International CBRNE Institute

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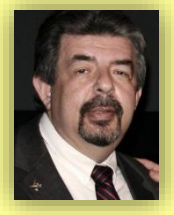


Editorial

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

Editor-in-Chief
CBRNE-Terrorism Newsletter

Dear Colleagues,

August – the month of the 2016 Olympic Games!
So far, so good! (Aug 15)

On the other hand, there is no doubt that Rio2016 can be recorded as one of the worst Olympics regarding preparation and organizational issues but also regarding athletic behavior and overall picture, as verified by certain incidents below:

- Armed robberies (i.e. taxi gunpoint involving US Golden medalist Ryan Lochte and his three teamates; member of the UK team also invlved in a gunpoint)

BUT ... Brazilian authorities moved to seize the passport of Olympic swimmer Ryan Lochte in Rio on Wednesday, but he was already back in the good ol' US of A, strolling through a Charlotte, N.C., airport with his Playboy Playmate girlfriend. But two of Lochte's teammates didn't get out quickly enough and were pulled off a plane at Rio's airport, as authorities threw cold water on their story about being robbed at gunpoint, according to the U.S. Olympic Committee. What a shame!!!

- Shooting on "media bus" traveling between Olympic venues
- Bullets found near media center
- Steeling from athletes' rooms in Olympic Village
- Green pool phenomenon
- Highly poluted seas
- Anti-athletic behavior (i.e. Egyptian judoka refused to shake hands with Israeli opponent; Irish boxer [65kg category] burst into unspeakable reactions following loss from Russian opponent)
- International female athletes should had oppose the athletic appearance of Muslim athletes and strongly demonstrate against the suppression of women in the Arab world. It wold be a step forward

if female athletes threaten to postopone their participation if Muslim women did not change their look that humiliates the nature of a woman helping to spread the message of equality between the two sexes
- Crocodiles swimming in golf area lake
- Threats from snakes and rodents (media exaggerated the presence of native capybora – the largest rodent in the word)
- Dopping issues – WADA was also a victim of hacking!
- Lack of Olympic buses drivers' training
- Many problems with Olympic Village's infrastructure
- Prostitution (of course) – big money at Vila Mimosa road with 3000 sex workers and 70 bars (prostitution rates: 10-20 euro)

During late July and August 2016 there were numerous articles on the Internet about Olympic Games' security preparedness compared with the absolute silence during the last four years! All articles stressed the international intelligence collaboration and the huge deployement of military and police forces and means. There were a handful of articles provided some generic details on CBRN preparedness – a function given solely to the Brazilian military. And of course there was not a single article (at least in English) given some details on the preparedness of the health/hospital sector to manage mass contaminated casualties within the Olympic Cities. Of course this is not the first time – similar was the situation in London 2012. And this raise the question: was it a top secret issue or a top gap in both Olympiads? Even for defensive propaganda issus it would be clever to leak some info on this topic reassuring the public and expected international spectators that "we are ready to deal even with extreme threats". Perhaps there is another explanation as well. Brazilians consider CBRN threats too exotic to deal with them and with all the financiall and political problems they were facing, they decided that these threats do not worth extra attention given the fact that "it would no happen to them!"
Aug 22: The Olympic Games are over and nothing happened apart from usual crime incidents and population opposition that was within "normal" levels. The new adventure for Tokyo2020 just began! Let us only hope that Brasil learned a lot from this mega event and will continue to improve its defenses against international terrorism in the years to follow (although usually countries go back to usuall staff the day after the Games). We must also not forget that Paraolympics will begin soon and that people with special need are also not immune to terrorism. The mentality of IS is such that the unexpected will not be a surprise.

In Europe, mess remained the same!
We had the knife attack against police officers in Charleroi (Belgium) and a combined arson/knife attack in a Swiss train verifying the terrorist shift to common use weaponry against unarmed soft targets. EU members still try to find solutions for the problems identified and implement lessons learned via new policies and tactics. Not quite successful so far! Illegal immigration and refugees reality although initially shifted towards Italy now is back (but not in the same paces [yet]) mainly because of Turkey's balckmailing to get the desired EU Visa for its nationals – or else…

In the Near and Middle East the geostrategic chess is at its peak and Putin is verifying his title as a grand maitr in combination with current pre-election period in the United States.
Yemen's former President Ali Abdullah Saleh says the new government in the country is ready to cooperate with Russia against terrorism by allowing Russian access to Yemeni military bases. He said Yemen was ready to open the country's military bases to Russia.
At the same time Ankara wouldn't mind it if Russia used the Incirlik airbase (already used by the US and Germany) for its anti-terror missions against Islamic State terrorists in Syria, Turkey's Prime Minister Binali Yildirim hinted but acknowledged that no such requests have been made. It seems that a Russian-influenced axis (Russia-Turkey-Syria-Iran-Qatar-Yemen) is under development. In a similar manner another axis is on sight (Russia-Serbia). Greece is not part of this "orthodox" axis mainly because we lack of long-term strategic planning

(in fact we never had one since we "always belonged to the West"); instead we go by the day while leaking our wounds for the last five years.

And some good news!

As of July 2016, the Editor of the Newsletter will be the new CBRN Knowledge Center Manager at the International CBRNE Institute in Belgium. This is a tremendoous opportunity to materialize all ideas and ambitions the Editor had aiming to boost the CBRN field and promote counter CBRN operations within EU and internationally. ICI has some pretty good innovative ideas that you will see them coming in the months to follow. In addition the Newsletter itself will be under the same roof with ICI and help spread the knowledge among First Responders around the globe. The new improved website of ICI is under re-construction and will be availbe within automn time.

Take care First Responders! Be more actively involved in planing and decisions' making since only you face the enemy in the eyes!

The Editor-in-Chief

Do think-tanks matter? Expert says "think again"

Source: http://www.homelandsecuritynewswire.com/dr20160725-do-thinktanks-matter-expert-says-think-again

July 25 – **A UBC professor is suggesting government policymakers and advisors need to do a re-think when it comes to**

giving validity to reports coming across their desks.

Carey Doberstein, an assistant professor of political science at UBC's Okanagan campus, recently published an experimental study of public sector workers and determined that many give a written report or study purported to be from a university more credibility than one from a think-tank or advocacy group.

UBC says that Doberstein conducted a randomized controlled survey experiment involving British Columbia public service staff, asking them to read and assess the credibility of various policy studies. For half of the respondents, the authorship of the studies was randomly switched but the content remained the same. Doberstein then compared the average credibility assessments between the control and experimental groups.

"There were systematic and at times extraordinarily large differences between the credibility assessments provided by these policy professionals on precisely the same policy studies, when the only part I changed was the label of who wrote it," said Doberstein. "Irrespective of the content and just by virtue of presenting it as written by an academic, the report suddenly becomes more credible in the eyes of bureaucrats."

The results surprised him, in part due to the magnitude of the differences observed. For one report, originally authored by the Fraser Institute, the credibility skyrocketed among study participants when they read the same document thinking it came from a university academic.

Another policy study, this time written by a university economist, received very high credibility assessments in the control group. But when authorship was changed to be purportedly written by the Canadian Center for Policy Alternatives think-tank, its credibility plummeted dramatically.

"Put simply, the think-tank affiliation was a significant drag on the perceived credibility of their report and analysis," said Doberstein.

The same was true for reports said to be written by research-based advocacy groups.

"Some may interpret this finding positively," he said. "That analysts in government are skeptical of reports or studies that emerge from think tanks or advocacy organizations offering analysis and conclusions that tend to align with the organization's obvious ideological position."

Yet Doberstein says having a report's credibility increase simply by changing the name of the source is concerning as it can appear that policy-relevant research contained within its pages is being ignored by government policy advisors.

"We expect public servants to objectively examine the research evidence available to them," he said. "However, it seems many are taking shortcuts, and in essence giving academics a free pass."

And while this study examined the biases among policymakers in BC, Doberstein notes similar results were observed his subsequent replication experiment involving provincial policy analysts in Ontario, Saskatchewan and Newfoundland.

— Read more in Carey Doberstein,"Whom Do Bureaucrats Believe? A Randomized Controlled Experiment Testing Perceptions of Credibility of Policy Research," Policy Studies Journal (30 May 2016).

U.S. police killed or injured more than 55,000 people during "legal interventions" in 2012

Source: http://www.homelandsecuritynewswire.com/dr20160727-u-s-police-killed-or-injured-more-than-55-000-people-during-legal-interventions-in-2012

July 27 – **U.S. police killed or injured an estimated 55, 400 people during legal stop and search incidents and arrests in 2012,** research published in the journal *Injury Prevention* reveals.

Blacks, Native Americans, and Hispanics had higher stop/arrest rates per 10,000 of the population than Whites and Asians. And Blacks were by far the most likely to be stopped, and then arrested, the data show.

And they are more likely than Whites to die at the hands of the police, although, when stopped or arrested, they are no more likely than Whites to be injured or killed during that incident.

"Police use of undue force is an enduring tinderbox issue in America," say the researchers, and recent incidents in which police have shot unarmed citizens have provoked public outcry.

BMJ notes that in a bid to expand the data on the excessive use of force by U.S. police, the researchers counted and characterized injuries resulting from legal interventions — arrests, stop, and search incidents on the street, and traffic stops involving a search for 2012.

They used national data from the Vital Statistics Mortality Census; the 2012 Healthcare Cost and Utilization Project nationwide inpatient and emergency department samples; two newspaper censuses of deaths; FBI reports for 2012 and 2014 arrests; and the 2011 Police Public Contact Survey.

In 2012 arrests accounted for an estimated 12.3 million police interventions; street stop and search 2.8 million; and traffic stops involving searches 1 million. During these legal interventions, U.S. police fatally injured an estimated 1,000 people; and another 54,300 required hospital treatment for their injuries.

Firearms accounted for almost all the deaths (95 percent) and for around one in four (23 percent) of hospital admissions. Virtually all the remaining deaths involved tasers: an estimated sixty-five taser incidents resulted in admission to hospital and forty-eight more were fatal.

Most of the non-fatal injuries stemmed from blows or blunt objects.

On average, an estimated 1 in 291 stops/arrests resulted in an injury requiring hospital treatment or the death of a suspect or bystander, equal to a ratio of 34 per 10,000 stops/arrests.

The life threatening nature of the injuries during police intervention was lower than for assaults. This suggests the police were not usually out of control when they physically confronted a suspect, say the researchers.

But gunshot wounds were significantly more likely to be lethal if they were sustained during police intervention rather than during an assault (40 percent vs 26 percent).

The numbers of those who were killed or injured as a result of legal police intervention per 10,000 stops/arrests did not vary by race/ethnicity. But death/injury was more common with increasing age, and was higher among men than women.

Young people were more likely to be arrested than older people.

Excess death rates among Blacks and youth at the hands of the police are reflections of excess,

perhaps inappropriate, exposure, suggest the researchers.

"Consistent with our findings, simulation studies find police are no more likely to fire on unarmed Blacks than unarmed Whites, and high rates of black speeding citations per capita result from high violation rates," they write.

"Given a national history of racism, the excess per capita death rate of Blacks from U.S. police action rightly concerns policy analysts, advocates, and the press. The excess appears to reflect exposure. Blacks are arrested more often than Whites, and youth more often than the elderly," they continue.

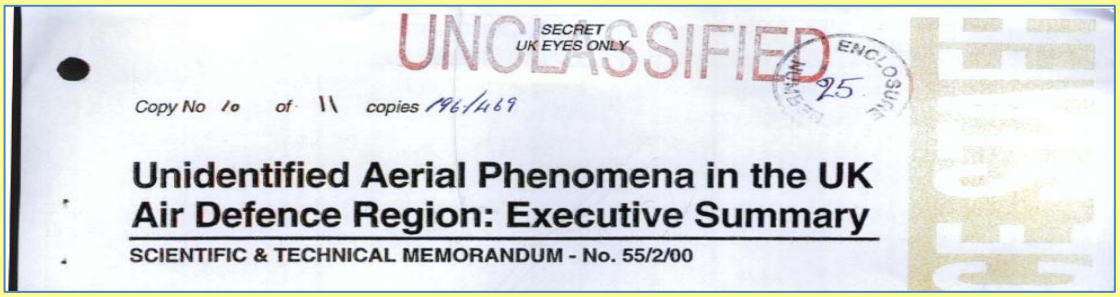
"However, Blacks are not more likely than non-Hispanic Whites to be killed or injured during a stop/arrest, and youth have the lowest injury ratios. Ratios aside, even one person unnecessarily killed or injured by the police is one too many, and every racial/ethnic group has mourned losses from undue force," they say.

"As the U.S. struggles to reduce citizen injuries during police contacts, it would seem prudent to train at-risk groups about appropriate behavior during police stops," they conclude.

— Read more in Ted R Miller et al., "Perils of police action: a cautionary tale from U.S. data sets," Injury Prevention (25 July 2016).

UAP in the UK Air Defence Region: Executive Summary

Source:http://webarchive.nationalarchives.gov.uk/20121026065214/http://www.mod.uk/DefenceInternet/FreedomOfInformation/PublicationScheme/SearchPublicationScheme/UapInTheUkAirDefenceRegionExecutiveSummary.htm



The Findings and Recommendations are contained in this Executive Summary. The Executive Summary has now been broken down into 3 parts to make it easier for download purposes.

- Executive Summary (full) PDF [5.3 MB]
- Executive Summary Part 1 PDF [1.9 MB]
- Executive Summary Part 2 PDF [1.8 MB]
- Executive Summary Part 3 PDF [1.7 MB]

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Goldman Sachs **August 01, 2016**

Rio2016

Using a model that tracks "the quality of growth environments, population, previous success, and 'host effects'", **Goldman Sachs** has churned out the following predictions:

- China and US will dominate the medals table
- The UK's haul will drop sharply after being boosted by the "host effect" at London 2012
- Russia's medal haul will slump as most of its athletes won't be competing
- Brazil is going to win a (relatively) bumper stack of medals thanks to the "host effect"
- Italy has great fencers
- **Greece's sporting performance will be even worse than its economic performance**

Editor's Comment AFTER the Games

EDITOR'S COMMENT: Dear Goldman Sachs please immediately consult a gatrenterologist! Excessive secretion of bile might poison your body and mind! Take care and be well! (▶pp.12-18)

Rio 2016 Olympics: Usain Bolt misses the opening ceremony because he is feeling 'too lazy'

Source: http://www.telegraph.co.uk/olympics/2016/08/06/rio-2016-olympics-usain-bolt-misses-the-opening-ceremony-because/

Aug 06 – Usain Bolt – the fastest man in the world and the biggest star of the Olympic Games – left his supporters disappointed when he missed the opening ceremony of the Rio Games, claiming that **he was feeling too lazy to make the journey to the Maracanã Stadium.**

Bolt, who carried Jamaica's flag at the London 2012 Olympics, announced on his Snapchat account shortly before the ceremony that he would be missing the Athletes' Parade. "Opening Ceremony time but I won't be there people, all the busses are out," he said in a short message.

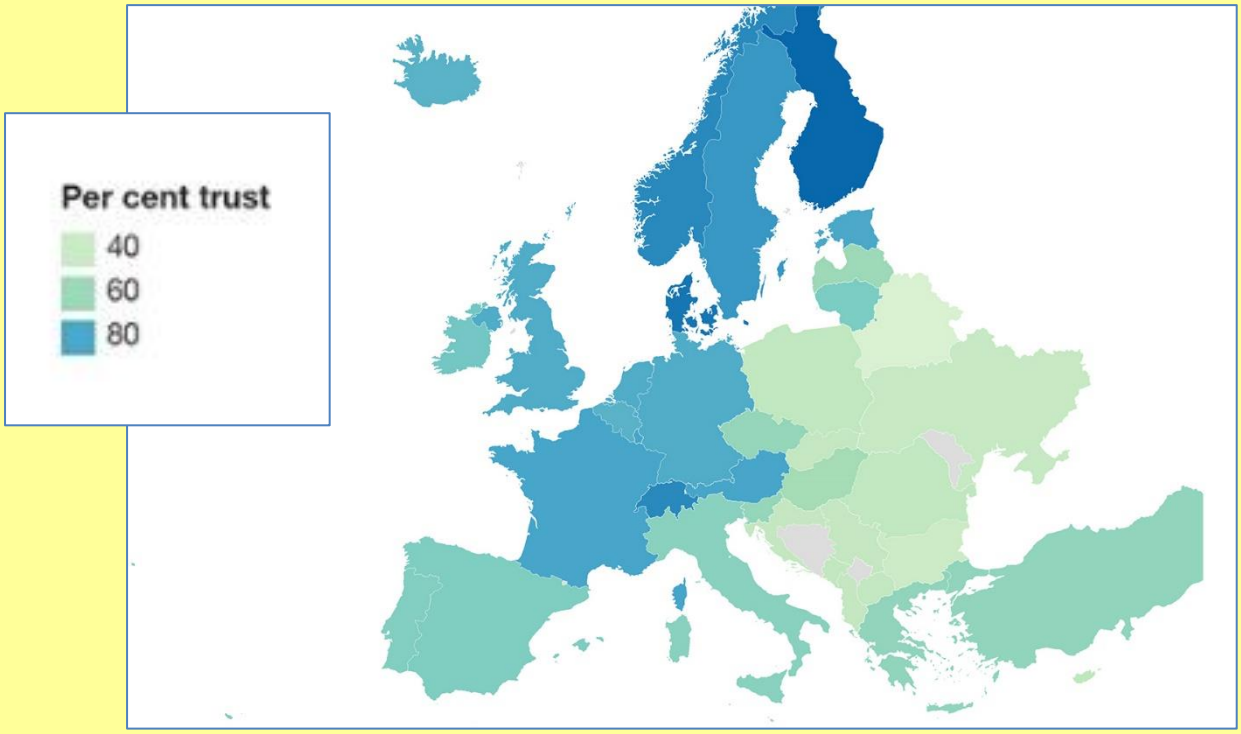
He later added: "Looks like the whole squad is out, road movements. One big lazy par me den pon today, no movement for me."

Despite claiming that his absence was simply because he was feeling too lazy to move, some have speculated that Bolt may have declined his place at the Athletes' Parade because of how frequently he is mobbed by his fellow Olympians.

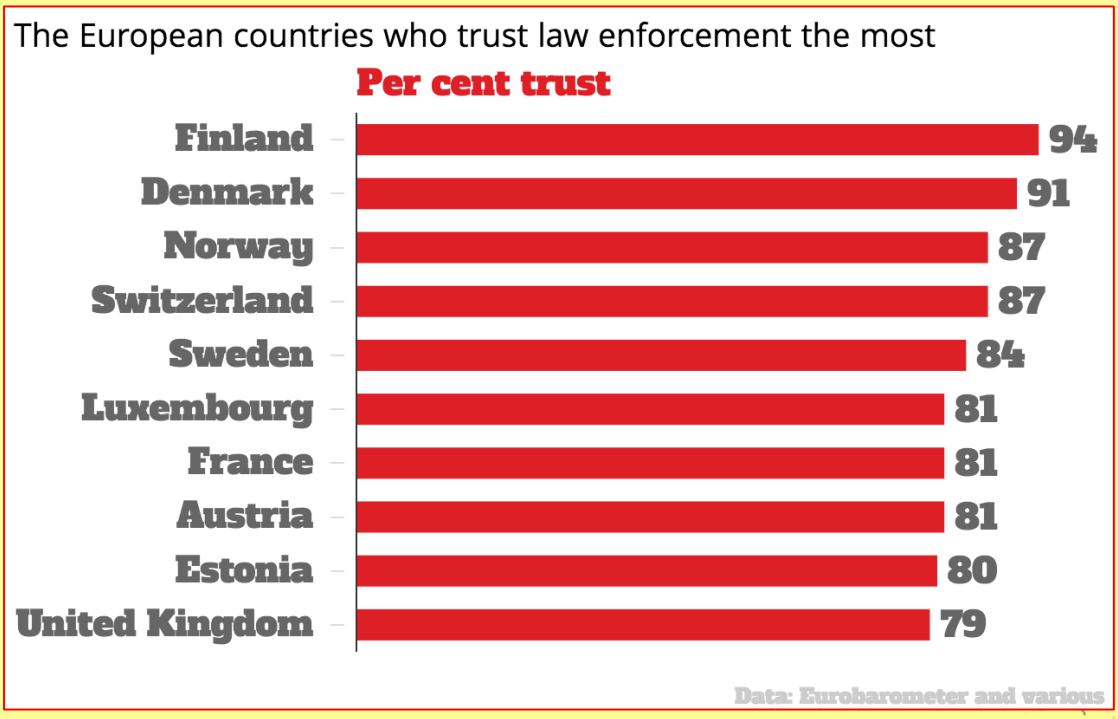
EDITOR'S COMMENT: Who do you think you are Mr. Bolt? Just a spoiled child, totally irrespectful to the history of the Olympic Games… Afterall: you are just running faster than me! That's all! "*Healthy mind in a healthy body*". Remember?
UPDATE: Bolt's "behavior" in both 100m and 200m races verifies this comment. Such a shame for such a great athlete!

The European countries who trust their police the most

Source: http://indy100.independent.co.uk/article/the-european-countries-who-trust-their-police-the-most--Zylx1hC0kPZ



Aug 06 – The data, taken predominately from the European commission website and various other



polls, shows that Scandinavian countries have the most trust in their police out of European countries.


Rio2016
Dedicated to
Goldman
Sachs
3 Gold
1 Silver
2 Bronze

25m air pistol shooting

Anna Korakaki (Greece – GOLD); Monika Karsch (Germany – SILVER) and Heidi Diethelm Gerber (Switzerland – BRONZE)

10m air pistol shooting

China's gold medallist Zhang Mengxue (China – GOLD); Vitalina Batsarashkina (Russia – SILVER) and **Anna Korakaki (Greece – BRONZE).**

Men's rings

Eleftherios Petrounias (Greece – GOLD); Arthur Zanetti (Brazil – SILVER) and Denis Abliazin (Russia – BRONZE)

Olympic Men's 10KM Swim

Gold	Silver	Bronze
Ferry Weertman (NED)	Spiros Gianniotis (GRE)	Marc-Antoine Olivier (FRA)
1:52:59.8	1:52:59.8	1:53:02.0

470 SAILING

Youth to Olympics and beyond

Rio2016

Sime Fantela/Igor Marenic (Croatia - GOLD), Silver to Mat Belcher/Will Ryan (Australia - SILVER) and Panagotis Mantis/Pavlos Kagialis (Greece - BRONZE).

Ekaterini Stefanidi (Greece – GOLD), Sandi Morris (USA – SILVER)
and Eliza McCartney (New Zealand – BRONZE)

ethos

Ethos **is a Greek word meaning "character" that is used to describe the guiding beliefs or ideals that characterize a community, nation, or ideology.**

NBC Olympics 13h
@NBCOlympics

You can't get much closer than that. #Rio2016
pic.twitter.com/9cjCyFTCbd

david Follow
@dwhite191

@NBCOlympics The bitch that won is from Stanford maybe she should stay in Greece

4:47 AM - 20 Aug 2016

20 9

david Follow
@dwhite191

@KatStefanidi stop using USA stay in Greece that's your country

4:51 AM - 20 Aug 2016

16 2

Ekaterini Stefanidi

What will the 2056 Olympics look like?

By Loz Blain
Source: http://newatlas.com/future-olympics-bionic-genetic-neurostimulation-augmentation/44781/

Aug 08 – As long as the name of the Olympics holds some kind of international prestige, people and countries are going to do whatever

it takes to grab those gold medals. But with technology developing at a rapidly accelerating pace, what's that going to mean for the state of global athletics? Maybe it's a good time to dream ahead. Let's take a look at some technologies currently in development that could tilt the playing field for better or worse in 40 years' time.

CRISPR-Cas9 - Gene Editing

Today, the Olympics is held up as a fair event because people come to compete with the genetics they were born with. But isn't superior genetic potential itself an unfair advantage? Why should a competitor be stuck with the limited potential their parents gave them?

The world of genetics has been upended in the last couple of years by the discovery of CRISPR-Cas9, which, to grossly oversimplify, allows the precise editing of DNA in a living subject. Initially, the focus of most research seems to be chopping out and replacing the bits of DNA responsible for hereditary diseases.

But it doesn't take much imagination to see how an individual or a national sports program might want to use this kind of technology once it's better understood. In theory, any genetic advantage you can pinpoint can be rolled out into another person's DNA –either before the point of conception with altered sperm and egg cells, or by editing the genetics of an already living person.

To start with, that could go some way toward leveling the Olympic playing field, but that's just the beginning. The days of the genetically edited 10-foot-tall basketballer, designer-built ultra-flexible gymnast or ultimate load-bearing weightlifter might not be that far away.

Who knows if it will be possible to test for edited DNA in the same ways we currently test for performance enhancing drugs. But is it even that different from the idea of government-influenced athlete breeding programs? Famously, China's seven-foot-six basketball prodigy Yao Ming was rumored to be the result of a program in which the Chinese government tracked and "encouraged unions" between its tallest athletes across several generations.

Perhaps the 2056 Olympics will need to see athletes separated into classes based on their genetic potential (natural or edited), in order to keep things as fair as possible. But the debate, and watching the open class competition, will sure be interesting.

Sensors and Augmented Reality

In many sports, information can be the key to success – or at least, an incredibly valuable

training tool. Swimmers are already being fitted with sensors that can provide them with audio feedback to improve their technique. Real-time feedback like this can put you on track quicker than anything a coach can tell you.

Real time monitoring of nutrition levels, hormones and other medical signals could help athletes arrive at the starting line primed for peak performance, and we're already seeing the beginnings of that. Coaches should be able to monitor their athletes from a physiological perspective instead of just a performance one, helping work out the perfect time for substitutions and other interventions.

Likewise, we're starting to see the rise of augmented reality, in which information can be overlaid onto the world as we look at it, and it's not hard to see how that might be useful to an olympic athlete. Imagine AR glasses that predict the flight of an archer's arrow given the current orientation of the bow and the wind conditions, or that can give a marathon runner a bunch of live information about his competitors' pace and locations, or show a trap shooter exactly where to aim as the target flies past.

Presumably much of this functionality will be instantly banned, but as it becomes more and more integrated into our normal lives, including advanced sensors and augmented reality into the Olympics will seem like a more reasonable proposition.

Prosthetics and Bionics

There will come a time soon when Paralympic sprint times start to eclipse what "able bodied" Olympians are capable of. Today's prosthetic legs for amputees, for example, are already allowing them to occasionally mix it in the open class in a few different sports. Currently they're reasonably simple blade springs, but some people already consider those an unfair advantage.

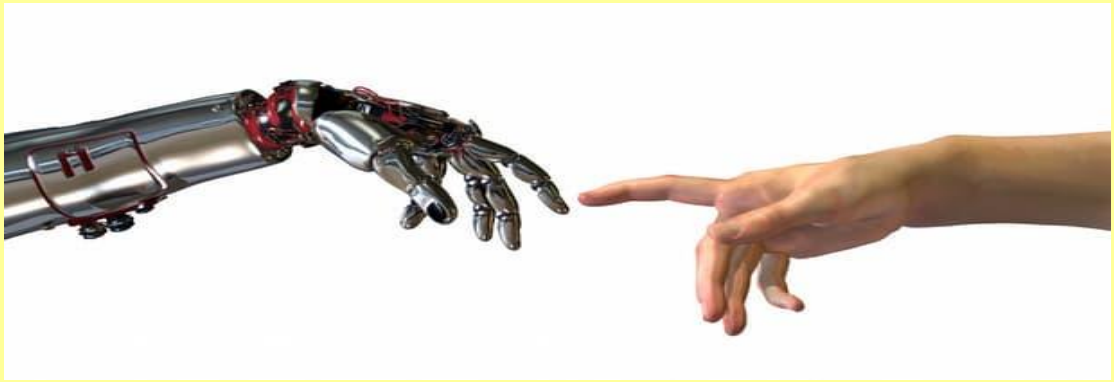
Amputee sprinter and occasional murderer Oscar Pistorius was allowed to compete against able-bodied athletes in the 2012 Olympics, but only after a fascinating legal battle to prove his carbon sprinting blade legs didn't give him superhuman capabilities by storing and releasing more energy than human limbs, and that his performance still deteriorated with fatigue in the way that his competitors do.

Pistorius was able to prove that his prosthetics weren't an advantage, but powered knee and ankle joints are in development that will surely eventually outperform a human joint. There are already bionic lenses that claim to give you vision three times better than a natural eye. Bionic hand technology is going gangbusters as well, with prototypes beginning to achieve mind control and touch sensitivity.

The venerable human heart itself could eventually be superseded by a bionic unit - potentially one that provides a constant flow of blood with no pulse per se. Imagine the athletic benefits of a tireless mechanical heart – and of course, the potential dangers.

It's easy to imagine a high-tech alternative Olympics in which the bionic technology is as important, or more important, than the human element, much like modern Formula One racing.

In fact, welcome to the future: it's starting this year. In October 2016, ETH Zurich is holding the world's first Cyborg Olympics in Switzerland – the Cybathlon. Athletes will compete using the latest prosthetic technology, brain-computer interfaces and even powered exoskeletons.



This first Cybathlon is mainly still focused on bringing disabled humans as close as possible to "normal" capability using technology, but it won't be long

before bionic athletes are far surpassing the natural abilities of the human body.

Neurostimulation, the brain, and the Singularity

Already at this year's Olympics, there's athletes trying to gain an advantage through neurostimulation. "Neuropriming" headsets are

starting to emerge that electrically stimulate the brain to prepare it for activity, claiming both to improve the strength and organization of the signals sent to the muscles. This is said to give immediate performance results, but the technique is also proving effective at priming the brain to learn and acquire skills faster.

Of course, this is absolutely trivial compared to what could be achieved through direct brain stimulation, or even direct actuation of the muscles using external electrical pulses. Imagine the muscle memory benefits of having an autopilot-like system take your body through a thousand repetitions of a perfect gymnastics routine, swimming stroke or golf swing.

Perhaps a bigger thing to think about is the technological singularity – the point where we build a computer that's smarter than the smartest human brain. All human technology up to this point is the product of the magnificent, but limited, squishy hardware we're born with. As somebody once said (I'd attribute this, but my flabby human brain can't remember where I read it), humans looking at the universe are like a dog looking at a telephone – we simply lack the mental machinery to understand it beyond a few trivial interactions that we see achieve certain results. But we're accelerating toward a point where we can build computers that have a greater ability to understand things than we do.

Futurists have been speculating for decades on what might become possible after we hit that moment of singularity, but one thing seems certain: the pace of technological development will accelerate wildly. When the human brain invents a machine smarter than itself, that machine will invent something smarter again, and so on and so forth, at an increasing rate of efficiency, wirelessly networked with other burgeoning artificial minds around the globe in the way the human brain could never replicate.

Ray Kurzweil, who popularized the concept of the Singularity in his 2006 book *The Singularity is Near*, has predicted we're going to hit this liminal moment in technological history in about 2045 - indeed, among experts, the median prediction is closer to 2040. Either way, by the time the 2056 Olympics roll around, enhanced biology should really be hitting its stride. Totally relevant, then.

But what to expect? By its very nature, the Singularity portends to take us far beyond the limits of what the human imagination can conjure. One key tenet is the idea of transhumanism – moving the human consciousness and experience out of the flawed, deteriorating, illness and injury-prone physical bodies and brains we've had to put up with for hundreds of thousands of years, and into some other form that can evolve as the technology itself evolves. Any mental or physical capability we were lacking can be built in, be it the ability to intuitively understand multidimensional space, or remember things perfectly, or interface directly with other minds, or fly, or use twelve yo-yos at once.

At which point, the concept of having a world-wide competition to see who can drag last year's model of meat-bag around a field the fastest will probably start to look a lot less interesting. Maybe we'll have evolved to the point where we value collaboration over competition. Or we may well be worrying more about other

questions like what it actually means to be human, and how do we prevent an artificial intelligence far more brilliant than our own from circumventing our feeble-minded attempts to control it and mobilizing an army of nano-bots to enslave us all and turn us into biological batteries.

Or maybe we'll be watching the swimming. Who knows.

EDITOR'S COMMENT: By the year 2056 I will be somewhere in the vast universe; in the meantime and while sill around Earth, I strongly support the idea to organize the Olympic Games in Greece (their starting point) or end them for good. What we watch now are not Olympic; are not Games and are not promoting the wellknown but forgotten quote "*Mens sana in corpore sano" (*a Latin phrase, usually translated as "a sound mind in a sound body" or "a healthy mind in a healthy body"). The phrase comes from *Satire* X of the Roman poet Juvenal (10.356). An earlier, similar saying is attributed to the pre-Socratic Greek philosopher Thales: τίς εὐδαίμων, "ὁ τὸ μὲν σῶμα ὑγιής, τὴν δὲ ψυχὴν εὔπορος, τὴν δὲ φύσιν εὐπαίδευτος" (What man is happy? "He who has a healthy body, a resourceful mind and a docile nature."). Olympic Games has been transformed to "Olympic Security Games" in parallel with "Olympic Dopping Games" and are nominated to countries that do not fulfill logic criteria for selection (e.g. ctiminality, terrorism threats, poverty etc.) In most cases the only who benefit from the Games are the sponsors and the media and of course the "medal winners" that I am not sure for what exactly they cry for during the related ceremony – are they tears of pride; tears of relief or tears of happiness for full wallets? As for the major witticism that their achievements will inspire the youth to follow their example I would agree with that since a supercar is always a good motivation for super athletes and champions around the globe. As for the Cybathlon I would advice the Swiss organizers to pay a visit to their own Olympic Museum in Lausanne and have a look at the history concentrated there and then remove the world "Olympic" from the event they are planning for.

◈ This comment have nothing to do with "real athletes" that they honor their identity by respecting both their body, soul and mind – and there are many of them but too modest to cry out loud their opinion about the abjection of the Olympic Idea!

Rio 2016: The "Olympic ideal" and the reality of capitalism

Source: https://www.wsws.org/en/articles/2016/08/08/pers-a08.html

Aug 08 –"The goal of Olympism is to place sport at the service of the harmonious development of humankind, with a view to promoting a peaceful society concerned with the preservation of human dignity." These words, which appear in the Olympic Charter's "Fundamental Principles of Olympism," are supposed to sum up what is referred to with sanctimonious reverence as the "Olympic ideal."

There has never been a golden age of the Olympic games, which have for over a century served as an arena for the promotion of nationalism. The founder of the modern Olympics, Baron Pierre de Coubertin, was candid in acknowledging that he valued sport not only for its potential for advancing mankind's development, but also for its use in preparing French men to become better soldiers in war.

With the opening of the 2016 games in Rio de Janeiro, however, the contrast could hardly be more stark between the supposed Olympic ideal and the reality of a capitalist system mired in economic crisis and social inequality and hurtling toward another world war.

The opening ceremony of the Rio games, held in the city's iconic Maracana Stadium, was widely covered by the international news media. Less reported was a brutal

attack by the Brazilian police against a demonstration organized a half mile away, called against what the protesters termed "the exclusion games." Police used tear gas, pepper spray and stun grenades to drive the demonstrators off the streets, injuring several.

Earlier clashes were seen along the route taken by the Olympic Torch, which in one case was extinguished by a crowd of workers and youth in the coastal town of Angra dos Reis. They had turned out to protest the expenditures on the Olympics under conditions where public employees and teachers are not being paid and transit service and health care are being cut because of the deepening fiscal crisis.

In 2009, when the Brazilian government secured the 2016 games for Rio, then President Luiz Inacio Lula da Silva proclaimed, "Our time has arrived." During the same period, Lula was boasting that Brazil, whose growth rate had rebounded to 5 percent, was immune from the effects of the global financial meltdown of 2008.

Since then, the world capitalist crisis has devastated Brazil's economy, driving the official unemployment rate to over 11 percent and sending real wages falling. Millions are threatened with being thrown back into extreme poverty in what is already one of the world's most socially unequal countries.

Even as the games unfold, the Brazilian Senate is moving ahead with the impeachment of ousted President Dilma Rousseff on trumped-up charges of budgetary irregularities. Those moving against the Workers Party (PT) president are, like the PT itself, implicated up to their necks in the multi-billion-dollar Petrobras bribery scandal. Nonetheless, they are backed by both Brazilian and foreign capital, which wants a full change of regime in order to proceed with sweeping austerity policies under interim President Michel Temer, Rousseff's former vice president and political ally.

In the run-up to the opening of the games, the Brazilian government heavily publicized alleged terror plots that appeared to have little if any substance. In fact, the massive security operation accompanying the Rio games is aimed not at terrorists, but at the Brazilian population itself. An occupation army of some 100,000 troops and police—twice the number mobilized for the already militarized 2012 London games—has been deployed across Rio, many dressed in combat gear, carrying assault rifles and backed by armored cars and even tanks.

This operation has been supplemented by the United States military and intelligence apparatus, which, according to NBC, has "assigned more than 1,000 spies to Olympic security," hundreds of whom have been sent to Brazil. In addition to the CIA, FBI and NSA spooks, detachments of Marine and Navy commandos from the US Special Operations Command have been deployed on the ground.

This is the culmination of a campaign of repression that has unfolded over the past few years in tandem with preparations first for the 2014 World Cup football tournament and now for the Olympics. Violent police measures have been used to drive tens of thousands from their homes in impoverished districts targeted for development, while thousands more homeless have been swept from the streets in what amounts to an exercise in "social cleansing." Police have killed between 40 and 50 people a month in the city over the recent period, while extra-official death squads have murdered many more. So much for the Olympics and "human dignity."

Against this backdrop, the vast wealth expended on the Olympics, all in pursuit of enrichment and private profit, is obscene. Corporate sponsors, including Coca-Cola, Samsung, Dow Chemical, General Electric, McDonalds and others, have paid hundreds of millions of dollars for exclusive marketing rights and are spending hundreds of millions more to exploit them. TV companies have shelled out $4 billion to broadcast the 19-day event, while marketing revenues are expected to total $9.3 billion.

A relative handful of individual professional athletes will make tens of millions more from product endorsements. The days when the Olympics were a celebration of amateur sports are a distant memory.

Within the games themselves, the overriding atmosphere of social inequality is ever present. While poorer teams are dealing with substandard conditions in hastily constructed Olympic villages, the US

basketball "dream team" is residing on the luxury cruise ship Silver Cloud, moored in Rio's harbor and surrounded by police and navy patrol boats.

Meanwhile, the use of the Olympics to promote nationalism and prepare for war is as virulent in the Rio games as at any time since Adolf Hitler convened the 1936 Olympics in Berlin.

On Monday, it was announced that Russian athletes will be banned entirely from the Paralympics to be held next month in Rio in connection with charges of state-sponsored doping of athletes. Earlier, 118 members of the country's track and field team were banned under a system relegating the decision to the federations of each individual sport.

Washington, the World Anti-Doping Agency, various NGOs and the Western media have waged a virulent campaign to exclude every Russian athlete from the Rio Olympics and prevent the country's flag from even appearing there, as part of a broader effort to paint Russia as a "rogue" nation that must be stopped by force.

The campaign to bar Russia from the games is inseparably bound up with the growing US-NATO siege of the country's Western borders, which has been steadily escalated since the US- and German-orchestrated coup that installed an ultra-right, anti-Russian regime in Ukraine in 2014.

The sanctimonious denunciations of Russia for having corrupted an otherwise pristine sporting event reek with bad faith and hypocrisy. The anti-Russian campaign intentionally obscures the wholesale corruption surrounding the entire organization of the games as well as the rampant doping practiced by nearly every country.

The controversy, which has run in tandem with the Democratic Party's neo-McCarthyite campaign denouncing Vladimir Putin for interfering in the US election, has been pumped up as part of the attempt to prepare public opinion for a military conflict with Russia that could quickly lead to nuclear war.

While this year's Olympic Games will once again provide a display of astounding athletic ability by participants from across the planet, the entire event is overshadowed by a social system that is founded on inequality and exploitation, and threatens the very survival of humanity.

Rio 2016: Olympic security chief attacked after opening ceremony before knife-wielding robber shot dead by police

Source: http://www.mirror.co.uk/news/world-news/rio-2016--olympic-security-8584340

Aug 07 – The Rio 2016 Olympic Games have been rocked by more trouble after it emerged the Olympic security chief had been attacked after he left the opening ceremony.

The Olympics security chief was attacked as he left the Games opening ceremony by a knife-wielding robber who was shot dead by a cop. Felipe Seixas was walking to his car near the Maracanã Stadium early on Saturday when he was set upon by four men brandishing knives. A policeman with him shot one of the assailants dead and the others fled. Authorities have attempted to hush up details of the shooting, which is a monumental embarrassment to crime-plagued Rio 2016 bosses. The security chief himself became a mugging target after committing 10,000 security forces to protect the extravaganza.

