meeting seeks to review all the training programmes adopted with a view to enhancing them and maximising their use to states parties of the convention and ensuring smooth training programmes in the future.

He hoped that the Doha meeting would constitute an important starting point in this regard.

QU workshop raises awareness on mass destruction weapons

Source: <https://www.thepeninsulaqatar.com/article/14/11/2017/QU-workshop-raises-awareness-on-mass-destruction-weapons>



QU Vice-President for Research and Graduate Studies, Prof Mariam Al Maadeed, and National Committee for the Prohibition of Weapons Head, Brigadier-General Nasir Muhammad Al Ali, during the Qatar University awareness workshop on mass destruction weapons conventions.

Nov 14 – Qatar University (QU) hosted the 7th awareness workshop on mass destruction weapons conventions on November 12, under the patronage of Qatar Minister of Defence H E Dr Khalid bin Mohamed Al Attiyah.



Organised in collaboration with the National Committee for the Prohibition of Weapons and Doha Regional Centre for Training on the Conventions on Weapons of Mass Destruction, the event engaged a large number of students from QU, Texas A&M University at Qatar, Community College of Qatar, and the College of the North Atlantic - Qatar. Attendees included QU President, Dr Hassan Al Derham; National Committee for the Prohibition of Weapons Head, Brigadier-General Nasir Muhammad Al Ali; and QU Vice-President for Research and Graduate Studies, Prof Mariam Al Maadeed. The event's programmes featured the screening of a video on mass destruction weapons conventions. It also included presentations delivered by National Committee for the Prohibition of Weapons Secretary First Lieutenant, Abdelaziz Hamdan Al Ahmad; Al Wakrah Hospital Microbiology Consultant, Dr Nasser Al Ansari; National Committee for the Prohibition of Weapons Radiation Expert, Prof Salwan Kamal Jamil Abboud; and QU College of Arts and Sciences (CAS) Assistant Professor of International Affairs, Dr Ibrahim Saidi. They presented on a wide range of issues such as the objectives and achievements of the National Committee for the Prohibition of Weapons, the biological weapons convention, the chemical weapons convention, the contemporary security risks of mass destruction weapons, and the nuclear weapons convention. Dr Hassan Al Derham, said: "I appreciate the efforts of the National Committee for the Prohibition of Weapons to raise awareness about the threats of mass destruction weapons, which are a violation to humanitarian and religious values and national law. QU is keen to participate in such a workshop in line with its commitment to spread the culture of peace."

Nasir Muhammad Al Ali thanked QU for hosting the workshop, saying, "This event aligns with the mission of the National Committee for the Prohibition of Weapons to provide social awareness activities and workshops to society in general and students in particular as they are the human wealth of the nation." Prof Mariam Al Maadeed, said, "This workshop comes within the framework of the understanding of the State of Qatar of the huge danger of mass destruction nuclear, chemical and biological weapons. It also aligns with the local and international efforts to prevent the proliferation of such weapons by recommending their abolition and investing the allocated costs to produce them to create programmes aiming at ensuring international progress and growth."

Emergency chemical attack drill carried out in Israel's London embassy

Source: <https://www.rt.com/uk/412694-emergency-chemical-attack-israel/>



Dec 11 – Armed police in biohazard suits swarmed the Israeli embassy in London during a training exercise for a chemical terrorism attack. Emergency services rehearsed their response to "casualties effected by a noxious substance."



The drill, which was the first of its kind to take place in a foreign embassy in the capital, saw decontamination tents erected in a section of the building that was cordoned off on Sunday. Paramedics in biohazard suits treated 50 'casualties' played by Royal Military Police personnel, who were put through decontamination showers.

It comes at a time when Israeli-owned institutions are on high alert. Officials say the drill was planned well in advance, however, and was unconnected to protests around the world in the wake of US President Donald Trump's recognition of Jerusalem as Israel's capital.

Trump's move is controversial since the city is a holy site for a number of religions. It is home to the Al-Aqsa Mosque, the third-holiest site in Islam, and is looked to as the capital of a future Palestinian state. The US president has been accused of squandering years of diplomatic peace efforts between the Israelis and Palestinians.

A spokesman for the Metropolitan Police, which coordinated Sunday's exercise, said all of the emergency services were involved, including London Fire Brigade and the London Ambulance Service. *"It was an exercise involving the emergency services, and the reason they do it is to see how they can link up in such events, and if there is anything that can be improved in the future,"* the spokesman said, according to The Guardian.

He added that the snowy, wet weather conditions "added another dynamic" to the exercise, and



said that there were no plans for further events of the kind in the near future.

"It was the first time we have been able to carry out a live exercise inside a foreign embassy and the experience and learning gained from this will be invaluable," Commander Adrian Usher, who heads the Met's parliamentary and diplomatic protection command, told the newspaper.

"It also tested our joint response in dealing with a hazardous substance, which is important as it will help officers and staff be better prepared should we ever face this type of challenge for real. I must stress that the exercise, which has been planned over several months, was not designed with any specific threat in mind either in terms of the hazardous material element or the location," Usher added.

The Embassy of Israel said it was happy to take part in the exercise and to work together with the Metropolitan Police and emergency services.



Better gas mask filters

Source: <http://www.homelandsecuritynewswire.com/dr20171211-better-gas-mask-filters>

Dec 11 – In research that could lead to better gas mask filters, scientists at the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) have been putting the X-ray spotlight on composite materials in respirators used by the military, police, and first responders, and the results have been encouraging. What they are learning not only provides reassuring news about the effectiveness of current filters in protecting people from lethal compounds such as VX and sarin, but they also provide fundamental information that could lead to more advanced gas masks as well as protective gear for civilian applications. The project at Berkeley Lab is led by Hendrik Bluhm, a senior staff scientist with joint appointments in the Chemical Sciences Division and the Advanced Light Source (ALS). On his team are two postdoctoral researchers in the Chemical Sciences Division, Lena Trotochaud and Ashley Head.

LBL [notes](#) that the Berkeley Lab team is part of a larger collaboration that includes researchers at the University of Maryland at College Park, Johns Hopkins University, and the U.S. Naval Research Laboratory.

The researchers pointed out that studying how metal oxides interact with small organophosphates could be relevant beyond the gas masks used by the military and emergency responders. The work they are doing could have applications in sensing technologies. In addition, less potent forms of organophosphates are widely used as pesticides and herbicides, so the findings could help the agricultural industry and environmental scientists understand what eventually happens to these substances after they are released into the environment.

"This is a project where we are working to help save lives," said Trotochaud. "That is very fulfilling."

For Head, the project provided a particularly relevant topic of conversation at family gatherings.



"My sister-in-law is in the Air Force," said Head. "I was telling her what I do, and she said, 'When I'm deployed, I get a gas mask. Does it work?' She tells her colleagues about what I'm working on. So much of what we do in basic science is far removed from an application. While our work is still fundamental, I can now tell my family what I'm doing, and they'll actually understand."

Do the masks work?

Current gas mask filters do counter current threats, but there are large gaps in knowledge about how they do so at the molecular level, the researchers said. The question comes up because many of the filters were developed to handle a wide range of ever-changing chemical threats and to work under a variety of different conditions all over the world. During World War I, chemical warfare agents were predominantly chlorine and mustard gases.

Since then, a new class of chemical weapon came onto the scene. Sarin and venomous agent X, or VX, are nerve agents so named because they interfere with the nervous system's ability to communicate with muscles, including those that control breathing. The current materials used in gas mask filters provide effective protection against all of these compounds, despite the very different chemical properties of the gases.

Gas mask filters include activated carbon, a family of absorbents that trap toxins in millions of micro-pores. It is the same compound used to filter water and treat ingestion of poisons. The activated carbon traps the toxins, but in gas masks it is further augmented with metal oxides, such as copper and molybdenum, to help break down the toxins.

"Even though the first gas mask filters were developed before these new nerve agents emerged, the current filters are effective at capturing them, and they also seem to be good at breaking them down, but we still



have some questions about the chemistry of this process,” said Trotochaud. “We know it works, but we don’t always know how it fails. We do know the filters sometimes stop working after a while when exposed to these organophosphorus compounds, so the chemistry of how the material is deactivated after exposure to these agents is a big part what we’re studying.”

The Berkeley Lab researchers targeted two metal oxides – molybdenum oxide and copper oxide – that are key working components in gas mask filters. To simulate the small organophosphorus molecules of sarin and VX, the researchers worked with dimethyl methylphosphonate (DMMP), an established proxy for sarin with similar functional groups but significantly lower toxicity.

The goal is to better understand the molecular interactions that occur as various gases are adsorbed by the gas mask filter materials, and the environmental conditions – air pollution, diesel fuel exhaust, water – that could alter performance and shelf life, so even better materials can be developed.

“Much of our early work focused on characterization,” said Bluhm, the project’s principal investigator. “There were a lot of details to resolve. What exactly does copper oxide do? What does molybdenum oxide do? Why does one behave differently than the other? Understanding where the differences are can make these filtration materials potentially much more efficient.”

The effects of water vapor were of particular interest because of how the masks are used, noted Bluhm.

“It’s a filtration mask that sits in front of our mouths, so there is high humidity as we breathe into it,” he said. “Among the published findings from our project is that water vapor seems to be neutral or even beneficial for the performance of the materials.”

This was reported in a [2016 study](#), which found that water exposure activated the composite surface in a way that facilitated the binding of the DMMP molecule, lowering the energy required to break the molecule down.

The researchers have tested the effects of water, octane, and nitrogen oxides, and none of these exposures decreased the ability of the metal oxides to bind to and break down DMMP

molecules. Thus far, the project has yielded four published papers, with more to come.

“They still work very well,” said Trotochaud. “There are subtle differences that are interesting from a fundamental point of view but that do not affect the bulk performance.”

The draw of a powerful X-ray technique

LBL says that enabling the scientists to answer these questions is a powerful technique called ambient pressure X-ray photoelectron spectroscopy (XPS). Berkeley Lab researchers played a major role in the development of this new generation of instruments, now deployed at many synchrotron facilities and laboratories around the world, including the Advanced Light Source, a DOE Office of Science User Facility at Berkeley Lab.

XPS is a workhorse surface characterization technique enabling the precise determination of the chemical composition of the top few atomic layers, or “skin,” of materials with great detail. When in contact with a liquid or gas, the surface can act as a catalyst for the decomposition or reaction of molecules.

In XPS, a sample is illuminated by a beam of [X-rays](#), which transfers part of its energy to electrons inside the atoms of the material. Measuring the [kinetic energy](#) and number of [electrons](#) that escape from the material’s surface allows a precise determination of the material’s chemical composition, including adsorbed and decomposed molecules at the surface.

“The development of ambient pressure XPS now allows us to perform these measurements in situ, which more closely mimics real-world situations,” said Bluhm.

The Berkeley Lab researchers are able to add molecules of DMMP to simulate nerve agents in the analysis chamber, and study how they interact with the surface of the copper or molybdenum oxides. They have also been able to expose the material to water vapor before adding DMMP to see if there is any difference in the surface chemistry.

Head noted that ambient pressure XPS can provide more quantitative data than other techniques that have been used to study gas mask filters. The data helps establish computational baselines for the theoretical



modeling of highly toxic organophosphates on metal oxide surfaces.

"We can look at the DMMP molecule landing on the surface of the metal oxide, and not only can we see that it breaks apart and decomposes, we can tell what percentage of the molecule decomposes," said Head.

The ability to use this instrument was one of the major attractions that drew Trotochaud to this project.

"XPS is so powerful; you get so much information from it," she said. "It's like a puzzle. With ambient pressure XPS, you get bits of info that are somehow connected, but you don't know the whole picture until the very end, and when you finally get it, it's so satisfying."

The project is now entering its next phase, in which different composite materials will be tested to determine whether they might perform better than existing filters.

Austria gas plant burns after deadly explosion

Source: <http://www.bbc.com/news/world-europe-42321217>



Dec 12 – A big blast has rocked a major natural gas hub in Austria, killing one person and injuring at least 18, police say.



A fire followed the blast which happened around 08:45 (07:45 GMT) at the Baumgarten site, just east of the capital Vienna, near the Slovak border.

[On Twitter, Austrian police said the situation was under control](#) and a technical fault had caused the blast.

The flow of Russian gas to Europe has dropped, triggering price hikes. Italy declared a state of emergency.

Baumgarten is a key hub for imported Russian gas, which is sent on to a number of European countries. The facility receives about 40bn cubic metres of gas per year.

"The installation has been brought under control and operations have been suspended there," said Armin Teichert, spokesman for the operator, Austria's Gas Connect service.

Police have cordoned off the area. [Some victims suffering burns have been airlifted out by helicopter, Austrian ORF news reports.](#)

One unconfirmed report spoke of 60 hurt.





"I heard a huge explosion and thought at first it was a plane crash," photographer Thomas Hulik, who lives in a nearby village in Slovakia, told AFP news agency. "Then I saw an immense ball of flame."

Gas Connect said the incident should have no effect on gas deliveries to Austria but those to Italy and Croatia might be reduced.

Meanwhile, Russia's Gazprom Export company said it was working to redirect gas flows.

It said it was "doing everything possible to secure uninterrupted gas supplies" to customers in the region. Ukraine's Ukrtransgaz firm said that "due to the emergency situation in the EU there will be a temporary fall in the volume of natural gas transit across Ukraine in the Slovak direction".

Ukraine is a major transporter of Russian gas into the EU.

Spot prices rose sharply across Europe after the incident.

TAR's Mobile CBRNe Solution - CBRNe VEHICLE

Source: http://bcm.tarideal.com/?utm_source=activetrail&utm_medium=email&utm_campaign=CBRN



TAR's CBRNe vehicle delivers a complete mobile solution for CBRNe detection, sampling and analysis and may be integrated into any vehicle of sufficient size.

The TAR' CBRNe vehicle is fully customized to meet the tactical and operational environment of the customer. Our vehicles provide laboratory grade equipment for accurate on-site detection and analysis.

How to ensure authenticity in HazMat safety training for industry

Source: <http://www.argonelectronics.com/blog/how-to-ensure-authenticity-in-hazmat-safety-training-for-industry>

Nov 17 – Major industrial or technological HazMat accidents that involve toxic chemicals are thankfully comparatively rare. However, when a large-scale industrial incident does occur,



there is the potential to cause significant damage and disruption to personnel, the general public and the facility.



The storage, transport and manufacture of chemicals brings with it an inherent element of risk. Chemicals can be corrosive or toxic or react explosively, with the potential for considerable impact on human life and the environment, and with many thousands of chemicals in commercial use worldwide, there is the ever present risk of [accidental release](#).

Chemical spills and accidents can happen, on a small and large scale, anywhere chemicals are found - from factories, to oil rigs to tanker trucks, shipping vessels and railway transport - and can occur with surprising frequency.

Just a few recent examples of smaller [industrial-related HazMat incidents](#) in the US in 2017 (all of which were successfully contained) have included a mercury spill at the Cincinnati VA Medical Centre due to the movement of an old pipe during construction work; an ammonia leak at a Butterball plant in Jonesboro Arkansas after a power outage; a polyethylene holding tank catching fire at a chemical plant in Gales Ferry, Connecticut; and a chemical scare at Flint Hills Resources in Illinois.

There are clearly defined procedures and working practices in place within industrial facilities to help assess and manage risk, and individual sectors of industry within the US and UK are also subject to their own specific regulations.

The fact remains though that the hazardous nature of the processes involved in the handling or manufacture of chemicals, together with the ever-present potential for human error means it is essential that emergency response teams are equipped with the appropriate knowledge and skills to handle chemical incidents.

The ongoing challenge for HazMat instructors working within an industrial setting (or indeed any environment where there is a HazMat risk) is to devise training scenarios that provide an authentic live-incident experience for their trainees.

Traditional Hazmat safety training scenarios

Traditional approaches to [HazMat safety training](#) have typically relied on the use of classroom or field-based simulations in which trainees use actual detection instruments to locate small quantities of a live material.

While there is certainly value in being given the opportunity to handle real-life detectors, the simulant-based HazMat training method comes with some distinct limitations.

There is the potential for wear-and-tear of expensive detector instruments, there is the human and environmental risk associated with using live sources even in small quantities, there are health and safety regulations to comply with, and there is the not inconsiderable administrative effort required in ordering, transporting and storing the substances.



Another traditional training system involves the use of simple signs or handheld notes within a classroom setting or training area, or even simply telling the student what they “are now reading” which informs trainees as to the expected level of contamination at different locations.

While the use of printed signs and similar injects is an inexpensive training method, it does little to educate personnel in the correct use of their detectors or to equip them with an understanding of genuine readings or changes in measurements.

So if simulant-based training presents inherent risk and ‘make-believe’ scenarios lack authenticity, what other options exist for creating [realistic training scenarios](#)?

Intelligent simulation tools for HazMat safety training

One solution is the introduction of an intelligent computer-based simulation tool, such as the [PlumeSIM-SMART](#), which can be used in a wide range of industrial scenarios to replicate the release of radiological, chemical and petrochemical gases, vapours or agents.

PlumeSIM-SMART is a software-driven system which runs on a standard laptop connected wirelessly to one or more handheld smart devices or mobiles (SMART-SIM.) The devices can then be used by students in any location and over a distance of up to 2,500 kilometres.

The virtual devices within each SMART-SIM can replicate multi-gas detection, air monitoring, radiological dose and dose rate meters. They also enable instructors to oversee each training scenario from a central location, and to influence the readings throughout each phase of an exercise. In addition, each student’s activity is automatically logged which means the instructor can review the time taken, the selected route, the information collected and how that information was communicated.

While there are rigorous controls across industry to prevent accidental release of toxic chemicals, the fact remains that [emergency response teams](#) need to be skilled and trained to respond to potential incidents on both a small and large scale.

Intelligent computer-based simulation tools, that enable crews to experience every element of a real life event, can play a vital role in ensuring they are prepared to handle any situation.

The vital role of personal dosimeters in radiation safety training

Source: <http://www.argonelectronics.com/blog/the-vital-role-of-personal-dosimeters-in-radiation-safety-training>



Nov 15 – A key objective of [radiation safety training emergency preparedness](#) is the ability for military personnel and first responders to be able to identify, evaluate and react to a wide spectrum of potentially hazardous events. For those tasked with handling the unique



challenges of radiological incidents, the importance of maintaining personal safety is paramount. Radiation is an invisible force that is constantly around us. It takes the form of natural radiation (such as radioactive radon gases, terrestrial gamma radiation or cosmic radiation) and is also a by-product of man-made radioactive materials (as a result of medical radiotherapy procedures, occupational radiation exposure or radioactive discharges) some of which can be immensely powerful.

[Exposure to radiation](#) is defined as being when part, or all, of the body is irradiated with radioactive material. This radiation may be deposited externally (ie by direct contact with skin or clothing) or internally (through the process of inhalation, ingestion or via a wound.)

The effect of radiation on human tissue varies depending on the radiation type. Alpha particles for example are the least dangerous in terms of external exposure but extremely hazardous if inhaled or ingested. The effects from beta radiation or gamma radiation exposure on the other hand are less dangerous internally, but pose a much greater risk externally as they can penetrate the skin and damage the cells inside.

On average, US civilians are exposed to an [annual radiation dose](#) of approximately 620 millirem (6.2 millisieverts) while in the UK the dose is estimated at approximately [270 millirem](#) (2.7 millisieverts) per year. Both levels fall well within what are considered safe parameters for individual radiation exposure.

For military personnel or first responders however, whose job it is to react to a range of hazardous radiological incidents, the potential for exposure to high levels of ionising radiation poses a much greater risk.

An understanding of personal radiation levels is therefore essential for anyone working in a first response role within the area of radiation safety.

Personal dosimeters for radiation safety training

One of the key life-saving items of instrumentation provided to military personnel and first responders during a radiation safety incident is a personal dosimeter which enables them to monitor their own individual dose of ionising radiation.

Personal dosimeters can be worn to obtain a whole body dose and there are also specialist types that can be worn on the fingers or clipped to headgear, to measure the localised body irradiation for specific activities.

A personal dosimeter is a fairly straight-forward piece of instrumentation to use, however as health and safety regulations restrict the use of a live ionising radiation source during training scenarios, it is impossible for trainees to fully experience any authentic readings on their detectors and understand the importance of readings and alarms.

One solution is to introduce the use of a [dosimeter simulator](#) into radiation safety training.

A dosimeter simulator, such as Argon's [EPD Mk2 SIM](#), is a training device that enables students to experience every operational feature of an actual EPD Mk2 dosimeter, but without the need for an ionizing radiation source.

A dosimeter simulator offers some distinct advantages for trainees:

- It responds to an electronic source that simulates the effects of life-threatening ionising radiation levels but with zero risk to the trainees, instructors or environment
- The SIM authentically replicates the appearance, functionality and display of a real device to enables trainees to experience every operational feature
- The simulator indicates HP07 and HP10 dose, including first and second alarms when the dose rate reaches a preset level
- The simulation sources can be used anywhere, including public buildings
- The simulator runs on the same battery supply as a real dosimeter
- The devices require no preventative maintenance or recalibration
- The use of a simulator avoids unnecessary and expensive damage to actual detectors
- The simulator dosimeter is fully compatible with Argon's PlumeSIM System to be used as part of wide area tactical field and nuclear emergency response exercises



Understanding radiation exposure

Regular training using a simulator dosimeter can also be invaluable in enabling trainees to experience and understand three key factors that will determine their individual radiation exposure and the actions they can take to reduce this:

Time: The longer the exposure to radiation, the bigger the dose will be - and any reduction in the time of an exposure will reduce the effective dose proportionally.

Distance: Any increase in the distance from a radioactive source automatically reduces the dose due to the inverse square law (ie that a specified physical quantity or intensity is inversely proportional to the square of the distance from the source of that physical quantity).

Shielding: Solid or liquid materials such as lead, concrete and water can all act as shields to absorb the energy of the radiation. Inserting the proper shield between a person and a radiation source will greatly reduce, or in some cases even eliminate, the dose received.

Hands on learning, using life-like instrumentation, is a key contributor to the effectiveness of radiation safety training exercises.

The provision of life-like simulator detectors, and being given repeated opportunity to use them in a range of realistic training scenarios, is invaluable in ensuring that military personnel and first responders are equipped to handle the unique challenges of any radiological incident they may encounter.

A comparison of exercise scenarios for authentic CBRNe training

Source: <http://www.argonelectronics.com/blog/a-comparison-of-exercise-scenarios-for-authentic-cbrne-training>



Nov 30 – The [1997 Chemical Weapons Convention \(CWC\)](#), signed and ratified by 192 state-parties globally, is a multilateral treaty that bans the use of chemical weapons under international humanitarian law, and requires their destruction within a specified period of time.

The treaty prohibits the developing, producing, acquiring, stockpiling, or retaining of chemical weapons; the direct or indirect transfer of chemical weapons; the use of chemical weapons by the military; the assistance, inducement or encouragement of other states to engage in CWC-prohibited activity; and the use of riot control agents as a method of warfare.

Thankfully, acquiring, producing, and dispersing chemical agents is more easily said than done, as many CWAs are dangerous to acquire and handle; require highly sophisticated expertise and technology to produce and are often difficult to disperse in a sufficient quantity to inflict harm. Nonetheless, it is vital not to underestimate the inherent risk to global security of any deliberate chemical attack. With that awareness comes an increasing need for military



personnel and first response teams to be prepared for the unique challenges of an act of chemical warfare. The act of chemical warfare is the use of any chemical with the intent to kill or incapacitate humans, animals or the environment. Chemical warfare agents (CWAs) are typically categorized as blister, nerve, choking, blood and riot-control agents (such as mustard gas, sarin, chlorine, hydrogen cyanide and tear gas) and the effects are felt immediately upon inhalation or skin contact.

CWAs can be employed in various ways, whether as a threat or through actual deployment, and to gain a strategic or tactical advantage. The agents may be lethal or nonlethal in nature, and may be targeted against an individual, a group, or a larger population.

The longstanding challenge for CBRNe trainers within the US military has been to create realistic and authentic scenarios that accurately reflect the conditions and risk of a real-life CWA incident.

So what are the current training options available?

Live Agent Training (LAT)

Live agent training (LAT) is considered the peak of chemical warfare training, as it offers an opportunity for students to experience the characteristics of an actual chemical threat (including GB (sarin) and VX nerve agents and HD (mustard) agents) in a controlled manner.

LAT provides invaluable experience in preparing trainees to be combat ready, but alongside the host of benefits, the training does also bring with it real risks. The CWAs used are high-grade (usually 90-95 percent purity) which means that highly trained staff need to be on site to strictly monitor a training exercise.

LAT is also subject to stringent environmental and administrative regulations, with government departments working closely with the military and environmental agencies. And because exercises can only be carried out in carefully controlled locations, and with strict controls on the release and handling of the live agents, this can result in a perception of “unrealism” for trainees.

Simulant Agent Training (SAT)

The use of simulants in CBRNe training follows the same principles as LAT, but with the use of simulant agents that model the properties and behaviour of real CWAs.

While the use of actual detectors during exercises does make SAT a highly realistic form of training, it also has its shortcomings. SAT necessitates the purchase and storing of expensive substances, the use of chemical simulants can cause damage to real detectors which can compromise their operational readiness, and the fact that trainees can usually see the trainers releasing the substances can make for an unrealistic experience. Repeatability and training area saturation are also problematic.

CBRNe Training Using Simulators

An alternative to both LAT and SAT is the use of life-like [simulator detectors](#) that utilise new generations of intelligent computer-based technology to accurately replicate how real detectors react when exposed to a range of chemical agents.

Simulator detector technology takes into account the unique volatility of each chemical agent, the tactics and techniques used to detect different agents, and the significance of prevailing weather conditions. There is also no requirement for live sources and (aside from the cost of replacement batteries) no need to purchase expensive consumables.

Cost considerations

When considering the cost of simulators as opposed to using real detectors for [CBRNe training](#), it's important to keep in mind to cost of purchase versus the cost of ownership over the lifetime of the device. The true cost of an actual detector involves a combination of multiple factors (including maintenance, repair, calibration and the purchase of simulants) all of which can significantly increase the cost of that item over its lifetime.

When utilising live sources or simulants in CBRNe training exercises it's also important to take into account the financial commitment associated with regulatory compliance and land remediation.



Damage to actual detectors is another key factor to consider, as it's not uncommon for students to accidentally damage or break a real detector during a training exercise, which can result in a significant cost for repair or replacement.

Well-designed simulator detectors, on the other hand, are designed to tolerate incidents of student misuse, and are built with the ability to immediately reset rather than going into "wait" mode, which saves both time and expense.

The necessity to create realistic CWA training scenarios is crucial to the preparedness of the military and first responders worldwide to ensure they are confident and knowledgeable to handle the challenges of any chemical incident.

In selecting the most viable training method for [chemical warfare agent training](#), it is important to consider the authenticity of the training experience, the capacity for exercises to be easily set up and repeated, and the true cost (both in terms of time and money) that the training method will incur.

