



Dedicated to Global First Responders

May 2019

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# EDITORS CORNER



**Editorial** Brig Gen (ret.) Ioannis Galatas, MD, MSc, GAMC

*Editor-in-Chief* C<sup>2</sup>BRNE Diary



Dear Colleagues,

May's issue is one of the smallest issues in the last few years and this is good since it means that May was a relatively quiet month without major incidents both conventional or asymmetric.

The most important to keep in mind of is the "official" introduction of armed drones into field operations from a weak country supported by a stong country against a stong nation. Fuel pipelines and an airport were attacked despite the fact that damages caused were not characterized as significant. But these attacks had an impact of oil prices – most probably transient – but also to strategic planning since now drone attacks should be seriously taken into consideration both at civilian and military level.

What if tomorrow we experience a drone packed with high explosives against a commercial aircraft during take off or landing process? An explosive drone against football fans gathered in stadium during FIFA 2020 World Cup? An explosive drone attack in a busy commercial shoping street or a cruise ship approaching the port to dock? What if aside explosives this drone carries a CWA portion or a radioactive isotope in powder form. What if .... So many scenarios that we have to thing of and redesign our defences because the latest incidents – starting from flights over nucleat power plants in France and Belgium – have shown that this modus operandi is now mature enough to be used and most probably to perfectionize further depending on the imagization and capabilities of the offenders.

Apart from this, it is of interest to watch the geopolitical games played in Southeast Mediterranean and Middle East and the alliances between countries, friends and enemies. It is interesting to realize that big powers care only for their own benefits and in that respect it is both accepted and ethical to change sides in an ubpredictable way (US-NATO-Turkey-Russia). It is interesting to realize that the old dogma of "dived and conquer" is still a valid process if financial loads are at stake (UK-Cyprus-Turkey). It is interesting to notice that the big fincy organizations are nothing that houses of academic chat unable to enforce peace or solutions (UN-WHO-NATO). It is interesting to notice that the players competing and how easy is to loose a pone or a country if one makes a mistake. In all this huge mess, a CBRN attack might be considered as normal and anticipated. The problem is that we are not prepared for the unexpected because we think that even cruelty has an upper limit forgetting that humans are capable for both excellence and the worst nighmare!

Be alert CBRN first responders! It might happen in your shift and it is important first to survive and then, when the incident will be over to be alive to return to your beloved family. History is full of dead heroes! Lets change that and prepare as best as possible in order to be able to survive and help your fellow country men.

The Editor-in-Chief



#### **Terrorism Resources**

Perspectives on Terrorism Volume XIII (issue 1), 2019

Bibliography: Terrorism and the Media (including the Internet) (Part 4) Compiled and selected by Judith Tinnes

Counterterrorism Bookshelf: 40 Books on Terrorism and Counter-Terrorism-Related Subjects Reviewed by Joshua Sinai

Max Abrahms, Rules for Rebels: The Science of Victory in Militant History. (Oxford University Press, 2018) Reviewed by Alex P. Schmid

Recent Online Resources for the Analysis of Terrorism and Related Subject Compiled and selected by Berto Jongman

#### Why the World Should Fear North Korea's Rockets and Artillery Weapons

#### By Kyle Mizokami

Source: https://nationalinterest.org/blog/buzz/why-world-should-fear-north-koreas-rockets-and-artillery-weapons-55972



Other factors reduce the projected loss of life in the greater Seoul metropolitan area. The city has extensive air raid shelters for civilians that will quickly reduce the exposed population density. The North will struggle to keep these heavy artillery units supplied with shells, particularly with its aging supply system. Finally, U.S. and ROK forces will quickly begin hunting down units participating in the bombardment, causing their numbers to drop almost immediately.

May 05 – For most armies, artillery is just one component of an all-arms force consisting of infantry, armor and artillery. But North Korea's curious strategic location, with the enemy capital

within striking range, has turned the country's arsenal of howitzers and rocket launchers collectively into a weapon of mass destruction,



capable of reducing Seoul to rubble within days. Or does it? Has the threat to the capital by North Korea's "King of Battle" been overstated?

During the Cold War, North Korea built up an oversized army—and artillery corps—as part of its goal of re-invading South Korea. The North Korean People's Army Artillery Command is responsible for 12,000 pieces of tube artillery and 2,300 pieces of multiple launch rocket artillery over 107-millimeters. The majority of tube artillery are 122-, 130-, 152- and 170millimeter units, and on the rocket side the majority are 240-millimeter units.

Artillery is particularly useful in Korea. The hilly, forested terrain common on much of the peninsula restricts line of sight, shortening direct fire ranges. Indirect weapons, such as howitzers, rocket launchers and mortars, can be useful for striking targets on the other side of a mountain or in a valley. Moreover, mountainous terrain may also block units from receiving longrange artillery support, making it vital for smaller units to have enough artillery firepower to conduct their own local attacks.

During peacetime, North Korean artillery is organized under the Artillery Command, which in turn falls under the Fourth Department of the General Staff's Department's Operations Bureau. In wartime, however, independent artillery units—where most of the heavy artillery is located—would be allocated to corps commanders responsible for carrying out the invasion.

North Korean units are generously supplied with artillery starting at the regimental/brigade level. Each infantry regiment, for example, not only has three infantry battalions but one battalion of eighteen 120-millimeter heavy mortars, another battalion of eighteen 122-millimeter howitzers, and a multiple rocket launcher (MRL) battery of nine 107-millimeter or 140-millimeter weapons. This ensures that regiments can act independently on the battlefield, carrying out attacks without support from headquarters if necessary.

At the next level up, a North Korean division typically has three artillery battalions, including one battalion of twelve 152-millimeter howitzers, two battalions with eighteen 122-millimeter howitzers and a MRL battalion of twelve 122millimeter Katyusha truck-mounted MRLs. The result of all of this is a frontline combat division that has considerably more, on a tube-by-tube basis, firing units than a U.S. or South Korean division.

North Korea is known for some very big guns and MRLs, and these are allocated at the corps level. Each corps has twelve artillery battalions, or about twice as much as what could be expected to be allocated to a typical U.S. corps, split between cannon six and six MRL battalions. The cannon battalions are equipped with eighteen of the infamous 170millimeter Koksan self-propelled howitzers. while the MRL battalions are equipped with eighteen 240-millimeter rocket launchers. During wartime, these are split into two or more Corps Artillery Groups and their firepower lent to support to critical operations—such as breaching the DMZ.

The world got a rare look at the preparedness of North Korean artillery units in November 2010, when the country conducted a surprise artillery attack on the southern island of Yeonpyeongdo. In preparation for the attack a battalion of twelve 122-millimeter MRLs was believed to have been the Kangnyong peninsula moved onto near Yeonpyeongdo. Such rocket launchers are division-level artillery and, according to 38North, this battalion is believed to have belonged to the nearby 33rd Infantry Division.

On November 23, the island was hit by two barrages totally 170 rounds of 122-millimeter rockets—and possibly some rounds from nearby 76.2-millimeter coastal artillery units. Republic of Korea (ROK) return fire was limited by an inoperative counter battery radar, which was repaired in time to direct a strike on North Korean rocket launcher units. Two civilians and two ROK Marines were killed in the attacks. Curiously, the rocket battalion should have been able to fire a total of about 288 rockets, but only 170 actually landed near the island. Of those 170 rockets, only 80 landed on the island itself, the rest in surrounding waters.

North Korea has also managed to turn its heavy artillery, particularly corps level<u>170-</u> <u>millimeter Koksan guns</u>, 240-<u>millimeter heavy</u> <u>rockets</u> and new 300millimeter MRLs into weapons of mass destruction. Since the 1990s, right about the time the Clinton administration decided not to undertake military action against North Korea's nuclear program, the general consensus has been that Pyongyang had enough artillery to turn nearby Seoul, home to approximately 25 million South Koreans, into a "sea of fire" that could see up to one million civilians killed. This apocalyptic scenario has been a trump card against strong military action against Pyongyang, with fears it could order a bombardment of the city as an act of retaliation. A 2011 study by the Nautilus Institute throws a considerable amount of cold water on this scenario. While the sheer number of artillery tubes could theoretically kill a large number of civilians, operational issues complicate matters and push the number of civilian casualties greatly downward. Despite the thousands of artillery pieces, only 700 heavier guns and rocket launchers, plus the newer 300millimeter MRLs, have the range to strike Seoul. Only a third would normally be fired at once, and notional rates of fire would be slowed tremendously by the need to withdraw guns into their hardened artillery sites (HARTS) to shelter them from counter battery fire.

Other factors reduce the projected loss of life in the greater Seoul metropolitan area. The city has extensive air raid shelters for civilians that will quickly reduce the exposed population density. The North will struggle to keep these heavy artillery units supplied with shells, particularly with its aging supply system. Finally, U.S. and ROK forces will quickly begin hunting down units participating in the bombardment, causing their numbers to drop almost immediately.

Finally, the North would face a strategic dilemma. Artillery used to bomb Seoul could not be used to soften up border defenses for a general invasion, and in wartime it would be critical to capture the enemy capital quickly as possible. An all-out bombardment of the South Korean capital might very well leave Pyongyang without the ability to actually capture it, while at the same time ensuring a U.S./South Korean counteroffensive that would spell the end of the regime of Kim Jong-un. Even if a million civilians were killed in Seoul it would ensure Kim's untimely demise, and from his perspective that is still almost certainly a very bad trade.

North Korean artillery will undoubtedly play a very large role in any future conflict. While the Korean People's Army certainly has a large amount of cannon and rocket artillery, recent experience suggests that it falls short of its actual potential. Furthermore, while an artillery attack on Seoul would undoubtedly cause a great deal of civilian casualties, there are numerous factors involved that would give the North pause before unleashing such a scenario. This should not necessarily embolden hawks to use force against North Korea; the ideal future is still one in which the country's plentiful artillery is not used at all.

**Kyle Mizokami** is a defense and national-security writer based in San Francisco who has appeared in the Diplomat, Foreign Policy, War is Boring and the Daily Beast. In 2009, he cofounded the defense and security blog Japan Security Watch.

#### **Additional Security Layer for Large Public Areas**

Source: https://i-hls.com/archives/91121

May 06 – For security practitioners, it could seem impossible to catch everything that happens in wide, crowded spaces such as airports, stadiums and other large, public venues that require surveillance systems.

A new technology developed by the Department of Homeland Security (DHS) Science and Technology Directorate (S&T), the Immersive Imaging System, is a 360-degree, singlevantage-point surveillance capability. Funded by S&T and developed at the Massachusetts Institute of Technology Lincoln Laboratory, the innovative system could provide security practitioners with vastly greater imagery than any prior camera system, collecting visual data that is both clear and comprehensive.

Offering high-resolution images and 360-degree coverage, the system provides full scene situational awareness of areas of interest with rapid forensic

capabilities and real-time actionable data analytics.



The technology provides a more continuous means of surveillance, especially in congested locations such as airport terminals, with all directions simultaneously, adding a new layer of safety to high-impact locations. Using up to 50 individual, high-resolution lenses,



thousands of people filtering through daily. "Currently, there is a clear divide between monitoring pre-checkpoint, the checkpoint, and the secure area once passengers are cleared. In the future, we want to be able look at the whole process, from the curb to the checkpoint," said John Fortune, S&T Program Manager.

"The Immersive Imaging System will enable situational awareness across an entire airport terminal."

Moreover, many cameras today are pan-tilt and must be pointed directly at areas in need of surveillance, forcing operators to choose either a high-resolution view of a small area or a lowresolution, larger area view. The new platform transforms 360-degree surveillance by delivering a resolution sufficient to identify a person's face at distances up to 100 meters in the system stitches the many perspectives into a single, continuous image. The system's graphical user interface incorporates viewer software with detection and video processing algorithms, delivering a constant, allencompassing feed, Fortune explained.

The platform allows multiple operators at once to scan and zoom across the whole 360-degree span digitally, selecting areas to designate for automated alerts as well as play back archived footage to review critical events.

Full-resolution footage can be stored and retrieved from the camera for up to 30 days, and image compression allows for efficient capture of data.

The system's storage solution enables extremely high data rates, which further supports real-time surveillance, according to newswire.com

# Not just balloons. Helium shortage may deflate MRIs, airbags and research

Source: <u>https://eu.usatoday.com/story/money/2019/05/10/helium-shortage-could-deflate-</u> mris-manufacturing-and-research/1169464001/





# THE NINDA MISSILE

# Reaper drone carrying the missile flies over target Front view Blades The missile is then dropped from the drone and locks onto the target 2 It extends SIX blades moments before smashing into target

The blades can cut through roofs of cars. Al-Qaeda deputy leader was struck by a Ninja missile in 2017 in Syria

#### **Crowdism**

Source: http://www.anus.com/zine/articles/crowdism/

History may run in cycles, but each era has its distinctive flavor, and those form the methods by which its part in the process of history is fulfilled. In our modern time, we have uniquely united the world through centralized media, by which someone in one location produces what comes to be known as the official



"truth," and it is then distributed throughout the globe almost instantly. The people of earth, conditioned to require the absolute "truth" from central agencies on matters of commerce and governmental regulation, promptly extend the same courtesy to political and social truth as conveyed by the "official" media.

The result of this is that a small group of people create our public perceptions of events; the events happen, and the rest of us, who are fated to find out about them second-hand in any case, rely on the descriptions of those events relayed to us by this centralized source. In such a climate, it is not surprising that there are errors in our perception of reality, as all that is required is for those in the "official" truth-telling capacity to miss a detail or, more likely, be convinced for social reasons that they need to hush that detail. It will put people out of jobs; it will make people feel bad; they don't need to know what they can do nothing about; it will not benefit your (you, personally, the guy responsible for putting out the news) career.

#### Who Owns Truth?

Another way of saying this is that if fifteen people witness an event and give roughly similar testimony, barring any prior agreement to collusion among them, it's a lot more accurate than if there's only one eyewitness who also has a vested interest in how the outcome is viewed. If the landlord of a building is the one person to witness its burning, and he claims it was the reckless conduct of the tenants and not shoddy construction that allowed the blaze to devour the complex entirely, how likely are we to wholly believe him? After all, he has a reason to lie that directly benefits his livelihood. The same can be said of our media, who eat based not on the degree of truth to their stories, but the degree of human interest. They sell drama, but not difficult truths, as those will make one unpopular enough to be bankrupt.

For this reason, it has been very slowly that discontent has built in our society, because for most people, there was never any reason to trust the official version of events until now. We were told foreign dictators were bad, so we all banded together and crushed them. We were told that we needed to buy certain products, so we did, hoping to keep our families safe and



futures secure. We were told that it was important to believe certain things, as they were ideologies of the future, and through this "progress" we got to a better life; who doesn't want that? Most of us live in small worlds, focused around family and friends and local social community, and we don't want more than that. Nothing is more admirable, since this is a view of life that negates fear of death and embraces what life offers the individual outside of social and monetary absolutes. It's a healthy, normal existence.

Yet these small worlds have been shattered, as despite our armies of scientists and reporters and researchers, these problems crept up on us: global warming, terrorism, mass immigration, economic collapse. It's well and fine to have missed a few fragments of information here and there, and to be surprised by a shortfall in a government program or a new population trend, but how does something as big as global warming sneak up on us? That's like getting ambushed by a glacier. Undoubtedly, the thought that hit many minds when after years of fighting the story, our news media and politicians finally gave in and said, "Aw shucks, this global warming thing is real," was quite simply that either we're being told a partial story or, more ominously, that these people do not care enough about reality to get the whole story. This puts an image in our minds of, instead of diligent and honest guardians, profiteers running the show who leave it to us to survive as we can.

With this sudden distrust of the "truth" upon which our society is based comes another sobering thought: for things to get this out of control, where we are controlled by predators who seem oblivious to our future, something must be fundamentally wrong about the way we're governing ourselves. As said before, most people are content to lead local lives, but our world is now so interconnected that government rarely stops at the town, city, parish or county. If people in distant nations screw up and dump uranium into our oceans, we get the cancers here just as fatally as anywhere else. Should negotiations fail and nuclear war rain death upon us, our localities - which have been quietly going about life - are no longer autonomous, but targets belonging to whatever political entity incurred ire. Our lives are bound up in the fortunes of the collective, and when it errs, we are the ones who pay. How do you hold a government, or a corporation, or a world governing body responsible? You can haul out the people in office and shoot them, but that is little recompense for the vast amounts of good things destroyed by the errors of such leadership entities. If we follow this chain of thought to its logical conclusion, then we are - as a species - ruled by distant forces who have little accountability for the decisions that affect us, and may be motivated by self-interest more than the best interests of the species as a whole. Modern people are so used to long strings of words that mean nothing, so this is restated in the vernacular: you are under the control of people who are leading you to their profit, not yours. Even more, if you resist, other people - well-meaning, normal, healthy people - will do their best to kill you, believing that they are destroying a dangerous deviant and not someone with a rational objection to the system as a whole. In other words, the world is turned upside down; truth has become a fabrication, the predators are in control, and dissent is not tolerated in any way that will have actual effect. If one were paranoiac, it would suggest an evil force in control of this world.

#### Deflection

Yet it is the demonic nature of this process alone that provides us a clue to its origin. No human organization in history has been so well-managed that it could pull off a conspiracy of this nature without revealing itself or collapsing in infighting. Whatever engendered this particular mess did not have a leader, or a central organizing principle, although it has manifested itself in centralized authority. A systematic change to this kind of order comes through a shared assumption, much like when a group of friends, upon perceiving their favorite bar is closed, meet at the next most likely place without having to communicate the name amongst themselves. More than a leaderless revolution, it was an unconscious one: those who brought it about had no idea they shared an ideology, or no idea what its name might be, or even why they did it. They simply did it because it was natural to do, and because nothing has since opposed it, it continues to this day in grossly simplified form.

We are tempted by the opposite conclusion, because if we were able to find a single easy cause, like removing a jam from a machine we could yank it out, and by mathematical simplicity, would have all of the good in society with the negative removed, thus an all-good society. When was the last time life was that simple? Any infection on the level of our assumptions has pervaded our society at its lowest level, that of its values and worldview.



We could blame language, or x=y thinking, or sin waves of emotion, or any of the other detours that have absorbed our best liberal thinkers looking for a symbological fix to our problem, but really, these are just the devil's messengers. What's wrong isn't us; it's what we think we believe, and even if we say we want to fix it, our minds have become mesmerized by a certain outlook on the world and are unwilling to leave it. Thus our disease remains, since even when trying to excise it, we re-affirm the infection by assuming the necessity of its component parts.

It's like the mafia boss who's determined to root out the informer in his organization. He and his personal secretary interview all of his department heads, and after some theorizing, they put the worst of them into the bay. But the next time a bust happens, the boss realizes he's still infected. He goes after every person he can think of, but can't ever clear himself of the informant, until one day he's put into jail. You can imagine his shock when the star witness comes out to confront him: his personal secretary! In our case, as moderns, the disease is worse than an informing secretary; it's within us. There is no clearer evidence of this than our mania for deflection. Is it the Communists? Then the other side whispers: it's the Capitalists. Is it the drug-users? The hackers? The terrorists? The Nazis? Who else can we blame - what do we do when we finally run out of people to blame? (It's not fair to let the right off the hook either: it's not the Negroes or the Jews that are the root of your problem, although their presence can be argued to be a symptom!)

All of these futile attempts have failed, since even when these demons have been exorcised, the disease has remained. That is not to say that these attempts have not improved the situation, only that they haven't gotten to the core of it. Think for a moment: what sort of problem is it that one cannot identify and root out? The simple answer: one you cannot tell to another person, and therefore, even if you know it, no one else can work on the problem - and in modern society, every problem is too big for one man. Imagine working with another police inspector on this case. You can tell the guy everything except that which might potentially hurt his feelings. So the investigation goes on, and despite your partner being slower than you are, he puts his heart into it. At the end you have no answers, because both of you don't know the answer, even though it's in your knowledge.