Tiago Brandao Rodrigues was mugged on his way back to his hotel

Meanwhile Portugal's Minister of Education was robbed at knifepoint as he headed back to his hotel from the Olympic cycling road race. Tiago Brandao Rodrigues, 39, was stopped by a man brandishing a blade near his hotel in Ipanema on Saturday afternoon. He and aide Rita Roque were forced to hand over cash and mobiles. The mugger fled after taking their valuables but was intercepted by locals who held him

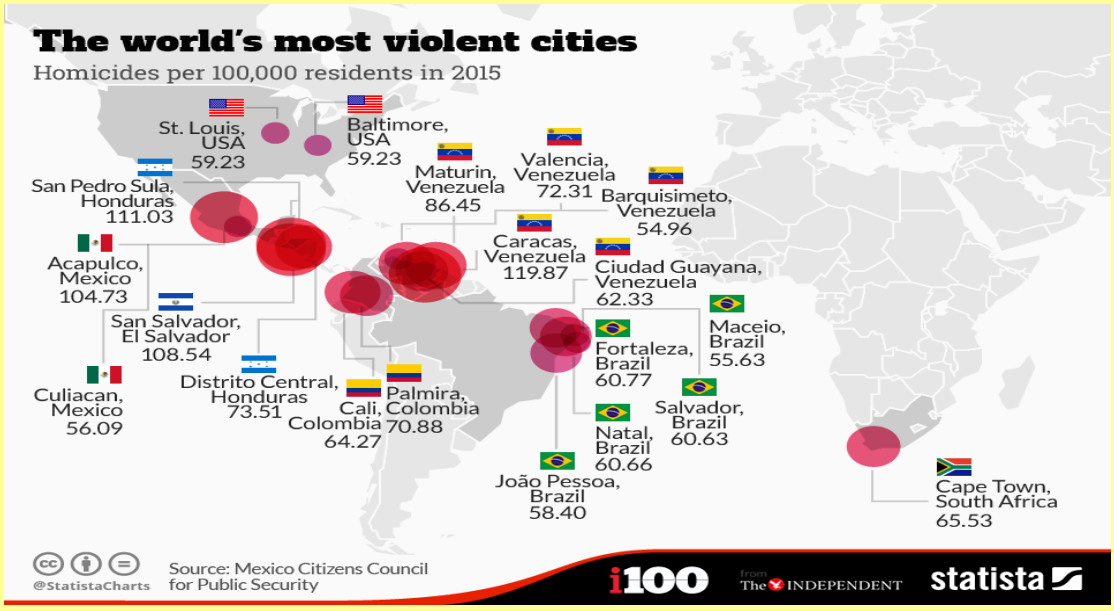
until police arrived and reunited the visiting politician and his advisor with their belongings. It is thought an accomplice managed to get away empty-handed.
Ms Roque, who described the weapon the mugger used as a "domestic knife", admitted: "It was a bit of a fright but we're both okay."
Police in Brazil confirmed a 26-year-old named as Marcio Luiz Brandao had been arrested and accused of robbery - and faces a 10-year jail sentence if convicted. Before being taken to a police station to be fingerprinted, he had to be treated in hospital for injuries he suffered at the hands of the angry locals who stopped him fleeing the scene of his crime. Local reports said he had tried to bribe the officers who arrested him by offering them the equivalent of £1200 to avoid being taken into custody. The detainee was held overnight in a police station before being transferred to Rio's notorious Bangu prison. Brandao was described as being well-known to police.

Reuters / A bomb disposal expert wearing protective equipment examines a suspect package one of several to blight the games

So far the games have been dogged by security fears and petty crime. A suspect package was spotted outside a games venue as the opening ceremony took place. Police and army bomb disposal experts raced to Copacabana after terrified members of the public reported seeing what could be an explosive device in the road.
Just moments later, it was reported that a second security scare had been sparked when a series of unauthorised drones made their way to the Olympic stadium.

50 most violent cities in the world

Source: http://www.msn.com/en-in/news/crime/50-most-violent-cities-in-the-world/ss-BBoS6Bm?ocid=spartandhp#image=1



Aug 09 – The Citizen Council for Public Security and Criminal Justice, a Mexico City advocacy group, has compiled a list of the most violent cities in the world by murder rate per capita. Caracas in Venezuela took the top spot from last year's most violent city, San Pedro Sula in Honduras. Click through to see the full list.

50. Obregon, Mexico
Homicides 90
Population: 318,184
Murder Rate: 28.29 per 100,00 residents
49. Maracaibo, Venezuela
Homicides: 477
Population: 1,653,211
Murder Rate: 28.85 per 100,00 residents
48. Macapá, Brazil
Homicides: 138
Population: 456,171
Murder Rate: 30.25 per 100,000 residents
47. Johannesburg, South Africa
Homicides: 1,344
Population: 4,434,827
Murder Rate: 30.31 per 100,000 residents
46. Victoria, Mexico
Homicides: 107
Population: 350,862
Murder Rate: 30.50 per 100,000 residents
45. Pereira, Colombia
Homicides: 153
Population: 469,612
Murder Rate: 32.58 per 100,000 residents
44. Curitiba, Brazil
Homicides: 1,121
Population: 3,230,061
Murder Rate: 34.71 per 100,000 residents
43. Porto Alegre, Brazil
Homicides: 1,479
Population: 4,258,926
Murder Rate 34.73 per 100,000 residents
42. Nelson Mandela Bay, South Africa
Homicides: 413
Population: 1,152,115
Murder Rate: 35.85 per 100,000 residents
41. Durban, South Africa
Homicides: 1,237
Population: 3,442,361
Murder Rate: 35.93 per 100,000 residents
40. Campina Grande, Brazil
Homicides: 146
Population: 405,072
Murder Rate: 36.04 per 100,000 residents
39. Campos dos Goytacazes, Brazil
Homicides: 175
Population: 483,970
Murder Rate: 36.16 per 100,000 residents
38. Aracaju, Brazil
Homicides: 349
Population: 925,744
Murder Rate: 37.70 per 100,000 residents

24. Cumaná, Venezuela
Homicides: 199
Population: 416,587
Murder Rate: 47.77 per 100,000 residents
23. Manaus, Brazil
Homicides: 985
Population: 2,057,711
Murder Rate: 47.87 per 100,000 residents
22. Cuiabá, Brazil
Homicides: 412
Population: 849,083
Murder Rate: 48.52 per 100,000 residents
21. São Luís, Brazil
Homicides: 802
Inhabitants: 1,511,678
Murder Rate: 53.05 per 100,000 residents
20. Barquisimeto, Venezuela
Homicides: 719
Population: 1,308,163
Murder Rate: 54.96 per 100,000 residents
19. Baltimore, USA
Homicides: 343
Population: 623,911
Murder Rate: 54.98 per 100,000 residents
18. Maceio, Brazil
Homicides 564
Population: 1,013,773
Murder Rate: 55.63 per 100,000 residents
17. Culiacán, Mexico
Homicides: 518
Population: 923,546
Murder Rate: 56.09 per 100,000 residents
16. Joao Pessoa, Brazil
Homicides 643
Population: 1,100,956
Murder Rate: 58.40 per 100,000 residents
15. St. Louis, USA
Homicides 188
Population: 317,416
Murder Rate: 59.23 per 100,000 residents
14. Salvador (y RMS), Brazil
Homicides: 1,996
Population: 3,291,830
Murder Rate: 60.63 per 100,000 residents
13. Natal, Brazil
Homicides: 921
Population: 1,518,221
Murder Rate: 60.66 per 100,000 residents
12. Fortaleza, Brazil
Homicides: 2,422
Population: 3,985,297
Murder Rate: 60.77 per 100,000 residents11

37. Recife, Brazil
Homicides: 1,492
Population: 3,914,317
Murder Rate 38.12 per 100,000 residents
36. Vitória da Conquista, Brazil
Homicides: 132
Population: 343,230
Murder Rate: 38.46 per 100,000 residents
35. Tijuana, Mexico
Homicides: 668
Population: 1,708,679
Murder Rate: 39.09 per 100,000 residents
34. Gran Barcelona, Venezuela
Homicides: 334
Population: 833,328
Murder Rate: 40.08 per 100,000 residents
33. Kingston, Jamaica
Homicides: 495
Population: 1,219,366
Murder rate: 40.59 per 100,000 residents
32. New Orleans, U.S.A.
Homicides: 164
Population: 395,710
Murder Rate: 41.44 per 100,000 residents
31. Vitoria, Brazil
Homicides: 802
Population: 1,910,101
Murder Rate: 41.99 per 100,000 residents
30. Teresina, Brazil
Homicides: 360
Population: 844,245
Murder Rate: 42.64 per 100,000 residents
29. Goiânia y Aparecida de Goiânia, Brazil
Homicides: 847
Population: 1,952,607
Murder Rate: 43.38 per 100,000 residents
28. Detroit, USA
Homicides: 295
Population: 672,193
Murder Rate: 43.89 per 100,000 residents
27. Feira de Santana, Brazil
Homicides: 281
Population: 617,528
Murder Rate: 45.50 per 100,000 residents
26. Belém, Brazil
Homicides: 1,101
Populations: 2,402,437
Murder Rate: 45.83 per 100,000 residents
25. Guatemala City, Guatemala
Homicides: 1,528
Population: 3,239,185
Murder Rate: 47.17 per 100,000 residents

Ciudad Guayana, Venezuela
Homicides: 547
Population: 877,547
Murder Rate: 62.33 per 100,000 residents
10. Cali, Colombia
Homicides: 1,523
Population: 2,369,821
Murder Rate: 64.27 per 100,000 residents
9. Cape Town, South Africa
Homicides: 2,451
Population: 3,740,026
Murder Rate: 65.53 per 100,000 residents
8. Palmira, Colombia
Homicides: 216
Population: 304,735
Murder Rate: 70.88 per 100,000 residents
7. Valencia, Venezuela
Homicides: 1,125
Population: 1,555,739
Murder Rate: 72.31 per 100,000 residents
6. Distrito Central, Honduras
Homicides: 882
Population: 1,199,802
Murder Rate: 73.51 per 100,000 residents
5. Maturín, Venezuela
Homicides: 505
Population: 584,166
Murder Rate: 86.45 per 100,000 residents
4. Acapulco, Mexico
Homicides: 903
Population: 862,176
Murder Rate: 104.73 per 100,000 residents

3. San Salvador, El Salvador
Homicides: 1,918
Population: 1,767,102
Murder Rate: 108.54 per 100,000 residents

2. San Pedro Sula, Honduras
Homicides: 885
Population: 797,065
Murder rate: 115.98 per 100,000 residents

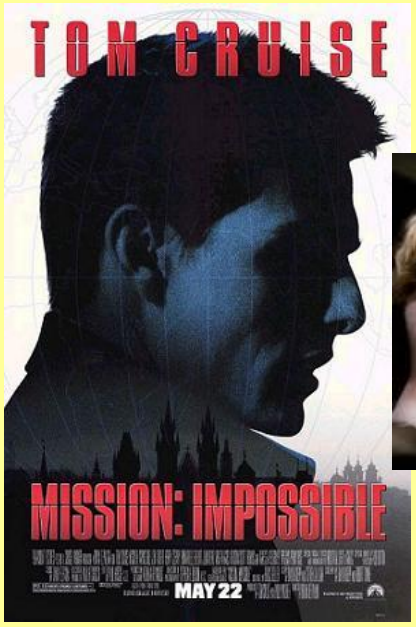
1. Caracas, Venezuela
Homicides: 3,946
Population: 3,291,830
Murder Rate: 119.87 per 100,000 residents

EDITOR'S COMMENT: 20 out of 50 are in Brazil – the country hosting the 2016 Olympic Games!

Biometrics: Reliable, Quick and Efficient — but Not Foolproof

Source: http://www.emergencymgmt.com/safety/Biometrics-Not-Foolproof.html

Aug 05 – In 1996, moviegoers watched as Ethan Hunt peeled off a lifelike mask and slinked through U.S. Embassy security and facial recognition systems in *Mission Impossible I*. As one of those moviegoers, I absolutely lost my mind. Nothing was safe from someone who could steal your face and wear it around. Nothing.

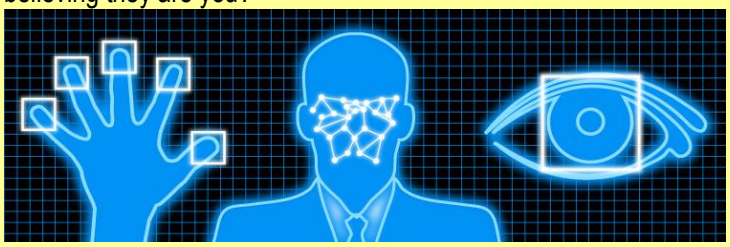


At the time, biometric security measures looked so far away, seemingly relegated to government agencies like the CIA, classified military facilities and spy films. But today we live in a world that very much relies on our fingerprints, faces, voices and other markers to verify that we are who we say we are.

Apple iPhone users clamored to upload their own fingerprints into their new devices when the biometric security feature was added, and just this week, **Samsung announced the Galaxy Note7 that effectively scans your iris to verify your identity.**

For governments, fingerprints and photographs are some of things collected for a new driver or security clearance.

But all of this information being collected forces you to consider, what about those Ethan Hunt/James Bond-types clever enough to steal passwords you can never change? What happens when someone steals your biometric data and tricks a machine into believing they are you?



Believe it or not, it has already happened; **a dead man's phone was unlocked using a fingerprint reprinted in a lab.** It took some doing, but Michigan State University's biometrics expert Dr. Anil Jain and his team made it happen.

Jain was recently approached by detectives, who asked him to unlock a murder victim's phone for potential evidence with only the victim's full set of prints, he did.

When you ask him what he thinks the larger implications of biometrics are, he will tell you that as security measures go, biometrics offer something PIN codes and passwords can't. A thumbprint or an iris scan are not only harder to fake, they're impossible to guess — but they still aren't perfect.

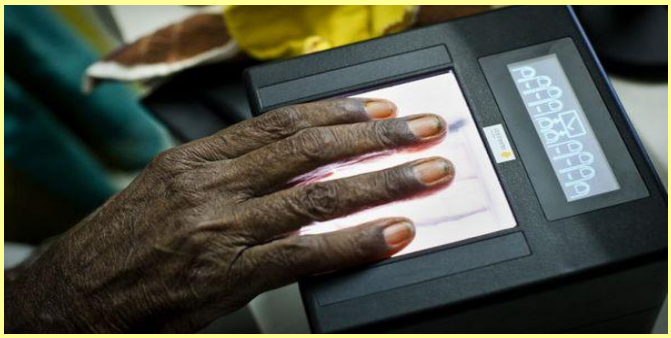
"Credential-based systems, ID card, passwords, PIN numbers, they all sort of have their own weaknesses, right? Documents can be forged; documents can be stolen. Passwords and PINs, even though they are supposed to be random characters, people, if they want to remember it, [make them a] relatively simple combination of characters.," he told *Government Technology*. "That's why for higher security, we have started adopting biometrics. And there are some places where biometrics are the only way to find a solution."

In high-security areas, border crossings and even at the Department of Motor Vehicles, biometrics, like facial recognition, offer a reliable way to identify people quickly and efficiently.

While he advocates that the technology is a great way to improve security or identify individuals, whether on a cellphone or some other system, he acknowledges that these biometric systems can be tricked.

The best way to ensure any security barrier is to couple it with other ID verification methods.

"So, basically, the idea is that, yes, biometric systems can be spoofed, and that is true with



any security system, right?" Jain said. "Now passports have a security chip in them, the dollar bills that we use are more difficult to forge, but that doesn't mean it has fixed everything."

As for whether he is concerned about the data being stolen and used inappropriately, he said there are really two kinds of thefts in this space.

"There are **two types of attacks** which are possible in a biometric security system; one we already talked about, the most publicized one, namely fake biometrics offensive. And the second attack is the biometric data is stolen from a database," he said. "If you cannot safeguard the data, then that's a problem."

In New York, the DMV relies on facial recognition, not for access to a certain location or system, but rather to ensure that people are who they claim to be. Social Security numbers and fingerprints are one thing, but more than 15 million photos on file offer a fast, efficient means of cutting down on multiple identities, fraud and other criminal activities.

Owen McShane is an investigator for the department and said the facial recognition program, which has been active since 2010, has been an effective tool in stopping illegal activity.

"[The program] is identifying a lot of the people you would not want driving behind you," he said.

Since the beginning, McShane said they have identified more than 15,000 people with more than one identity — 50 percent were trying to circumvent driving restrictions and suspended licenses, 30 percent were avoiding other issues like warrants and child support, and the remaining 20 percent were facing suspended or revoked licenses under all of their aliases.

"Over the years, we've tried different mechanisms. We validate the Social Security numbers for everyone who applies for a license," McShane said. "When we first started doing that, we found a lot of people who were using the same numbers or committing fraud with the numbers. In terms of biometrics, facial recognition is the easiest. It doesn't require any special processing."

Other identification practices like iris scans and fingerprinting required additional processing, but photos allow an applicant to be processed against the millions of existing records fairly quickly. Just this year, the program boosted the recognition parameters from 64 points of recognition to 128.

And when it comes to locking down the database, McShane said the files are closely monitored and access is limited. Investigators are granted deeper access than other DMV employees, and a trail of access is available should questions arise about who or why a certain file was accessed.

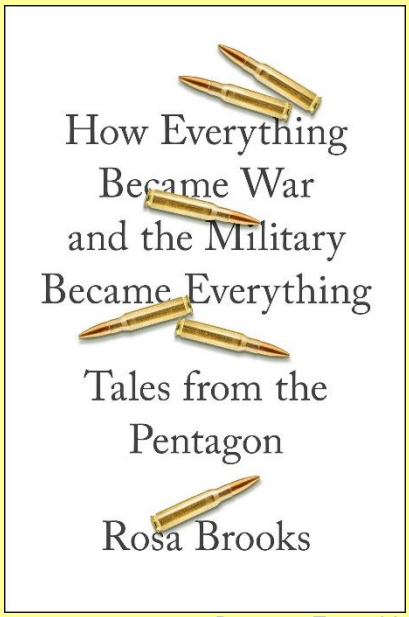
Bikini *vs.* Burkini

Cannes & Marseille (France): Bikini – Burkini: 1-0

In Today's Complex World, 'We Have No Idea What War Is'

By Kathy Gilsinan Associate editor at The Atlantic
Source: http://www.defenseone.com/ideas/2016/08/we-have-no-idea-what-war/130639/

Aug 10 – Just days after I interviewed the legal scholar Rosa Brooks about her book on her time as a civilian advisor in President Barack Obama's Pentagon, the United States bombed Libya again. This was the third such strike in the U.S. campaign against ISIS there, but this time, Reuters reported, U.S. officials said it "marked the start of a sustained air campaign."



Still, it was hard to tell how much of a turning point it really was. Small numbers of American special-operations forces have been active in the country since late last year, ostensibly to support local partners against ISIS, though details are vague. By launching more airstrikes at the beginning of August, America was not so much opening up a new front in its war on the group as maintaining an existing one. And it wasn't so much changing tactics as amplifying them. Did this mean that the United States somehow became more "at war" in Libya last week than it had been the week before? For that matter, as U.S. planes have accelerated their bombing campaign against militants in Afghanistan this summer, and President Obama has vowed to leave some 8,000 troops there through the end of his term, is the United States any less "at war" there than when U.S. combat operations in the country officially ended in December 2014? What about in Pakistan, Somalia, and Yemen, where U.S. drones have killed thousands of people outside of what the government considers "areas of active hostilities"?

Brooks's new book, *How Everything Became War and the Military Became Everything*, is about the limits of categories like these, just as much as it's about war and the American military. Brooks, a writer and law professor at Georgetown University, bases her account in part on her two-plus years at the Defense Department,

where she observed the blurring of the line, in her words, "between war and not-war." The Pentagon, she writes, is on the one hand a "vast, bureaucratic, death-dealing enterprise;" on the other, the U.S. military operates in "nearly every country on earth" and in many cases its activities have nothing to do with shooting at bad guys. Its personnel, she notes, have been involved in everything from Ebola response in Liberia to agricultural reform in Afghanistan to health care in Malaysia. The range of their work is as remarkable as it is unsettling. If the U.S. military's job is to protect America's own security, why is it doing all of these things?

Brooks contends that the amorphous nature of modern security threats—conflict and terrorism, but also things like climate change and financial collapse—have made it "increasingly difficult to define a uniquely 'military' role and mission." It's not just that the Bush and Obama administrations' pursuit of terrorists around the world have pushed the geographic boundaries of the so-called war on terror beyond the more formal battlefields of Afghanistan and Iraq. It's also that, as the military has sucked up an increasing share of America's foreign-policy resources in the post-9/11 era, the Pentagon has become "like a Super Walmart with everything under one roof," as retired General David Barno tells Brooks. "Like Walmart," she writes, "the military can marshal vast resources and exploit economies of scale in ways impossible for mom-and-pop operations. And like Walmart, the tempting one-stop-shopping convenience it offers has a devastating effect on smaller, more traditional enterprises—in this case, the State Department and other civilian foreign policy agencies."

I spoke to Brooks recently about war, peace, and the space in between. What follows is a condensed and edited transcript of our conversation.

Kathy Gilsinan: The lines between "war and non-war are growing indistinct," as you say. As a very basic question, what is war? And do you know it when you see it?

Rosa Brooks: I think we have absolutely no idea what war is. I think everything that frightens us, we now label war, more or less. And that's a problem. As an analytic category, [war] has lost any clarity it might once have had.

Gilsinan: Are there any common features to things that are war-like?

Brooks: They run the gamut, and they have fewer and fewer common features. We look at Syria and we say, "Oh look, there's war." And that's the sort of traditional understanding of war. Lots of people who are shooting each other, blowing each other up, generally killing each other.

But we also are thinking of cyber [operations], more and more, primarily through the framework of war. We look at terrorism through the framework of war. Already some of our thinking about what we call "illicit transnational actors"—not terrorists, but groups like narco-smugglers and traffickers—[is] beginning to get framed as part of war and war-like stuff.

When we think of sort of the classic understanding of war that we've had in Western society, it owes a huge amount to [Carl von] Clausewitz, the 19th-century Prussian military strategist whose very famous definition of war was: "War is the continuation of politics by other means." But Clausewitz was really clear what those "other means" had to include, and Clausewitz's understanding of war was that it had several defining facts that differentiated it from other kinds of competitions or conflicts that weren't war. So, to Clausewitz, war is organized, it's violent, it's on a mass scale—not an individual scale—and it is for the pursuit of political ends. For Clausewitz, a game of chess is not war, because it's individual, not violent, and it has no political ends. A rugby match where people end up with bloody noses and broken arms is not war, because although it's organized, it also has no political ends. A barroom brawl is not war, because it's not organized, and it has no political ends. Economic competition between states, however fierce, is not war, because it's not bloody—it's mass, it's organized, and political—but it's not violent.

In the terms of Clausewitz, where you have massed armies of thousands and thousands of people, and single battles that are killing tens of thousands of people, terrorism is small potatoes. But increasingly, we've got these things that, they're not mass, they may not be organized, the political ends are sometimes unclear, and yet we're calling them war. It's not completely crazy that we want to, since we now live in a world where technology has enabled both states and even individuals to cause a level of disruption that it might once, 100 years ago,

have taken war to achieve. So on some level, why not call it war if it sort of does what war does? On the other hand, Clausewitz would not have recognized [it], if you said "We're at war with terrorism." He would have just said, "Whatever you're doing is not war."

Gilsinan: I see how terrorists aren't, under the Clausewitzian definition, doing acts of war on the United States, but the United States's "war on terror" is organized, violent, on a mass scale, and for the pursuit of—

Brooks: We're certainly responding with something that looks more like war. It's just not all that clear that it's entirely reciprocal. Could you have a war if only one party knows it's a war? I don't know how that fits into the Clausewitzian framework.

Gilsinan: Do you have in mind a glory era in which the lines were totally clear—[an American] war started when Congress declared it and ended with a signed peace agreement between the combatants? Or are there ways in which we've seen this continuum, rather than binary, between war and not war? There was never a peace agreement when the fighting stopped after the Korean War in 1953.

Brooks: The line between war and not war has never been as clear as international lawyers sometimes like to pretend it is—that we have this nice, neat framework that says wars have beginnings and ends; there are places that are at war; there are places that are neutral. There are combatants; there are civilians. You can kill the combatants, you can't kill the civilians, end of story. And it's never been that neat, obviously. On the margins at least, there have always been actors who didn't quite fit—partisans, guerrillas, countries that were technically not at war but where there was a lot of proxy war activity going on. The categories were never perfect; they were always somewhat arbitrary. But now the exceptions have kind of overwhelmed the rule.

Gilsinan: "Now" being in the post-September 11th era?

Brooks: Very much so. September 11th itself didn't create this world, but it's both the symbolic beginning and a dramatic acceleration of a lot of trends that had been out there already.

Gilsinan: Which is interesting, because that era, in terms of the U.S. response, was kicked off with the more classic, interstate wars. You invaded Afghanistan, you invaded Iraq.

Brooks: Absolutely. And it was in some ways an illustration of our difficulty in thinking beyond the framework of traditional state-on-state conflict. Like there we were, confronted by something very different—an attack that didn't involve traditional weapons, by a non-army, from multiple different nationalities. But the only thing we could figure out how to do to respond was go and invade a bunch of states.

Gilsinan: Then it sounds like the categories weren't necessarily a good thing.

Brooks: They certainly limited our imagination, but I don't know if I'd characterize it quite that way, because we had a choice. It was not inevitable that the 9/11 attacks would be categorized as starting a war in a legal sense. They could have been categorized as crime, they could have been categorized as in between—it's not quite a war, not quite a crime, [so] we're going to do some stuff that's in between. It was not that there were no alternative categories available, it was that the Bush administration was not interested in using them. And I am not sure of the extent to which they themselves thought through the long-term implications of choosing to call it war—I think some did, some didn't—but they sent us down one path, when other paths were available.

Gilsinan: When you went in [to the Pentagon] versus when you came out, what would you say was the biggest difference in your thinking about what war means?

Brooks: I was both impressed and somewhat terrified by the dawning awareness that the Pentagon does everything. If you go in with a bit of a stereotype of, the military shoots guns and blows stuff up, and then you find yourself in meetings with military officials who are talking about running a program to prevent sexual violence in the Congo, and doing a big research project on how you most effectively dissuade foreign militaries from using sexual violence during conflict, and then you walk into another meeting and people are talking about how to promote micro-enterprise among Afghan women, it's both kind of amazing and inspiring—that there's this unbelievably diverse set of talents and people [and] projects. It's amazing that the U.S. can still marshal so much talent and idealism. At the same time, it's kind of scary, because you think, "Wait,

whoa, is this the right place? Do we know what we're doing? And what happens to the military as an institution when we're asking it and expecting it to be all things to all people?"

Gilsinan: What does happen?

Brooks: Well, we'll find out. It's a big experiment, and I think there are several possibilities. There's a bad for the military, bad for the world possibility, and here's what that one looks like: The U.S. military does everything, but it's doing a lot of stuff that people weren't trained to do, does it badly, that has bad effects on the lives of human beings all over the world. It also decreases U.S. credibility, because what the world sees as the face of the U.S. is the military. It's a uniformed figure, which has bad ramifications for civil-military relations worldwide and for democracy. Meanwhile, the military as an institution is demoralized and less effective because we're trying to force one institution to do too many things.

[There is a] more interesting possibility. All these categories we've been talking about—war, peace, conflict, combatant, military—we made them up. They didn't come down from a divine power. This invites us to radically rethink what it is we want from our institutions, and how to organize them. And if the military is not doing these things well, but we think the United States needs to do them, and if we think it's not realistic that the State Department or USAID starts doing them again or doing them well, it invites us to say, why shouldn't we have a radically different military that combines within it a whole spectrum of activities, from traditional war-fighting to things that we think of as more peace-building and development? Why not really change how we think of the military, and change how we recruit, change our training, to make this an institution that does those things, does them well, and does them accountably? And that would be really hard. I think most people both in the military and outside of it sort of recoil at that and tend to want to go back to the much simpler "Well, shouldn't the military just fight?" I don't know if that's even possible anymore.

Gilsinan: [We're discussing] the dangers of this blurring of the line between war and not war. And yet there are fewer people dying in wars now than in the World War II era, when the boundaries were pretty clear, even if not completely clear. So on the one hand, the U.S. military is in maybe more countries than ever before, almost every country on earth. On the other, the worldwide level of killing going on is substantially lower than [at] almost any time in history. If the long-term trend is in this positive direction, how much should we worry about the categories?

Brooks: I think those are separate questions. I don't think they necessarily have a whole lot to do with each other. But I also would question whether we have a long-term trend. In the sweep of human history, 50 or 60 years is not a long-term trend, and I do worry about that. Of course it's good that we, over the last few decades, have seen a reduction in the number of people dying in violent conflict around the globe, but on the other hand, the world we live in remains extraordinarily dangerous in many, many ways, including some quite new ways, driven by technology—the speed at which epidemics can move around the world has increased due to changes in transportation technologies, the speed at which economic disruption can move around the globe because of changes in electronic technologies, et cetera. And, by the way, there are very many thousands of nuclear warheads and old-fashioned sources of destruction.

So I'm not all that comfortable when people say, "Oh, happy, happy news, interstate conflict and death have dropped in the last few decades." There have been plenty of other decades in world history where you've gotten a few decades, a hundred years, or a few hundred years of relative cessation in violence, only to have new catastrophes. I am very, very skeptical of claims that what we have is a long-term trend, as opposed to saying we have no idea whether this continues or not, and lots of things could destabilize it.

Gilsinan: One of the things that could destabilize it is the expansion of the U.S. military all over the world and the tendency to view everything that scares us, as you say, in terms of war.

Brooks: When you build up a national and international legal system where our ability to constrain power and coercion are very much linked to the creation of this particular set of legal and political categories—armed conflict, foreign, domestic, military, civilian—then when those categories get blurry, you lose your ability to effectively constrain power. But that's not the same thing as saying the answer is necessarily to shore up the categories again. The categories themselves are arbitrary—what's important is their relationship to a much

broader system of consensus, of institutions, of laws, and so forth. We didn't create these categories because there's something magical about [them], we created these categories because they were part of a system that helped us achieve certain normative goals that have to do with the rule of law, with promoting stability and peace and so forth, and if the categories aren't doing it, then maybe the categories don't make sense anymore. Maybe we now live in a world in which we need an in-between category, something that's in between war and peace, with a set of in-between implications for law and for power and for rights.

Gilsinan: Are those categories Western-invented? To what extent is, say, Russia observing those categories? To what extent is China?

Brooks: Every culture in the world has had some concept of war and some notion of what should be permissible and what should be prohibited during wartime, and what the distinctions are between warriors and non-warriors. In that sense, there's nothing Western about it. In a narrower sense, sure they're Western—the Geneva Conventions [are] what we think of the modern law of armed conflict, [and they] very much arose out of conflicts between Western states in the 19th century and the first half of the 20th century. I think Russia and China—partly because they're authoritarian, which gives them the ability to move a little more rapidly because they don't have to worry about debate or argument, and they're less scrupulous, frankly—have been much more quick than Western states to look at the issues we've been talking about and say, "These categories don't make any sense anymore, and that is an opportunity for us. We can exploit the West's continuing insistence that the categories do make sense while we do whatever we want."

Gilsinan: The "little green men" and turning off the electricity in Ukraine.

Brooks: Absolutely, the Russians have been very creative about operating in that space between war and peace in ways that have been very hard for the West to respond to, in part because they sort of confound our categories. We want to look and say, is there a war? Or is there not a war? And the answer is, well, hard to say.

Gilsinan: And that opens up space—potentially dangerous space—because I think some of what constrains American policymakers is saying "Look, do we really want to start a war with Russia over Crimea?" But if there's some in-between option, of combating Russia in Crimea or contesting the annexation of Crimea, without resorting to war but resorting to some sort of in-between category—do you see that happening already?

Brooks: Not very much. I think that particularly in the special-operations community within the military, [there are] conversations about [how] we're probably permanently in some kind of gray area between war and peace. Our adversaries are operating with comfort and creativity in that world. How do we operate in that world? I think the question is, if we're going to be operating in that world, how do we do so while preserving our commitment to rule of law and democracy?

Gilsinan: The drone war is one of these issues where you could say it represents an in-between category—we're not at war with Pakistan, we're not at war with Somalia. There's a long history of soldiers trying to kill at a distance, stretching back to the ages of throwing spears and longbows and up through the age of cruise missiles. And you mention that you're troubled by the innovation of drones but that you had trouble articulating what it is about drones in particular that was disturbing. Can you try to articulate it?

Brooks: The drone war both highlights what is promising and what is frightening about some U.S. efforts to kind of operate in that in-between space. Start with the promising part: Yes, of course, we've always tried to find ways to kill the bad guys from a distance without risking the lives of our people. It's not a bad thing to want to do that. It's a good thing. Nobody thinks our troops should be engaging in hand-to-hand combat with terrorists because it's more chivalrous or something. And also the drone strikes represent part of a trend towards the individualization of warfare, where instead of firebombing Tokyo or Dresden, which kills thousands upon thousands of people from soldiers to infants indiscriminately, we now have a technology that enables us, combined with our intelligence and surveillance resources, to be really focused in who we target and say, we're not going to drop a bomb on cities in Syria, we're going to bomb this guy over here. And we are pretty amazingly good at hitting that guy and nobody else—not always, no question. And I

sometimes say to my friends who say "I don't like targeted killing," "Would you prefer untargeted killing?" Because that's what World War II was most of the time, with catastrophic results for civilian populations. But here's the dark side: Because it's individualized, because it operates below the radar and it's a technology that enables covert use of force across borders, it becomes invisible and shielded from meaningful democratic accountability, and shielded to some extent from international laws because of the deniability. This is our way of exploiting categories. The Russians use the little green men, when we use covert targeted strikes by unmanned vehicles. We then get to say, "Hey, this is just lawful wartime targeting combatants, there's nothing new here, so leave us alone." And yet at the same time, normally in a traditional war you know who the enemy is, you know where the battle is, and we don't know any of those things. The claims the U.S. makes about these targeted strikes are completely non-falsifiable because they're really not saying anything, and what little they say says, "Well, we can't tell you who we targeted, we can't tell you why, it's a secret, trust us." And that's very, very frightening.

***Kathy Gilsinan** is an associate editor at The Atlantic, where she covers global affairs. Previously, she was an associate editor at World Politics Review.*

Brazil uses collaborative approach to track terror threats during Olympics

Source: http://www.usatoday.com/story/sports/olympics/rio-2016/2016/08/12/brazil-uses-collaborative-approach-track-terror-threats-during-olympics/88613260/

(Photo: Andressa Anholete, AFP/Getty Images)

Aug 12 – Above the food trucks and cruise ships stationed along Rio's festive Olympic Boulevard, a quiet room is lined with desks that have a flag above each computer: Iran, Russia, China, United States, Oman. The police here watch a news memo board, a map with roving red squares that represent federal agents monitoring sports venues, and a live stream of Olympic judo.

Brazilian organizers say this control room is one of several such centers that represent a unique approach to collaboration to provide security for the 500,000

foreign guests during the August and September sports competitions here in Rio de Janeiro. The Games have so far gone off without any major hitch in security for visitors other than conventional crime and robberies, just like Brazil's 2014 World Cup and 2013 Confederations Cup. Brazilian hosts say they have taken every measure necessary to prepare themselves for threats unknown.

The latest sign of local authorities' zeal for Games security came on Thursday as federal agents arrested two Brazilians and detained three for questioning in an ongoing investigation that targets suspected sympathizers with the self-proclaimed Islamic State. Brazilian authorities gave few details on the arrests, only saying that the goal was "to guarantee the security of the Olympic Games and citizens' well-being." In a similar series of arrests in July, a prosecutor confirmed that their tip came from the Federal Bureau of Investigation.

"When you understand that an event like the Olympics is a global one, I think then it's the responsibility of everybody to support its security," said Valdecy Urquiza Junior, federal police commissioner and the head of Interpol Brazil.

What's unique about Rio's International Police Cooperation Center (IPCC), according to Urquiza, is actively sharing information rather than the host nation's police informing visiting agents once a day in briefings of occurrences in the area, as he said was the case in the 2010 World Cup in South Africa and the 2008 Beijing Olympics. Brazilian police opened this special control room for international law enforcement to work on its premises around the clock.

In addition to Rio's IPCC, which hosts representatives from 31 countries, a corollary center in Brasília pools intelligence data to monitor foreigners arriving in Brazil. Another in the capital city focuses on counter-terrorism, drawing on nine countries which Urquiza said have the best know-how in the field. A final collaboration unit set up on the tri-border area in Iguaçú Falls joins Argentine, Paraguayan and Brazilian police to monitor land crossings at Brazil's busiest border station during the Games.

"There is nothing that needed to be done that the Brazilian government didn't do related to this subject," Urquiza said. "Brazil rushed and approved anti-terror legislation. We set up specialized units for this activity. Our teams were trained both in Brazil and abroad. We established partnerships with police forces that best have a handle on this issue."

Those foreign police in Brazil for the Games are not armed with weapons — Urquiza said only a few dignitaries came accompanied by such security detail — but instead are armed with information, actively relaying intelligence from their countries' surveillance and law enforcement agencies to nerve centers here.

Rio's Olympics presented a curious cross of events for observers assessing the risk the host and its visitors faced for the kind of terror threats that have alarmed populations from Bangladesh to San Bernadino in recent months. Brazil has no history of terrorism committed by Islamic extremists. Its long-standing public security fears instead revolve around domestic issues, like lethal robberies and urban drug war violence.

But Games targets for extremists are plentiful: One-third of the countries participating in the Games are also members of the international coalition fighting the self-proclaimed Islamic State. Participants include France, Belgium and the United States, where so-called "lone-wolf" attacks have raised the concern about terror committed by an individual with merely online contact with organized terror groups, if any.

The Olympics have faced diverse attacks since Palestinian assailants killed 11 Israeli athletes during the 1972 Games in Munich. Attackers' ideologies are as varied as the teams that gather at the events. American bomber Eric Rudolph killed two people at the Atlanta Olympic park; he later said he did so out of opposition to legalized abortion. Italian anarchists attacked an Olympic merchandise store in 2006.

Urquiza said that stepped-up security with foreign partners has already led to actions on the ground: Agents in Brasília monitor the 80,000 passengers arriving in Brazil by air each day, and they identify one to two each day who need additional screening. Police identified at least one positive case amongst incomers and refused entry to a passenger who was wanted on financial crime charges in Qatar. Urquiza said that without the IPCC, Brazilian officials are only able to check entrants' backgrounds against Brazil's and Interpol's criminal databases, but that the center allows them to draw on data from other participating nations. That piece will go away after the IPCC shuts down after the Olympics, but Urquiza said they like the model so much they are trying to get 10 countries across North America, South America and Europe to continue the operation in the future.

Foreign expertise also comes handy in patrols, Urquiza said. He imagined a scenario in which a Brazilian officer saw a flag with Arabic writing at a venue. "I am not able to determine if that is a threat or somebody partying," he said. "But an Arab police officer is able to immediately identify this and reports it to us."

Nathan Thompson, a researcher with the Igarapé Institute, a think tank on public security based in Rio, said Brazilian officials' have shown they clearly welcome international collaboration on this front, a seeming recognition that Brazil, by the nature of the threats it faces, has little experience in counter-terrorism.

"I'd say that international cooperation at all levels is generally a good thing," Thompson said, "but I think the Brazilian public also has a right to know what form this cooperation will take in the future. But at the moment there is not a lot of transparency."

Thompson also added that the high level of involvement with the United States — Brazilian police have taken security courses with U.S. trainers and sent agents to observe events like the Super Bowl and Boston Marathon — is remarkable given the recent political history between the two over issues of surveillance and spying.

"All of this is in and of itself is notable given the fact that just three years ago Brazil was handling the fallout from the Snowden revelations," Thompson said. In 2013, President Dilma Rousseff took the rare decision to cancel a state dinner with President Obama after news reports of spying on her personal communications.