Police and government units face chemical 'bomb' in anti-terror drill at Hong Kong Coliseum

Source: <http://www.scmp.com/news/hong-kong/law-crime/article/2124080/police-and-government-units-face-chemical-bomb-anti-terror>



Dec 13 – **About 500 police officers and personnel from other government units as well as some 100 members of the public took part in an anti-terrorism exercise at the Hong Kong Coliseum in Hung Hom on Tuesday night.**

The interdepartmental drill, code-named "Wildeagle", involved a constructed scenario where armed terrorists entered the Coliseum, the city's iconic multi-purpose indoor arena with a capacity of 12,500, and took the audience hostage.

The "terrorists" also detonated a simulated chemical bomb.

Different police units responded, and they eventually subdued the terrorists and evacuated the crowd.

Those who might have been contaminated by the explosion had to undergo a chemical, biological, radiological and nuclear (CBRN) decontamination process by the Fire Services Department.

The exercise was organised by the police Counter Terrorism and Internal Security Division, involving more than 500 officers from the Counter Terrorism Response Unit, "Flying Tigers" Special Duty Unit,



Explosive Ordnance Disposal Bureau, Police Negotiation Cadre, Police Tactical Unit, Emergency Unit, Organised Crime and Triad Bureau, Fire Services Department, Government Flying Service and the Leisure and Cultural Services Department.

The event was also the first such exercise to involve public engagement, with the participation of more than 100 members of Junior Police Call and Senior Police Call, groups which aim to foster police-youth and police-senior citizen partnerships in the fight against crime.

A police spokesman said the objectives of this exercise were to assess the effectiveness of

force-level counter terrorism plans and procedures and the interdepartmental coordination in conducting a proactive operation.

The department also reminded the public of a previously issued rule of thumb for what to do in case of an attack: run, hide and report.

Police have staged more than a dozen such drills this year.

The spokesman added that there was no specific intelligence suggesting that Hong Kong would be targeted for any terrorist attack, and that the city's terrorist threat level remained "moderate."

Chemical Warfare Drills by Homeland Security Will Turn Humans into Lab Rats, Many Fear

By Nicole Rodriguez

Source: <http://www.newsweek.com/chemical-warfare-drills-homeland-security-turn-people-lab-rats-residents-fear-745697>

Dec 12 – Residents of a small Oklahoma farming town near the Kansas border fear the federal government will be using them as lab rats if it carries out plans for biological warfare testing in the area next month.

The Department of Homeland Security is set to release what is says are [inert chemicals](#) into the atmosphere [near an abandoned school in Newkirk, Oklahoma](#). It aims to gauge how the chemicals travel through the air and whether they could infiltrate buildings and homes where people were seeking shelter in the event of a biological attack.

"This helps responders and emergency managers decide how to respond and save lives. It helps in planning for evacuations...and other tactics," the department's science and technology directorate

spokesman, John Verrico, told *Newsweek* in an email. "It also helps us to understand how materials settle and stick to surfaces," which can aid in recovery.



Members of the Department of Homeland Security and New York Metropolitan Transportation Authority release chemical tracer devices in a test of how gas would flow through the subway system in New York, May 9, 2016.

SHANNON STAPLETON/REUTERS

Testing could commence in January, and then be done again in February, June and July at the closed Chilocco Indian School in Newkirk, which has a population of 2,300. Homeland Security is reviewing approximately 300 comments received by email from the public before making a final determination on whether it will conduct the drills, Verrico said.

Comments on such Environmental Assessments, which would require redaction of personal information before they're publicly released, typically cover "a broad range, from people who



didn't read or understand the [Environmental Assessments] or don't like the idea of any such experiment near their community, to scientists and historians with detailed facts," Verrico said.

The chemical agents the department plans to utilize are titanium dioxide, which is common in sunscreens and cosmetics; fluorescent brightener, used in laundry detergents; urea, a natural fertilizer; and Dipel, an insecticide.

Area residents dispute the Homeland Security assurances that the chemicals are harmless to humans, animals and the environment.



Emergency responders in hazardous materials suits test the air during "TOPOFF3", a drill produced by the Department of Homeland Security to simulate a chemical or biological attack, in New London, Connecticut April 4, 2005. "TOPOFF3" is a \$16 million exercise to test the responses of local, state and national agencies to an attack. BRIAN SNYDER/REUTERS

Jill Wineinger, a resident of nearby Arkansas City in Kansas, has collected nearly 9,000 signatures on a [petition](#) seeking to block the testing since Homeland Security on November 6 placed a legal notice about the tests in a Newkirk newspaper to invite the public to comment on the environmental assessment during a 30-day open comment period.

"We just don't really know or trust that everything that they're saying is what they're doing," Wineinger told *Newsweek*.

Wineinger, a 35-year-old mother of two, said she's allergic to urea and could be hospitalized if she's exposed to it. She also is worried about individuals with asthma and fears the chemicals could contaminate the area's crops.

"It could saturate our homes and it could saturate our water supply," she said.





Members of the Hialeah Haz-Mat unit carry chemical test strips and samples of an unknown chemical obtained from a leaking tanker after responding to a mock terrorism incident involving a tanker spill during the Homeland Security Drills near Homestead Air Reserve Base, Florida, June 17, 2004. GARY I. ROTHSTEIN/REUTERS

Homeland Security said it planned to spray 600 grams of each chemical diluted with water, which is said to be roughly equivalent to a 22-ounce container of baby powder.

Kitty Cardwell, a professor at Oklahoma State University and director of the National Institute of Microbial Forensics for Food and Agricultural Biosecurity, who has been involved in other Homeland Security projects, believes the chemicals are non-toxic at that minuscule amount and likely wouldn't reach populated areas.

"I'm really sorry that everyone is so afraid in Newkirk, because these are very benign products," Cardwell told *Newsweek*.

Still, residents are leery.

"Why not test it in a more likely area to be hit by an attack, like NYC?" an individual who signed Wineinger's petition on Change.org commented. "Maybe because people there have the money and clout to protect themselves from our [government]. An Indian school in the middle of no where. Yeah, just like the Tuskegee syphilis study. No one who matters gets hurt."

The Tuskegee Study of Untreated Syphilis in the Negro Male is a notorious secret research experiment conducted by the U.S. Public Health Service in Alabama from 1932 to 1972 involving 600 African American men. Researchers conducted the study to track the progression of the deadly general disease—and participants received no treatment. Instead, they were monitored until they died and were examined post-mortem. President Bill Clinton in 1997 apologized to survivors of the program.





A woman walks by a device used for chemical tracers used by the Department of Homeland Security and New York Metropolitan Transportation Authority during a test of how gas would flow through the subway system in New York, May 9, 2016. SHANNON STAPLETON/REUTERS

Chemical testing similar to what Homeland Security has proposed in Oklahoma has indeed occurred in metropolitan areas, including New York City, Homeland Security officials said.

Most recently, in May 2016, inert gases were released in New York's subway system, to gather data on the mobility of airborne chemicals in the event of a toxic release. Other drills date back to 1966, when the Army conducted comparable tests in New York's subway system. Other tests have been performed in Washington, D.C., Boston and Fairfax, Virginia, according to Homeland Security.

No one has been injured or adversely affected by chemical tests performed by Homeland Security, Verrico said.

Nicole Rodriguez is a political reporter covering the Trump Administration and immigration for Newsweek. The South Florida native, who specializes in government, breaking news and investigative reporting, studied journalism at St. John's University in New York City and is a graduate of Florida International University in Miami. Nicole has covered the Pulse nightclub shooting, first American suicide bomber in the Syrian civil war, toxic water on Florida's Treasure Coast and hurricanes Matthew and Irma. Past bylines include The Washington Post, USA Today, Treasure Coast Newspapers and New Times Broward-Palm Beach.

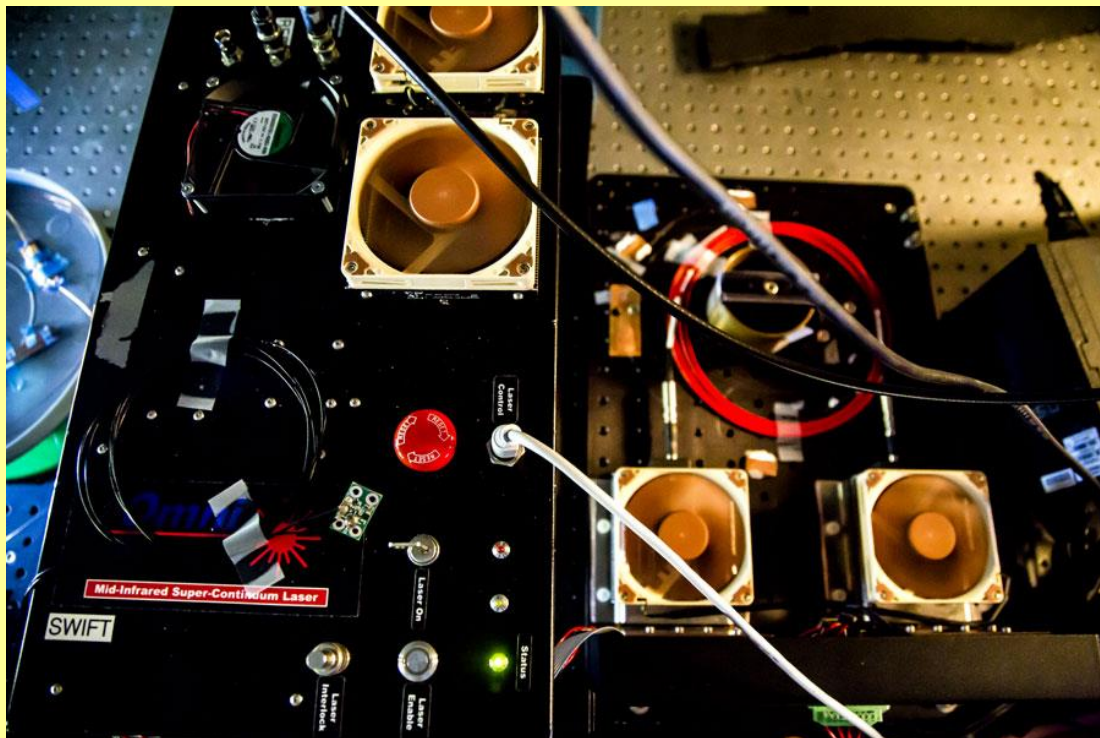
A portable, shoe-box-sized chemical detector

Source: <http://www.homelandsecuritynewswire.com/dr20171218-a-portable-shoebox-sized-chemical-detector>

Dec 18 – A chemical sensor prototype developed at the University of Michigan will be able to detect “single-fingerprint quantities” of substances from a distance of more than 100 feet away, and its developers are working to shrink it to the size of a shoebox.



It could potentially be used to identify traces of drugs and explosives, as well as speeding the analysis of certain medical samples. A portable infrared chemical sensor could be mounted on a drone or carried by users such as doctors, police, border officials and soldiers.



U-M [notes](#) that the sensor is made possible by a new optical-fiber-based laser that combines high power with a beam that covers a broad band of infrared frequencies—from 1.6 to 12 microns, which covers the so-called mid-wave and long-wave infrared.

“Most chemicals have fingerprint signatures between about 2 and 11 microns,” said U-M researcher Mohammed Islam, who developed the laser. “Hence, this wavelength range is called the ‘spectral fingerprint region.’ So our device enables identification of solid, liquid and gas targets based on their chemical signature.”

The project is a collaboration among U-M, global technology company Leidos, fiber makers IRflex and CorActive and U-M startup Omni Sciences, which was founded by Islam. The project is funded by the U.S. Intelligence Advanced Research Projects Activity.

Islam, U-M professor of electrical and computer engineering and biomedical engineering, and his team built their device with off-the-shelf fiber optics and telecommunications components, save one custom-made optical fiber. This approach ensures that the laser will be reliable and practical to manufacture at a reasonable cost.

“We’ve shown we can make a \$10,000 laser that can do everything a \$60,000 laser can do,” Islam said. Broadband infrared lasers are typically built up from a laser that produces very short pulses of light, and then a series of amplifiers ramps up the power, but this approach is limited to laboratories. In addition to their high costs, these components can’t yet shrink small enough to fit into a handheld device. Plus, the use of lenses and mirrors would make the device sensitive to jostling and changes in temperature.

To craft their new laser, the team started with a standard laser diode, similar to those in laser pointers and barcode scanners. This pulse was then boosted in power with telecom amplifiers—similar to those used in the field to periodically ramp voice signals backup as they diminish over long travels through the fiber-optic lines. Then they ran this powerful, broadband signal through a 2-meter coil of optical fiber.

“This is where the magic comes in,” said Islam. “We put in these roughly one-nanosecond pulses at this high power and they break up into very narrow series of small short pulses,



typically less than a picosecond in width. So basically for the price of 20 cents of fiber, we obtain the same kind of output as very expensive mode-locked lasers.”

Then, in a process known as “supercontinuum generation,” they expanded the wavelengths covered by that light by sending it through specialized softer glass fibers. Most lasers emit light of just one wavelength, or color. But supercontinuum lasers give off a focused beam packed with light from a much broader range of wavelengths.

Visible-wavelength supercontinuum lasers, for example, discharge tight columns that appear white because they contain light from across the visible spectrum. Islam’s broadband infrared supercontinuum laser does the equivalent, but in longer infrared wavelengths.

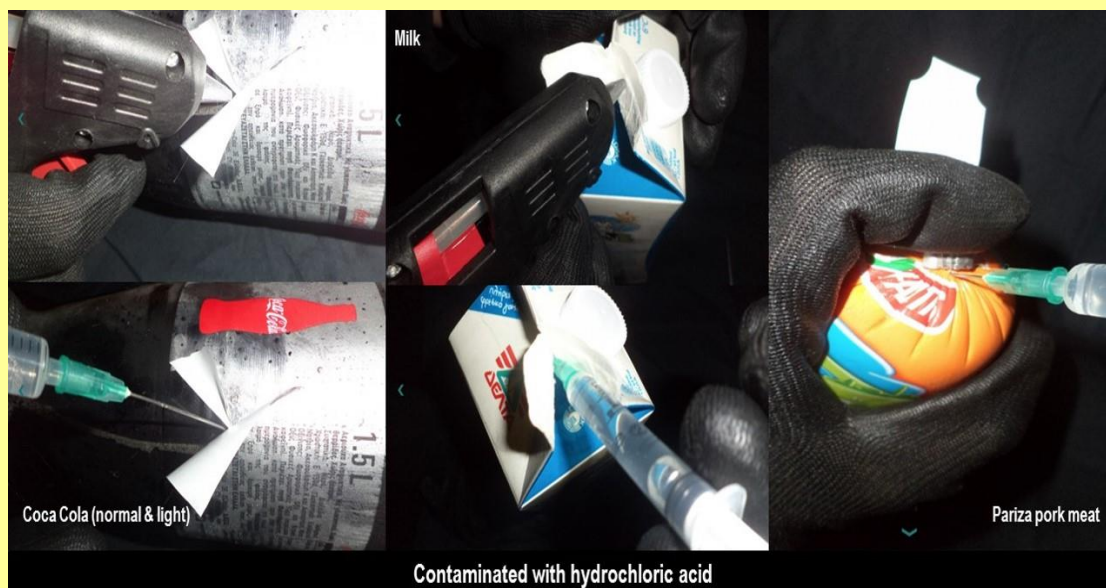
To use the device, the researchers shine the laser on an object and analyze the reflected light to identify what wavelengths did not bounce back. They can identify chemicals by the unique pattern of infrared wavelengths that they absorb.

U_M says that the team successfully demonstrated the laser for the U.S. Intelligence Advanced Research Projects Activity in August 2017, analyzing 70 mystery samples over two days of testing. Phase 2 of the project will entail shrinking the system toward the size of a shoebox, a process that will be led by Leidos and Omni Sciences.

In addition to the applications in policing and defense, Islam sees a future for the technology in medicine. For instance, tissue samples are chemically analyzed in a laboratory—a process that takes time and materials. Islam thinks the laser could provide an assessment of the chemical content on the spot. It may even be possible to run the beam through a scope and analyze tissue right in the body.

— Read more in Mohammed Islam et al., “Mid-infrared supercontinuum generation from 1.6 to >11 micrometers using concatenated step-index fluoride and chalcogenide fibers,” *Optics Letters* 42, no. 24 (15 December 2017).

Greece – Supermarket foods contaminated with acid (anarchists' action)



Cleaning a fentanyl lab

Source: <https://www.stalbertgazette.com/article/cleaning-fentanyl-lab-20171219>

Dec 19 – A former fentanyl production lab northwest of St. Albert has been cleaned and is waiting to be re-opened to the public.



Mayken Hazmat Solutions was called in to clean the home located at 26023 Township Road 544 in Sturgeon County after it was discovered that it was part of the largest fentanyl bust in Canadian history. Dean May, owner of Mayken, said that the house was not the most contaminated fentanyl production site he has cleaned, despite being a massive bust. He said that on a scale of one to 10, this property ranked around a six or seven for the level of contamination.



White particles of dust containing mold and fentanyl float through the air while the team at Mayken clean out the home.

Fentanyl is a deadly drug and a few grains of the drug can be enough to cause an overdose. May said that as soon as they entered the property they could see the white fentanyl powder in the air. "This particular property had a white haze of dust pretty much through the entire property," May said. The house was fully contaminated due to the home's furnace system. Even if the fentanyl production is taking place in one room, the furnace system blows the contaminated air to every room and so the entire home has to be decontaminated.

"The homes are all contaminated as soon as they start the milling process," May said.

May's crew of three usually takes around one week to get a property cleaned up and to have all the fentanyl neutralized.

Inside the Sturgeon County home, the pill production was taking place in the basement, which was covered in green powder. The products were being mixed using two cement mixers in one of the bedrooms.

The drug traffickers were not living in the house, so for the most part, the home was empty.

May's crew had to remove two air mattresses from the property along with some DVDs, a couch and a wall storage unit. Typically production sites have minimal furniture, although May said that in some smaller operations people do actually live on the properties.

Once the items are taken out of the house May's crew has to decontaminate them and dispose of them as hazardous materials.



Along with removing any furniture, the cleaning crew will remove almost any other soft or porous surface in the home. All of the carpet will be removed along with smaller items like light switch covers or doorbells. "It seems fairly small and insignificant but they're open to the atmosphere of the property," May said.

The cleaning crew said that they also removed some personal protective gear that the fentanyl producers were wearing while they were making the pills. May said that they found paper suits, rubber gloves, full face respirators and dust masks in the house.

"They are obviously aware there is a hazard present and they need to protect themselves from it," May said.

For the safety of the cleaning crew, May and his workers enter the house wearing full Hazmat suits and they start vacuuming immediately. They set up a decontamination zone in the entrance way of the house so they can clean each other when they leave the property.

To ensure the house is fully decontaminated, the air in the property must be completely cleaned. May said that they put the house under negative air and all of the air that is expelled from the property goes through HEPA air filters. All of the air is cleaned before leaving the property so the area around the house is not contaminated.

May also has a product that neutralizes the fentanyl in the house. He said that he sprays the product on the surfaces and in every crack and crevice to decontaminate the home.

While cleaning the house May said that they are very aware of the dangers involved and take precautions to stay safe.

"As long as we are aware of the hazards and the toxicity of the product we are dealing with and we have respect for it we can control the hazard," May said.

In case of accidental overdose, the cleaning crew keeps one naloxone kit inside of the home that they are cleaning and two outside of the house.

Once the cleaning crew is done with the house they use their own field testing kits to see if there is any fentanyl residue left in the house. May said that he is certain the spaces he cleans are safe to live in.

According to AHS, there are no industry-certified tests to determine if there are any grains of fentanyl left in a home.

Kathryn Koliaska, a medical officer of health at Alberta Health Services said that fentanyl safety is a rapidly evolving field.

"There are some technologies starting to be used for detection of substances and certainly the door is open," Koliaska said.

AHS works with the cleaning partners in an oversight role to ensure that the cleaning has been done properly and that the workers are safe while they clean the house.

"Approval inspection that has to be completed to our satisfaction under the public health act again to make sure something is safe," Koliaska said.

May said that he cleaned his first fentanyl production lab one year ago and since then his crew has cleaned a total of 10 labs.

The home in Sturgeon County was shut down in July and in November four people faced charges related to the property.

Police seized \$4.3 million in drugs from the drug raid. The owner of the home, Phat Vuong, is not facing any charges.

The house was one of five homes busted in the drug ring and the home was a suspected drug lab being used to produce fentanyl pills. The other four homes are located in Edmonton.

At a press conference in July, Staff Sgt. Karen Ockerman showed off some of the drugs and money seized, and said that it is likely the drugs were planned to be distributed around Edmonton.

The police seized 130,000 fentanyl pills worth around \$3.9 million from the homes, along with \$1 million in cash – the largest cash bust in Edmonton police history. Police also seized four large yellow portable cement mixers, two pill presses and a 2001 Ford F-150 with a hidden compartment. Together the pill presses would have been able to make around 10,000 pills an hour.

As well, 2.4 kg of cocaine worth around \$129,000 was seized along with 1.8 kg of methamphetamine worth around \$52,000. Police also found 834 one-gram packets of the cannabis extract known as "shatter" worth \$58,000, four ounces of carfentanil worth \$14,000,



658 grams of powders laced with fentanyl worth \$115,000 and 100 kg of buffing agents used to make pills.

In July, Const. Jason Wells of the RCMP said that fentanyl was not produced on site but it was mixed with other substances, like caffeine and sugars and was then pressed into pills.

The county home is currently fenced off and the owner is waiting for AHS clearance that the home is safe for habitation.

Landen Robert Wisbey (33), Wayne Bao Tran (31), Dennis Trinh (34) and Thinh Dinh (29) are all facing charges related to the Sturgeon County home.

During the first nine months of 2017, approximately 400 people died fentanyl-related deaths.



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BIO NEWS



Triaging and Treating After the Las Vegas Shooting: A Firsthand Account

By Robert Glatter, MD and Dale Carrison, DO

November 15, 2017

Source: <https://www.medscape.com/viewarticle/888361>

At the Hospital After the Las Vegas Shooting

Robert Glatter, MD: Hello. I am Dr Robert Glatter, assistant professor of emergency medicine at Northwell Health and attending physician at Lenox Hill Hospital in New York City. The devastating shooting on October 1



Robert Glatter, MD

in Las Vegas killed 58 people and injured more than 500 others.^[1,2] This was yet another in a relentless string of mass shootings with which we struggle to come to grips. The heroic actions of first responders that day helped to save countless lives, especially with rapid transport to Las Vegas hospitals by citizens in cars, SUVs, and pick-up trucks. The use of prehospital tourniquets, improvised in many cases, was another life-saving action described by witnesses that day.^[3]

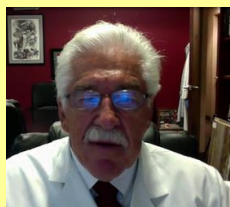
University Medical Center (UMC), Nevada's only Level 1 trauma center, received 104 patients.^[4] Additional patients were later transferred to UMC as a result of complex trauma that could not be effectively handled by other area hospitals.^[5]

Sunrise Hospital and Medical Center, a Level 2 trauma center, treated 214 patients, with at least 30 requiring surgery.^[6]

Dr Dale Carrison, chairman of the department of emergency medicine at UMC, was on the front lines when patients began arriving that day. He joins us now to talk about the critical role that he and his staff played in triaging and treating patients that day.

Welcome, Dr Carrison. I know that this has been a difficult period, including these weeks after the shootings, which we will talk about at length. But I want to begin by asking you what the scene was like as you arrived. Could you describe what you saw? How many patients arrived with tourniquets already placed? What was your triage process?

Dale Carrison, DO: I am the medical director for the [Las Vegas Metropolitan] Police Department, and my initial notification came from them. Within about 10 minutes of the notification of the shooting, I put on



Dale Carrison, MD

my scrubs and drove to the trauma center. Our chief trauma surgeon, Dr John Fildes, a former chief of trauma for the Committee on Trauma of the American College of Surgeons, and I arrived at the same time.

We have an 11-bed independent trauma unit, staffed and in use. It's not in the emergency department; it's a free-standing area. When the shooting started, nine patients were already being seen in the trauma center. By the time John and I arrived, around 50 people were in the trauma unit. They were all being cared for, some with tourniquets on, and chest tubes were being inserted into at least three

people at that time. Anesthesia had arrived. The three operating rooms in the trauma center were all open and staffed. The 26 operating rooms in the main hospital were also being opened.

We refined the triage process when we arrived. I have a dual role at UMC; I am also chief of staff, and I had asked if the Incident Command Center had been set up. It had not yet been set up so I asked the on-duty administrator to have the Incident Command Center set up immediately. The CEO had been notified and was on his way in.

Then John and I went through who should go to the trauma unit next. All of the patients were being taken care of; 18 patients were sitting in chairs, all had extremity wounds, some with tourniquets on. That process of triage involves deciding who goes to CT next; who immediately goes to the operating room; who does not need to be evaluated further; and who is prioritized in that group because, for example, at least two of the patients were dead by the time they got to us.

That seemed to be similar to what happened at the other hospitals. Many of the dead patients were transported simply because they may have had some vital signs when they were picked up. The emergency medical service (EMS) technicians were doing an incredible job at the



scene, trying to correctly triage everyone and figure out who was who. But it was not like a bombing, where you can sit everyone down and start your triage process with "This is a red, this is a black, this is a green, this is a yellow," and that sort of thing.

Because of our location, all of the patients who came to us were primarily brought by EMS. Other hospitals in the area did a terrific job. Many of their patients were self-triaged, just as we saw in the sarin gas attacks in Tokyo, where more than 4000 people self-triaged.

That's something that needs to be discussed, because that is the most difficult thing to plan for. People were being transported by taxis, police cars, and private cars. The one gentleman who made national news essentially stole a utility vehicle and transported people to the hospital. You cannot account for that ahead of time.

With EMS, you have radio traffic and some idea of what is coming in. The immediate flow of those patients into the hospitals, particularly into our trauma center, was just tremendous. That night, my trauma center, which usually has 11 people in it (with maybe a couple in the hallway on a busy day), had more than 50 people when we walked in.

Theoretically, those patients had been triaged before they got there, but we were still getting patients who could have been well served by just going to an emergency department, because they did not have limb-threatening or life-threatening injuries. There was a tremendous amount of shrapnel injuries from the projectiles hitting the asphalt. A lot of lower-extremity injuries were caused by shrapnel, parts of the rounds that were being fired, and also parts of the asphalt shooting up when struck by the projectiles.

Meeting the Need for Blood

Dr Glatter: This was an incredible response, and the coordination of your medical center is certainly to be lauded for making it happen on a moment's notice. How did you coordinate efforts with your blood bank, especially for massive transfusions? How was the blood bank's role in this process set up? Were they ready?