The dirty little secret of the West's collapse is that it has come from within. The extent of our modern disease is revealed by the fact that when we think this, we immediately try to blame either everyone, or no one. We are afraid to blame a process and implicate certain people as its methods. And why not? We're not passing moral judgment, claiming them to be the spawn of Satan, as our leaders do to enemies during wartime. All we are saying is that they, by what they do, have caused a massive problem. The real social taboo broken here is the unstated obvious: in order to fix the problem, we have to *limit their sainted "freedom."* Nevermind that few people actually need freedom. What they want are normal, comfortable lives, without other people intruding in upon them and telling them what to think. That's not freedom; it's common sense and common decency. People like to conceive of "freedom," however, as a limitless absolute. "I can do anything I want," they say, forgetting that most of what they actually want falls within the narrow sphere of what benefits them in a practical sense. You could make sculptures out of your own mucus... but do you need that "freedom"?

Yet any person who advocates breeching that "freedom" is portrayed to be a bad guy, which is interesting, since in times without freedom, there was not such widespread deception where a few people could control "truth" for an entire planet, even if through the quasi-voluntarily methods of television and entertainment media. To a thinking person, the fear of losing "freedom" is another type of deflection: finding something irrelevant to the cause to blame. It's psychologically very easy, actually: to blame something external divides the world into two segments, the desired and the undesired. In actuality, it makes no sense to divide things that already exist into desired/undesired, because the only thing that can be desired is an *outcome* and by definition anything but that outcome is undesired - yet outcomes usually occur in partial degrees, or with modifications, so that kneejerk response makes little sense. When manipulating the masses, however, it makes sense to tell them that the world is divided into

"freedom" and those who hate freedom, as they react more quickly to the positive *feelings* associated with "freedom" and only more slowly to the logic trap into which they fall. Heart first, then brain - even with very smart people.



#### Crowdism

This emotional process of trying to solve logical issues is obviously paradoxical, but it is the foundation of our modern morality, which is derived in part from Christianity but has previous antecedents; this means that while Christianity (as practiced by most, not the happy few who've made a real religion of it!) embraces this ambient quasi-ideology we are describing, it is not the sole origin of it. Rather, morality of this type has been with the world since its earliest days; it is not a new invention, merely a less successful one, thus one that was until recently alien to our societies because many generations ago we transcended it. It is a belief system based on appearances: emotions come before logic, personal boundaries come before the necessity of doing what is right for all, and abstract divisions of "good" and "evil" regarding *intent* come before a realization of the effect of any action. In short, this is a belief system which manipulates by preventing certain actions rather than by recommending others, and it attacks before any action is ever committed.

When we remove all the irrelevant theory, what becomes clear is that this is a belief system designed to protect a type of person; that is why its negative, preemptive assessment. It does not have a goal. It does not have a goal. It does not have an ideology. It is wholly negative in nature, in that it identifies certain things that are destabilizing to those who find it important, and it attempts to censure and criminalize those. It in fact replaces the idea of having a goal with the idea of not doing wrong, and thus restricts what can be done to those whose actions might be so selfish that any sort of goal would conflict with them. These sort of people might be described as passive criminals, then, since what they do is not outright criminal, but by being what is done *instead of* pursuing a healthy goal, and by requiring a morality that prevents others from interrupting it, it supplants the seeking of a healthy goal. It is thus a crime of omission if nothing else.

Another way to look at it is from this angle: imagine that something needs to be done for the good an entire community. Healthy people are willing to make sacrifices for this. But some would prefer to rigidly negate that proposal because it interferes with their personal fortunes or convenience. By doing this, they are dooming the community in the long run, even if it means they get to keep whatever it was they desired in the short term. These people need some kind of protection that, no matter what the overall goal is, justifies their selfishness. Even better, it should eliminate the concept of overall goal, and focus only on the individual. To do that, a morality was created which banned actions and not goals, effectively hobbling any goal-setting because any real change will always infringe upon someone's little world. Morality is the assertion of personal reality as a higher value that physical, this-is-the-real-world-pay-attention reality.

We can diagnose it: solipsism, or perhaps a low grade sociopathy, or even in the simplest terms, selfishness. It could even be described with fancy academic terms like materialism, meaning a focus on material comfort that places all ideological concerns at distant second, or absolutism, meaning a creation of a false abstraction that governs how we see reality. What reveals its nature the most however is understanding the type of mentality that produces it. To do this, we must go to folk wisdom, in which it is recognized that what people would not do as individuals they will do as a mob. Under social pressure, people will take drugs, torture one another, steal, lie, cheat and delude themselves. If they *internalize* that social pressure, they will do these things without the presence of others because they are aware of the eventuality of having to interact with those others. In this sense, the mob mentality can extend to those who are alone, because in their minds the rest of the mob is always there.

This behavior transcends ideology. One can as easily assume the identity of a Green, or a modern Republican, or a radical neo-Nazi, or a harmless Democrat, and still wield this belief system. It can strike any social class, any intelligence, at any age, although it tends to be supported among the lower middle class young of moderate but not genius intelligence. It does not require awareness of its own presence; those who are its carriers never would know it by name, and most commonly believe they are fighting for something else when they strike out with it: justice, "freedom," equality, love, peace, happiness, wealth. Even more tenacious, it is based in the emotions of the individual, so it does not succumb to rational

argument. It is there because it is the intersection of a person's emotional need and their lack of higher reasoning to keep it in check. In this sense, it is part ideology -- and part pathology, or disease.

It makes the most sense however to give it a unique identification, since it is so prevalent that any other reference would be ambiguous: Crowdism. The belief, whether known in



language to its bearer or not, that the individual should predominate over all other concerns is Crowdism. We name it according to the crowd because crowds are the fastest to defend individual autonomy; if any of its members are singled out, and doubt thrown upon their activities or intentions, the crowd is fragmented and loses its power. What makes crowds strong is an inability of any to criticize their members, or to suggest any kind of goal that unites people, because what makes for the best crowds is a lack of goal. Without a higher vision or ideal, crowds rapidly degenerate into raiding parties, although of a passive nature. They argue for greater "freedom." They want more wealth. Anything they see they feel should be divided up among the crowd.

Crowdism strikes anyone who values individual comfort and wealth more than doing what is right. People of a higher mindset leave situations in a higher state of order than when they were found. This requires that people form an abstraction describing how organization works, and create in themselves the moral will to do right, and thus embark on a path that is not accessible to everyone: the smarter and more clearsighted one is, the greater likelihood exists that one is realizing things that an audience of average people have not yet comprehended. For this reason, Crowdists hate people who leave situations in a higher state of order than when they were found. These people threaten to rise above the crowd, and thus fragment the crowd by revealing individual deficiencies again, and that steals the only method of power the crowd has: superior numbers and the illusion that everyone in the crowd is in agreement as to what must be done.

In short, a crowd does not exist except where underconfidence unites people who, being unable to lead on their own, find solace in the leadership and power of others. They want to be in control, but they are afraid to lead, and thus each person in the crowd delegates his authority to others. The crowd therefore moves not by choices, but by lowest common denominator, assessing each decision in terms of what all people in the crowd have in common. Predictably, this makes its decisions of such a base nature they can be guessed in advance. A crowd derives its momentum from the need of its members coupled with their fear of their own judgment. Taking impetus from the need, it asserts itself violently, but because its only mechanism of decision-making is radical compromise, it moves passively toward predictable resolutions.

Crowdists love "competition" of a fixed nature, where a single vector determines the winner. They do not like real life competition, including evolution, as it assess the individual as a whole and does not simply rank individuals by ability. For this reason crowds love both sports events and free market capitalism, as each allow people to gain power according to a linear system. The more time you put into the system with the sole goal of making profit, excluding all else, the more likely it is that you can get wealth - and it can happen to anyone! That is the promise that makes crowds flock to these ideas. It is like the dream of being a rock star, or a baseball hero, or a billionaire: what makes it attractive is the idea that anyone can do it, if they simply devote themselves to a linear path of ascension - one that is controlled by the whims of the crowd. The crowd decides who is a baseball hero, or what to buy and thus who to make rich. Control without control.

Of course, since the crowd has disclaimed all true idealism, its only ideology is that of personal gain. It is by nature opposed to culture, since culture establishes a values system against which one can refer any potential choice to determine its viability in the community's preference. Crowdists like to replace culture with the grandfather of multiculture, which is the idea of a *facilitative* society, or one in which the only goal is to satisfy its members. In this vision, a common goal or even standard of society is not needed. Society exists for its members to fulfil their personal needs, and it explicitly disclaims the ability or need to oversee those, unless they violate the basic tenets of Crowdism, of course. Crowdists naturally embrace both internationalism, which denies local culture in favor of an international culture of novelty, and multiculture, which mixes cultures with nothing in common and claims to be satisfied with any result. Crowdism is not a decision any more than cancer is a design for a new organism; it is the lack of decision, of goal, of design. It is not random, however, so unlike chaos, it is a predictable and rarely-changing order. Some would call it entropy.

Any ideology is automatically dominated by Crowdists. They were at home as Marxist radicals, but equally happy as conservative American capitalists. Crowdism is not an ideology, but an emotional response. They view any ideology as a means to an end, and



that end is Crowdism itself, although Crowdists cannot put this in words - they're part of a Crowd, remember, which means they don't make choices as much as force compromise, and by the nature of something akin to dialectical materialism, compromises always move "forward" although toward eternally the same goals. They will dominate any democracy, and turn it away from encouraging excellence toward subsidizing weakness. They will dominate a totalitarian state, humbling it by making its appeals to its proletariat and winning their allegiance through unreasonable concessions. They will use corporations to dominate a culture, producing products that reward those of a Crowdist mentality, while ignoring the needs and desires of those of a higher mentality. Even a non-ideology will be dominated, as Crowdists will use social pressure where there is a lack of decision-making.

#### **Characteristics**

Among all human phenomena, Crowdism is unique in that it turns timorous individuals into a dangerously assertive group. Crowdism appeals to those who are underconfident. They're unsure of their abilities and fear that, in a competition like that of evolution, where many factors at once must be measured and one's judgment and character are essential, they might not come out ahead. In fact, they have a sneaking suspicion they'll come out behind. This is only logical, since those with such abilities have no need of a crowd, and therefore only very rarely become Crowdists (usually in cases of: drug addiction, child abuse, mental illness). The average Crowdist needs a crowd to do what he or she could not do alone, including not in the least the process of making decisions. The crowd provides anonymity and the illusion of a cause. Crowdists are underconfident, thus incapable of the kind of assertive and creative action by which one glances at a situation and calls the shots; therefore, all of their modes of action are passive. They cannot strike without first having been struck, but it's perfectly acceptable for them to provoke others with a thousand small irritations until the other responds, then to retaliate with full force. Notice how America has entered her wars: placing ships within range of Spanish saboteurs, sending passenger liners full of weapons to be torpedoed, cancelling steel shipments while giving a fortune in weapons to an enemy. It is a brilliant strategy, in that one never has to make a decision: one is always the injured party and therefore justified in responding, even if it ends up being to one's advantage.

Crowdists have a great fear of mortality, which is linked to their fear of evolution. They do not have a value higher than their own lives; there is nothing for which, unbidden, they will give their lives (although they will gladly give them, in anger, when having provoked an enemy, they are able to embark upon their "justified" response). This shirking personality and lack of self-confidence manifests itself in a form of cognitive dissonance that creates an inverse response to the failings of confidence: the less the person feels confident, the more egomaniacal they are, at the expense of being able to accurately perceive external reality. As a result of their need to supplant underconfidence with ego, they turn off any external feedback which could prove critical of their selves, and therefore lock themselves into a world composed entirely of the self. This creates a crowd of little queens. They demand "proof" - someone must hold up something tangible and show it to them, and have it be simple enough that everyone in the crowd yes even the deaf mute hunchback can appreciate its significance; this is why crowds do well with butchered babies, torpedoed ocean linears, gas chambers and gassing Kurds, but do poorly with concerns about global warming, genetic fragmentation, or pervasive ignorance. In fact, they seem to treasure their ignorance in the same way that higher people treasure their innocence. Crowdists like to keep things simple so as not to distract from the basic focus (themselves).

The term "lowest common denominator" has almost become a cliche in our society in that it explains so much. A group of people - an electorate, a committee, a mob - gets together, and soon a once-promising idea has through compromise and censorship (the removal of that which might offend, or shock, or be contrary to already-well-established tastes) become distilled down to something completely acceptable to every member of the crowd. The only problem is that, in the process, it has come to resemble *every other* 

action that the crowd has been known to take. No matter - the same old thing dressed up as something new serves a dual function, in that it both provides novelty and, by virtue of being essentially similar to everything else, avoids presenting people with stimulus they cannot recognize and thus immediately know they can handle. Low self-confidence reveals itself in situations where the unexpected occurs. Crowdists like to minimize that by dumbing



everything down to the lowest common denominator, at which point they feel they dominate it and in that state of control are no longer threatened by it.

The paradox of crowdism is that because these people refuse to have a long term vision, they have nothing worth dying for, and therefore their lives are empty of meaning and they respond with the hollow attempts to control that comprise Crowdism. It is as a pathology much like overeating, in which case one confuses the signal for being full, which eliminates psychological doubt, with the process of eating, and hopes that by eating again and again to banish doubt (which increasing doubt in direct proportion to girth!). If they had faith, or belief in doing something which does not immediately reward them, or the vision to see the benefit in doing things which help the community as a whole but in the distant future, they would not have this gnawing emptiness. Civilizations in the past saw fit to make such people into serfs and servants, such that others could give them causes, and they could both be kept from being destructive and given a raison d'etre which would sustain them for their natural lives. Crowdists will never admit it, but secretly, they have a desire to submit to authority because they do not trust their own judgment.

Indeed, there is somewhat of a sadomasochistic nature to Crowdism. For every crowd that exists, there will be some who manipulate it expertly; as in a microprocessor, most of the circuits do the mechanical work of computation while a few are responsible for at key moments switching the flow of data. Such is it that some of the voices who shout out at opportune times are to redirect the crowd, such as the classic "He's getting away!" screamed by an anonymous crowd member and provoking a stampede to bring down the suspect. Others simply profit from the crowd. By far the best way to profit from a crowd is to pretend to be its servant, as its memory is short and being underconfident it loves to be flattered, and therefore rarely notices that its servants are robbing it blind until it is too late for anything but revenge; the thief is killed, yes, but the money has been spent, and the crowd feels even less confident when its blunder comes to life, so it rages on to the next event in a search for something of substance to occupy it. Always eating and never full. But the manipulators of a crowd eat well.

If one were to divide up a population according to "Crowdist theory," there would be many sheep, a few born leaders and a larger group of shrewd people who lack the capacity of a true leader, but are mentally agile enough to manipulate the crowd and make a profit from it. These are your Josef Stalins, Ken Lays, Ivan Boesky, George W. Bushes. They are cynical enough to realize that the "ideology" of the crowd is nothing but lies, and its actual agenda is power. They recognize that the crowd loves gaining power through revenge on those with more talent, intelligence, beauty and character than itself, and these manipulators create bogeymen and justifications faster than the crowd can decode them. However, to be a manipulator in a crowd is to be acutely conscious of belonging in the crowd; after all, if one did not *need* the crowd, something else would have been the path. Thus manipulators both love and loathe the crowd, appreciating it for being the vehicle of their own greatness, but hating it for being necessary and thus constantly forcing them into the role of gentle servant when their inner wolf-personality seeks to escape and manifest itself. Manipulators are like drug dealers: they realize too late that their profession will consume them by forcing them into a function, and thereby eliminating any hope they ever had of making decisions about their own lives. They follow the function, and therefore, all of their choices are reactions; there are no independent choices to be made.

The dominant characteristic of a crowd, as mentioned by F.W. Nietzsche, is the desire for revenge: they detest anyone gifted by nature with more than they have, whether it is wealth or natural traits. Much like ancient tribes who believed that eating the organs of an enemy would transfer his power to the eater, Crowdists believe that destroying others raises the Crowdist's own stature. Their primary weapon is equality. By insisting on one level for all people, they have an excuse to curtail the higher abilities of those who rise above the crowd. Further, they have the ultimate weapon, in that since equality sounds good on an emotional level, it is perceived as a good, and thus anyone who resists its advance ("progress") is automatically a bad guy who has transgressed, and thus against him or her retaliation can be launched.

This is the ultimate threat of a crowd, which is expressed in a simple syllogism: I. Our way is the path of good intentions, equality. II. If you are not for our path, you are against good intentions and will attempt to destroy us. III. Because you will attempt to destroy us, we will destroy you first. It is a mental trap of epic proportions: if one joins the crowd, one has agreed to limit one's own abilities to the lowest common denominator; if one resists the crowd, one



is styled as the aggressor and destroyed by direct force. At the point when the question of with-us-oragainst-us has been asked, the battle is already lost, as the Crowd have gathered behind the questioner with torches that could just as easily be applied to the dwelling of the questioned as toward a feast in her honor.

#### Effects

The effects of Crowdism take many generations to fully permeate a society. Indeed, Crowdism is like the effects of aging on each of us: we start aging the instant we are born, but at some point, the effects of years have piled up enough to carry us off. Crowdism exists in every society, but to varying degrees, and as societies age, it increases. Almost all societies on the brink of death are totally dominated by Crowdism, which helps carry them off as it paralyzes the decision making capability; if your population sees only its own gratification, who is going to mobilize it to fight an enemy while the enemy is still distant? By the time the Vandals reach Rome, the battle is lost, but the Crowd will never respond until directly attacked, so will blissfully ignore the assailants until the battle has begun. Disorganized, the crowd responds slowly and then panics, abandoning the empire to its lessers, who promptly destroy it. It is for this reason that everywhere a great society once stood, there is now a barely technological, semi-literate society distinguished mostly by its lack of ambition. These are people soul-weary with combat and with power, and they have opted for the stage after Crowdist, which is a form of highly granularized apathy. (There's no point studying this in America until after the Chinese, sensing our distraction and inner weakness, invade and crush our centralized authorities, at which point those less-fortunate populations within and surrounding us will consume the spoils.)

In fact, throughout its life span, Crowdism promotes apathy by forcing inane decisions on people and threatening them with passive aggression if they refuse. This could be seen most clearly in the former Soviet Union, where people quietly worked around any number of absurd proclamations and dysfunctional government agencies. They realized that things were hopelessly broken, but that the first person to speak up about it would be torn to pieces by the crowd, thus these things had to be tolerated. And what a disgusting word "tolerance" is - it means to recognize something's inaptitude, but to ignore it and even accept it. Accept mediocrity. Accept failure. Accept the lack of a goal. This beats people down into a state of submission which periodically polarizes itself and becomes violent, as if all of the psychological energy kept suppressed when given an outlet explodes to the surface in a form beneath rationality or even an organized emotional state. It is this form of passivity that is idealized by religions such as Judaism, which clearly arose in a civilization which had already reached this degree of apathy, and therefore was little more than a survival guide. Some would say that Asia went down this path thousands of years before the West, and thus through submission achieved the uniformity for which Asian culture is famous.

The "morality" of the Crowdists affirms the importance of the individual over doing what is right. A society based on this lack of choice, and lack of goal, is inherently frustrating, and thus breaks down all but that which Nietzsche called the "last man." The last man is someone who cares about nothing but his own material comfort. Does he have an expensive car? Enough to watch on television? Get to go out to the clubs that others covet? And have a trophy girlfriend? -- if so, he is happy. No plan for the future, and no significance to these things, other than that he owns them and therefore can construe his personality - that externalized "ego" that we insist is a social construct, a form of personal *marketing* - as a success as a result of them. The last man does not fight the good fight; he instead does what benefits him. He looks upon ideological conflict as silly, because he is inherently submissive to the external order and thus never thinks of changing it. His revenge upon it is to profit from it, and to consider himself smarter and better than all the others for not having been fooled by value, and possibly having given up his life or his career in some crusade to do what is "right," instead having been more competitive and shrewd and enriched himself while others fought ideological battles. The last man is an opportunist, a profiteer. He is like a

Satanic Zen monk, in that none of his energy is wasted on emotional display. It all goes toward The Bottom Line, a.k.a. making him feel better about himself (an intangible state) through an increase in tangible things like wealth, prestige, and power.