The clearest sign of that two-way street of intelligence sharing came

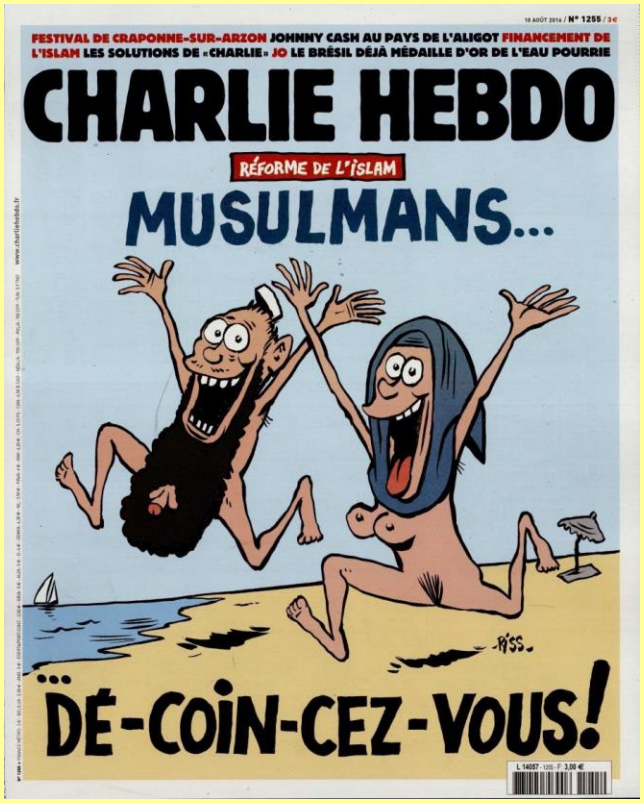
two weeks before the Games when Brazilian law enforcement announced the arrest of 12 men on suspicion of plotting terror attacks. Brazil's justice minister described the group as "absolutely amateur" but said the suspects made "preparatory acts." The suspects have not been charged and are being held in a maximum-security prison deep in Brazil's hinterland.

The men, almost all Brazilian converts to Islam and two with Arab ancestry, would simply have been called by police for questioning and put under surveillance had it not been for the pressure of the Olympics, said Ronaldo Vaz de Oliveira, a São Paulo lawyer representing several of the detainees.

Oliveira said the men exchanged information and ideas about conflicting parties in Iraq and Syria online in ways they believed were protected by constitutional guarantees of freedom of expressions.

"They can even post a photo, they can do the propaganda that they wish, they can say they like it — they are still in the sphere of ideas," said Oliveira, adding that real threats of violence come from criminals that possess heavy weaponry and is harder for authorities to reign in than politicized social media users.

"In the meantime organized crime in Rio de Janeiro and São Paulo are in the sphere of action and reality. So that's my argument. You arrest thoughts but you don't arrest actions."



New issue of Charlie Hebdo (Aug 2014)

Islam's reform
Muslims loosen up! ("Musulmans decoincez vous")

EDITOR'S COMMENT

When you pour oil into fire you must be ready to deal with the consequences. If personnel in Charlie Hebdo is victimized this is an acceptable risk. But what if there are collateral damages between the overall Paris populations? Or in other major French cities? Are there limits in satire and logic? No, I do not like the CH cover! The same way I oppose the Musulmanization of Europe, I see no point for a similar Europization of the Arab world.

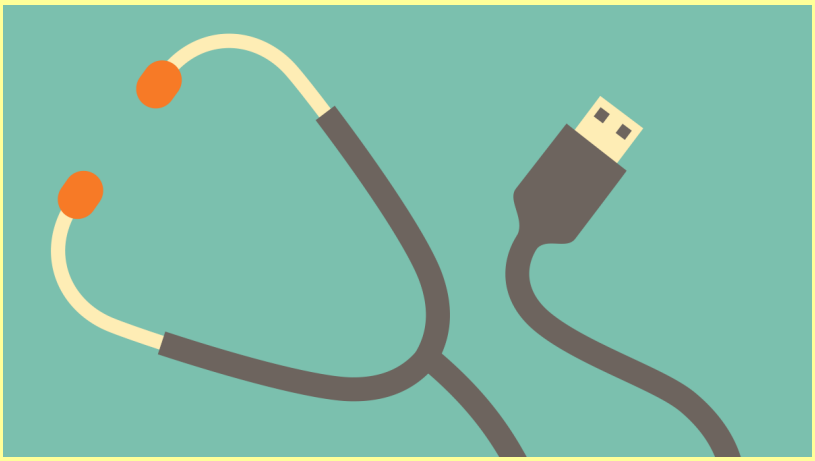
How the U.S. Spies on Medical Nonprofits and Health Defenses Worldwide

By Jenna McLaughlin

Source: https://theintercept.com/2016/08/10/how-the-u-s-spies-on-medical-nonprofits-and-health-defenses-worldwide/

Aug 10 – As part of an ongoing effort to "exploit medical intelligence," the National Security Agency teamed up with the military-focused Defense Intelligence Agency to extract "medical SIGINT" from the intercepted communications of nonprofit groups starting in the early 2000s, a top-secret document shows.

Medical intelligence can include information about disease outbreaks; the ability of a foreign regime to respond to chemical, biological, and nuclear attacks; the capabilities of overseas drugs companies; advances in medical technology; medical research, and the medical response capabilities of various governments, according to the document and others like it, provided by NSA whistleblower Edward Snowden. The documents show that such intelligence is used in efforts to protect U.S. forces, assess the readiness of foreign armies, create opportunities for U.S. diplomats to build



goodwill, uncover chemical weapons programs, identify specific bio-weapons facilities, and study how diseases spread.

The existence and broad contours of U.S. medical intelligence collection have been previously disclosed (as has one of its more nefarious uses, in which the flow of medical supplies would be used to hunt down a targeted individual). But a top-secret, previously-unreleased article published in November 2003 in the NSA's internal newsletter, *SIDtoday*, details the birth of a collaboration between the agency and the DIA's National Center for Medical Intelligence, then known as the Armed Forces Medical Intelligence Center. (The article is being published along with 262 others by *The Intercept* today; here are some other highlights.)

Work began when the NSA brought in a DIA expert on infectious diseases to help its hamstrung International Organizations Branch — tasked with spying on non-governmental organizations, or NGOs — exploit medical intelligence it collected from the nonprofit groups' reports on outbreaks. The DIA staffer became an NSA "integree" and was granted access to signals intelligence, or SIGINT, that was considered "raw," meaning it had not been edited or stripped of personal information. Topics of interest included "SARS in China, cholera in Liberia, and dysentery, polio, and cholera in Iraq," according the article, which was written by the NSA's "account manager for DIA."

"The timing of the integree's arrival, as it coincided with a worldwide SARS epidemic, could not have been better," the article stated.

SARS, a respiratory virus, infected over 8,000 people worldwide, with an epicenter in China, before it was contained.

During that time, the NSA and its partners researched "the effect of the epidemic on the state security apparatus," media coverage of the disease, the political and economic impacts of its spread, as well as the "impact" of SARS on China's People's Liberation Army "readiness" — according to NSA documents about a SARS conference published by *The Intercept* in May.

But SARS wasn't the only purpose of the coupling, according to the *SIDtoday* article.

"In addition, the partnership has generated unique SIGINT [signals intelligence] reporting that supports the larger DoD and Intelligence Communities," it stated.

"Efforts to develop related topics will inform and facilitate future endeavors to exploit medical intelligence in the International Organizations Branch," they continued — though it's not clear how else the information might be exploited.

The collaboration joined NSA communication intercepts with NCMI's longstanding expertise on medical issues. Within NCMI, military and civilian experts, mostly medical doctors and researchers working at a facility now based in Fort Detrick in Maryland, study information on diseases and other topics clustering around health, medicine, pharmaceuticals, and biological weapons, with one of the goals being to protect U.S. forces widely deployed abroad.

The joint effort to mine "medical SIGINT" is particularly noteworthy

13 years later, as medical devices and body monitors are increasingly connected to the internet, opening up new possibilities to expand intelligence gathering beyond epidemics and bioweapons and into more focused forms of surveillance. The NSA's deputy director, Richard Ledgett, said in June that the spy agency was "looking … theoretically" at exploiting biomedical devices like pacemakers in order to surveil targets, even as he admitted that there are often easier ways to spy.

The NSA did not comment on the collaboration. Speaking on behalf of DIA, the Office of the Director of National Intelligence did not answer specific questions about the partnership, instead writing, via a spokesperson, that "from forecasting and tracking infectious disease outbreaks to assessing foreign health threats, medical intelligence is key to protecting our deployed forces from a wide range of threats across the globe."

The Evolution of Medical Intelligence Gathering

One of the more prominent examples of focused medical spying came in 2010, when the agency crafted a plan to stow tracking devices with medical supplies bound for an ill Osama bin Laden in order to locate the terrorist leader, as detailed in Snowden documents published by *The Intercept last year*. It's unclear if the plan was ever carried out.

But the military has been gathering intelligence on medicine, health, and scientific developments in biology since early World War II, according to Dr. Jonathan D. Clemente, a North Carolina physician and researcher who wrote a 2013 report on medical intelligence for *The Intelligencer*, a journal published by the Association of Former Intelligence Officers. During the war, the Army surgeon general began disseminating public health information about various countries to field commanders and military surgeons prior to combat.

By the later stages of the war, the Allies began seizing foreign medical technology and drugs to improve its own stock — and spying on Germany for any plans it had to unleash a biological weapon.

Medical intelligence programs dissipated and were reborn under the CIA around 1947 — playing an important role in intelligence on the Communist Bloc, and during the Korean War.

After several leadership and name changes, the medical intelligence unit was permanently transferred to the Defense Intelligence Agency in 1992, tasked with "prepar[ing] intelligence assessments and forecasts on foreign military and civilian medical systems, infectious disease and environmental health risks, and biomedical research," according to Clemente.

Concerns about drug-resistant infectious diseases were only heightened after the September 11 attacks, strengthening the need for medical intelligence analysts to monitor aggressors' attempts to weaponize biological tools like anthrax.

Other known partners of agency, now called the National Center for Medical Intelligence, include the National Geospatial Intelligence Agency and the Department of Agriculture.

A former director of the DIA's medical intelligence unit, now a biology professor, Anthony Rizzo, described his mission as "protecting this country from threats that people will never even know we faced."

John Schindler, a writer, former NSA intelligence analyst, and former professor of national security affairs at the U.S. Naval War College described the medical intelligence capabilities in the U.S. government in a blog post as "decidedly unique," claiming the NCMI is "the only full-fledged medical intelligence outfit on earth."

Bio-Warfare and Nuclear Weapons

Additional *SIDtoday* articles further elucidate the NSA's focus on medical intelligence in 2003 — including its strategies to combat possible weapons of mass destruction and coordinate with the new Department of Homeland Security.

One article from August 2003 identifies an NSA project to keep an eye on the evolution of biotechnology in various countries. "Can we … determine the specific features that would distinguish a Bio Warfare Program from a benign civilian pharmaceutical production effort?" the author wrote, identifying a "suspect Iranian [biological warfare] facility" as a target for inspection.

A separate slideshow from April 2013, called "Special Source Operations Weekly" briefs analysts on an intelligence gathering mission into two Iranian

universities that the NSA suspected might be involved in state chemical and biological warfare programs.

Their research, involving human trials on patients exposed to chemicals in pesticides, "could also be used in the event of … nerve agent exposure," the slideshow reads. "This type of information enabled [intelligence community] customers, such as NCMI (National Center for Medical Intelligence) … to assess the types of medical countermeasures being developed by Iran, as well as Iran's ability to respond to and protect against [chemical and biological warfare] threats," reads a footnote at the bottom of the slide.

Medical intelligence gathering has continued since then, according to the so-called "black budget" proposed for the 2013 fiscal year, published in February 2012.

The document specifies a request for the NMCI to "expand its warning capability for health and biological events that have strategic implications by fielding more sophisticated analytic tools to forecast, detect, prepare, and respond to foreign health threats, emphasizing models for infectious disease spread and toxic and radiological contaminant dispersion."

Further information from the 2013 budget request identifies other goals of the National Center for Medical Intelligence: tracking "foreign pharmaceutical industry capabilities," "health-related opportunities for US diplomatic/goodwill efforts," "foreign military and civilian health care and response capabilities and trends," and "foreign medical advances for defense against chemical, biological, radiological, and nuclear warfare."

And the budget request specifically targeted research in Afghanistan and Pakistan, to gather information about "military and civilian medical capabilities" as well as funds to allow analysts to "support joint targeting and no-strike list selection for medical facilities."

***Jenna McLaughlin** is a reporter and blogger covering surveillance and national security. She previously covered national security and foreign policy at* Mother Jones *magazine as an editorial fellow. There, she recently published a deep-dive investigation into the self-proclaimed "freedom fighter" Matthew VanDyke and his mission, entrenched in problems, to train the Assyrian Christians of Iraq to fight ISIS. She routinely covered the Pentagon's sexual assault problem, putting pressure on Lackland Air Force base and others to address issues with reporting and preventing assaults. Her coverage of the Islamic State, ISIS, has been cited by recent novels and other stories on the subject, and her coverage of Twitter and its relationship to privacy and counterterrorism has been referenced in congressional testimony. She has also published multiple freelance articles with the* National Journal*, and previously worked for* Baltimore City Paper *and* DC Magazine.

Burkini *vs.* Bikini Round Two: Showdown in Corsica

By Leslie Shaw

Source: https://www.clarionproject.org/analysis/burkini-versus-bikini-round-two-showdown-corsica

On Sunday August 14, 2016, Bernard Cazeneuve, French Interior Minister, issued the following statement **after a violent clash between locals and Muslim immigrants on the island of Corsica:**

"A violent confrontation, the circumstances and motives of which will be determined by a police investigation, erupted on Saturday evening in Sisco, Upper Corsica, between local residents and a group of around ten out-of-towners. The four people injured, including a pregnant woman, were evacuated

to the hospital in Bastia. Their injuries are not life-threatening. Three vehicles were set on fire causing major disruption of traffic and a brush fire was rapidly brought under control."

According to eyewitness accounts reported in the French media, on the evening of Saturday, August 13, a group of young Corsicans waged a battle with a group of Muslims at a beach next to Sisco. **The fight broke out after women wearing burkinis were photographed by a tourist, provoking the Muslims to retaliate with insults and cries of " Allah Akbar."**

They then began throwing stones at the tourists and a group of Corsican teenagers further along the beach. The Muslim men, aged around 40, then began to hit the teenagers, one of whom was wounded by a blow from a machete.

Several older Muslim men then arrived armed with axes and blades and attacked the Corsicans, aged from 15 to 18, on the beach. Following this, the parents of the Corsicans intervened and two of them were wounded with harpoons. People from a neighbouring village arrived, claiming their car tires had been slashed by Muslim women. In retaliation, the Corsicans overturned a car belonging to a Muslim and torched two others.

One of the Muslims shouted, "Just come and see us at Lupino" [a housing project in Bastia, capital of Upper Corsica]. Around 100 residents of Sisco gathered at the scene, but order was restored by an equal number of police officers, gendarmes and firefighters.

On Sunday morning, a group of around 500 demonstrators gathered at the Bastia town hall, where a delegation met with local government officials. When they emerged from the meeting, the crowd chanted, "To arms, we are going to Lupino because this is our homeland."

The demonstrators then headed for a housing project in the Lupino neighbourhood. One of the demonstrators declared, "The attackers live here. We will show their brothers, friends and everyone Scenes from the fight (Photo: Courtesy)they know that we will not tolerate these kinds of acts in our land."

The crowd was barred from entering by gendarmes. They continued on to the hospital in Bastia, where stones were thrown at police vehicles. Ange-Pierre Vivoni, the mayor of Sisco, appealed for calm.

On Monday, August 15, after a meeting of the Sisco municipal council, he issued a decree banning burkinis. He also cancelled the festivities planned for August 15, a public holiday in France.

Relations between Corsicans and Muslims have been on a knife-edge since Christmas 2015, when firefighters were lured into an ambush in a Muslim neighbourhood of Bastia. When they arrived to put out a fire, they were attacked with rocks and petrol bombs.

The following day hundreds of Corsicans went to the neighborhood looking for the

culprits and ransacked the local mosque. In April 2016 a prayer room was set on fire in Mezzavia.

These incidents show that forced multiculturalism has failed in Corsica and could be a prelude of things to come on the French mainland. The mayor of Sisco described the incident at the origin of the violence as "trivial" but it is not. To French and other European hard-line secularists, the burkini is a deliberate and aggressive symbol of the refusal of Salafist Muslims to adapt to the French way of life.

It is inevitable that such hostility to the culture of a host population will provoke inter-community tensions and violence.

***Leslie Shaw** is an Associate Professor at the Paris campus of ESCP Europe Business School and President of FIRM (Forum on Islamic Radicalism and Management).*

A look into how much it costs to fly America's military planes per hour

By Amanda Macias

Source: http://www.businessinsider.com/price-military-aircraft-per-flight-hour-2016-8/#p-3c-10

Aug 13 – The US Defense Department's latest financial-management report on reimbursement rates offers a glimpse of how much it costs to fly America's Air Force and Navy planes per flight hour.

The annual report from the Office of the Under Secretary of Defense (Comptroller) lists rates for "other DoD component user," which are aircraft handled within the Defense Department and "all other user rates" which are for services outside the federal government.

This means that, for example, an F-22 Raptor that isn't used within the US government costs a cool $34k/per flight hour.

Note: *Excluded from the report are fixed wing aircraft that are provided by US Transportation Command (TRANSCOM) and the Defense Working Capital Fund. Figures represent hourly rates effective October 1, 2015, and are to be used when the applicable aircraft are provided on a reimbursable basis.*

A-10C

An A-10C Thunderbolt II ground attack aircraft pulls up sharply out of a low-level strafing run during a combat search and rescue demonstration here Oct 4, 2007.Tech. Sgt. Parker Gyokeres/US Air Force

Mission: Designed to carry out close-air support at low altitude and low speed. The A-10 is built to be highly survivable and can takeoff and land in locations near the front lines.

Branch: Air Force

Other DoD component user rates: $5,944 per hour

All other user rates: $6,273 per hour

C-130J

A US Air Force C-130J Hercules aircraft navigates the mountainous Alaskan terrain July 20, 2016.US Air Force Photo

Mission: The C-130 is primarily used for airlift missions and transporting equipment and troops.

Branch: Air Force

Other DoD component user rates: $6,604 per hour

All other user rates: $7,100 per hour

F-35A

The first F-35A Lightning II to land at Hill Air Force Base, Utah, arrives Sept. 13, 2013. US Air Force Photo
Mission: The latest fifth-generation fighter designed to replace the Air Force's aging fleet of F-16 Fighting Falcons and A-10 Thunderbolt II's.
Branch: Air Force
Other DoD component user rates: $28,455 per hour
All other user rates: $29,685 per hour

F-22

An F-22 Raptor from the Hawaii Air National Guard's 199th Fighter Squadron returns to a training mission after refueling March 27, 2012, over the Pacific Ocean near the Hawaiian Islands. US Air Force Photo
Mission: A stealth multi-role fighter that performs both air-to-air and air-to-ground missions.
Branch: Air Force
Other DoD component user rates: $33,538 per hour
All other user rates: $34,971 per hour

E-4B

A Boeing E-4B at Bogota Airport in Colombia. USAF photo/Tech. Sgt. Jerry Morrison
Mission: The E-4B is the National Airborne Operations Center (NAOC), which serves as a command-and-control center for the president, the Secretary of Defense, and the Joint Chiefs of Staff during emergencies.
Branch: Air Force
Other DoD component user rates: $78,500 per hour
All other user rates: $83,218 per hour

F-15C

An F-15C Eagle prepares to refuel with a KC-135R Stratotanker Sept. 12, 2013, en route to the Arctic Challenge Exercise in Norway. US Air Force Photo
Mission: Highly maneuverable fighter intended to capture air supremacy over the battlefield.
Branch: Air Force
Other DoD component user rates: $23,124 per hour
All other user rates: $24,140 per hour

C-2A

A C-2A Greyhound assigned to Fleet Logistics Support Squadron 40 makes an arrested landing aboard the Nimitz-class aircraft carrier USS Carl Vinson. US Navy Photo
Mission: The Navy's "freight train" is designed to transport high-priority cargo and passengers between deployed aircraft carriers and bases.
Branch: Navy

Other DoD component user rates: $9,602 per hour
All other user rates: $10,301 per hour

FA-18F

Capt. Robert Boyer, commander of Carrier Air Wing 1, launches in an F/A-18F Super Hornet from the aircraft carrier USS Enterprise for an aerial change of command ceremony. US Navy Photo
Mission: Icons of Navy aviation, these lethal attack aircraft are used as escorts when not deployed into combat.
Branch: Navy
Other DoD component user rates: $10,507 per hour
All other user rates: $11,140 per hour

E-2C

An E-2C Hawkeye from the Bluetails of Carrier Airborne Early Warning Squadron 121 lands aboard the Nimitz-class aircraft carrier USS Dwight D. Eisenhower. US Navy Photo
Mission: The E-2 is the Navy's "eye in the sky." It is an all-weather, carrier-based aircraft used for early warning and surface surveillance and is equipped with a 24-foot diameter radar on its upper fuselage.
Branch: Navy
Other DoD component user rates: $9,336 per hour
All other user rates: $10,241 per hour

P-3C

A P-3C Orion from Patrol Squadron 10 takes off from Naval Air Facility Misawa.US Navy Photo
Mission: The P-C3 is a four-engine turboprop aircraft used for anti-submarine and maritime surveillance.
Branch: Navy
Other DoD component user rates: $6,761 per hour
All other user rates: $7,871 per hour.

Dubai gets aboard the Hyperloop train

Source: http://newatlas.com/hyperloop-one-dubai-dp-world-jebel-ali/44914/

A concept rendering of an underwater Hyperloop next to a Dubai port (Credit: Hyperloop One)

Aug 15 – Hyperloop could be heading to the Middle East, thanks to a new deal signed on Monday between Hyperloop One and port operator DP World. The partnership calls for a feasibility study of how the nascent, ultra-fast transport technology could improve Dubai's Jebel Ali Port, but both parties hope that's just the beginning.

The study will look at the possibility of building a Hyperloop to take freight off container ships arriving at Jebel Ali and transport it via the technology's system of pods moving through pressurized tubes to an inland depot that DP World plans to build further inland.
"By having a system where a box can be taken off a ship and dropped into the tube or pod, we are moving activity that would otherwise be on the island terminal as well as reducing the size of the terminal you need to build," said Hyperloop One founding board member Peter Diamandis.

The Los Angeles-based startup says a Hyperloop can fit within Dubai's existing transportation corridors

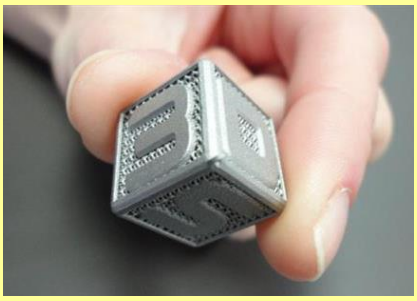
and could reduce freeway traffic by taking cargo transport trucks off roads. DP World says it can even foresee using a "submerged floating Hyperloop" located next to its huge new terminal built on a man-made island.
Hyperloop One isn't the only startup looking to commercialize a version of the technology originally open sourced by Elon Musk three years ago. Hyperloop Transportation Technologies has its own plans for a pilot passenger track in California. But Hyperloop One has been stealing all the headlines lately, with public tests at the site of its new Nevada construction facility and other initiatives in Russia and Finland.
Even with the latest in a string of globe-trotting agreements, we've still yet to see a complete Hyperloop proof of concept. Regardless, it seems the worldwide Hyperloop race is on and Dubai is now in the mix.
"We firmly believe that this study is the first step towards the construction of the Hyperloop in Dubai," said Shervin Pishevar, cofounder and Executive Chairman of Hyperloop One.

Who is behind the explosive growth of the 3D printing market? A closer look at industry giants

Source: http://www.3ders.org/articles/20160816-who-is-behind-the-explosive-growth-of-the-3d-printing-market-a-closer-look-at-industry-giants.html

Aug 16 – Is the 3D printing revolution picking up steam? When glancing at figures and market projections, you certainly get that idea. Especially demand from professional clients (for high quality 3D printing prototyping and even end-use production) has been skyrocketing, convincing experts to change their long term projections. Just last week, the International Data Corporation (IDC) updated their 3D printing spending guide with the prediction that worldwide spending on **3D printing will surpass the $35 billion mark by 2020**.

But where is that money going to? For over the past two years, new 3D printing startups and hardware have been appearing in rapid succession – creating a more diverse, if more unstable and unpredictable market. More and more high quality technologies have also been maturing, creating serious competition for those companies that reigned supreme just a few years ago. To find out exactly who the shining stars in the 3D printing industry are, 3ders.org takes a closer look at the 2015 results and plans of some of the biggest names in 3D printing.



3D Systems

As one of the major pushers of the 3D printing revolution from its onset, 3D Systems hardly needs introduction. Leading the way with SLA and SLS 3D printing solutions, they are one of the two industry benchmarks for hardware – the other being Stratasys (and their MakerBot). But 3D Systems do, however, need a new battle plan. Their 2015 full revenues clocked in at $666.2 million – just 2 percent higher than their figures for 2014. What's more, they have failed to grow quarterly results since the Q2 2015 – a trend that persists until today. While thus not exactly in a crisis, the company has struggled to build on their earlier successes in 2013 and early 2014. During the first six months of 2016, 3D Systems' revenue fell 6.2% year over year to $310.7 million. In the second quarter, 3D Systems' revenue fell 7% year over year, a steeper fall from the 17% decline in the first quarter.

A change is therefore needed, and 3D Systems appointed **Vyomesh 'VJ' Joshi** as new president and CEO back in April to do so. And he sees opportunities in 3D printing mass production for especially the health care market. "We see clear opportunities for improvements in 3D printers and on demand manufacturing services as we drive operational excellence and focus on providing reliable end-to-end solutions," he said. "We are building a comprehensive strategy and assembling a world-class team and organizational structure we believe will enable us to deliver exceptional customer value, drive profitable growth and accelerate digital manufacturing." **Mass production 3D printing** is thus the new name of the game, but 3D Systems continues to remain one of the biggest and most successful names in the 3D printing market.

Stratasys Ltd.

This trend is mirrored by Stratasys Ltd., the Nasdaq-listed company that grew out of the Stratasys and Objet merger in 2012. Just like their 3D printing solutions and brand power, their figures are comparable to those of 3D Systems with a revenue of

$696.0 million for 2015. But unlike 3D Systems, they are actually doing worse than in 2014 – when they realized a revenue of $750.1 million. Earlier this month, Stratasy posted a modest year-over-year revenue decline of 5.6%. Revenue fell to $172.1 million, missing the consensus by $3.7 million.
Also recognizing the need for a change, they appointed a new CEO as well – replacing CEO David Reis with **Ilan Levin** on July 1. And like 3D Systems, they are betting it all on 3D printing services, mass production and very powerful and accessible software platforms. "We have entered a transformative new phase in our company's development," former CEO **David Reis** said when announcing their 2015 figures. "Our goal is to maintain our leadership position in prototyping, while developing a solutions-based business model that targets key vertical markets and emerging applications for end-use parts. We believe our comprehensive new strategy will help grow our markets and is essential for maintaining our leadership position." While thus still market leaders in every sense of the word, the increasingly diverse 3D printing market certainly had an impact on the 'Big Two'.

SLM Solutions

But then who is benefitting? As we will see, several metal 3D printing specialists are responsible for a big chunk of market growth. Among them is **SLM Solutions Group AG**, a Lübeck, German-based provider of metal 3D printing systems. They have been remarkably successful over the last few years, with their 3D printers increasingly finding their way to aerospace, energy, healthcare and automotive partners. In May, even Audi purchased one of their **ten-feet tall SLM 280HL 3D printers.**

This is also reflected by their figures. Their overall 2015 revenue grew to €66,137 million – nearly double what they realized in 2014. And that trend is continuing over the **first six months of 2016**, when they processed 56 new orders for a total sales figure of €33.5 million (an 85 percent growth when compared to 2015). "The ongoing, innovative development of our systems is a key source of our further growth. Our aim is to build up the development, production and sale of consumables for laser melting systems," the company said. While still much smaller than Stratasys or 3D Systems, SLM Solutions is clearly becoming a business to be reckoned with.

Arcam AB

A similar trend can be seen at Arcam AB, the Swedish pioneers of electron beam melting (EBM) technology– which some experts believe has the power to turn metal 3D printing into a mass production tool. Specialists from the **aerospace and defense provider Honeywell** even singled out this technology for its revolutionary production potential. Among others, they received a big order from GE subsidiary Avio Aero, while various medical implant developers, such as China Beijing Icahn, are also looking at EBM 3D printing for implant production.

This potential is also reflected in their sales, with 42 sets of EBM 3D printers sold over 2015. Realizing a total revenue of 576.1 million Swedish Krona ($68 million USD), they could brag about a net increase of 70

percent over 2015 – almost as impressive as SLM Solutions. "2015 was yet another very strong, eventful year for Arcam. We have worked hard to drive and develop our long-term strategy to put our EBM technology into industrial production. We have developed all three parts of the group: EBM systems, metal powders and contract manufacturing. We have grown considerably and made significant investments in increasing capacity so that we can continue to meet our customers' increased demand," said CEO Magnus René.

ExOne

Slightly less successful over 2015 was prominent US metal 3D printing provider **ExOne**. A company that has been manufacturing and selling metal 3D printing machines under lease financing deals for several years now, they are also working hard to secure their place in a changing market. They also offer services in the US, Germany, Italy, Sweden and Japan. Over 2015, they gathered $40.353 million in revenues – slightly down from $43.9 million in 2014. At the same time, ExOne (valued at $230 million) is not doing fantastically on NASDAQ either, with a share price of $13.3.

However, the company is seeing plenty of opportunities for their hardware. "We continued to make progress with broader market acceptance of our technology. We are optimistic that more and more of our customers are evaluating opportunities to use our machines in production — the four Exerial machines that we shipped in 2015 are being integrated into customer facilities," CEO S. Kent Rockwell said of his 2015 figures. " Additionally, we are working with several of the world's leading automotive manufacturers on evaluation of our Exerial for their series production operations. On the direct printing side of our business, we are making good progress in the development of ceramics, carbon and monolithic metals. We look forward to further development of applications unique to our binder jetting technology."

Voxeljet AG

Another shining light in the 3D printing industry is German company **Voxeljet**. Valued at $110 million dollar, they quickly became a leading provider of large-format 3D printers and on-demand component services for industrial and commercial customers. Their remarkable hardware is especially rapidly finding its way into the hands of European and American clients from the automotive, aviation, aerospace, entertainment, machine building and consumer goods industries. Their product is best illustrated by the VX4000 3D printer – the world's largest industrial 3D printer with a continuous build volume of 4 x 2 x 1 meters, perfect for rapid production of individual molds.

The VX4000 3D printer

With more than 50 3D printers sold over 2015, they gathered a revenue of $26.141 million – an increase of nearly 50 percent when compared to 2014. While the company's New York Stock Exchange stocks are currently trading at a small loss, the company itself is greedily expanding their clientele – having just entered the **Mexican automotive market** (one of the largest in the world) with a deal with Latin American OEM specialist ART. Definitely a company that cannot be ignored.

Nano Dimension Ltd.

One of the smaller and youngest companies on this list is Nano Dimension, an Israeli 3D printed circuit board specialist founded in 2012. It's a very exciting time for the company, who also develops 3D inkjet, 3D software and nanomaterial solutions. While 2015 figures are hard to come by, they have started 2016 off very well – with Q1 revenues of $7.628 million.

The company itself also sees a lot of opportunities. "The first quarter was an extremely exciting time for Nano Dimension, during which the company continued to gain momentum and solidify its position as a leader in the 3D printed electronics industry. A standout moment from the quarter was the company's listing on the NASDAQ in March. In addition, the company filed for several new patents to advance its proprietary technologies and announced a new collaboration with Tel Aviv University," said CEO Amit Dror. And as their DragonFly2020 3D Printer is expected to make a huge splash, a lot is happening over in their Israel HQ. Valued at $55 million already, Nano Dimension is a name that we will be hearing a lot more in the near future.

Materialise

Meanwhile, **Materialise** is doing very well and cannot be ignored at all. The largest provider of high quality 3D printing services in Europe, they are working hard to expand their international footprint – in part through **Europe's largest 3D printing factory**, which the company is planning to build in Poland over the next few years. Their success is also reflected in their revenue, which reached €102,035 million ($113 USD) over 2015 – a 25.4 percent increase when compared with 2014. These excellent figures were partly realized by a strong performance in the Materialise Software and Materialise Manufacturing segments, as well as the purchase of OrthoView in late 2014.

Especially the company's fourth quarter was a huge success (responsible for €28 million of that year's revenue), and the company is currently building on that momentum for 2016. "We executed well on our strategy throughout 2015 and turned in an especially strong fourth quarter, reflecting Materialise's increasing prominence as the software and services backbone of the 3D printing ecosystem. During the fourth quarter, all three of our business segments achieved revenue gains as well as positive EBITDA," Executive Chairman Peter Leys commented. "We are pursuing a number of exciting initiatives for 2016, all designed to strengthen Materialise's position as the leading enabler of 3D printing applications. Additive manufacturing is being adopted by new and substantial players, and we are proud to be at the forefront of this growing industry."

Sigma Labs

Another promising, but much smaller company is Sigma Labs. The company was formerly known as Framewaves, but became a subsidiary of that company in 2010 – enabling them to fully focus on metal 3D printing. Despite not being around for very long, they have already started collaborating with companies such as Boeing, GE Aviation and Honeywell Aerospace. While the **2015 revenue total** of $1.235 million shows that this company still has a lot to do, the potential is definitely there.

What's more, 2016 could become a major growth year for them, especially if the signs from late 2015 are anything to go by. More than half of all their 2015 revenue was realized in the year's last quarter, and the company is working hard to continue that trend. "We are pleased to announce that, due to an acceleration of orders, our fourth quarter revenue was the highest in the Company's history," said Mark Cola, President & CEO of Sigma Labs. "Our business development efforts are clearly gaining traction, and – due to demand – we have extended our Early Adopter and OEM Partner programs past the end of 2015. Last year marked the highest level of sales for Sigma Labs, but we believe the best is yet to come, as we focus on further growth and a path to profitability in 2016."

Shining 3D

But 3D printing is by no means just a western affair, as is illustrated by the success of Chinese company Shining 3D. Of course everything in China is done on a bigger scale than here in the west, and Shining 3D is a perfect example. Founded in 2004, they have very quickly grown into a huge and promising enterprise. Offering the full range of 3D services from 3D scanning and 3D printing to software, 3D design and material development, they are quickly becoming a force to be reckoned with. Recently opening a **25,000m2 3D printing HQ** in Hangzhou, China, they are selling **thousands of 3D printers** while their **EinScan 3D scanning equipment** is already being distributed in the U.S. and other overseas markets.

This is also reflected in their revenue streams, which are growing. Over 2015, the company already raised 190 million RMB in revenue (or approximately $28.6 million USD). And with their international market presence expanding rapidly, Shining 3D could lead the way in Chinese 3D printing efforts.

BrightChina (eSUN 3D)

But they are by no means the only Chinese 3D printing company, with filament manufacturer eSUN 3D (part of BrightChina) growing into a huge player in their own right. Founded back in 2002, they are particularly known for producing filaments from an ecological point of view, with green solvents and sustainable production, and have become China's leading PLA manufacturer. Headquartered in the Shenzhen City Science Park in Xiaogan City, they are producing tons and tons of 3D printable material for both the domestic and international markets. Last summer, they also released ePC, a transparent, fire-resistant and environmentally-friendly **3D printing filament**.

These successes are also reflected in their revenue numbers, which reached 93.29 million RMB (approximately $14 million USD) in 2015. That number is only expected to grow over 2016, in part thanks to the important achievement of being added to the **New OTC Market list of the NEEQ stock exchange** – making investment a whole lot easier, more flexible, and giving the company a lot more growth opportunities. "We believe that the 3D printing market will grow explosively over the next five years. Things like big data, cloud computing and many other information and communication innovations will be integrated into 3D printing," they said. And eSUN 3D is clearly going to be a part of that future.

Kim Jong-un labels DOG MEAT a 'superfood' in a bid to encourage starving North Koreans to eat it... and advises them to beat the animals to death to improve the taste

Source: http://www.dailymail.co.uk/news/article-3741712/Kim-Jong-labels-DOG-MEAT-superfood-bid-encourage-starving-North-Koreans-eat-advises-beat-animals-death-improve-taste.html

Capybara

The **capybara** (*Hydrochoerus hydrochaeris*) is a large rodent of the genus *Hydrochoerus* and is the largest rodent in the world. The scientific name, both *hydrochoerus* and *hydrochaeris*, comes from Greek **ὕδωρ** (*hydor* = water) + **χοίρος** (*choiros* = pig, hog). Native to South America, the capybara inhabits savannas and dense forests and lives near bodies of water. The capybara is not a threatened species and is hunted for its meat and hide and also for a grease from its thick fatty skin which is used in the pharmaceutical trade. They can be found in many areas in zoos and

parks, and may live for 12 years in captivity. Capybaras are gentle and will usually allow humans to pet and hand-feed them, **but physical contact is normally discouraged as their ticks can be vectors to Rocky Mountain spotted fever**. Capybaras are herbivores, grazing mainly on grasses and aquatic plants, as well as fruit and tree bark. They weigh as much as 145 pounds and stand up to two feet tall.

Now read this…

Talk of Rio golf course involves mega rats, snakes

Source: http://www.usatoday.com/story/sports/olympics/rio-2016/2016/08/11/rio-golf-course-rats-snakes-justin-rose-patrick-reed/88595424/

How a new source of water is helping reduce conflict in the Middle East

By Rowan Jacobsen

Source: http://www.homelandsecuritynewswire.com/dr20160817-how-a-new-source-of-water-is-helping-reduce-conflict-in-the-middle-east

Aug 17 – Ten miles south of Tel Aviv, I stand on a catwalk over two concrete reservoirs the size of football fields and watch water pour into them from a massive pipe emerging from the sand. The pipe is so large I could walk through it standing upright, were it not full of Mediterranean seawater pumped from an intake a mile offshore.

"Now, that's a pump!" Edo Bar-Zeev shouts to me over the din of the motors, grinning with undisguised awe at the scene before us. The reservoirs beneath us contain several feet of sand through which the seawater filters before making its way to a vast metal hangar, where it is transformed into enough drinking water to supply 1.5 million people.

Red dots ● indicate existing desalination plants; red circles indicate future plants

We are standing above the new Sorek desalination plant, the largest reverse-osmosis desal facility in the world, and we are staring at Israel's salvation. Just a few years ago, in the depths of its worst drought in at least 900 years, Israel was running out of water. Now it has a surplus. That remarkable turnaround was accomplished through national campaigns to conserve and reuse Israel's meager water resources, but the biggest impact came from a new wave of desalination plants.

Bar-Zeev, who recently joined Israel's Zuckerberg Institute for Water Research at Ben-Gurion University of the Negev after completing his postdoc work at Yale University, is an expert on biofouling, which has always been an Achilles' heel of desalination and one of the reasons it has been considered a last resort. Desal works by pushing saltwater into membranes containing microscopic pores. The water gets through, while the larger salt molecules are left behind. But microorganisms in seawater quickly colonize the membranes and block the pores, and controlling them requires periodic costly and chemical-intensive cleaning. But Bar-Zeev and colleagues developed a chemical-free systemusing porous lava stone to capture the microorganisms before they reach the membranes. It's just one of many breakthroughs in membrane technology that have made desalination much more efficient. Israel now gets 55 percent of its domestic water from desalination, and that has helped to turn one of the world's driest countries into the unlikeliest of water giants.

Driven by necessity, Israel is learning to squeeze more out of a drop of water than any country on Earth, and much of that learning is happening at the Zuckerberg Institute, where researchers have pioneered new techniques in drip irrigation, water treatment and

desalination. They have developed resilient well systems for African villages and biological digesters than can halve the water usage of most homes.
The institute's original mission was to improve life in Israel's bone-dry Negev Desert, but the lessons look increasingly applicable to the entire Fertile Crescent. "The Middle East is drying up," says Osnat Gillor, a professor at the Zuckerberg Institute who studies the use of recycled wastewater on crops. "The only country that isn't suffering acute water stress is Israel."
That water stress has been a major factor in the turmoil tearing apart the Middle East, but Bar-Zeev believes that Israel's solutions can help its parched neighbors, too — and in the process, bring together old enemies in common cause.
Bar-Zeev acknowledges that water will likely be a source of conflict in the Middle East in the future. "But I believe water can be a bridge, through joint ventures," he says. "And one of those ventures is desalination."

Driven to desperation

In 2008, Israel teetered on the edge of catastrophe. A decade-long drought had scorched the Fertile Crescent, and Israel's largest source of freshwater, the Sea of Galilee, had dropped to within inches of the "black line" at which irreversible salt infiltration would flood the lake and ruin it forever. Water restrictions were imposed, and many farmers lost a year's crops.
Their counterparts in Syria fared much worse. As the drought intensified and the water table plunged, Syria's farmers chased it, drilling wells 100, 200, then 500 meters (300, 700, then 1,600 feet) down in a literal race to the bottom. Eventually, the wells ran dry and Syria's farmland collapsed in an epic dust storm. More than a million farmers joined massive shantytowns on the outskirts of Aleppo, Homs, Damascus, and other cities in a futile attempt to find work and purpose.
And that, according to the authors of "Climate Change in the Fertile Crescent and Implications of the Recent Syrian Drought," a 2015 paper in the*Proceedings of the National Academy of Sciences*, was the tinder that burned Syria to the ground. "The rapidly growing urban peripheries of Syria," they wrote, "marked by illegal settlements, overcrowding, poor infrastructure, unemployment, and crime, were neglected by the Assad government and became the heart of the developing unrest."
Similar stories are playing out across the Middle East, where drought and agricultural collapse have produced a lost generation with no prospects and simmering resentments. Iran, Iraq, and Jordan all face water catastrophes. Water is driving the entire region to desperate acts.