Dr Carrison: It was quite efficient. We have what is called a massive transfusion protocol. Three patients can be in the operating room and all be part of the rapid transfusion protocol. It is essentially a mass transfusion. The blood bank has policies and procedures set up for that. You can go with O-negative for females and O-positive for males as a rapid transfusion. But the blood bank is set up to get patients at least typed and cross-matched in a very efficient, rapid manner so that we do not use up the O-negative and O-positive blood. Then we have it available for the people we have to use it in.

We had no problems with blood initially. We are a Level 1 trauma center and we stock a tremendous amount of blood. We have been in a position to be able to give blood to other hospitals. We did not have a shortage at the time of the shooting. That being said, multiple hospitals in our valley were all going through the same thing with whatever protocols they had, so that by the time that initial wave of patients came through, there began to be a need for blood in the community.

As you probably saw on national television, the outpouring of this community was extraordinary. The lines of people waiting to give blood were completely around a full-sized block in two different locations. This community really came together for this tragedy.

Dr Glatter: That is what was so good to see—that the public realized the need and responded.

All Hands on Deck

Dr Glatter: In terms of your procedure, how did you clear the emergency department of existing patients? This happened on a moment's notice, probably on a busy night at your hospital. And then I want to explore the process of damage control laparotomy and the process of how your trauma surgeons quickly looked at these patients, assessed them, and got to work.

Dr Carrison: Some of the trauma surgeons had been notified and were there by the time I got there, and I got there very rapidly after being notified. A lot of people were already on duty that night. We have a trauma fellowship and an acute care surgery fellowship. All of the trauma and acute care surgery fellows were in the hospital along with the trauma team.

The emergency medicine residents were in the emergency department. All of those residents immediately came to the trauma unit. We have no fewer than two attending physicians in the emergency department at any given time. The shift changes at 10 PM, so at that particular



time of night, many emergency physicians were coming and going. Four of those physicians came to the trauma unit immediately along with the residents, and we still were able to cover the emergency department.

Other emergency physicians had heard about the shooting in various ways. A lot of our friends and neighbors were at this concert; it was that kind of concert. A lot of firefighters, EMS workers, police officers, and nurses attended the concert, so the word got out very quickly, and physicians—without even being called—immediately came in.

Now what do you do? Extremity wounds need to go to the emergency department. Our emergency department is full at all times. We are very busy and the emergency department was full that night, so then the question was, what do we do with the patients? We opened up the post-anesthesia care unit (PACU). We essentially opened up everything. The nine patients who were being treated in the trauma unit were immediately moved to the post-anesthesia area within the trauma center as the gunshot victims began to arrive. Only one of those nine patients was severely injured, with a fractured cervical spine; the others had minor bumps and bruises or forearm fracture.

Where do you put someone who has been shot in the head and who you know is going to die? We have to take that patient out of the bed because we need to have that trauma resuscitation bed available for someone who has a chance to live.

Injuries and Tourniquets

Dr Glatter: Can you give us a general breakdown of the types of injuries you saw? You are describing extremity injuries, fractures, and maybe some trampling injuries, but could you break down overall what came in and what you were able to treat?

Dr Carrison: Most of the critical injuries were either abdominal or chest injuries. As I mentioned, when I came in, three people were having chest tubes inserted. Several others already had chest tubes in place. Quite frankly, those who had a tourniquet were not going to bleed to death, so we moved to the next patient until we could determine who needed surgery.

We had a lot of abdominal injuries that were caused by direct blows or shrapnel. Dr Fildes was going through with the trauma fellows to identify who they were going to take to the operating room to open up, stop the bleeding, pack the wound, get them over to the trauma unit, and get the next patient on the table.

Dr Glatter: With respect to the tourniquets, were these improvised or military-grade tourniquets? Were they placed by EMS? How did this all break down?

Dr Carrison: We have done a really good job with our EMS and police officers in this community with respect to tourniquets. We started this some years ago. In my role as medical director of the Las Vegas Metropolitan Police Department, after a long process over a couple of years, we have arranged for every police officer to carry a tourniquet. If you have a gun, you have a tourniquet. Period.

In a number of cases, police officers have placed tourniquets in the field and it has been life- or limb-saving. One police officer was in a shootout, and immediately afterwards he went over and put a tourniquet on the person he had just had a gun battle with and essentially saved that person's life. The police officer at the scene had a tourniquet. All of the EMS workers have tourniquets in all of our transporting units.

It's been a tremendous advantage to have these in our community. If we go back to the Boston Marathon bombing and even the Pulse nightclub shooting in Orlando, that just solidified for EMS the importance of having tourniquets available. The night of the Las Vegas shooting, I would say that we had more real tourniquets, such as a combat application tourniquet (Cat 3), than we had improvised tourniquets. Were there improvised tourniquets? Yes. One person had a chain as a tourniquet. It was a small chain and it worked.

But there were police officers at the scene. There was an undercover narcotics officer. At all of our events, there is an undercover officer looking for the people selling drugs. He told me that he put on multiple tourniquets, that he was just grabbing tourniquets from the responders and from the police officers and putting them on patients because he had more of a medical background than some of the other folks. But they are all trained in how to use them.



The Psychological Toll

Practice and Preparation

Dr Glatter: You have hit upon an important point, because the basics remain the basics, and being able to do what is asked of you in such a setting is so important. What else do you want providers to take away from the events that unfolded that day? What are the key take-away points?

Dr Carrison: I've thought about this quite a lot. Self-triage is something that has to be addressed. It's extremely important. When I was chairman of Homeland Security for the State of Nevada, I was invited to travel to Israel to see how they do it. They put their most senior physician in the parking lot, and when they have a bombing, all of the patients are brought to the parking lot. That physician decides who goes in and what is done. Hospitals should be aware of the self-triage issue.

The other extremely important factor is practicing, and we practice, practice, practice. We have two major events a year.

In Las Vegas, as the casinos get old, they are torn down, blown up, and replaced. Before the casinos are demolished, the EMS and police department are allowed to go in and use those for drills. We have set up multiple scenarios over many years at different times. The Metropolitan Police Department goes in and has an exercise.

We have a thing called MACTAC (Multiple-Assault Counter-Terrorism Action Capability), which is quite important. We have firemen with tactical gear who go into the hot zone where an active shooter is. But they will also go into the warm zone. If we still have an active shooter in an area, but we know where that hot area is and there are victims in the warm zone, these folks go in and start extracting patients. We have had a lot of practice with that.

We have practiced in shopping centers and malls. I believe that that has made a huge difference. In the hospital, we have our disaster drills. You have been an emergency physician and a general surgeon, so you know what it's like: "Oh, no. Not another disaster drill. I'm trying to see patients and you're interfering with what I'm doing." Ladies and gentlemen, practice! It makes a difference. You will not get any pushback once something like this happens and everyone realizes the difference it made.

Dr Glatter: Training with simulation is such a big thing in emergency medicine now, and at a lot of conferences, teams compete against one another. This is obviously an offshoot of practicing—simulating the scenarios that we have to be prepared for. That is imperative.

Thank you for your time, Dr Carrison. It has been an honor to speak with you and to hear you describe what happened that day. I look forward to future conversations.

Dr Carrison: Thank you. I cannot tell you how much I appreciate the turnout of the emergency physicians on the frontline, along with our trauma surgeons and general surgeons who came in to all of the hospitals and provided that care. Not enough can be said about how that worked out and the participation of those folks in this tragedy.

Mass casualty training to prepare students for the worst

Source: <http://www.homelandsecuritynewswire.com/dr20171122-mass-casualty-training-to-prepare-students-for-the-worst>

Nov 22 – Screams were heard as a runaway car plowed through a crowd before the vehicle crashed and the wreckage was engulfed in flames. The chaos was heightened by the sirens from fire trucks and ambulances rushing to the scene. After firefighter cadets from the Houston Fire Department (HFD) subdued the flames, more than 300 students and volunteers from The University of Texas Health Science Center at Houston ([UTHealth](#)) rushed onto the smoky field, ready to triage and respond to those injured in the accident.

UTH [says](#) that fortunately, the casualties that played out were all part of a well-scripted scenario, staged at the Houston Fire Department's Val Jahnke Training Facility, and orchestrated weeks in advance. Students from [Cizik School of Nursing](#) at UTHealth, [McGovern Medical School](#) at UTHealth, UTHealth [School of Public Health](#) and [UTHealth School of Biomedical Informatics](#) participated in the mass casualty incident drill.



"This event all started in the aftermath of Katrina in 2005 when I realized that so few people, not just nursing or medical professionals, knew what to do when disasters happen," said [Elda G. Ramirez](#), professor of nursing at Cizik School of Nursing and project director of the mass casualty incident drill. "Our goal is that every single student who goes through this exercise is going to be able to know what to do when any kind of natural or man-made disaster takes place."

The annual mass casualty incident drill offers UHealth students the training they need to hone their emergency first responder skills in a realistic simulation and presents them with a rare opportunity to learn with experienced faculty and staff by their side.

"As a student in the Emergency/Trauma Care Nurse Practitioner program, we are going to see these types of patients once they come to the trauma bay," said Rachael Chapple, R.N., student at the School of Nursing. "This training gives you a better appreciation for the hard work that takes place in the prehospital emergency care setting before they reach the emergency department for us to perform definitive care."

As the sun intensified throughout the morning, two first responders were assessing a patient and noticed an unknown substance in the patient's hand. Upon touching the pseudo-narcotics they were notified that they been exposed to the unknown substance and would soon "die" from the exposure.

Upon further investigation, the students identified the pseudo-narcotic substance a [Carfentanil \(or fentanyl\)](#), the strongest opioid in the world and known to be 100 times more potent than morphine.

"Today with the staged Carfentanil overdoses and the two initial exposures of the first responders, it's an important reminder for the students to wear gloves at all times because even during a mass casualty event or disaster, there are other types of exposures they will need to be aware of," said Angela Di Paola, M.S., graduate assistant and doctoral student at UHealth School of Public Health.

In the afternoon, a large and disorienting sound came from a nearby tower. What sounded like an explosion at first was followed by rapid and repeating cracks - the sound of gunfire.

The students sheltered in place until the Houston Police Department SWAT team was able to clear the tower and apprehend the shooter. In the following minutes, the students learned the true definition of a mass casualty – when the immediate needs outweigh the amount of available resources.

"The biggest takeaway for the students here today is to learn how to interact with the other professionals and students in their different disciplines as an emergency responder," said Jennifer Laine, M.P.H., safety manager of occupational safety and fire prevention at UHealth. "It's imperative to learn what your resources are and how to benefit from each other's experience."

"During this training the students have the opportunity to see what it's like to be the 'boots on the ground' and what it takes to consider scene safety, package and properly triage a patient to give them the best opportunity to survive," said Houston Fire Department Capt. Steven Johnson.

Infectious diseases: "Deleting" diseases from human bodies

Source: <http://www.homelandsecuritynewswire.com/dr20171122-infectious-diseases-deleting-diseases-from-human-bodies>

Nov 22 – Gene editing is revolutionizing the bioscience research landscape and holds great promise for "deleting" diseases from human bodies. Sandia National Laboratories is working to make this technology safer and to ensure that one day it can be delivered into humans without triggering adverse immune system reactions or causing other undesirable side effects.

Sandia biochemist Joe Schoeniger explains that gene editing technology is based on a "billion-year-old arms race" between bacteria and the viruses trying to attack them.

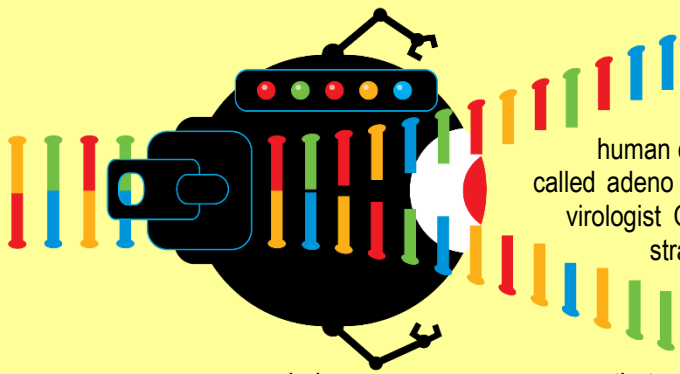
Bacteria save bits of invading viral DNA using a system called Clustered Regularly Interspaced Short Palindromic Repeats or CRISPR. This system helps bacteria recognize a virus when it returns for a repeat attack. The CRISPR system produces Cas9, an enzyme that binds to the offending viral DNA, then cuts and destroys it.

This bacterial defense system can be programmed. Scientists can send CRISPR-Cas9 to a precise location to alter a specific bit of DNA.



The ability to alter DNA is useful, especially when dealing with genetic diseases, but alterations to DNA are currently irreversible. Using the technology as it is today could cause unintended, dangerous and permanent side effects. It could cut a genome in the wrong place (that is, have off-target effects), potentially causing disease.

In addition, CRISPR-Cas9 needs a carrier to be delivered into human cells. Typically, this carrier is a virus linked to the common cold called adeno associated virus. Sandia Lab [says](#) that according to Sandia virologist Oscar Negrete, a majority of people have been exposed to strains of this virus at some point. This means people are quick to manufacture antibodies against it, making it a one-time use only therapy. Even on that first use, patients are likely to have an immune reaction, Negrete explained. New approaches are needed that enable the treatment to be successfully used more than once if necessary.



Controlling CRISPR

To be able to control CRISPR technology and use it without causing permanent DNA changes, the [Defense Advanced Research Projects Agency](#) created the Safe Genes program.

One effort being funded under Safe Genes is a \$2.5 million, two-year project led by Jennifer Doudna's laboratory at the University of California, Berkeley, in partnership with Sandia, and the University of California, San Francisco. Doudna is a pioneer in the development of CRISPR. If the early research is fruitful, DARPA could extend this effort for another two years, bringing the total to four years and \$5 million.

Viruses are skilled at changing their DNA and generating new anti-CRISPR proteins to block the bacterial immune systems. This is the other side of the bacteria-virus "arms race." These proteins can function as antidotes, allowing gene editors to be turned off if needed.

The Safe Genes team is taking advantage of these proteins to develop inhibitors that can control off-target effects of CRISPR. Schoeniger said that should a dose of a gene editor need to be administered, it could be followed by a dose of the inhibitor to shut it off, minimizing the amount of time in which off-target effects could take place.

Remaking the cargo

This Safe Genes project builds on work ongoing at Sandia which also is focused on fighting infectious disease using gene editing.

Normally, the CRISPR system targets DNA, but Sandia has been collaborating with Doudna's team to create a CRISPR system that targets RNA instead. Attacking virus RNA directly is likely to be effective against most pathogens of biosafety concern, said Negrete.

CRISPR systems already exist that target RNA, but these systems result in general RNA degradation. This new RNA-targeting system can affect specific human or animal RNA, including those known to encode proteins that aid viral infection.

"Some proteins are known gateways for invaders," Negrete explained. "If you knock out these proteins via their coding RNAs, the pathogens can't get into your cells and you haven't made any permanent changes to your genome."

Developing safe CRISPR applications

Sandia notes that for the Safe Genes project, Sandia will test the RNA-targeting CRISPR technology against a variety of viruses. The Sandia team will deliver the CRISPRs to mammalian cells infected with a variety of RNA viruses, including Ebola and Rift Valley Fever Virus, that cause symptoms such as hemorrhagic fever. Then they'll measure the level of virus remaining in the cells after treatment.



“Ideally, we’d like to see the level of virus reduced to zero. If it isn’t, the CRISPR technology would have to be modified,” Negrete said.

In addition, the UCSF team is developing CRISPR-derived technologies to turn genes on and off without editing DNA. For this application, the team is harnessing CRISPR for targeted DNA methylation. DNA methylation is a non-destructive mechanism of gene expression regulation that occurs naturally throughout the mammalian life cycle.

Negrete believes this work, if successful, would represent a quantum leap forward for virology because the new CRISPR technologies would attack illnesses in multiple ways. Currently, vaccines target single strains of a virus. Sandia’s Safe Genes project is working toward solutions that target all the strains of a virus, as well as finding ways to repair infected host and human cells.

“It’s cumbersome to create new treatments for each and every bug, and not feasible for quickly responding to emerging threats. One treatment for each and every strain that appears, as well as all the related viruses – it’s a much better strategy,” Negrete said. “It’s like the leap from eliminating one letter with a pencil eraser to hitting control-A and deleting an entire paragraph.”

Identifying biomarkers that indicate likelihood of survival in infected patients

Source: <http://www.homelandsecuritynewswire.com/dr20171122-identifying-biomarkers-that-indicate-likelihood-of-survival-in-infected-patients>

Nov 22 – The results come from scientists at the Department of Energy’s [Pacific Northwest National Laboratory](#) and their colleagues at the University of Wisconsin-Madison, Icahn School of Medicine at Mount Sinai, the University of Tokyo and the University of Sierra Leone. The results were published 16 November in the journal [Cell Host & Microbe](#).

, said the senior author of the study, Yoshihiro Kawaoka, a virology professor at the UW-Madison School of Veterinary Medicine.

The focus of the study were blood samples from Ebola patients that were obtained during the outbreak in Sierra Leone in 2014. The Wisconsin team obtained 29 blood samples from 11 patients who ultimately survived and nine blood samples from nine patients who died from the virus. The Wisconsin team inactivated the virus according to approved protocols, developed in part at PNNL, and then shipped the samples to PNNL and other institutions for analysis.

PNNL [says](#) that the team looked at activity levels of genes and proteins as well as the amounts of lipids and byproducts of metabolism. The team found 11 biomarkers that distinguish fatal infections from non-fatal ones and two that, when screened for early upon symptom onset, accurately predict which patients are likely to die.

“Our team studied thousands of molecular clues in each of these samples, sifting through extensive data on the activity of genes, proteins, and other molecules to identify those of most interest,” said Katrina Waters, the leader of the PNNL team and a corresponding author of the paper. “This may be the most thorough analysis yet of blood samples of patients infected with the Ebola virus.”

The team found that survivors had higher levels of some immune-related molecules and lower levels of others compared to those who died. Plasma cytokines, which are involved in immunity and stress response, were higher in the blood of people who perished. Fatal cases had unique metabolic responses compared to survivors, higher levels of virus, changes to plasma lipids involved in processes like blood coagulation, and more pronounced activation of some types of immune cells.

Pancreatic enzymes also leaked into the blood of patients who died, suggesting that these enzymes contribute to the tissue damage characteristic of fatal Ebola virus disease.

The scientists found that levels of two biomarkers, known as L-threonine (an amino acid) and vitamin-D-binding-protein, may accurately predict which patients live and which die. Both were present at lower levels at the time of admission in the patients who ultimately perished.



The team found that many of the molecular signals present in the blood of sick, infected patients overlap with sepsis, a condition in which the body — in response to infection by bacteria or other pathogens — mounts a damaging [inflammatory reaction](#).

— *Read more in Amie J. Eisfeld et al., “Multi-platform ‘Omics Analysis of Human Ebola Virus Disease Pathogenesis,” [Cell Host & Microbe](#) (16 November 2017).*

Research team unlocks secrets of Ebola

Source: <https://medicalxpress.com/news/2017-11-team-secrets-ebola.html#nRlv>

Nov 16 – In a comprehensive and complex molecular study of blood samples from Ebola patients in Sierra Leone, published today (Nov. 16, 2017) in *Cell Host and Microbe*, a scientific team led by the University of Wisconsin-Madison has identified signatures of Ebola virus disease that may aid in future treatment efforts.

Conducting a sweeping analysis of everything from enzymes to lipids to immune-system-associated molecules, the team—which includes researchers from Pacific Northwest National Laboratory (PNNL), Icahn School of Medicine at Mount Sinai, the University of Tokyo and the University of Sierra Leone—found 11 biomarkers that distinguish fatal infections from nonfatal ones and two that, when screened for early symptom onset, accurately predict which patients are likely to die.

With these results, says senior author Yoshihiro Kawaoka, a virology professor at the UW-Madison School of Veterinary Medicine, clinicians can prioritize the scarce treatment resources available and provide care to the sickest patients.

Studying Ebola in animal models is difficult; in humans, next to impossible. Yet, in Sierra Leone in 2014, a natural and devastating experiment played out. In September of that year, an Ebola outbreak like no other was beginning to surge in the West African nation. By December, as many as 400 Ebola cases would be reported there each week.

That fall, Kawaoka sought access to patient samples. He has spent a career trying to understand infectious diseases like Ebola—how do they make people sick, how do bodies respond to infection, how can public health officials stay at least a step ahead?

"Here, there is a major outbreak of Ebola. It is very rare for us to encounter that situation," says Kawaoka, who is also a professor of virology at the University of Tokyo.

Yet blood samples were proving difficult to obtain and people continued to die.

Then, just weeks before Christmas, Kawaoka learned about a colleague in his very own department at UW-Madison, a research fellow from Sierra Leone named Alhaji N'jai, who was producing radio stories for people back home to help them protect themselves from Ebola. The pair forged a fortuitous partnership.

"He knows many people high up in the Sierra Leone government," says Kawaoka. "He is very smart and very good at explaining things in lay terms."

By Christmas, Kawaoka, N'jai and Peter Halfmann, a senior member of Kawaoka's team, were in Sierra Leone.

"On the first trip, Alhaji took me to Parliament and we talked to a special advisor to the president, then the vice chancellor of the University of Sierra Leone," says Kawaoka. "We got the support of the university, which helped us identify military hospitals and provided space. We went to the Ministry of Health and Sanitation and the chief medical officer and we explained what we hoped to do."

By February of 2015, Kawaoka and other select senior researchers on his team, including Amie Eisfeld, set up a lab in a military hospital responding to the outbreak in the capital city of Freetown (the researchers never entered patient wards). With the approval of patients and the government of Sierra Leone, health workers collected blood samples from patients after they were diagnosed with Ebola and at multiple points thereafter.

They obtained 29 blood samples from 11 patients who ultimately survived and nine blood samples from nine patients who died from the virus. The samples were transported to the lab where Kawaoka's experienced and expertly trained team inactivated the virus according



to approved protocols. Blood samples were subsequently shipped to UW-Madison and partner institutions for analysis.

For comparison, the research team also obtained blood samples from 10 healthy volunteers with no exposure to Ebola virus.

"Our team studied thousands of molecular clues in each of these samples, sifting through extensive data on the activity of genes, proteins and other molecules to identify those of most interest," says Katrina Waters, a biologist at PNNL and a corresponding author of the study. "This may be the most thorough analysis yet of [blood samples](#) of patients infected with the Ebola virus."

The team found that survivors had higher levels of some immune-related molecules, and lower levels of others compared to those who died. Plasma cytokines, which are involved in immunity and stress response, were higher in the blood of people who perished. Fatal cases had unique metabolic responses compared to survivors, higher levels of virus, changes to plasma lipids involved in processes like blood coagulation, and more pronounced activation of some types of immune cells. Pancreatic enzymes also leaked into the blood of patients who died, suggesting that damage from these enzymes contributes to the tissue damage characteristic of fatal Ebola virus disease. And, critically, the study showed that levels of two biomarkers, known as L-threonine (an amino acid) and vitamin D binding protein, may accurately predict which patients live and which die. Both were present at lower levels at the time of admission in the patients who ultimately perished.

"We want to understand why those two compounds are discriminating factors," says Kawaoka. "We might be able to develop drugs."

When Ebola virus leads to death, experts believe it is because of overwhelming viral replication. Symptoms of infection include severe hemorrhaging, vomiting and diarrhea, fever and more.

Kawaoka and his collaborators hope to better understand why there are differences in how patients' bodies respond to infection, and why some people die while others live. The current study is part of a larger, multicenter effort funded by the National Institutes of Health.

"The whole purpose is to study the responses of human and animal bodies to infection from influenza, Ebola, SARS and MERS, and to understand how they occur," Kawaoka explains. "Among the various pathways, is there anything in common?"

In the current Ebola study, the team found that many of the molecular signals present in the [blood](#) of sick, infected [patients](#) overlap with sepsis, a condition in which the body—in response to infection by bacteria or other pathogens—mounts a damaging inflammatory reaction.

And the results contribute a wealth of information for other scientists aimed at studying Ebola, the study authors say.

Kawaoka says he is grateful to UW-Madison, University Health Services and Public Health Madison and Dane County for assistance, particularly with respect to his research team's travel between Madison and Sierra Leone. Each provided protocols, "I hope another outbreak like this never occurs," says Kawaoka. "But hopefully this rare opportunity to study Ebola virus in humans leads to fewer lives lost in the future."



Black Friday Bioterrorism: If Tom Clancy's 'The Division' Were Real, How Could It Happen?

By Hank Campbell

Source: <https://www.acsh.org/news/2017/11/22/black-friday-bioterrorism-if-tom-clancys-division-were-real-how-could-it-happen-10346>

Nov 22 – In March of 2016, a game called "Tom Clancy's The Division" was released. Unlike other "shooter" games such as "Destiny" and "Call of Duty", "The Division" has a compelling science story.⁽¹⁾ And the plot began on "Black Friday", the busiest shopping day of the year.



Since Black Friday is in two days, I did an analysis of what it would take for the eco-terrorists to really win a big one; killing off humanity using the thing they believe humans love most - money. The game revolves around activation of [Executive Directive 51](#), a "continuity of government" plan in case of a catastrophic emergency. In the game, it is invoked because a deadly virus has been introduced into Manhattan using dollar bills on Black Friday, which if you are not American is the shopping day after Thanksgiving in the United States. The virus spreads quickly, people die, and chaos ensues. It spreads so rapidly, and with such devastating effect, that Manhattan is quarantined and society breaks down. Incorporating both [Operation Dark Winter](#) and Directive 51, the federal government sends in a clandestine unit known as "The Division" to restore order.



That's you. Well, me, since I played the game. I have to figure out what happened. That means assembling a team of experts who can help and looking for clues while not getting contaminated or shot in a lawless death zone.

This is not a game review, I only care about the science premise. And as part of the science mystery premise, one of the tasks is to find dollar bills containing the virus - which is hindered because the bills can't have been exposed to heat over 200 degrees. Easy enough, you might think, there are not a lot of wildfires in Manhattan, except once sanitation workers discovered that heat kills the virus they began to burn everything, including bodies, which means a lack of original samples.

After playing it, I thought about how realistic it was. How many dollar bills in circulation would it take to have mathematical likelihood of finding samples? Hundreds? Thousands? How about causing it to spread?

Contagion: R naught? Are too!

That ability to spread, how contagious an infectious disease is, is expressed in a *basic reproduction number*, known as R_0 (pronounced "R naught"). It is an expression of the number of people likely to catch a disease from one contagious person. Though often used interchangeably, contagious and infectious are different. For instance, the Ebola virus is highly *infectious* (a tiny amount can make you ill) but it is not highly *contagious* because it is spread by bodily fluids after symptoms appear. (2)

As you already guessed, in order to get an epidemic, the R_0 needs to be greater than 1, meaning each infection causes more than one new infection, compounding its impact and creating an epidemic. Below 1 and it will fade out, because people recover or die without spreading it widely. R_0 is not an indicator of fatality or severity. For context, the deadliest pandemic in recent times, the 1918 Spanish flu, had an R_0 value of around 2.8, while measles has an R_0



of 18. Obviously measles spreads really well, far better than flu. HIV has an R_0 of 2 because even though it requires body fluid transmission it can stick around for a long time.