Last men are the type of people who are manipulators of the Crowd, only a more advanced version than the somewhat masochistic "leaders." A last man simply takes and has no



emotional reaction. Where a leader like G.W. Bush or Kim Jong-II is cynical, and kleptocratic, he still has some degree of emotional response in him; in contrast, a Stalin is without emotion entirely and feels no reason to respond to his changing fortunes, as he is busy focusing on the only thing which matters, which is increasing them. When things go badly, he schemes for recovery, wasting no time on reaction or indulgent displays of emotion. A Bush might have some days of depression, or stumble in public, but a Stalin remains impassive, his iron grip unchanging, knowing that only discipline and a lack of emotions will restore his power. Over time, the last men rise in power through their lack of response, and those with emotional excess descend through an inability to stay focused on the goal. When one descends, one becomes part of the crowd. We call those who have descended Undermen, because they have viewed the challenges of life on several levels and opted to run away or take a course of profiteering, yet have not succeeded even in that through their lack of discipline, which is essentially the ability to see that events distant in time are as important as events proximate in time, because time is continuous and for plans to succeed one must unite the moments in an ongoing series of planned developments. Undermen do not plan. They do not think. They react; where the last man is deliberate, the Underman is impulsive and fired with a consumptive desire for revenge, since to an Underman the world is grossly unfair: because his reactions are out of control, he cheats himself out of everything good that comes his way, and therefore always feels that others have been gifted where he is deprived.

Undermen are sabotage incarnate. Like other Crowdists, they are passive in nature, and therefore will never directly assault an enemy. To live among them however is to constantly clean up after them, and to double-check anything they do, knowing that more often than not they will subconsciously leave things in defective and dangerous states, hoping in their inner minds that others who are more fortunate than them will be destroyed. Where true last men plan their pillaging and execute it with detail, Undermen execute clumsy and violent thefts. Undermen like to live in their own filth and keep others out of the clubhouse of their filth, associating around them others that they can dominate. Undermen exist at all stages of the Crowdist process, but it is most revelatory to point out that a successful Crowdist revolt will after many generations have converted the entire population into Undermen, and thus have plunged the civilization into disorganized, self-afflicted third world status for the next thousand or more generations. Undermen are saprophytes. They compensate for lack of higher function in themselves by destroying those who do have it, or the works of those who did, under the assumption that if it cannot be seen it will not exist to remind them of their essential spiritual hollowness.

#### **Back to Now**

The Crowdist dilemma puts us modern humans in a bad situation. As the reader may recall from the first paragraphs of this document, we are manipulated by centralized reality representations that are subject to the same influences Crowdism places on all other reality. The weapon of Crowdists is passivity; if they are "offended," their retaliation is justified, because they are the blameless ones bringing *us* the progressive and superior doctrine of equality. Equality of course does not allow us to tolerate offense, because if anyone feels less than equal, the crowd falls apart and cannot protect equality. The logic behind crowdism is like a musical scale, in that if one starts on any note and runs through the logic, soon one has followed the scale back to its origin in a repeating, endless pattern. The crowd in its view is always right, and its goal is to remove those who would prove it be a paper tiger, e.g. only a crowd of underconfident people and not the ultimate authority on morality it would like to pretend to be.

Looking at our situation practically, we who are not yet absorbed by the Crowd are in a rough place: we cannot strike out against the crowd, and yet we cannot continue to tolerate it, or it will eventually reduce our civilization to third-world status through backhanded destruction of all things higher than its non-goal intentions. Even more, as it has crept within our society, it has spread its agenda of destruction against any higher ideas or ideals. Crowdists triumph through greater numbers, and with each generation of Crowdist control, more people submit out of exhaustion, and thus swell the numbers of

Crowdists. It is not a conspiracy; it is a cancer. Since Crowdists have the purchasing power in our society, and the popularity, they ignore any higher visions. A product designed for those who are not Crowdists will not be boycotted, only bypassed. Those who speak up about the truth of the situation, or any of the details associated with the truth that can be



construed as offensive (women and men are not equal, races are not equal, individuals are not equal, decisions are not all equal) will be branded a heretic and, while no overt action is taken against them, they will passively be denied opportunity until they accept their destiny as a janitor or in rage against the injustice lash out, become an aggressor and are killed. Remember, Crowdism is negative logic. It does not set out to establish an ideal as much as remove those with ideals, as those conflict with its paradoxical worldview, which is that of facilitating individuals rather than uniting individuals with a goal. Crowdism is anti-aspiration, and anti-organic. It only approves of systems where one individual is in power, or all are equally in power, and thus nothing gets decided.

Yet society continues its decline, and with the appearance of Really Bad News like global warming and economic instability, there is again chance for change. During the Great Depression, America could have easily swung into a Communist state; during the Viet Nam war, political instability led to directional changes (unfortunately, both options were and are Crowdist to the bone). We are heading toward another such nodal point in the neural net of details that determine whether our civilization heads in an ascendant way, or descends back into third world status, from which we all came and toward which all societies fall. With each failure of our trusted information sources, and with each incontrovertible proof that our "truths" are not reality, we get closer to radical alteration in course. The problem is of course that, as in most revolutions, ours is mostly likely to take with it the assumptions of its previous masters, and thus to recreate their reign with new faces. This is why accurate diagnosis of Crowdism is essential. One can switch to Communism, to Tribalism, or even to Anarchy, but as long as the assumptions of Crowdism remain, the path is barely altered and the end result is the same. If we wish to transcend Crowdism, we must first restore our heroic outlook, by which there are things for which we're willing to die, ideals we hold more precious than life itself. By thinking in parallel, and not in terms of organizing everybody as equals to undergo the same mechanical process and thus cure us all at once, we can move the best people among us to greater heights and slowly bring the rest of us to our respective places. We can deny equality in all of its forms, as it is a crazy doctrine that ends in the norming of us all. Localizing government and turning away from single points of informational "truth" helps as well. Even more, we can finally break the taboo barrier and tell individuals that they **cannot** have it their way and also participate in a non-failing society. All of these methods will help defeat the Crowdist disease, but it is not defeated by method alone. It requires that we take on a reorganization of our own minds so that we avoid falling into the underconfident, anti-heroic thoughts of Crowdist. It requires that we value actual truth above any socially convenient illusion, or friendly distortion of the truth. We must face facts and stop taking them personally. To an awakened mind, our faults and strengths are visible, and so what we think of as hidden will soon be no secret to the post-Crowdist people who will rise if we succeed. For this reason, we must transcend our personal pretense and ability to be offended. The truth will set us free - perhaps not, but the pursuit of truth for its own sake will free us from the cancerous plaque of Crowdism and its millennial reign over our society.

# Turkey and the new scramble for Africa: Ottoman designs or unfounded fears?

Source: http://www.homelandsecuritynewswire.com/dr20190520-turkey-and-the-new-scramble-for-africa-ottoman-designs-or-unfounded-fears

May 20 – Turkey features regularly in new debates about foreign influence in the Horn of Africa region, as does speculation about its motives. While Ankara fashions itself a benevolent power driven by an <u>"enterprising and humanitarian"</u> foreign policy, Gulf rivals say President Recep Tayyip Erdogan's moves in the Horn reflect a dangerous quest for a "neo-Ottoman" revival. Does Ankara have grand designs on the region, or have its ambitions been overstated? Zach Vertin writes in <u>Lawfare</u> that in confronting this question, three vantage points are helpful: a close look at its recent activity in Horn states, a medium-range focus on regional competition with Gulf rivals, and a wide-

in Horn states, a medium-range focus on regional competition with Gulf rivals, and a wideangle assessment of Turkish foreign policy making at a time of extraordinary domestic change.



#### Love and hate in the 21<sup>st</sup> century



#### New research on immigration, terrorism, and ideology

#### By Alex Nowrasteh

Source: http://www.homelandsecuritynewswire.com/dr20190515-new-research-on-immigration-terrorism-and-ideology

May 15 – Last week the Cato Institute released my latest policy analysis entitled <u>Terrorists by</u> <u>Immigration Status and Nationality: A Risk</u> <u>Analysis, 1975-2017</u>. Much of it is an update and expansion of my original <u>policy analysis</u> on this topic from 2016. I added two more years of data, estimates of the number of people injured, and a handful of non-deadly foreign-born terrorists whom I had failed to include in my original paper. The annual risk of being murdered in an attack committed by a foreignborn terrorist by visa category is very similar to my original study as there were only a handful of victims from attacks perpetrated by foreignborn terrorists in 2016 and 2017.

Overall, the chance of being murdered by a foreign-born terrorist was about 1 in 3.8 million per year during the 43-year period in which 3,037 people were murdered. Foreign-born terrorists who entered on tourist visas were the most deadly, responsible for over 96 percent of

those deaths – largely because 18 out of the 19 9/11 hijackers entered on tourist visas.

The changes to this analysis mentioned above are small, but



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there are two major additions that you should pay attention to. The first is that I included all 788 native-born terrorists during this time by applying the same exclusion criteria that I applied to foreign-born terrorists. It took years and reading tens of thousands of pages of documents, government news stories. dissertations, reports by non-profits, and more biographies of sketchy people than I care to remember. Just for the record, there are a lot of Nazis who have been killed in shootouts with the police but most of them are not terrorists. All 788 native-born terrorists are listed in the appendix. If you think I missed somebody or included somebody I shouldn't have, please let me know.

The second major addition to the updated policy analysis is that I categorized all terrorists by the ideology that motivated them. In order of the size of their body counts, the ideologies are Islamism, Right, White Supremacy, Left, Black Nationalism, Anti-abortion, Unknown/Other, Foreign Nationalism (Armenian terrorists targeting Turks in revenge for the genocide), Separatists (Puerto Rican independence, Texas secessionists, etc.), Anti-specific Religion (anti-Semitic shooters, etc.), Political Assassination, and Religious (non-Islamist).

I decided to separate White Supremacists, Right, and Anti-Abortion terrorists because they are all different ideologies. True, they would mostly all label themselves as right-wing, but this enhanced level of detail conveys a deeper understanding of American terrorism. Most Black Nationalists, Left, and Separatist terrorists would also label themselves as left-wing, but I made the same judgment call and separated them into their sub-ideologies for the same reason. Similarly, separating Islamist terrorists into Sunnis or Shiites wouldn't add much clarity so I didn't do that.

After the Christchurch mosque terrorist attack in New Zealand in March, many people <u>wrote</u> that right-wing or white-supremacist terrorism is on the rise. While my updated report only covers the United States through 2017 and most of those writers were discussing the issue globally, my research can provide some evidence of whether this is true inside of the United States. Over the entire 43-year period, the deadliness of Islamist terrorism dwarfs Right, White Supremacy, and Anti-abortion terrorism by factors of 16, 40, and 239, respectively. The picture changes somewhat more recently as Islamists are responsible for 58 percent of all murders in terrorist attacks since 9/11. White Supremacists are responsible for 17 percent, Right terrorists for 10 percent, Left terrorists for 8 percent, and then the numbers get tiny. Islamism is still the deadliest terrorist ideology in the post-9/11 world relative to Right, White Supremacy, and Anti-abortion, but by smaller factors of 6, 3, and 27, respectively. Those numbers may well have diverged in 2018 and 2019, but I doubt they've changed enough to alter the general pattern.

Since 9/11, 184 people have been murdered by 378 terrorists in attacks on U.S. soil. Of those 378 attackers, 62 managed to murder at least one person in an attack. That means that only 16.4 percent of attackers succeeded in murdering somebody. On this count, Right and White Supremacist terrorists are the most likely to succeed in murdering at least one person in their attacks at 28 and 22 percent, respectively. Islamist terrorists have been less successful, with only 9 percent of them succeeding in murdering at least one person. However, because there were so many Islamist terrorists and each one of them was deadlier on average, that ideology still inspires the deadliest terrorists. It's a bit premature to write the epitaph for Islamist terrorism in the United States.

The main lesson from this report is that there are very few terrorists of any ideology or origin and even fewer who manage to murder Americans. The 3,518 total murder victims of terrorism killed by foreign-born, native-born, and unknown terrorists from 1975-2017 account for only about 0.4 percent of the roughly 800,000 homicides during that time. The ideology, frequency, deadliness, and origins of terrorists are fascinating but these numbers are so small that it is difficult to tease out any trend, let alone to be overwhelmed by fear.

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#### Miserable people, dangerous people

# Qatar stresses need to combat terrorism at international conference

Source: https://www.qatarliving.com/forum/news/posts/qatar-stresses-need-combat-terrorism-international-conference

May 19 – Tajikistan's capital Dushanbe hosted on Saturday an international conference on regional and international cooperation in counter-terrorism and its financing through drug trafficking and organised crime.

The conference was held in cooperation with Qatar, the UN, the European Union and the Organisation for Security and Co-operation in Europe.

Qatar's delegation was led by Special Envoy of the Minister of Foreign Affairs for Counterterrorism and Mediation of Conflict Resolution HE Dr Mutlag bin Majid al Qahtani.

The envoy said the conference was proof of the strong and strategic partnerships Qatar has in thefield of countering terrorism and its financing.

He said terrorism and its financing represent a grave threat to international peace and security.

"The international community has a collective responsibility to counter terrorism and its financing in line with international law and UN Security Council resolution number 2467, which calls on all

countries to prevent terrorist acts and bans the provision of all support to people or organisation involved in terrorist attacks," he said.

He stressed that combating the financing of terrorism remains one of the most important priorities for Qatar, highlighting the legislation that the country adopted in this regard. He



added that the country has also ratified the majority of international and regional counter-terrorism agreements, and established national mechanisms in the fields of counter-terrorism in line with UN Security Council resolutions.

"Qatar is working closely with the designated UN agencies. The country has recently contributed \$75 million to the UN Counter-Terrorism Office in support of its mission and goals over the next five years," he said.

He noted that an important issue to focus on in the conference is the adverse impact regional conflicts have on advancing joint efforts in the field. Wars and conflicts became important elements feeding terrorism and extremism.

He gave an example with the armed conflicts in the Middle East and North Africa, which led to the undermining of group efforts in combating terrorism and ultimately to weakening the border security of those countries.

He highlighted the potential of using the war zones not just for drug trafficking, but for illegal arms dealing that would include the components for weapons of mass destruction. He said that Qatar has expressed its concern over the danger the lack of cooperation regionally poses to resolving these threats.

He added that the international community cannot just stand helpless as some countries interfere in the internal affairs of others, in clear violation to the sovereignty of these countries.

#### The forensic unknowns of 3D-printed guns

Source: http://www.homelandsecuritynewswire.com/dr20190521-the-forensic-unknowns-of-3dprinted-guns

May 21 – In the summer of 2016, Transportation Security Administration screeners at Reno-Tahoe International Airport in Nevada confiscated an oddity: a 3D-printed handgun in a man's carry-on baggage. The plastic gun was inoperable but accompanied by five .22-caliber bullets. The passenger said he had forgotten about the gun and <u>willingly left it at the airport</u> and boarded his flight without being arrested. The TSA later said the plastic gun was believed to be the first of its kind seized at a U.S. airport.

Since the world's first functional 3D-printed firearm was designed in 2013, such guns have increasingly been in the news. Proponents of the firearms – 3D-printed with polymers from digital files – maintain that sharing blueprints and printing the guns are protected activities under the First and Second Amendments. Opponents argue the guns are concerning because they are undetectable and also untraceable since they have no serial numbers.

OleMiss <u>says</u> that tackling some of those forensic unknowns are a <u>University of Mississippi</u> chemistry professor and a graduate student. Their research is developing analytical methods to explore how the firearms might be traced using chemical fingerprints rather than relying on physical evidence, with the goal of offering tools for law enforcement to track the guns as they become more widespread.

"We can positively identify the type of polymer used in the construction of the gun from flecks or smears of plastic on bullets, cartridge cases and in gunshot residue collected on clothing," said James Cizdziel, an associate professor in the <u>UM Department of Chemistry and Biochemistry</u>.

Cizdziel, <u>who joined the Ole Miss faculty in 2008</u>, and Oscar "Beau" Black, who recently earned his doctorate in chemistry, have spent two years researching 3D-printed firearms through a grant from the National Institute of Justice, part of the U.S. Department of Justice.

The three-year, \$150,000 grant, "Physical and Chemical Trace Evidence from 3D-Printed Firearms," has resulted in a 2017 <u>peer-reviewed paper in Forensic Chemistry</u>, a growing reference library of mass spectra from 3D-printed firearms for use by law enforcement and <u>a book</u>, "Forensic Analysis of Gunshot Residue, 3D-Printed Firearms, and Gunshot Injuries: Current Research and Future Perspectives."

The research involved Cizdziel and Black being the first to use Direct Analysis in Real Time, or DART, Mass Spectrometry to identify polymers and organic gunshot residue in evidence from 3D-printed guns. The idea is forensic experts could trace the polymer that might show up in chemical

evidence from the discharge of a 3D-printed firearm back to the type of plastic used in the gun.



"Our growing database provides a second means of identification or grouping of samples, alleviating the need for subjective interpretation of the mass spectral peaks," said Cizdziel, a Buffalo native. "We also published fingerprinting protocols on surfaces of 3D-printed guns.



"Overall, we demonstrated that our methods are particularly useful for investigating crimes involving 3Dprinted guns."

The pair's research arises from an undergraduate chemistry class Cizdziel taught in 2014, <u>Introduction to</u> <u>Instrumental Analysis</u>. Before earning his bachelor's degree in forensic chemistry in 2015, Black, who also was an undergraduate researcher in Cizdziel's laboratory, took the class, where talk soon turned to 3D-printed firearms.

"We discussed how developing new reliable analytical methods for forensic practitioners dealing with trace evidence from 3D-printed guns would make a good doctoral research project," Cizdziel said. "Apparently this sparked a fire in (Black), and he not only joined my research group as a graduate student but was awarded a research fellowship from the Department of Justice to do that very project."

Black, from Weatherford, Texas, began the project in 2016, before funding was secured in 2017, and quickly realized he was in unexplored territory.

"There was such a dearth of information out there," Black said. "There was only one, I think, report of an actual test fire (of a 3D-printed firearm) from a forensic agency."

The pair began creating functional 3D-printed firearms – either .22-caliber or .38-caliber handguns – that used certain metal parts to comply with a federal ban on weapons that aren't picked up by metal detectors. They test-fired them under controlled and safe conditions at the Mississippi Crime Laboratory in Pearl and the Alabama Department of Forensic Sciences in Hoover, Alabama.

"When you discharge them, they do exactly what they are designed to do," Black said. "You can shoot them multiple times. There was one we shot dozens of times with no visible wear and tear on it."

The discharges generated samples to analyze. The duo also evaluated the differences in evidence between 3D-printed guns and conventional guns, and used the analytical technique mass spectrometry to identify and characterize the various polymer types in 3D-printed gun evidence.

This work was the beginning of creating a reference library of various polymer samples to provide the basis of categorizing an unknown sample. The reference library holds about 50 polymer samples.



Cizdziel and Black were assisted in their research by undergraduate students and Murrell Godfrey, director of the UM <u>forensic chemistry program</u> and associate professor of chemistry and biochemistry. Black graduated Saturday (May 11), but the pair's research is ongoing, including expanding and improving the 3D-print polymer reference library.



"The ultimate goal would have the reference library in a format that's similar to the other reference libraries that are out there for fingerprints, etc.," Black said. "Every different arena has a reference library that goes



along with that discipline." Beyond work on the reference library, the twosome is examining DNA 3D-printed methods on firearms and studying the polymer longevity of evidence under weathering conditions. Cizdziel and Black also are working on a paper that presents all their scientific discoveries when it comes 3Dto printed firearms.

Not knowing what they might find in their investigations has led to some exciting findings and groundbreaking work, Cizdziel said.

"That's when things get interesting," he said. "When you don't quite know what to expect."

— Read more in Oscar Black et al., "Identification of polymers and organic gunshot residue in evidence from 3D-printed firearms using DART-mass spectrometry: A feasibility study," <u>Forensic Chemistry</u> (27 May 2017)





# **ICYMI:** New CBRN Incident database includes more than 500 events coded for more than 140 variables

Last month, START researchers Markus Binder and Gary Ackerman published a new database, the Profiles of Incidents involving CBRN and Non-State Actors (POICN) database, consisting of 517 CBRN terrorism–related events from 1990 to 2017. Each event record collects more than 140 geospatial, temporal, motivational, operational, tactical and consequence variables, including multiple metrics for variable, source and incident uncertainty.