More water than needs

Except Israel. Amazingly, Israel has more water than it needs. The turnaround started in 2007, when low-flow toilets and showerheads were installed nationwide and the national water authority built innovative water treatment systems that recapture 86 percent of the water that goes down the drain and use it for irrigation — vastly more than the second-most-efficient country in the world, Spain, which recycles 19 percent.

But even with those measures, Israel still needed about 1.9 billion cubic meters (2.5 billion cubic yards) of freshwater per year and was getting just 1.4 billion cubic meters (1.8 billion cubic yards) from natural sources. That 500-million-cubic-meter (650-million-cubic-yard) shortfall was why the Sea of Galilee was draining like an unplugged tub and why the country was about to lose its farms.
Enter desalination. The **Ashkelon plant**, in 2005, provided 127 million cubic meters (166 million cubic yards) of water. Hadera, in 2009, put out another 140 million cubic meters (183 million cubic yards). And now Sorek, 150 million

cubic meters (196 million cubic yards). All told, desal plants can provide some 600 million cubic meters (785 million cubic yards) of water a year, and more are on the way.
The Sea of Galilee is fuller. Israel's farms are thriving. And the country faces a previously unfathomable question: What to do with its extra water?

Water diplomacy

Inside Sorek, 50,000 membranes enclosed in vertical white cylinders, each 4 feet high and 16 inches wide, are whirring like jet engines. The whole thing feels like a throbbing spaceship about to blast off. The cylinders contain sheets of plastic membranes wrapped around a central pipe, and the membranes are stippled with pores less than a hundredth the diameter of a human hair. Water shoots into the cylinders at a pressure of 70 atmospheres and is pushed through the membranes, while the remaining brine is returned to the sea.
Desalination used to be an expensive energy hog, but the kind of advanced technologies being employed at Sorek have been a game changer. Water produced by desalination costs just a third of what it did in the 1990s. Sorek can produce a thousand liters of drinking water for 58 cents. Israeli households pay about $30 a month for their water — similar to households in most U.S. cities, and far less than Las Vegas ($47) or Los Angeles ($58).
The International Desalination Association claims that 300 million people get water from desalination, and that number is quickly rising. IDE, the Israeli company that built Ashkelon, Hadera, and Sorek, recently finished the Carlsbad desalination plant in Southern California, a close cousin of its Israel plants, and it has many more in the works. Worldwide, the equivalent of six additional Sorek plants are coming online every year. The desalination era is here.
What excites Bar-Zeev the most is the opportunity for water diplomacy. Israel supplies the West Bank with water, as required by the 1995 Oslo II Accords, but the Palestinians still receive far less than they need. Water has been entangled with other negotiations in the ill-fated peace process, but now that more is at hand, many observers see the opportunity to depoliticize it. Bar-Zeev has ambitious plans for a Water Knows No Boundaries conference in 2018, which will bring together water scientists from Egypt, Turkey, Jordan, Israel, the West Bank, and Gaza for a meeting of the minds.

Even more ambitious is the $900 million Red Sea–Dead Sea Canal, a joint venture between Israel and Jordan to build a large desalination plant on the Red Sea, where they share a border, and divide the water among Israelis, Jordanians, and the Palestinians. The brine discharge from the plant will be piped 100 miles north through Jordan to replenish the Dead Sea, which has been dropping a meter per year since the two countries began diverting the only river that feeds it in the 1960s. By 2020, these old foes will be drinking from the same tap.
On the far end of the Sorek plant, Bar-Zeev and I get to share a tap as well. Branching off from the main line where the Sorek water enters the Israeli grid is a simple spigot, a paper cup dispenser beside it. I open the tap and drink cup after cup of what was the Mediterranean Sea forty minutes ago. It tastes cold, clear and miraculous.
The contrasts couldn't be starker. A few miles from here, water disappeared and civilization crumbled. Here, a galvanized civilization created water from nothingness. As Bar-Zeev and I drink deep, and the climate sizzles, I wonder which of these stories will be the exception, and which the rule.

Report: More Than 1,000 Known Child Marriages in Germany

By Raheem Kassam

Source: http://www.meforum.org/blog/2016/08/child-marriages-in-germany

Aug 14 – **German authorities are reportedly "sounding the alarm" over a sharp rise in child marriages after noting that more and more girls are disappearing from school.** Justice Minister Heiko Maas has announced "drastic" new measures to tackle the problem.

The girls are usually married to older men, and the trend is being linked to the new wave of migrants who entered the country over the past 18 months. **The state has logged over 1,000 child marriages, but N24.de reports that the number of unreported cases may dwarf this number.**

In the *Welt* am *Sonntag* newspaper, Mr. Maas said he would be setting up a new working group which will begin its work on September 5th.

SPD parliamentary leader Thomas Oppermann said the protection of children is an absolute priority which must also apply to minors from a migrant background.

"Forced marriages are, in Germany, punishable," he said. "...that's how it should be."

"No one, especially not a child, should be forced into marriage."

The marriages, the report notes, are often arranged. Oppermann notes that child marriages often result in girls becoming pregnant at a young age and subsequently leaving school. "[Y]oung refugees must be informed of their rights in Germany," he said.

And officials are also contemplating a change in law to refuse to accept an underage marriage that took place in a different country before the migrants arrived.

In June a German judge ruled that the marriage of a 14-year-old Syrian girl to her 20-year-old cousin was valid, despite German law. The Oberlandesgericht Bamberg (Higher Regional Court in Bamberg, Bavaria) decided the marriage must be recognised as the wedding has already taken place as was recognised as legal in their native Syria, conducted in accordance with Sunni marriage rites.

"These marriages have been recognized in Germany, although they violate our rights," said Interior Committee Bundestag spokesman Armin Schuster.

The consequences currently being touted include prison terms of up to five years, even for marriages which are conducted privately in religious, cultural, or social ceremonies.

N24 notes that even UNICEF is concerned about the child marriages.

CEO Christian Schneider said. "For the welfare of refugee children who live in Germany, the state has a particular responsibility to protect – for them the same principles apply as for German children".

In February, Breitbart London reported that dozens of child brides had arrived in Norway, with the youngest being just 11-years of age. The phenomenon has also caused concern in the Netherlands, prompted by the disappearance of the nine-month pregnant 14-year-old girl Fatema Alkasem and her 24-year-old husband.

Last month the German region of North Rhine-Westphalia, which has seen 188 marriages of migrants who are underage, saw calls grow for the government to intervene and stop the practice.

Meanwhile, the increasingly authoritarian and Islamist Turkey is flirting with the idea of allowing 12-year-olds to consent to sex.

***Raheem Kassam** is a Shillman-Ginsburg fellow at the Middle East Forum and editor-in-chief of Breitbart London. Chris Tomlinson is a journalist at Breitbart.*

EDITOR'S COMMENT: One more little step to Eurabia the Europeans surely missed. Plan is progressing effectively mainly because German judges desire to be politically correct, Norwegians are too civilized to react and Dutch are "concerned". ***O tempora o mores*** (Cicero)!

Police in Cannes arrest 10 Muslim women for wearing banned burkinis

Source: https://arynews.tv/en/police-cannes-arrest-10-muslim-women-wearing-banned-burkinis/

Aug 18 – **Ten Muslim women wearing burkinis to the beach have been apprehended by police in the southern French city of Cannes in the three weeks since it imposed a temporary ban on the full body swimsuit, a local official said.**

Arguing that the burkini defies French laws on secularism, Cannes is one of three towns in France to have banned the garment amid tensions after an Islamist militant attack in nearby Nice killed 85 people on Bastille Day on July 14.

The moves have sparked an intense public debate, with Muslim groups calling them unconstitutional, divisive and Islamophobic. The Conseil d'Etat, France's highest administrative court, will rule on the legality of burkini bans in coming days.

In an interview with daily La Provence, Prime Minister Manuel Valls backed the municipal bans, but said he saw no need for nationwide legislation. The women's rights minister has also backed the ban.

In neighbouring Italy, the interior minister said Rome would not be following the French example, arguing a curb might be provocative and even trigger further attacks.

"It does not seem to me that the French model has worked for the best," Angelino Alfano told Corriere della Sera newspaper.

The burkini – a conflation of the burqa and bikini – is designed for Muslims who believe that Islam requires women to conceal everything except the face, hands and feet from all men who are not their husbands or unmarriageable kin.

A Cannes townhall spokeswoman told Reuters on Wednesday that since the burkini ban was put in place on July 28, 10 burkini-wearing women have been controlled by police. Six left the beach, four were fined 38 euros ($43), she said.

Police cannot oblige women to leave the beaches for wearing a burkini, and the same person can only be fined once a day. The ban will end on Aug. 31.

"Following the attacks, the atmosphere is very tense and the burkini is seen as an ostentatious display that can threaten public order, that is why we took the measure," she said.

French citizens are on edge following a string of deadly assaults claimed by Islamic State, including attacks in Paris in November 2015 when 130 people were killed and the July 14 attack in Nice, when a militant ploughed a truck into a crowd.

Abdallah Zekri, head of the National Observatory against Islamophobia, told BFM television that some French politicians were using the burkini debate to stigmatize Islam.

"It is terrible to see that the prime minister stokes the fire rather than trying to put it out," Zekri said.

The Cannes official said burkinis first appeared on local beaches last year and that their number was growing. The mayors of Le Touquet and Oye-Plage on the Atlantic coast and Leucate on the Mediterranean have also announced plans to ban the burkini.

The Italian interior minister said the best way to counter the threat of Islamist militancy was to expel radicals, adding that he wanted all Italy's imams to be trained in the country to ensure they worked within clear cultural norms. Italy has expelled 109 suspected Islamist radicals since last year, including nine imams. "We need to shine a light on all places of worship, in full respect of the rules and to avoid mini-mosques in garages," Alfano said.

Where the Rio Olympics a mistake?

Source: http://www.huffingtonpost.com/rafael-salazar/were-the-rio-olympics-a-m_b_10816116.html

violence in cities such as Rio. According to new research from economists Robert Baade and Victor Matheson as explained by the Financial Times' Tim Harford, Olympics only make sense if they're hosted twice by the same city — that way the huge initial investment makes sense and ends up turning a profit. London's 2012 Olympics and the upcoming 2020 games in Tokyo are examples of Olympics held in cities with this pre-existing infrastructure, with an ability to make the most out of the games. The 2020 Olympics will be a challenge for Tokyo, but it seems likely that the well-developed city will rise to these challenges. The city also benefits from very low levels of crime and unlike Rio it's not at risk of being targeted by terrorists - the recent G7 summit served as a touchstone that proved Japan has the capacity to host high-level events without incidents. What's more, Tokyo was the venue of the 1964 Olympics, widely regarded as the most successful of all time.

This lesson may finally be sinking in, as all the candidates for the 2024 Olympics are cities in Europe or the US, including Los Angeles, Rome, Budapest, and Paris. This is not to say that cities in developing nations don't deserve the honor of hosting Olympics, but simply that resources poured into these countries would be better spent improving cities for the people who will continue living them long after Olympics have moved on.

Grecia the Toucan Finally Has His New 3D Printed Beak

Source: https://3dprint.com/115060/grecia-toucan-3d-printed-beak/

On the list of things that upset and outrage me, cruelty to animals is way up there. That's why the story of Grecia the toucan made me so angry. Grecia was the victim of a berutal attack by a group of boys, who witnesses said were laughing and beating him with a stick. During the attack, the top part of his beak was broken off, leaving him unable to forage for food or defend himself from predators.

It makes me ill when I hear stories of cruelty like that, but Grecia's story is a welcome reminder that for every cruel person in the world, there are thousands more whose compassion drives them to help animals like the injured toucan, who was named for the Costa Rican town in which he was found. When Grecia's story appeared on social media, people responded with outrage – and donations. Before long, thousands of dollars had poured in to help give Grecia a new, 3D printed beak.

That was about a year ago, and now, after several challenges, Grecia has his new beak and can sing again. After his rescue, the toucan was taken to Rescate Animal ZooAve, a rescue organization that specializes in the rehabilitation of injured wildlife. Several 3D printing companies then stepped in. Technicians from Grupo SG scanned the remaining part of Grecia's beak and turned the scan over to EwaCorp and Elementos 3D, who would work on creating a 3D model.

Unfortunately, the designers ran into some difficulty. A toucan beak serves several functions; beyond feeding and vocalization, it also plays an important role in temperature regulation. Without having a full toucan beak to work with, the designers couldn't quite get the function of the prosthetic beak to function like a real one. But another unfortunate toucan was able to help. Naturalists at Playa Nicuesa Rainforest Lodge discovered the body of a toucan that had been killed by predators, and they donated its beak to Grecia's rescuers. (No word on whether the toucan had signed up to be an organ donor.)

Finally, a successful design was created and printed. Once Grecia's wound had finished scarring, the 3D printed prosthesis was attached just a few months ago, and he now sports a striking black and white beak that allows him to eat normally, sing, and otherwise function as a happy and healthy toucan. Interestingly, female toucans select mates based on the color of their beaks, so Grecia may have an interesting dating life ahead of him.

"The process was not easy. It was a very ambitious project, of which there were different national companies without profit, in order to provide to Grecia the best possible prostheses and quality of life.

"For several months was analysed, designed and studied the subjection of the same, where we learned a lot about the importance of the beak of Grecia. Its beak has various functions as preening, feed and draw the attention of the opposite gender; for this, it's not just the part of his beak what he lost, but this also affected the psychological part of Greece, but this prosthetic allows you to have life Normal, within their abilities. A curious fact is that the singing of Grecia was affected with the loss of the beak and fortunately managed to retrieve his singing with the prosthesis.

"Unfortunately, because of legal problems and we were forced to interrupt the communication with the media, but this did not stop the process of the prosthetic and in the month of September was placed for the first time the prosthesis of Grecia," the rescue group reported on Facebook (translated from Spanish).

His story may also save the lives of other animals in Costa Rica. After the attack, President Luis Guillermo Solís called for a bill (no pun intended) to be passed against animal cruelty. The legislation is still pending in the Legislative Assembly, but if it passes, it could go a long way towards deterring the kind of brutality that put Grecia in his situation in the first place.

Grecia isn't the only toucan to benefit from 3D printing; you may remember the story of the Brazilian toucan who received a new beak after his was damaged when he crashed into a window. The types of animals that have been saved by 3D printing ranges from cats and dogs to goats, turtles, ducks, and more. **Not long ago, the fate of most of these animals would have been euthanasia; because of 3D printing technology, they've all gone on to live normal, happy lives.**

IOC approves five new sports for Olympic Games Tokyo 2020

Source: https://www.olympic.org/news/ioc-approves-five-new-sports-for-olympic-games-tokyo-2020

The International Olympic Committee (IOC) today agreed to add baseball/softball, karate, skateboard, sports climbing and surfing to the sports programme for the Olympic Games Tokyo 2020.

IOC President Thomas Bach said, "We want to take sport to the youth. With the many options that young people have, we cannot expect any more that they will come automatically to us. We have to go to them. Tokyo 2020's balanced proposal fulfils all of the goals of the Olympic Agenda 2020 recommendation that allowed it. Taken together, the five sports are an innovative combination of established and emerging, youth-focused events that are popular in Japan and will add to the legacy of the Tokyo Games."

Tokyo 2020 President Yoshiro Mori said, "The inclusion of the package of new sports will afford young athletes the chance of a lifetime to realise their dreams of competing in the Olympic Games – the world's greatest sporting stage – and inspire them to achieve their best, both in sport and in life."

EDITOR'S COMMENT: It is not about youth or sports or life! It is about money and profit! It is time to remove the word "Olympic" from Olympic Games and replace it with "Word Games" or better with "World Security Games". IOC needs to read history again and re-discover what OG are about before they add chekkers and seek and hide!

Disabled are forgotten in Iraq's conflict

Source: http://www.chinadailyasia.com/eyeonasia/2016-06/16/content_15449724_2.html

June 16 – People living with disabilities are particularly vulnerable. Shunned by the rest of society, they are often excluded from community life, Abdulhamid said.

A displaced Iraqi child pushes a disabled boy in a wheelchair at the Harsham refugee camp where they found shelter, ten kilometres west of Arbil, the capital of the autonomous Kurdistan region of Iraq, on Oct 26, 2015. (Photo / Safin Hamed, AFP)

"A lot of people are becoming deaf because of the bombings, and they do not know where to turn to if not to us," she said.

More worrying are reports that militant groups such as al Qaeda and Islamic State are recruiting people with disabilities to become suicide bombers, Abdulhamid said.

Last month, she received a call from an acquaintance in Baghdad.

"This woman asked me to help her with her son who is 18," Abdulhamid said. "Some terrorists approached him and offered him US$1,000 to blow himself up, but his mother discovered everything. I told her to send him to Erbil and we are taking care of him."

In February 2015, the UN Committee on the Rights of the Child said Iraqi boys aged under 18 were increasingly being used by Islamic State as suicide bombers, informants or human shields to protect facilities against U.S.-led air strikes.

An expert from the committee also said the UN watchdog had received reports of children, especially mentally challenged children, being used by Islamic State as suicide bombers, "most probably without them even understanding".

Empowerment

Before escaping to the capital of Iraq's autonomous Kurdish region, Abdulhamid lived in the western city of Falluja, where she and her husband, Sharif Farhan, set up the only charity in the country dedicated to helping the deaf and dumb.

From boyhood, Farhan was encouraged by his father to be independent. As a child Farhan was sent to study in Baghdad and later trained as a tailor, generating enough business to open a shop in Falluja.

His fame spread all the way to the capital, his wife said: "In the Saddam era ministers and government officials would come to the shop and buy suits. They loved his style."

Soon people started knocking on the door looking for help.

"Deaf and dumb people came from all over the region, they wanted my husband and me to help them. We started in a very informal way but then more and more people came, " she said.

In 2007, the couple set up the Anwar Al-Fallujah Society to provide classes in literacy, cooking, computing, carpentry and sewing to children and adults.

"In a way we changed people's perception about being deaf and dumb. We were finally humans," Abdulhamid said.

But Abdulhamid and Farhan were forced to abandon it when Islamic State captured Falluja in January 2014. The family fled just hours before the militants hoisted their flag in the city.

Abdulhamid has tried to open a new centre in Erbil, a magnate for nearly 300,000 people seeking refuge from war in neighbouring

Syria and insecurity in other parts of Iraq.
But her attempts to get funding from the local authorities or the United Nations have so far proved futile. Yet she argues it is worth investing in people with disabilities. Most of them would like to help their families, but being stigmatised makes them feel useless, Abdulhamid said. "This is why our job is so important, we give them a purpose. We train them to do a job, we try to empower them." It can also be life-saving work.

In October 2013, two police officers showed up at Abdulhamid and Farhan's doorstep in Falluja. They had detained a woman who had snuck into a police station with explosives strapped to her body. But nobody could communicate with her because she was deaf and dumb.
Farhan went with the officers, and eventually convinced the woman to take off the belt, Abdulhamid said.
"We want to help people like her," she added.

Data on taxi routes and points of interest could improve crime predictions

Source: http://news.psu.edu/story/420911/2016/08/16/research/data-taxi-routes-and-points-interest-may-improve-crime-predictions

Aug 18 – **Data on how taxis travel through communities and on how people label points of interest on social media could help analysts and criminologists better understand neighborhood crime rates in a city,** according to Penn State researchers.
Penn State says that analysis of data from points of interest in Chicago — including restaurants, shops, nightclubs, and transit stations — designated by members of FourSquare, a social media site, along with the city's taxi flow information, offered significantly more accurate estimates of crime rates compared to traditional means. Crime analysts currently mainly rely on demographic and geographic data to study crime and predict trends.
Big data projects could improve understanding of crime and help planners make better decisions, as well as allow communities and police to use their resources to more efficiently fight crime, said Jessie Li, assistant professor of information sciences and technology.
Taxi routes are like hyperlinks, connecting different communities with each other, added Li, who worked with Hongjian Wang, doctoral student in information sciences and technology; Daniel Kifer, associate professor in computer science and engineering and Corina Graif, assistant professor of sociology and criminology, all at Penn State.
"We had this idea that taxis serve as hyperlinks because people are not only influenced by the nearby location, but they are also frequently influenced by the places they go to," said Li. "For example, your home may be a half hour drive from your work; they are not spatially close. But you spend a lot of time there and you end up being influenced by people, such as your colleagues, there."
Points-of-interest information may improve crime statistic analysis because it shows how certain areas are used and why people want to be there, according to the researchers, who presented their findings Monday, 15 August, at the conference on Knowledge Discovery and Data Mining in San Francisco.
"According to the data, areas with nightclubs tend to be low crime areas, at least in Chicago, which may be a surprise to many," said Li. "However, it may reflect the people's choices to be there — they want to go to a nightclub that is safe, not one that's dangerous."
Li said that this study also points to how the field of big data is providing both new sources of data and new ways to explore the implications of that data.
Big data can often show correlations between the sources of data and certain effects, such as crime, which is helpful for making predictions. However, Li pointed out that the sources of data are not necessarily causing the effect.
"What we see here is a correlation between the taxi and points-of-interest data and crime rates," said Li. "The data show us the correlation, but, scientifically, as far as a cause, we don't know."

The researchers used data on taxi trip records in Chicago, which included pickup and drop off times and locations, operation time and total fare amount, from October to December 2013. They also gathered 112,000 points-of-interest from FourSquare for the study. Statistics on crimes in Chicago were gathered from the city's data portal and demographic details included information on population, poverty, disadvantage index and ethnic diversity.

https://www.youtube.com/watch?v=q_R6MvW7YLQ

Paris tourism lost 750 mln euros after attacks

Source: http://in.reuters.com/article/france-tourism-idINL8N1B31JN

Aug 23 – **Islamist attacks, strikes and floods kept foreign tourists away from the French capital in the first half of the year and cost the Paris region tourism industry some 750 million euros ($849.38 million) in lost revenue,** officials said on Tuesday.

"It's time to realise that the tourism sector is going through an industrial disaster. This is no longer the time for communication campaigns but to set up a relief plan," Frederic Valletoux, head of the Paris region tourist board said in a statement on Tuesday.

Valletoux said massive investments were needed to protect jobs in the sector and he urged Foreign Minister Jean-Marc Ayrault to quickly meet with local tourism officials.

About 500,000 people in Ile-de-France have jobs linked to tourism, making it the biggest industry in the region

France, which is seeking to revive its economy, depends heavily on tourism, which generates over 7 percent of national gross domestic product and over 13 percent of that of the Ile-de-France region, which includes Paris, the world's most visited city.

France's tourism industry has suffered since Islamic State gunmen killed 130 people in an attack in Paris last year. It was dealt further blows in July when a gunman drove a truck into crowds celebrating Bastille Day on July 14 in the Riviera city of Nice. Two weeks later,

two men killed a priest in a small town in Normandy. Strikes against a controversial labour reform and floods in June also deterred tourists.
Nightly hotel stays were down 8.5 percent in the Paris-Ile de-France region in the first half, with an 11.5 percent decline for foreign tourists and a 4.8 percent drop for French tourists.
Japanese visitors were down 46.2 percent in the first half compared with the same period in 2015, while Russians were down 35 percent, Chinese down 19.6 percent, and Americans down 5.7 percent, the Paris region tourist board statement said.
France is the most-visited country in the world, with almost 85 million foreigners last year, including 16 million in Paris.
Weak activity in France contributed to a fall in first-half operating profit for French group AccorHotels. Air France-KLM has said it expects its unit revenues to decline in July and August, partly due to the situation in France. ($1 = 0.8830 euros).

Amazing mosaic of Poseidon found in Turkey

Source: http://en.protothema.gr/amazing-mosaic-of-poseidon-found-in-turkey/

The Greek inscriptions says: "Greetings to all you bathing"

Aug 24 – **Archaeological excavations near the southern Turkish province of Adana have unearthed a rare mosaic depicting the ancient Greek god of the sea, Poseidon. It is believed to date back to the 3rd or 4th century B.C.**
The Poseidon mosaic, which is nearly 11 square meters, was found in the frigidarium (large cold pool of a Roman bath) part of the ancient bath at the ancient city of Aegae, which is a 1st degree archaeological field. The bottom part of the mosaic contains partly ruined writing in Greek: "Greetings to all of you bathing."
The city of Aegae served as a naval base in the era of the Roman Empire and it was also a famous place for Asclepius, the god of medicine in ancient Greek religion and mythology.
"One of three big Asclepius temples of the ancient world is in this city," said Turkish archaeologist Tari.
Tari said the region is rich in historical tissue, and they had previously found a mosaic depicting the god of love, Eros.
Adana Museum Deputy Director Nedim Dervişoğlu said they continued to place a big importance on excavations in order to further boost the province's tourism potential, with such works carried out in a number of different parts of the city.

French police make woman remove clothing on Nice beach following burkini ban

Source: https://www.theguardian.com/world/2016/aug/24/french-police-make-woman-remove-burkini-on-nice-beach

Aug 24 – Photographs have emerged of armed French police confronting a woman on a beach and making her remove some of her clothing as part of a controversial ban on the burkini.

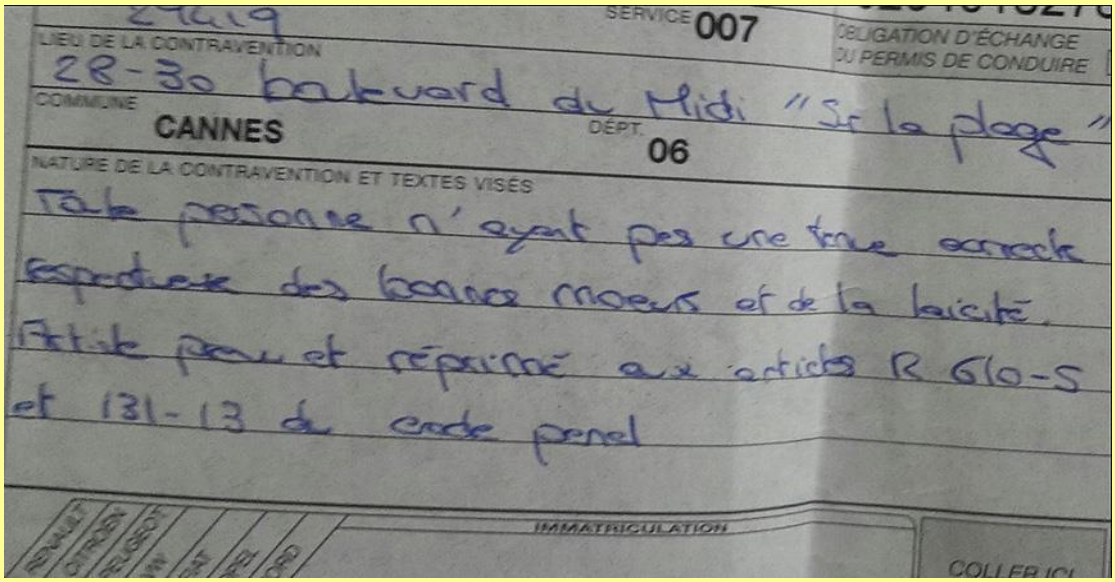
Authorities in several French towns have implemented bans on the burkini, which covers the body and head, citing concerns about religious clothing in the wake of recent terrorist killings in the country.

The images of police confronting the woman in Nice on Tuesday show at least four police officers standing over a woman who was resting on the shore at the town's Promenade des Anglais, the scene of last month's Bastille Day lorry attack.

After they arrive, she appears to remove a blue long-sleeved tunic, although one of the officers appears to take notes or issue an on-the-spot fine.

The photographs emerged as a mother of two also told on Tuesday how she had been fined on the beach in nearby Cannes wearing leggings, a tunic and a headscarf.

Her ticket, seen by French news agency AFP, read that she was not wearing "an outfit respecting good morals and secularism".
"I was sitting on a beach with my family," said the 34-year-old who gave only her first name, Siam. "I was wearing a classic headscarf. I had no intention of swimming."



A witness to the scene, Mathilde Cousin, confirmed the incident. "The saddest thing was that people were shouting 'go home', some were applauding the police," she said. "Her daughter was crying."
Last week, Nice became the latest French resort to ban the burkini. Using language similar to the bans imposed earlier at other locations, the city barred clothing that "overtly manifests adherence to a religion at a time when France and places of worship are the target of terrorist attacks".
The Nice ban refers specifically to the truck attack in the city on 14 July that claimed 86 lives, as well as the murder 12 days later of a Catholic priest near the northern city of Rouen.
The ban by several towns will come before France's highest administrative court on Thursday following an appeal by the Human Rights League, a French NGO. It is challenging the decision by a lower court in Nice, which upheld a ban on the outfit by the town of Villeneuve-Loubet.
Villeneuve-Loubet, just west of Nice, was among the first of 15 towns to ban the burkini, triggering a fierce debate in France and elsewhere about the wearing of the full-body swimsuit, women's rights and secularism.
A Corsican mayor has also banned burkinis, amid tensions on the island and violent clashes between villagers and three Muslim families. Skirmishes at a beach in the commune of Sisco earlier this month left four people injured and resulted in riot police being brought in to stop a crowd of 200 Corsicans marching into a housing estate with a high population of people of North African origin, shouting "this is our home".
A police investigation is under way to determine the cause of the violent brawl, although there has been no confirmation from authorities as to whether anyone on the beach was wearing a burkini at the time.
Nevertheless the local Socialist mayor, Ange-Pierre Vivoni, banned the garments, describing the measure as necessary to "protect the population".
The Nice tribunal ruled on Monday that the ban in Villeneuve-Loubet was "necessary, appropriate and proportionate" to prevent public disorder after a succession of jihadi attacks in France.
The burkini was "liable to offend the religious convictions or (religious) non-convictions of other users of the beach," and "be felt as a defiance or a provocation exacerbating tensions felt by" the community, it added.
The ruling by the state council, France's highest administrative court, will provide a legal precedent for towns to follow around the country.

U.N. authorizes states to help Libya dispose of chemicals

Source: http://www.reuters.com/article/us-libya-security-chemicalweapons-un-idUSKCN1022CG

The United Nations Security Council on Friday (July 29) authorized U.N. countries to help eliminate Libya's stockpile of chemicals that could be used to develop toxic weapons amid concern they could fall into the hands of militant groups.

Libyan authorities told the global chemical weapons watchdog, the Organization for the Prohibition of Chemical Weapons (OPCW), last Saturday that the **country's remaining precursor chemicals had been moved to a temporary storage site in the north of the country and asked for help to destroy them outside of Libya.**

Libya has roughly 700 tonnes of precursor chemicals - known as category two chemical weapons - diplomats said.

In a unanimously adopted, British-drafted resolution, the 15-member Security Council determined "that the potential for acquisition by non-State actors of chemical weapons in Libya represents a threat to international peace and security."

Islamic State gained a foothold in Libya amid the political chaos and security vacuum that developed after long-time ruler Muammar Gaddafi was toppled in an uprising in 2011. Al Qaeda-linked militant group Ansar al Sharia also has a presence.

British Foreign Secretary Boris Johnson said the resolution "marks the beginning of the end of the Libyan chemical weapons program" by authorizing the removal of the precursors from Libya to be destroyed in another country.

"In doing so, we have reduced the risk of these weapons falling into the hands of terrorists and fanatics," Johnson said during his first appearance at the U.N. Security Council since being appointed last week.

The Security Council authorized "member states to acquire, control, transport, transfer and destroy chemical weapons identified by the Director-General of the OPCW ... to ensure the elimination of Libya's chemical weapons stockpile in the soonest and safest manner, with appropriate consultations with the Government of National Accord."

Russia's U.N. Ambassador Vitaly Churkin said the adoption of the resolution on Friday was relevant "given there's been a springing up of terrorist groups in Libya."

"There was an imminent threat of danger that these things would fall into terrorist hands. The examples of Syria and Iraq have demonstrated the topical nature of the problem of chemical terrorism for the region," Churkin said.

The OPCW is helping Libya come up with a modified plan to destroy the chemicals. **Libya said in February 2014 it had destroyed weapons that were ready for use, including armed munitions and the most deadly, or category 1, toxins with the help of Western states.**

My career in jeopardy, agonised says IIT scholar denied Oz visa over 'WMD proliferation'

Source: http://www.thenewsminute.com/article/my-career-jeopardy-agonised-says-iit-scholar-denied-oz-visa-over-wmd-proliferation-46868

July 21 – An aerospace engineer from IIT Kanpur was reportedly denied a visa because he was suspected of being involved in the proliferation of weapons of mass destruction. The incident came to light when Congress MP Shashi Tharoor wrote to External Affairs Minister Sushma Swaraj, urging her to intervene in the case.

Ananth SM, a native of Thiruvananthapuram, had completed his education from IIT Kanpur and was employed there as a Research Associate. He had secured a fully-funded

doctoral position at the department of Mechanical Engineering in University of Melbourne, and had therefore applied for an Australian student visa.

However, even after 10 months Ananth had not received his visa, and therefore contacted

Tharoor for help in expediting the process. When Tharoor, in turn, contacted the Australian High Commissioner, Ananth received a letter from the Australian Department of Immigration and Border Protection (a copy of which is with TNM) that stated that Ananth was suspected, "to be a person whose presence in Australia may be directly or indirectly associated with the proliferation of weapons of mass destruction," and this was the reason that his visa application was being rejected.

"I feel devastated and terrible about what is happening to me. I cannot imagine such a suspicion being cast over my application. Those who know me closely – my parents, friends, academicians who are supervising me at IIT Kanpur, the prospective supervisor in Melbourne, etc. are totally shocked. On a personal level, this suspicion is something which doesn't suit with my nature at all," Ananth told TNM over email.

When he received this letter, said Ananth, he put together a response with letters from professors he had worked with at IIT Kanpur and from his prospective supervisor in Melbourne. However, on July 19, he received a notification that his visa application had been refused.

Ananth added that this decision has not only derailed his immediate career plans (in the form of 10 months wasted on waiting for the Australian visa), but has put his entire academic future in jeopardy. "The reason cited for refusal is good enough to tarnish my name very badly at an international level," he observed, pointing out that even if he should secure admission in a different university in another country, on any future visa application, he would have to disclose that he was denied an Australian visa and the reasons for it.

"In other words, the stated reason and the refusal by Australia will damage my academic career, which will stop me from pursuing education in any of the reputed universities abroad," he said.

"Already, myself and my parents are suffering from huge mental agony because of the difficulty in getting a study visa and the situation is getting worse day by day. I do not know what else I must do to prove my innocence and make the relevant officials understand that my true intention is to become an academician after my PhD and that I don't and will not have anything to do with proliferation of weapons of mass destruction," he added.

In his letter to Swaraj, Tharoor said that he had written privately to the High Commissioner, asking, "how an Indian scholar could be subject to such a bizarre suspicion, and stated that such a position is unacceptable since it clubs Indian nationals working in certain sectors with those of rogue nuclear states like North Korea and Pakistan."

He urged Swaraj to intervene in the matter, since, "unlike a typical 'individual case', this is one that reflects a matter of fundamental principle where a friendly country, taking no notice of our exemplary record on nuclear non-proliferation, has treated an

Indian citizen as they would somebody from a rogue nation."
Ananth is now pinning his hopes on a successful intervention by the External Affairs Minister. "I am going to be immensely grateful throughout my life for all those who have come to my assistance during this very urgent situation. I am innocent and I believe that my faith will help me to get justice eventually," he said.

Oxnard man arrested for planting chemical weapon in Walmart

Source: http://abc7.com/news/oxnard-man-arrested-for-planting-chemical-weapon-in-walmart/1436118/

July 20 – Oxnard police arrested a man they said built a chemical weapon designed to release a dangerous gas and left it in a Walmart last month, forcing the evacuation of the store.

The incident happened on June 18, when police and firefighters responded to the Walmart at 2701 Saviers Road regarding a suspicious device. They identified it as an improvised chemical weapon, designed to release a dangerous gas.
The store was evacuated for about six hours while a hazmat team rendered the device safe.
The store said it lost about $120,000 in business while it was closed.
Officials were later able to identify and arrest Martin Reyes, 31, of Oxnard as the suspect.
On Tuesday they interviewed Reyes at the Ventura County Main Jail, where he was in custody on an unrelated charge. Investigators said Reyes confessed to building the device and leaving it in the store. They said he knew the device was capable of creating a gas, and that he researched how to build it on the internet.

Reyes was arrested and booked for unlawful possession and manufacturing of a chemical weapon of mass destruction

Chemical plants, water supply are terrorist targets, Europol warns

Source: http://counteriedreport.co.uk/chemical-plants-water-supply-are-terrorist-targets-europol-warns

July 22 – **Chemical plants are becoming a "target of choice" for terrorists who may also try to contaminate water supplies or infiltrate nuclear sites,** according to Europe's law enforcement agency.
The threat posed by Islamic State will get only worse, Europol warned, as it revealed the number of jihadist attacks across the continent had more than quadrupled in a year.

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The agency's annual terrorism trends report said Syrian asylum-seekers could be targets for swift radicalisation by Islamic State recruiters and that a new generation of fighters was being raised in the so-called caliphate.
Europol director Rob Wainwright said the threat was "reinforced" by European Islamic State fighters who have returned.
Chemical plants are becoming a "target of choice by terrorist groups", the report said, and biological toxins such as abrin and ricin had been bought using bitcoin on the dark web.
"The phenomenon of individuals travelling for terrorist purposes to conflict zones increases the risk that expertise in the use of chemical weapons can be transferred to the EU by returning foreign terrorist fighters," the report said.
"Both Syria and Iraq have had chemical weapon programs in the past, as well as production facilities and stockpiles which may not have been completely destroyed."
More than 5000 Europeans are believed to have travelled to conflict areas in Syria and Iraq.

Jordan – Advanced devices to detect chemical, explosives at Customs Department

Source:http://www.petra.gov.jo/Public_News/Nws_NewsDetails.aspx?Site_Id=1&lang=2&NewsID=261847&CatID=13&Type=Home&GType=1

July 24 – **New advanced chemical and explosive detection devices will be introduced to maintain the security of borders and confront threats of weapons of mass destruction,** a source at the Custom Department said.
According to Director General of Jordan Customs Department, Wadah Al-Hamoud , the new equipment are light and designed to examine all goods and luggage brought into or going out of the country, determine the nature of the materials and detect toxic industrial chemicals, precursors chemical and other unknown substances.
The portable explosive detectors, he revealed, can also detect dual-use goods, chemical warfare agents, narcotics and counterfeit pharmaceutical components .
Al-Hamoud added that the department aims to build the capacity of its personnel, speed up the clearance process and increase accuracy of examination of entering or leaving the Kingdom.

Chemical Insecurity: An Overview of the Threat to the Chemical Sector

By Frank G. Rando
Source: http://www.cbrneportal.com/chemical-insecurity-an-overview-of-the-threat-to-the-chemical-sector/

"The nature of the chemical bond is the problem at the heart of all chemistry"

– Bryce L. Crawford, Jr.

"Basically, these facilities (hazardous chemical facilities) are stationary weapons of mass destruction spread all around the country"

– then Senator Barack Obama, 2006

July 28 – On 12 August 2015, two powerful explosions occurred in a warehouse in the Chinese port of Tianjin, killing approximately 173 people, injuring hundreds and sending a shockwave to nearby residences. The Chinese Earthquake Networks Center reported the first blast generated shock waves equivalent to 3 tons of TNT; and the second blast

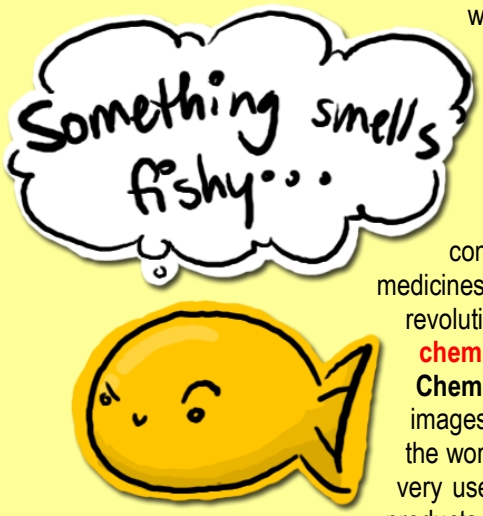
generated the equivalent of 21 tons of TNT. (Rando FG. "China's chemical dragon", *CBNW, 2016/01, p.38-41.*)
The two fiery explosions liberated toxic plumes of Toxic Industrial Chemicals (TICs) generated from stored chemicals, including sodium cyanide, toluene dissocyanate (TDI), ammonium nitrate and potassium nitrate (highly explosive); flammables and highly reactive metals, including sodium and magnesium.
Some recent events in China also reveal the ubiquitous inadequacies of chemical sector safety and security. In April of 2015, a paraxylene (PX) plant explosion and fire in Zhangzhou resulted in casualties requiring hospitalization and medical treatment. Contaminated casualties and chemical hazards were so great that officials deployed 3,000 of the Peoples Liberation Army CBRN troops to perform chemical sampling and monitoring, decontamination, hazard mitigation duties, extensive clean-up and recovery operations. Hundreds of emergency services personnel were required to conduct fire suppression, search and rescue and emergency medical operations.