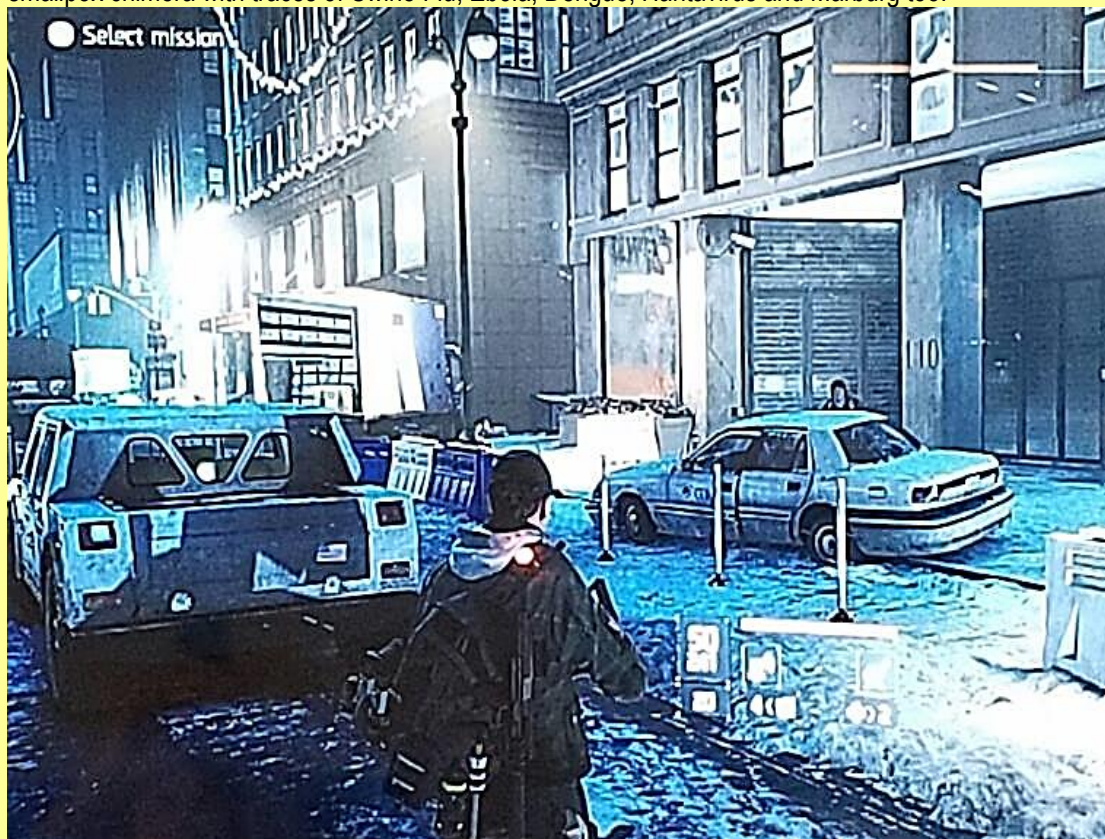
In the game, the disease is spread using dollar bills and it is piggybacked onto stolen Smallpox samples. An object that spreads an infectious disease is called a *fomite*. It's a good premise for a game because [no one can really say](#) how prevalent fomites are for virus transmission and that makes it more creative than yet another animals-spreading-disease scenario. (3)

Why use smallpox? For one thing, it's eradicated and that gives it a certain mystique. It's exclusively a human to human disease and it can be spread by coughing or sneezing or...clothing. What are dollar bills made of? They are 75 percent cotton and 25 percent linen, which accounts for most clothing. (4)

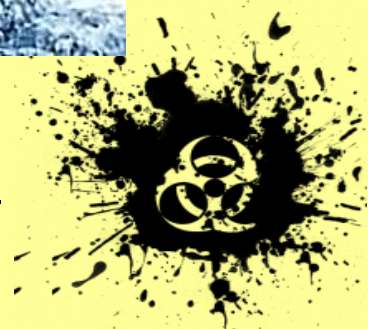
So someone at game developer Ubisoft thought that part through. The big issue will be how many dollars to use. These are eco-terrorists, they don't want an antidote created before their mission is accomplished, and the way to avoid that is to not leave original samples lying around for clandestine government agents to find. But if the bad guys use too few dollars the disease can be easily isolated or die off. People also increasingly use credit cards. No one will cash out if they get skimpy on the bills, pardon the pun.

The chances of success are improved by having a dense population and little biodiversity, which is Manhattan. There's no way to know with certainty who will be immune or what their behavior will be, but at least that second part is easier to know when it is Black Friday in a densely populated area. Poor people, the most susceptible population in a health crisis, are going shopping then because their money has to go farther so they want a good deal, and they are more likely to use cash. Engineers know sometimes you "overbuild" for safety and our eco-terrorists would likewise pad the number of bills to be sure to create harm.

Yet smallpox by itself is a problem for them. Eco-terrorists want society to collapse, so they need their disease to spread fast. The incubation period for smallpox is too long, about two weeks, and in the game society had already collapsed by then. So Smallpox had help. The story mentions that the virus is a smallpox chimera with traces of Swine Flu, Ebola, Dengue, Hantavirus and Marburg too.



In the game, after finally making my way to our office at 110 East 42nd Street, across from Grand Central. It hasn't looked this bad since Dinkins was mayor. Credit: Hank Campbell



That's not just artistic license, though infectious disease experts I consulted say Dengue and Marburg are just fictional shock value because there is no real benefit added. Hanta is very stable and easy to disseminate but flu would be the best bet, they said. Though the story doesn't use language like "viral chatter" - mutations as species mix - it would be necessary if this were to work over the long haul. However, this pandemic happens in weeks so mutations are not helping much. So smallpox alone wouldn't be enough because even though they broke into one of the two approved labs - in Atlanta and Koltsovo, Russia - that store it, and it's deadly, they can't change what it does by itself. The long incubation period sets limitations for real eco-terrorists. Where it does provide value is that it can be spread by direct contact with infected bodily fluids or clothing or bedding that has the virus on it - and as I mentioned, dollar bills are mostly cotton, (5) making those a good place to start.

Calculating R naught

Diseases were around long before we were and in modern times there has been interest in estimating the spread of diseases like HIV and SARS using population-level models in order to keep pandemics from turning into epidemics. Models are tricky, and using an object, a fomite, as the transmitter is even more difficult to predict. One reason is because there is a lot of variability in human behavior. Doctors still use pagers, for example, and it can be easy to unconsciously touch them before, during or after a patient visit. Many shoppers may not touch money at all. However, bad guys could overcompensate for that by using enough bills and going where there will be density and predictable behavior. Like Manhattan, on Black Friday.

Last year, Macy's in Manhattan [had 16,000 people visit from 5 PM until closing](#), even on Thanksgiving Day. [And 74 percent of weekend shopping will occur the next day](#). We keep being told that retail is dead, and maybe it is, but when more people shop on that weekend than cast ballots in an election, it's a meaningful number using cash in person.

"In Manhattan, we're totally susceptible," says American Council on Science and Health microbiologist Dr. Julianna LeMieux. "Basically none of us have antibodies for smallpox but at least that has outward symptoms. With SARS a few years ago they instead had to have travelers at major airports go through fever scanners. If you had a fever you were going into a room, whether they knew you had SARS or not. That was controversial and I'm being a little dramatic but that's how it was stopped. It was a worldwide success."

So the island makes sense, and the day makes sense. They just need locations to place enough dollars. They don't use real names for businesses in the game, maybe Starbucks doesn't want to be associated with disease the way Chipotle is, so one of the missions instead sends you to Abel's Department Store, which just happens to be where Macy's sits in Herald Square. There you will find an intact bill. But how many did they use? In order to realistically calculate the R_0 we need timeframes.

We learn during the course of the game that after one week schools had closed because of the pandemic. After 9 days two-thirds of Manhattan had been evacuated and 48 percent of those left behind were infected. By the time the game starts, on January 6th, around 300,000 people have died, though those could be in other cities where travelers visited.

Given all the information now at our disposal, [we can come up with a number](#).

$R_0 \propto (\text{infection/contact}) \times (\text{contact/time}) \times (\text{time/infection})$

which is written as

$$R_0 = \tau \cdot c \cdot d$$

which is transmissibility multiplied by the rate of contact between susceptible and infected individuals by the duration of infectiousness. That allows us to create a pretty valid Susceptible-Infected-Removed (SIR) model because Manhattan is an island. Yes, people move around but most people in Manhattan live in Manhattan. You don't see a lot of people from Staten Island visiting unless they must.

So I consulted an infectious disease epidemiologist to impartially do a SIR calculation and provide an R_0 . Since it is a fomite, even if the disease is transmitted in two ways afterward, the SIR would need to be 1.3, and given the short timeframe the story provides, the R_0 would have to be around 7. That means the terrorists would need to have almost 100,000 bills, even if 16,000 people shop in Macy's / Abel's in an afternoon.



That's actually good news for your shopping comfort this Friday. While it is possible to place 100,000 bills into circulation all at once, it is not realistic for a plucky team of bioterrorists out to save Gaia from the Anthropocene Epoch. Despite what some claim, conspiracies are really hard to pull off when the group is of any decent size. So buy gifts with comfort, there is little chance of dollar bills spreading a deadly disease this year.

But what eco-terrorism should we worry about?

It isn't norovirus, though norovirus is the worst, so avoid Chipotle. However, it won't kill you. Smart bioterrorists out to cull humanity would instead put carfentanyl in our water supply. But that is an article for another time.

NOTES:

(1) Why is it called "Tom Clancy's The Division"? No idea, he has been dead since 2013 and stopped

writing before that, but if you pay for a famous name you use it and he had used eco-terrorism as a theme before. The story was compelling enough that a movie studio bought the rights. It is essentially a paramilitary combat game, where you have to fight criminals who escaped from Rikers Island, former sanitation workers known as The Cleaners who know the virus is killed by heat and end up burning more than those with the disease, and a private military contractor with heavily-armed former soldiers.

Because the Idyll of the scientist at the heart of this is population control, it has a very eugenics feel. You can almost imagine Margaret Sanger and Oliver Wendell Holmes cheering from the great beyond.

(2) But Ebola has a high fatality rate and an R_0 of nearly 2, which is scary if you think about patients in the U.S. increasing exponentially. However, the carriers were isolated pretty fast and

DISASTER SUPPLIES KIT

Do you have these essentials at home?
Every year, it's not just the loss of your supplies. It's the loss of your life. If you have these essentials, you can survive for at least 72 hours. If you have these essentials, you can survive for at least 72 hours.

OTHER PEOPLE

Water, Food and Clean Air are the priorities. Without them your chances of survival diminish rapidly.

AVOID CONTACT. THEY MAY BE INFECTED. PERSONAL, VIOLENCE AND ANXIETY. REPORT TO THE POLICE. PROTECT YOURSELF AND YOUR HOME. CONSIDER BARRICADING YOUR SHELTER.

DIRECTIVE 51

IS NOW IN EFFECT

IN CASE OF INFECTION OR CONTACT IMMEDIATELY REPORT TO THE POLICE. PUBLIC HEALTH AND SAFETY.

THIS IS NOW ACTIVE. COMPLY WITH ALL INSTRUCTIONS BY GOVERNMENT OFFICIALS. ONLY THE LAW. LOOTING AND CRIMINAL DAMAGE WILL NOT BE TOLERATED.

YOU MAY BE SHOT

PROTECT YOURSELF

DON'T SPREAD THE INFECTION!

Follow these simple steps to prevent the infection. Keep your hands clean. Stay away from others.

AVOID SICK PEOPLE

Stay at home or shelter in place.

WASH YOUR HANDS

After using the bathroom, before you eat, after you sneeze, cough, or blow your nose.

DO NOT TOUCH YOUR FACE

A person touches his or her face an average 3 to 5 times a minute. Your eyes, nose and mouth are breeding grounds for GERMS.

BE POLITE IF YOU COUGH OR SNEEZE

Always face away from other people. Use a disposable tissue. As a last resort, use your sleeve.

SYMPTOMS

COUGH, FEVER, RASH, SNEEZE, SOB, CRY, SWEAT, TIRE, SLEEP, EAT, DRINK, BREATHE, MOVE, THINK, FEEL, LIVE.

SHELTER IN PLACE

MASS CARE CENTERS WILL BE CROWDED.

Close proximity to potential infection. Stay in your apartment.

STAY PUT

Stay in your apartment. Stay in your apartment.

COMBAT AIRBORNE TOXINS

Seal your shelter. Lock doors and windows. Close vents. Turn off all fans. Seal all openings.

10/sq ft PER PERSON = 3 TO 5 HOURS OXYGEN

Breathing normally is not possible.

WARNING: Carbon Dioxide (CO2). It will build up in a sealed space. Vent the space before you die!

though it is highly infectious it is not highly contagious, it requires bodily fluids after symptoms appear. Thus it was not a problem in America. But that speaks to why it's so dangerous for well-heeled deniers in Oregon, Washington and California to be anti-vaccine about things that spread more easily. Since measles (and flu) travel through the air, their families can easily harm people with suppressed immune systems or who are too young to be vaccinated. However, the Swine Flu that killed tens of millions in 1918 can't do that so easily today. Thanks to prevention and containment, when H1N1 came back to prominence in 2009, its R_0 was half of 1918, about 1.4.

(3) Diseases from animals - zoonotic - account for [60 percent of the 400 or so emerging infectious diseases that have been identified since 1940](#). So those work but it is unlikely an ecoterrorist would unleash a horde of monkeys in Manhattan when there are already plenty of rats and The Black Plague is the most famous epidemic. Regardless, the game uses dollar bills so zoonotic pathogens are out. Ditto for the 1918 Spanish influenza pandemic, because that was airborne.

(4) What works in favor of a pandemic *occurring*? The World Health Organisation is considered to be in charge when a pandemic is looming. If you have seen the recent work of IARC or the IPCC or any U.N. peacekeeping force, you know we'll all be dead by the time the wrong decision even gets out of a UN committee.

(5) They could aerosolize it but the smallpox virus is not strong, in lab experiments 90 percent of aerosolized smallpox virus dies within 24 hours. In the presence of sunlight or heat, it occurs even faster.

Carfentanil or **carfentanyl** is an analog of the synthetic opioid analgesic fentanyl. It is 10,000 times more potent than morphine, making it among the most potent commercially used opioids. Carfentanil was first synthesized in 1974 by a team of chemists at Janssen Pharmaceutica which included Paul Janssen. It is



marketed under the **trade name Wildnil** as a general anaesthetic agent for large animals, such as elephants. The toxicity of carfentanil in humans and its ready commercial availability has aroused concerns over its potential use as a weapon of

mass destruction by rogue nations and terrorist groups. Carfentanil is classified as Schedule II under the Controlled Substances Act in the United States with a DEA ACSCN of 9743 and a 2016 annual aggregate manufacturing quota of 19 grams.

Animal health as a marker for predicting epidemics in human populations

Source: <http://www.homelandsecuritynewswire.com/dr20171124-animal-health-as-a-marker-for-predicting-epidemics-in-human-populations>

Nov 24 – **From September 2016 to August 2017, a virus inadvertently transmitted from puppies in a chain of pet stores sent thirty-nine people to hospitals across seven states.** But the size or even the unexpected source of the outbreak did not concern health officials as much as the fact that it took nearly a year after the first reported case for a pattern to emerge.

This is exactly the kind of problem Kari Meidenbauer, of the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, Maryland, is investigating as part of her work in animal health surveillance at APL. As the Lab's sole animal health analyst and veterinarian — she works part-time at the Hickory Veterinary Hospital in Forest Hill, Maryland — Meidenbauer understands the



significant role that animal health plays alongside human health and the environment as factors in spreading disease.

JHUAPL [notes](#) that researchers know that zoonotic diseases — illnesses transmitted from animals to humans — are the culprit behind most of the outbreaks that circled the globe over the last decade. First monkeys, and then bats, were discovered to be carriers of the deadly strain of Ebola that killed thousands of people between 2014 and 2016. Mosquitos are behind the Zika and West Nile virus, while birds carry avian flu.

As part of the [One Health](#) initiative, animal health is increasingly gaining focus as a marker for predicting health epidemics among the human population. Meidenbauer studies existing data to detect patterns but realizes that animal health data collection is not nearly as robust or on the same scale as human health surveillance. Meidenbauer points out the major gaps in animal health surveillance, noting that animal and human health surveillance should be integrated and data collection done in real time. She presents an analogy to highlight her point: Say the cows on a dairy farm are carrying salmonella. The bacteria contaminate the raw milk, which is consumed by people in the nearby town, who fall ill. The cows' waste runs off to the river near the dairy farm. More animals and humans are sickened from drinking and swimming in the now contaminated water, continuing the cycle and spurring a potential epidemic.

Being able to rapidly identify and isolate illness in the town's dairy cow population could have curbed the spread of infection and potentially kept it from reaching humans and contaminating the surrounding environment, she said. Animal health is very much intertwined with human and environmental health.

"You can't tackle public health until you capture and consider all three areas," said Meidenbauer.

And APL has recognized the need to address these new research spaces.

APL deployed the [Electronic Surveillance System for the Early Notification of Community Based Epidemics \(ESSENCE\)](#) after Sept. 11, 2001. The Lab-developed electronic disease surveillance system can detect disease patterns and outbreaks in large populations, and Meidenbauer envisions integrating animal data into the mix. Current animal-health data is scattered and you really have to look to find it, she said, and aggregating it into something like ESSENCE would provide better and more effective surveillance.

Meidenbauer seeks to work on a pilot with one of the nation's largest poultry suppliers. Because of its size, an animal-borne illness could potentially cripple the industry and widely impact human health.

"How can we take wildlife data and combine it with domestic animal influenza data and our [human] influenza data to compare?" said Meidenbauer. "It's important to find new avenues to enhance existing capabilities." Better and more consistent surveillance, she added, will help public health officials — and APL can be the vehicle for this level of communication and culture change.

Meidenbauer is passionate about forging relationships with these types of industries in the pursuit of more transparent surveillance to promote One Health efforts. Her appreciation for public health started when she was young, as the daughter of a nurse. Meidenbauer grew up to become a health professional in her own right, as a veterinarian. She spent her college years in a program that allowed her to focus on public health, for applications beyond traditional veterinary medicine. Now, she has the best of both worlds, working as a vet when she's not at the Lab and living on a farm with her many pets, including — count them — five goats, two pigs, seventeen chickens, and two dogs.



Isis 'will use drones to spread deadly viruses', warns EU security chief

Source: <https://www.standard.co.uk/news/world/isis-will-use-drones-to-spread-deadly-viruses-warns-eu-security-chief-a3700506.html>

Nov 25 – **Europe's most senior terrorism expert has warned Isis extremists could soon turn to biological warfare, using drones to spread lethal viruses.**



Speaking at a conference in [London](#), Gilles de Kerchove, the [EU's](#) counterterrorism co-ordinator, said **terrorist groups such as al-Qaeda and Isis will soon turn to constructing biological weapons in their own homes.**

[The Times](#) reports Mr Kerchove told the Royal United Services Institute that the first edition of Inspire, [al-Qaeda's](#) online magazine, had an article on "how to make a bomb in your mum's kitchen".

He claimed the next step could be "a similar article on how to process a virus in your mum's kitchen". He also warned the terrorists could use drones to spread such infections.

Underlining the threat of Isis's online presence, [Theresa May's](#) deputy national security adviser, Patrick McGuinness, told the conference: The online space is the frontline.

"Until Isis cannot occupy space online freely, we will not be safe...The speed with which people are brought to violence is almost too fast to catch."

Mr McGuinness said major social media companies - such as [Twitter](#) and [Facebook](#) - were co-operating to take down extremists but he was "not convinced" they were doing everything they could.

"These companies have got it in them to resolve this issue very substantially and free us largely in this space."

EDITOR'S COMMENT: OK – nothing is impossible! But spraying device adds weight; then they need technology to keep spores apart (the difficult part) and have the right size to infiltrate host's respiratory defenses (also difficult to minuterize the spraying system).

Synthetic biology and bioengineering: Opportunities and risks

Source: <http://www.homelandsecuritynewswire.com/dr20171127-synthetic-biology-and-bioengineering-opportunities-and-risks>

Nov 27 – Rapid developments in the field of synthetic biology and its associated tools and methods, including more widely available gene editing techniques, have substantially increased our capabilities for bioengineering – the application of principles and techniques from engineering to biological systems, often with the goal of addressing real-world problems.

In a feature article published in the open access journal [eLife](#), an international team of experts led by Dr. Bonnie Wintle and Dr. Christian R. Boehm from the Center for the Study of Existential Risk at the University of Cambridge, capture perspectives of industry, innovators, scholars, and the security community in the United Kingdom and the United States on what they view as the major emerging issues in the field.

Dr. Wintle says: "The growth of the bio-based economy offers the promise of addressing global environmental and societal challenges, but as our paper shows, it can also present new kinds of challenges and risks. The sector needs to proceed with caution to ensure we can reap the benefits safely and securely."

Cambridge [says](#) that the report is intended as a summary and launching point for policy makers across a range of sectors to further explore those issues that may be relevant to them.

Among the issues highlighted by the report as being most relevant over the next five years are:

Artificial photosynthesis and carbon capture for producing biofuels

If technical hurdles can be overcome, such developments might contribute to the future adoption of carbon capture systems, and provide sustainable sources of commodity chemicals and fuel.

Enhanced photosynthesis for agricultural productivity

Synthetic biology may hold the key to increasing yields on currently farmed land – and hence helping address food security – by enhancing photosynthesis and reducing pre-harvest losses, as well as reducing post-harvest and post-consumer waste.

Synthetic gene drives

Gene drives promote the inheritance of preferred genetic traits throughout a species, for example to prevent malaria-transmitting mosquitoes from breeding. However, this



technology raises questions about whether it may alter ecosystems, potentially even creating niches where a new disease-carrying species or new disease organism may take hold.

Human genome editing

Genome engineering technologies such as CRISPR/Cas9 offer the possibility to improve human lifespans and health. However, their implementation poses major ethical dilemmas. It is feasible that individuals or states with the financial and technological means may elect to provide strategic advantages to future generations.

Defense agency research in biological engineering

The areas of synthetic biology in which some defense agencies invest raise the risk of dual-use. For example, one program intends to use insects to disseminate engineered plant viruses that confer traits to the target plants they feed on, with the aim of protecting crops from potential plant pathogens – but such technologies could plausibly also be used by others to harm targets.

In the next five to ten years, the authors identified areas of interest including:

Regenerative medicine: 3D printing body parts and tissue engineering

While this technology will undoubtedly ease suffering caused by traumatic injuries and a myriad of illnesses, reversing the decay associated with age is still fraught with ethical, social and economic concerns. Healthcare systems would rapidly become overburdened by the cost of replenishing body parts of citizens as they age and could lead new socioeconomic classes, as only those who can pay for such care themselves can extend their healthy years.

Microbiome-based therapies

The human microbiome is implicated in a large number of human disorders, from Parkinson's to colon cancer, as well as metabolic conditions such as obesity and type 2 diabetes. Synthetic biology approaches could greatly accelerate the development of more effective microbiota-based therapeutics. However, there is a risk that DNA from genetically engineered microbes may spread to other microbiota in the human microbiome or into the wider environment.

Intersection of information security and bio-automation

Advancements in automation technology combined with faster and more reliable engineering techniques have resulted in the emergence of robotic 'cloud labs' where digital information is transformed into DNA then expressed in some target organisms. This opens the possibility of new kinds of information security threats, which could include tampering with digital DNA sequences leading to the production of harmful organisms, and sabotaging vaccine and drug production through attacks on critical DNA sequence databases or equipment.

Over the longer term, issues identified include:

New makers disrupt pharmaceutical markets

Community bio-labs and entrepreneurial startups are customizing and sharing methods and tools for biological experiments and engineering. Combined with open business models and open source technologies, this could herald opportunities for manufacturing therapies tailored to regional diseases that multinational pharmaceutical companies might not find profitable. But this raises concerns around the potential disruption of existing manufacturing markets and raw material supply chains as well as fears about inadequate regulation, less rigorous product quality control and misuse.

Platform technologies to address emerging disease pandemics

Emerging infectious diseases—such as recent Ebola and Zika virus disease outbreaks—and potential biological weapons attacks require scalable, flexible diagnosis and treatment. New technologies could enable the rapid identification and development of vaccine candidates, and plant-based antibody production systems.

Shifting ownership models in biotechnology

The rise of off-patent, generic tools and the lowering of technical barriers for engineering biology has the potential to help those in low-resource settings, benefit from developing a sustainable bioeconomy based on local needs and priorities, particularly where new advances are made open for others to build on.

Dr Jenny Molloy comments: "One theme that emerged repeatedly was that of inequality of access to the technology and its benefits. The rise of open source, off-patent tools could



enable widespread sharing of knowledge within the biological engineering field and increase access to benefits for those in developing countries.”

Professor Johnathan Napier from Rothamsted Research adds: “The challenges embodied in the Sustainable Development Goals will require all manner of ideas and innovations to deliver significant outcomes. In agriculture, we are on the cusp of new paradigms for how and what we grow, and where. Demonstrating the fairness and usefulness of such approaches is crucial to ensure public acceptance and also to delivering impact in a meaningful way.”

Dr Christian R. Boehm concludes: “As these technologies emerge and develop, we must ensure public trust and acceptance. People may be willing to accept some of the benefits, such as the shift in ownership away from big business and towards more open science, and the ability to address problems that disproportionately affect the developing world, such as food security and disease. But proceeding without the appropriate safety precautions and societal consensus—whatever the public health benefits—could damage the field for many years to come.”

— Read more in Bonnie C. Wintle et al., “A transatlantic perspective on 20 emerging issues in biological engineering,” *eLife* (14 November 2017).

Could gene editing tools such as CRISPR be used as a biological weapon?

By James Revill

Source: <http://www.homelandsecuritynewswire.com/dr20171127-could-gene-editing-tools-such-as-crispr-be-used-as-a-biological-weapon>

Nov 27 – The gene editing technique CRISPR has been in the limelight after scientists reported they had [used it to safely remove disease](#) in human embryos for the first time. This follows a “CRISPR craze” over the last couple of years, with the number of academic publications on the topic growing steadily.

There are good reasons for the widespread attention to CRISPR. The technique allows scientists to “cut and paste” DNA more [easily](#) than in the past. It is being applied to a number of different peaceful areas, ranging from cancer therapies to the control of disease carrying insects.