- ► To learn more, read this article in <u>Studies in Conflict and Terrorism</u>.
- To gain access to the database, email the project team at <u>poicn@umd.edu</u>



Source: https://www.proekt.media/narrative/test-novichok-eng/

#### Vietnamese woman freed in killing of Kim Jong Un's half brother

Source: https://www.upi.com/Top\_News/World-News/2019/05/02/Vietnamese-woman-freed-in-killing-of-Kim-Jong-Uns-half-brother/3711556848216/

May 02 – A Vietnamese woman originally accused of assassinating <u>Kim Jong Nam</u>, the half-brother of <u>North Korea</u>'s leader <u>Kim Jong Un</u> in 2017, has been released from jail in Malaysia, her attorney said Friday.

<u>On April 1</u>, Doan Thi Huong pleaded guilty to a lesser charge of "voluntarily causing hurt by dangerous weapons or means" in a deal with prosecutors in Kuala Lumpur. She was sentenced to three years and four months, but it was cut due to <u>sentence remissions</u>, including time service since February 2017.

Huong and Indonesian national Siti Aisyah were accused of smearing VX nerve agent on the face of Kim as he entered an airport on Feb. 13, 2017. He died within minutes.

In CCTV footage, one woman was seen with her hands over his face.

Both of the women thought they were part of a prank.

Aisyah was freed in March and returned to Indonesia when prosecution decided to drop charges.





Vietnamese Doan Thi Huong (C) smiles as she is escorted by Malaysian police officers at the Shah Alam High Court in Shah Alam, Malaysia, on April 1. Malaysian prosecutors dropped the murder charge against Huong and one month later she was released from jail. Photo by Fazry Ismail/EPA

Four men, who were believed to be North Koreans, fled Malaysia on the day of the murder. They have been charged in the case but not apprehended.

North Korea has denied any involvement in the killing.

"The planners, organizers, and overseers of the assassination of Kim Jong Nam have indeed 'gotten away with it," said Evans Revere, a consultant at the Albright-Stonebridge group and former acting U.S. assistant secretary of state for East Asian and Pacific Affairs told CNN. "No one will be held responsible for this horrific attack in which a weapon of mass destruction was used to kill a human being in an international airport."

Kim Jong Nam was bypassed in favor of the younger Kim to become North Korea's leader after their father, Kim Jong II, died.

He criticized his family's control of North Korea and had spent years outside North Korea in Chinese controlled territory of Macau.

#### DARPA tests its chemical threat sensors at the Indy 500

Source: https://sociable.co/technology/darpa-tests-chemical-threat-sensors-indy500/



May 02 – The Defense Advanced Research Projects Agency (DARPA) announces the results of its chemical threat sensors it deployed at the Indy 500.

Over the past five years, DARPA has been in the process of developing a range of sensors that detect a broad spectrum of threats, including chemical threats.



In May and August of 2018 DARPA tested its chemical threat sensors at the Indianapolis Motor Speedway. The technology developed was a result of the defense agency's <u>Sigma</u> and Sigma+ programs.

"The successful pilot and simulant test of the ChemSigma system at the Indy 500 and Dugway Proving Ground provided valuable, relevant, and realistic data sets" The network of chemical detection sensors was run during events at the Speedway — inclusive of the Indianapolis 500. This allowed DARPA to assess the performance of the sensors and cloud-based algorithms. Tests using nonhazardous chemical simulants have been used to examine the effectiveness of the system.

With sensors deployed as a network at the Indy 500 and also later at the Dugway Proving



DARPA's Sigma+ program aims to develop a network of sensors with a capability on a citywide or regional scale. Its initial pilot study — ChemSigma — utilized a chemical sensor, wind sensor and a communications board within a robust housing. Using these devices, a small network was established.

#### DARPA's Chemical Threat Sensors at the Indy 500

Given the need to prepare for an attack in the urban context, an <u>urban setting was chosen for</u> the ChemSigma pilot.

DARPA partnered with the Indianapolis Motor Speedway, Marion County public health department, and the Indianapolis Metropolitan Police Department to deploy the network at the Speedway. Ground in Utah in October, ChemSigma was able to pinpoint chemical release locations to a high degree of accuracy.

"We're looking at how we might make this network more robust and more mature," said <u>Anne Fischer</u>, program manager in DARPA's Defense Sciences Office, in a statement.

"For example, we implemented a network at Dugway Proving Ground as part of a DoD test for simulant releases, and have shown that the network can respond to a number of chemical simulant threats different than those used in Indianapolis, as well as built-in capabilities for mobile releases.

"Over the past few months, the team has used these data sets to further refine the algorithms, and plans to integrate and test them with the ChemSIGMA system in



test events scheduled later this year," she added.

When trialed during the day and at night, and in varying meteorological conditions, the system was able to detect the source location of the chemicals accurately.

"The successful pilot and simulant test of the ChemSigma system at the Indy 500 and Dugway Proving Ground provided valuable, relevant, and realistic data sets for validation and verification of the source localization and plume propagation algorithms," according to DARPA.

#### DARPA's Sigma+ Program

The research forms part of DARPA's Sigma program – which encompasses efforts to revolutionize detection and deterrent capabilities when it comes to countering nuclear terrorism.

In February of last year, DARPA <u>revealed</u> that it had expanded scope of the Sigma program to include detection of other threats. The agency is increasingly concerned that the emergence of a number of commercially available technologies is leading to a greater terrorism risk.

Micro level chemical reactors in the pharmaceutical industry, gene manipulation tools and 3D printing have the potential to be misused by terrorist groups or rogue nations. The potential outcome is the development of chemical, biological, radiological, and nuclear weapons.

This change of direction has led to Sigma+, and a consideration of chemical threat detection according to a press release published on Tuesday. Also within the scope are biological and explosive threats.

#### **How Chemical Sensors Work**

Chemical sensors are measurement devices which convert chemicals or chemical constituents into a measurable signal. To fit the task, a sensor <u>needs</u> to be portable and relatively inexpensive. Most importantly, it must respond well to instant identification and detection of the target chemical substance, according to The National Academies of Science.

Chemical sensors work through a chemical interaction which takes place between the target

chemical and the sensor itself. A good chemical sensor must have two particular characteristics in order to function effectively. Those characteristics are sensitivity and selectivity. Sensitivity is important as it may be necessary to detect very low concentrations of a target chemical constituent, or from a considerable distance. From the perspective of selectivity, with 10 billion molecular compounds in existence, its far from an easy task for a sensor to seek out one specific molecular substance. Once the target chemical enters the sensor, there are a number of mechanisms that various sensors use for detection. At a molecular level. the sensor may bind the chemical. Another approach is that the sensor passes through a thin film which doesn't allow the entry of any other substance. A third approach is implicated where the sensor uses the target chemical in a reaction which leads to a bi-product which in turn triggers the sensor.

#### Other Chemical Threat Detection Players

It's not just DARPA that is working on chemical threat detection technology. Work is ongoing within the broader defense industry sector.

Toronto-based Patriot One Technologies recently entered into a <u>partnership</u> with Nano Bio Detection Systems in an effort to develop and commercialize such applications for defense and security. Its solution features a scalable sensor array that relies upon internet of things (IoT) enabled hardware. It implicates a mass casualty threat detection capability which can be used for both military and civilian applications.

Karsa Oy is a Finnish company which is targeting the same market and use case. Borne out of a project at the University of Helsinki, the company has developed ultra-sensitive threat detection technology which it plans on deploying in the areas of homeland security, aviation security and emergency management.

A recent <u>report</u> on chemical terrorism by the US Government Accountability Office features chemical threat detection heavily in terms of a strategy to deal with such an eventuality.

To that end, further development of the technology is encouraging if it plays a part in keeping civilians out of harm's way.



# www.qcbrna.qa





#### The Future of Chemical Weapons: Implications from the Syrian Civil War

Geoffrey Chapman, Hassan Elbahtimy, and Susan B. Martin. "The Future of Chemical Weapons: Implications from the Syrian Civil War." Security Studies 27:4 (2018): 704-733. DOI: <u>https://doi.org/10.1080/09636412.2018.1483640</u>. Source: <u>https://issforum.org/articlereviews/114-chemical</u>

#### Review by Margaret E. Kosal, Georgia Institute of Technology

May 07 – Geoffrey Chapman, Hassan Elbahtimy, and Susan B. Martin test a framework for assessing the security implications of chemical weapons (CW) use in the twenty-first century in their recent *Security Studies* paper. The authors state that they were motivated by the erosion of a norm of disuse, commonly known as the chemical weapons taboo.<sup>[1]</sup> In this context, they assess the strategic and tactical utility of CW by the Syrian state as part of its ongoing civil war. Two incidents of CW use are analyzed in detail; one in which a nerve agent was used and another in which gas chlorine was employed. Overall this work has important implications for a more rigorous and better understanding of the use of unconventional weapons in modern warfare.

Before 2012, chemical weapons (CW) were often seen as an artifact of history. As one third of the 'weapons of mass destruction' (WMD) grouping of armaments, CW are the 'poor man's atomic bomb.'<sup>[2]</sup> Nuclear weapons still hold lasting geostrategic implications for deterrence with a fundamental and unchallenged role in strategic stability. Biological weapons, whose uncertainty is driven by rapidly changing technological drivers and capabilities, were and remain a focus of attention. The role of CW in state-based geopolitics was perceived by many as minor, if not out rightly dismissed as a tool of states in the twenty-first century. CW was relegated to the domain of non-state actors, if thought of at all. A notable example of this was the bipartisan U.S. Commission on the Prevention of Weapons of Mass Destruction, which concluded in 2008 that "unless the world community acts decisively and with great urgency, it is more likely than not that a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013."<sup>[3]</sup> It furthered clarified the type of WMD to which they were referring, asserting that "terrorists are more likely to be able to obtain and use a biological weapon than a nuclear weapon." Chemical weapons were not even considered. Yet, by December 2012 a state had used chemical weapons.

From the chlorine gas attacks of World War I and use of nuclear weapons in WWII through the Cold War and to the present day, limiting the proliferation of unconventional weapons has been a significant international issue. The last decade, however, has brought an intersection of two key drivers that prompt a new way of looking at the geostrategic implications of these weapons and the challenges of limiting proliferation. The first, the changing character of global security threats, began with the fall of the Soviet Union and was punctuated by the terrorist acts of September 11, 2001. Second is the shifting nature of technological progress, which brings entirely new capabilities, many of which are no longer the exclusive domain of a few large states. The perception of the threat of WMD from state and non-state actors continues to increase in scale, scope, and complexity. These drivers offer new opportunities and new challenges for nonproliferation, international security, and foreign policy more broadly.

Countering WMD is among the highest priorities for the U.S. domestic and the international security community in the twenty-first century.<sup>[4]</sup> Denying the acquisition and use of WMD by hostile states, substate actors, or non-state actors as part of nonproliferation and counterproliferation, coupled with possessing robust capacity to manage potential consequences, are desired strategic ends. Addressing the challenges of countering WMD encompasses both conflict and post-conflict activities centered on securing and destroying material and delivery systems; but, more broadly, it also entails

activities intended to address the associated programs, infrastructure, and expertise.<sup>[5]</sup> It includes activities that span the range of "prevent," "shape," "contain," and "respond" concepts.<sup>[6]</sup> Proliferation involves a broad range of actors, materials, technologies, activities, and legal considerations, all of which have implications for the roles of military and civilian



government departments. Considerations such as risk, time sensitivity, geographic location, and international relations add greater complexity.

Prevention of WMD is a laudable and important goal, but disparities between that objective and the understanding of the geostrategic implications of chemical (and biological) weapons remains as a comparatively nascent and under-theorized field to the rich theoretical work that underpins nuclear proliferation, deterrence, and strategic stability. Greater recognition of that fact is needed in order to affect strategy, and additional levers at the policy level are needed. Part of the challenge in narrowing the gap between strategy and its enabling capabilities and capacities is attributable to multiple endogenous and exogenous military, technical, cultural, policy, and institutional factors.<sup>[7]</sup> Work like that by the authors and others are necessary if we are to close those gaps for chemical weapons, as well as biological weapons (BW).<sup>[6]</sup> A robust, analytically-driven understanding of CW and BW also has implications for understanding the international security implications of emerging technologies.

The crux of the question motivating and underlying the work is "whether that use [of CW in Syria] provides new information that will change states' calculus about acquiring and using them. To do so, the Syrian case would need to demonstrate that states have more to gain—or less to lose—from chemical weapons than previously thought. Only in this circumstance would the Syrian case pose a threat to the CW norm." (707-708) Through an analysis of two cases of CW use by Syria, Ghouta in August 2013 and the Hama Plains in 2014, the authors assess the tactical utility of CW, its utility as a tool of civilian victimization, and the response by the international community. Based on these factors, the authors assess that CW have limited military capability and provoke a substantive negative response externally, suggesting that other state-based actors are not likely to see CW as having value.

There substantive work by Martin and her colleagues raises a question that remains unanswered: if the explanation for use is based on military utility, what is driving the re-emergence of use of CW by stateactors. Is it a means to erode post-WWII liberal international order, as illustrated by the use of unscheduled, military-grade nerve agents by Russia against former government affiliates living in the UK?<sup>[9]</sup> Is it to re-inforce control and demonstrate capabilities (at least as far as far small scale production of a third-generation nerve agent, VX), as by DPRK in the assassination of Kim Jong-nam, the estranged half-brother of current North Korea head of state, in a Malaysian airport,

Chemical weapons have been used both by military forces on the battlefield and by terrorists in cities and towns. In this respect, they are unique among the weapons of mass destruction that have been used in the twentieth century and first decades of the twenty-first century. The world's recognition of the horror of chemical weapons prompted the only disarmament treaty that eliminates an entire category of weapons under strict international verification, enshrining the norm in international law. The 1993 Chemical Weapons Convention (CWC) – a multilateral arms control and disarmament agreement – is central to international limitations on chemical weapons proliferation, reducing the risk of chemical terrorism through the universality of the convention and full implementation of its program.

Regardless of the military utility and motivation for state-based actors to pursue the use of chemical weapons, the situation over the last five years has complicated the international arms control and disarmament processes as part of the Chemical Weapons Convention (CWC). The recently concluded Review Conference (RevCon) of States Parties was marked by accusations of politicization and the erosion of the integrity of the international body that oversees the implementation and execution of the CWC, the Organisation for the Prohibition of Chemical Weapons (OPCW).<sup>[10]</sup> The RevCon delegate from one state, which is a member of the CWC, characterized the discord over allegations as "bullets of duality" that "split us into a subtle line of 'us' and 'them."<sup>[11]</sup> The United Kingdom asserted that "supporting OPCW attribution is not about choosing sides in big power politics, it is about restoring the global taboo against chemical weapons."<sup>[12]</sup> The diplomatic discord was driven by differing contentions surrounding Syrian CW use and the investigation of that use, which makes it directly relevant to the article under review.

The fundamental technology intrinsic to chemical weapons is more widespread than that of any other WMD; synthetic chemistry is ubiquitous to the industrial world. Making chemical weapons requires some technical skill, but over time much of the information needed to make these materials has drifted into the public domain. Technology is rapidly enabling new



methods for creating novel agents and easier dissemination. All of which combines, in estimates,<sup>[13]</sup> to increase terrorist capability and civilian vulnerability to the threat of chemical weapons.

Understanding these changing paradigms and limiting the proliferation of chemical (and biological weapons) for the twenty-first century is necessary. More empirically-driven, analytic work is needed to develop and advance theories that help explain the why states decide to pursue chemical and biological weapons programs, how to deter them, and the geostrategic implications of emerging technologies. More scholarly attention is needed that addresses the political factors driving decisions to pursue or use these weapons (whether by states or non-state actors) and capabilities, as well as more research on the changing nature of technological progress and how it impacts the changing characteristics of warfare. Better theoretical work should enable better policies for prevention and limiting the proliferation of such weapons. The work reviewed here is an important piece in understanding the calculus that states use in deciding to pursue, develop, and use unconventional weapons.

**Dr. Margaret E. Kosal** is Associate Professor in the Sam Nunn School of International Affairs at Georgia Institute of Technology, where she directs the Sam Nunn Security Program. She's jointly appointed faculty in the Parker H. Petit Institute for Bioengineering and Bioscience at Georgia Tech. Her research explores relationships among strategy, technology, and governance. She is the author of **Nanotechnology for Chemical and Biological Defense**, which explores scenarios, benefits, and potential proliferation threats of nanotechnology and other emerging sciences, and editor of **Technology and the Intelligence Community: Challenges and Advances for the 21st Century**. Formally trained as an experimental scientist, Kosal earned a doctoral degree in Chemistry from the University of Illinois at Urbana-Champaign (UIUC) working on biomimetic and nano-structured functional materials. Kosal previously served as a Senior Advisor to the Chief of Staff of the U.S. Army, as Science and Technology Advisor within the Office of the U.S. Secretary of Defense (OSD), and as Associate to the U.S. National Intelligence Council (NIC). In January 2017, she was appointed the Editor-in-Chief of **Politics and the Life Sciences.** 

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# The politics of international chemical weapon justice: The case of Syria, 2011–2017

#### By Brett Edwards and Mattia Cacciatori

*Contemporary Security Policy; Volume 39, 2018 - Issue 2* Source: https://www.tandfonline.com/doi/full/10.1080/13523260.2017.1410614?src=recsys

There has been near-universal condemnation of the use of chemical weapons in the Syrian conflict. The international community has nevertheless struggled to make progress on holding the perpetrators to account. This article reviews developments at the international level in terms of Syrian chemical weapon justice between 2011 and 2017. It argues that there have been substantive disagreements between states on the rationale and means of justice in the Syrian case. It also argues that international initiatives have been tightly intertwined with developments in chemical disarmament and conflict resolution processes as well as the broader war. The article describes progress and challenges to chemical weapon justice in a number of distinct formal international mechanisms during the period studied. The analysis concludes by contextualizing international responses—including the U.S. tomahawk strikes against a Syrian airbase—to the Khan Shaykhun chemical attacks of April 2017.

#### **Observations from the CBRNe Summit Europe 2019**

#### By Steven Pike

Source: https://www.argonelectronics.com/blog/observations-from-the-cbrne-summit-europe-2019

May 09 – In April 2019 Birmingham played host to the largest gathering of CBRNe officials in Europe at <u>CBRNe Summit Europe</u> 2019.

For those who attended, the three-day event offered the opportunity to hear analysis on the CBRNe threats currently facing the UK, to get an overview of European military CBRNe capabilities and to gain better understanding of first responder techniques in the event of a terrorist attack.

CBRNe terrorism can be defined as the actual or threatened dispersal of a CBRNe material for criminal or malicious intent.





That threat can include any release of <u>chemical hazards</u> that is carried out deliberately or that is suspected to have been carried out with deliberate intent. It also includes the dispersal of any biological infection that is confirmed to have not occurred spontaneously.

The UK Government's CT strategy (CONTEST) seeks to reduce the threat of terrorism, and the UK's vulnerability to it, through a variety of measures:

- Prevention through the tackling of the underlying causes of terrorism, the resolution of regional conflicts and the support of good governance and reform.
- Pursuit through the identification of terrorists and those who fund them, the improvement of
  understanding of terrorist networks, and the tracking down, disruption and bringing to justice of
  perpetrators.
- Protection through improved protective security both at home and abroad to protect the public and UK interests.
- Preparation by working to improve the the UK's resilience to cope with the consequences of terrorist attacks and other disruptive challenges.

#### The UK's CBRNe capability

Included in the schedule for this year's CBRNe Summit Europe was a presentation by Deputy Chief Constable John Campbell QPM, the CBRN lead for the UK National Police Chief's Council, who provided an overview of the UK's CBRNe resilience program.

This Home Office led counter terrorism strategy aims to ensure quick and effective response in the event of a terrorism incident, with the focus on saving of lives and minimizing the impact on property and the environment.