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

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

Do I smell something fishy?"

By Dr. Ram Athavale
Source: http://www.cbrneportal.com/do-i-smell-something-fishy/



July 28 – The smell of rotting fish is synonymous to something being wrong. Everyday we are subjected to multifarious smells and odors, some pleasing, others noxious. Then there are substances that are bad to touch. They may cause irritation, burns or rashes. Others may sting your eyes. We have a natural reflex that tells us that something is not right with this place based on our sensory inputs.
Technological advancements have brought us far from the days of simple classroom chemistry to complex reactions leading to exotic chemical compounds. These could be in any physical state. Some are beneficial as medicines, some excellent engineering material while others may result in new revolutionary technologies. **While there may be countless benefits of modern chemistry, there are grave pitfalls too.**
Chemical Accidents. The mention of chemical accidents brings to mind the gory images of Bhopal gas victims of 1984. Similar accidents are happening all over the world. There are chemical plants which use tons of toxic chemicals to produce very useful and beneficial products. Tons of waste chemicals and unwanted by-products lie begging for disposal. Cost cutting and unregulated industrial boom compounded by rampant corruption has led to chemical units mushrooming at lesser known locations. Such units, more often than not, function with total disregard of safety norms and security of material. Pilferages and "loss in transit" cases are many. Lack of oversight leads to process shortcuts and accidents. Loss of life is the least of the concerns.
Transportation and logistics of storage, handling and distribution of toxic substances has its perils too. Gross disregard to best practices and regulations as well as lack of education and awareness has led to many accidents and incidents with toxic chemicals. Chemical train accidents, container disruptions, pipeline bursts and scores of such incidents put us

at risk on a daily basis.

The Spectre of Terrorism. A lot of us may remember our first chemical lab kit we got as children. The basics of chemistry were learnt then. Imagine a trained scientist with misguided leanings having rudimentary, yet functional laboratory facilities set up in a kitchen or pantry. Most toxic compounds can be created here. If the required dispersal means can be put together and the desired motivation exists, imagine what scary scenarios could be played up. Forget about exotic chemical warfare agents, simple industrial chemicals like Ammonia or Chlorine could be used to devastating effects. Such incidents are common place in Syria and Iraq.

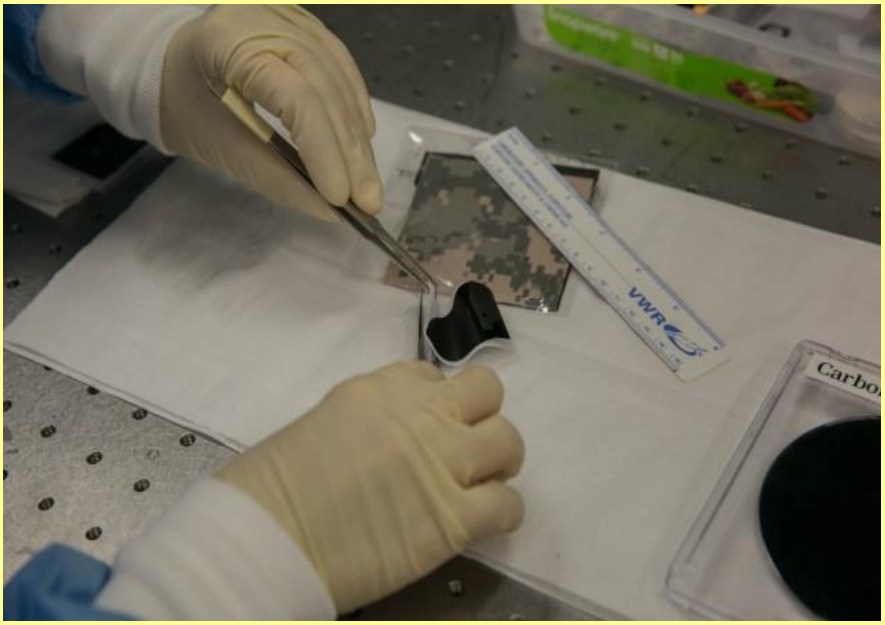
▶ **Read the rest of this article at source's URL.**

Dr. Ram Athavale *has been a key advisor to the Government of India on CBRN Security and Incident Management, and is now deployed as a key CBRN Expert for On-Site Technical Assistance to the EU CBRN Risk Mitigation Centres of Excellence Regional Secretariat in Nairobi Kenya.*

'Second skin' uniform protects soldiers from biological and chemical agents in the field

Source: https://www.llnl.gov/news/%E2%80%98second-skin%E2%80%99-uniform-protects-soldiers-biological-and-chemical-agents-field

Aug 03 – In work that aims to protect soldiers from biological and chemical threats, a team of Lawrence Livermore National Laboratory scientists has created a material that is highly breathable yet protective from biological agents.



This material is the first key component of futuristic smart uniforms that also will respond to and protect from environmental chemical hazards. The research appears in the July 27 edition of the journal, *Advanced Materials*.

High breathability is a critical requirement for protective clothing to prevent heat-stress and exhaustion when military personnel are engaged in missions in contaminated environments. Current protective military uniforms are based on heavyweight full-barrier protection or permeable adsorptive protective garments that cannot meet the critical demand of simultaneous high comfort and protection, and provide a passive rather than active response to an environmental threat.

The LLNL team fabricated flexible polymeric membranes with aligned carbon nanotube (CNT) channels as moisture conductive pores. The size of these pores (less than 5 nanometers, nm) is 5,000 times smaller than the width of a human hair.

Ngoc Bui demonstrates the flexibility of a carbon nanotube membrane.

"We demonstrated that these membranes provide rates of water vapor transport that surpass those of commercial breathable fabrics like GoreTex, even though the CNT pores are only a few

nanometers wide," said Ngoc Bui, the lead author of the paper.

To provide high breathability, the new composite material takes advantage of the unique transport properties of carbon nanotube pores. By quantifying the membrane permeability to water vapor, the team found for the first time that, when a concentration gradient is used as a driving force, CNT nanochannels can sustain gas-transport rates exceeding that of a well-known diffusion theory by more than one order of magnitude.

Lawrence Livermore scientists are developing a flexible membrane with sub-5 nanometer single-walled carbon nanotube pores - a key component of protective, yet breathable fabrics. Image by Ryan Chen/LLNL.

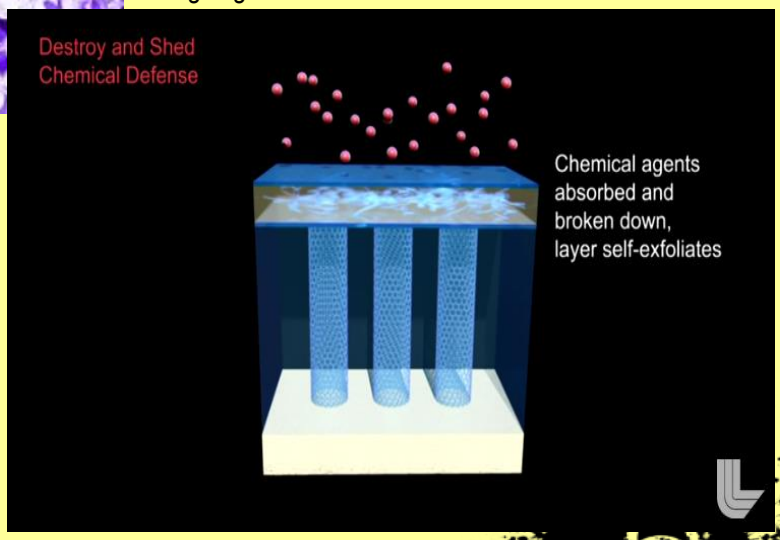
These membranes also provide protection from biological agents due to their very small pore size -- less than 5 nanometers (nm) wide. Biological threats like bacteria or viruses are much larger and typically more than 10-nm in size. Performed tests demonstrated that the CNT membranes repelled Dengue virus from aqueous solutions during filtration tests. This confirms that LLNL-developed CNT membranes provide effective protection from biological threats by size exclusion rather than by merely preventing wetting.

Furthermore, the results show that CNT pores combine high breathability and bio-protection in a single functional material.

However, chemical agents are much smaller in size and require the membrane pores to be able to react to block the threat. To encode the membrane with a smart and dynamic response to small chemical hazards, LLNL scientists and collaborators are surface modifying these prototype carbon nanotube membranes with chemical-threat-responsive functional groups. These functional groups will sense and block the threat like gatekeepers on the pore entrance. A second response scheme also is in development -- similar to how living skin peels off when challenged with dangerous external factors. The fabric will exfoliate upon reaction with the chemical agent.

"The material will be like a smart second skin that responds to the environment," said Kuang Jen Wu, leader of LLNL's Biosecurity & Biosciences Group. "In this way, the fabric will be able to block chemical agents such as sulfur mustard (blister agent), GD and VX nerve agents, toxins such as *staphylococcal enterotoxin* and biological spores such as anthrax."

Current work is directed toward designing this multifunctional material to



undergo a rapid transition from the breathable state to the protective state.

"These responsive membranes are expected to be particularly effective in mitigating a physiological burden because a less breathable but protective state can be actuated locally and only when needed," said Francesco Fornasiero, LLNL's principal investigator of the project.

The new uniforms could be deployed in the field in less than 10 years.

"The goal of this science and technology program is to develop a focused, innovative technological solution for future chemical biological defense protective clothing," said Tracee Whitfield, the DTRA science and technology manager for the Dynamic Multifunctional Material for a Second Skin Program. "Swatch-level evaluations will occur in early 2018 to demonstrate the concept of 'second skin,' a major milestone that is a key step in the maturation of this technology."

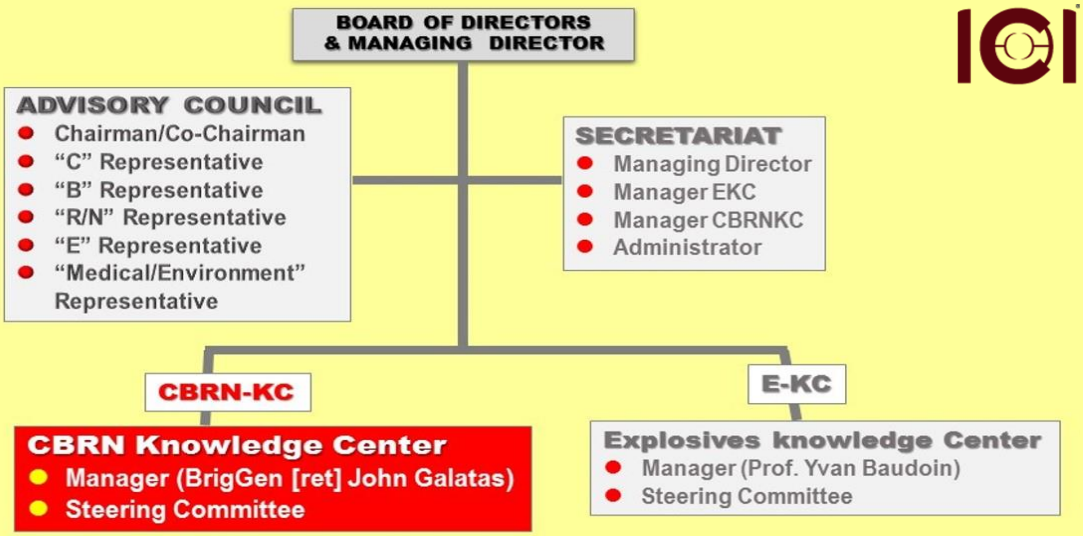
The work is funded by the Chemical and Biological Technologies Department of the Defense Threat Reduction Agency (DTRA) in the "Dynamic Multifunctional Materials for a Second Skin D[MS]^2" program, and by the Laboratory Directed Research and Development (LDRD) program.

Other researchers contributing to this work include Eric Meshot, Jose Pena, Sangil Kim and Phillip Gibson (Natick Soldier Research Development and Engineering Center).

▶ **Read the related paper at:** http://onlinelibrary.wiley.com/doi/10.1002/adma.201670197/full

Belgium – The International CBRNE Institute Knowledge Center

The International CBRNE Institute Knowledge Center (ICI KC) aims to be a well of CBRNE professionals where national and international bodies or organizations can find solutions to occurring CBRNE problems they are facing. KC would address topics from crisis/consequence management to scientific issues, emergency planning, or technological challenges and development. KC members are high-level professionals from all backgrounds (international organizations, armed forces, first responder community, scientists, equipment providers, etc.) ready to assist, inform and advise on best practices about CBRNE matters. **KC is comprised from two entities: CBRN-CT and Explosives CT (E-CT).**



The CBRN-KC vision will be materialized via respective Task Forces (TF) as follows:

TF 1: Technology Watch and Shared R&D
TF 2: Validation and European Standards
TF 3: Training and Risk Education
TF 4: Meeting the C-CBRNH Practitioners' Requirements
TF 5: Countering CBRN IED Threats

Preview of the NEW ICI's website – visit us soon at: ici-belgium.be

TASK FORCE 1

Technology Watch and Shared R&D

- **Continuous improvement** of CBRN-related technologies through an exchange of R&D results among the scientific community and via adequate interdisciplinary technology transfer
- Share **expertise** and particularly **research** through dedicated workshops, in close cooperation with the above mentioned Centers and other stakeholders
- **Monitor** the developed tools and prepare their validation and their wider implementation

As of July 2016, the Editor of the CBRNE-T Newsletter is the new Manager of the ICI CBRN Knowledge Center

TASK FORCE 2

Validation and European Standards

- Promote EU-wide **standards** of relevant counter CBRN hazards technologies, tests and evaluations of related equipment

- Maintain a dedicated permanent **lab**-space for baseline testing of performance and suggest appropriate **test** areas for field testing
- Suggest and validate new/improved **testing procedures**, in cooperation with ICI, NATO, JCBRNCoE/NATO, the European Defense Agency, the European Committee for Standardization (CEN) and others
- Pursue (or propose/extend) **new CEN workshop agreements** initiated by the FP7 Projects or initiated under the current Horizon 2020 projects

Multifunctional conference rooms and permanent exhibition area/indoors training facility

TASK FORCE 3

Training and Risk Education

- Develop **survey** (prediction, prevention, detection)
- Offer advanced multinational counter CBRN hazards courses and related **training**
- Provide **risk-education** tools for countering CBRN hazards practitioners

TASK FORCE 4

Meeting the counter CBRN hazards Practitioners' Requirements

- Support comprehensive and integrated use of **Information Management Systems** (IMS) as requested by end users;
- Develop **synergies** between all above-mentioned centers focusing on counter explosive hazards in view of the systems and security challenges of the European Union;
- Participate in **analysis** of countering CBRN hazards requirements.

TASK FORCE 5

Countering CBRN IED Threats

- **Support training of practitioners in the domain of CBRN IEDs (together with E-KC)**

Why becoming a member?

- ☑ The ICI KC aims to be a well of CBRNE professionals where national and international bodies or organizations can find solutions to occurring CBRNE problems they are facing.
- ☑ KC would address topics from crisis/consequence management to scientific issues, emergency planning, or technological challenges and development.
- ☑ KC members are high-level professionals from all backgrounds (international organizations, armed forces, first responder community, scientists, equipment providers, etc.) ready to assist, inform and advise on best practices about CBRNE matters.
- ☑ Possibility to be designated as an expert on request for incidents involving CBRNE matters (national, international);
- ☑ Access to the KC database of professionals in all CBRNE matters and networking with other professionals within the CBRNE community;
- ☑ Possibility to publish your own publications on the ICI website of the KC community;
- ☑ Access to publications on testing of CBRNE materials;
- ☑ Updates on future CBRNE conferences, seminars and workshops

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How to Join CBRN-KC

Participation in the Knowledge Centre requires **individual registration** and an **annual membership (non refundable).** Upon acceptance and acknowledgment of the registration by the Secretariat the individual becomes an **Associate Member** of the ICI. Participation in the activities of the Knowledge Centre means adhesion to its way of thinking and working **principles**:

- ☑ **Honesty**
- ☑ **Probity**
- ☑ **Fairness**
- ☑ **Knowledge**
- ☑ **Expertise**
- ☑ **Availability**
- ☑ **Friendship**

Express of Interest

- ☑ CBRN-KC is interested to organize a workshop that will bring together **CBRN First Responders and Architects/Civil Engineers**. When these two communities will exchange ideas and unveil needs and gabs a safer critical Infrastructure potential will become a reality. It is much easier and cheaper to design CBRN proof structures that to harden them afterwards. If interested please contact us!
- ☑ CBRN-KC is interested to create a "**CBRN R&D Cell"** that will explore more ergonomic and economic solutions in the area of mass decontamination. If interested to join this effort please contact us!
- ☑ CBRN-KC is especially interested in introducing **"CBRNE Medicine"** into university medical and nursing schools EU-wide and internationally. If you share the same vision please contact us!

▶ **Contact details:** info@ici-belgium.be

Pesticide which killed 10 in Dubai 'should never be used in homes'

Source: http://www.thenational.ae/uae/health/pesticide-which-killed-10-in-dubai-should-never-be-used-in-homes

Aug 05 – A pesticide that has killed 10 people is illegal for use in homes under any circumstances, experts warn.

Those who died had inhaled **pesticide containing aluminium phosphide** in Dubai in the past year.

"This pesticide is only to be used by licensed companies under the direct supervision of Dubai Municipality and never in homes," said Hisham Al Yahya, head of public health and pest control at Dubai Municipality.

"This is only used in palm planting to prevent cases of red palm weevil and against pests in warehouses that store wheat, pulses, sugar and such."

He said licensed companies required the municipality's approval before using the compound.

"We need to know when and where (it will be used), and then we approve it and tell them (users) who we will be sending from Dubai

- **Greyish green tablet, metallic taste, garlicky odour**
- **Solid fumigant pesticide, insecticide and rodenticide**
- **Widely used as grain preservative** (phosphite & hypophosphite of aluminium are non-toxic residues left in the grains)
- Celphos, Alphos, Quickphos, Phostoxin, Phosphotex
- Each tablet is 3g, can liberate 1g of phosphine (PH_3) when come in contact with moisture
- **HCl** in stomach **accelerate** the convertion

Municipality to monitor the procedure," said Mr Al Yahya.
He said the municipality had special measuring devices for the monitoring of the deadly compound because "only a certain percentage [of the pesticide] can be used. And if used in warehouses, you must make sure that they remain closed for a certain period of time".
Some people – mostly blue-collar workers who want to kill bedbugs – choose to ignore the warnings and use the toxic pesticide because it was cheaper than using pest controllers, according to the municipality.
"They resort to these methods and buy the pesticides illegally or from the black market. However, they may not only be harming themselves but also their neighbours," said Mr Al Yahya. He warned that phosphide gas could not be easily detected because it was colourless and odourless.
A mother and her child were among those who died this year from inhaling the pesticide, said Dubai Police's general directorate for evidence and criminology. They lost their lives when aluminium phosphide seeped into their home through air-conditioning ducts after neighbours had applied the pesticide.

India using chemical weapons in IAK: Hafiz Saeed

Source: http://www.pakistantoday.com.pk/2016/08/04/city/lahore/india-using-chemical-weapons-in-iok-hafiz-saeed/

Aug 04 – **Jamaat-ud-Dawa (JuD) chief Hafiz Muhammad Saeed has said that India is using mass destruction chemical biological weapons in occupied Kashmir** to crush the Kashmiris' freedom movement.

Addressing the JuD workers on Thursday, Hafiz Saeed said that Kashmir is on fire and Indian atrocities have broken records of all tyrannies. He said the Indian army in Kashmir has been exceeded from 800,000. India launched massive operation after the death of martyrdom of Burhan Wanni.
He said the bodies of injured and died Kashmiris have confirmed the use of chemical and biological weapons in the valley. This is very alarming and the world leaders take notice into large scale killings of Kashmiris in result of chemical weapons, he added.
Hafiz Saeed further said that the **usage of chemical weapons has been started soon after joining hands by Israel with India.** Criticising the government, he said that issuing statements only is not the solution to Kashmir problem.
He said this is the time to awake and these are decisive moments. Freedom of Kashmir is knocking Pakistan's doors. The rulers must set aside compromising policies while Kashmiris were watching Pakistan with expectant eyes, he added.

The US State Department has named (2014) Pakistan's Jamaat-ud-Dawa (JuD) a "foreign terrorist organisation", a status that freezes any assets it has under the US jurisdiction. Jamaat-ud-Dawa calls itself a humanitarian charity but is also seen as a front organisation for the banned Lashkar-e-Taiba (LeT), a Pakistan-based group that fights Indian soldiers in India-administered Kashmir (IAK) and accused of 2008 Mumbai attacks that killed 166 people.

"Liquid fingerprinting" technique identifies unknown liquids instantly

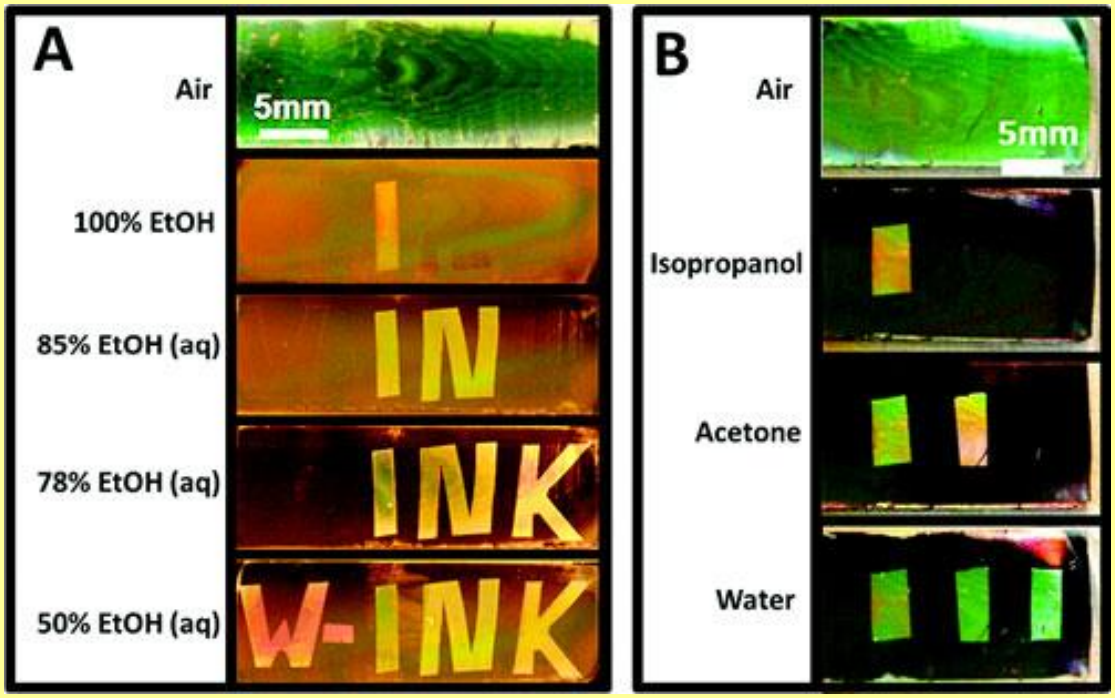
Source: http://www.homelandsecuritynewswire.com/dr20160805-liquid-fingerprinting-technique-identifies-unknown-liquids-instantly

Aug 05 – **A new company will commercialize sensing technology invented at Harvard University that can perform instant, in-field characterization of the chemical make-up and material properties of unknown liquids.**

Validere, cofounded by Harvard scientists and engineers, has raised an initial round of seed capital and has entered into a worldwide exclusive licensing agreement with the university to pursue applications in quality assurance and liquid identification.

Validere aims to develop the licensed technology, called **Watermark Ink (W-INK), into a pocket-sized device that could be used by first responders to quickly identify chemical spills, or by officials to verify the fuel grade of gasoline right at the pump.** Unlike other techniques for identifying and authenticating liquids, Harvard's solution is inexpensive, instantaneous, and portable.

Harvard University reports that the W-INK concept, developed in the laboratory of Joanna Aizenberg, the Amy Smith Berylson Professor of Materials Science at the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) and a Core Faculty member of Harvard's Wyss Institute for Biologically Inspired Engineering, **exploits the chemical and optical properties of precisely nanostructured materials to distinguish liquids by their surface tension.** Marko Lončar, Tiantsai Lin Professor of Electrical Engineering at SEAS, also contributed to its development.



Akin to the litmus paper used in chemistry labs to detect the pH of a liquid, the detector changes color when it comes in contact with a liquid with a particular surface tension. **The color-changing strip can be programmed to respond precisely to the unique surface tension exhibited by any liquid of interest.**

"This idea advanced swiftly through Harvard thanks to an organic system that facilitates progress from discovery to application," said Aizenberg, who is also Professor of Chemistry and Chemical Biology

and Director of the Kavli Institute for Bionano Science and Technology. "We first developed the technology from basic research in my lab at SEAS. The Harvard Office of Technology Development (OTD) guided and supported our commercialization strategy through its Physical Sciences and Engineering Accelerator. Out of this virtuous cycle of innovation Validere was spun off with a viable commercial product."

The W-INK technology, which received early support from the Air Force Office of Scientific Research and a proof-of-concept contract from the U.S. Department of Transportation, could have important applications in industry and government.

"Validere translates this technology to create inexpensive, one-time-use test kits that can be used anywhere in the field to visually identify unknown liquids, all without the need for a dedicated power source," said Ian Burgess, co-founder, CEO and CTO at Validere, who co-invented W-INK as a doctoral student at SEAS and technology development fellow at the Wyss Institute.

"Many people focus on making hardware smaller, but miniaturization often turns out to be the easy part," Burgess said. "What's difficult, and what our solution does, is to simplify the readouts to a level that you don't need a technician to interpret the results. Anyone in the field can immediately know, on the spot, how to respond to a sampled liquid."

Harvard's Physical Sciences and Engineering Accelerator provided seed funding that enabled Aizenberg's group to advance the technology from the lab to the pilot scale and attract further investment. The research group continues to refine W-INK to expand its range of applications.

Following a set of original publications describing W-INK technology in the *Journal of the American Chemical Society*, *ACS Nano,* and *Lab on a Chip*, in January 2016, Aizenberg, Lončar and Burgess reported improvements that make possible a colorimetric test for determining the volatility of liquids. This capability, described in a paper published in *Scientific Reports*, is of particular interest to the Department of Transportation. The ability to rapidly profile the volatility of crude oil, which is commonly transported by railroad, means decisions about proper transport containers can be made at the point of extraction in the field, helping to prevent accidental explosions. DOT is also supporting development of test kits for analyzing hazardous spills.

Harvard notes that Aizenberg's lab specializes in reverse-engineering nature. **W-INK mimics two biological systems to achieve a tunable device with properties that allow it to change colors when it comes in contact with certain liquids. The wings of some species of butterfly owe their brilliant colors to structure rather than pigment; the surface of each wing contains networks of tiny pores, the size of which determines the perceived color. Meanwhile, brittle stars, relatives of starfish, can change color from black to white by modulating the position of pigmented cells inside lens-like, light-focusing structures arranged in an array across the star's back.**

By combining both of these mechanisms so that they respond optically to liquid infiltration into chemically modified porous structures, Aizenberg's team developed a liquid decoder that is small enough to fit in the palm of the hand and can function without a power source. Engineered surface properties interact with liquids to change the interfacial chemistry of the test strip, which instantly causes corresponding color changes or markers to appear.

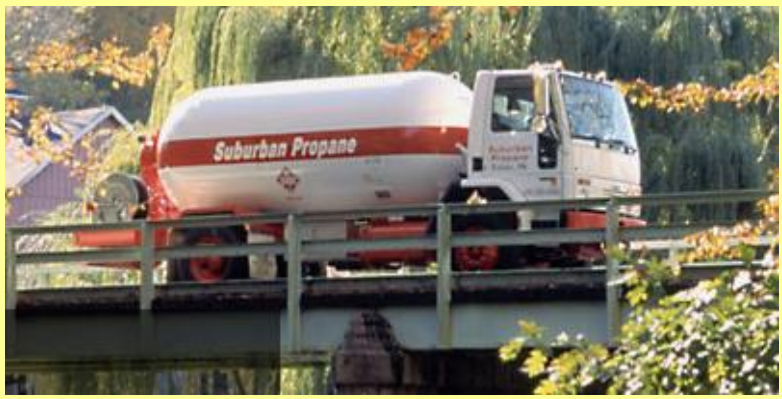
With support from the U.S. Federal Railroad Administration, Aizenberg is now leading research efforts to optimize the sensing capabilities, while Burgess is spearheading Validere's development of software and an interface device that will translate visual test results into recommended action for handling identified liquids. The device will pair with disposable strips to comprise customizable field test kits that can be tailored to identify virtually any liquid or liquid mixture.

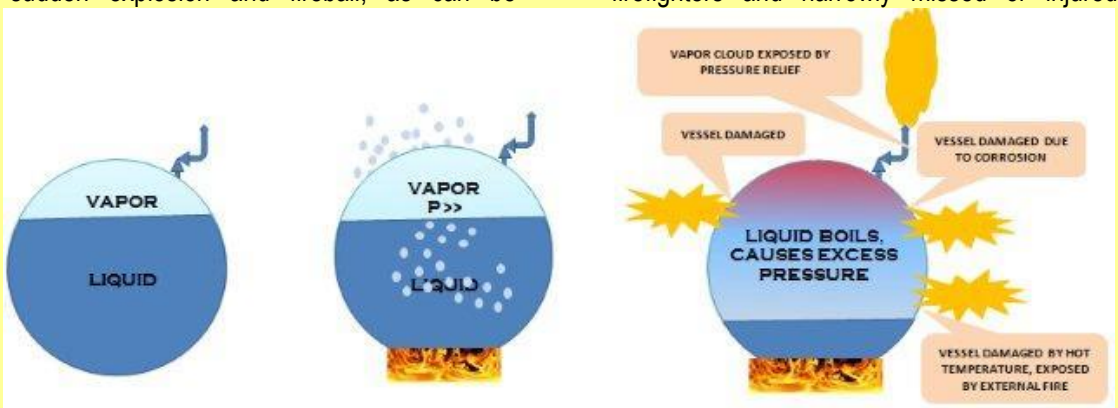
"The goal is to remove the element of human error from the identification and categorization of unknown liquids," Burgess said.

Technical Brief on BLEVE Explosions for Propane, LPG and Natural Gas Tanks Available

Source: http://www.hstoday.us/single-article/technical-brief-on-bleve-explosions-for-propane-lpg-and-natural-gas-tanks-available/5badb292664c154ff3c176cbe2edf98a.html

Aug 02 – A Boiling Liquid Expanding Vapor Explosion (BLEVE) can occur if a propane, liquefied petroleum gas (LPG) or a natural gas tank is heated such as when engulfed in a fire, causing buildup of vapor pressure within the tank which overwhelms the ability of safety valves to allow the pressure buildup to escape. Flaming jets exiting a tank from a safety valve due to BLEVE are followed by a sudden explosion and fireball, as can be viewed in this video.





"Tank fragments can be tossed long distances as a result of the explosion," said Aristatek, Inc, a leading provider of hazardous materials planning and response solutions in a new technical paper, *Propane Brief*, detailing the hazards of propane, LPG and natural gas that includes a BLEVE chart for safe standoff distances.

Indeed. Aristatek noted in its new technical brief that an 18,000 gallon propane tank explosion occurring on April 9, 1998 near Albert City, Iowa, resulting in the deaths of two firefighters and seven more injured. The explosion was invested by the US Chemical Safety Board, which found the tank was engulfed in flames shooting jets 70 to 100 yards into the air before the explosion. Fragments from the exploding tank killed two firefighters and narrowly missed or injured others. At least 36 (possibly 40) fragments were recovered some distance away, including off the 14-acre property site. The pressure relief valve (set at 250 psi) was working, but the Chemical Safety

Board estimated the pressure inside the tank had built up to almost 1,000 psi before the explosion. The CSB report said the firefighters were too close.

Propane, LPG and natural gas are stored as pressurized liquids, but when their containers are heated during a fire, and those liquids exceed their boiling point, additional pressure causes their storage vessels to explode. This explosion is called a boiling-liquid, expanding-vapor explosion.

Aristatek's new *Propane Brief* contains a 'BLEVE Chart' to determine safe stand-off distance based on various storage containers of these common gases. This chart along with other technical information in the brief is designed to help responders deal with BLEVE's and other hazards associated with these substance.

The company is making this brief available at no cost to Hazmat teams, fire departments/fire marshals, sheriffs, LEPC/EMA officials or any other public safety/health professionals to assist in protecting their first responders. The document is available on Aristatek's website.

"With good reason, the *Emergency Response Guidebook* for responders recommend that if a tank, railcar or tank truck containing a flammable liquid (including liquefied gas) is involved in a fire, the area should be isolated for ½ mile (800 meters) and public evacuation should be considered for that distance," the company said.

Aristatek said its *Propane Brief* "was written to help with planning and responding to common incidents involving propane, LPG or natural gas," pointing out that, "Propane, LPG and natural gas are very common substances involved in hazmat incidents, but they can have a devastating impact on the public and responders when they find an ignition source. As recently as this past May, two firefighters in Detroit were injured fighting a fire when a propane tank exploded. In another event in late June, a natural gas plant explosion in Mississippi gave off vibrations that could be felt over 10 miles away. Thankfully there were no injuries in that event."

"Gases like propane and LPG are extremely common," said Aristatek CEO Bruce King. "However, if responders aren't prepared and know the consequences of a BLEVE explosion involving these substances, they can easily be hurt or worse."

"We actually took the BLEVE chart straight out of our industry-leading PEAC-WMD hazmat software," King said, adding, "We felt like this resource was important enough that we should share it with all responders to make better, safer decisions in the field."

Russia Submits Updated Version of Chemical Terrorism Convention Draft to UN

Source: http://sputniknews.com/russia/20160804/1043929301/russia-chemical-trerrorism-convention.html

Aug 04 – In March, the Russian initiative, which was initially limited to chemical terrorism, was discussed at the UN Disarmament Conference in Geneva where Italy and China proposed expanding it to include bio terrorism.

Borovkin said he presented the updated convention to the UN Disarmament Conference in Geneva and that "thus, the draft convention has been submitted in its final form and is ready for further discussion."

According to him, the updated text has expanded the range of activities for which criminal liability is stipulated.

In addition, the updated version requires ratification by only 15 countries in order for the convention to enter into force, while the earlier draft required ratification by between 25 and 60 countries.

In April, Mikhail Ulyanov, the head of the Russian Foreign Ministry's nonproliferation and arms control department, said that Russia estimates that UN debates on its draft convention to fight biological and chemical terrorism could take up to two years.

Syria's Chemical Weapons Have Been Destroyed. So, Why Do Chlorine Gas Attacks Persist?

Source: http://www.nytimes.com/2016/08/12/world/middleeast/syria-chlorine-gas-attack.html?_r=0

A civilian in a hospital on Thursday after what medical and civil defense officials said was a chlorine gas attack in a neighborhood of Aleppo, Syria, that killed four people. Credit Abdalrhman Ismail/Reuters

Aug 11 – The use of chlorine gas against civilians in the Syrian city of Aleppo should be investigated as a "war crime," a top United Nations diplomat said Thursday. It was a deadly reminder of the persistence of makeshift chemical weapons in Syria despite an international effort to destroy the country's chemical weapons caches.

Four people were killed when at least four barrels containing the gas were dropped Wednesday over Zubdiya, a rebel-held neighborhood in eastern Aleppo, witnesses said. The bombing was the latest in a series of chlorine gas attacks that have killed or wounded scores during Syria's five-year civil war.

What Is Chlorine?

Chlorine is one of the most common naturally occurring elements on earth and has a variety of beneficial uses. It is used to make pesticides and the bleach that disinfects hospitals, and it is injected into municipal drinking water to make it clean and potable.

It is a legal and necessary chemical, freely traded across international borders. But chlorine was among the first chemical gases to be turned into a weapon during World War I. Given its accessibility and the ease with which it can be weaponized, it has been commonly used in homemade bombs.

Chlorine gas was reintroduced to warfare in the Middle East during the American occupation of Iraq when insurgents made improvised explosive devices out of chlorine.

What Are the Effects of Chlorine Gas?

Chlorine gas is classified as a choking agent. When inhaled in its concentrated form, it causes a person's lungs to fill with liquid, leading to asphyxiation. The yellow-green gas is extremely corrosive to the mucuous membranes of the eyes, skin and upper respiratory tract.

Children and older people are particularly susceptible to its effects.

Why Was Chlorine Not Destroyed?

In 2013, President Bashar al-Assad of Syria, facing the threat of an American attack, agreed to join the Chemical Weapons Convention and subsequently turned over for destruction thousands of tons of deadly agents.

That deal, brokered by Russia and the United States, led to the destruction of most of Syria's most dangerous chemical weapons, including the nerve agents Sarin and VX, and sulfur mustard, a blister agent.

Using chlorine as a weapon is banned under the Chemical Weapons Convention, but because of its widespread use for legal purposes, the substance was not included in the wholesale eradication of Syria's chemical weapons.

Who Is Responsible for the Recent Attacks?

The rebels and the government in Syria have each accused the other, and the Islamic State, of using chlorine as a chemical weapon.

The combatants in the country have not had difficulty producing improvised bombs. Canisters of chlorine can be packed into a barrel along with conventional explosives. In some recent attacks, including one on Aug. 2, in Saraqeb in Idlib Province, witnesses reported seeing barrel bombs being thrown from helicopters. In that attack, in which 30 people were sickened, according to the BBC, it was unclear who was responsible, but the rebels and the Islamic State do not have helicopters.

In August 2015, the United Nations Security Council unanimously adopted a resolution to identify "to the greatest extent feasible individuals, entities, groups or governments perpetrating, organizing, sponsoring or otherwise involved in the use of chemicals as weapons in Syria." The one-year mandate for that investigation ends this month.

On Thursday, the United Nations' special envoy for Syria, Staffan

de Mistura, told reporters that "there is a lot of evidence" that chlorine gas was used in the attack on Aleppo.
"If it did take place, it is a war crime," he said.

Saudi Arabia: The world's largest hotel built in Islam's holiest city Mecca

Abraj Kudai Hotel will be boast 12 towers, filled with 10,000 rooms and more than 70 restaurants. It will cover more than 1.4 million square metres – estimated to be open in 2017.

EDITOR'S COMMENT: I would kill to have a look at the CBRN defense plan of this gigantic hotel – if any! Imagine what a challenge would be for evacuation, decontamination, food safety, ventilations control and safety, first aid station, shelter-in-place provision, drone attack and many more!