Some of these applications – such as the engineering of mosquitoes to resist the parasite that causes malaria – effectively involve tinkering with ecosystems. CRISPR has therefore generated a number of ethical and safety concerns. Some also worry that applications being explored by [defense organizations](#) that involve “responsible innovation in gene editing” may send worrying signals to other states.

Concerns are also mounting that gene editing could be used in the development of biological weapons. In 2016, [Bill Gates remarked](#) that “the next epidemic could originate on the computer

screen of a terrorist intent on using genetic engineering to create a synthetic version of the smallpox virus”. More recently, in July 2017, John Sotos, of Intel Health & Life Sciences, stated that gene editing research could “[open up the potential for bioweapons of unimaginable destructive potential](#).”

An annual [worldwide threat assessment report](#) of the US intelligence community in February 2016 argued that the broad availability and low cost of the basic ingredients of technologies like CRISPR makes it particularly concerning.

However, one has to be careful with the hype surrounding new technologies and, at present, the security implications of CRISPR are [probably modest](#). There are easier, cruder methods of creating terror. CRISPR would only get aspiring biological terrorists so far. Other steps, such as growing and disseminating biological weapons agents, would typically be required for it to become an effective weapon. This would require additional skills and places CRISPR-based biological weapons beyond the reach of most terrorist groups. At least for the time being.

This does not mean that the hostile exploitation of CRISPR by non-state actors can be ignored. Nor



can one ignore the [likely role](#) of CRISPR in any future state biological weapons program.

International efforts

Fortunately, most states around the world regard biological warfare with particular abhorrence. There are already measures in place to prohibit and prevent the development of biological weapons. At the international level, this includes the [Biological and Toxin Weapons Convention](#). Under this convention, states have agreed “never under any circumstances to acquire or retain biological weapons”.

This convention is imperfect and lacks a way to ensure that states are compliant. Moreover, it has not been adequately “tended to” by its member states recently, with the last major meeting unable to agree a further program of work. Yet it remains the cornerstone of an international regime against the hostile use of biology. All 178 state parties [declared in December of 2016](#) their continued determination “to exclude completely the possibility of the use of (biological) weapons, and their conviction that such use would be repugnant to the conscience of humankind”.

These states therefore need to address the hostile potential of CRISPR. Moreover, they need to do so collectively. Unilateral national measures, such as reasonable biological security procedures, are important. However, preventing the hostile exploitation of CRISPR is

not something that can be achieved by any single state acting alone.

As such, when states party to the convention meet later this year, it will be important to agree to a more systematic and regular review of science and technology. Such reviews can help with identifying and managing the security risks of technologies such as CRISPR, as well as allowing an international exchange of information on some of the potential benefits of such technologies.

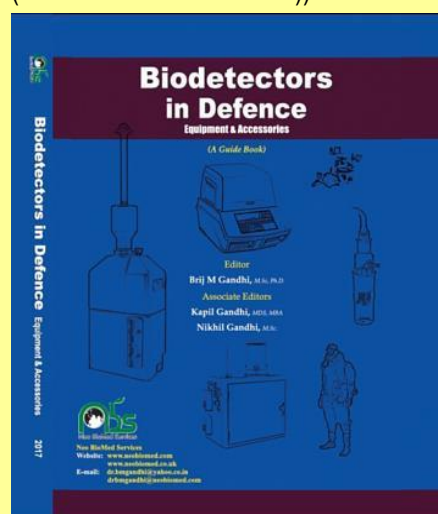
Most states supported the principle of enhanced reviews of science and technology under the convention at the last major meeting. But they now need to seize the opportunity and agree on the practicalities of such reviews in order to prevent the convention being left behind by developments in science and technology.

Biological warfare is not an inevitable consequence of advances in the life sciences. The development and use of such weapons requires agency. It requires countries making the decision to steer the direction of life science research and development away from hostile purposes. An imperfect convention cannot guarantee that these states will always decide against the hostile exploitation of biology. Yet it can influence such decisions by shaping an environment in which the disadvantages of pursuing such weapons outweigh the advantages.

James Revill is Research fellow, University of Sussex.

Biodetectors in Defence, Equipment and Accessories

(ISBN: 978-93-5288-722-4))



Source: <https://www.linkedin.com/groups/1989189/1989189-6341166835462955009>

Published First edition of the book "Biodetectors in Defence" summarizing over 1300 globally available collectors, portable detectors and computer-based laboratory systems using advanced technologies, instrumentation and diagnostic system for detection and identification of biological warfare agents in environment, water and food samples. Information is also provided to the source of these technologies and similar technologies and systems. Information provided in the book is meant for reference purposes providing useful information to educate the R&D personnel, defence industry, homeland security agencies, local, state and national governments



on biological and chemical defence matters regarding available equipment and technologies to combat WMDs, terrorism, and homeland security for safety of citizens and critical infrastructure and respond to incidents of CBRNe. It also helps the end-users to make informed decisions about the equipment and technologies to be used for detection of biological weapon agents, other infectious agents and toxins, their procurement.

70-year-old US woman made ricin, tested it on neighbors

Source: <http://www.dailymail.co.uk/wires/afp/article-5138155/70-year-old-US-woman-ricin-tested-neighbors-FBI.html>

Dec 01 – An FBI team of weapons of mass destruction experts searched the 70-year-old woman's apartment in the bucolic northeastern US state of Vermont. They found ricin and components of other plants that can be used to make poison

A 70-year-old woman living in a Vermont retirement home passed her time experimenting with homemade ricin, even testing it on fellow residents, the Justice Department said Friday. No one had apparently been killed by Betty Miller's activities at the



bucolic Wake Robin retirement home in Shelburne, Vermont, which advertises a population of "vibrant, engaged people and a community in which you can be yourself."

But Miller was arrested by FBI agents Thursday amid fears she had stockpiled a weapon of mass destruction.

The FBI was alerted to a dangerous substance at the home earlier this week, and discovered a bottle labelled "ricin" in her residence. Tests confirmed it contained the deadly substance.

"Miller stated that she had an interest in plant-based poisons and had conducted internet research on how to make them," the FBI said in a statement.

"She stated that she manufactured ricin in the kitchen of her Wake Robin residence and, to test its potency, placed the ricin in the food or beverages of other residents."



An FBI WMD team returned for a search of her apartment and found more ricin, and components from plants, including apple, yew, cherry, castor and foxglove, which all can be used to produce poisonous substances.

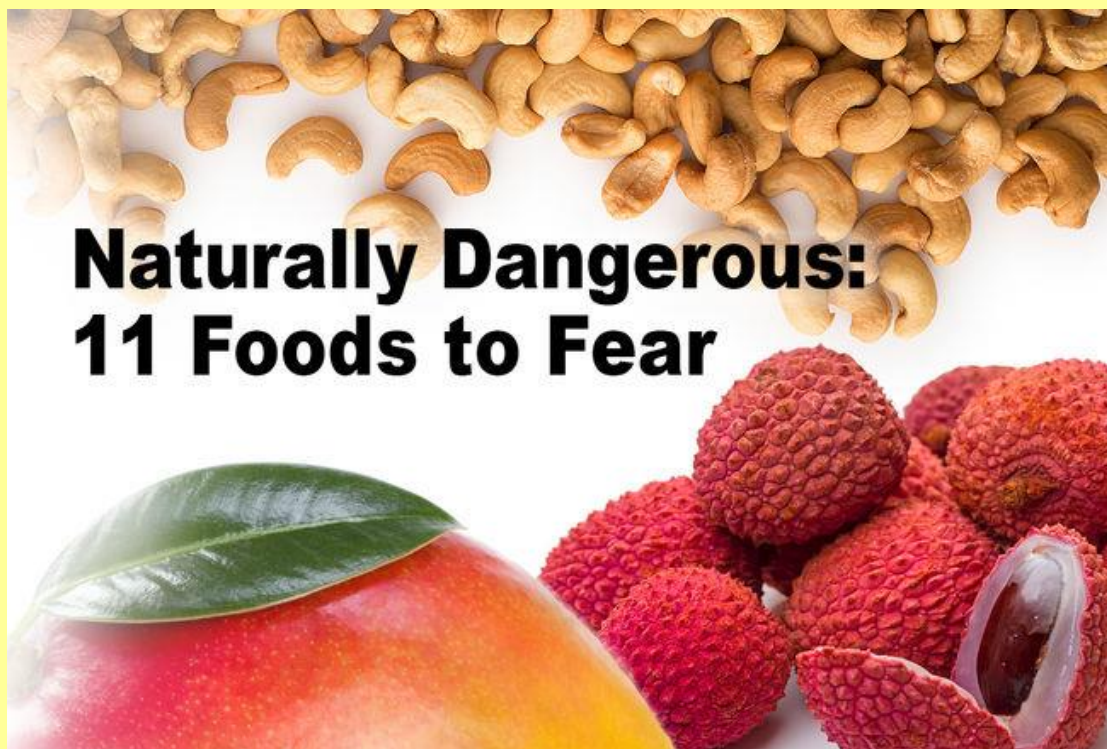
Officials "stressed that any threat posed by the substances in Miller's apartment has been neutralized," they said.

Wake Robin called the case "an isolated incident."

"The toxic substance was contained; no residents were evacuated," the retirement home said in a statement.

"The resident of the apartment in question is now involved with the criminal justice system and will not be returning to Wake Robin."

EDITOR'S COMMENT: Curiosity killed the cat but also proved that can be done in the kitchen!



Source: <https://www.medscape.com/slideshow/toxic-foods-6009263>

The Female Body, Cloning, and (Bio)terrorism in X-23: INNOCENCE LOST

By Molly Barnewitz

Source: <https://comicsverse.com/bioterrorism-x-23-innocence-lost/>

Dec 02 – In X-23: INNOCENCE LOST, Craig Kyle and Christopher Yost explore the origins of Laura Kinney, also known as X-23, Wolverine's genetic clone. When Wolverine escapes from the Facility, he kills the scientist Dr. Rice. Hellbent on finishing his father's work, Zander Rice pursues the Weapon-X project with neurotic zeal. Zander will stop at nothing to perfect the Weapon-X and avenge his father's death. However, Wolverine's genetic code is damaged. Only Dr. Sarah Kinney can produce a viable clone: X-23.

X-23 INNOCENCE LOST debuted in 2005, four years after the 9/11 terrorist attacks and the anthrax scare. The threat of terrorism and bioterrorism were and continue to be topics of



concern in America and increasingly around the globe. Bioterrorism is terrorism that deploys biological



agents to harm specific populations. Also known as “germ warfare,” bioterrorism relies on pathogens to terrorize a society. Anxieties about bioterrorism are reflected in the character X-23, a biological clone that is designed specifically to serve as a weapon.

X-23's tragic origin story situates bioterrorist acts at the site of the cis-female body, depicting violence committed against both X-23 and her mother, Dr. Sarah Kinney. X-23: INNOCENCE LOST scrutinizes the ethics of unchecked biotechnological advancements, especially in the context of the military-industrial complex.

As a clone explicitly designed to be a weapon, X-23 embodies the cultural anxieties about technology projects gone awry. X-23 and Sarah act as stand-ins for society at large, one that is both victim and perpetrator of terrorist acts. X-23: INNOCENCE LOST pinpoints violence against the female reproductive system and cloning as central metaphors for bioterrorism.

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

Managing antibiotics insufficient to reverse resistance

Source: <http://www.homelandsecuritynewswire.com/dr20171130-managing-antibiotics-insufficient-to-reverse-resistance>

Nov 30 – Researchers have discovered that reducing the use of antibiotics will not be enough to reverse the growing prevalence of antibiotic resistance for some types of bacteria. Besides passing along the genes bestowing antibiotic resistance to their offspring, many bacteria can also swap genes amongst themselves through a process called **conjugation**.

There has long been a debate, however, as to whether this process occurs fast enough to spread through a population that is not under attack by antibiotics.

In a new study, researchers from Duke University believe they have found a definitive answer to that question. Through a series of experiments with bacteria capable of conjugation, they show that all of the bacteria tested share genes fast enough to maintain resistance. They also show, however, that there are ways to disrupt the process and reverse antibiotic resistance.

The results were published in [Nature Communications](#).

“The results came as a surprise to me when I first saw the data,” said [Lingchong You](#), the Paul Ruffin



Scarborough Associate Professor of Engineering at Duke University and corresponding author on the paper. “For all of the bacteria we tested, their conjugation rate is sufficiently fast that, even if you don’t use antibiotics, the resistance can be maintained — even if the genes carry a high cost.”

Most resistance to antibiotics arises and spreads through natural selection. If a few lucky bacteria have genes that help them survive a round of antibiotics, they quickly parent the next generation and pass on those genes.

Duke [notes](#) that many of these genes, however, come at a cost. For example, a mutation may allow a bacterium to build a thicker membrane to survive a particular antibiotic, but that mutation might also make it more difficult for the cell to reproduce. Without the selective pressure of antibiotics killing off the competition, bacteria with this mutation should disappear over time. But when the genes responsible for resistance can also be swapped between cells, the equation gets more complicated. In favor of maintaining the resistance is the rate at which the genes are shared. Working against it is the previously mentioned biological cost of the genes, and the natural error rate in genes when they are passed on.

“There have been some studies on how critical conjugation is to maintaining resistance despite its cost, but there has been a lack of careful and well-defined experiments to come to definitive conclusions,” said You. “That’s where Allison has made a central contribution. Her incredibly thorough measurements allow us to draw our conclusions with high confidence.”

Allison Lopatkin, a doctoral student in You’s laboratory and first author of the paper, carefully measured the rate of conjugation and antibiotic resistance in pathogens for more than a month. The strains were obtained through a parallel project with Duke Health, in which You is trying to determine just how common conjugation is amongst pathogens.

So far, You has found that more than 30 percent of the bacterial pathogens he has tested spread resistance through conjugation. And of those, nine were further tested by Lopatkin to see how

well they would maintain their resistance in the absence of antibiotics.

“Every single clinical strain we tested maintained its resistance through conjugation even without the selective pressure of antibiotics,” said Lopatkin.

The results indicate that — at least for bacteria that swap resistance genes — simply managing the amount of antibiotics being used will not turn the tide on the growing problem of resistance. To make any headway, according to You and Lopatkin, drugs will also be needed that both stop the sharing of genes and decrease the rate at which they are passed on through reproduction.

Luckily, such drugs already exist, and there may be many more out there waiting to be discovered.

“We did the same experiments with one drug that is known to inhibit conjugation and another that encourages resistance genes to be lost,” Lopatkin said. “We found that without the presence of antibiotics we could reverse the bacteria’s resistance in four of the pathogens we tested and could stop it from spreading in the rest.”

One of the drugs is a benign natural product and the second is an FDA-approved antipsychotic. While the team has filed a provisional patent for the use of the combination to reverse antibiotic resistance, they hope future work will reveal even better options.

“As a next step, we’re interested in identifying additional chemicals that can fill these roles more effectively,” said You. “Historically, when researchers screened huge libraries for medicines, they focused on drugs that can kill the bacteria. But what our studies suggest is that there is a whole new universe where you can now screen for other functions, like the ability to block conjugation or to induce the loss of resistance genes. These chemicals, once proven safe, can serve as adjuvants of the standard antibiotic treatment, or they can be applied in an environmental setting as a way of generally managing of the spread of antibiotic resistance.”

— *Read more in Allison J. Lopatkin et al., “Persistence and reversal of plasmid-mediated antibiotic resistance,” [Nature Communications](#) (22 November 2017).*



AI could help eradicate biological disease

By William Nakulski

Source: <https://venturebeat.com/2017/12/04/girl-scouts-hope-to-change-the-face-of-ai-robotics-and-data-science/>



Dec 01 – What does it mean to be human? The answer to this is, like [humanity](#), in constant flux, evolving with our species and the times. But one essential, defining element for centuries is our mortality. All people get sick, and all people die. But advanced technologies like AI could help change all of that — if the expert minds behind them succeed, that is.

We've come a long way in reducing and even eliminating biological diseases in the past century, passing [milestones](#) like the emergence of penicillin, the ability to sequence the genomes of diseases, and lately, [the discovery of CRISPR](#). Now, with the advent of computers in medicine, humanity is about to supercharge its medical progress — and perhaps finally put an end to death by disease.

Illness still exists, but improvement is rapid

Even in the digital age, [illness is still the main cause of death](#) across the country and the world. Heart disease leads the charge, followed closely by cancer.

Believe it or not, this is a sign of progress. In contrast, Americans in 1900 were dying of what are now curable diseases today, such as respiratory illnesses (tuberculosis, pneumonia, and influenza), as well as gastrointestinal infections (such as cholera and dysentery). Put simply, today's diseases of civilization are no longer the germ-fueled pandemics like [Spanish flu](#) or [bubonic plague](#). Instead, they're diseases stemming from [sedentary lifestyles](#) and modern habits.

Although humans tend to think linearly, with cooperative measures and leaps in technology, technological advances tend to be exponential. With increased economic prosperity worldwide, this model is spreading to other nations. [Heart attacks](#) and strokes edge out previous, communicable diseases like lower respiratory infections and diarrhea. Clearly, as a country becomes richer (and their infrastructure strengthens), the threat shifts. Even if their populations are free from afflictions born of unsanitary conditions, they will still encounter the downsides of more affluent societies.

But all this begs an interesting question: Can we ever truly rid ourselves of disease? Or have we only traded one cause of death for another?

Computer-driven medicine

This brings us to the next milestone: computers. Though they've long been used in medicine (in the [1960s](#), early computers were used to track blood-borne diseases), new developments may revolutionize the field. The most promising development is machine learning, which promises to help end disease as we know it.

At the moment, we've only scratched the surface of machine learning's medical potential. Today, machine learning programs [supplement](#) doctors. The software sifts through and interprets reams of data, diagnoses current patient problems, creates patient profiles from their medical histories, and predicts future conditions seamlessly. Given how much data the sheer volume of medical studies produce (in 2003, one health care network estimated that it would take [30 years](#) for humans to review every single existing randomized trial), the fact that computers can cut down, analyze, and aggregate patient data is very promising.

Deep learning

Machine learning capabilities are only growing. Researchers are conducting promising experiments on a variant called [deep learning](#), programs patterned after the very structure of the brain. Deep learning programs consist of [layers of algorithms](#) stacked atop each other. An input from one layer is then transmitted into the next, with each subsequent layer further processing the inputs. With this



complex system, deep learning can [easily recognize](#) patterns and indulge in extremely high-level procedures — higher than what we've seen thus far from normal machine learning programs.

With this raw processing power, the days of disease may yet be numbered. Nvidia, a company best known for producing graphics processing units, is an unlikely candidate for a deep learning leader. Yet as developers make clear, the [nature of GPUs](#) make them ideal for deep learning. Compared to normal CPUs with eight cores (computer chips), GPUs have thousands of cores, making it easier to run complex programs. Because of this unexpected crossover, Nvidia [now applies](#) its deep learning expertise to medicine. Among these exciting applications include identifying genetic factors involved in neuro disorders or using algorithms to predict patient health outcomes (and constantly learning from its mistakes and successes along the way).

For therein lies the biggest advantage of deep learning in medicine: its adaptive, autonomous quality. Deep learning algorithms can actually build on their knowledge and evolve, like humans do. In fact, studies suggest that in many applications, deep learning [can surpass](#) human abilities. In medical imaging, deep learning offers the ability to automate a task that was once limited to human specialists — and do it with a far lower rate of error. In fact, some deep learning teams have already used their programs to [classify](#) skin cancer cells simply from a patient photo, demonstrating the awesome ability of such algorithms.

The natural cumulation of this technology is cutting-edge, forward-thinking institutions that seek to overturn our paradigm of disease. For example, the Microsoft [biological computation lab](#) hosts a variety of exciting procedures. The most dramatic procedure may well be the ability to model biological systems and predict outcomes. At the intersection of machine

learning, mathematics, and biology, Microsoft's lab hopes to someday both understand and control the way cells behave in order to reverse disease through programming.

That's just the tip of the iceberg. At the new USC Michelson Center for Convergent Bioscience, AI experts like Fei Sha [apply machine learning](#) to health and bioscience to identify the genetic cause of diseases like cancer and develop hyper-effective precision therapies to cure them.

The future is now

It's an exciting time when computer science, at one point little more than a series of ones and zeroes, is on the verge of revolutionizing health and wellness in ways no one could have predicted. Technology has changed what it means to be human, and with the advent of intelligent machines, the line between body and computer is finer than ever. The implications are extraordinary.

Imagine the day when each of us has an SD card or equivalent with our genetic code, so doctors can print out an organ or replacement appendage based on our unique information. Imagine, too, the realms of research AI computers could conduct by gathering data and learning at an exponential pace. While it's true that AI can be dangerous, as [Stephen Hawking warns](#), these are just several of the incredible opportunities within reach before we even come close to the danger zone.

There will no doubt be roadblocks between today and a disease-free utopia, if indeed it is achievable. Also, this could lead to consequences such as overpopulation, inequality, and an abundance of ethical quandaries. But I do believe that if nothing else, computer science is redefining humanity and will continue to do so as AI penetrates mainstream medicine. In this light, what it really means to be human may be determined less by our mortality than by our amazing ability to overcome it.

William Nakulski is an entrepreneur and computer science expert with an interest in AI and software.



Why Basement Biohackers Might Need to Start Fearing the FDA

Source: <https://gizmodo.com/why-basement-biohackers-might-need-to-start-fearing-the-1820924607>



The ingredients for CRISPRing a human, sold by The Odin. Image Courtesy Josiah Zayner

Last week, the Food and Drug Administration [issued a stern warning](#) to biohackers in America: Undertaking DIY gene therapy, it warned, is risky, and selling the supplies to do it is flat-out against the law.

“FDA is aware that gene therapy products intended for self-administration and ‘do it yourself’ kits to produce gene therapies for self-administration are being made available to the public. The sale of these products is against the law. FDA is concerned about the safety risks involved,” the agency said.

The statement came on the heels of two very public demonstrations of unregulated, do-it-yourself genetic engineering. In one, a 27-year-old software engineer injected himself with an unproven gene therapy for HIV [while streaming live on Facebook](#). In the other, a [well-known biohacker](#) injected himself with a gene to promote muscle growth at a San Francisco biotech conference. New genetic engineering technologies has spurred [a burgeoning movement](#) of biohackers doing sophisticated science outside of formal labs. Until last week, though, regulators have mostly stayed out of it.

The FDA’s brief statement raised many questions. For one, the agency singled out CRISPR in particular as a subject of concern, noting that it “considers any use of CRISPR/Cas9 gene editing in humans to be gene therapy.” But what about other gene editing techniques, of which there are many? It also offered no details on which regulations selling DIY gene therapy supplies violated, or how it planned to enforce those regulations.

After the initial warning, Gizmodo reached out to the FDA for clarity on how it might affect the biohacking community.

For one, the agency, made clear, it’s not just CRISPR: “Gene editing in humans by any method would be considered gene therapy regulated by FDA,” a spokesperson said, noting that it only mentioned CRISPR because it’s such a buzzy word.

And the selling of kits, it seems, would be considered illegal because, in broad terms, the agency would consider it the sale of any unapproved “gene therapy product” akin to the sale of an unapproved drug. If someone wants to test an unapproved drug in humans, they must first clear a clinical investigation with the FDA.

Per the agency:

A clinical investigation, described in title 21 of the Code of Federal Regulations, part [312.2](#) is defined as: any experiment in which a drug is administered or dispensed to, or used



involving, one or more human subjects. An experiment is any use of a drug except for the use of a marketed drug in the course of medical practice.

The clarification makes it appear likely that the warning was motivated by the October experiment involving the unproven gene therapy for HIV. While the subject of the experiment actually injected the vaccine himself, its development was paid for by a company, Ascendence Biomedical. The company plans to sell the “research compounds” used to make the vaccine online and to fund “transparent” clinical trials that would skirt typical regulatory oversight by having people deliver their own treatment. The initial experiment raised significant concerns because there has been no human clinical trials of such an HIV treatment to date.

Ascendence Biomedical [says it has no plans](#) to change course based on the warning.

“It sounds like the FDA would like to believe that a research compound expressly not for human consumption becomes a clinical investigation as soon as the individual in receipt of it decides of their own free will to use it for personal research purposes,” CEO Aaron Traywick told Gizmodo. “These definitions were not set in place to regulate such activities, and there appears no specific law regulating such activities.”

If the FDA chose to step in, it could also affect The Odin, a company run by Josiah Zayner, the biohacker who injected himself with CRISPR. The Odin sells kits for home genetic engineering, and though those kits do not expressly mention humans, it [also sells a human DNA plasmid](#) that promotes muscle growth for \$20. (It comes with this warning: “This product is not injectable or meant for direct human use. The DNA needs to be replicated and purified before use in human cells.”)

Zayner also says he has no plans to heed the agency’s warning, because he feels it does not apply.

“It seems people are getting after me because I promote people doing something even though I am not selling them the thing,” Zayner told Gizmodo. “Even if someone were to inject the DNA, the concentration is so low and it doesn’t have the required chemicals to get it in cells efficiently.”

The FDA would not offer further detail on which products it specifically considers in violation of its regulations, or how it might penalize those that violate them.

“I can’t cite specifics,” a spokesperson told Gizmodo, “Information about the agency’s inspection and surveillance activities, including whether the agency is considering action, is generally not made available to the public unless and until enforcement action is taken.”

In the past, with [a few exceptions](#), the regulators have largely left biohackers alone. The FBI has even [gone so far](#) as to cultivate a friendly relationship with them. At least as far as the FDA is concerned though, that laissez faire attitude may be a thing of the past.

Biohackers Disregard FDA Warning on DIY Gene Therapy

By Emily Mullin

Source: <https://www.technologyreview.com/s/609568/biohackers-disregard-fda-warning-on-diy-gene-therapy/>

Dec 01 – Despite a warning from the federal government about do-it-yourself gene therapy, two companies say they’ll continue offering DNA-altering materials to the public.

The companies, The Odin and Ascendence Biomedical, both recently posted videos online of people self-administering DNA molecules their labs had produced.

Following wide distribution of the videos, the U.S. Food and Drug Administration last week issued a [harshly worded statement](#) cautioning consumers against DIY gene-therapy kits and calling their sale illegal. “The sale of these products is against the law. FDA is concerned about the safety risks involved,” the agency said.

The agency declined to specify what products it was referring to. Executives at both firms said they might be the target of the warning, but they have not been contacted by the FDA.

In a statement to *MIT Technology Review*, the FDA said that “information about the agency’s inspection and surveillance activities, including whether the agency is considering action, is generally not made available to the public unless and until enforcement action is taken.”

Normally, drug makers must seek the agency’s permission to test new drugs, a process that often takes years and costs hundreds of millions of dollars. But now a growing number of



cases of DIY gene therapy are putting the health regulator in a difficult situation as individuals argue that no law stops them from self-administering the substances. In fact, there is a long history of scientists carrying out experiments on themselves, including some Nobel Prize winners.