John's presentation also offered some fascinating insights on the UK's emergency response to the Salisbury and Amesbury <u>nerve agent</u> incidents, which have been the subject of national and international headlines since March 2018.

After plotting an initial timeline of events, he went on to provide a detailed description of the UK police response, the impact that the event had at the time and the impact that it continues to have on those living in and around the Wiltshire community.

#### The importance of inter-agency cooperation

A specific focus of John's presentation was on the importance of <u>inter-agency</u> cooperation and the role that it played in the resolution of the Salisbury incident.

As he explained, the initial response and the command of the local operation was overseen by the Wiltshire Police, who also took responsibility for coordinating the multi-agency response and in playing an active role in the recovery process.



The investigation itself however, was led by the Counter Terrorism Police, the collaboration of UK police forces that works in cooperation with the UK intelligence community.

Also making a key contribution to the investigation were the National CBRN Centre who took on the role of coordination and who offered specialist advice and logistics - and the National Police Chief's Council (NPOCC) who provided additional mutual aid.

CBRNe threats are recognized as becoming a more frequent occurrence in major cities across Europe and worldwide. The efficiency with which civil and military agencies can respond to major incidents, and the effectiveness with which they can resolve those situations is key.

As an attendee at CBRNe Summit Europe it was encouraging to see the extent to which the UK is equipped and prepared to respond to potential threats or attacks.

#### Catch-22 dilemma in response to complex emergencies

By Lina Kolesnikova

Source: http://crisis-response.com/comment/blogpost.php?post=448

May 10 – In my latest blog I would like to attract the attention of terrorist attack responders to the Catch-22 dilemma and to ask for points of view on it.

So, what is Catch-22? Joseph Heller first coined the phrase in his classic novel of 1961 where the main



character, Captain John Yossarian, found himself in a 'damned if you do, damned if you don't' paradoxical situation. A member of the US Air Force, the only way for Yossarian to avoid highly dangerous bombing missions was on the grounds of insanity, but to plead for exemption would actually be proof of his sanity, as surely no one of sane mind would keep flying the missions – this was the only catch – hence, Catch-22.

The dilemma is well known to responders to terrorist attacks and could be a massive problem for responders to CBRN incidents.

Professional responders have an assumption that public behavior during an emergency is very much characterized by irrational panic, which can be true in some – although by no means all – cases. It is a particularly big problem when crowds are involved. For the individual, the rational message might get through and be understood. However, the more stressful and/or emotional a person becomes, the more unlikely this is. For crowds, rationality is largely the wrong way forward, it is most often irrationality that works.

CBRN is a very complex issue and it is very difficult to explain to a layperson – using simple language – what has happened and how to act. So, the communication is therefore limited and coarse-grained; there are lacunas in information delivered to the public. And members of the public are often aware of this. This perceived vacuum of information, the feeling that something is being deliberately withheld by authorities, can create panic, anxiety and confusion among the public. At the same time, we

understand that in a major CBRN-related incident, the victims themselves will be the first responders, and therefore they should have precise information on their circumstances and how to react. Clear and concise communication with the public before, during and after responses to CBRN attacks is paramount

Is it possible to find a balance and avoid the Catch-22 dilemma in communication with the public during the CBRN incidents or during a complex terrorist attack?

Such balance is possible, but on the condition that the communication starts before the attack or incident. Repeated chemical attacks by various actors in the context of the Syrian conflict, the Novichok case in Salisbury (UK) and the disruption of two ricin terror plots in



Germany and in France in 2018, are all stark reminders that the CBRN threat remains real for states, that societies can be affected and this threat could pose a real challenge to response systems.

The Fukushima case showed that a natural hazard may develop into a serious nuclear incident, where all state response systems become challenged to their maximum. Therefore, we have to talk to the public about CBRN or complex threats before incidents occur and provide a clear explanation and modus operandi during the potential incident; remembering, as previously mentioned, that victims could be the first responders themselves.



There is therefore a need for communities to develop non-conventional protection methods orientated towards citizens and encouraging their involvement. Such education and advance communication would allow information delivered during the incident to be:

- speedy
- clear
- relevant
- trustworthy
- not-contradictory

We need to work together to find schemas and frameworks that enable simple, understandable and actionable communication. A large part of that work is to deliver the context into the minds of individuals and public in general, prior and without a link to any specific incident. With such a context already in place, communication during an incident can massively benefit both those communicating (the crisis management team) and those receiving communication (responders, the public) by being much shorter and more relevant, conveying the messages in a straight and perceivably complete and coherent way, and leaving no obvious gaps which otherwise could cause the public to lose trust in the authorities dealing with the crisis.

In the case of a CBRN incident, information should not be too scientific or technical, as this can be complex, and therefore cause stress and panic for unprepared minds. Whenever directly involved in or affected by an incident, the public wants information about the measures that emergency responders are taking, how this helps, and how effective these measures are.

Preferences for risk communicators can vary. However, it is clear that directly affected members of the public want to receive information from individuals who are invested with formal authority and who capable of demonstrating leadership skills, balanced by compassion and respect for the concerns of the public. I would like to encourage a discussion on the Catch-22 dilemma during the response to CBRN incidents or complex terrorist attacks. Please, contact me at <u>lina@crisis-response.com</u>

*Lina Kolesnikova* is an expert at Experts Advisory Committee at European Forum for Urban Security (EFUS) and member of the International Advisory Committee of the C<sup>2</sup>BRNE Diary.







# Be prepared For the UNEXPECTED

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#### **Ricin poisoning?**

Source: https://www.valleynewslive.com/content/news/Fire-officials-1-hospitalized-after-unconfirmed-report-of-ricin-in-Minneapolis-509605991.html

May 08 – One person has been hospitalized after an "unconfirmed report of ricin" at a Dinkytown apartment building, according to the Minneapolis Fire Department.

Minneapolis Fire says crews were called to 515 14th Avenue SE Tuesday afternoon [7 May 2019] on a report of a hazardous substance.

Crews are evacuating the apartment building and isolating the affected area according to Minneapolis Fire's Twitter account.

The fire department says one resident was transported to the hospital.

According to the CDC, ricin is a poison naturally found in castor beans, and if chewed and swallowed, it can be dangerous. But it can also be in the form of a powder, mist or pellet.

Within a few hours of inhaling ricin, a person would likely have trouble breathing, fever, cough and nausea. It can ultimately lead to death.

The CDC also says there is no antidote for ricin, which is why it's so important to avoid exposure to it. The apartment building, called The Marshall, describes itself as "off-campus housing." It's located right on the edge of the University of Minnesota campus.

#### Comment

[The article is a bit sparse in details. Any time a type of substance such as this is used, it is concerning. One has to wonder whether this was a science experiment gone sideways? Was this someone planning something nefarious? Was the individual the victim of a crime, or perhaps carelessness in their own project? Or perhaps the perpetrator of a crime only on themselves? We may never know answers to those questions.

"Ricin is a poison found naturally in castor beans. If castor beans are chewed and swallowed, the released ricin can cause injury. Ricin can be made from the waste material left over from processing castor beans. It is a potent protein derived from the beans of the castor plant (*Ricinus communis*). Castor beans are used in the production of castor oil, a brake and hydraulic fluid constituent. The aqueous phase of the process, termed the "waste mash," is 5% to 10% ricin.

Castor oil does not contain ricin. Ricin has been used experimentally in medicine to kill cancer cells. Ricin works by getting inside the cells of a person's body and preventing the cells from making the proteins they need; hence, it is often called a toxalbumin. Without the proteins, cells die. Eventually this is harmful to the whole body, and death may occur.

Ricin can be in the form of a powder, a mist, or a pellet, or it can be dissolved in water or weak acid. It is a stable substance under normal conditions but can be inactivated by heat above 80 C (176 F).

Effects of ricin poisoning depend on whether ricin was inhaled, ingested, or injected. The major symptoms of ricin poisoning depend on the route of exposure and the dose received, although many organs may be affected in severe cases. Initial symptoms of ricin poisoning by inhalation may occur within 8 hours of exposure. Following ingestion of ricin, initial symptoms typically occur in less than 6 hours.

Inhalation: Within a few hours of inhaling significant amounts of ricin, the likely symptoms would be respiratory distress (difficulty breathing), fever, cough, nausea, and tightness in the chest. Heavy sweating may follow as well as fluid building up in the lungs (pulmonary edema). This would make breathing even more difficult, and the skin might turn blue. Excess fluid in the lungs would be diagnosed by x-ray or by listening to the chest with a stethoscope. Finally, low blood pressure and respiratory failure may occur, leading to death. In cases of known exposure to ricin, people having respiratory symptoms that start within 12 hours of inhaling ricin should seek medical care.

Ingestion: If someone swallows a significant amount of ricin, he or she would develop vomiting and diarrhea that may become bloody. Severe dehydration may be the result, followed by low

blood pressure. Other signs or symptoms may include hallucinations, seizures, and blood in the urine. Within several days, the person's liver, spleen, and kidneys might stop working, and the person could die.



Skin and eye exposure: Ricin is unlikely to be absorbed through normal skin. Contact with ricin powders or products may cause redness and pain of the skin and the eyes.

Death from ricin poisoning [may] take place within 36 to 72 hours of exposure, depending on the route of exposure (inhalation, ingestion, or injection) and the dose received. If in suspected situations where

ricin may have been disseminated, preliminary environmental testing by public health or law enforcement authorities may detect ricin in powders or materials released into the immediate environment. Persons occupying such areas may initially be observed for signs of ricin poisoning.

No widely available, reliable medical test exists to confirm a person has been exposed to ricin.

Because no antidote exists for ricin, the most important factor is to avoid rici exposure in the 1st place. If exposure cannot be avoided, the most important factor is then getting the ricin off or out of the body as quickly as possible.

Symptomatic ricin poisoning is treated by giving victims supportive medical care to minimize the effects of the poisoning. The types of supportive medical care would depend on several factors, such as the route by which victims were poisoned (that is, whether poisoning was by inhalation, ingestion, or skin or eye exposure). Care could include such measures as helping victims breathe, giving them intravenous fluids (fluids given through a needle inserted into a vein), giving them medications to treat conditions such as seizures and low blood pressure, flushing their stomachs with activated charcoal (if the ricin has been very recently ingested), or washing out their eyes with water if their eyes are irritated.

#### **CBRNe World**

April 2019 Source: <u>https://cbrneworld.com/magazine</u>

> Colonel Denis Giordan of the Savoie Fire department, shares alternative views on CBRN decontamination

Israel Baptista de Souza Borges, RN and Alexandre Barbosa de Oliveira, PhD of the Federal University of Rio de Janeiro, with Maria Clara Leite Scaldaferri on prehospital procedures in chemical warfare

# The doctor will see you... Now?

### UK and Bulgaria investigate 2015 poisoning of Bulgarian arms dealer

Source: https://www.theguardian.com/world/2019/feb/11/uk-bulgaria-investigate-2015-poisoning-emilian-gebrev

February 2019 – Britain and Bulgaria are jointly investigating the 2015 poisoning of a Bulgarian arms dealer to determine whether it involved novichok, the nerve agent used in the <u>poisoning of Russian</u> <u>double-agent Sergei Skripal</u> and his daughter, Yulia, in Salisbury last year.

The investigation was announced on Monday, after the British ambassador to Bulgaria met Boyko



Borissov, the country's prime minister, and other senior officials. It came after reports that one of the potential suspects in the Skripal poisoning was also allegedly in <u>Bulgaria</u> at the time of the poisoning of the arms dealer. "We are working in a joint team and a close partnership, and we are going to find out the facts in this case," ambassador Emma Hopkins told reporters in Sofia.

Emilian Gebrev was hospitalised in April 2015 after collapsing at a reception he was hosting in Sofia. His son and one of his company's executives also fell ill shortly after, and all three were hospitalised. Gebrev fell into a coma, and doctors surmised he had been

poisoned, though they could not identify the poison used.

The Bulgarian investigation into Gebrev's poisoning was reopened in October, after he told Bulgarian prosecutors he believed the substance used against him could have been similar to novichok, Bulgaria's chief prosecutor Sotir Tsatsarov said on Monday.

The story gained little attention at the time, and reports of a possible novichok link only surfaced in a Bulgarian newspaper report last month. Last week, the investigative site Bellingcat <u>claimed</u> it had discovered that a possible suspect in the Skripal poisoning had been in Bulgaria at the time Gebrev fell ill.

Sergey Fedotov, believed to be an alias for an officer of Russia's GRU military intelligence service, has not been named by British investigators as a suspect in the Skripal poisoning. However, Russian investigative journalists and Bellingcat believe they have strong evidence that Fedotov works for the GRU, was in the relevant country at the time of both the Gebrev and Skripal poisonings, and used similar travel patterns in both cases, booking return flights but not showing up for them and instead flying using a different route.

Tsatsarov confirmed on Monday that Fedotov had visited Bulgaria three times in 2015 and was in the country when Gebrev was poisoned. "We are establishing all moments while he was on Bulgarian territory, the hotels, the vehicles he used, contacts with Bulgarian citizens," he said.

British authorities believe Skripal and his daughter were poisoned with novichok, a powerful nerve agent developed by the Soviet Union. They both survived and are currently in an unknown location.

Gebrev also survived, and after he recovered sent urine samples to a Finnish laboratory, which failed to identify the poison but found traces of organophosphates, used in pesticides. No substances from the Chemical Weapons Convention's banned list were found, Tsatsarov said on Monday.

He said no links had been discovered to the Skripal poisoning but that the investigation was ongoing and added that in December, Bulgaria sent medical data and test results to Britain to check for any possible novichok links. Gebrev has told Bulgarian media that he does not know why he might have been targeted by a foreign intelligence service. The businessman has been involved in arms export for several decades.

On Friday, Vladimir Putin's spokesman, Dmitry Peskov, said it was difficult to understand why the Bulgarian poisoning allegation had only come to light several years after the event. "Why have we found out about this only now? We do not know whether this corresponds with reality at all," he said.



Russian authorities have also denied all involvement in the poisoning of the Skripals but the denials have been flimsy. British officers said they were seeking two men who travelled under the aliases Ruslan Boshirov and Alexander Petrov. The two men gave a <u>stilted interview</u> to the Kremlin's English-language television station, RT, in which they said they were travelling vitamin salesmen visiting Salisbury to view its cathedral spire. They have not surfaced since.

Bellingcat and Russian outlet the Insider claimed the men's real identities were Anatoliy Chepiga and Alexander Mishkin, and that both worked for the GRU, providing large amounts of circumstantial evidence. Acquaintances in the two men's home towns also confirmed that the men who appeared on RT were Chepiga and Mishkin.

#### **How We'll Stop Chemical Attacks**

Source: https://www.popularmechanics.com/technology/a27243679/device-will-stop-chemical-attack/

Apr 28 – The scene isn't all that hard to imagine. It's Memorial Day. The Indianapolis 500, the world's largest sporting event, is underway. At least four-hundred thousand fans are standing, stomping and screaming. Far louder and more deafening, at 95 decibels, are the 550-700 horsepower engines of the thirty-three roaring Indy 500 twin-turbocharged race cars. Because the Federal Government considers



this a National Special Security Event, the Secret Service, F.B.I., and FEMA are deployed alongside local and state police to keep everyone safe. Explosive-sniffing dogs, sharpshooters, security perimeters, license-plate camera scanners, and checkpoints are in full-force. But none of them notice the man parked nearby in a rented cargo van.

DARPA conducted a secret six-month test, begun in the spring of 2018

He hunches over uncomfortably in the rear of the van. His back occasionally brushes the ceiling as he twists open

the valves of a dozen gas tanks. The man wears scuba gear—protection against the billows of invisible Sarin gas that are pumped out of the wide-open front windows. The odorless chemical catches the wind and slowly spreads over the crowd. Sarin's effects can be immediate, and range from blurred vision to convulsions and vomiting. Many people exposed to the cloud of gas would be asphyxiated. Thousands could die.

This particular attack hasn't happened, but it could. Anne Fischer, the head of a program at DARPA called ChemSIGMA, is doing her best to ensure it won't. The effort is part of the ambitious SIGMA+ project, which has already deployed inexpensive handheld nuclear weapon and radiation detectors. ChemSIGMA, however, will identify and locate scent-evidence of chemical ingredients, called precursors, which must be combined to make chemical weapons or explosives. Detection is especially difficult in dense industrial and urban environments because of the vast numbers of chemicals, particularly hydrocarbons and solvents, that already pollute the air. Fischer and her team must also be certain the detectors and analysis software don't register non-existent threats and create false alarms.

To do that, they needed a real-life test. And that's where the Indianapolis Motor Speedway came in. With the help of the Indianapolis police department, DARPA conducted a secret six-month test, begun in the spring of 2018. The agency installed a network of chemical detectors at the Speedway—precise sensors linked to high-accuracy wind gauges revealed how chemical odorants travel in plumes through the air. DARPA even released special harmless gases mixed with smoke to visually observe how accurately particles were measured by the sensors. It was a success. Over the six months, the ChemSIGMA team demonstrated that their software models and sensors repeatedly and precisely tracked plumes to their source.

ChemSIGMA partnered with the Massachusetts-based Physical Sciences Inc. to develop the network algorithms to detect, identify, map, and predict the cloud movement of chemical



threats. Additionally, Princeton University scientists are perfecting a method called "dual comb" spectroscopy that allows harmful chemicals to be quickly identified. It works by splitting an eye-safe infrared-laser beam. One beam shine over a city block while the other measures reflected light. When hit by the light, any present chemicals emit unique optical signatures, allowing for near-instantaneous identification.

Although the device is currently about the size of a sedan's trunk, more are on the way. "We intend these chemical detectors to be in various sizes. Definitely some will be smaller and portable. There's not one single sensor that can do the job we need," Fischer says. Connected in a network, the sensors will lead law-enforcement directly to the source of possible danger.

"What is truly difficult," Fischer says, "is getting the lasers and detectors to perform consistently, and in an automated fashion, with extremely high sensitivity, and generating no false positives so they don't need constant handling." Even so, she expects the full program to be completed and deployed within the next five years.

#### A history of herbicide use

Source: https://link.springer.com/book/10.1007/978-3-319-51664-6

### **Religious Terrorism in Japan: The Fatal Appeal of Aum Shinrikyo**

**Daniel A. Metraux** 

Asian Survey, Vol. 35 No. 12, Dec., 1995; (pp. 1140-1154) DOI: 10.2307/2645835 Source: https://as.ucpress.edu/content/35/12/1140

#### **Country Profile: Czech Republic Fire and Rescue Service of the Czech Republic and its preparedness for CBRN threats**

By Cpt. Ing. Michal Setnička, Ph.D.

Fire Rescue Service of the Czech Republic and Population Protection Institute Source: http://nct-magazine.com/nct-magazine-may-2019/country-profile-czech-republic/

The primary mission of the Fire Rescue Service (FRS) of CR is to protect the lives and health of citizens, environment, animals and property against fires and other emergencies and crisis situations (you can find more info about FRS of CR here). In case of a CBRN threat, the role of the FRS has been crucial since



2001 when Act No. 239/2000 Coll. for the Integrated Rescue System (IRS) began to apply. IRS is not an organization but a coordinated process of its units in planning and preparing for emergencies and carrying out rescue and recovery operations. Basic bodies of the IRS are the FRS, Police and Emergency Medical Service, and they operate on a 24/7/365 basis throughout the whole country. If necessary, the main units collaborate with other bodies of the IRS, such as the army, Red Cross, etc. The Act also transferred activities and responsibilities for the Civil Protection from the Ministry of Defence to the Ministry of Interior and then directly to the FRS CR. The FRS plays a key role in the IRS,

because firefighters have the position of officers in charge not only for fires but also for most of the other threats including CBRN incidents. In the beginning, firefighters were mainly focused on industrial and traffic incidents connected with the leakage of chemicals. However, after several dangerous terrorist attacks across the world, tasks and equipment of the FRS CR needed to be updated to cover all CBRN threats.



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

#### **Emergency, Crisis and Risk Communications in CBRNE Events**

By Dee L. Ruelas and Frank G. Rando

Source: <u>http://nct-magazine.com/nct-magazine-may-2019/emergency-crisis-and-risk-communications-in-cbrne-events/</u>

From the public's initial contact and interaction with the public safety dispatch center to the end recovery phase of an event, the seamless provision, accuracy and management of critical information is vitally important.