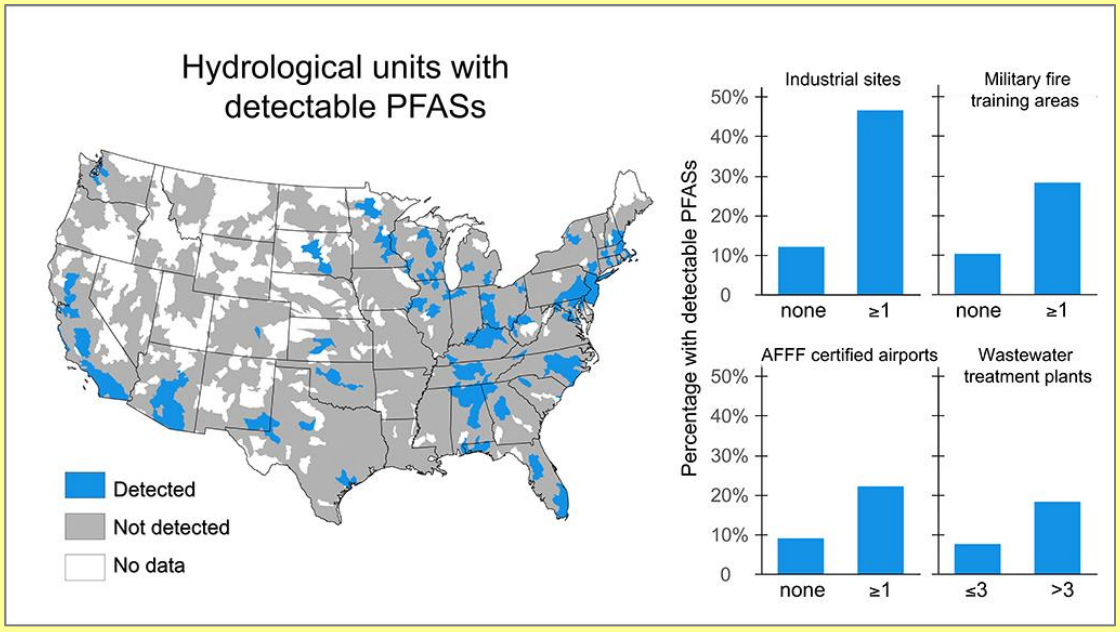
Six million Americans drink water with unsafe levels of toxic chemicals

Source: http://www.homelandsecuritynewswire.com/dr20160812-six-million-americans-drink-water-with-unsafe-levels-of-toxic-chemicals

Aug 12 – **Levels of a widely used class of industrial chemicals linked with cancer and other health problems — polyfluoroalkyl and perfluoroalkyl substances (PFASs) — exceed federally recommended safety levels in public drinking water supplies for six million people in the United States,** according to a new study led by researchers from Harvard T. H. Chan School of Public Health and the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS). The study is published in *Environmental Science & Technology Letters*.
"For many years, chemicals with unknown toxicities, such as PFASs, were allowed to be used and released to the environment, and we now have to face the severe consequences," said lead author Xindi Hu, a doctoral student in the Department of Environmental Health at Harvard Chan School and Environmental Science and Engineering at SEAS. "In addition, the actual number of people exposed may be even higher than our study found, because government data for levels of these compounds in drinking water is lacking for almost a third of the U.S. population—about 100 million people."
T. H. Chan School notes that **PFASs have been used over the past sixty years in industrial and commercial products ranging from food wrappers to clothing to pots**

and pans. They have been linked with cancer, hormone disruption, high cholesterol, and obesity. Although several major manufacturers have discontinued the use of some PFASs, the chemicals continue to persist in people and wildlife. Drinking water is one of the main routes through which people can be exposed.

The researchers looked at concentrations of six types of PFASs in drinking water supplies, using data from more than 36,000 water samples collected nationwide by the U.S. Environmental Protection Agency (EPA) from 2013 to 2015. They also looked at industrial sites that manufacture or use PFASs; at military fire training sites and civilian airports where fire-fighting foam containing PFASs is used; and at wastewater treatment plants. Discharges from these plants — which are unable to remove PFASs from wastewater by standard treatment methods — could contaminate groundwater. So could the



sludge that the plants generate and which is frequently used as fertilizer.

The study found that PFASs were detectable at the minimum reporting levels required by the EPA in 194 out of 4,864 water supplies in 33 states across the United States. Drinking water from thirteen states accounted for 75 percent of the detections, including, in order of frequency of detection, California, New Jersey, North Carolina, Alabama, Florida, Pennsylvania, Ohio, New York, Georgia, Minnesota, Arizona, Massachusetts, and Illinois.

Sixty-six of the public water supplies examined, serving six million people, had at least one water sample that measured at or above the EPA safety limit of 70 parts per trillion (ng/L) for two types of PFASs, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Concentrations in some locations ranged as high as 349 ng/L for PFOA and 1,800 ng/L for PFOS.

The highest levels of PFASs were detected in watersheds near industrial sites, military bases, and wastewater treatment plants — all places where these chemicals may be used or found.

"These compounds are potent immunotoxicants in children and recent work suggests drinking water safety levels should be much lower than the provisional guidelines established by EPA," said Elsie Sunderland, senior author of the study and associate professor in both the Harvard Chan School and SEAS.

Other Harvard Chan authors of the study included Philippe Grandjean and Courtney Carignan. Funding for the study came from the Smith Family Foundation and a private donor.

PFASs and reduced immune response

Another Harvard Chan School study, led by Philippe Grandjean, adjunct professor of environmental health, published in *Environmental Health Perspectives*, also suggested

negative health impacts of PFAS exposure. That study looked at a group of about 600 adolescents from the Faroe Islands, an island country off the coast of Denmark. Those exposed to PFASs at a young age had lower-than-expected levels of antibodies against diphtheria and tetanus, for which they had been immunized. The findings suggested that PFASs, which are known to interfere with immune function, may be involved in reducing the effectiveness of vaccines in children.

— Read more in Xindi C. Hu et al., "Detection of Poly- and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants," Environmental Science & Technology Letters (9 August 2016); and Esben Budtz-Jørgensen et al., "Serum Vaccine Antibody Concentrations in Adolescents Exposed to Perfluorinated Compounds," Environmental Health Perspectives (online 9 August 2016).

North Korea war: America's secret plot to crush Kim with chemical weapons revealed

Source: http://www.dailystar.co.uk/news/latest-news/537784/america-secret-plot-crush-north-korea-chemical-weapons

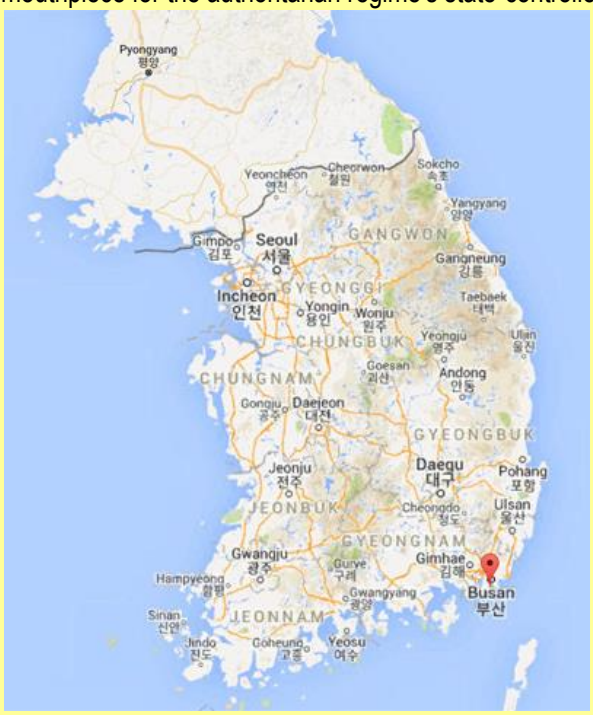
Aug 14 – **US defence bosses are planning a Nazi-style "Final Solution" to "annihilate" the people of North Korea with sinister weapons of mass destruction, according to media sources from the country.**

With the help of south Korea "puppet forces", the US is allegedly scheming to set up a secret laboratory in Pusan Port to develop chemical weapons in preparation for "germ warfare".

The apparent doomsday project, allegedly codenamed **"Jupiter plan",** is due to start next year, with materials and US engineers to build the weapons shipped in from November.

Once completed, the US will use the biological weapons – such as **anthrax and botulinus** – to wipe out North Koreas in a holocaust akin to the abhorrent mass murder of Jewish people during World War Two.

The sensational claim was made by North Korean website Uriminzokkiri, which acts as a mouthpiece for the authoritarian regime's state-controlled propaganda machine Central News Agency.



It cites North Korea's People's Army as the source responsible for gathering the intelligence.

In response to the "hideous scheme", Pyongyang has warned of "stern punishment" should the US "inflict the holocaust of germ warfare" upon the rogue nation.

A statement on the website read: "At a time when the whole world is aspiring after peace and security, the US imperialist aggression forces are making preparations for germ warfare as evidenced by the plan **to set up the biological and chemical weapons laboratory in south Korea (red ppin in map).**

"This can never be tolerated.

"The US imperialists' hideous scheme for germ warfare clearly teaches the army and people of the DPRK how they have to approach the imminent

confrontation with the US.
"The army of the DPRK is fully ready to counter any form of war mode wanted by the US imperialists.
"The US imperialists' hideous moves to inflict the holocaust of germ warfare upon the Korean nation are bound to invite stern punishment."
The United States military was accused of using biological weapons in the Korean War, which ran from 1950 to 1953.
The allegations were raised by the governments of People's Republic of China, the Soviet Union and North Korea in 1952, sparking a highly publicised international investigation.
The US and allied government officials denounced the allegations as a hoax.

Using Typing to Define Hazmat Team Capabilities

By Anthony S. Mangeri
Source:http://www.domesticpreparedness.com/First_Responder/Fire_HAZMAT/Using_Typing_to_Define_Hazmat_Team_Capabilities/

Aug 17 – These three requirements are the basis for the Occupational Safety and Health Administration's (OSHA) training standards for hazardous materials (hazmat) response training. In today's world, it is essential to understand the chemical, biological, and radiological threats that communities and responders face. Emergency responders require a substantial knowledge of natural sciences, mathematics, and technologies to maintain competency for chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) responses. Like many training requirements and life safety codes, emergency response training for hazmat incidents began with the need to have standardized training to address expected competencies based on the potential risk and response role.
All emergency service personnel – from cadet through command – are required to have a basic understanding to recognize that an incident has occurred, identify the threat, and notify environmental responders. Emergency responders such as firefighters have the added responsibility to be trained to take defensive measures without contacting the chemical released and to establish command to manage the incident.

Standardizing Response

In the 1980s, the National Fire Protection Association (NFPA) developed and published consensus standards (NFPA 472) to identify competency standards for emergency responders. NFPA 473 focuses specifically on competency standards for emergency medical service providers.
In 1990, OSHA issued regulations referred to as Hazardous Waste Operations and Emergency Response (HAZWOPER). The regulations found in 29 CFR 1910.120 were focused on providing health and safety requirements for employees involved in the management, clean up, and emergency response to hazmat incidents. Much of the regulations were designed to protect the health and safety of workers after events such as the Love Canal cleanup in New York in the early 2000s and the 1984 Union Carbide disaster in Bhopal, India.

Hazmat technicians and specialists are specifically trained to respond to and take measures to manage emergencies. Hazmat technicians are trained to identify the class of materials being released and to take actions to mitigate the threat by stopping the release and reducing the threat to life, environment, and property. Specialists are those that have developed a specialized knowledge of a specific product, class of material, or type of response such as rail tank car response.
Since the creation of the HAZWOPER regulations, there has been a shift in the threat to many communities requiring response. In addition to toxic industrial chemicals and materials, there is an increase in concerns related to clandestine laboratories, and the intentional release of chemical, biological, and radiological agents by those that mean to do harm.

Training Hazmat Personnel

Hazmat technician training varies across the country. According to OSHA regulations, the minimum requirement for a hazmat technician is a 40-hour course with defined competencies. However, many have migrated to a curriculum that is 80 to 150 hours to address the competencies found in the revised NFPA 472, which now includes weapons of mass destruction incident response.

In an interview on 22 July 2016, Fire Chief James McLaughlin, Warwick Fire Department, remembers when he took his first Hazmat Technician course. The class was 80 hours and provided the basics in chemistry and offensive techniques to control releases. Today, the 64 members of Warwick Fire Department's hazmat team are required to complete a course of study that exceeds 120 hours. In addition, the team must complete a minimum of 40 hours of refresher training annually.

Education for tomorrow's hazmat responders may very well begin high school. U.S. students have continually lagged behind the rest of the world in science and math literacy. Many school districts, colleges, and universities are working to incorporate science, technology, engineering, and math (STEM) literacy into their curriculum.

The Program for International Student Assessment (PISA) conducts a study of the competency of young students in math, science, and reading. PISA completed a study in 2015 and will release the data by the end of 2016. However, a 2013 Wall Street Journal article by National Education Reporter Stephanie Banchero, entitled U.S. High-School Students Slip in Global Rankings, reviewed PISA's 2012 test scores. She found that U.S. students' STEM literacy has remained generally stagnant since 2000 with students' science literacy dropping four places from 20 to 24.

Creating a Better Understanding

Not all hazmat teams are trained and equipped to respond to weapons of mass destruction. And not every hazmat technician is trained to respond to the deliberate release of these weapons. In 2005, the Federal Emergency Management Agency published Document 583-4 (Typed Resource Definitions: Fire and Hazardous Materials Resources), which provides the criteria for typing hazmat entry teams. In the document, FEMA guidance, which is not mandatory, types hazmat teams based on their capability:

- **A Type III team** is one that is responding to known chemical.
- **A Type II team** is one that is expected to respond to and be able to identify and mitigate unknown chemical releases.
- **A Type I team** is one that is trained and equipped to respond to unknown chemical releases as well as incidents involving CBRNE weapons.

Given the need for an understanding of the natural sciences involved in hazmat response, hazmat technician training should be modified to provide a significant understanding of chemistry, biology, and even general physics as it relates to both industrial chemicals and weapons of mass destruction.

Anthony S. Mangeri, *MPA, CPM, CEM, is the director of strategic relations for fire services and emergency services and is on the faculty of the American Public University System. He has more than 30 years of experience in emergency management and public safety. He has been a volunteer firefighter and Emergency Medical Technician for more than 25 years. He earned the rank of assistant chief-safety officer, serving as the fire department's health and safety officer for three years. He has completed Hazardous Materials Technician training and numerous courses in biologic threat response. He has also completed a Fellowship in Public Health Leadership Initiative for Emergency Response sponsored by the Center for Public Health Preparedness. In addition, he sits on the ASIS Fire & Life Safety Council.*

Daesh carries out chemical attack in northern Syria

Source: http://www.presstv.ir/Detail/2016/08/16/480341/Daesh-chemical-attack-Syria-Aleppo

Aug 16 – **The Daesh Takfiri terrorists have carried out a chemical attack on residential areas in northern Syria.**

Sources in the northwestern city of Aleppo said on Tuesday that the **terrorists fired rounds of mustard gas mortars on a government-controlled neighborhood earlier** in the day. They said at least 20 people were wounded in the assault.

This was not the first time Daesh used chemicals in its attacks on Aleppo, the sources said, adding that many civilians have suffered from similar poisonous assaults over the past weeks.

Aleppo has become the scene of fierce clashes between foreign-backed militants and government forces over the past few months.

Daesh and other militants have a history of carrying out chemical attacks on civilians and government forces in Iraq and Syria.

This photo released by a Syrian website shows a man in the northern Syrian city of Aleppo wearing a mask after rockets containing banned agents and launched by Daesh Takfiri militants hit a government-controlled neighborhood of the city.

On April 7, nearly two dozen people were killed and over 100 others injured in a chemical attack by Daesh against members of the Kurdish People's Protection Units (YPG) in Aleppo.

The Daesh terrorists also used internationally-banned chemical weapons in their recent attack against civilians in a village in northern Iraq. At least 17 civilians, including women and children, suffered respiratory problems after Daesh shelled Osija village, located on the southern outskirts of Mosul. Iraqi officials said after initial inspection that shells used in the attack contained chlorine gas, a choking agent banned under the 1997 Chemical Weapons Convention.

According to a report by the Syrian-American Medical Society, Daesh has carried out more than 160 attacks involving "poisonous or asphyxiating agents, such as sarin, chlorine, and mustard gas" since the beginning of the conflict in Syria in 2011. Over 1,490 people have been killed in the chemical attacks.

CBRN Threats – Accessories for the Mobile Robots

Source: http://www.defence24.com/357936,cbrn-threats-accessories-for-the-mobile-robots

Apr 27 – **As a result of collaboration between the engineers of the Industrial Research Institute for Automation and Measurements and a group of practitioners who faced a variety of threats, the Institute has developed a number of accessories expanding the capacities possessed by the mobile robots, operated in the contaminated areas. Thanks to the new devices it is possible to remotely extract**

test samples for laboratory analysis and display the contamination information directly via an additional console used by the robot operator.

Industrial Research Institute for Automation and Measurements presented, for the first time in history, the new products that could be used to neutralize and act against a variety of threats during the MSPO 2015 defence exhibition. At the time, sampling accessories, along with CBRN detection devices were showcased, among other products. At the moment, the offer includes:

- **Environmental swab –** making it possible to draw smear samples from vast surfaces in order to acquire chemical or biological material for the purpose of laboratory tests. The package includes dry and neutral-buffered, sterile sponges.
- **Surface sampler –** a tool for drawing ground, ice or sand samples for laboratory analysis, with a volume of up to 300 cubic centimetres. The bundle includes three different sampling units, allowing for drawing a variety of materials.

Surface sampler

- **Forensic sampler set –** for drawing small samples of liquid and powdered substances, with the use of swabs and indenter units contained in the package,
- **SPME Adsorber**, for acquiring the chemical particles for analysis with the use of a gas chromatograph. The bundle includes additional SPME fibers (e.g. for sampling narcotics or explosives),

R-sensor

- **R-Sensor (integrated EKO-C) -** the first device of the detection accessories family. EKO-C radiometer – allowing for measurement of alpha, beta, gamma and X radiation.

The above listed accessories are placed on the robot with the use of the NATO Accessory Rail holders of the mobile base of the robot. The Industrial Research Institute for Automation and Measurements GRYF and IBIS robots are fitted with the rails mentioned above. The accessories are removed from the holders solely in case when a sampling or detection operation is carried out. Thanks to the above, the operator has a chance to use the robot's manipulator for other purposes too. Each of the accessories comes with a dedicated transport case which, in case of SPME Adsorber and R-Sensor, may also be used for the purpose of wireless charging of the internal batteries of the said devices.

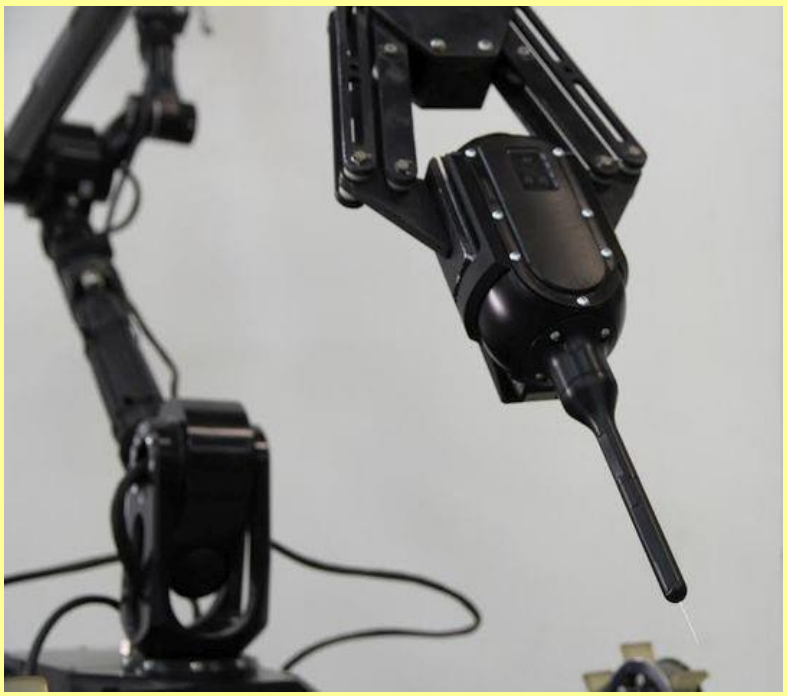
Set of forensic samplers.

R-Sensor and SPME Adsorber are controlled with the use of an accessory console, which comes in a form of a military-grade tablet fitted with a relevant communication module. The console displays the current statuses for the devices (including e.g. battery power), along with the current measurement data. It also makes it possible to display the local map, marking the operator's position. The console is a universal device, used to control a wide range of accessories, thus the user of a wider range of accessories uses only a single console to control all of them.

Environmental swab.

Both the R-Sensor, as well as the SPME Adsorber may be used manually, thanks to the touch-screen user interface on the housing of the devices. The interface allows the user to control the device, check the battery level and identify the device on the list displayed via the console which is usable in cases, when several examples of a single device of the same type need to be distinguishable.

The Industrial Research Institute for Automation and Measurements plans to offer more accessories for the mobile robots soon, e.g. used for detection of CBRN contamination.



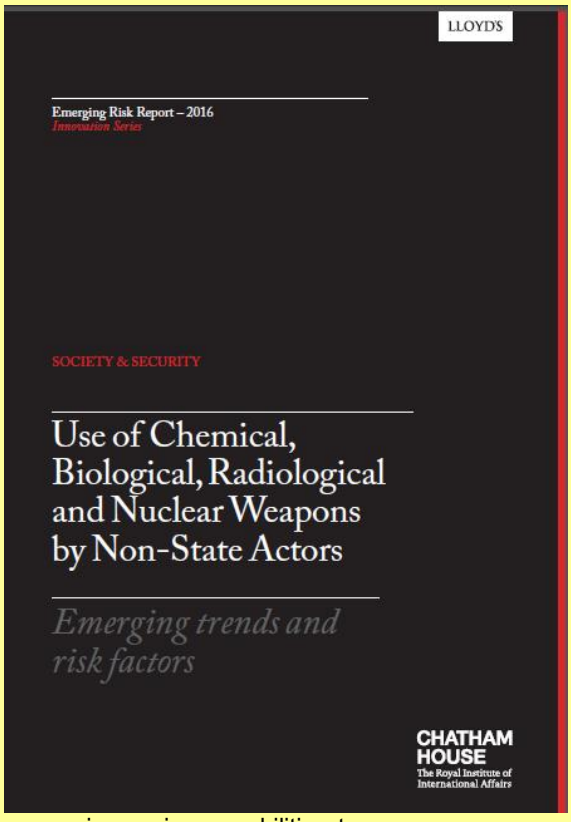
SPME Adsorber

CBRN threat accessories described here, used by the mobile robots, will be presented, along with a practical demonstration, during the International RoboScope® 2016 seminar, covering the CBRN threat spectrum. The seminar is being organized by the Industrial Research Institute for Automation and Measurements and the SPRZYMIERZENI z GROM foundation. It is going to take place between 24th and 25th May at the Rynia WDW resort.

Use of Chemical, Biological, Radiological and Nuclear Weapons by Non-State Actors

Source: https://www.lloyds.com/~/media/files/news%20and%20insight/risk%20insight/2016/cbrn.pdf

Lloyd's commissioned Chatham House to investigate the potential for chemical, biological, radiological and nuclear (CBRN) weapons use by non-state actors, in order to improve understanding of the nature of this threat. Lloyd's believes that greater understanding of these issues can be important for developing robust exposure management and underwriting strategies.



CBRN weapons are some of the most indiscriminate and deadly weapons in existence today. Given the potential deadliness and costliness of even a single CBRN attack, and the relative ease with which malicious actors could obtain many of the materials and know-how required to build CBRN weapons, it is important to assess the current global threat of use of these weapons in light of society's resilience and vulnerabilities, and emerging technologies.

This report, produced for Lloyd's by Chatham House – an independent policy institute based in London – explores some of the key factors driving the global threat of CBRN attacks as an act of terrorism or sabotage. The report also presents a set of plausible but extreme scenarios for each form of attack. These are devised to be illustrative of the types of events that insurers may want to consider in their exposure management and underwriting strategies. The scenarios are not predictions, but they could provide a useful tool to assist insurers in thinking about CBRN weapons use.

The report indicates that the global threat of CBRN weapons use is evolving, driven by three strategic trends:

1. Potential perpetrators – CBRN weapons could be used by terrorist organisations, saboteurs or lone actors, and there is growing evidence suggesting that terrorist groups have the intention of acquiring such weapons.

2. Technological and scientific capabilities – cyber techniques with the capacity to sabotage or severely damage chemical or nuclear facilities are becoming more refined, while scientific advances are increasing capabilities to synthesise deadly viruses.

3. Dual-use materials – a wide range of materials with the potential to be used in CBRN weapons can also be used for civilian purposes, with many easily purchased online or from high street retailers.

Today's heightened terrorist and saboteur threat, combined with the significant potential for CBRN weapons to cause widespread disruption and fear, could increase the likelihood of these weapons being used by malicious actors. Despite this, there have been relatively few large- or even medium-scale incidents of CBRN terrorism or sabotage in the 20th and 21st centuries. The probability and nature of this threat varies geographically, and is linked to the capabilities, intentions, (dis)incentives for use and the consequences of use for a potential perpetrator.

Emerging technologies are altering the risk landscape for CBRN weapons use in a variety of ways. Technological developments – including those in nanotechnology, synthetic biology and chemicals, cyber technology and 3D printing – could enable hostile actors to develop weapons that are cheaper, more powerful and easier to use. However, these same advances also have the potential to enhance detection, and reduce the destructive and disruptive capacity of CBRN weapons.

Although CBRN attacks are rare, the threat is dynamic, and effective risk management requires co-operation, vigilance and innovation. Governments and industries can increase resilience to attacks by strengthening existing security measures – particularly around chemical facilities and critical infrastructure – ensuring laboratory

security, safety and safeguards, and introducing alternatives to radioactive materials in nonmilitary locations such as hospitals.

200 people fall sick after ammonia leak in Bangladesh

Source: http://dunyanews.tv/en/World/350410-200-people-fall-sick-after-ammonia-leak-in-Banglad

Aug 23 – **An explosion at a chemical fertiliser factory left at least 200 people needing medical treatment after toxic gas spread across large parts of Bangladesh's second city Chittagong,** officials said Tuesday.

Police and fire officials said hundreds of residents were also evacuated from their homes near the di-ammonia phosphate (DAP) plant in the port city where **a 500-tonne capacity ammonia tank exploded** late Monday.

Mesbah Uddin, the district's chief administrator, said that 56 people had been admitted to the Chittagong Medical College Hospital after the gas leak, none of whom was in a life-threatening condition.

"Eight have been discharged. Forty-eight people are still in the hospital today but they are out of danger," he told AFP.

"Around 150 people were given first aid locally," he added.

Firefighters battled through the night to halt the leak and finally declared that the situation was under control in the mid-morning.

"We used loudspeakers to urge people to evacuate the area. Hundreds did leave but they came back after the situation improved," said Uddin.

The local police chief Rafiqul Islam confirmed that hundreds of workers from nearby factories had also been ordered to leave their premises.

Other officials said that strong winds blew the toxic gas across a 10-kilometre radius and there were reports of people being taken ill at the southern city's international airport.

Authorities mobilised a special team of some 60 firefighters after the explosion triggered panic among people living nearby.

"We saved two other tanks by spraying water," Abul Kalam Azad, a senior fire official told AFP, adding that the explosion occurred when a tank was being refilled with ammonia gas.

The government has ordered an investigation into the explosion and a three-member inquiry team was scheduled to visit the fertiliser plant later Tuesday, chief administrator Uddin said.

Cobalt Light Systems RESOLVE - Handheld Through-Barrier ID System - Announced as R&D 100 Awards Finalist

Source: https://www.cobaltlight.com/news/Cobalts-RESOLVE-Announced-as-RND-100-Awards-Finalist

Aug 18 – **Cobalt's Resolve™, a ground-breaking new handheld system that identifies hazardous materials *through* sealed opaque containers, has been named as a finalist in the 2016 R&D 100 Awards by R&D Magazine.**

Resolve was launched in March 2016 for applications in Hazmat incident management, military search and EOD, first response, law enforcement, and screening at ports & borders.

Resolve uses Cobalt's proprietary spatially offset Raman spectroscopy (SORS) technology to detect and identify chemicals *through* opaque barriers such as coloured and non-transparent plastics, dark glass, paper, card, sacks and fabric. Measured spectra are accurately matched to comprehensive on-board spectral libraries and the system identifies materials including; explosives and precursors, hazardous and toxic materials, chemical agents, narcotics and new psychoactive substances, plus thousands of benign chemicals.

Removing the need to open or move potentially hazardous containers can significantly improve the safety and efficiency of operations:

- Hazards are contained, reducing the risk to operators and the public
- Objects can be examined quickly and efficiently – less time spent in protective gear
- Evidence is more easily preserved
- Better informed critical decisions can be made earlier in the operation

The R&D 100 Awards, known as the "Oscars of Invention", are a celebration of the year's top innovations in the R&D space. This year's winners will be announced at a black-tie awards dinner on Nov. 3 at the Gaylord National Resort & Convention Center, Oxon Hill, Maryland (Washington, D.C.).

Boy dies in Siberian anthrax outbreak caused by 'awakening' of lethal disease from frozen corpses thawing in graveyard

Source: http://www.mirror.co.uk/news/world-news/boy-dies-siberian-anthrax-outbreak-8538051

Aug 01 – **A boy has died in an outbreak of deadly anthrax that is feared to have been sparked by the disease seeping out of long-dead bodies thawing in a frozen Siberian graveyard.**

The tragic child, named in Russia as Denis, 12, collapsed and died at home on Saturday after contracting the lethal disease.

The child is one of dozens of people in the region to have caught the deadly disease and experts now fear the outbreak has been caused by an 'awakening' of anthrax from the corpses of long dead humans buried in an Arctic graveyard. **Denis died just a day after his grandmother also dropped dead .**

Both of them had been eating reindeer meat infected with anthrax and while the grandmother's cause of death has not yet been determined.

Will Stewart/East to West

Biological troops land in SIberia to battle the outbreak

Until now it was believed that a heat wave on the Yamal Peninsula had unlocked the disease after an infected reindeer's remains thawed as the permafrost soil melted.

Now Russian experts say the disease may have come from a cemetery used by local Nenets herders in the Stalin era or earlier.

It has already killed 2,349 reindeer, it was confirmed today.

Veterinarians have identified the burial ground that they fear is the source of the current infection.

According to The Siberian Times , it

is an old Nenets cemetry 25 miles from the main infection point.
Bodies were not buried deep in the ground, but instead simply placed in a wooden box on an open hill.
It is feared that a recent heatwave - where temperatures reached as high as 35C - caused ground to melt and anthrax spores in the bodies to be released into the air and carried by the wind.
Anthrax can survive for a century or more, and it now confronts Russian health chiefs with a major health crisis in the Arctic amid fears it could quickly spread.
It was disclosed that Denis died of the deeply virulent intestinal form of anthrax, estimated to kill 90 per cent of victims.
A total of 72 people are now in hospital, a rise of 32 since Friday. 41 of these are children.
Most initial diagnoses are negative but medics are taking no chances.
In an emotional statement, the local governor Dmitry Kobylkin said: "I was informed about the death of the boy in our hospital....
"God knows, we made strenuous efforts from the first day, did everything possible, to save the lives of everyone.
"We just fought for the life of each.
"But the infection was wily, returning 75 years later, and it took the child's life."
He vowed: "We will beat this infection. We are not alone, many people help us."
Russia has drafted in its military bio-warfare troops in a bid to dispose safely of the corpses of reindeers killed by anthrax.
Other emergency forces - including the Kremlin's chief infections doctor Irina Shestakova - are rushing to the region in the north of Siberia where the last anthrax outbreak was 75 years ago.
Governor's spokeswoman Nadezhda Noskova admitted that experts are now looking at the theory an infected human body was behind the disease.
"The first version is that due to the very hot weather permafrost thawed and bared the carcass of an animal which died from anthrax long ago," she said.
"The other version is that it could have been a human body.
"The point is that Nenets and Khanty peoples do not bury their dead in the ground.
"They put them into the wooden coffins - they resemble boxes - and place them on a stand or hillock.
"The old cemetery could be also the source of the disease."
The army started incinerating the reindeer today.
"We have chosen the most effective way of elimination - we will burn the bodies with petroleum products and car tyres," said vice governor Mikhail Kagan.
Some 15 carcasses have been destroyed in this way.

Can the bioweapons convention survive Crispr?

By Daniel M. Gerstein
Source: http://thebulletin.org/can-bioweapons-convention-survive-crispr9679

July 25 - When the Eighth Review Conference of the Biological Weapons Convention convenes in November, as it does every five years, to review the operations of the treaty and assess new developments in science and technology that might challenge its relevance, Crispr will be waiting for it. **A revolutionary biotechnology that's making genetic editing easier, cheaper, and far more accessible than before,** Crispr has also been called a major security threat by America's intelligence chief. If the seven previous review conferences are any indication, the gathering in November will recognize Crispr's contribution to the biotech field, then enthusiastically declare the convention fit to address any problems it might create. But will that be enough?
The convention, which dates to the early 1970s, takes a flexible—some might say elastic—approach to identifying what it outlaws, believing that general prohibitions are harder to evade than specific ones. Banning the weaponization of a given pathogen, for example, is easier than banning any specific experiment or procedure that

might make weaponization possible. This helps explain why members of the review conference will most likely conclude that Crispr falls within the scope of the existing agreement, which therefore need not be modified on account of the new technology. Given this likely outcome, what can the convention do to ensure that the norm against the use of biological pathogens, regardless of origin, remains strong?

What won't work

A good starting point might be a realistic assessment of how Crispr differs from other proliferation threats. The novelty and importance of Crispr is not that it can enable the genetic editing of a pathogen—tools for this have been available for decades. What Crispr does is make the technology widely available, allowing even largely untrained people to manipulate the very essence of life. Crispr-based kits go for less than $500 in some cases, with pathogen-specific kits—West Nile virus, human coronavirus 229E, human adenovirus 35, to name a few—offered up like so many choices at a grocery store. Companies selling these kits are certainly not keeping registries of buyers or attempting to control the technology beyond the intellectual property that has been invested. The kits come with operator manuals that have only minimal warnings about containing hazardous materials and being for laboratory use only. Considering the safety and security problems those labs (and other biological facilities) often encounter, the use of such kits outside of them is especially frightening.

Attempting to limit the use of such technology through nonproliferation regimes and export controls would certainly not work because the technology has become commonplace. Trying to establish registries of buyers would be similarly ineffective and unwieldy, given the wide availability of the technology, and limiting the technology could have negative effects on the biotech industry. (Crispr, after all, has a wide range of legitimate applications, from human medicine to food and agriculture, that should be protected.) Traditional verification based on quotas for proscribed items, restrictions on use, and intrusive inspections is simply not an option for this new technology; counting pathogens or conducting exhaustive inspections of biological facilities is an infeasible and impractical way to monitor Crispr usage and would not increase confidence in compliance.

National implementation must translate to national responsibility

This hardly means the review conference can do nothing, though. Members of the bioweapons convention are bound by Article IV to aid with national implementation of the treaty, and the proliferation of Crispr makes this a key provision—if, that is, the review conference is ready to require greater action from those nations. As the sole decision-making body for the bioweapons convention, the review conference should at the very least require more of its members in terms of surveillance and training at the national level. Countries could be made to develop their own laws, policies, and regulations to prohibit dangerous activities emanating from this new technology. They could also be required to develop surveillance capabilities for spotting the development of new pathogens or the modification of existing ones.

Although this might require the development of new technology, including diagnostics for identifying non-natural pathogens, scientists should form the first line of defense in this campaign, and stepped-up efforts at the national level, spurred by new requirements at the bioweapons convention, could make that happen. Within every member nation, scientists should receive proper education and training on the dangers of Crispr technology, and make safety and security procedures a cornerstone of any lab they enter. In the United States, the federally mandated biosafety committees that oversee genetic research throughout the country should thoroughly monitor and review research involving Crispr technology, and bioethics should play a role as well, instituting a firm understanding of how Crispr should and should not be used everywhere from large institutions to neighborhood laboratories.

National implementation should also translate to national responsibility. Countries should accept responsibility for threats emanating from their territory, regardless of the cause. For

naturally occurring disease and accidents, this responsibility implies rapid identification of the issue, reporting through international and regional channels, and full sharing of information on the threat. For deliberate incidents, either those caused by the misuse of technology or those caused by bioterrorists, national responsibility should include providing appropriate information to those that might be threatened, followed by the investigation and prosecution of those responsible and perhaps even the paying of restitution to affected parties.

Provisions for such national responsibility would likely require commitments and obligations that go beyond what the convention currently requires of its members. At a minimum, the review conference should consider revising these when it meets in November.

Rethinking traditional approaches

National responsibility also ties into what should be a larger reconception of the bioweapons convention in light of new biotechnologies like Crispr. Rather than focusing on traditional verification methods involving pathogens, technology, and equipment, the emphasis should be on people and activities—e.g., the proper training of scientists, lab workers, and medical students. Limited visits to high-level biocontainment facilities, during which officials from the bioweapons convention would assess training, procedures, and security, could lay the groundwork for a new style of verification catered to new biotech threats. Such a visit from convention ambassadors to several US high-containment facilities in 2012 demonstrated the usefulness of this approach. The 10 ambassadors gained an appreciation for the type of work that was being conducted and the reason it was so vital for protecting populations from dangerous biological pathogens, regardless of whether they are naturally occurring or human-made. Opportunities for direct interaction with laboratory personnel provided the delegation an important sense of transparency and openness.

Furthermore, the processes and organizations of the convention should fit the biotech pace of this century rather than the last one. That means stronger institutional structures. Decision making should be permitted at annual meetings, not limited to the review conferences held every five years. The convention's Implementation Support Unit must be expanded beyond its current three-person staff, which barely has the capacity to carry out its task of work with nations on their confidence-building measures, the annual means by which members disclose information to the convention. More generally, the convention must have greater capabilities for monitoring biotechnology advances and gaining scientific advice. A larger Implementation Support Unit would be useful here as well, but procedures for calling on experts must also be in place to allow for a more informed dialogue on pressing biological issues.

Crispr is here to stay, and it is reasonable to assume that even more powerful gene editing and synthesis techniques will continue to evolve. Those gathering at the review conference in November must seriously consider whether advances in biotechnology have made the existing bioweapons convention obsolete, but they must also ask what more the convention can do, as the reigning body for regulating biological weapons, to ensure that new biotechnologies continue to be used for peaceful purposes only.

Daniel M. Gerstein *works at the nonprofit, nonpartisan RAND Corporation. He was formerly the under secretary (acting) and deputy under secretary in the Science and Technology Directorate of the Department of Homeland Security from 2011 to 2014. He is also an adjunct professor at American University, where he teaches courses on bioterrorism, technology policy and national security, and the evolution of military thought. He has published numerous books and articles on national security topics like bioterrorism, the misuse of biotechnology, and the Biological Weapons Convention, including* National Security and Arms Control in the Age of Biotechnology: The Biological Weapons Convention *(2013).*

GMOs lead the fight against Zika, Ebola and the next unknown pandemic

By Jeff Bessen

Source: http://www.homelandsecuritynewswire.com/dr20160729-gmos-lead-the-fight-against-zika-ebola-and-the-next-unknown-pandemic

July 29 – The shadow of the Zika virus hangs over the Rio Olympic Games, with visitors and even high-profile athletes citing worries about Zika as a reason to stay away (even if the risk is probably quite low). The public's concerns are a striking example of the need to rapidly combat emerging infectious diseases.

In the fight against Zika, public health experts have turned to what may sound like an unlikely ally: genetically modified organisms, or GMOs.

Consumers are used to hearing about GMOs in food crops, but may be unaware of the vital role GMOs play in medicine. Most modern biomedical advances, especially the vaccines used to eradicate disease and protect against pandemics such as Zika, Ebola, and the flu, rely on the same molecular biology tools that are used to create genetically modified organisms. To protect the public, scientists have embraced GMO technology to quickly study new health threats, manufacture enough protective vaccines, and monitor and even predict new outbreaks.

Vaccines, meet molecular biology

Vaccines work with the immune system to strengthen the body's own natural defenses. A vaccine offers a preview of a potential infection, so the immune system is ready to pounce if the real threat shows up.

The earliest vaccines were primitive — think Edward Jenner in the 1790s inoculating against smallpox by rubbing together the open wounds of uninfected patients and those with cowpox. But over the years, advances in medical technology led to improved vaccines. The modern age of vaccines was ushered in by the introduction of molecular biology tools in the 1970s, which vastly improved our ability to study and manipulate viruses.

Under the microscope, viruses look like spiky balls, with an internal cargo bay that houses their genetic material. "Dissecting" a virus means using molecular biology tools to study its genes (whether encoded via DNA or RNA) up close. For example, researchers can "cut and paste" genes to study them in isolation and figure out what they do. Or researchers can cause genetic mutations and watch how an organism responds.

When DNA is modified or studied inside different cells than those from which it originated, it is called "recombinant DNA." An organism with recombinant DNA is considered a GMO.

GMO developers use molecular biology, manipulating genes to study and alter plant DNA, for instance, to create new varieties that can thrive with less water or fewer pesticides.
For vaccine researchers, molecular biology is a jack-of-all-trades. These tools allow scientists to figure out the keys to a virus' survival by dissecting its DNA, devise new vaccines, manufacture those vaccines cheaply and quickly, and monitor which viruses in the wild might become public health headaches. According to Dr. José Esparza, president of the Global Virus Network and professor at University of Maryland Medical School, "It is impossible to do research in biomedicine without doing molecular biology."