Last month, Josiah Zayner, CEO of The Odin, which sells DIY biology kits and supplies through its website, [posted a video](#) in which he injected himself with the gene-editing tool CRISPR during a biohacker conference in California. That video has been viewed more than 58,000 times on YouTube.

In its [statement](#), which FDA Commissioner Scott Gottlieb tweeted on November 21, the same day it was posted to the agency's website, the regulator took aim directly at companies selling CRISPR supplies intended for self-administration.

"I think that's totally in response to the experiment I did on myself," says Zayner, a self-described biohacker who promotes the idea that anyone should be able to participate in scientific experimentation.

Unknown risks

Experts say any gene therapy prepared by amateurs would probably not be potent enough to have much effect, but it could create risks such as an immune reaction to the foreign DNA. "I think warning people about this is the right thing," says David Gortler, a drug safety expert with the consulting group [Former FDA](#). "The bottom line is, this hasn't been tested."

The problem facing regulators is that interest in biohacking is spreading, and it's increasingly easy for anyone to obtain DNA over the internet. It's also easy to get hold of the recipes necessary to carry out gene editing using CRISPR, a potent new technique for modifying DNA.

Learn more about how CRISPR works.

In October, Zayner's website began selling \$20 copies of a DNA molecule containing the necessary genetic information to deactivate the human gene for a certain protein, myostatin, using CRISPR.

Animals without that gene develop extra-large muscles, so it is frequently cited by biohackers as a target for self-improvement experiments.

Zayner says selling the supplies isn't illegal because it's not up to him how people use them. His website warns that the product is "not injectable or meant for direct human use." Human DNA can be purchased through a number of other companies that cater to research labs. The difference is The Odin markets its DNA to amateur biologists.

"The DNA we sell is kind of to inspire people, and maybe people will buy the DNA and use it. I don't really have a problem with that," says Zayner. He said he won't stop selling any of his products in light of the FDA's statement last week.

The materials sold by The Odin also can't be directly used to alter a person's genes. Instead, they contain DNA that would have to be produced in larger amounts, purified, and then delivered to the body using methods well beyond the skills of most consumers—methods that might involve viruses, additional chemicals, or electric shocks.

"I think we place at least a small barrier for entry where someone has to at least know what they're doing before they can just inject it," says Zayner.

Self-experimentation

At least one other company appears to have begun offering finished gene-therapy preparations directly to patients for their own use. In October, an HIV patient named Tristan Roberts was [filmed live on Facebook](#) injecting himself with a gene therapy designed to generate antibodies that he believed would help his body destroy cells infected with the virus.

The material he used was supplied by [Ascendance Biomedical](#), an until recently unknown startup company that promotes "[decentralized](#)" testing of new drugs. The FDA warning was released the same day as a [BBC report](#) describing Roberts's self-experiment.

Aaron Traywick, the CEO of Ascendance, who believes his company might be the target of the agency's warning, says the experiment was legal because Ascendance didn't charge Roberts for the therapy.

"The FDA believes we're doing something that we're not," Traywick says. "They believe we're providing a compound and marketing a compound for a specific health purpose and providing it for sale, and we are not." He says the company is offering the therapy for research purposes only.



Typically, the FDA requires that companies first seek permission, through an investigational new drug application, or IND, before testing a new treatment in human participants. Traywick says Ascendance has not obtained one.

The company is also developing a herpes vaccine, as well as a gene therapy to boost muscle mass and reduce fat. He says Ascendance plans to make both of those therapies available for self-administration by early next year.

Emily Mullin is a MIT Technology Review's associate editor for biomedicine. I report from Washington, D.C., where I look for stories about how new technology is making us healthier and our medicine better. I am particularly interested in how these advances are affecting real people. Previously, I was a contributor at Forbes, and before that, an associate editor at FierceBiotech.

The Gene Drive Files: Who is in charge of bioengineering research?

Source: <http://www.homelandsecuritynewswire.com/dr20171204-the-gene-drive-files-who-is-in-charge-of-bioengineering-research>



Dec 04 – Over [1,200 emails](#) released under open records requests reveal that the [U.S. military is now the top funder](#) and influencer behind a controversial genetic extinction technology known as “gene drives” – having pumped \$100 million into the field. The trove of emails additionally sheds light on a \$1.6 million dollar [lobbying operation](#) paid for by the Bill and Melinda Gates Foundation.

ETC Group, an Ottawa, Canada-based nonprofit monitoring the ecological impact of new technologies, especially as they affect poor and vulnerable communities, [reports](#) that Emerging Ag, a private PR firm funded by the Gates Foundation, is working behind the scenes to make sure that an important UN advisory processes is peopled by with gene drive-friendly scientists, and has recruited independent academics and public officials into a private collaboration to counteract possible regulation of gene drives, including an effort to resist calls for an international moratorium. Some of those recruited entered into the UN discussions without divulging their conflicts of interest or the role that paid political consultants played in shaping their inputs (see “U.S. defense agencies dominate federal synthetic biology research,” [HSNW, 21 September 2015](#)).

The files cast a spotlight on the role of the U.S. Defense Advanced Research Projects Agency (DARPA) as the key funder now accelerating gene drive development. For example, DARPA is now revealed as the major financial backer of efforts to develop gene drive



mammals (mice) which are led by a U.S. environmental NGO, although DARPA has no biodiversity conservation mission, raising questions about the defense agency's intent.

"Gene drives are a powerful and dangerous new technology and potential biological weapons could have disastrous impacts on peace, food security and the environment, especially if misused," said Jim Thomas of ETC Group. "The fact that gene drive development is now being primarily funded and structured by the U.S. military raises alarming questions about this entire field."

"There is no transparency about who is influencing decisions about the future of global ecosystems, people's livelihoods, or our food system," said Dana Perls of Friends of the Earth, U.S. "Gene drives could have profound ecological, health and socio-economic impacts, and the emails reveal a secretive attempt to game the system by gene drive proponents aiming to minimize regulations and oversight."

"In response to this news that the integrity of technical processes under the Convention on Biological Diversity (CBD) may have been compromised by Gates-funded political consultants, civil society groups will urgently raise the need for better disclosure of interests within a framework for addressing conflict of interest at the CBD," said Lim Li Ching of Third World Network.

"Mosquitoes containing gene drives are being proposed for malaria control in Africa. While claiming potential health benefits, any application of such powerful technologies should be subject to the highest standards of transparency and disclosure. Sadly, this doesn't appear to be the case. Releasing risky GM organisms into the environments of these African countries is outrageous and deeply worrying," said Mariam Mayet, Executive Director of The African Center for Biodiversity.

(For more on the current state of synthetic biology, see: "Synthetic biology and bioengineering: Opportunities and risks," [HSNW, 27 November 2017](#); "Identifying vulnerabilities posed by synthetic biology," [HSNW, 25 August 2017](#); and Eric van der Helm, "Biosecurity and synthetic biology: it is time to get serious," [HSNW, 1 September 2017](#)).

Information revealed in the Gene Drive files includes:

- ◆ The U.S. Defense Advanced Research Projects Agency (DARPA) is reported to have given approximately \$100 million for gene drive research, \$35 million more than previously reported. If confirmed, DARPA appears to be the largest single funder of gene drive research on the planet.
- ◆ Emerging Ag, a privately-held public relations firm, received [over \\$1.6 million](#) from the Bill and Melinda Gates Foundation to work on gene drive topics and to focus on exerting influence on the United Nations Convention on Biological Diversity (CBD), the key body for gene drive governance. Following calls in 2016 for a global [moratorium](#) on the use of gene drive technology, the CBD sought input from scientists and experts in an online forum. According to the Gene Drive Files, Emerging Ag recruited and coordinated over 65 experts, including a Gates Foundation senior official, a DARPA (Defense Advanced Research Project Agency) official, and government and university scientists, in an undercover attempt to flood the official UN process with their coordinated inputs.
- ◆ The attempt to covertly influence the UN process online centrally involved three members of an associated UN expert committee (The Ad Hoc Technical Expert Group on Synthetic Biology): Dr Robert Friedman of the J Craig Venter Institute, Dr. Todd Kuiken of North Carolina State University and Professor Paul Freemont of Imperial College London. Two of these are from institutions that together received over \$100 million in U.S. military and other funds expressly to develop and test gene drive systems. Dr Kuiken served as "stakeholder engagement" lead for a Gene Drive development project. The Expert committee meets this week in Montreal, Canada.
- ◆ The secretive JASON group of military advisors have undertaken two classified studies on genome editing and gene drives at the request of the U.S. government. The gene drive study, which included input by a Monsanto executive, focuses on hostile use of gene drives and use of gene drives in agriculture.
- ◆ DARPA is revealed to be funding a high-profile U.K. team of researchers targeting African communities with gene drive mosquitos. This funding was not previously made public.
- ◆ The files reveal how far along the two leading gene drive teams (Target Malaria for the U.K. and GBIRD, based in North Carolina) have proceeded toward building gene drive organisms and are preparing for open field trials, including steps to select test sites in



Australia, New Zealand, Burkina Faso, Uganda, Mali and Ghana, and to create government and community acceptance of the use of gene drives in key testing sites.

The Gene Drive Files may be accessed at: <http://genedrivefiles.synbiowatch.org>. The Gene Drive Files consist of records recently released in response to U.S. and Canadian open records requests. Also see letter from civil society to the Convention on Biodiversity Executive Secretary: "[Addressing conflict of interest issues in the CBD, its Protocols and subsidiary bodies](#)," published 4 December 2017.

— Read more in "[Gates Foundation Paid PR Firm to Secretly Stack UN Expert Process on Controversial Extinction Technology](#)"; "[Gene Drive Files Expose Leading Role of US Military in Gene Drive Development](#)"; "[Reckless Driving: Gene drives and the end of nature](#)"; "[The Case for a Global Moratorium on Genetically-engineered Gene Drives](#)"

Limited global risk of Madagascar's pneumonic plague epidemic

Source: <http://www.homelandsecuritynewswire.com/dr20171204-limited-global-risk-of-madagascar-s-pneumonic-plague-epidemic>

Dec 04 – Mathematical models have proven the risk of the on-going pneumonic plague epidemic in Madagascar spreading elsewhere in the world is limited, with the estimated number of exported cases staying below 0.1 person in each country between 1 August and 17 October.

The study also estimated the epidemic's basic reproduction number, or the average number of secondary cases generated by a single primary case, at 1.73. The case fatality risk was 5.5 percent. This was the world's first real-time study into the epidemiological dynamics of the largest ever pneumonic plague epidemic in the African nation. The study employed several mathematical models.

Hokudai University [notes](#) that Madagascar has seen a surge in pneumonic plague cases since August 2017; **reportedly 2,217 people were diagnosed positive and there were 113 fatal cases by 14 November.** The epidemic prompted United Nations bodies, including the World Health Organization and UNICEF, and major nongovernmental organizations such as Doctors Without Borders to send relief to the nation. It is one of the largest epidemics in Madagascar since the late nineteenth century, when pneumonic plague was imported from abroad.

Pneumonic plague, which is the most severe form of plague caused by the bacterium *Yersinia pestis*, can be transmitted between people through breathing airborne droplets or through contact with the patient's bloody sputum. The severe lung infection has a high mortality rate,

but it can be cured if treated with antibacterial drugs at an early stage.

Several epidemiological research projects on this form of plague were conducted by using mathematical models. They made indexes based on past data of major epidemics to objectively and quantitatively clarify transmission dynamics of the disease. But there had been few real-time, practical analyses of on-going major epidemics, the results of which were released quickly for the benefit of society. The research team led by Professor Hiroshi Nishiura of Hokkaido University analyzed the Institut Pasteur de Madagascar's epidemiological bulletin regarding confirmed and suspected cases of pneumonic plague between 1 August to 21 October to conduct real-time statistical analysis. The team incorporated reporting delays—time lags between the onset of a disease and the reporting of cases—in the mathematical modeling to calculate a more reliable basic reproduction number of 1.73. Reporting delays were estimated at 6.52 days on average.

The researchers used U.N. World Tourism Organization data on Madagascar's inbound and outbound travel volumes to estimate the risk of the epidemic spreading to other nations. The risk of international spread anywhere in the world was found to be very low, staying below 0.1 person for the 78 days between 1 August and 17 October.



The team's real-time estimates have been proven mostly correct so far. "Unlike the Zika virus epidemic that internationally spread from South America to other nations, the overall magnitude of the ongoing pneumonic plague epidemic in Madagascar is very limited. Our finding objectively endorses the notion of the World Health Organization to recognize the risk of international spread as very low," says Hiroshi

Nishiura. The team plans to continue researching the plague epidemic in Madagascar, where the notification of new cases still continues.

Hokudai says that the team, using similar strategies, previously predicted [the risks of local and international transmission of the Zika virus in 2016](#) as well as [the peak of the cholera epidemic in Yemen](#) earlier this year.

— Read more in Shinya Tsuzuki et al., "Dynamics of the pneumonic plague epidemic in Madagascar, August to October 2017," *Eurosurveillance* (16 November 2017).

The Bioterrorism Threat

By David Oliver

Source: <http://www.cbrneportal.com/the-bioterrorism-threat/>



Dec 05 – Bioterrorism refers to the malicious use of bacteria, viruses or biological toxins, to threaten or cause harm to humans, animals or agriculture, and there is a number of terrorist groups demonstrating an interest and intent to use biological materials as weapons. There are four categories that would be considered for a biological weapon; aerobic bacteria, anaerobic bacteria, viruses and biological toxins. These weapons have a significant fear factor, but in reality would need immense preparation if a mass casualty outcome were desired. The materials are often available, but the difficulty is to have a reliable delivery mechanism.

However, illicit development of the biological content of a weapon can be easily hidden which makes early detection by counter terrorism organisations very difficult. The technology required could be 'low tech' compared to the requirements for a chemical weapon. For example, ricin, which can be found in castor beans, is easily extractable without the need for specialist equipment. There is a significant difference in the scale of effort required when it comes to the activities of the state versus those of non-state actors. The terrorist's goal with the use of these weapons is to create fear and expose the inability of the targeted government to cope with the situation. Transferable micro organisms such as smallpox, Ebola and plague can present the challenge of spreading beyond the initial target group and the further impact on additional waves of infected victims when chemical and radiological weapons do not present this possibility. Small pox has been eradicated since 1980 and only two samples are known to exist, one with the Russian Government and the other with the US Government and it is extremely unlikely that a non-state actor could access these last remaining samples.



However, the World Health Organisation (WHO) has stated that 50kg of weapons-grade B anthracis spores released in an aerosol attack will kill 125,000 people in a city of 500,000 inhabitants. To make an “effective” bio-weapon, the anthrax has to be prepared in a way that will make it hang in the air from an aerosol, in sufficient quantities that it can be breathed in and cause disease. Loading it on to a fine powder could do this but the powder itself would have to be treated so that it is electrically neutral, does not stick to surfaces and stays airborne for longer.

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

David Oliver is a defence photo-journalist for more than 30 years, and member of the Independent Defence Media Association (IDMA) and the European Security and Defence Press Association (ESDPA). David is the author of 18 defence-related books, and is former IHS Jane's consultant editor and a regular correspondent for defence publications in the UK, USA, France, Poland, Brazil and Thailand.

Attack on life: biothreats in the background

By Andy Oppenheimer

Source: <http://www.cbrneportal.com/attack-on-life-biothreats-in-the-background/>

Dec 05 – With Daesh on the retreat in the Middle East, the threat to the West from returnees and homegrown radicalised advocates is persistent and growing. So is their M.O. for attacks: from guns and bombs to vehicles and – it is feared – a possible incipient capability in CBRN, having already used chlorine and mustard in dozens of IEDs Daesh have laid in occupied areas of Iraq and Syria. Among the CBRN panoply of threats, bioterrorism lurk in the background of priorities for prevention.

Food and water – the bases of life – have long been feared to be terrorist targets, although documented and fully verified instances are less common than biological warfare launched by nation states.

Threats from Daesh

In April 2016 a plastic bag full of excrement, animal testicles and explosives was found on Mohamed Abrini – the so-called “man in the hat” who fled following the suicide bombings he perpetrated at Brussels airport and Maelbeek subway station on 22 March, killing 32 and injuring 270. Police were warned of the contents of the plastic bag to prepare them to avoid infection while they were hunting down Abrini.

According to Dr Amesh Adalja of the University of Pittsburgh Medical Center for Health Security: “such crude preparations hearken back to... when warriors would coat their spears and swords in animal excrement to heighten the chance of a post-traumatic infection.” In the Vietnam War the Vietcong placed stakes dubbed Punji sticks laden with faeces to impale and infect US troops with faecal bacteria.

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

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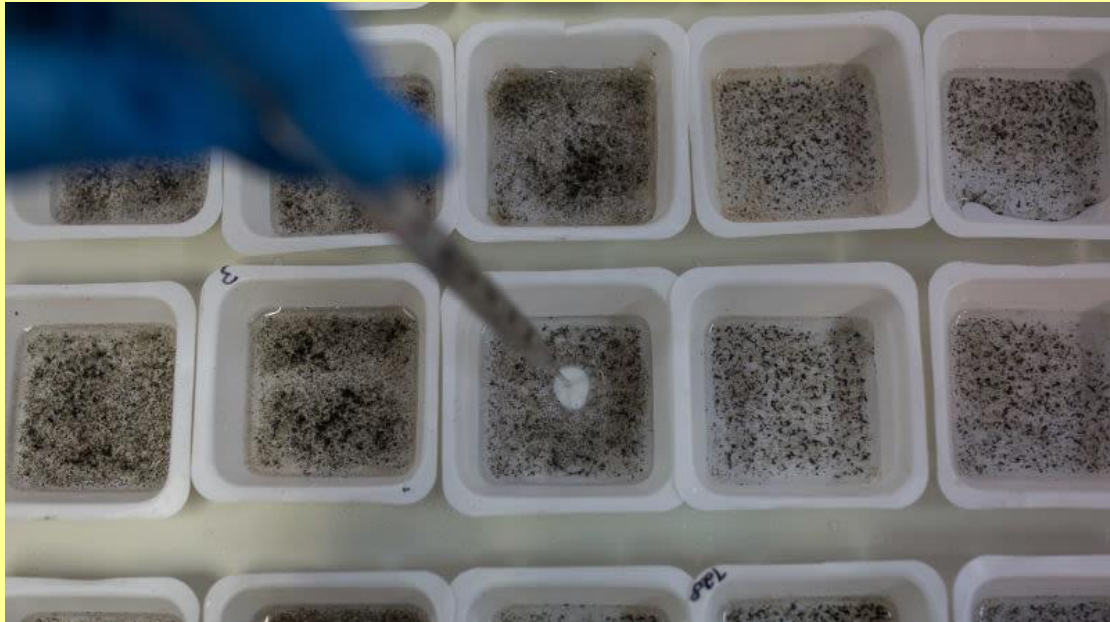
WHO guidance for surveillance during an influenza pandemic

Source: http://www.who.int/influenza/preparedness/pandemic/WHO_Guidance_for_surveillance_during_an_influenza_pandemic_082017.pdf?ua=1



Why DARPA Is Investing Big in Gene Drives

Source: <https://gizmodo.com/why-darpa-is-investing-big-in-gene-drives-1821028638>



One day scientists could use technology like gene drive to engineer away pests like mosquitoes. IMAGE: Getty Images

Dec 05 – A powerful and controversial new genetic engineering technology called a [gene drive](#) offers the potential to drastically reshape our world by overriding natural selection. And the US military's research arm is one of the technology's biggest research funders.

It's no secret that the Defense Advanced Research Projects Agency has its eye on gene drive technology. Last year, the agency [launched a program](#) aimed at developing a sort of Ctrl-Z function for gene editing that would allow scientists to undo their genetic work should they make an unfortunate mistake and better understand gene editing technologies' function. In July, [DARPA announced](#) seven research teams that would be the recipients of a total \$65 million in grants, with gene drives one of the major focuses of the research.

DARPA's interest in gene drives—and what exactly the sometimes secretive agency plans to do with them—is [making headlines](#) again this week after an anti-gene drive advocacy group [published a trove](#) of emails from gene drive researchers obtained through a Freedom of Information Act request. The emails come as a United Nation committee [meets this week](#) in Montreal to discuss, among other things, how to

address gene drives at the UN's Convention on Biological Diversity next year in Egypt.

The involvement of the US military in such a technology has understandably raised concerns. A [gene drive](#) works by overriding natural selection's typical 50-50 mix, ensuring that a desired trait introduced by genetic engineering more efficiently spreads through a wild population. Among other things, this technique might be used to engineer invasive pests to breed themselves out of existence. Earlier this year, [New Zealand signaled](#) it was interested in the gene drives as a potential solution to its problem with invasive species (pending much, much more research of course). If it works outside of lab environments, the gene drive could eventually become a massively powerful technology, allowing for the potential of genetically altering an entire species.

The ETC Group, which published the emails, said that the rapid development of this technology is a concern it hoped to shed light on.

"The speed with which those developments are scaling up is often presented in terms of carefully crafted speculative conservation and health benefits



while the overwhelming military interest driving these developments, while not hidden, has been very much downplayed,” Jim Thomas, the group’s head, told Gizmodo via email.

DARPA, though, has not been shy about its real interest in gene drive technology—and that it’s not conservation. In fact, the agency even seems to share some of the ETC Group’s concerns.

“The science of gene editing, including gene drive technology, has been advancing at a rapid pace in the laboratory,” DARPA told Gizmodo via email. “These leaps forward in potential capability, however, have not been matched by advances in the biosafety and biosecurity tools needed to protect against potential harm if such technologies were accidentally or intentionally misused, nor does data exist on how such technologies would actually function in the far more complex real world.”

DARPA is afraid of what might happen if something goes awry, whether nefariously or by accident. And it’s not the only party voicing that concern. Last month, one of the pioneering scientists behind the prospect of using CRISPR to create a gene drive published [what he called a “mea culpa”](#) arguing that the technology is nowhere ready for primetime. He said safe guards are needed to prevent it from spreading uncontrollably in the wild.

The seven teams that DARPA is funding under its Safe Genes program are conducting fundamental research. A team at The Broad Institute is developing the means to switch on and off genome editing, including the control of

gene drives in mosquitos. A Massachusetts General Hospital team is looking at better ways to measure the on-target and off-target effects of gene editing, with a focus also on a mosquito gene drive. An MIT team is looking at how to geographically limit the spread of a gene drive and potentially reverse it. Five of the funded teams are working directly on biosafety and biosecurity measures for gene drive technologies, the other teams focused on gene editing more broadly.

The concern, of course, is that a military organization like DARPA could turn around and take those technologies for offensive measures—maybe, say, a gene drive that destroys an enemy’s crops. It’s potentially scary technology. It’s easy to let the imagination run wild. In the released emails, it’s clear that the funded scientists are aware of the image of DARPA as just the kind of shadowy government organization that would do such a thing.

ETC Group argues that DARPA’s crime is that it hasn’t been transparent enough. (For one, it claims that the agency is actually spending \$100 million on the technology based on a comment made at [a launch event](#) for the program. DARPA says that is a misinterpretation of the statement and the original \$65 million figure is correct.)

What is certainly clear from the documents, though, is that DARPA has a hand in most of the significant research into gene drives in the country. And that the military takes very seriously the potential for a world-altering technology to become a serious threat.

Does Brain Inflammation Cause Suicidal Thoughts?

By Michelle Schoffro

Source: <http://www.care2.com/greenliving/does-brain-inflammation-cause-suicidal-thoughts.html>

Dec 07 – **It’s easy to think there is something mentally wrong with us if we experience suicidal thoughts, but new research shows that there may be a physiological reason for those detrimental thoughts and the major depression behind them.**

According to new research in the Jan 1, 2018 edition of the medical journal [Biological Psychology](#) found a link between brain inflammation and suicidal thoughts. While brain inflammation has previously been linked to depression, this study goes further in linking it to suicidal thoughts and major depression.

Previously there had been little progress in our understanding of why people have suicidal thoughts or tendencies. That lack of information may easily cause people to fault themselves, wrongly assuming that they are just too weak to cope with the things in their life. But the new study suggests that the self-destructive thoughts are not all in their head, but in their brain. And, the potential causes or aggravators of brain inflammation may be the real problem.



Sadly, more than [40,000 people commit suicide](#) in the United States annually, making [suicide the 10th leading cause of death in America](#), so anything that helps reduce the suffering that causes people to take their own life is worth further exploration.

So what exactly causes brain inflammation? Well, the research is still fairly new so we can't say for sure what might be behind the inflammation that causes suicidal thoughts, but we do know that substances known as [neurotoxins](#) (toxins that damage the brain and nervous system) can cause or aggravate brain inflammation.

There are many different neurotoxins, with many more being unleashed on an unsuspecting public, largely because the regulatory agencies have grandfathered so many chemicals without any research to determine their safety and now merely require companies to submit their own (often falsified) research to ensure the public's safety. As a result, many pesticides, flame retardants and other chemicals have been allowed in consumer products, foods and household building materials. **While there are countless neurotoxins that may be contributing to brain inflammation, here are some common ones:**

Chlropyrifos

Dow Chemical Corporation began marketing this chemical as an insecticide in 1965 and it soon became the most popular insect killer in American homes. By 1995 the Environmental Protection Agency fined the company a meagre \$732,000 for concealing over [200 reports of poisoning](#) linked to the chemical, which is barely a slap on the wrist to a company with Dow's revenues. It is still in widespread use on food crops, as well as in greenhouses and golf courses. Choose organic food and bedding plants as much as possible and search out pesticide-free golf courses if you must have your golf fix.

PBDEs

Known as polybrominated diphenyl ethers, PBDEs are flame retardants that are in widespread household use, particularly on furniture and mattresses. While the industry that makes the chemical continues to cite their benefits against fires without any recognition of the damage they can cause, which could more than make up for their flame retardant properties. The chemicals have been linked to brain damage, including [IQ and attention span losses](#). Choose organic mattresses and furniture, free of flame retardants, as much as possible. Also, limit your consumption of fish like rainbow trout and Atlantic salmon, as well as sausage, cheese, butter and milk since PBDEs have been found in these foods.

Lead

Not technically a chemical, lead is a heavy metal that has brain damaging effects. It is found in canned food, paint, water pipes, colored glossy newsprint, ceramic dishes, cigarette smoke, vehicle emissions and soil. Food cooked in water that has high lead absorbs the metal. It has been found to be linked to a range of brain disorders including learning disabilities, heightened aggression, attention deficit disorder, dementia and Alzheimer's. Its neurotoxic effects could cause or aggravate brain inflammation. It can be difficult to avoid lead, but do your best to avoid canned goods and cigarettes as much as possible.

Toluene

Found in solvents, paints, nail polish, perfumes, colognes, laundry products, fabric softeners and other scented products, toluene (also known as methylbenzene) is a well-established neurotoxin. Choose unscented, natural cleaning products from your local health food store. Avoid perfumes, colognes and fabric softeners altogether. Forego nail polish or choose toluene-free options.