Communication is often cited as a major component needing improvement during post-event after action de-briefings and reports. In the U.S., emergency communications are one of the main functional areas of

the National Response Framework, under Emergency Support Function -#2, which includes:

- Coordination with telecommunications and information technology industries
- Restoration and repair of telecommunications infrastructure
- Protection, restoration, and sustainment of national cyber and information technology resource
- Oversight of communications within the Federal incident management system and response structures

An intact and robust communications ESF and the

national communications infrastructure as a whole, have critical and obvious roles to play across the entire spectrum of the national Emergency Support Functions, such as Information and Planning (ESF #5), Public Health and Medical Services (ESF# 8),Search and Rescue (ESF# 9),Firefighting (ESF #4),Public Safety and Security (ESF # 13), Oil and Hazardous Materials, including CBRN response, (ESF# 11) and External Affairs which would incorporate emergency public information and protective action guidance (ESF# 15).

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

**Dee Ruelas** possesses over 25 years of multidisciplinary experience in public safety communications, emergency medical services, health care, environmental safety and jurisprudence. She is also a trained and ordained minister. She is the owner of Teach 2 Prepare, a consultation, training and educational entity focusing in the areas of emergency preparedness and response, community recovery and resiliency, occupational-environmental health and safety, homeland security-counterterrorism, training, education and exercise design, development and evaluation. She is also a respected and accomplished instructor, educator, author and serves as an SME, NAEMT Certified instructor and American Heart Association CPR Program Manager and Instructor for Integrated Community Solutions to Active Violence Events (ICSAVE.org), an Arizona-based non-profit organization.

**Frank Rando** has over 30 years of experience in public safety emergency services, including law enforcement, criminal investigations, high- risk tactical entry, tactical medicine, technical and heavy rescue and as a hazardous materials CBRNE specialist, paramedic and flight medic. He is a Surgical First Assistant, Respiratory Therapist, Emergency Medical Technician, environmental health scientist, consultant, instructor, educator, author and co-owner of Teach 2 Prepare and an SME/NAEMT Certified Instructor for Integrated Community Solutions to Active Violence Events

(ICSAVE.org) He has served as a Counterterrorism /Homeland Security SME and instructor for several US Department of Homeland Security and Department of Defense projects and programs.







# **PRNE** DIARY

# BIO NEWS

#### Russian couple dies in bubonic plague scare that closes Mongolia border

Source: https://nypost.com/2019/05/03/russian-couple-dies-in-bubonic-plague-scare-that-closesmongolia-border/

May 03 – A Russian couple died in Mongolia from suspected bubonic plague, sparking a panic aboard a plane and forcing authorities to place the border under "indefinite quarantine," leaving tourists stranded,



according to reports.

"Preliminary test results show that bubonic plague likely caused the deaths of the two people," according to the emergency management department in Bayan-Ulgii province, <u>the Siberian Times reported.</u>

Dramatic photographs show workers in hazmat suits walking along the aisle of an airliner at the airport in the Mongolian capital of Ulaanbaatar. The flight arrived from Bayan, Uglii and Khovd.

The team from the National Center of Communicable Diseases checked the 160 passengers for signs of infection.

All the passengers from Ulgii were sent to a hospital for observation, while the others were examined near the airport.

The domestic Mongolian carrier Hunnu Air grounded all flights to the region until Saturday. The Russian couple — a 38-year-old man and his 37-year-old pregnant wife — reportedly fell ill after hunting and eating contaminated marmot, a large species of squirrel, in Mongolia, according to the reports.

The man died April 27 and his wife died three days later, leaving behind four kids.

"Despite the fact that eating marmots is banned, Citizen T hunted marmot," Dr. N. Tsogbadrakh, director of the National Center for Zoonotic Dermatology and Medicine, told the Siberian Times, using the man's designation.

"He ate the meat and gave it to his wife, and they died because the plague affected his stomach. Four children are orphaned," he added.

A total of 158 people who came into either direct or indirect contact with the couple are "under supervision."

Russian tourists from Siberia and the Urals were left stranded when a major border crossing was closed amid suspicion it was related to the frightening outbreak.

At least nine tourists sought help from the Russian consulate.

The extremely contagious bacterial disease is spread by fleas living on wild rodents. It can kill an adult in under 24 hours if not treated in time, according to the World Health Organization.

The plague is believed to be the cause of the Black Death that spread through Asia, Europe and Africa in the 14th century, killing about 50 million people.



#### Islamist gunmen kill polio vaccinator in Pakistan

Source: http://www.homelandsecuritynewswire.com/dr20190425-islamist-gunmen-kill-polio-vaccinator-in-pakistan

Apr 25 – Police in Pakistan say a gunman shot dead a female polio vaccinator and wounded another Thursday, raising the number of deaths to three in attacks against this week's national immunization campaign in Pakistan.

The latest shooting incident occurred in southwestern Baluchistan province where, police said, assailants

on a motorbike opened fire at a polio team in a remote district on the Afghan border. They described the conditions of the injured female health worker as "critical."

"The women were coming back from the field after administering polio drops to children when they were shot at by two unknown men riding a motorbike," said Rashid Razzaq, a senior official at the polio emergency center in the provincial capital of Quetta. He told



VOA that one victim died instantly while the other received "serious" bullet injuries and is undergoing treatment in a Quetta hospital.

Razzaq confirmed authorities have temporarily suspended the vaccination campaign in Chaman.

Other attacks took place in northwestern Khyber Pakhtunkhwa province, also bordering Afghanistan, where gunmen shot dead two police offices escorting polio vaccinators.

Additionally, authorities also arrested ten men in the provincial capital Peshawar for spreading unfounded rumors through fake social media videos that a polio vaccine had led to fainting and vomiting.

One of the detainees, identified as school teacher Nazar Muhammad, could be seen in the scaremongering Twitter videos instructing his students to faint and pretend to be sick from the oral polio vaccine (OPV).

The videos quickly went viral, sparking widespread protests in parts of Peshawar, with angry mobs destroying a local health unit. Clerics in mosques used loudspeakers to warn parents against having their children vaccinated.

The scare prompted panicked families to rush their children to hospitals, where doctors examined more than 25,000 and concluded that none had suffered an adverse reaction after receiving the vaccine drops.



Islamic clerics and residents in parts of the religiously conservative Khyber Pakhtunkhwa and Baluchistan have long been suspicious of the polio vaccine, claiming it is a Western plot to harm or sterilize Muslim children.

Militants linked to outlawed extremist groups also have taken responsibility for attacks against anti-polio teams in Pakistan, accusing them of working as government spies. The suspicions and attacks have hampered Islamabad's efforts to eradicate the crippling polio disease from the country, officials admit.

The violence against workers associated with polio immunization efforts have in recent years killed dozens of people in Pakistan, one of three countries in the world — along with Afghanistan and Nigeria — where wild polio virus is still endemic. Nigeria has not reported any new cases for two consecutive years.

# Non-thermal plasma: new technology could kill 99.9% of the deadly germs in the air

Source: http://theconversation.com/non-thermal-plasma-new-technology-could-kill-99-9-of-the-deadly-germs-in-the-air-115651

Apr 29 – You can live without food for three weeks and without water for up to three days. But you can't live without air for more than three short minutes. It's not just the abundance of air that matters – the quality is essential, too. Unfortunately, air can be contaminated with dangerous germs known as airborne pathogens, such as bacteria and viruses.

Airborne diseases are very easily transmitted, and can result in respiratory illness that can be life threatening. It's therefore no wonder that outbreaks of airborne infectious diseases are a major public health concern, and that researchers are working hard to come up with technologies to provide clean air. So far, however, such technologies have had limited success.

Now a new study suggests that <u>non-thermal</u> <u>plasma</u> – a cool gas made up of electrically charged particles, despite having no overall charge – could inactivate airborne viruses and <u>provide sterile air</u>. Although the technology has a long history and many applications (in medicine and food industry), this is a completely new use for it.

#### **Devastating outbreaks**

Viruses that can spread through the air include <u>influenza (flu)</u>, common cold (rhinovirus), varicella zoster (chicken pox), mumps and measles. Measles in particular has been labelled a <u>public health time bomb</u> as many parents fail to vaccinate their children. Importantly, vaccination is the only way to completely prevent getting measles. Infected individuals can transmit airborne viruses through droplets and small particles excreted during sneezing and coughing. These viruses can spread very quickly from person to person through air, especially in crowded areas such as schools and nursing homes.

Flu is one of the most common airborne viruses and <u>it is very contagious</u>. Illness may range from mild to severe respiratory disease and even death, with symptoms including sudden onset of fever, cough, sore throat, runny nose, headache, malaise and muscle and joint pain. Hospitalisation and deaths due to influenza virus can occur in high-risk groups including children, the elderly, pregnant women, individuals with a weakened immune system – such as HIV or cancer patients – and some individuals with chronic illnesses.

According to WHO, the flu results in <u>more than</u> <u>3m cases</u> of severe illness per year and about 290,000-650,000 deaths. The most lethal pandemic of influenza virus was the Spanish flu (H1N1) in 1918-1919 that infected about a quarter of the global population and caused more than 40m deaths. Newly emerged airborne viruses such as <u>Severe Acute Respiratory</u> <u>Syndrome (SARS)</u> also <u>spread quickly</u> from China to many countries all over the world.

Treatment of mild airborne viral infections include rest and fluids. However, there are no

specific antiviral drugs for the treatment of severe infections. It is also very hard to prevent yourself catching them, though you can reduce exposure through some good habits such as regular hand washing. If you have an infection, you can reduce the risk of passing them on by covering sneezes and coughs with a tissue or a hospital mask.

#### **Clearing the air**

There are air disinfection methods currently available but they have several limitations. Ultraviolet germicidal irradiation (UVGI), for example, is a disinfection method that uses ultraviolet light to kill or inactivate microorganisms by destroying their DNA so that they cannot reproduce inside the human body. However, over-exposure to UVGI has adverse health effect, leading to skin erythema (superficial reddening of the skin) and a painful eye condition known as photokeratitis. Air filtration is a good method to clean the air by passing it through a filter which removes particles and stops outside pathogens from penetrating into buildings such as healthcare facilities. However, some airborne pathogens are too small to be removed and can pass through air filters.

The new method developed by researchers at the University of Michigan does offer hope though. Their study, published in the Journal of Physics, shows that a non-thermal plasma can inactivate 99.9% of airborne viruses through releasing energetic, charged fragments of air molecules that can <u>destroy viruses in less than</u> <u>a second</u>. The non-thermal plasma can also kill bacteria through destruction of their cell wall. The plasma was produced in a non-thermal plasma reactor. When pathogens in the air pass through it, they <u>react with its unstable</u> <u>atoms</u> called radicals (such as ozone). These alter the lipids, proteins and nucleic acids of the microorganisms they encounter – killing the pathogens or rendering them harmless. The device also works by filtering pathogens from the air stream.

Combining filtration and inactivation of airborne pathogens will provide a more efficient way of providing sterile air than current devices. The research team has already begun testing the reactor on ventilation air streams at a pig farm to determine its efficacy in preventing the spread of airborne pathogens.

But while the device is effective, is it safe? We know that ozone is <u>linked to respiratory</u> conditions. But the researchers say that ozone exposure from the device is within regulation standards, meaning it shouldn't constitute a safety hazard.

So it looks like non-thermal plasma reactors have the potential to replace the traditional face mask and provide sterile air – especially in crowded areas such as on public transport, and in schools and hospitals.

Given how difficult it is to prevent the transmission of airborne disease, this is great news. Although we can often choose what food to eat and what beverages to drink, we cannot, after all, choose what air we breathe.

# A first in medical robotics: Autonomous navigation inside the body

#### By G. Fagogenis, M. Mencattelli, Z. Machaidze et al.

Source: https://robotics.sciencemag.org/content/4/29/eaaw1977

Although all minimally invasive procedures involve navigating from a small incision in the skin to the site of the intervention, it has not been previously demonstrated how this can be performed autonomously. To show that autonomous navigation is possible, we investigated it in the hardest place to do it—inside the beating heart. We created a robotic catheter that can navigate through the blood-filled heart using wall-following algorithms inspired by positively thigmotactic animals. The catheter uses haptic vision, a hybrid sense using imaging for both touch-based surface identification and force sensing, to accomplish wall following inside the blood-filled heart. Through in vivo animal experiments, we demonstrate that the

performance of an autonomously controlled robotic catheter rivaled that of an experienced clinician. Autonomous navigation is a fundamental capability on which more sophisticated levels of autonomy can be built, e.g., to perform a procedure. Similar to the role of automation in a fighter aircraft, such capabilities can free the clinician to focus on the most critical aspects



of the procedure while providing precise and repeatable tool motions independent of operator experience and fatigue.



#### i-gel

#### Source: https://www.intersurgical.com/info/igel

The i-gel<sup>®</sup> is the innovative second generation supraglottic airway device from Intersurgical. The first major development since the laryngeal mask airway, i-gel has changed the face of airway management and is now widely used in anesthesia and resuscitation across the globe.

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i-gel is supplied in an innovative, color-coded polypropylene protective cradle or cage pack.

#### Why use the i-gel<sup>®</sup>?

- Ease and speed of insertion
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i-gel has a soft, gel-like, non-inflatable cuff, designed to provide an anatomical impression fit over the laryngeal inlet.



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Working in harmony with the patient's anatomy, compression and displacement trauma are significantly reduced or eliminated.

#### **Bioterrorism may be behind locusts attack on Iran: MP**

Source: https://en.mehrnews.com/news/144740/Bioterrorism-may-be-behind-locusts-attack-on-Iran-MP

May 01 – An Iranian lawmaker said that swarms of locusts' attack on southern Iranian regions may be an act of bioterrorism.

"Given the existing reasons, the locusts attack on parts of the country may be planned strikes designed by other countries and an act of bioterrorism", Ali Akbari, Shiraz's representative in the Iranian Parliament told IRNA on Wednesday.

In the past two weeks, swarms of locusts have attacked southern Iranian provinces. The locusts are reportedly originated from Saudi Arabia where there was no fight to control them.





"There is a possibility of bioterrorism given the enmities which some neighboring countries have toward the Iranian nation," said Akbari, adding, "These countries spare no effort to inflict economic, political and social loss to the Iranian nation."

Locusts can fly some 200 kilometers but the distance between Iran and Saudi Arabia is way more than this, he noted, adding that these insects may have been transferred to the vicinity of Iranian borders in the Persian Gulf by vessels.

He went on to say that the situation is under control and minimum damage has been incurred to the country.

#### Are Frontline Hospitals Ready for a Patient with Ebola?

By Saskia V. Popescu

Source: https://www.contagionlive.com/contributor/saskia-v-popescu/2019/05/are-frontline-hospitals-ready-for-a-patient-with-ebola

May 01 – Just how well prepared are frontline hospitals for high-consequence pathogens like **Ebola?** It's likely you won't be happy with the answer that is included in a new article from <u>Health</u> <u>Security</u>, which details an evaluation of a multi-hospital system and identifies gaps in their biopreparedness.

Following the <u>Dallas Ebola cluster in 2014</u>, the US Department of Health and Human Services (HHS) created a tiered hospital approach to manage Ebola preparedness. When the first patient in Dallas was identified, hospitals around the United States rushed to acquire the necessary personal protective equipment (PPE), train staff, and identify and correct gaps in their admitting processes to avoid missing symptoms of highly contagious diseases such as Ebola.

From travel screening questions in electronic medical records to special Ebola treatment teams, it was a time of extreme effort and fatigue for health workers. To reduce the burden on the US health care system, HHS created a regional approach that involve 3 tiers—frontline hospitals were

expected to identify, isolate, and hold a patient for 12-24 hours; assessment hospitals were tasked with receiving, isolating, and providing laboratory efforts while holding the patient for up to 96 hours; Ebola treatment centers were designated to receive and isolate Ebola



patients, and provide care for a minimum of 7 days, while sustaining enough staff and supplies to care for Ebola patients for weeks.

The hope was that this would alleviate the stress of the more than 4845 frontline facilities and establish more treatment centers for special pathogens to ensure that the United States could handle more than a handful of patients with a disease like Ebola.



**Now fast forward to 2019**...how prepared are these frontline facilities today? Unlike the treatment centers, they do not receive funding or undergo assessments of their biopreparedness and frankly, there are a lot of <u>competing interests</u> for hospital administrators to invest in the costly PPE for Ebola. Although some hospital systems have run drills on their preparedness for high-consequence pathogens, they are also typically the systems that maintain a heightened level of readiness, and for most of the other facilities it is less likely Ebola or other special pathogens are getting much attention.

Investigators sampled 5 major frontline hospitals in Maricopa County, Arizona, to perform a gap analysis in how their response would be for a patient with Ebola or another high-consequence pathogen. From entering the hospital through the emergency department to cleansing and disinfecting protocols, the investigators evaluated whether health care workers could still answer the questions that were heavily drilled into these hospitals in 2014.

The investigators report: "Intake staff in the emergency departments (n = 42) were aware of the importance of documenting travel history, but no staff at any of the facilities could speak to how they would respond if a patient had a relevant travel history and symptoms that could indicate EVD [Ebola virus disease] or another high-consequence pathogen. Only 60% of the surveyed individuals could describe a proper communication strategy, and only 20% thought to call the infection prevention and control team. Staff were aware of an algorithm for response but could not describe its location or a mechanism for acquiring it. No staff were confident or comfortable in their ability to don or doff the appropriate PPE, and all requested additional training."

Moreover, the location of the designated PPE was found to be in locked storage areas, and even the infection prevention staff did not feel entirely comfortable in their abilities to communicate protocols. "Fortunately, the logistics of acquiring additional PPE within 24 hours were in place, and existing waste management containers and contracts for EVD-associated waste removal were available. Laboratory staff were able to report the process and materials for



shipping samples to the CDC or state laboratory, as well as point-of-care testing equipment for use in the patient's room."

This gap analysis was just the tip of the iceberg and although hospitals work to maintain readiness for a multitude of hazards, high-consequence pathogens appear to no longer be on the top. It is likely that these findings represent a trend among other frontline facilities—those with competing priorities and strained budgets that see health care-associated infections as the bigger threat.

Overall, it is important that we consider these facilities in future efforts and work to include frontline hospitals and urgent care facilities in biopreparedness efforts, as the odds are more likely a patient with a high-consequence pathogen will walk into their emergency departments.

Saskia v. Popescu, MPH, MA, CIC, is a hospital epidemiologist and infection preventionist with Phoenix Children's Hospital. During her work as an infection preventionist she performed surveillance for infectious diseases, preparedness, and Ebola-response practices. She is currently a PhD candidate in Biodefense at George Mason University where her research focuses on the role of infection prevention in facilitating global health security efforts. She is certified in Infection Control.

#### 6 in 10 Infectious Diseases Come from Animals. The CDC Is Most Worried About These 8

Source: https://www.livescience.com/65417-top-concerning-zoonotic-diseases.html

May 07 – More than half of the infectious diseases that affect people come from animals. Now, for the first time, the government is releasing a list of the top eight illnesses spread from animals — called zoonotic diseases — in the United States.

The list includes some strains of the flu, *Salmonella* infection, <u>West Nile</u> <u>virus</u>, the plague, emerging coronaviruses such as <u>Middle East respiratory</u> <u>syndrome</u>, <u>rabies</u>, <u>brucellosis</u> (a bacterial infection) and Lyme disease, according to the list, released May 6 by the <u>Centers for Disease Control and</u> <u>Prevention</u> (CDC).

Experts from the CDC, along with experts from the U.S. Department of Agriculture and the Department of the Interior, came up with the list during a workshop held last

December in Washington, D.C.

The eight illnesses were chosen based on the potential for the disease to cause an epidemic or pandemic, the severity of the disease, the economic impact, the potential for the introduction or spread of the disease in the U.S., and the potential for bioterrorism. (An epidemic refers to when a disease affects more of a given population than expected; a pandemic refers to a worldwide epidemic.) [10 Deadly Diseases That Hopped Across Species]

Take the flu, for example. The flu can sicken many different animals, including cats, dogs and bats. And though certain strains of the virus are typically contained within certain species, the strains change all the time. In rare cases, the virus can mutate in a way that allows it to hop from whichever animal it usually infects to humans, and from there, spread to other humans.