GMOs advance science of vaccines

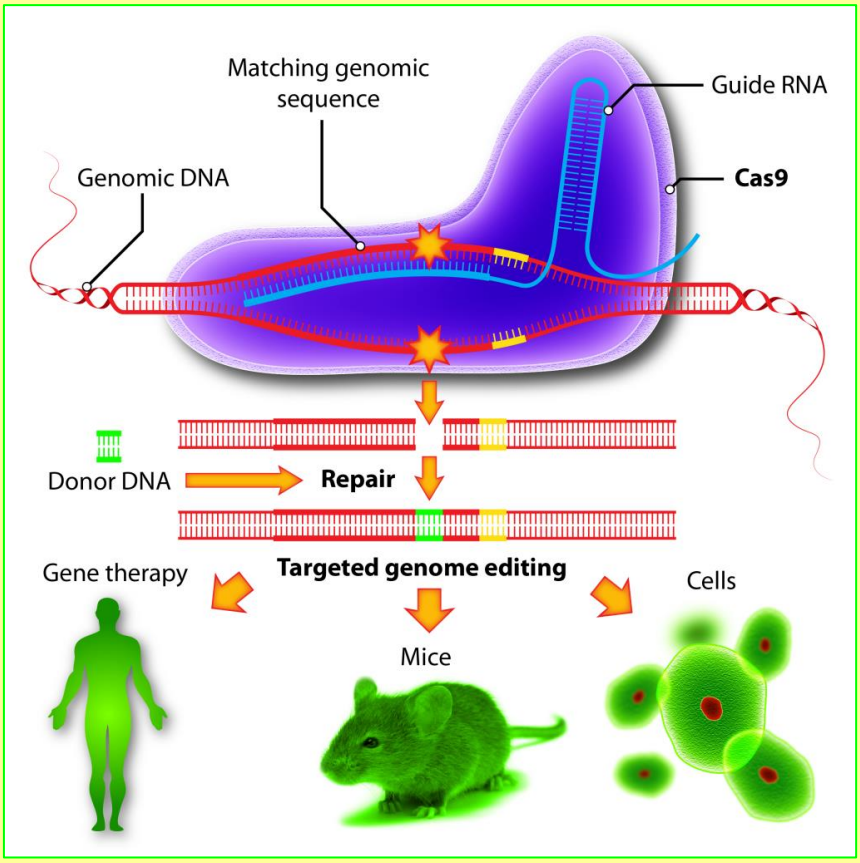
One disease currently being addressed with the help of molecular biology is hepatitis B, which kills one person every minute worldwide – even though we do have an effective vaccine.
In the 1960s, virologists realized that the hepatitis B antigen — a protein from the virus' outer shell that triggers an immune response in an infected person — showed up in the blood of hepatitis B patients. To their surprise, injecting a healthy person with the purified antigen protected against future infections. The first hepatitis B vaccine (HBV), approved in 1981, was made by harvesting the antigen from the blood of hepatitis B carriers, including intravenous drug users.
Once recombinant DNA technology was developed, researchers could isolate the gene for the virus' antigen protein, allowing for HBV to be manufactured in laboratories via those genetic instructions instead of from infected blood. Currently, both FDA-approved vaccines for hepatitis B include the recombinant version of the antigen.
And molecular biology can be used to accelerate the development of new vaccines. For example, in late June, a "DNA vaccine" was the first to be approved for human trials against the Zika virus. Rather than containing the Zika antigen itself, the vaccine contains a gene for the Zika antigen which the patient's body then produces.
The announcement of this breakthrough came less than five months after the World Health Organization declared Zika a "public health emergency of international concern." Without the tools to modify and isolate sections of DNA, Dr. Esparza of the Global Virus Network notes, "we would not be able to do this with the necessary speed and efficiency."

GMOs as pharma factories

Consumers who scrupulously avoid genetically modified foods might be surprised to know that lots of drugs and vaccines they rely on are the product of GMOs.
Many vaccines and top-grossing pharmaceuticals contain proteins as the main ingredient. Proteins are too costly and delicate to manufacture from scratch. But living cells must make proteins to survive, and they can be coaxed to produce medical proteins in bulk, requiring little more than the DNA instructions and sugary broth as fuel. Since these genetic blueprints must be inserted into the cells, many vaccines and drugs are technically the product of GMOs.
Modified bacteria, yeast and even Chinese hamster cells are the unheralded molecular factories of the drug and vaccine industry. In 2014, ten of the top 25 best-selling drugs were "biologics" — drugs made up of recombinantly produced proteins — including blockbuster treatments for arthritis, cancer and diabetes. Of the 10 vaccines that the Centers for Disease Control and Prevention (CDC) recommends for newborns, three are available in recombinant form; HBV, for example, is produced by modified yeast. The earliest recombinant vaccines and drugs have been in use for three decades.
Perhaps the most dramatic example of GMO use in medicine came during the 2014 Ebola outbreak in West Africa. When American doctor Kent Brantly and other Western volunteers contracted Ebola, several were cured by a "secret serum" called Zmapp. Manufactured by genetically modified tobacco plants, it's a mixture of several proteins that attack the Ebola virus.
The technology for producing drugs in genetically modified plants, dubbed "pharming," was developed by Charles Arntzen in the early 1990s. In the case of Zmapp, the antibodies are made

in the tobacco plant's leaves. When they're harvested, rather than being made into cigarettes, their cells are popped open and the drug is collected. Researchers call pharming "a revolution for the field" of manufacturing pharmaceuticals.

The biotech company Applied Biotechnology Institute has embraced the technique to make a next-generation pharmed vaccine. They're developing a genetically modified corn plant that produces the hepatitis B antigen. The plant could be harvested and turned into an oral vaccine tablet, which looks like a small wafer,



as opposed to a liquid which must be refrigerated and injected. The hope is that an oral vaccine can lower the rates of hepatitis B in the developing world, where the cold supply chain, sanitary needles and trained medical personnel the current vaccine depends on are either lacking or prohibitively expensive.

Future of diagnostics

Beyond improved vaccines, equally pressing for the future of public health will be addressing pandemics that have not yet even begun. Virologist Esparza counts eleven pandemics that have occurred in the last fourteen years, including Ebola, the H1N1 (swine) flu, and MERS — all but one of which were viruses. "It is totally predictable there will be other pandemics. What is not easy to predict is which one. Two years ago, no one could have predicted Zika," he told me.

Molecular biology is often found on the front lines of pandemics, appearing in on-the-spot diagnostic tools that are cheap and do not require extensive equipment or t raining. For example, a Harvard-led team recently unveiled a paper-based test — similar to a pregnancy test — that uses the CRISPR/Cas gene editing tool to distinguish the Zika virus from the closely related Dengue virus. If the Cas9 protein encounters the specific DNA sequence of Zika virus in a drop of blood, it starts a chain reaction that results in a colored readout.

Beyond diagnosing single patients, molecular biology tools will be used to get ahead of the as-yet-unknown pandemic threats that lie in the future. Public health officials are calling for monitoring infections in the places where new diseases frequently emerge. Quick and accurate diagnostic tests are key to determining which viruses are already circulating and would allow researchers to anticipate new pandemics and develop and stockpile vaccines.

"Until now, we have had a very reactive response" to threats like Zika and Ebola, says Dr. Esparza. With the help of GMOs, infectious disease experts have the tools to get ahead of the next outbreak, moving beyond reaction to quick detection, containment and even prevention.

Jeff Bessen *is Ph.D. Candidate in Chemical Biology, Harvard University.*

Analysis of Introduced Species as a Form of Biological Weapon: Part 1-Theory and Approaches

By Lawrence Roberge (2013)
Source:https://www.researchgate.net/publication/265460706_Roberge_LF_2013_Analysis_of_Introduced_Species_as_a_Form_of_Biological_Weapon_Part_1-Theory_and_Approaches_Biosafety_2107doi_1041722167-03311000107?origin=publication_list

Abstract
The hypothesis of this paper is that introduced species (aka non-indigenous species) could be used as a form of biological weapon (BW). The first step of this paper is a brief review of biological weapon concepts, and a review of the definition of an introduced species, as well as a brief survey of historical examples of introduced species. Previous evidence of the use of invasive species as a form of biological weapon is also discussed. The methods to predict a successful invasive species candidate is discussed, and examples of various theories and computer software models to analyze introduced species invasions are reviewed. The use of GARP (Genetic Algorithm for Rule-set Prediction) has found promise in predicting the range and effective invasiveness of an organism, prior to the actual invasion. This research discusses the approaches of invasive species by hostile actors (aggressor nation, crime syndicate, bioterrorists, or lone individual), as well as the various BW targets (public health, ecosystems, agricultural commodities, biofuel feed stocks). The vulnerability of nations to invasive species introduction, as well as the risk factors favoring invasive species BW would also be examined. Some of these risk factors favoring a BW attack using invasive species include poor communication between local population and government scientists and decision makers; monoculture of agricultural fields; disturbed or damaged ecosystems, and presence of favored niches in the targeted areas. The strategies to introduce BW invasive species are discussed, and range from human smuggling and delivery by vectors to biocruise-the technique of using cruise missile technology (aka unmanned aerial vehicles), to deliver and disperse BW agents (e.g. virus, fungal spores, bacteria, even insects), at precise targeted sites. Two models are presented to describe the process of invasive species BW by hostile actors-one, using a single invasive species and one leading to invasion meltdown of the targeted area. Four examples of potential BW using introduced species are discussed, with supportive evidence for their effectiveness and invasive potential on targets (Nipah virus, Striga plant parasite, Heartwater-Ehrlichia ruminantium, and Wheat Stem Rust-Puccinia graminis f. st. tritici). Finally, the data supports the hypothesis that introduced species could be used as a form of biological weapon.

38 people die of unknown disease in remote villages in Myanmar

Source: http://www.globaltimes.cn/content/999068.shtml

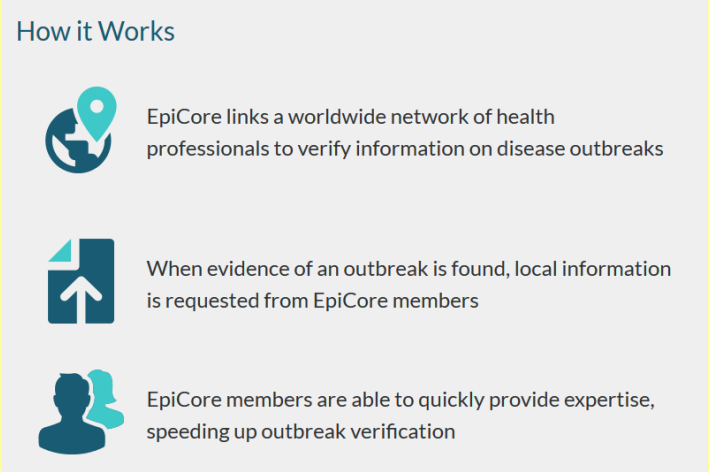
Aug 08 – **A total of 38 people have died of an unknown disease in remote villages in two townships in Myanmar's northwestern Sagaing region,** an official report said Monday.
The Htankhawlama village in Lahel township, where 25 people out of 38 have died, is located 64 km from Lahel and it takes two days to reach the village from the township .
Health workers said the **symptoms include fever, coughing, headache, stomach ache and rash, adding that the most vulnerable deaths were those under 12 years of age.**
Sample blood test carried out at the National Health Laboratory in Yangon has revealed that **three patients were diagnosed with measles** which is

considered to have reached epidemic proportion in the region.
Vaccination is being conducted against the disease to contain the pandemic, the report said.
In another incident, 13 deaths, mostly children, were reported in Nanyun township in the region..
Health specialists are investigating into the outbreak of the disease since mid-July, the report added.

EpiCore

Source: https://epicore.org/#/home

EpiCore is a virtual community of health professionals using innovative surveillance methods to verify outbreaks of infectious diseases.
All health professionals with formal education and training in animal or human health, and knowledge of basic principles of epidemiology, infectious disease or related fields are encouraged to apply online.



EpiCore members must have at least 2 of the following qualifications:

- An advanced degree in Public Health or a related field (e.g. MPH)
- A health profession certification or licensure (e.g. MD, DVM, RN)
- At least 3 years of experience in human or animal health
- Current affiliation with a medical center, university, Ministry/Department of Health, or other health-related organization including NGOs & private sector organizations
- Successful completion of a field epidemiology training program

Commerce Department and State Department Change Rules related to Toxicological Agents, Medical Countermeasures, Protective Gear, Coatings and Related Items and Technology as well as Directed Energy Weapons

By Hogan Lovells
Source: http://www.lexology.com/library/detail.aspx?g=2b94690f-0790-4941-b272-db0c25dce877

Aug 04 – On July 28, 2016, the Commerce Department and the State Department issued new final rules effective December 31, 2016 regarding certain plant and animal pathogens, viruses, toxins, biological materials, and chemical agents as well as coatings**,** protective gear**,** and related items**.** These **rules** will affect companies engaging in certain Research and Development in the life sciences and other industries as well as those manufacturing or exporting medical countermeasures, vaccines, protective equipment, and other items.
The final rules describe how articles the President has determined no longer warrant control under USML Category XIV (Toxicological Agents, Including Chemical Agents, Biological Agents**,** and Associated Equipment) or Category XVIII (Directed Energy Weapons) are now controlled under the Commerce Control List (CCL). For example, the rules amend the CCL and the United States Munitions List (USML), respectively, to move certain medical countermeasures to the CCL under Export Control Classification Number (ECCN) 1A607.k. Selected points in the final rules include:

State Department Final Rule

- USML Category XIV identifies certain "Tier 1" pathogens **and** toxins that meet certain capabilities (**and** their non-naturally occurring genetic elements) established in the **Department** of Health **and** Human Services **and** the U.S. **Department** of Agriculture select **agents and** toxins regulations. Any pathogens **and agents** that do not meet these capabilities remain controlled in ECCN 1C351 **and** other entries on the CCL.
- Riot control **agents** are moving **to** the CCL, **as well as** certain test facilities, equipment for the destruction of chemical **and** biological **agents**, **and** tooling for production of articles.
- USML Category XVIII, covering **directed energy weapons**, has been revised **to** control only certain articles **and to** exclude articles that may incidentally, accidentally, or collaterally achieve the same effects.
- USML Category XIV includes certain equipment, software, sorbents, **and countermeasures** developed under **Department** of Defense contract or funding authorization, **as well as** certain vaccines exclusively funded by a **Department** of Defense contract, including recombinant plague vaccine **and** vaccines specially designed for the sole purpose of protecting against biological **agents and** biologically derived substances.
- USML Category XVIII includes developmental **directed energy weapons** funded by the **Department** of Defense via contract or other funding authorization.

Commerce Department Final Rule

- The **Commerce Department**'s final rule creates new "600 Series" ECCNs **to** cover **items** that have transitioned from USML Category XIV **to** the CCL, including dissemination, detection, **and** protection "equipment" **and related** articles, **as** follows: ECCNs 1A607, 1B607, 1C607, 1D607, **and** 1E607.
  - ECCN 1A607.f is revised **to** include "air conditioning units, **protective coatings**, **and protective** clothing.'' The final rule further clarified that this ECCN includes Chemical Agent Resistant **Coatings** (CARC).
  - ECCN 1A607.k is revised **to** include "**medical countermeasures** that are 'specially designed' for military use (including pre- **and** post-treatments, antidotes, **and medical** diagnostics) **and** 'specially designed' **to** counter chemical **agents** controlled by USML Category XIV(a)."
- The final rule creates new "600 Series" ECCNS for **items** that have transitioned from USML Category XVIII **to** the CCL, including tooling, production equipment, test **and** evaluation equipment, test models, **and related** articles, **as** follows: ECCNs 6B619, 6D619, **and** 6E619.
- The new "600 Series" ECCNS are controlled for national security (NS), regional stability (RS), anti-terrorism (AT), **and** United Nations (UN) reasons **and** are subject **to** the applicable licensing policies for such controls.
- **Items** controlled under the new 600 Series ECCNS created by this rule are eligible for de minimis treatment under the EAR, provided that the foreign-made **items** into which they are incorporated are not destined for a country listed in Country Group D:5.
- The final rule amends License Exception Temporary imports, exports, reexports, **and** transfers (in-country) (TMP) **to** authorize temporary exports, reexports, or in-country transfers of chemical or biological agent personal **protective** equipment classified under ECCN 1A613.c or .d **and** individual protection equipment classified under ECCN 1A607.f consistent with the requirements **and** restrictions described therein.
- The final rule amends License Exception Baggage (BAG) **to** authorize exports, reexports, or in-country transfers of chemical or biological agent personal **protective** equipment classified under ECCN 1A613.c or .d **and** individual protection equipment under ECCN 1A607.f consistent with the requirements **and** restrictions described therein.

It is important **to** carefully review the new provisions, particularly with respect **to technology** transfer **as well as** certain research funded by the **Department** of Defense. Companies should assess the controls on so-called Tier 1 pathogens **and** toxins, including for example, Bacillus anthracis, Ebola virus, Foot **and** mouth disease virus, Smallpox virus, **and** Yersinia pestis, meeting certain modified criteria.

Hogan Lovells is an international legal practice that includes Hogan Lovells US LLP and Hogan Lovells International LLP.

Olympics bet on suburban company's portable isolation units in event of catastrophe

Source: http://www.chicagotribune.com/business/ct-isolation-units-brazil-olympics-0805-biz-20160804-story.html

Patient isolation chambers made by Romeoville-based Isovac are headed to Rio for the Olympic games. Each capsule costs $14,000 and can be used only once.

Aug 04 – Go on a sales call with Peter Jenkner, and you're likely to hear about mustard gas, Ebola and H1N1.

He's president of Romeoville-based Isovac Products, maker of a portable "isolation unit" designed to protect emergency medical personnel and first responders from contamination by patients who might have contracted an infectious disease or been exposed to chemical or biological weapons.

Some 8,500 miles away from its Romeoville headquarters, Isovac's gear is already on the front line of helping to keep the upcoming Olympics safe, should Rio de Janeiro become a hot zone. Isovac has sold about 150 of the locally manufactured units to the Brazilian government in preparation for hosting the Games, whose opening ceremony is Friday.

On a recent day, accompanied by a Tribune reporter, Jenkner was in Wheaton demonstrating the device, which resembles an enclosed stretcher, to the DuPage County Office of Homeland Security and Emergency Management.

He asked DuPage County planning coordinator Joseph Rogers to stand up and use his pen to poke a hole in the enclosure's clear, flexible plastic. Rogers tried, to no avail.

Besides the proprietary puncture-tested plastic, Isovac's product sports the same zippers developed for NASA spacesuits to ensure that no airborne or liquid pathogens leak through. The isolation unit, called CAPSULS, also has eight ambidextrous gloves built into the barrier so medical personnel on either side can tend to patients and not get exposed to stuff that's hazardous or just plain nasty. CAPSULS is short for Containment and Protection System Utilizing Life Support.

The chief organizer of the Rio Olympics said in June that security was his top concern and that keeping athletes and visitors safe from terrorism and other crime is the top priority. Rio's ability to safely host the Games, the first held in South America, has been questioned

Isovac Products President Pete Jenkner demonstrates the company's CAPSULS portable isolation unit to the DuPage County Office of Homeland Security and Emergency Management. Among the Romeoville company's customers is the Brazilian government, preparing for the Summer Olympics. (James C. Svehla / Chicago Tribune)

Isovac's Jenkner said the deal with Brazil came together about two years ago at an annual gathering of responders to chemical, biological and other hazmat incidents.

About 90 percent of Isovac's sales are international, and the company has sold its products in about two dozen countries, Jenkner said.

The units already are in place in settings like the Mayo Clinic, for use in cases of "potential high-consequence infectious diseases," said spokeswoman Kelly Reller. The United Nations World Food Program and the state of Virginia's emergency preparedness teams have also bought units, Isovac said. Brazilian government officials could not be reached for comment.

Housed in an industrial park in Romeoville, Isovac's 15 to 20 workers make the isolation units in a 6,000-square-foot facility. Why Will County? "Price, county, taxes," Jenkner said.

The unit is designed with features for patients not thrilled about being confined. **Airflow is provided through a battery-powered purifying respirator near the person's head, and the transparent material lessens that claustrophobic feeling. It accommodates a person up to 6-foot-8.**

The decibel difference between being inside and outside the patient isolation unit is less than two. That means the patient can clearly hear the emergency personnel who are administering care.

When in 2014 a man in Dallas was found to have Ebola and was transported to a hospital, the ambulance had to be pulled from service. Isovac's product could have helped to break that chain of contamination, Jenkner said.

That potential benefit resonated with Jeremy Hirst, deputy director of DuPage County Office of Homeland Security. "What we're really looking at with this product here is the affected patient traveling to a hospital," said Hirst, who planned to show the unit to hospital emergency personnel.

It's recommended that the isolation unit, which sells for $14,000, be used only once, even if it turns out that the person wasn't infected.

Isovac, whose name is derived from "isolation from vacuum," is private and closely held, and

Jenkner declined to disclose the company's annual sales or production volume, though he said that "hundreds" of patient isolation units have been sold.

Some of the unit's testing was done at U.S. Army facilities, Jenkner said. "To find somebody to perform chemical warfare testing in the country — you don't go through the Yellow Pages," he said.

Literature about the product says it "incorporates technology developed by Alion Science & Technology Corp."

In 2003, according to a Securities and Exchange Commission filing, Alion sued Isovac, which was founded in 1999. Alion's complaint, filed in Cook County Circuit Court, alleged that a business that Alion acquired had an Army contract to develop an "emergency personal isolation" pod to enable rescuers to help victims of chemical or biological attacks. The team that developed that device included some of Isovac's owners. Alion's complaint alleged that Isovac then began competing with it using trade secrets. A patent duel ensued.

The case was settled in 2004, with Isovac agreeing to pay Alion a royalty on sales and to mention that the product incorporates Alion intellectual property, the SEC filing said. Jenkner wasn't named as a defendant. He said he was a consultant to Isovac from 1999 to 2005, became an investor in 2005 and shortly thereafter was named president. Isovac said the patent that was part of the settlement agreement has expired and that the settlement is no longer in force. Alion could not be reached for comment.

Isovac's unit operates similarly to established aircraft transport isolators, but technological advances, such as those in materials technology and battery chemistry, have made Isovac's CAPSULS lighter and easier to use, according to a 2006 filing with the Food and Drug Administration. **Isovac's patient isolation unit is registered as a Class II medical device with the FDA,** according to the agency's website. Class II devices are those considered to pose moderate risks; other Class II examples, according to the FDA, include male condoms and blood pressure monitors. A manual toothbrush is considered Class I.

Isovac also has big-ticket insurance. "We have extremely large product liability insurance on this," William Finn, a former banker and an investor in Isovac's small ownership group since 2010, told DuPage officials. "It took us a while to get coverage, as you can imagine if you've got Ebola in a bag."

Why it takes so long to develop a vaccine against a new epidemic

By Akshat Rathi

Source: http://qz.com/751478/why-it-takes-so-long-to-develop-a-vaccine-against-a-new-epidemic/

Aug 05 – **Amid the depressing news about Zika continuing to infect more people and spread quickly, there is some good news.** Three vaccine candidates have been shown to work successfully in monkeys and one is being tested in a human trial, raising hopes that a vaccine may soon be available on the market.

But don't get your hopes too high. Even with such success stories, it is unlikely that any Zika vaccine will be available this year or even early next year. That's because developing a safe and effective vaccine is difficult in the best of times, and gets harder during an epidemic. Consider the example of Ebola.

The Ebola epidemic began in west Africa in early 2014. By the time the World Health Organization (WHO) declared in June 2016 that it was over, the disease had infected 28,000 people and killed 11,000.

Ebola had been on the radar of public-health officials for many years and we even had some vaccine candidates lying on scientists' shelves before the epidemic. Once the WHO declared Ebola a public-health emergency, scientists began working with renewed urgency and funding. Two years on, some vaccine candidates have reached the very last phase of clinical trials. Sadly, however, none have yet been approved to be sold on the market.

There are many reasons why, despite much scientific progress,

we are still unable to develop vaccines in a timely manner.

1. Epidemics cause chaos

When a new disease starts spreading, it often spreads unchecked before raising alarm. And the pathogen often spreads in places where health infrastructure is not good, such as Ebola starting in Guinea. So by the time we are aware that an epidemic has taken hold, the pathogen is many steps ahead of the humans trying to stop it.

2. Pathogens are shifty

We live on a planet of microbes. The microbe behind every new epidemic is wildly different from the previous one. For instance, even though Ebola and Zika are both caused by viruses, they are completely different beasts. To develop a successful vaccine, we need to understand the pathogen quickly, see if there are more than one genetic strain of it that is causing the disease, and then develop means to counter each strain. But chaotic epidemics can make it difficult to collect the necessary samples and send them to labs.

3. Vaccine development is risky business

Big pharma companies invest billions in research every year, but few jump to action when there is urgent need for vaccines. Though such companies regularly make losses on failed drug candidates, they are often able to claim some return on investment by applying lessons learned and expertise gained in new projects. However, most can't follow that process for vaccine developments, because they don't have other vaccine projects that can carry over the learning.

4. No global body coordinates research

If big pharma won't take the lead, you'd expect the WHO to do so. Even though the WHO's constitution states that its objective "is the attainment by all people of the highest possible level of health," the WHO hasn't been setup to coordinate research programs. Research programs require huge sums of money and the WHO doesn't have it. All it does now is create a framework for how research must be conducted on a new disease and then it hopes that various national health bodies will use the framework to do the work.

5. Animal models aren't always available

Once the pathogen causing an epidemic is identified, scientists need to find a good animal model to test early vaccine candidates. The most commonly used model is small mammals, like rats or mice. But they don't always get infected by a pathogen that has specialized to infect humans. For instance, it took nearly two months to develop the first animal model for Zika after the WHO declared a public-health emergency.

6. Human trials take a long time

Despite all these difficulties, some vaccine candidates do make it through to human trials. But here they linger for longer than we'd like. The first human trial for the most promising Ebola vaccine candidate started in November 2014. Despite success, by June 2015, the company was struggling to find enough human volunteers to continue its trials.

Clinical trials start with tens of patients. With success in each phase, the trial is expanded—from hundreds to thousands to, finally, tens of thousands. However, at each phase, scientists have to collect a lot of data and analyze it to be sure that the vaccine is doing what it should in humans and there are no nasty side effects. This takes time, and in that time often an epidemic crosses its peak. So even though the trial needs more patients, there often aren't enough around to test the vaccine on the scale needed to approve it for commercial use.

So although it's great news we are making progress on a Zika vaccine, it won't be ready any time soon to stop the disease spreading. Still, given it normally takes more than 10 years to develop a vaccine, it's a small miracle that we can get close to developing one in an emergency in less than three years.

__Akshat Rathi__ is a reporter for Quartz in London. He has previously worked at The Economist and The Conversation. His writing has appeared in Nature, The Guardian and The Hindu. He has a PhD in chemistry from Oxford University and

a BTech in chemical engineering from the Institute of Chemical Technology, Mumbai.

US Begins First Zika Vaccine Trial on Humans

Source: http://www.hstoday.us/single-article/us-begins-first-zika-vaccine-trial-on-humans/44ebcc77cc6376cae15c4f54250812ae.html

Aug 04 – Just days ago, the Centers for Disease Control and Prevention (CDC) issued an historic travel warning advising pregnant women and those thinking about becoming pregnant to avoid travel to a Miami, Florida neighborhood, which has seen over a dozen confirmed cases of locally transmitted Zika virus.

The Zika virus, originally discovered in Uganda in the late 1940s, is spread through mosquito bites and has rapidly expanded its reach in the Americas. According to the Centers for Disease Control and Prevention (CDC), common symptoms include fever, rash, joint pain and conjunctivitis. However, Zika infections can also be asymptomatic.

The virus is especially dangerous for pregnant women. Zika has been linked to birth defects, including a rare congenital condition called microcephaly in which infants are born with abnormally small heads and incomplete brain development.

With over 6,400 confirmed cases of Zika in the United States and its territories as of July 27, and with no vaccines or treatments to prevent the virus, the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH), announced on Wednesday that it will begin testing an experimental Zika vaccine on humans.

Developed by scientists at NIAID's Vaccine Research Center earlier this year, the vaccine will be tested on at least 80 healthy volunteers ages 18-35 to determine its safety and efficacy. During the first phase of the clinical trial, volunteers receive a vaccination via a needle-free injector. Some participants receive an additional vaccine at eight weeks or 12 weeks later. They return within a 44-week time period for a follow-up visit where they are evaluated by health officials. Participants also return for two follow-up visits at 18 months and two years to determine durability of the immune response and monitor safety of the treatment.

"A safe and effective vaccine to prevent Zika virus infection and the devastating birth defects it causes is a public health imperative," said NIAID Director Anthony S. Fauci, M.D. "NIAID worked expeditiously to ready a vaccine candidate, and results in animal testing have been very encouraging. We are pleased that we are now able to proceed with this initial study in people. Although it will take some time before a vaccine against Zika is commercially available, the launch of this study is an important step forward."

According to NIAID, the vaccine uses a plasmid—a small, circular piece of DNA—engineered by scientists to make Zika virus proteins, which assemble themselves into virus-like particles once injected into a human. The body reacts by developing an immune response to the particles. The vaccine does not contain infectious material, so the individual cannot become infected with Zika through the treatment.

"A team of scientists here at NIAID worked tirelessly to rapidly develop this vaccine for clinical

testing," said John Mascola, M.D., director of NIAID's VRC. "DNA or gene-based vaccines induce antibodies, but they also can activate the cell-mediated immune response, which ultimately could yield strong and durable protection against disease."

The vaccine will be tested at three locations: the NIH Clinical Center in Bethesda, Md.; the Center for Vaccine Development at the University of Maryland School of Medicine's Institute for Global Health in Baltimore, and Emory University in Atlanta.

Air Techniques Unveils Next Generation in Real-Time Biological Threat Detection

Source: http://www.atitest.com/news/air-techniques-unveils-next-generation-in-real-time-biological-threat-detection/

June 08 – Air Techniques International (ATI) announced the release of its latest innovative product, the **EBS™ Real-Time Biodetection Sensor**. The announcement was made concurrently in Washington, DC at the NCT: CBRNe USA Conference and in Tokyo, Japan at the CBRNE Convergence Asia Conference. ATI President Ron Adkins presented in Tokyo, while the Director of Sales, Jon Beville, presented in Washington, DC. The presentations focused on the changing nature of the threat posed by a biological attack, the lack of preparedness among so-called "soft targets" such as airports and mass transit systems globally, and the evolution of biosurveillance system architecture and incident response.

In December 2015, ATI acquired the underlying technology in the EBS from S3I, a defense technology development company led by David Silcott. The companies have been working collaboratively to develop the EBS system into a deployable platform. Silcott is widely recognized as one of the world's foremost experts in biosurveillance, and as the developer of the IBAC™, a previous generation of biological aerosol sensor that has been successfully deployed in a range of biosurveillance applications.

"The EBS provides biodetection capabilities that have previously been unachievable, including real-time classification of airborne particle types, single-spore sensitivity, and a substantial reduction in false triggers," said Ron Adkins, ATI President. "We have also accomplished our goal of achieving significant cost reductions relative to similar products, which we plan to pass on to our customers with the goal of supporting widespread deployment of this critical capability in global preparedness against bio threats. Our employees are excited to expand on our key role in protecting people, products, and critical infrastructure."

"ATI is the right company to successfully bring this innovation to global markets, having decades of experience developing and manufacturing optical instruments and supporting ChemBio programs," said David Silcott, S3I President. "S3I is passionate about the

importance of real-time biosurveillance and we look forward to supporting ATI's efforts and seeing the EBS deliver significant value in critical applications where it is urgently needed."
Air Techniques will continue to display and highlight the EBS system through presentations and demonstrations at events in the second half of 2016, including ASIS National Convention in Orlando September 12-15 and CBRNe Convergence San Diego October 31-November 1.

The unintentional exotic-pet bio-attack on US shores

By Laura H. Kahn
Source: http://thebulletin.org/unintentional-exotic-pet-bio-attack-us-shores9695

Aug 01 – **Invasive species are not generally considered bioweapons, but a few security experts, including some in the US military, are concerned about the damage they can cause to ecosystems and agriculture.** For example, Lawrence Roberge, a professor at Labouré College in Boston, published a paper in *Biosafety* on the potential for adversaries to deliberately introduce non-native species as biological weapons. The Department of Defense is also concerned about invasive species because they can take over training grounds, erode natural resources, injure soldiers, and damage equipment. According to the US Defense Department's Natural Resources Program, **invasive species cause more than $138 billion in annual damage and management costs.**

The irony is, we don't need to wait for an intentional bioterror attack to feel the impact of invasive species. The United States already endures biological attacks from non-native species every year, which arrive in large numbers via the exotic pet trade.

Exotic pets are generally non-native wild animals, including rare or unusual ones, that are not typically domesticated. The definition is a moving target because many reptiles, rodents, and amphibians are becoming increasingly popular as pets. Invasive species—which can take the form of anything from microscopic organisms to plants, fish, and mammals—are those inhabiting a region where they are not native, and where they are causing harm. They displace native species by either eating them or eating their food. In part because they often have no natural predators in their new location, they can disrupt ecosystems, delicate webs of

plants and animals that evolved to exist in balanced harmony. This can wreak havoc on environmental, animal, and human health. Beyond short-term health threats that a particular species may cause, the long-term threat to ecosystems and biodiversity poses a much larger risk. Some scientists argue that biodiversity loss in and of itself could be catastrophic for civilization, because of diminished ecosystem function in the form of reduced production of biomass, reduced decomposition of biomaterials, and reduced recycling of biologically essential nutrients.

Space invaders

Invasive species are brought to the United States—legally and illegally, intentionally and otherwise—by plane, ship, train, truck, and car. The exotic pet trade not only creates problems for domestic habitats, but by leaving a vacuum in habitats left behind, can also lead to the extinction of important species in the countries of origin. This is particularly problematic for wild bird populations that are being decimated in many countries by domestic and foreign demand.

One of the worst examples of an invasive species causing ruin to an ecosystem was the introduction of rabbits to Australia in the late 18th and early 19th centuries. Europeans brought domesticated and wild rabbits to the antipodes for food and hunting. By 1946, these rabbits' progeny had invaded four million square kilometers (1.5 million square miles) of Australia, making them one of the fastest-colonizing mammals known, thriving in a wide range of habitats including forests, grasslands, and woodlands. Rabbits graze and burrow, causing serious soil erosion, reducing the survival of native plants, altering habitats, and attracting predators like foxes. They can strip a landscape bare, leaving nothing to eat for native animals or livestock. The imported rabbits have contributed to the decline or disappearance of numerous native species including the yellow-footed rock-wallaby, the malleefowl, and the southern and northern hairy-nosed wombats. Australian agriculture is estimated to lose more than $115 million Australian ($87 million US) per year because of rabbit overgrazing. Desperate to reduce rabbit populations, the Australian government resorted to biological agents such as rabbit calicivirus to kill them—infecting the animals with a deadly disease—but the animals eventually developed resistance.

In the United States, invasive species have been particularly devastating to Florida's delicate ecosystems, where hundreds of invaders thrive. They include giant African land snails (which go by the scientific name Achatina fulica), among the "world's 100 worst agricultural invaders" according to the Global Invasive Species Database. First imported as pets, they may also have arrived accidentally with cargo. According to the UN Food and Agriculture Organization the giant African land snail, which favors warm, tropical, humid climates and breeds quickly, consumes at least 500 different plants including common crops like peanuts, peas, cucumbers, and melons. While an ongoing cooperative program in Florida is working hard to eradicate them, these snails still have the potential to cause widespread devastation to the state's natural resources. They also harbor rat lungworm, a type of parasite that can cause meningitis in humans. (Fortunately, in healthy individuals, the disease is usually self-limiting without medication.)

Burmese pythons, one of the largest snakes in the world and popular as pets, are another invasive species causing environmental, economic, and social concerns in Florida, especially in the Everglades. These animals eat native species of mammals, birds, and even an occasional dog, cat, or alligator, though they rarely attack humans unless provoked. Established populations were first reported in 2000, the result of breeding among animals that either escaped or were deliberately released into the wild. From 2006 to 2012, the US Fish and Wildlife Service spent more than $6 million dollars trying to eradicate them without success.

Lionfish, a species native to the Indo-Pacific region, were brought to the United States for home aquariums. Today, after being released into the wild and breeding, they've established themselves along the US East Coast and in the Bahamas, Bermuda, and the Caribbean. They are voracious predators and eat ecologically and commercially

important species such as snappers and groupers. They're aggressive and poisonous. Their venomous spines can sting unsuspecting divers and snorkelers and can cause intense pain, headaches, nausea, convulsions, and paralysis. One strategy people are using to reduce their numbers is to eat them—after the poisonous spines have been removed, of course. Some supermarkets are now selling their meat.

A global problem needs a global solution

Exact data on the extent of the exotic animal trade is not available, but according to the US Fish and Wildlife Service, the illegal wildlife trade alone—which includes the unlawful trade of live animals as well as parts and products derived from them—is worth billions of dollars. The Humane Society of the United States estimates the illegal global trade in wild animals is worth $10 billion or more per year.

Concern about the illegal wildlife trade goes back to 1900 with the passage of the Lacey Act, the first federal law protecting wildlife by prohibiting the interstate or foreign trade of any fish, animal, or plant taken in violation of US law. Today, criminal penalties for individuals who illegally import or export fish, wildlife, or plants include fines of $20,000 or less, imprisonment for five years or less, or both. Unfortunately, these penalties, which are insignificant for individuals involved in multibillion-dollar industries, do little to deter the perpetrators.

The *legal* importation of animals poses enormous challenges too. From 2005 to 2008, the United States legally imported more than one billion live animals, according to a 2010 report from the US Government Accountability Office. Regulatory authority over live animal importation is spread across four US federal agencies: the Department of Agriculture's Animal and Plant Health Inspection Service, the Department of the Interior's Fish and Wildlife Service, the Department of Health and Human Services' Centers for Disease Control and Prevention (CDC), and the Department of Homeland Security's Customs and Border Protection. The CDC regulates the importation of pet dogs, cats, African rodents, civet cats, monkeys, and turtles, among other animals, but most are neither quarantined nor tested for infectious diseases.

State-level rules exist too. According to Born Free USA, a nonprofit animal advocacy organization, approximately 22 states regulate exotic animals as pets. This number, though, suggests a poorly coordinated, patchwork response that does little to protect the country as a whole against invasive species.

The trade in exotic animals is a global issue that requires a global solution. In 1973, representatives from 80 countries met under the auspices of the World Conservation Union and agreed on a resolution to ensure that international trade in animals did not lead to the extinction of any species being traded. The resolution enshrined the endangered species list. In response, the United States passed the Endangered Species Act of 1973, prohibiting the unauthorized taking, possession, sale, or transport of endangered species. The new law gave equal authority to the Departments of Agriculture and the Interior for enforcing restrictions on the import and export of listed plants, but unfortunately, did not explicitly mention the exotic pet trade.

There are efforts in place to reduce wildlife trafficking. Officers from the US Fish and Wildlife Service inspect declared shipments of businesses involved in the animal trade. Since 2014, it has stationed agents at US embassies overseas to increase international cooperation, including in Thailand, Tanzania, Botswana, and Peru. In July 2013, US President Barack Obama issued an executive order on combating wildlife trafficking, aimed at working with partner countries to reduce demand for illegally traded wildlife while allowing legal and legitimate commerce. The order does not, though, explicitly call for enhancing regulations and surveillance of the exotic pet trade.

In short, it appears that exotic pets fall through the regulatory cracks much to the peril of our nation's ecosystems and agriculture. In fact, they should be considered potential biological threats, and the regulation loopholes allowing their unfettered importation should be closed.

A general internist who began her career in health care as a registered nurse, ***Laura Kahn*** *works on the research staff of Princeton University's Program on Science and Global Security. Her expertise is in public health, biodefense, and pandemics. From 2003-2005, she led a study that assessed the public health infrastructures of New Hampshire, New Jersey, New York, and Pennsylvania. She has also co-organized the Carnegie Corporation's "Biodefense Challenge" seminar series, which introduces biosecurity, codes of conduct, and dual-use biotech threats to the life sciences community. Prior to joining Princeton, she was a managing physician for the New Jersey Department of Health and Senior Services and a medical officer for the Food and Drug Administration.*

Rapid bacterial infection test reduces antibiotic use

Source: http://www.medicalnewstoday.com/releases/312108.php

Aug 04 – Researchers from the Oxford University Clinical Research Unit in Vietnam have shown that using a rapid (5-minute) test can reduce antibiotic misuse for respiratory infections. Cutting the number of unnecessary antibiotic prescriptions is a key way to prevent the spread of antibiotic-resistant infections.

The rapid tests detect C-reactive protein (CRP), a marker of infections caused by bacteria, in patients' blood. A low level of CRP is suggestive of viral infection and therefore antibiotic treatment is not required.