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To Strengthen Public Health, Look to Prisons

Source: <http://www.pewtrusts.org/en/research-and-analysis/analysis/2017/11/30/to-strengthen-public-health-look-to-prisons>

Nov 30 – Every state strives to improve the health and wellness of its residents, in part by seeking to free communities of [preventable illness](#). States aim to avoid and control the spread of communicable diseases by rapidly identifying and addressing new cases of infection, supporting disease elimination, and thwarting emerging and re-emerging health threats.

The health care that the prison population receives is a critical component of states' public health strategies. Those in state prisons have [high rates of infectious disease](#), and nearly all of these individuals [eventually return](#) to their communities. Prisons also receive a continuous flow of staff and visitors, contributing to this interconnectedness.

While these high prevalence rates and the close confines of prisons present a challenge, they also offer a public health opportunity on which states can capitalize by screening, diagnosing, and treating these communicable diseases in a group that is frequently hard to reach in the community. "Public safety is public health; public health is public safety," [according](#) to former U.S. Surgeon General Richard H. Carmona. Similarly, the World Health Organization has [said](#) that "good prison health is essential to good public health" and that "good public health will make good use of the opportunities presented by prisons" to control the spread of infectious diseases.

Hepatitis C

The United States is [grappling](#) with an epidemic of opioid overdoses, misuse, and dependence. In addition to prescription drugs, illicit intravenous opioids such as heroin, fentanyl, and carfentanil are having devastating effects on families and communities.

An example is the spike in hepatitis C, which is spread primarily through contact with the blood of an infected person, typically by sharing needles or other injection equipment. The incidence rate of the hepatitis C virus in the United States began skyrocketing in 2011, [more than doubling](#) from 2010-15. This increase is largely [attributable to injection drug use](#), according to the Centers for Disease Control and Prevention (CDC).

The disease, which can lead to serious liver problems, now causes about [19,000 deaths](#) a year—more than 60 other infectious diseases reported to the CDC combined. States hit hardest by hepatitis C include Indiana, Kentucky, Maine, Massachusetts, New Mexico, Tennessee, and West Virginia. Not surprisingly, all seven have recorded a statistically significant increase in [drug overdose deaths](#) in recent years.

Also unsurprising is that hepatitis C is especially [prevalent](#) in prisons, making them an [important setting](#) for preventing and treating the disease, and ultimately curbing its transmission in the community.

Sexually transmitted diseases

Progress in the nation's fight against sexually transmitted diseases (STDs) has ["unraveled,"](#) according to the CDC. In 2016, more cases—combining those of chlamydia, gonorrhea, and syphilis—were reported in the United States than ever before. This puts Americans at greater risk of severe and often irreversible [health consequences](#), including infertility, life-threatening pregnancies, [chronic pain](#), and susceptibility to HIV. It also [costs](#) the country's health care systems billions of dollars a year.

Like hepatitis C, rates of STDs are [high](#) in correctional facilities. Effective screening and treatment policies and procedures play a [key role](#) in reducing transmission inside and outside their walls.

Tuberculosis

The positive and negative spillover effects of correctional health care on communities, depending on the nature and quality of the care, have been substantiated by a growing body of evidence. Management of tuberculosis (TB) provides an example of the positive role correctional health care can play. Because the incarcerated population is at an [elevated risk](#) for TB, the CDC—and before it, the Advisory Council for the Elimination of Tuberculosis—identified correctional facilities as a [critical setting](#) for detection and treatment. Actions by correctional staff to



screen, contain, monitor, and collaborate with public health partners paid off. The number of TB cases in correctional facilities [fell by 66 percent from 1994-2014](#), contributing to the U.S. rate hitting a provisional [record low](#) in 2016.

Pew research on quality monitoring and care continuity

Despite the critical place prisons have in improving public health, state officials often lack the information they require to build and maintain high-performing prison health care systems that proactively make the most of diagnostic and treatment opportunities and avert the harmful and expensive consequences of inattention or missteps. Moreover, with prisons and communities constantly reintegrating returning residents, the public health effects of even well-designed and -executed health programs delivered inside facilities can be undermined if necessary treatment is not continued outside.

A [first-of-its-kind report](#) by The Pew Charitable Trusts details whether and how states monitor the quality of care they provide, as well as steps they take to facilitate seamless care continuity upon release. This research offers practical information and insights that policymakers and administrators can use to help optimize policies and programs for incarcerated individuals, state residents, and taxpayers.

***Matt McKillop** is an officer for Pew's state and local fiscal health project. He manages new research for Fiscal 50: State Trends and Analysis, an online resource that helps policymakers gain insights into fiscal, economic, and demographic trends affecting their states. McKillop also leads Pew's research on state and local correctional health care. He examines states' and localities' spending to care for people in prisons and jails; monitoring of health care quality; and promising practices for facilitating continued care after they are released. This work helps policymakers assess and improve their correctional health care systems. Before joining Pew, McKillop led advocacy and community organizing campaigns for So Others Might Eat, a nonprofit organization that serves poor and homeless residents of the District of Columbia. He holds a master's degree in public policy from George Washington University and a bachelor's degree in political science from Kalamazoo College.*

Oklahoma border town leery of planned bioterror test

Source: <http://www.foxnews.com/us/2017/12/08/oklahoma-border-town-leery-planned-bioterror-test.html>

Dec 09 – The U.S. Department of Homeland Security announcement that it was conducting biosecurity drills in the Oklahoma farming town of Newkirk was tucked among the local weekly newspaper's classified ads.



The notice mentioned a "low level outdoor release of inert chemical and biological simulant materials" and directed people to a science-heavy website explaining why the agency chose the community.

The Newkirk Herald Journal thought it should be front-page news, and its subsequent article sent shockwaves through the town of about 2,300 people, leaving them wondering, "Why here?" and questioning the

government's assurances about the safety of the chemicals it plans to use during tests that will gauge how authorities might respond to a bioterror event.

"They're trying to tell us it's 100 percent safe," Brian Hobbs, a 40-year-old construction worker who's helped rally like-minded residents. "It leaves people with an uneasy feeling. I don't want to become the testing ground for the Department of Homeland Security."



About 9,000 wary residents of Newkirk and neighboring communities, including Arkansas City, Kansas, just across the border, have signed a petition seeking more details from the federal agency. Many residents want guarantees from the government that none of the chemicals will adversely affect nearby cropland, a creek that flows into the Arkansas River or the massive Kaw Lake watershed. Dozens have shown up at community meetings demanding answers.

Newkirk, about 100 miles (161 kilometers) northwest of Tulsa, near Oklahoma's border with Kansas, is dotted with churches and modest homes with well-tended yards. A grain elevator at the local co-op is the tallest downtown building. Some here trace their lineage to the Oklahoma Land Rush of 1889, when the area was opened up to white settlement.

"A lot of families have grown up here; it's truly home. That's why everybody's scared," said Newkirk Herald Journal editor Cody Griesel.

The tests are tentatively set for winter and summer 2018, with no specific dates from the government.

The test area is the abandoned Chilocco Indian School campus just outside of town.

Scientists say the cluster of buildings at the site best resemble single-family homes and commercial buildings in any U.S. city. The government said the chemicals will be used to measure the amount of material that penetrates structures in the event of a bioterrorism event, and how authorities can best clean it up in the event of an attack.

The chemicals to be used include **titanium dioxide**, which is common in sunscreens and cosmetics; **fluorescent brightener**, found in laundry detergents; and **urea**, a compound found in urine and fertilizers. The chemical that has probably caused the most worry among residents is called **DiPel**, a biological insecticide that's been commercially available since the 1970s and is approved for use in organic farming.

Lloyd Hough, the Homeland Security scientist who's overseeing the testing, insists the product is widely used and isn't harmful to humans or wildlife. Hough insists nothing is being kept from residents, and he noted that the government has more time to follow up on their concerns.

"It's not like we're going to show up sometime in the spring and start spraying everywhere," he said.

Kitty Cardwell, a professor at Oklahoma State University and expert in agricultural biosecurity who has been involved in other Homeland Security projects, suggested that some residents may be worried because of the government's involvement in the testing.

"When you hear 'Homeland Security,' it sounds scary ... like quasi-military people running around in hazmat suits — that seems scary; it seems like a bad science fiction movie," said Cardwell, who added that DiPel is "only bad news if you're a caterpillar."

Those assurances aren't good enough for 59-year-old Alan Newport.

"The thing that really set me off is when they say it's an inert chemical," said Newport, who works for an agriculture trade publication. "It doesn't mean it's safe."

Why Gulfstream jets are the popular choice for MEDEVAC

Source: <https://www.defenceiq.com/defence-technology/white-papers/why-gulfstream-jets-are-the-popular-choice-for>





A 3D-printed, solar-powered lab-in-a-box could change how we combat disease outbreaks

Source: <https://qz.com/1152790/fieldlab-is-a-3d-printed-solar-powered-medical-diagnostics-lab-in-a-box/>

Dec 11 – The desperate need for mobile labs in Africa was made clear during the 2014 Ebola outbreak in West Africa. Testing for Ebola [could take up to five days](#), as symptoms that [initially presented as flu or malaria](#) quickly turned deadly. Mobile labs sped the diagnostics process up to mere hours, but were only in place thanks to donations from foreign governments or agencies.

Up until now, [mobile labs](#) have come in the form of container-based or truck mounted labs, which are difficult to deploy to areas where roads are poor, while powering these containers requires fuel or a generator. During the Ebola outbreak, innovations were rapid, with more [compact mobile labs](#) being developed to address Ebola's hyper-contagiousness.

Now, a combination of simple carpentry, 3D-printing and sheer innovation has led to a breakthrough in medical testing in remote areas across the continent.



FieldLab is a solar-powered lab-in-a-box created by two grad students at Rhodes University in South Africa. The FieldLab can be carried like a briefcase and is designed specifically to address the constraints facing medical diagnostics in Africa: affordability, mobility and robustness.

The FieldLab's simplicity belies its ability to handle molecular biology in harsh conditions. The portable lab's 3D printed

equipment is able to test for viruses and bacteria, testing samples in much the same way as a laboratory in a building. The carry-on lab was specifically designed for medical workers travelling to remote or conflict ridden areas.

The FieldLab is able to carry out DNA analysis, centrifugation (in which fluids in the sample are separated) and offer a visual analysis of the result. The lab is modular, and can accommodate additional parts like a microscope and a [thermocycler](#) (which amplifies DNA segments).

The kit [will cost](#) at most 20,000 rand (less than \$1,500), which is about a tenth of the cost of lab-based equipment, according to the creators. Additional modifications or attachments will cost about 10,000 rand (\$730) more.

Creators [Lucas Lotter and Charles Faul](#), both masters students at Rhodes University, have already raised one million rand (\$73,000) through support from the [South African government](#), Unicef and others. The funding will ensure that the FieldLab is commercially available in 2018.



North Korea Testing ICBMs Loaded With Anthrax Bio-Agent: Report

Source: <http://www.ibtimes.com/north-korea-testing-icbms-loaded-anthrax-bio-agent-report-2630715>

Dec 20 – **North Korea began tests to load anthrax onto its intercontinental ballistic missiles**, a report said Tuesday.

[Bloomberg](#) reported Japan's Asahi Shimbun newspaper cited an unidentified person connected to South Korea's intelligence services saying the testing involved making sure



the anthrax was capable of surviving the high temperatures generated when the missiles re-enter the Earth's atmosphere.

According to the [Centers for Disease Control and Prevention](#), the deadly infection-causing bacteria would be one of the biological agents most likely to be used in case of a bioterrorist attack. Reports by South Korea previously stated the North was capable of producing biological agents such as anthrax and smallpox that could be used as a part of biological warfare.

The North was also thought to be among the world's largest possessors of chemical weapons, ranking third after the United States and Russia, according to the [Nuclear Threat Initiative](#) (NTI), a non-profit organization aiming at protecting lives and the environment from nuclear, biological, radiological, chemical, and cyber dangers. **In 2012, the South Korean Ministry of National Defense estimated North Korea possessed between 2,500 and 5,000 metric tons of chemical weapons.**

Although North Korea is party to both the Biological and Toxin Weapons Convention and the Geneva Protocol, it is suspected of maintaining an ongoing biological weapons program.

Several individuals including North Korean defectors as well as assessments by the U.S. and South Korean governments estimated the North began acquiring biological weapons as early as the 1960s, under the orders of Kim Il Sung.

The report by NTI also stated North Korea was capable of indigenously producing other agents of biological warfare including Variola major (smallpox), Francisella tularensis (rabbit fever), and Bunyaviridae Hantavirus (Korean hemorrhagic fever).

The report about the North's testing of anthrax came after the U.S. published its National Security Strategy, a [document](#) that said Pyongyang was "pursuing chemical and biological weapons which could also be delivered by missile."

"North Korea — a country that starves its own people — has spent hundreds of millions of dollars on nuclear, chemical, and biological weapons that could threaten our homeland," [the report said](#).

Rebecca Hersman, a former Defense Department deputy assistant secretary for countering weapons of mass destruction, was quoted in a Washington Post article speaking about the country's bio-weapon program: "North Korea is bad enough when you're talking about their nuclear and missiles program. But I think we ignore their chemical and biological programs truly at our own peril."

The threat of an impending war with North Korea intensified after the country's state television reported last month it launched a new intercontinental ballistic missile, Hwasong 15, which is a nuclear-capable weapon that could reach the entire continental U.S.

Secretary of State Rex Tillerson also announced a new international group Tuesday to increase the pressure on North Korea for a diplomatic solution to the global crisis over the regime's growing nuclear and ballistic missile programs.

Social media trends can predict vaccine scares tipping points

Source: <http://www.homelandsecuritynewswire.com/dr20171213-social-media-trends-can-predict-vaccine-scares-tipping-points>

Dec 13 – **Analyzing trends on Twitter and Google can help predict vaccine scares that can lead to disease outbreaks**, according to a study from the University of Waterloo.

In the study, researchers examined Google searches and geocoded tweets with the help of artificial intelligence and a mathematical model. The resulting data enabled them to analyze public perceptions on the value of getting vaccinated and determine when a population was getting close to a tipping point.

In the study, a tipping point represented the point at which vaccine coverage declines

dramatically due to spreading fear, which could cause large disease outbreaks due to a loss of population immunity.

"What this study tells us is that the same mathematical theories used to predict tipping points in phenomena such as changing climate patterns can also be used to help predict tipping points in public health," said Chris Bauch, a professor of applied mathematics at Waterloo. "By monitoring people's attitudes towards vaccinations on social media, public health organizations may



have the opportunity to direct their resources to areas most likely to experience a population-wide vaccine scare, and prevent it before it starts.”

Waterloo [says](#) that as part of their study, the researchers collected tweets that mentioned measles-mumps-rubella vaccine and classified their sentiment using artificial intelligence computer programs. They also collected data on measles-related Google searches. Their mathematical theory on vaccine scares predicted what kind of early warning signals they should observe in the data.

They found they were able to detect those signals in data from California before the 2014-15 Disneyland, California measles outbreak, which showed early warning signs of a tipping point two years before the outbreak occurred.

Their mathematical model also predicted how the Disneyland outbreak helped push California back from the tipping point by making parents more afraid of the disease than the vaccine.

“Knowing someone is a smoker cannot tell us for sure whether someone will have a heart attack, but it does tell us that they have increased risk of heart attack,” said Bauch. “In the same way, detecting these early warning signals in social media data and Google search data can tell us whether a population is at increased risk of a vaccine scare, potentially years ahead of when it might actually happen.

“With the ability to predict the areas where immunity is most at risk due to behavioral factors, we may be able to help eradicate diseases such as measles and polio.”

— Read more in A. Demetri Pananos et al., “Critical dynamics in population vaccinating behavior,” [PNAS](#) (11 December 2017).

Predicting pandemics: Global spread of hemorrhagic fever viruses

Source: <http://www.homelandsecuritynewswire.com/dr20171213-predicting-pandemics-global-spread-of-hemorrhagic-fever-viruses>

Dec 13 – As successive epidemics have swept the world, the scientific community has quickly learned from them about the emergence and transmission of communicable diseases. Epidemics usually occur when health systems are unprepared. During an unexpected epidemic, health authorities engage in damage control, fear drives action, and the desire to understand the threat is greatest. As humanity recovers, policy-makers seek scientific expertise to improve their “preparedness” to face future events.

Global spread of disease is exemplified by the spread of yellow fever from Africa to the Americas, by the spread of dengue fever through transcontinental migration of mosquitos, by the relentless influenza virus pandemics, and, most recently, by the unexpected emergence of Ebola virus, spread by motorbike and long-haul carriers. Other pathogens that are remarkable for their epidemic expansions include the arenavirus hemorrhagic fevers and hantavirus diseases carried by rodents over great geographic

distances and the arthropod-borne viruses (West Nile, chikungunya, and Zika) enabled by ecology and vector adaptations. Did we learn from the past epidemics? Are we prepared for the worst?

Springer [says](#) that the ultimate goal is to develop a resilient global health infrastructure. Besides acquiring treatments, vaccines, and other preventive medicine, bio-surveillance is critical to preventing disease emergence and to counteracting its spread. So far, only the western hemisphere has a large and established monitoring system; however, diseases continue to emerge sporadically, in particular in Southeast Asia and South America, illuminating the imperfections of our surveillance. Epidemics destabilize fragile governments, ravage the most vulnerable populations, and threaten the global community.

Pandemic risk calculations employ new technologies like computerized maintenance of geographical and historical datasets, Geographic



Information Systems (GIS), Next Generation sequencing, and Metagenomics to trace the molecular changes in pathogens during their emergence, and mathematical models to assess risk. Predictions help to pinpoint the hot spots of emergence, the populations at risk, and the pathogens under genetic evolution. Preparedness anticipates the risks, the needs of the population, the capacities of infrastructure, the sources of emergency funding, and finally, the international

partnerships needed to manage a disaster before it occurs. At present, the world is in an intermediate phase of trying to reduce health disparities despite exponential population growth, political conflicts, migration, global trade, urbanization, and major environmental changes due to global warming. For the sake of humanity, we must focus on developing the necessary capacities for health surveillance, epidemic preparedness, and pandemic response.

— Read more in Jean-Paul Gonzales et al., “Global Spread of Hemorrhagic Fever Viruses: Predicting Pandemics,” *Hemorrhagic Fever Viruses. Methods in Molecular Biology*, vol. 1604 (7 October 2017).

Bioelectronic “nose” detects food spoilage by sensing the smell of death

Source: <http://www.homelandsecuritynewswire.com/dr20171212-bioelectronic-nose-detects-food-spoilage-by-sensing-the-smell-of-death>



Dec 12 – Strong odors are an indicator that food has gone bad, but there could soon be a new way to sniff foul smells earlier on. As reported in [ACS Nano](#), researchers have developed a bioelectronic “nose” that can specifically detect a key decay compound at low levels, enabling people to potentially take action before the stink spreads. **It can detect rotting food, as well as be used to help find victims of natural disasters or crimes.**

When food begins to rot, the smell that we find repulsive comes from a compound known as cadaverine. That’s also the substance responsible for the stench of rotting bodies, or cadavers — hence the name. The compound is the result of a bacterial reaction involving lysine, which is an amino acid commonly found in various food products. ACS [notes](#) that a previous study has shown that a receptor in zebrafish has an affinity for cadaverine. To make this receptor in the laboratory, scientists have turned to *E. coli* as a host cell because it can easily produce



large quantities of proteins. But the production of this receptor in *E. coli* has been a challenge because it needs to be in a membrane. One way to do this is to make the protein in a bacterial cell and reconstitute it in nanodiscs, which are water friendly, membrane-like structures that the receptor can reside in. So, Seunghun Hong, Tai Hyun Park and colleagues wanted to see if they could put the receptor into nanodiscs to create a sensitive and specific detector for cadaverine.

The researchers successfully produced copies of the receptor in *E. coli* and assembled them into nanodiscs. The receptor-containing nanodiscs were then placed in a special orientation on a carbon nanotube transistor, completing the bioelectronic nose. During testing with purified test compounds and real-world salmon and beef samples, the nose was selective and sensitive for cadaverine, even at low levels. Additionally, the researchers say the detector could someday prove useful in finding bodies, since the compound is also produced when a person dies.

— Read more in *"Nanodisc-Based Bioelectronic Nose Using Olfactory Receptor Produced in Escherichia coli for the Assessment of Death-Associated Odor Cadaverine," ACS Nano (9 November 2017).*

Sydney man charged with allegedly discussing the supply of weapons of mass destruction with North Korea

Source: <http://www.smh.com.au/nsw/sydney-man-charged-as-agent-for-north-korea-20171216-h05ykl.html>

Dec 19 – **A 59-year-old Eastwood man has been arrested for allegedly acting as a broker and economic agent for the rogue North Korean regime.**

The man, Chan Han Choi, has been living in Australia for 30 years and came under surveillance earlier this year after a tip off from international law enforcement.

He is understood to be South Korean-born.

Australian Federal Police Assistant Commissioner Neil Gaughan said the man had been acting "to serve some higher patriotic purpose" to raise funds for the North Korean regime and, if his attempted transactions had been successful, could have raised tens of millions of dollars.

"This case is like nothing we have ever seen on Australian soil," AFP Assistant Commissioner Neil Gaughan said.

The attempted transactions related to sale of missile guidance systems and other missile componentry, and to the sale of coal, to third parties in Indonesia and Vietnam.

Prime Minister Malcolm Turnbull said he had been briefed by AFP commissioner Andrew Colvin on the "very, very serious matter".

He warned anyone thinking of assisting the rogue state that "the AFP will find you".

"North Korea is a dangerous, reckless, criminal regime threatening the peace of the region, it supports itself by breaching UN sanctions, not simply by selling commodities like coal and other goods, but also by selling weapons, by selling drugs, by engaging in cyber crime," Mr Turnbull said.

"It is vitally important that all nations work relentlessly to enforce those sanctions because the more economic pressure that can be brought on North Korea, the sooner that regime will be brought to its senses.

"The charges that are being laid are of the gravest nature, so I'll say no more about the facts of the case, obviously it will be dealt with in court."

Mr Choi has been charged with six offences, two under the *Weapons of Mass Destruction (Prevention of Proliferation) Act 1995*. The other four are under legislation enforcing UN and Australian sanctions against North Korea.

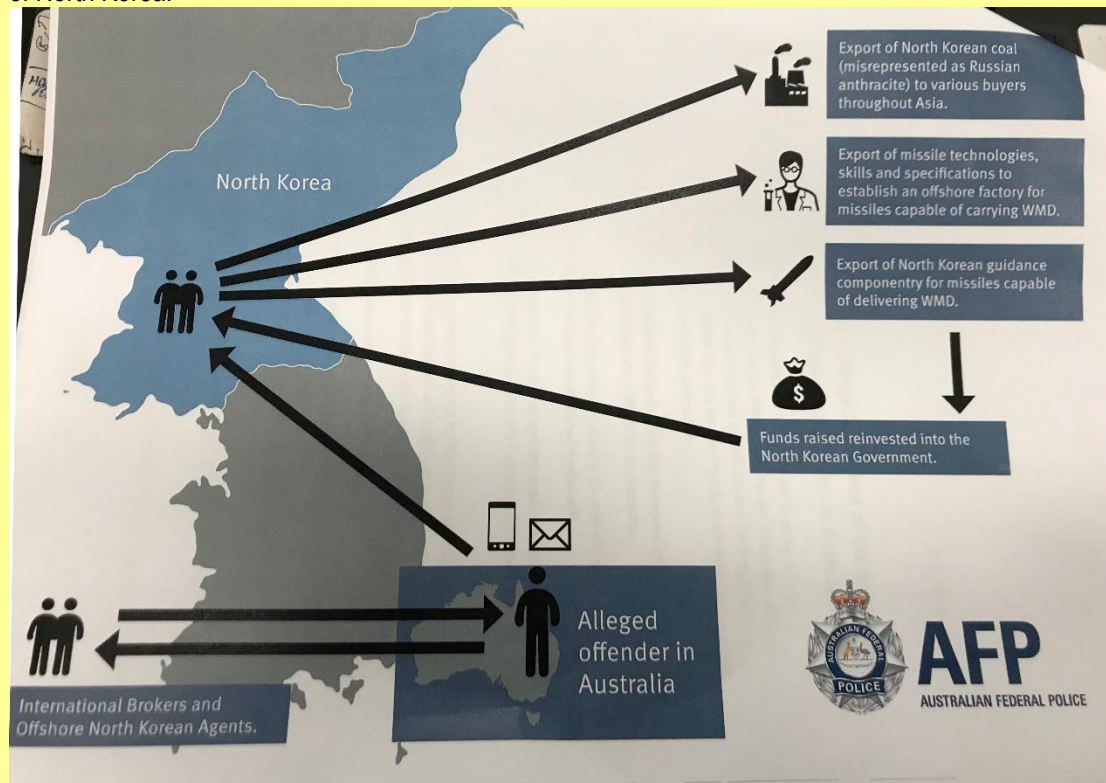
Mr Gaughan stressed that there had been no risk to the Australian public and that no weapons or missile componentry had been imported into Australia.

"This is black market 101," he said.

"We are alleging that all the activity occurred offshore, and was purely another attempt for this man to trade goods and services as a way to raise revenue for the government of North



Korea," he said. "This was his goal. His actions were all around trying to raise revenue for the government of North Korea."



He said it was believed the man had been in contact with high-ranking North Korean officials but gave no other details of how or when the man was recruited as a North Korean economic agent.

"I know these charges sound alarming. Let me be clear we are not suggesting there are any weapons or missile componentry that ever came to Australian soil, nor that we believed that we identified any immediate threat to the Australian community."

The allegation in relation to the missile componentry is that the man participated in discussions about the provision of the componentry, which assists in the guidance of ballistic missiles, from North Korea to other entities.

"This man was acting as a loyal agent for North Korea.

"The evidence suggests there had been contact with high-ranking officials in North Korea," he said.

However, Assistant Commissioner Gaughan said there was no evidence, and in fact there was evidence to the contrary, that any other foreign government officials were involved in the matter.

Rather, the charges related to "people trying to use the blackmarket as a way to get things they shouldn't get hold of and then also to receive revenue back in return.

"That's the same with the coal, and the oil and everything else we will be alleging, and also some gemstones and the like as well, it is all about making money for the North Korean government," he said.

Mr Choi was arrested following the execution of search warrants in Sydney on Saturday. The matter came before Parramatta bail court on Sunday. He did not apply for bail and did not appear in the courtroom.

Assistant Commissioner Gaughan said investigations were ongoing, and that the AFP was working closely with intelligence agencies and overseas law enforcement partners.

The man's activities were being investigated back as far as 2008, and it was possible other charges would be laid. He added: "There are relatives in Australia that we are currently speaking to and there are ongoing investigations in relation to those particular people."

Police will allege that the man provided services to a "weapons of mass destruction program" and discussed the sale of ballistic missile technology. They will further allege those discussions included the setting up of a "ballistic missile production facility", the supply of



missile construction plans and the provision of North Korean technical specialists for training others outside North Korea.