Flu pandemics typically happen as a result of this hop from animals to humans, <u>Live Science reported in</u> <u>March</u>. For example, the 2009 flu pandemic — the swine flu — came from pigs. And the 1918 flu pandemic, which killed millions of people around the world, originated in birds.

Other zoonotic illnesses on the list include salmonellosis, caused by <u>Salmonella bacteria</u>, which leads to about 1.2 million illnesses every year in the U.S., according to the <u>CDC</u>. People can become

infected by this bacterium if they eat food contaminated with the bacteria.

Also, on the list is a very rare, yet very serious zoonotic infection known as rabies, which is caused by a virus that can spread from animal bites.



The list also includes the West Nile virus, which can be transmitted from mosquitoes, and Lyme disease, an illness that comes from the <u>bite of infected ticks</u>. The plague (yes, it still exists) can be transferred to humans who have handled <u>animals infected with the bacterium</u> *Yersinia pestis*. The plague, unlike in the Middle Ages, is now treatable with antibiotics. Even so, the report concluded that one form of the plague — the deadly pneumonic plague — has the potential to spread until it's an epidemic, and the bacteria could also be used as a bioterrorism agent.

# Scientists combat the use of Ebola as a bioweapon, advance treatments

#### **By Claudia Adrien**

Source: https://homelandprepnews.com/countermeasures/33804-scientists-combat-the-use-of-ebola-as-a-bioweapon-advance-treatments/

May 09 – It's not far-fetched to think that Ebola could be used as an agent of bioterrorism, according to researchers working on vaccines and treatments for the virus.

In theory, a terrorist could mass disseminate the hemorrhagic virus by small particle aerosol. It is a possible but unlikely scenario because executing such an attack would take an incredible amount of technology and financing. However, someone with basic skills in virology could infect only a few people with Ebola, and the event would cause worldwide havoc.

"Even if this act of terrorism killed only a small number of people, it's the panic, the fear, and the economic issues caused by it that would be concerning," said Thomas Geisbert, a professor at the University of Texas Medical Branch at Galveston and a member of the Institute for Human Infections and Immunity. But bioterrorism loses its appeal when there are treatment options at hand, Geisbert said.

Geisbert is partnering with scientists from Profectus Biosciences, Vanderbilt University Medical Center, Mapp Biopharmaceutical and Genevant Sciences Corporation to develop rapid-acting vaccines and broad-spectrum treatments for the highly-lethal Ebola and Marburg viruses.

The National Institutes of Health awarded the team \$35 million in April to continue its research. The researchers are only a few years away from completing the development of a candidate drug, MBP134, which is an antibody cocktail that can treat Ebola even in a person with late-stage infection. The researchers hope the drug will be available in three years.

Ebola wasn't always the public health concern that it is now. In the last half of the 20th century, outbreaks of Ebola appeared small and sporadic in West Africa, where the virus is endemic. It wasn't until the major outbreak of 2013 to 2016, where 11,310 reported deaths occurred, that researchers began to make serious headway on vaccines and treatment options. The experimental Ebola vaccine created by Merck & Co. currently being administered in the Democratic Republic of Congo is combating the second largest Ebola outbreak in history. Much of the initial work toward Merck's Ebola vaccine was conducted by Geisbert and fellow researcher Heinz Feldmann.

From a bioterrorism perspective, Ebola was considered a threat as far back as the 1980s and 1990s, although major outbreaks of the virus weren't occurring in Africa during that period. Because the Soviet Union was developing Ebola and Marburg viruses to be used as bioweapons, the U.S. Army funded research to defend against this potential bioterrorism threat.

"And then 9/11 really changed everything," Geisbert said. "There was a realization that some of these different terrorist groups could use bioterrorism."

One week after the Sept. 11, 2001 attacks, letters containing anthrax spores were mailed to news media offices and to Democratic U.S. Sens. Tom Daschle and Patrick Leahy. The spores killed five people and infected 17 others.

Amidst the reality of these attacks, funding became a greater priority, and in the mid 2000s,

the NIH began to make available more research dollars for Ebola and Marburg. Scientists like Geisbert started partnering with small biotech companies to come up with countermeasures against these pathogens.



When the media began heavily covering the 2013 to 2016 Ebola epidemic in West Africa, as well as the American patients who had contracted the virus, the public pushed for more resources toward combating Ebola.

However, Ebola research is an expensive, complicated endeavor. It often takes three times longer to conduct Ebola studies due to the strict regulations scientists must follow in a biosafety level 4 laboratory. Experiments involving monkeys are also expensive, as each primate costs thousands of dollars. However, these animal experiments are essential because conducting laboratory Ebola research on humans is nearly impossible given the ethical questions. These impediments made advancing vaccines and treatments for Ebola a 15- to 20-year process.

Yet, there is new hope. The MBP134 drug Geisbert and his colleagues have created can treat the three major strains of Ebola. Geisbert explains it works by binding to key areas on the Ebola protein which then keeps Ebola from replicating.

"We're trying to develop drugs that when somebody is already sick, we can at least stop the virus from growing at that point," Geisbert said. "This whole thing is a race with the clock for any of these drugs."

#### **Bioterrorism history with Lawrence Roberge, PhD**

Source (video): http://outbreaknewstoday.com/bioterrorism-history-lawrence-roberge-phd-46319/

### North Korea's bioweapon research is "advanced, underestimated and highly lethal"

Source: https://stockvisionary.com/north-koreas-bioweapon-research-is-advanced-underestimated-and-highly-lethal/20596/

January 2019 – Pound for pound, the deadliest arms of all time are not nuclear but biological. A single gallon of anthrax, if suitably distributed, could end human life on Earth.

Even so, the Trump administration has given scant attention to North Korea's pursuit of living weapons — a threat that analysts describe as more immediate than its nuclear arms, which Pyongyang and Washington have been discussing for more than six months.

According to an analysis issued by the Middlebury Institute of International Studies at Monterey last month, North Korea is collaborating with foreign researchers to learn biotechnology skills and build machinery. As a result, the country's capabilities are increasing rapidly.

"North Korea is far more likely to use biological weapons than nuclear ones," said Andrew C. Weber, a Pentagon official in charge of nuclear, chemical and biological defense programs under President Barack Obama. "The program is advanced, underestimated and highly lethal."

The North may want to threaten a devastating germ counterattack as a way of warding off aggressors. If so, its bioweapons would act as a potent deterrent.

But experts also worry about offensive strikes and agents of unusual lethality, especially the smallpox virus, which spreads person to person and kills a third of its victims. Experts have long suspected that the North harbors the germ, which in 1980 was declared eradicated from human populations.

Worse, analysts say, satellite images and internet scrutiny of the North suggest that Pyongyang is newly interested in biotechnology and germ advances. In 2015, state media showed Kim Jong Un, the nation's leader, touring a biological plant, echoing his nuclear propaganda.

But compared with traditional weapons, biological threats have a host of unsettling distinctions: Germ production is small scale and far less expensive than creating nuclear arms. Deadly

microbes can look like harmless components of vaccine and agricultural work. And living weapons are hard to detect, trace and contain.



The North's great secrecy makes it hard to assess the threat and the country's degree of sophistication. Today, the North might well have no bioweapons at all — just research, prototypes, human testing, and the ability to rush into industrial production.

Still, Anthony H. Cordesman, a former Pentagon intelligence official now at the Center for Strategic and International Studies, said the North "has made major strides" in all technical areas needed for the production of a major germ arsenal.

In unclassified reports, the Trump administration has alluded to the North's bioweapons program in vague terms. President Donald Trump did not broach the subject of biological weapons during his meeting with Kim in Singapore, according to U.S. officials.

Last century, most nations that made biological arms gave them up as impractical. Capricious winds could carry deadly agents back on users, infecting troops and citizens. The United States renounced its arsenal in 1969.

But today, analysts say, the gene revolution could be making germ weapons more attractive. They see the possibility of designer pathogens that spread faster, infect more people, resist treatment, and offer better targeting and containment. If so, North Korea may be in the forefront.

South Korean military white papers have identified at least 10 facilities in the North that could be involved in the research and production of more than a dozen biological agents, including those that cause the plague and hemorrhagic fevers.

Several North Korean military defectors have tested positive for smallpox antibodies, suggesting they were either exposed to the deadly virus or vaccinated against it, according to a report by Harvard Kennedy School's Belfer Center for Science and International Affairs.

Smallpox claimed up to a half-billion lives before it was declared eradicated. Today, few populations are vaccinated against the defunct virus.

Starting three years ago, Amplyfi, a strategic intelligence firm, detected a dramatic increase in North Korean web searches for "antibiotic resistance," "microbial dark matter," "cas protein" and similar esoteric terms, hinting at a growing interest in advanced gene and germ research.

According to the Middlebury Institute analysis, at least 100 research publications that were jointly written by North Korean and foreign scientists have implications for military purposes, such as developing weapons of mass destruction. The collaborations may violate international sanctions.

Joseph S. Bermudez Jr., a North Korean military analyst, said it is entirely likely that the North has already experimented with gene editing that could enhance bacteria and viruses.

"These are scientists, and scientists love to tinker," he said.

Western concerns about the North's program jumped in June 2015, after Kim posed in a white lab coat alongside military officers and scientists in a modern-looking pesticide facility called the Bio-Technical Institute, his arms outspread toward shiny lab equipment.

The plant allegedly produced pesticides. The photos showed enormous fermenters for growing microbes, as well as spray dryers that can turn bacterial spores into a powder fine enough to be inhaled. Kim was beaming.

Melissa Hanham, a scholar who first identified the site's threatening potential, said equipment model numbers showed that the North had obtained the machinery by evading sanctions — laundering money, creating front companies or bribing people to buy it on the black market.

She said the evidence suggests the North succeeded in building a seemingly harmless agricultural plant that could be repurposed within weeks to produce dried anthrax spores.

Americans felt the sting of bioweapons in 2001 when a teaspoon of anthrax powder, dispatched in a handful of envelopes, killed five people, sickened 17 more and set off a nationwide panic. The spores shut down Congressional offices, the Supreme Court and much of the postal system, and cost about \$320 million to clean up.

Federal budgets for biodefense soared after the attacks, but they have declined in recent years.

Still, on the Korean Peninsula, troops gird for a North Korean attack. According to the Belfer report, U.S. forces in Korea since 2004 have been vaccinated against smallpox and anthrax.



Recently, Army engineers sped up the detection of biological agents from days to hours through Project Jupitr, or the Joint U.S. Forces Korea Portal and Integrated Threat Recognition, a Department of Defense spokeswoman said.

The comptroller general of the United States, after a request from the House Armed Services Committee, is currently conducting an evaluation of military preparedness for germ attacks.

"If you're a country that feels generally outclassed in conventional weapons," Hanham said, a lethal microbe such as anthrax might seem like a good way "to create an outsized amount of damage."

Such an attack would maximize casualties, she said, while terrorizing the uninfected population. For North Korea, Hanham added, "That would be the twofold goal."

#### **Cholera in Yemen**

Source: <u>http://www.emro.who.int/pandemic-epidemic-diseases/cholera/outbreak-update-cholera-in-yemen-12-may-2019.html</u>

May 12 – The Ministry of Public Healt h and Population of Yemen reported 18 171 suspected cases of cholera with 13 associated deaths during epidemiological week 18 (29 Apr-5 May) of 2019. 15% of cases were severe. The cumulative total number of suspected cholera cases from 1 Jan 2018 to 28 Apr 2019 is 668 891 with 1081 associated deaths (CFR 0.16%). Children under 5 represent 22.7% of total suspected cases during 2019. The outbreak has affected 22 of 23 governorates and 294 of 333 districts in Yemen.

### Tularemia bacterium hibernates but can be traced in terror attacks

Source: https://www.umu.se/en/news/tularemia-bacterium-hibernates-but-can-be-traced-in-terror-attacks\_7649881/

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

"Its potency to become dangerous in small amounts unfortunately makes this bacterium an ideal candidate as a biological weapon. Therefore, it is important that we have found a way to trace the origin of different bacterial

cultures," says Chinmay Dwibedi, doctoral student at the Department of Clinical Microbiology at Umeå r In his thesis, Chinmay Dwibedi has studied outbreaks of tularemia, also called 'rabbit fever', in Sweden and other European countries. Tularemia is caused by the bacterium *Francisella tularensis* and is a disease that infects both animals and

humans. In Sweden, people have so far only suffered from a mild form of tularemia. Already at a modest dose, variants of the bacterium can cause more serious disease attacks with deadly outcomes. Therefore, during the Cold War, the superpowers experimented with Francisella tularensis as a biological weapon. In one study, the *Francisella tularensis* bacterium was analysed in infected people and animals during repeated outbreaks in Örebro County in mid-Sweden. It was then discovered that the bacterial genome remained identical for up to nine years. Furthermore, the bacterium could survive for four years without nutrition in a laboratory experiment. In another study, the researchers could see that the bacterium could migrate several thousand kilometres through continental Europe with little change in its genome.

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

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

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

►► <u>To the doctoral thesis</u>



#### Ebola in Congo

Source: https://mailchi.mp/sante.gouv.cd/ebola\_kivu\_15mai19?e=f96cddba3b

The epidemiological situation of the Ebola Virus Disease dated 14 May 2019:

- Since the beginning of the epidemic, the cumulative number of cases is 1739, of which 1651 are confirmed and 88 are probable. In total, there were **1147 deaths** (1059 confirmed and 88 probable) and 459 people cured.
- 332 suspected cases under investigation;
- 19 new confirmed cases, including 7 in Mabalako, 4 in Musienene, 3 in Katwa, 2 in Beni, 1 in Mandima, 1 in Lubero and 1 in Butembo;
- 11 new confirmed case deaths, including
- 6 community deaths, 2 in Mabalako, 2 in Katwa, 1 in Musienene and 1 in Butembo;
- 5 deaths at CTE, 2 in Butembo, 2 in Beni and 1 in Mandima.

#### DRC Ebola cases exceed 1,800 amid burial team attacks

Source: http://www.homelandsecuritynewswire.com/dr20190521-drc-ebola-cases-exceed-1-800-amid-burial-team-attacks

21 May – Blowing past the 1,800 case mark, the Democratic Republic of the Congo (DRC) <u>reported</u>39 cases over the weekend as well as a pair of assaults on burial teams, along with 10 new infections today, according to the latest official reports, raising the outbreak's total to 1,826.

In his <u>keynote speech</u> to mark the opening of the World Health Assembly (WHA) in Geneva today, World Health Organization (WHO) Director-General Tedros Adhanom Ghebreyesus, praised the DRC health minister and its government for their leadership and commitment to ending the outbreak, but added that the risk of spread beyond the two affected provinces remains very high.

"We are fighting one of the world's most dangerous viruses in one of the world's most dangerous areas," Tedros said, emphasizing that outbreak responders are also battling insecurity, violence, misinformation, mistrust, and politicization of the event.

He said he has met with the DRC's president and opposition leaders to press for a multipartisan approach for ending the outbreak. "Unless we unite to end this outbreak, we run the very real risk that it will become more widespread, more expensive, and more aggressive."



Gavi gives \$9 million more for vaccination

Gavi, the Vaccine Alliance, <u>announced</u> yesterday that it has provided \$9.2 million more to support Ebola vaccination in the DRC's outbreak region.

In a news release, it said the new funding will go to the WHO to cover operating costs for vaccination, including vaccination teams, transportation, syringes and other supplies, and special refrigerators that keep the vaccine at the required temperature. Merck is donating the vaccine on a compassionate use basis.

Seth Berkley, Gavi's chief executive officer, said in the release that evidence so far suggests the highly effective vaccine is making an impact on the ground. "However, it is a sad fact that this impact has only been possible thanks to the sheer bravery of the vaccinators working in areas of increasing instability." CIDRAP <u>reports</u> that in its latest update, the DRC said nearly 120,000 people had been vaccinated against Ebola, and Gavi said nearly 30,000 frontline and health workers have been immunized in the outbreak region. The same two groups of professionals in neighboring areas in Goma, South Sudan, Uganda, and Rwanda are also being vaccinated, and Burundi is preparing to begin vaccination soon. Gavi's new funding will run until July, bringing its support since the outbreak began to \$15.1 million, which includes \$2 million for efforts in neighboring countries.

New cases alongside attacks

Alongside reports of new cases over the weekend, the DRC's health ministry in its 18 May <u>update</u> described two separate attacks on safe and dignified burial teams. In one, the chief of a burial team was assaulted by the family members of a person who died in the Rwampara/Bunia area who refused to let the team take samples from the body for testing.

On May 17 a burial team was assaulted while burying four people who died at the Ebola treatment center in Butembo. The teams dig the graves beforehand to streamline their work, but sometimes people cover the graves during the night to state their opposition to the burials. When the team arrived at the cemetery, the graves were covered and people threw stones at them, injuring a burial team officer.

In a pair of weekend updates, the health ministry reported 39 new cases in nine locations, with Butembo and Mabalako the hardest-hit areas, with 9 cases each. Other affected sites are Katwa (6), Beni (5), Musienene (3), Mandima (3), Kalunguta (2), Lubero (1), and Mangurujipa (1). As of yesterday, health officials were still investigating 291 suspected Ebola cases.

The health ministry also reported that 32 more people died from their Ebola infections, 19 of them in community settings and 13 in Ebola treatment centers.

The weekend developments pushed the outbreak total past 1,800 to reach 1,816. And yesterday, the number of fatalities topped 1,200 to reach 1,209.

Today the WHO's <u>online Ebola dashboard</u> reflected 10 more cases, which puts the overall total at 1,826.

#### Truth decay: Vaccination scare threatens the global war on polio

Source: http://www.homelandsecuritynewswire.com/dr20190513-truth-decay-vaccination-scare-threatens-the-global-war-on-polio



May 13 – Enraged by false reports on social media that polio drops had made their children ill, an unruly mob in Masho Khelhe, Pakistan, ransacked and then burnt a clinic where physicians vaccinated children against polio. The attack on 22 April came as long-festering suspicions and propaganda about the worldwide vaccination campaign

boiled over across northern Pakistan in a heady mix of fear and wildfire rumor. Ben Farmer writes in the <u>Telegraph</u> that the hysteria of 22 April marked a worrying setback



for a campaign which had been on the cusp of eradicating what was once a worldwide scourge, but has faltered. The scale of last month's panic highlighted how divisive the vaccination program remains to some, despite years of public education, and also how it continues to be used as a focus of extremist propaganda. Anti-vaccine disinformation on social media has made the situation worse, officials say. They are particularly worried how the suspicion appeared to have spread from the illiterate rural poor and even gripped middle class families.

#### The Author of *World War Z Is* Worried About *Germ Warfare*

#### By Max Brooks

Source: https://slate.com/technology/2019/05/max-brooks-germ-warfare-bioterrorism-graphic-novel.html



What if Zika had been cooked up in a lab? In 2016, I asked that question in an op-ed for the <u>New York</u> <u>Daily News</u>. At the time, Zika was spreading across the country, and Congress seemed to be treating it like the common cold. I couldn't believe the laziness, the incompetence. Here was a government that would spend trillions on national security but wouldn't lift a finger for public health. But what if national security depended on public health? That had been the case less than two decades ago, when envelopes full of anthrax had been mailed to multiple targets across America, including the building where I worked. As a brand-new writer for *Saturday Night Live*, I came into work one day to find all of 30 Rock in a panic. And we were the lucky ones. The so-called Amerithrax attacks had sickened 17 people and killed five. All from a disease that was completely treatable.

But what about the next time? What if the next attack comes not from bacteria like anthrax but from a virus like the <u>1918 influenza</u>? What if someone digs up a frozen, infected corpse or, like Amerithrax, smuggles the disease out of a lab? If we were caught by surprise by a natural outbreak like Zika—which is <u>waning now</u> but was devastating for those affected—how could we even hope to survive an artificial plague?