The study team made the tests available at 10 primary healthcare centres in and around Hanoi, Vietnam, and recorded antibiotic use for 2000 patients who randomly were or were not tested for CRP. The results showed a significant reduction of antibiotic use in adults and children while clinical recovery was the same. This trial was the first to investigate this in a resource-constrained setting and showed similar results to trials in Europe. This was also the first trial to assess CRP tests for children.

Vietnam is the world's 14th most populous country with a rapidly developing economy. Unregulated access to antibiotics makes Vietnam vulnerable for drug resistance development. While infectious diseases are still one of the leading causes of death, resistance critically compromises treatment options. The WHO reported in 2014 that antibiotic resistance of common bacteria in community and hospitals had reached alarming levels world-wide. Promoting new, rapid diagnostics to cut unnecessary use of antibiotics was listed as one of the priority areas to fight antibiotic resistance.

This intervention has the potential to be scaled up as several newer commercially affordable CRP tests have now been assessed and shown to be reliable. Prof. Heiman Wertheim, principal investigator, added: "There were large differences in the effect of the intervention between health centres; one centre saw no effect due to antibiotic stocks they wanted to get rid of. This nicely illustrates one of the practical obstacles that need to be overcome".

Prof Nguyen Van Kinh, investigator and director of the National Hospital for Tropical Diseases: "With this easy-to-use tool, primary healthcare providers can safely limit the unnecessary antibiotic use for viral respiratory infections. The study provides important evidence for simple solutions in antibiotic stewardship programmes. To enable a large scale implementation, further studies assessing cost-effectiveness of this intervention are needed". This trial provides important data necessary for planning such studies.

Dr Cao Hung Thai, vice head of the Medical Services Administration of the Ministry of Health, concluded: "This is important evidence that the Ministry of Health can use for primary health care regulations to improve rational antibiotic use".

Article: Point-of-care C-reactive protein testing to reduce inappropriate use of antibiotics for non-severe acute respiratory infections in Vietnamese primary health care: a randomised controlled trial, Nga T T Do, MSc, Ngan T D Ta, MSc, Ninh T H Tran, MSc, Hung M Than, MSc, Bich T N Vu, MSc, Long B Hoang, MD, H Rogier van Doorn, PhD, Dung T V Vu, MSc, Jochen W L Cals, PhD, Arjun Chandna, MD, Yoel Lubell, PhD, Behzad Nadjm, PhD, Guy Thwaites, PhD, Marcel Wolbers, PhD, Kinh V Nguyen, PhD, Prof Heiman F L Wertheim, PhD, *The Lancet Global Health*, doi: 10.1016/S2214-109X(16)30142-5, published online 2 August 2016.

Belgium has seen an influx of incidents involving suspicious powder letters/packages.

The past shows us that the more the media covers these incidents, especially the governments Hazmat response and disruption, the number of incidents will not decrease on the short-term. Luckily the substances in these letters/packages proved harmless after analysis, but it is strongly recommended to continue to treat all incidents in accordance with good CBR practices.

i. Sender of powder letters arrested and released again (In Dutch) http://bit.ly/2aTrEuf and http://bit.ly/2bqUNxl
ii. Another powder letter detected at postal office (In Dutch) http://bit.ly/2aO7t4H
iii. Mayor of Verviers received letter with suspicious powder (In Dutch) http://bit.ly/2aMeqiG
iv. 3 Powder letters found at mailbox in Landegem (In Dutch) http://bit.ly/2aWbwbR and http://bit.ly/2aOH7LN
v. Powder letter in Sint-Joost-ten-Node did not contain hazardous material (In Dutch) http://bit.ly/2aRqjJK

Have We Reached the Athletic Limits of the Human Body?

By Bret Stetka
Source: http://www.scientificamerican.com/article/have-we-reached-the-athletic-limits-of-the-human-body/

Aug 05 – At this month's summer's Olympic Games in Rio, the world's fastest man, Usain Bolt—a six-foot-five Jamaican with six gold medals and the sinewy stride of a gazelle—will try to beat his own world record of 9.58 seconds in the 100-meter dash.
If he does, some scientists believe he may close the record books for good.

Usain Bold – 100m Gold Medal (time: 9.81s)/Rio2016

Whereas myriad training techniques and technologies continue to push the boundaries of athletics, and although strength, speed and other physical traits have steadily improved since humans began cataloguing such things, the slowing pace at which sporting records are now broken has researchers speculating that perhaps we're approaching our collective physiological limit—that athletic achievement is hitting a biological brick wall.

Common sense tells us that of course there are limits to athletic achievement: Barring some drastic amendment to the laws of physics, no human will ever run at the speed of sound. And physiologically speaking there's only so much calcium that can flood into a muscle cell causing it to contract; there's only so much oxygen our red blood cells can shuttle around.

In this vein, in 2008 running enthusiast and Stanford University biologist Mark Denny published a study attempting to determine if there are absolute limits to the speeds animals can run. To do so he analyzed the records of three racing sports with long histories of documentation: track and field and horse racing in the U.S., along with English greyhound racing.

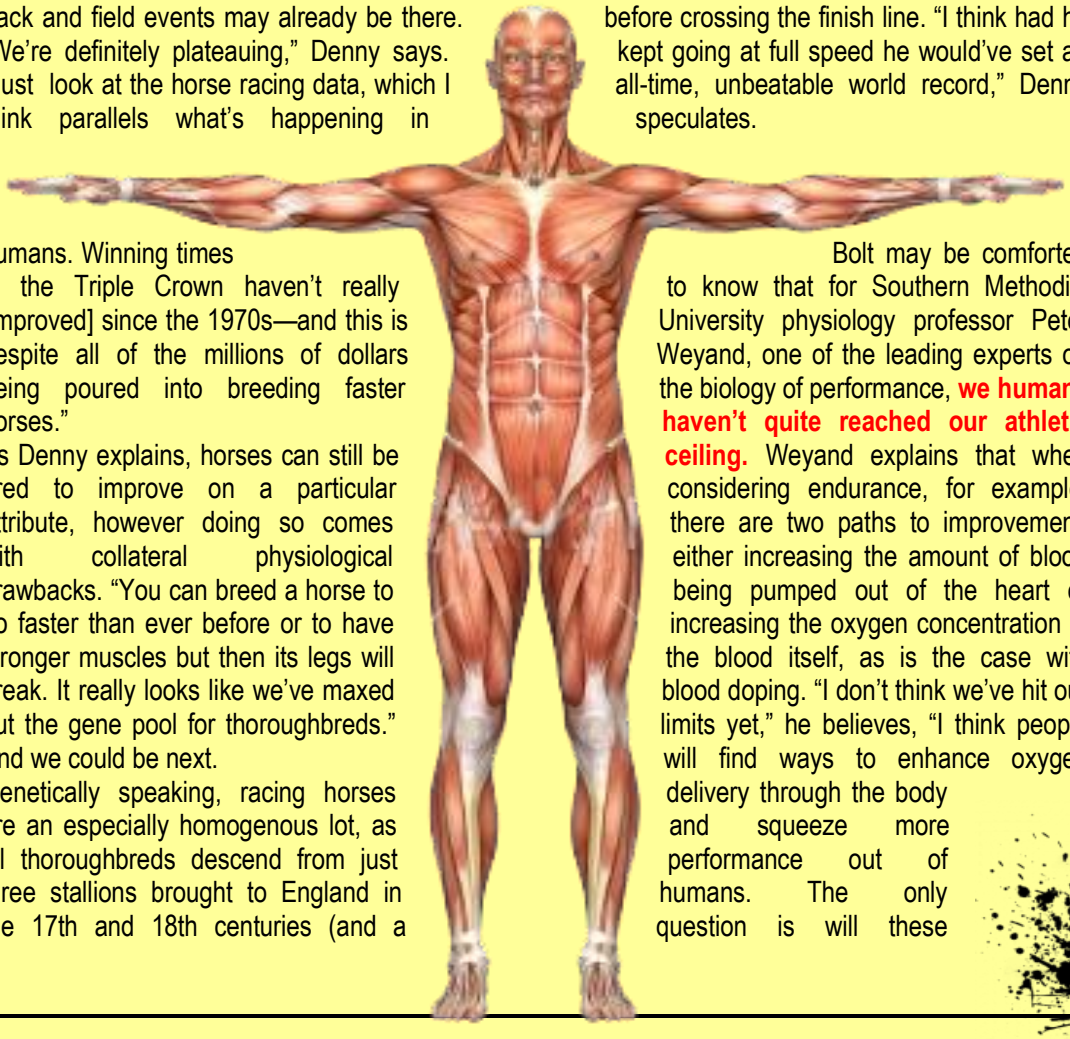
By plotting winning race times back to the turn of the 20th century and by controlling for population growth, Denny was able to conclude that there is indeed a predictable limit to the time it takes for a particular species to cover a certain distance. In fact, his data show that horse and dog racing as well as some human track and field events may already be there.

"We're definitely plateauing," Denny says. "Just look at the horse racing data, which I think parallels what's happening in humans. Winning times in the Triple Crown haven't really [improved] since the 1970s—and this is despite all of the millions of dollars being poured into breeding faster horses."

As Denny explains, horses can still be bred to improve on a particular attribute, however doing so comes with collateral physiological drawbacks. "You can breed a horse to go faster than ever before or to have stronger muscles but then its legs will break. It really looks like we've maxed out the gene pool for thoroughbreds." And we could be next.

Genetically speaking, racing horses are an especially homogenous lot, as all thoroughbreds descend from just three stallions brought to England in the 17th and 18th centuries (and a slightly larger number of "foundation mares"). But Denny points out that in a number of women's track events speeds have also leveled off, with many records going unbroken since the 1980s (when, as he puts it, many competitors were suspected of being "doped to the gills.") Denny cites marathoner Paula Radcliffe's 2003 world record time of 2:15:25 (purportedly unassisted by performance-enhancing drugs, despite an investigation) as being nearly at his predicted maximum speed for the women's marathon. Male marathon runners may still have some wiggle room. Denny's model predicts that the current record of 2:02:57 can be improved on by three or so minutes, in line with the much publicized pursuit of the two-hour men's marathon.

Bolt hopes to beat the researcher's fastest predicted 100-meter dash time of 9.48 seconds. Unfortunately, according to Denny, the now notably older sprinter may have missed his chance. The sprinter was a chasm ahead of the pack in a semifinals race at the 2008 Beijing Olympics when he slowed up before crossing the finish line. "I think had he kept going at full speed he would've set an all-time, unbeatable world record," Denny speculates.



Bolt may be comforted to know that for Southern Methodist University physiology professor Peter Weyand, one of the leading experts on the biology of performance, **we humans haven't quite reached our athletic ceiling.** Weyand explains that when considering endurance, for example, there are two paths to improvement: either increasing the amount of blood being pumped out of the heart or increasing the oxygen concentration in the blood itself, as is the case with blood doping. "I don't think we've hit our limits yet," he believes, "I think people will find ways to enhance oxygen delivery through the body and squeeze more performance out of humans. The only question is will these

approaches be considered legal."

The answer to improved athletic performance might be in our mitochondria,

the so-called cellular "powerhouses" that generate energy using oxygen via the Krebs cycle. In a person of average aerobic fitness mitochondria make up about 2 percent of each cell's volume; in well-trained athletes it is 4 percent. In the hyperkinetic hummingbird the number climbs to around 40 percent, giving hope that perhaps human cells could accommodate more mitochondria, thereby boosting athletic ability. "Of course there's a limit at which point you just can't cram any more mitochondria into a cell, but I think in humans there's room left," Weyand says. "Sports have become such a global, lucrative and professionalized endeavor that as long as there's money to be made and fame to be won, we'll continue to see improvements—both in terms of sports science and equipment—that cause records to fall, though maybe less frequently."

Weyand acknowledges that any future biological tinkering may bring with it the same ethical and philosophical concerns that shroud performance-enhancing drugs. "It's going to be increasingly hard to determine what should be legal and what shouldn't," he predicts. "Now we say, 'okay, training is a good thing, and so is diet,' but what about supplements?"

On top of that, **the watchdog groups will likely never be able to keep up with new biological and chemical enhancements that could inch—or perhaps propel—records forward,** Weyand says. "The anti-doping authorities first have to find out what new substances are being used; then they have to develop an assay to detect them. The identification and the list of what's banned is always going to lag behind what people are trying," he says.

Blood doping may not be going away but the future of record-breaking, for better or for worse, most likely lies in the human genome. Gene-editing technologies like CRISPR–Cas9 now allow specific genes to be turned on, off or introduced—granting modifications that could confer any number of athletic advantages and that, as Weyand warns, would be nearly impossible to detect. "I do think we'll see people trying things like CRISPR to introduce certain genes in the interest of athleticism," David Epstein, author of the 2013 book *The Sports Gene: Inside the Science of Extraordinary Athletic Performance*, says. "I think the main reason why people aren't doing this yet is that so many forms of traditional doping are available and effective. They haven't needed to move on yet."

Epstein, whose book explores the limits of human performance, points out that current concerns over CRISPR are often dismissed, given the complexities of our genetic code and the fact that at the moment we don't actually know what most genes do. Yet, as featured in his book, there are examples of specific gene variants that result in enhanced athletic performance.

One such case involved Finnish skiing legend and seven-time Olympic medal winner **Eero Antero Mäntyranta,** who had runaway

success throughout the 1960s,and was widely assumed to be blood-doping. Years later a genetic study on Mäntyranta and his family revealed that **he carried a gene that greatly increases red blood cell mass and hemoglobin levels, the molecule that carries oxygen in blood.** Epstein also cites the so-called "super baby," an alarmingly muscular boy born in Berlin in 1999. The now-teenager has a mutation that blocks the production of myostatin, a protein that limits excessive muscle growth.

Lucky individuals aside, what will become of the public's interest in competition if we are reaching a plateau in performance, one in

which records—perhaps assisted by ethically dubious genetic tampering—will continue to fall, but at a far slower rate? Will people watch when there are no more records to break?

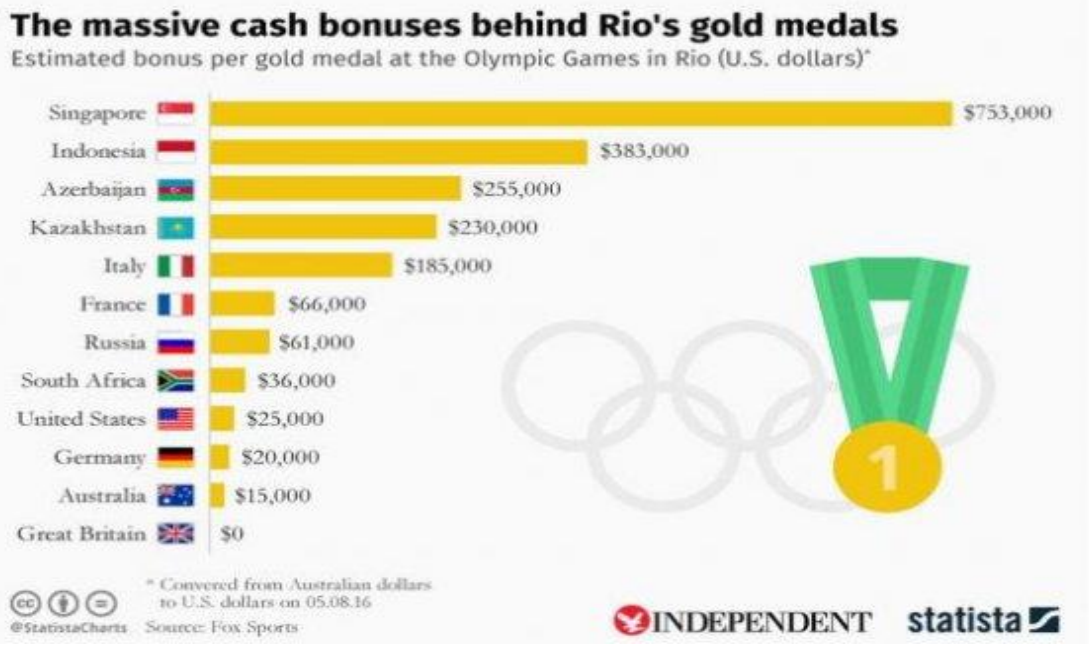
Denny isn't concerned. "When I published my paper, the feedback I got was that this was going to destroy the Olympics," he recollects. "That's like saying the 1962 Brazilian soccer team was the best ever so no one's ever going to watch the World Cup again. But if Bolt can run the 100 in 9.47 seconds and beat my prediction, then hats off to him. I think there's always going to be the lure of 'maybe someone's going to do better.'"

Both Denny and Epstein feel this is especially true for more complex sports in which any number of variables can contribute to success, and in which an objective "best" is hard to define. A lot of factors have to fall into place for a team to win a basketball championship or a Super Bowl. And sports leagues are continually changing the rules to capture public interest, creating new benchmarks for athletic ability. "Basketball didn't have a three-point line until 1979," says Denny, an absence that makes one wonder if in another era, the league's current phenom, Stephen Curry—whose single season three-point record of 402 so staggeringly soars above the former mark of 286, also set by him—might not have enjoyed the acclaim that he, given the rule change, deservedly has.

"The NBA and all the leagues know what they're doing," Denny jokes. "People will be arguing about sports over beers at the bar for decades to come."

Bret Stetka *is a writer based in New York City and an editorial director at Medscape (a subsidiary of WebMD). His work has appeared in* Wired*, NPR and the* Atlantic*. He graduated from the University of Virginia School of Medicine in 2005.*

EDITOR'S COMMENT: Although informative, this article raised a "stupid" question: "What is exactly the overall contribution of super athletes to Planet Earth?" Do not get me wrong! I am not upset with professional athlets like Bolt. It is that I cannot understand the industry behind their achievements and what exactly they give back to societies and the world. And I mean during peace time because



many of these achievements might be very interesting from a military point of view. I favor good physical condition because it helps people do things better and enjoy life but that is all. What I dislike is the fact that nobody is interesting to enhance the brain center of ethos that seems responsible for most of the ugly things happening in our days. Understanding the secrets of human body is good but a body without soul is just a combination of hydrogen and oxygen!

What happens when anyone can edit genes at home? We're about to find out

By Dyllan Furness
Source: http://www.digitaltrends.com/cool-tech/the-odin-diy-crispr-kit/

Aug 15 – Right now, for just $140, you can get your hands on one of the most powerful gene-editing tools known to science. You don't even have to go out of your way, either**. The ODIN do-it-yourself CRISPR kit, as it's called, will ship it to your front door.**
The project is the brainchild of ex-NASA scientist Josiah Zayner, who left the agency earlier this year to sell CRISPR kits from his Castro Valley, California apartment. After raising nearly $71,500 on Indiegogo, he turned to the ODIN full time.
People have a false sense of security about academic science being "good and safe".
Zayner is one of an international community of biohackers who want to democratize science. Biology and the body are their playgrounds. They ask why experiments should be restricted to academic institutions and why sluggish processes of federal approval should stall scientific discoveries. Thanks to many biohackers, technologies that were once locked in the ivory tower are now available to practically

anyone.
But many experts think Zayner's efforts are careless and even dangerous. They worry about handing such powerful tools to a largely unregulated community of DIY scientists who lack the rigor and oversight of those at established institutions. They're concerned that one man in a garage could inadvertently cause irreversible harm. And, although Zayner insists his intentions are good,
some scientists wonder if it's worth the risk.

CRISPR changes everything

To understand what Zayner does and why many experts object, let's look at the revolutionary gene-editing "tool" called CRISPR-Cas9.

Here's the short of it: the CRISPR system lets scientists edit DNA, delete and add specific genes to create specific mutations. It's a remarkably precise, step-by-step technique that's easy enough to be performed at home in a DIY lab. Using this tool, geneticists can edit stem cells in a petri dish, tweak genes inside fertilized eggs, or even target multiple genes at once, giving rise to drastically unique and designed DNA sequences.

As powerful as the tool is, at-home CRISPR experimentation isn't federally regulated, unless those experiments are performed on regulated organisms like certain pathogens and stem cells. The government does, however, regulate the release of engineered organisms. So, you can toy around with CRISPR in your kitchen but you can't distribute your creation without government approval.

With CRISPR, scientists have the potential to edit out genetic diseases, edit in immunities, and create transgenic species with relative ease. The ODIN's CRISPR kits are designed to make much simpler mutations, such as adjusting the the color and scent of yeast — but that doesn't necessarily calm nerves.

Risks at home and at the institution

"If you look at pathogenic organisms in nature, they often differ from their nonpathogenic counterparts by very tiny modifications," Stuart Newman, Professor of Cell Biology and Anatomy at New York Medical College, tells Digital Trends. He points to the bacteria that causes the deadly diphtheria infection. "It was a benign resident of the respiratory system," he says. "But at some point during evolution…it picked up a protein…which allowed the bacillus to interact with the human organism and cause horrendous illness."

And the lab isn't always safer than nature.

"I'm worried about the inadvertent side effects of well-intentioned uses."

Fifteen years ago, an Australian research lab attempted to genetically engineer a contraceptive for mice as pest control. Instead, they accidentally modified a mild pox into a virus that killed every mouse it infected. And that was with much cruder gene-editing tools than those available today.

"We can't predict these things ahead of time," Newman says. "You can't be sure you're going to be dealing with a benign strain or gene. There are no rules for what's going to be pathogenic and what's not — something is only benign until you get a concoction that has an unexpected consequence."

Zayner takes that point but doesn't see scientific institutions as any more legitimately safe than DIY projects.

"The argument that at-home biohacking isn't as safe or rigorous as academia is arbitrary," Zayner says, adding that people have a false sense of security about academic science being "good and safe," despite regular cock-ups. He cites a paper published last month that discovered an error in a common fMRI software. The study could invalidate some 40,000 scientific papers. "Over a decade of research under question because someone coded the software wrong," he says.

If official authorization for CRISPR-like projects were confined to academic institutions or people with PhDs, Zayner thinks scientific progress would be stonewalled. "Even if these [DIY scientists] aren't as skilled, how much quicker could we figure out issues with disease and understand the nature of the world we live in?"

However, this lack of skill is precisely one of Newman's main concerns. He and Zayner are trained scientists, but the ODIN buyers may not be. There's a scientific method, Newman says, and it must not be forgotten. "If you want to approach a scientific question, you have to have certain ideas in mind about what you want to study," he says. "You're not just tinkering. I don't even know if I would call [DIY science] 'science.' It's more like gaming."

But, above all, Newman worries that provocative projects like those offered by the ODIN might undermine the gravity of the experiment.

The strains or genes in the ODIN kit are not regulated or inherently dangerous. Trained scientists have done the legwork to ensure that the CRISPR experiment results in specific, harmless

outcomes. "But this gets it into people's minds that it's OK to genetically modify organisms — as a game or demonstration — and potentially release them into the environment," Newman says. "And it's not."

Side effects may include…

Hank Greely leans back at his desk and looks up from his glasses with skepticism that falls somewhere between Zayner's zeal for DIY science and Newman's objection to it. The Director of Stanford's Center for Law and the Biosciences admits, time and time again, that he isn't against things like biohacking — he's just nervous about it and thinks it must be regulated.

"Just because you can't predict it perfectly doesn't mean you shouldn't try."

"I'm worried about the malevolent uses," Greely says. "I think we all are. But I'm also worried about the inadvertent side effects of well-intentioned uses."

Everyone has *E. Coli* and although it's often benign, there are dangerous strains. Scientists have mapped the genomes of both. Greely thinks it's conceivable that a maleficent biohacker could obtain an *E. coli* sample — "Anyone with access to a toilet has access to a sample of *E. coli*." — and make the necessary genetic modifications to turn that benign strain into a biological weapon. But that's still pretty unlikely and would take some skill.

Instead, it's the unbridled use of CRISPR that Greely thinks we should be most cautious about.

Zayner, meanwhile, estimates both of these risks are nominal. "It would take significant skill to turn this bacteria or yeast into a hazardous thing," he says. And he likens the chance of accidentally creating a disruptive organism to the chance of accidentally making a bomb from computer parts.

Greely still isn't sure. "New life forms are highly unpredictable in new environments," he says, "which is partially an argument against my side because it means you can't regulate it well, since you can't predict it. But just because you can't predict it perfectly doesn't mean you shouldn't try."

What might regulation look like?

Greely offers a few starting points to consider for regulation. First, regulators need to know who's conducting the experiments and how, so DIY scientists should need to register and follow safe lab practices, he says. If and when a new organism is engineered — no matter how seemingly benign — an expert should examine it to determine any potential risk. And regulators must have a plan to follow up and control the organism if things get out of hand. Consider a genetic "kill switch," which can cause synthetic organisms to die in out-of-the-lab circumstances.

"It will be a tricky regulatory scheme but I think those are good starting points," Greely says.

To be sure, Zayner isn't anti-regulation. But, while the government takes its time weighing options, he intends to carry on with his experiments and help others do so, too. The ODIN currently consults on CRISPR projects for institutions like Princeton, the University of Washington, and the University of Chicago — Zayner and Newman's *alma mater*.

"You know, we see science in the media and they say it will be out for public use in 20 years of something.," he says. "That always disappointed me. I'm like, *Fuck that man, I want to work with stuff now!*"

Study Shows Stem Cells are Effective Weapon to Combat Biological Warfare

Source: http://www.prweb.com/releases/2016/08/prweb13613075.htm

Aug 15 – Researchers for the first time have shown how engineered stem cells can be used to deliver antibodies superior to those currently available for protecting against infectious diseases and biological warfare. The study appears in the August issue of *STEM CELLS Translational Medicine*.

Vaccines and antivirals exist for many such pathogens, but as the recent Ebola outbreak demonstrated, they have limitations – mainly the time it takes to manufacture a quantity large enough to control an epidemic, plus the window of time

they offer protection after being administered. The potential for adverse side effects poses yet another issue.

Many researchers believe that engineered mesenchymal stromal cells (MSCs) are an attractive alternative. The SCTM study's lead authors, Wei-Gang Hu, Ph.D., and Les Nagata, Ph.D., of the Defence Research and Development Canada, Suffield Research Centre, (Ralston, Alberta, Canada), and their colleagues, Lorena Braid, Ph.D., at Aurora BioSolutions Inc. (Medicine Hat, Canada) and John E. Davies, D.Sc., at the University of Toronto, are among them.

They wondered whether an antibody's protective window could be extended using engineered MSCs as a delivery platform, believing these cells might constitute a renewable source that compensates for the antibody's natural rate of degradation. They focused on Venezuelan equine encephalitis virus (VEEV), a mosquito-borne pathogen that affects humans and horses and can be used in bio-warfare. No licensed vaccine or antiviral agent currently exists to combat the infection in humans.

Using mice, the scientists compared the effectiveness of a traditional treatment made up of purified antibodies to one using antibodies generated by adding a gene encoding a humanized VEEV antibody (anti-VEEV) to human umbilical cord perivascular cells (HUCPVCs) – a rich source of MSCs.

"The results were eye-opening," Dr. Hu reported. "While the traditional antibody administration protected the animals for two or three days after administration, the engineered HUCPVC with the transgene encoding anti-VEEV protected the majority of the animals for 10 days, with protective antibody levels up to 38 days. In fact, 10 percent of the mice continued to secrete anti-VEEV three months later."

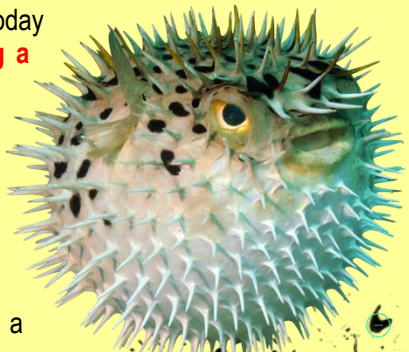
Dr. Nagata added, "Given the success of this study, we expect that HUCPVC-mediated gene therapy will provide a solution for a range of applications and biologics, including the delivery of additional medical countermeasures for biological and chemical defense purposes."

"This is the first study to describe engineered mesenchymal stromal cells as vehicles to deliver disease antibodies," said Anthony Atala, M.D., Editor-in-Chief of STEM CELLS Translational Medicine and director of the Wake Forest Institute for Regenerative Medicine. "The advantages of this approach include that a single dose could potentially provide immunity."

The full article, "Engineered mesenchymal cells improve passive immune protection against lethal Venezuelan equine encephalitis virus exposure," can be accessed at http://stemcellstm.alphamedpress.org/content/5/8/1026.abstract?sid=9922f81a-2bef-4ac2-8097-c6065da87841.

Suspected puffer fish poisoning case under CHP investigation

Source:http://7thspace.com/headlines/529840/suspected_puffer_fish_poisoning_case_under_chp_investigation.html



Aug 19 – The Centre for Health Protection (CHP) of the Department of Health is today (August 21) investigating a suspected case of **puffer fish poisoning affecting a man aged 67** and hence reminds members of the public not to consume puffer fish.

The patient developed dizziness, paraesthesia, peri-oral and finger numbness, nausea and vomiting about three hours after consuming a dried puffer fish for dinner at home on August 19. He attended the Accident and Emergency Department of the United Christian Hospital on August 20 and no hospitalisation was required. He is currently in stable condition.

Initial enquires by the CHP revealed that the dried puffer fish was bought from a temporary stall in Ngau Tau Kok.

The CHP has also alerted the Food and Environmental Hygiene Department of the incident and the investigations are continuing.

A spokesman for the CHP explained that consumption of puffer fish is the main cause of food poisoning from tetrodotoxin.

Tetrodotoxin is a potent water-soluble neurotoxin that can affect the central nervous system.

"Organs such as the liver, gonads and skin of puffer fish have high concentrations of tetrodotoxin. Being heat-stable, the toxin does not decompose upon cooking, boiling, drying or freezing. Tetrodotoxin intoxication can cause problems in respiration or circulation and is potentially fatal.

There is no known antidote or antitoxin. The public is advised to avoid purchasing and preparing puffer fish or unknown fish for consumption themselves to prevent tetrodotoxin-related food poisoning," the spokesman added.

D.A. Henderson, 'disease detective' who eradicated smallpox, dies at 87

Source: https://www.washingtonpost.com/local/obituaries/da-henderson-disease-detective-who-eradicated-smallpox-dies-at-87/2016/08/20/b270406e-63dd-11e6-96c0-37533479f3f5_story.html

D.A. Henderson, as chief of the World Health Organization's smallpox eradication unit, examines vaccination scars on children in Ethiopia. (World Health Organization)

Aug 20 – **Donald "D.A." Henderson, an American epidemiologist who led the international war on smallpox that resulted in its eradication in 1980, the only such vanquishment in history of a human disease and an achievement that was credited with saving tens of millions of lives, died Aug. 19 at a hospice facility in Towson, Md. He was 87.**

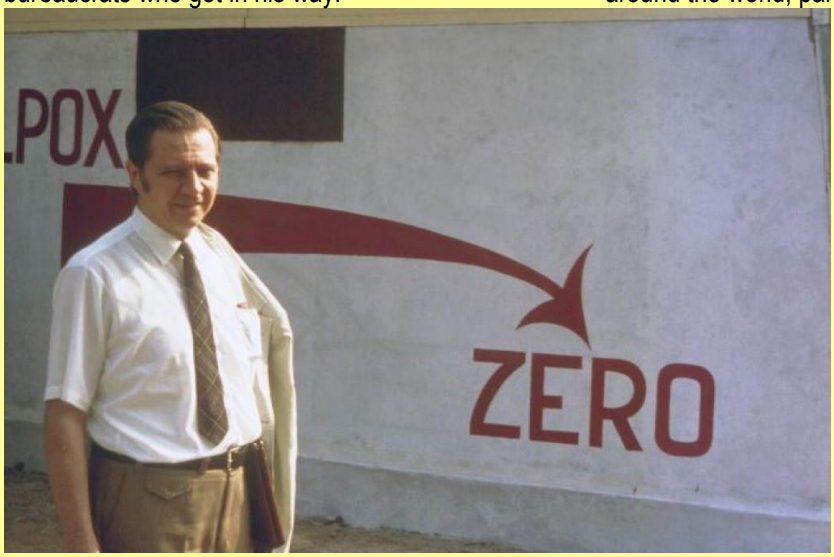
The cause was complications from a broken hip, said his daughter, Leigh Henderson.

A self-described "disease detective," Dr. Henderson spent the defining years of his career as an official of the Centers for Disease Control and Prevention and the World Health Organization. Later, he served as dean of Johns Hopkins University's school of public health and as a science and bioterrorism adviser in three presidential administrations.

But it was in the fight on smallpox — perhaps the most lethal disease in history and one that killed an estimated 300 million people in the 20th century alone — that he became known around the world. Lent from the CDC to the WHO for a decade in the 1960s and 1970s, he commanded a small cadre of public-health officials and an army

of field workers in an endeavor that amounted to a medical moonshot.

"I think it can be fairly said that the smallpox eradication was the single greatest achievement in the history of medicine," Richard Preston, the best-selling author of volumes including "The Hot Zone," about the Ebola virus, and "The Demon in the Freezer," about smallpox, said in an interview. He described Dr. Henderson as a "Sherman tank of a human being — he simply rolled over bureaucrats who got in his way."



D.A. Henderson in 1974. (CDC)

For millennia, at least since the time of the Egyptian pharaohs, smallpox had ravaged its way around the world. Caused by the *variola* virus, it was an exceptionally painful and gruesome disease. Victims suffered from fever and other flulike symptoms before developing a rash of the pustules that gave the disease its nickname: the speckled monster. It killed a third of its victims and left survivors disfigured, sometimes blind.

"Smallpox has been called one of the most loathsome diseases," Dr. Henderson told The Washington Post in 1979. "I know that no matter how many visits I made to smallpox wards filled with seriously ill and dying patients, I always came away shaken."

Populations had long sought to protect themselves from smallpox through crude methods of inoculation, the process by which a patient is intentionally exposed to a disease to provoke a mild reaction and thereby obtains immunity from a more serious infection.

In the 18th century, an English physician, Edward Jenner, discovered that exposure to the less dangerous cowpox virus produced immunity to smallpox. He is regarded as the father of the smallpox vaccine, which was perfected over the years and severely curtailed the spread of the disease in areas where the vaccine was distributed. Because of large-scale immunizations, the United States was free of smallpox by 1949.

But the disease continued to bedevil countries around the world, particularly in South America, South Asia and Africa. In the late 1950s, the Soviet Union began to apply pressure on the WHO, which is an agency of the United Nations, to mount a campaign to wipe out smallpox.

Many WHO officials were hesitant to embark on such an ambitious operation, fearing that a defeat would erode the organization's credibility. Previous efforts to eliminate other diseases, such as yellow fever and malaria, had "failed spectacularly," according to Jason Schwartz, a historian of medicine at the Yale School of Public Health.

D.A. Henderson in 2011. (Michael Temchine/The Washington Post)

When it was agreed that the WHO would take on the smallpox initiative, the organization turned to the United States, which, under Dr. Henderson's leadership, had already launched a smallpox-eradication program in Africa. In an oral history with the online Global Health Chronicles, Dr. Henderson recalled that the WHO director general, the Brazilian malariologist Marcelino

Candau, called the U.S. surgeon general with a demand.

"I want an American to run the program," Candau said, "because when it goes down, when it fails, I want it to be seen that there is an American there and the U.S. is really responsible for this dreadful thing that you have launched the World Health Organization into, and the person I want is Henderson."

Pressed by the surgeon general, and apprehensive about his chances of success, Dr. Henderson arrived in Geneva in 1966. For the next 11 years, he shuttled between Geneva and far-flung smallpox hot spots — obtaining funding, coordinating with nations including the Soviet Union amid Cold War tensions, and inspiring heroics from the tens of thousands of field workers who ventured into countries racked by deprivation, natural disaster, political instability and war.

The campaign, which cost an estimated total of $300 million, employed a strategy called ring vaccination that was credited to the American epidemiologist William Foege. Rather than attempting to vaccinate everyone — a technique determined to be superfluous — the WHO located smallpox patients, isolated them, vaccinated everyone who had contact with the victims, and then vaccinated everyone who had contact with those people.

The smallpox campaign benefited from an effective vaccine, ingeniously reconstituted in a freeze-dried form that could withstand the high temperatures of tropical environments. It was administered by a sharp, two-pronged rod that was easy for nonprofessionals to use. The nature of smallpox also offered advantages: With its telltale sores, it was easy to identify in patients, and it had no animal vector, or means of transmission.

Much credit for its success went to Dr. Henderson personally.

"He gives a sense of certainty on things," Foege said in an interview, "and people like to follow a leader that is quite certain about what they are doing."

When Dr. Henderson feared that the Soviet Union was delivering substandard vaccines for the effort, he traveled to Moscow, over the prohibition of his bosses, to confront authorities there, the New York Times reported. When the health minister under Ethiopian Emperor Haile Selassie proved insufficiently helpful, Dr. Henderson entered the country and cozied up to the emperor's personal physician.

Dr. Henderson shared credit for his accomplishments with the many WHO collaborators who performed vaccinations in the field.

"The obstacles were unbelievable," Dr. Henderson told the Times in 2011, recalling the efforts of Ciro de Quadros, a Brazilian epidemiologist who later helped lead an assault on polio. "The emperor assassinated, two revolutionary groups fighting, nine of his own teams kidnapped, even a helicopter captured and held for ransom. He kept the teams in the field — and that helicopter pilot went out and vaccinated all the rebels."

Recalling their work together, Foege said that Dr. Henderson displayed profound concern for the field workers who risked their safety to carry out their work.

"I don't know how many stories I've heard of the mothers of people who had gone to India calling him directly," Foege said. "For some of them, it was their first time overseas. You can see why their parents might have been nervous if they didn't hear from their child after a couple of weeks. Some of these mothers would call D.A. Henderson in Geneva and ask him to find out if their child was okay. And he would."

To ensure total eradication, field workers offered rewards for reports of smallpox cases. When offers of cash went unanswered, Dr. Henderson told The Post, "we knew we had done it, but we couldn't believe it."

Ali Maow Maalin, a Somali who died in 2013, contracted the disease in 1977 and was identified as the world's last patient with naturally occurring smallpox. Three years later, the World Health Assembly certified that smallpox had been eradicated.

Donald Ainslie Henderson was born in Lakewood, Ohio, outside of Cleveland, on Sept. 7, 1928. His mother was a nurse, and his father was an engineer.

He had not yet turned 20 when, in 1947, New York City suffered a smallpox outbreak. The episode, which resulted in the vaccination of millions, spurred Dr. Henderson's

interest in the disease and how it might be stopped.

He received a bachelor's degree in chemistry from Ohio's Oberlin College in 1950 and a medical degree in 1954 from the University of Rochester in New York. The next year, he joined the CDC, then called the Communicable Disease Center, where he was mentored by Alexander Langmuir, the founder of the CDC's Epidemic Intelligence Service, a sort of epidemiological special forces.

"I decided I was never going to be a practicing doc," Dr. Henderson once told an interviewer, according to the reference guide Current Biography. "It was just too dull, really."

He received a master of public health degree from Johns Hopkins University in 1960. At the CDC, he became chief of the virus surveillance section before leading the African and then global smallpox eradication campaigns.

Dr. Henderson was the author of "Smallpox: The Death of a Disease" (2009). His honors included the National Medal of Science in 1986 and the Presidential Medal of Freedom, the nation's highest civilian honor, in 2002.

Survivors include his wife of 64 years, the former Nana Bragg of Towson; three children, Leigh Henderson of Baltimore, David Henderson of Brooklyn and Douglas Henderson of Berlin.

When Dr. Henderson left the WHO in 1977, he quipped that as the chief expert on a disease that had been wiped out, he was "left there high and dry with no marketable skills," with no option but to become a dean.

He joined Johns Hopkins, where he remained until 1990, later returning to found a center for civilian biodefense studies. Dr. Henderson served in the administrations of George H.W. Bush and Bill Clinton. After the Sept. 11, 2001, terrorist attacks and subsequent anthrax mailings, he served under President George W. Bush as director of the Office of Public Health Preparedness, a new unit to combat bioterrorism.

At the time, some U.S. intelligence analysts feared that Iraq or North Korea might possess strains of the smallpox virus and be capable of using them as biological weapons. Fears subsided after the 2003 invasion of Iraq, where no smallpox was found, but some experts still perceive a threat from North Korea.

The only officially sanctioned stores of the smallpox virus are held at heavily secured facilities at the CDC in Atlanta and at a Russian facility in Siberia. Some researchers contend that the samples should be preserved for use in the development of future vaccines or treatments.

Dr. Henderson strenuously argued that the samples should be destroyed because, in his view, any amount of smallpox was too dangerous to tolerate. A side effect of the eradication program — and one of the "horrendous ironies of history," said "Hot Zone" author Preston — is that since no one in generations has been exposed to the virus, most of the world's population would be vulnerable to it in the event of an outbreak.

"I feel very — what should we say? — dispirited," Dr. Henderson told the Times in 2002. "Here we are, regressing to defend against something we thought was permanently defeated. We shouldn't have to be doing this."