But Mr Gaughan would not name the potential partner to the missile componentry transaction.

"There are ongoing investigations in relation to that," he said.

In relation to the size of the transactions, or potential transactions, Assistant Commissioner Gaughan said: "There are some financial records that indicate well over half a million dollar transfer that we are aware of but we estimate that if these trades were successful we would be talking tens of millions of dollars."

North Korean Boats Could Be Bringing Spies, Bioterrorists, Refugees Into Japan

Source: <https://japan-forward.com/north-korean-boats-could-be-bringing-spies-bioterrorists-refugees-into-japan/>

Dec 19 – **"Are these really fishing boats, or are they spy ships?"**

Japan is enhancing coastal security amid the sudden increase this fall in the number of wooden vessels, believed to be of North Korean origin, drifting off the coast of Japan and making landfall along the



Japanese coast. This has all unexpectedly thrown into sharp relief Japan's unpreparedness to respond to North Korean infiltration or attack.

On December 9, the Hokkaido police arrested a 45-year-old ship captain and self-professed North Korean national and two other men. They were suspected to be the same crew which, also on a wooden North Korean vessel, made landfall in November on a tiny uninhabited island off the coast of Matsumae town in Hokkaido and stole a generator.

On December 8, a day before their arrest, the same three men had attempted to escape in waters off the coast of the port of Hakodate by cutting the ropes binding their vessel to a patrol boat. However, the patrol boat prevented the

North Koreans from escaping. The Hokkaido police, who had come to ask the men to submit to voluntary questioning, opted instead for a compulsory search in light of the possibility of further escape attempts.

There had originally been a 10-man crew onboard. The three men were arrested on the charge of collusion and theft of the generator, valued at some JPY650,000. The men shouted loudly and resisted at the time of their arrest by investigators. Once on land, the suspects were transported to Hokkaido police facilities inside the city of Hakodate. On board the ship were found a generator believed to be the one stolen from an emergency shelter on the uninhabited island, as well as a television and other items.

On December 9, Chief Cabinet Secretary Yoshihide Suga in Tokyo spoke of the recurring incidents of vessels believed to be of North Korean origin washing up along the Japan coast. It was his understanding, he said, that in actuality military-owned ships were also drifting ashore.

"Cognizant of the possibility, among others, that some of the people on these ships might be North Korean agents, the police, Self-Defense Forces, and coast guard are working in tandem to deal with this situation to the fullest extent," Suga emphasized.

Suga indicated that his remarks followed the discovery that the wooden vessel subjected to compulsory search in Matsumae, Hokkaido, on December 9 belonged to the "North Korean Military 854 Corps."



The entrance to the emergency shelter on the uninhabited island, intended for use by fishermen, was pried open. A television, refrigerator, rice cooker, small motorcycle, and solar panel used for the lighthouse perched atop the highest point of the island were all missing. Local fishermen were unable to conceal their surprise, saying that such a thing had never happened before.

In North Korea, the military is believed to be engaged also in farming, fishing, and other production activities—and they are not thought to be above theft either.

There were 28 confirmed cases in November of wooden vessels thought to be of North Korean origin drifting near or ashore Japan. According to Japanese coast guard statistics, November saw the most such cases of any month in the past four years.

The coast guard also reports that, as of December 4, there had been a total of 64 cases of vessels drifting near or onto the Japanese coastline in 2017. A total of 18 dead bodies, believed to be those of North Koreans, had been found onboard the ships or floating in the water nearby, and 42 other people had been recovered alive. There were 80 drifting-vessel cases in Japanese waters in 2013, 65 in 2014, 45 in 2015, and 66 in 2016.

Despite the increasing size of ocean waves going into November and December, it is thought that the “winter fishing battle” to secure food is what causes North Koreans to force simple vessels to operate under such impossible conditions.

Economic sanctions imposed by the international community are having an effect, which comes in addition to the chronic food shortage inside North Korea, deepening the already severe crisis in that country.

The November 24 edition of the *Rodong Sinmun* newspaper, the mouthpiece of the Workers’ Party of Korea, announced the results of the “winter fishing battle” in an article intended to encourage fishermen to greater action. The North Korean media calls fishing a “battle” and fishermen “warriors.”

The issue of vessels drifting ashore on the Japanese coast garnered widespread coverage on November 23, when a wooden vessel with eight crew members drifted ashore at Yurihonjo, in Akita prefecture. Speaking in Korean, the crew said that they had “come from North Korea” after being shipwrecked while out fishing. All eight wanted to be sent back to North Korea immediately.

According to the Japanese coast guard, the November 23 incident was the first time that a ship which had made landfall from North Korea had had any surviving crew members aboard since January of 2015. On November 24, the day after the ship was found in Yurihonjo, a vessel was discovered drifting off the coast of Oga city, also in Akita. There were eight dead bodies aboard the ship.

On November 27, ships were discovered off of the coasts of Fukaura town and Sai village, both in Aomori prefecture.

On the 29th, the ship mentioned above was discovered drifting off Matsumae, Hokkaido, with a crew of 10.

On December 2, a capsized vessel and two dead bodies were found along the shore of Sado city in Niigata prefecture.

On December 4, one dead body and some wooden debris were found off of Nikaho city in Akita prefecture. On the same day, three dead bodies were found alongshore Tsuruoka city in Yamagata prefecture.

The dead bodies found in Yamagata were wearing black sweaters and parkas. Two of the dead were wearing work clothes with badges on the left breast bordered in gold and bearing portraits of the late North Korean leader Kim Il-sung.

But were the dead men just fishermen? The fishing boat which drifted ashore in Akita was tied up on the night of November 23 along a breakwater near the Honjo Marina mooring facility, but by the morning of the 25th the vessel had disappeared. Prefectural police had been waiting for the weather to improve in order to inspect the boat’s cargo, but the vessel vanished and all the evidence was gone.

Responding to this situation, Akita Governor Norihisa Satake said, “Are these really fishing boats, or are they spy ships? Were there really only eight people aboard? We have got to be able to make a thorough investigation of these vessels. When they can be moved, we have to do so and preserve the evidence. [By letting this boat slip away] we have caused citizens to feel uneasy, and we have lost an opportunity to make an investigation.”

The apprehension does not end there.



Pointing out his own concerns about the possibility of bioterrorism, Japanese Diet lower house member Shigeharu Aoyama, speaking during a House of Councillors committee meeting on November 30, said: “It is common knowledge among UN (United Nations) experts that North Korea is in possession of weaponized smallpox virus. If even one person who comes ashore is infected, then the virus will spread [in Japan] without limit unless vaccinations have been administered.”

Wooden vessels are difficult to pick up on radar, and there is the danger that they will be used to land armed refugees and terrorist spies. It is now understood that this problem cannot be handled by leaving it solely to the police and coast guard.

In the event of open conflict with North Korea, there will be countless people fleeing from the North to Japan. Even though it is expected that there will be North Korean operatives among the refugees, due to constitutional constraints and the inadequacy of the statutory law, Japan today stands unready to deal with the threat.

DNA has gone digital – what could possibly go wrong?

By Jenna E. Gallegos and Jean Peccoud

Source: <http://www.homelandsecuritynewswire.com/dr20171215-dna-has-gone-digital-what-could-possibly-go-wrong>

Dec 15 – Biology is becoming increasingly digitized. Researchers like us use computers to analyze DNA, operate lab equipment and store genetic information. But new capabilities also mean new risks – and biologists remain largely unaware of the potential vulnerabilities that come with digitizing biotechnology. The emerging field of cyberbiosecurity explores the whole new category of risks that come with the increased use of computers in the life sciences.

University scientists, industry stakeholders and government agents have begun gathering to discuss these threats. We’ve even hosted FBI agents from the Weapons of Mass Destruction Directorate here at Colorado State University and previously at Virginia Tech for [crash courses](#) on synthetic biology and the associated cyberbiosecurity risks. A year ago, we participated in a U.S. Department of Defense-funded [project to assess](#) the security of [biotechnology infrastructures](#). The results are classified, but we disclose some of the lessons learned in [our new Trends in Biotechnology paper](#).

Along with co-authors from [Virginia Tech](#) and the [University of Nebraska-Lincoln](#), we discuss two major kinds of threats: sabotaging the machines biologists rely on and creating dangerous biological materials.

Computer viruses affecting the physical world

Months later, a security firm was called in to troubleshoot an apparently unrelated problem. They found a malicious computer virus. The virus, called [Stuxnet](#), was telling the equipment to vibrate. The malfunction shut down a third of the plant’s equipment, stunting development of the Iranian nuclear program.

Unlike most viruses, Stuxnet didn’t target only computers. It attacked equipment controlled by computers. The marriage of computer science and biology has opened the door for amazing discoveries. With the help of computers, we’re decoding the human genome, creating organisms with new capabilities, automating drug development and revolutionizing [food safety](#).

Stuxnet demonstrated that cybersecurity breaches can cause physical damages. What if those damages had biological consequences? Could bioterrorists target government laboratories studying infectious diseases? What about pharmaceutical companies producing lifesaving drugs? As life scientists become more reliant on digital workflows, the chances are likely rising.

Messing with DNA

The ease of accessing genetic information online has democratized science, enabling amateur scientists in community laboratories to tackle challenges [like developing affordable insulin](#).

But the line between physical DNA sequences and their digital representation is becoming increasingly blurry. Digital information, including [malware](#), can now be [stored and transmitted via DNA](#). The J. Craig Venter Institute even created an entire [synthetic genome](#) watermarked with encoded links and hidden messages.



Twenty years ago, genetic engineers could only create new DNA molecules by stitching together natural DNA molecules. Today scientists can use chemical processes to produce synthetic DNA.

The sequence of these molecules is often generated using software. In the same way that electrical engineers use [software to design computer chips](#) and computer engineers use [software to write computer programs](#), genetic engineers use software to design genes.

That means that access to specific physical samples is no longer necessary to create new biological samples. To say that all you need to create a dangerous human pathogen is internet access would be an overstatement – but only a slight one. For instance, in 2006, a journalist used publicly available data to

order a fragment of [smallpox DNA](#) in the mail. The year before, the Centers for Disease Control used published DNA sequences as a blueprint to [reconstruct the virus responsible for the Spanish flu](#), one of the deadliest pandemics of all time.

With the help of computers, editing and writing DNA sequences is almost as easy as manipulating text documents. And it can be done with malicious intent.

First: Recognize the threat

The conversations around cyberbiosecurity so far have largely focused on doomsday scenarios. The threats are bidirectional.

On the one hand, computer viruses like Stuxnet could be used to hack into digitally controlled machinery in biology labs. DNA could even be used to deliver the attack by encoding [malware](#) that is unlocked when the DNA sequences are translated into digital files by a sequencing computer.

On the other hand, bad actors could use software and digital databases to design or reconstruct pathogens. If nefarious agents [hacked into sequence databases](#) or digitally designed novel DNA molecules with the intent to cause harm, the results could be catastrophic.

And not all cyberbiosecurity threats are premeditated or criminal. Unintentional errors that occur while translating between a physical DNA molecule and its digital reference are common. These errors might not compromise national security, but they could cause costly delays or product recalls.

Despite these risks, it is not unusual for researchers to order samples from a collaborator or a company and never bother to confirm that the physical sample they receive matches the digital sequence they were expecting.

Infrastructure changes and new technologies could help increase the security of life science workflows. For instance, voluntary [screening guidelines](#) are already in place to help DNA synthesis companies screen orders for known pathogens. Universities could institute similar mandatory guidelines for any outgoing DNA synthesis orders.

There is also currently no simple, affordable way to confirm DNA samples by whole genome sequencing. Simplified protocols and user-friendly software could be developed, so that screening by sequencing becomes routine.

The ability to manipulate DNA was once the privilege of the select few and very limited in scope and application. Today, life scientists rely on a global supply chain and a network of computers that manipulate DNA in unprecedented ways. The [time to start thinking](#) about the security of the digital/DNA interface is now, not after a new Stuxnet-like cyberbiosecurity breach.

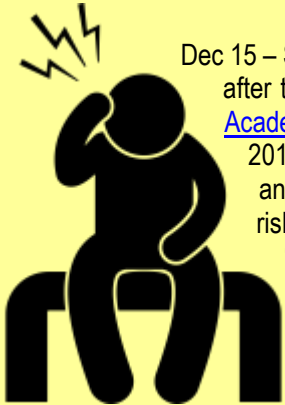


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Exposure to terror attacks may increase risk of migraine, other headaches

Source: <http://www.homelandsecuritynewswire.com/dr20171215-exposure-to-terror-attacks-may-increase-risk-of-migraine-other-headaches>



Dec 15 – Survivors of a terror attack have an increased risk of frequent migraine and tension headaches after the attack, according to a study published in *Neurology*, the medical journal of the [American Academy of Neurology](#). The study involved the teenage survivors of Norway's largest mass killing. In 2011, a lone gunman opened fire at a youth summer camp on Utøya Island, killing sixty-nine people and severely wounding thirty-three. All survivors experienced terror, many lost friends and some risked drowning as they tried to escape the island.

"We know a lot about the psychological effects of terror attacks and other extreme violence on survivors, but we don't know much about the physical effects of these violent incidents," said study author Synne Øien Stensland of the [Norwegian Center for Violence and Traumatic Stress Studies](#) in Oslo. "Our study shows that a single highly stressful event may lead to ongoing suffering with frequent migraines and other headaches, which can be disabling when they keep people from their work or school activities."

AAN [says](#) that the 358 teenage survivors were invited to participate in the study. Of the 213 who participated, the average age was 18 and six percent were severely injured in the attack. Participants were interviewed about their headache frequency four to five months after the attack. Their responses about headache type and frequency were compared to the responses of 1,704 young people of same sex and age who had not experienced terror. The teens who had been exposed to terror were four times more likely to have migraines and three times more likely to have frequent tension headaches than the teens who were not exposed to terror. These findings remained the same after adjusting for injury, sex, prior exposure to physical or sexual violence, and psychological distress.

Among the female participants, 80 of the 109 who were exposed to terror, or 73 percent, had recurrent headaches, compared to 325 of the 872 who were not exposed, or 37 percent. For male participants, 43 of the 104 terror survivors had headaches, or 41 percent, compared to 158 of the 832 with no exposure, or 19 percent. The terror survivors were much more likely to have daily or weekly headaches than those with no exposure.

"We suspected that headaches would increase for terror survivors, and the increase was over and above what might be expected based on psychological distress and other risk factors," said Stensland. "This suggests that we may need to figure out ways to help people right after events like terror attacks to help reduce the potential of frequent and disabling headaches. In many cases with severe headaches, treatments can be most helpful early on before the condition becomes chronic."

AAN notes that one limitation of the study was the lower response rate among survivors with high symptom levels, which could have led to an underestimation of risk.

Half of States Scored 5 or Lower Out of 10 Indicators in Report on Health Emergency Preparedness

Source: <http://healthyamericans.org/assets/files/TFAH-2017-ReadyOrNot%20FINAL.pdf>

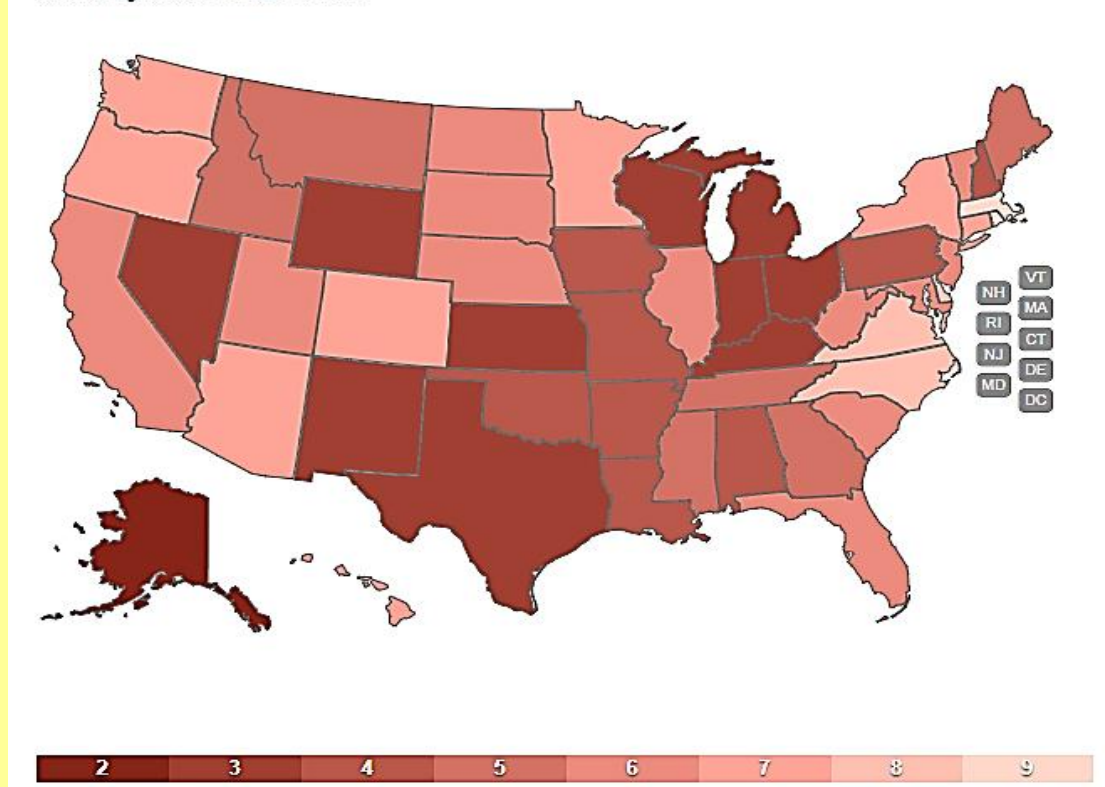
Dec 19 – In [Ready or Not? Protecting the Public's Health from Diseases, Disasters and Bioterrorism](#), 25 states scored a 5 or lower on 10 key indicators of public health



preparedness. Alaska scored lowest at 2 out of 10, and Massachusetts and Rhode Island scored the highest at 9 out of 10.

The report, issued today by the Trust for America's Health (TFAH), found the country does not invest enough to maintain strong, basic core capabilities for health security readiness and, instead, is in a continued state of inefficiently reacting with federal emergency supplemental funding packages each time a disaster strikes.

State-by-state Information



According to *Ready or Not?*, federal funding to support the base level of preparedness has been cut by more than half since 2002, which has eroded advancements and reduced the country's capabilities.

"While we've seen great public health preparedness advances, often at the state and community level, progress is continually stilted, halted and uneven," said John Auerbach, president and CEO of TFAH. "As a nation, we—year after year—fail to fully support public health and preparedness. If we don't improve our baseline funding and capabilities, we'll continue to be caught completely off-guard when hurricanes, wildfires and infectious disease outbreaks hit."

Ready or Not? features six expert commentaries from public health officials who share perspectives on and experiences from the historic hurricanes, wildfires and other events of 2017, including from California, Florida, Louisiana and Texas.

The report also examines the nation's ability to respond to public health emergencies, tracks progress and vulnerabilities, and includes a review of state and federal public health preparedness policies. Some key findings include:

- Just 19 states and Washington, D.C. increased or maintained funding for public health from Fiscal Year (FY) 2015-2016 to FY 2016-2017.
- The primary source for state and local preparedness for health emergencies has been cut by about one-third (from \$940 million in FY 2002 to \$667 million in FY 2017) and hospital emergency preparedness funds have been cut in half (\$514 million in FY 2003 to \$254 million in FY 2017).
- In 20 states and Washington, D.C. 70 percent or more of hospitals reported meeting Antibiotic Stewardship Program core elements in 2016.



- Just 20 states vaccinated at least half of their population (ages 6 months and older) for the seasonal flu from Fall 2016 to Spring 2017—and no state was above 56 percent.
- 47 state labs and Washington, D.C. provided biosafety training and/or provided information about biosafety training courses (July 1, 2016 to June 30, 2017).

The *Ready or Not?* report provides a series of recommendations that address many of the major gaps in emergency health preparedness, including:

- ◆ Communities should maintain a key set of **foundational capabilities** and focus on performance outcomes in exchange for increased flexibility and reduced bureaucracy.
- ◆ Ensuring stable, sufficient health **emergency preparedness** funding to maintain a standing set of core capabilities so they are ready when needed. In addition, a complementary **Public Health Emergency Fund** is needed to provide immediate surge funding for specific action for major emerging threats.
- ◆ Strengthening and maintaining consistent support for **global health security** as an effective strategy for preventing and controlling health crises. Germs know no borders.
- ◆ **Innovating and modernizing infrastructure needs** – including a more focused investment strategy to support **science and technology upgrades** that leverage recent breakthroughs and hold the promise of transforming the nation's ability to promptly detect and contain disease outbreaks and respond to other health emergencies.
- ◆ Recruiting and training a **next generation public health workforce** with expert scientific abilities to harness and use technological advances along with critical thinking and management skills to serve as Chief Health Strategist for a community.
- ◆ Reconsidering **health system preparedness for new threats and mass outbreaks**. Develop stronger coalitions and partnerships among providers, hospitals and healthcare facilities, insurance providers, pharmaceutical and health equipment businesses, emergency management and public health agencies.
- ◆ Preventing the negative health consequences of **climate change and weather-related threats**. It is essential to build the capacity to anticipate, plan for and respond to climate-related events.
- ◆ Prioritizing efforts to address one of the most serious threats to human health by expanding efforts to stop **superbugs and antibiotic resistance**.
- ◆ Improving rates of **vaccinations for children and adults** – which are one of the most effective public health tools against many infectious diseases.
- ◆ Supporting a **culture of resilience** so all communities are better prepared to cope with and recover from emergencies, particularly focusing on those who are most vulnerable. Sometimes the aftermath of an emergency situation may be more harmful than the initial event. This must also include support for local organizations and small businesses to prepare for and to respond to emergencies.

The report was supported by a grant from the Robert Wood Johnson Foundation (RWJF) and is available on TFAH's website at www.healthyamericans.org.

Score Summary:

A full list of all of the indicators and scores and the full report are available on TFAH's website. For the state-by-state scoring, states received one point for achieving an indicator or zero points if they did not achieve the indicator. Zero is the lowest possible overall score, 10 is the highest. The data for the indicators are from publicly available sources or were provided from public officials.

9 out of 10: Massachusetts and Rhode Island

8 out of 10: Delaware, North Carolina and Virginia

7 out of 10: Arizona, Colorado, Connecticut, Hawaii, Minnesota, New York, Oregon and Washington

6 out of 10: California, District of Columbia, Florida, Illinois, Maryland, Nebraska, New Jersey, North Dakota, South Carolina, South Dakota, Utah, Vermont and West Virginia

5 out of 10: Georgia, Idaho, Maine, Mississippi, Montana and Tennessee

4 out of 10: Alabama, Arkansas, Iowa, Louisiana, Missouri, New Hampshire, Oklahoma and Pennsylvania

3 out of 10: Indiana, Kansas, Kentucky, Michigan, Nevada, New Mexico, Ohio, Texas,



Wisconsin and Wyoming
2 out of 10: Alaska

Ban on funding for 'super pathogen' experiments lifted despite fears they could be used for bioterror attacks or accidentally cause a pandemic

Source: <http://www.dailymail.co.uk/sciencetech/article-5195651/U-S-lifts-funding-ban-studies-enhance-dangerous-germs.html>

Dec 19 – **The U.S. government has lifted a 2014 temporary ban on funding research involving the flu and other pathogens in which scientists deliberately make them more transmissible or more deadly.**

The ban covered federal funding for any new so-called 'gain-of-function' experiments that enhance pathogens such as Avian influenza, SARS and the Middle East Respiratory Syndrome or MERS viruses. It followed a series of safety breaches at federal laboratories involving the handling of anthrax and avian flu that raised questions about lab safety at high-security national laboratories.

The H1N1 strain of the swine flu virus up close: A 2014 ban on funding research involving the flu and other pathogens in which scientists deliberately make them more transmissible or more deadly has been lifted

The concern with 'gain-of-function' research is that while the work may produce useful insights about how a pathogen might naturally evolve and become more deadly, laboratory-enhanced pathogens could be used for biowarfare or bioterrorism if they fell into the wrong hands.

The U.S. National Institutes of Health (NIH) said in a statement on Tuesday that such work is important to help scientists understand and develop effective countermeasures 'against rapidly evolving pathogens that pose a threat to public health.'

NIH director Dr. Francis Collins said in a statement the funding ban was lifted after the Department of Health and Human Services issued a framework to guide decisions over work involving enhanced pathogens with the potential to cause a pandemic.

That framework lays out an extensive review process for federally funded research on enhanced pathogens - considering both the benefits of the research and the potential safety risks.

Dr. Sam Stanley, president of Stony Brook University and chairman of the National Science Advisory Board for Biosecurity, which provided guidance on the new policy, noted the world's deadliest pathogens are evolving naturally.

He said research is needed to understand and prevent devastating pandemics, such as the 1918-1919 Spanish flu pandemic that killed some 50 million people.

'I believe nature is the ultimate bioterrorist and we need to do all we can to stay one step ahead,' Stanley said in an email, adding 'basic research on these agents by laboratories that have shown they can do this work safely is key to global security.'

THE 1918 FLU OUTBREAK - THE WORLD THE WORLD HAS EVER SEEN

The deadly flu virus attacked more than one-third of the world's population, and within months had killed more than 50 million people – three times as many as the World War I – and did it more quickly than any other illness in recorded history.

Most influenza outbreaks disproportionately kill juvenile, elderly, or already weakened patients; in contrast the 1918 pandemic predominantly killed previously healthy young adults.





Red Cross volunteers fighting against the Spanish flu epidemic in United States in 1918

To maintain morale, wartime censors minimized early reports of illness and mortality in Germany, Britain, France, and the United States.

However, newspapers were free to report the epidemic's effects in Spain, creating a false impression of Spain as being especially hard hit - and leading to the pandemic's nickname Spanish flu.

The close quarters and massive troop movements of World War I hastened the pandemic and probably both increased transmission and augmented mutation, researchers believe.

The global mortality rate from the 1918/1919 pandemic is not known, but an estimated 10% to 20% of those who were infected died, with estimates of the total number of deaths ranging from 50-100 million people.

‘Pyongyang broker’ worked as a hospital cleaner in Australia

Source: <https://www.thetimes.co.uk/article/pyongyang-broker-worked-as-a-hospital-cleaner-in-australia-3bzwjqftb>

Dec 18 – The man who has been charged with brokering black market deals involving missile components for North Korea worked as a hospital cleaner in Sydney by day while allegedly sending encrypted messages to Pyongyang and his business partners by night.

Chan Han Choi, 59, is a South Korean-born Australian who lives alone in a rented apartment in the suburb of Eastwood. Neighbours describe him as mild-mannered and polite. He is divorced with a 30-year-old son and arrived in Australia 30 years ago.