I'd already discussed this scenario in my 2006 novel <u>World War Z</u>. Every aspect of this fictional zombie story was based in real-world facts that suggest humanity could easily bungle a response to a disease racing across our planet. I was inspired in part by the discovery and attempted Chinese cover-up of the SARS outbreak in 2002–04.



My Zika op-ed got the attention of folks who were already working on an answer. The Blue-Ribbon Study Panel on Biodefense is a bipartisan group of former government officials—including former DHS Secretary Tom Ridge, former FBI chief of staff Ken Wainstein, former Sen. Joe Lieberman, and, from 2014–18, former HHS Secretary and current Rep. Donna Shalala—devoted to protecting us from the nightmare scenario of a bio attack. And while the panel is affiliated with the Hudson Institute, it carries no political agenda other than uniting against a common threat. That's the good news. The bad news is ... well ... there's a lot of bad news.

The members invited me to a formal hearing in Washington, where two terrifying facts turned my stomach. The first is that my paranoid notions of corpse diggers and lab smugglers are pathetically outdated compared with what's coming at us now. The age of the homegrown bioterrorist is right around the corner, a time where anyone with a little cash and access to the internet will be able to cook up designer plagues. Lab equipment that used to cost millions of dollars can now be purchased on the cheap from eBay. Knowledge that used to require a Ph.D. and top-security clearance is available on the dark web or, in many cases, in open-source publications for the whole world to view. Even worse, breakthroughs in genetic manipulation will allow tomorrow's lone wolf to harvest a seemingly harmless bug anywhere in nature and tweak it just enough to wipe us out.

If that first fact wasn't bad enough, the second is even worse. We, the public, you and I, are the ones letting it happen. Because we've conquered so many diseases, and therefore don't have to worry about the specters that killed and crippled our grandparents, we're starting to question the science that saved us. Thanks to the anti-vaxxer movement, I'm writing this piece from a city (Los Angeles) that in late April <u>quarantined hundreds of people</u> exposed to a disease that was officially eliminated in the United States. And that's just measles. Just wait till polio makes a comeback! And what if that polio, or an entirely new disease, doesn't come from nature? In February, a Coast Guard lieutenant named <u>Christopher Paul Hasson</u> was arrested with a cache of firearms and ammo. In an email, he had allegedly sought to "acquire the needed/ Spanish flu, botulism, anthrax." Pulling that off right now might have been difficult, to say the least. But if he had, in an age of anti-vaxxers and alternative facts, he might have killed more people than all our past enemies put together.

The bioterrorist's greatest ally is our own ignorance, and, as I watched the Blue Ribbon Study Panel's hearing, I saw that the member had no plan to combat it. There were plenty of doctors, counterterror experts, even a logistician who spoke about the need for stockpiling medical supplies. But nobody had even considered how they were going to educate the public. Public misunderstanding is dangerous. Just look at Congo, where an Ebola outbreak is ongoing. Health workers and clinics have been attacked. A study published in the Lancet in late March found that one-quarter of "respondents believ[ed] that the Ebola outbreak was not real. Low institutional trust and belief in misinformation were associated with a decreased likelihood of adopting preventive behaviors, including acceptance of Ebola vaccines ... and seeking formal health care."

Science and technology are useless without us, the citizens, doing our part. We need to know what we're up against and what we can do to protect ourselves.

This is why we came up with the idea of *Germ Warfare: A Very Graphic History*—a <u>free graphic novel</u> that we have just published. Comic books are universal, they're easily accessible, and when it comes to education, they are nothing new. The U.S. Army has used them to train new recruits. UNICEF, in partner with the U.S. government, used them to warn Bosnian children about the dangers of landmines. Recently, the Ugandan Ministry of Health published a graphic novel to help its citizens tell medical science apart from folk <u>remedies</u>. As a parent, I used comics to introduce my son to world history, and as someone who struggles with dyslexia, I depend on them for an introduction to new subjects.

As a writer, the challenge was distilling volumes of research down to the bare essentials. I had to start at the beginning, from the earliest days of human evolution, when we had absolutely no idea that microbes

even existed. Even when we did, when men like Antonie Leeuwenhoek invented the microscope in the 17<sup>th</sup> century, it took another couple of centuries to realize that those tiny "animalcules" caused sickness. It wasn't easy reading about how humans have used germs to kill their fellow humans. From Bronze Age arrows infected with festering manure to bubonic bodies catapulted over city walls, to smallpox-soaked blankets given as a gift to



Native Americans. Even now, it's hard to picture Japanese planes dropping bombs packed with plague fleas on China, or the covered-up anthrax outbreak in the Soviet town of <u>Sverdlovsk</u> in 1979, or the horrific pathogens that the U.S. and numerous other nations have stockpiled (particularly during the Cold War), and how some of those nations still refuse to let them go.

And yet the silver lining during this process was the exact reason I started it in the first place. It's so easy to protect ourselves. We just have to keep doing what we're doing. Keep vaccinating our kids. Keep believing in science. Keep from backsliding into ignorance and division. Hopefully *Germ Warfare: A Graphic History* will remind everyone who reads it that, just like in a zombie outbreak, what keeps us healthy also keeps us safe.

<u>Future Tense</u> is a partnership of <u>Slate</u>, <u>New America</u>, and <u>Arizona State University</u> that examines emerging technologies, public policy, and society.

*Max Brooks* is the author <u>World War Z</u>, <u>Minecraft: The Island</u>, and <u>The Harlem Hellfighters</u>. He is a nonresident fellow at the Modern War Institute at West Point and the Atlantic Council's Brent Scowcroft Center for Strategy and Security.

#### The Hunt for a CRISPR Antidote Just Heated Up

#### **By Shelly Fan**

Source: https://singularityhub.com/2019/05/15/the-hunt-for-a-crispr-antidote-just-heated-up/

May 15 – When scientists behind the Manhattan Project heard of the destruction of Hiroshima and Nagasaki, their earlier exuberance gradually turned into morose regret. What began as a physics revolution had mutated into a weapon of mass destruction—with no feasible "off switch" to cripple its power.

For biology, <u>CRISPR</u> has that same nuclear-scale destructive power. And scientists are not willing to let history repeat itself. Just half a decade after <u>CRISPR's discovery</u>, DARPA initiated the <u>Safe Genes program</u>: a collaboration between seven of the world's leading gene editing experts to find multiple antidotes for CRISPR and better its editing specificity in time and space. The point isn't to fuel public fear of the powerful tool; rather, it's to look far ahead at potential dangers and find preventive treatments or countermeasures. If CRISPR is the biological Pandora's Box, it's already been opened: in the clinics, CRISPR has entered human trials; in the lab, the technology is forged into <u>gene drives</u>, with the potential to wipe out entire species. The goal of the Safe Genes program is to find a way—or many ways—to slam that box shut again.

Last week, the search for a CRISPR antidote got more heated. A team led by Dr. Amit Choudhary at the Broad Institute of MIT, a member of Safe Genes, <u>developed a "screening" platform</u> for rapidly sifting through over 10,0000 small chemicals that dial down Cas9 scissors' activity.

The team tweaked the structure of several promising candidates to further boost their anti-CRISPR power, generating two antidote molecules that prevent Cas9 from binding to and cutting its DNA target. When tested on human cells in petri dishes, the molecules floated through the cell membranes and reliably killed CRISPR activity within minutes.

These drugs are *very* early candidates—heck, they may be even more toxic than CRISPR running amok inside the body. Scientists will have to test them in animals to further assess their effectiveness and safety. But the small anti-CRISPR drugs, some of our very first, offer proof-of-concept that the CRISPR titan *can* be stopped. With a drug screening platform now in place, the scene is set to find even more powerful "undo" buttons: chemicals that may one day turn into shots or

pills to block unwanted gene editing activity, in medicine and perhaps bio-weaponry (now that's a scary thought!).

"These results lay the foundation for precise chemical control over CRISPR-Cas9 activities, enabling the safe use of such technologies," said Choudhary.

#### What's Already Out There?

Choudhary isn't the only one in the Safe Genes team hunting down anti-CRISPR molecules.

Back in 2013, another project member, Dr. Joseph Bondy-Denomy at UC San Francisco, helped <u>discover</u> the first anti-CRISPR drugs: large, bulky proteins that blocked Cas9 scissors from recognizing or binding to DNA molecules. His genius idea was to go back to CRISPR's natural roots as a bacterial immune defense system against viruses.

In a nutshell, CRISPR allows bacteria to store a "mug shot" of the viruses' DNA inside their own genome, so that when the virus attacks again, its Cas scissors can rip the virus to shreds. Phages, however, aren't sitting ducks. In an evolutionary arms race they have also acquired genes that make anti-CRISPR proteins to counteract the bacteria's immune defense.

Tapping into phage anti-CRISPR biology in 2012, Bondy-Denomy discovered several new proteins that widely inhibit Cas12a activity—a Cas9 alternative that's gaining popularity as a diagnostic tool. Working separately, Dr. Jennifer Doudna at UC Berkeley, one of the original CRISPR discoverers and a project team member, also used bioinformatics to <u>hunt down</u> a handful of Cas12a-killers that blocked gene editing activity in cultured human cells.

The results suggest a "straightforward path to the discovery of many more anti-CRISPRs from the microbial world," said Doudna at the time.

#### **Pretty Lights**

Yet anti-CRISPR proteins make crappy kill switches in the real world.

Proteins are difficult: they're large and bulky, so that they can't penetrate into cells and snag onto CRISPR machinery. They're sensitive to temperature changes and digestion, and don't last long inside the body. Many make attractive prey to our immune system, which could trigger annoying—if not dangerous— allergic reactions.

Small molecules, in general, have none of those problems. They're fast acting, cheap to make, and their effects are reversible. Don't want to inhibit CRISPR? Just wait for the molecules to wash out. But effective ones are ridiculously hard to find.

Here's where Choudhary's new screening platform comes in.

The high-throughput system sifts through tens of thousands of chemicals using two tests to hunt down promising ones. First, it monitors DNA segments binding to Cas9 scissors using neon lights. Here, DNA is labeled with fluorescent "light bulbs," which change its polarization upon binding to Cas9, similar to how polarized sunglasses change our perception of sunlight. This lets the team quickly monitor if a molecule disrupts Cas9-DNA binding.

Second, the system used automatic microscopes that looked at fluorescent signals from cells, either gained or lost from Cas9 activity. In one assay, for example, the team used cells that normally glow green, unless Cas9 cuts the gene. A potential anti-CRISPR drug would allow the cells to remain green, even when dosed with the CRISPR machinery.

Using these assays, along with some good 'ol chemistry, the team found a molecule dubbed BRD0539 that stops Cas9 from binding to a targeted DNA sequence. The drug's actions were completely predictable: the higher the dose, the stronger it killed off CRISPR activity.

The results are immediately helpful for lowering CRISPR side effects in a therapeutic setting. In cells, a dose of the drug rapidly lowered Cas9 cutting ability by roughly half, which in turn lowered off-target snipping of *HBB*—a gene involved in sickle-cell disease—five-fold.

It's not hard to imagine a future in which you can pop a pill made of BRD0539—or a more potent next-gen equivalent—to temporarily lower or halt CRISPR activity before it goes nuts inside your body. The drug, being a small molecule, remains stable in your blood and easily penetrates your cells, acting as a brake for when CRISPR is too powerful.



With startups eyeing chronic diseases <u>such as heart disease</u> as a next goal for CRISPR intervention, an easy kill switch is becoming ever more necessary.

#### CTRL+Z

Small molecule antidotes aren't the only way to tame the CRISPR beast.

The Safe Genes program is also eyeing the initial design of CRISPR tools as a way to inherently limit their effect: rather than having an always-on CRISPR, the teams are now engineering methods to target the tool to specific tissues. A powerful gene editor is completely useless if it can't get to the right place; Doudna and others are developing new strategies to shuttle both editors and inhibitors to where they need to go at the correct time.

Other members, including Dr. Kevin Esvelt at MIT and Dr. John Godwin from North Carolina State University, are taking a hard look at using gene drives for rodent pest control. Recently Esvelt, along with team member Dr. George Church at Harvard, introduced a way to "daisy chain" components of a CRISPR gene drive, which could prevent the edits from spreading through populations like wildfire and damaging our fragile ecosystem.

Eventually, the program hopes to find the biological equivalent of "ctrl+Z": removing engineered genes from our environment, allowing the biosphere to return to baseline. It's a hefty goal, amounting to reversing the devastating effects of nuclear weapons on our world.

CRISPR's entry into medicine, the biosphere, and our genetic inheritance will only accelerate. With more usage also come more points of catastrophic failure—and more chances at fundamentally transforming our world for the better.

"As with all powerful capabilities, society can and should weigh the risks and merits of responsibly using such tools," said Renee Wegrzyn, the Safe Genes program manager. "Gene editing is truly a case where you can't easily draw a line between ethics and pure technology development—they're inextricable—and we're hopeful that the model we establish with Safe Genes will guide future research efforts in this space."

**Shelly Xuelai Fan** is a neuroscientist-turned-science writer. She completed her PhD in neuroscience at the University of British Columbia, where she developed novel treatments for neurodegeneration. While studying biological brains, she became fascinated with AI and all things biotech. Following graduation, she moved to UCSF to study blood-based factors that rejuvenate aged brains. She is the co-founder of Vantastic Media, a media venture that explores science stories through text and video, and runs the award-winning blog NeuroFantastic.com. Her first book, "Will AI Replace Us?" (Thames & Hudson) will be out April 2019.

#### We All Fall Down by Daniel Kalla - book review

Source: https://www.lep.co.uk/whats-on/we-all-fall-down-by-daniel-kalla-book-review-richly-detailed-thought-provoking-and-with-a-narrative-that-alternates-between-the-14th-and-21st-centuries-1-9779249

May 20 – When the Black Death swept through Europe and Asia in the 14th century, it created one of the most devastating pandemics in human history, killing more than a quarter of the world's population. And if you thought this deadliest form of plague could never surface again, head off to Italy with Canadian doctor Daniel Kalla for a chilling, thrilling novel that serves up a fascinating history lesson alongside a heart-thumping page-turner.

Author of suspense novels like Pandemic, Rage Therapy and Blood Lies, Kalla is a practising hospital emergency doctor in Vancouver and it is this insider knowledge that adds terrifying power to his new medical-based thriller.

A mesmerising meld of Contagion and The Da Vinci Code, We All Fall Down imagines an outbreak of the pneumonic plague which spreads from one patient in a hospital in Genoa with such lightning speed that it is soon a global threat affecting people and their governments.

The result is a fast-paced, tension-packed hunt not just to halt the disease but to discover whether the source of the pandemic was accidental... or a deliberate act of bioterrorism.



Dr Alana Vaughn, an infectious diseases expert with NATO, is urgently summoned to Genoa by Dr Nico Oliva, a former lover, to examine a critically ill patient in the city hospital's Infectious Diseases Department. Local woman Vittoria Fornero, who was working on the site of an old Benedictine monastery where age-



old bones were discovered in the crypt, is dying from what looks to be a recurrence of pneumonic plague, better known as the Black Death.

When a nurse from the hospital dies shortly afterwards as well, the medics' worst nightmare starts to happen. The sickness is spreading quickly and soon the outbreak becomes a global pandemic. Markets crash and governments fall as quickly as the citizens they govern.

Alana suspects bioterrorism, but her World Health Organisation counterpart, Byron Menke from Canada, disagrees. In their desperate hunt to track down Patient Zero – the first person to be infected – they stumble across an 800-year-old monastery and a medieval journal written by barber-surgeon Rafael Pasqua that might hold the secret to the present-day outbreak.

With the lethal disease still spreading fast and no end in sight, it's a race against time to uncover the truth before millions die.

Kalla is on top form in this exciting, high-octane adventure which is made all the more compelling through the riveting medical detail and the sheer plausibility of the consequent social and political scenarios played out in the searing plot

line.

This is an author who knows how to keep his readers on the edge of their seats as Alana and Byron desperately try to track down the source of the plague and stop it spreading wider and wider. Richly detailed, thought-provoking, and with a narrative that alternates between the 14th and 21st centuries, this is a white-knuckle ride tailor made for history and thriller fans.



#### The Impact of Blast Injury on Children

Lt. J.F.S Millwood Hargrave BSc<sup>+</sup>

Centre for Blast Injury Studies





#### **The Unanswered Questions About Anthrax**

Source: https://www.kcur.org/post/unanswered-questions-about-anthrax#stream/0

May 17 - Nowadays, many people associate anthrax with bioterrorism.

Indeed, the anthrax bacteria is "one of the biological agents most likely to be used" in terrorism, according to the <u>Centers for Disease Control and Prevention</u>, because microscopic anthrax spores can be produced in a lab and be put into powders, sprays, food and water.

But that's only part of the anthrax profile. The bacteria occur naturally in soil all over the world. Livestock and wildlife — such as cattle, pigs, goats and deer — can pick up the bacteria as they breathe and graze in grasslands. The bacteria can be transmitted to humans as well — absorbed through a cut in the skin, for example, when slaughtering animals, or from eating infected meat that wasn't cooked at high-enough temperatures.

And there's a lot we don't know about the risks posed by anthrax in nature — notably, how many animal and human cases there are each year.

The World Health Organization <u>says</u> the number of human cases dropped from as many as 100,000 a year down to 2,000 in the 1980s. The number of infected animals per year is not available, but anthrax bacteria are found in the soil of every inhabited continent as well as several islands, including Haiti and parts of the Philippines and Indonesia.

Public health researchers believe cases are chronically underreported both in people and animals — partly because symptoms can mimic the flu and also because herders and hunters fear that news of anthrax in people or animals would take a toll on their livelihood.

To fill in the gaps, a team of researchers have examined 15 years of data to identify hot spots. <u>Colin</u> <u>Carlson</u>, a researcher at Georgetown University, and <u>Ian Kracalik</u>, a former researcher at the University of Florida and now an epidemic intelligence officer at the CDC, led this study, and <u>Jason Blackburn</u>, an associate professor at the University of Florida, led the data collection.

Based on their estimations, 1.1 billion livestock live in areas where the bacterial disease is found. The human involvement is also significant: 1.83 billion people reside in those areas — and approximately 63 million livestock keepers are at high risk.

To determine where anthrax is likeliest to occur around the world, the researchers looked at soil characteristics and climate data. The bacteria thrive in arid and semi-arid climates with slightly alkaline soil but are also present in temperate highlands like in China.

Then the researchers looked at the population of livestock and wild animals in those areas — and the population of humans.

They found that the countries with the greatest number of people at risk are Bangladesh, China, India and South Africa.

Other regions, such as North America, see cases as well. But animals there are routinely vaccinated, and food safety measures keep anthrax-infected meat from being eaten.

<u>Wendy Turner</u>, an assistant professor of biological sciences at University of Albany who was not affiliated with this study, calls the map "a good first start."

"It's kind of surprising that this work has only been done now, to be quite honest," she tells NPR.

#### How Anthrax Affects Animals and People

An animal that has not been vaccinated will quickly die from an anthrax infection unless antibiotics are administered.

But the vaccine isn't always an easy solution. It must be administered annually. And access to the vaccine may be limited in the poorest parts of the world, Carlson says. Yet those are often the regions where animals — and the people who interact with them — need it the most.

Parts of sub-Saharan Africa as well as south and east Asia have extremely low vaccinations rates — from less than 1 percent to 6 percent, according to this study. These are the regions where more than half of the livestock and 48.5 million livestock keepers are at risk.



People can experience a variety of symptoms if infected. In cases where the bacteria gets under people's skin, symptoms include fever, fatigue and black sores on the skin. About <u>20 percent</u> of people who get cutaneous anthrax, as this type is called, die if they aren't treated with antibiotics, but nearly everyone survives with treatment.

Those who eat tainted and undercooked meat may also experience nausea, vomiting and diarrhea. Gastrointestinal anthrax has higher fatality rates: <u>more than half</u> of people die with no treatment and 40 percent die even after taking antibiotics.



The deadliest of all is inhalation anthrax. That's the kind that terrorists seek to spread. But it also occurs in nature — if someone working in a slaughterhouse or wool mill inhales spores, for example. With no treatment, <u>85 to 90 percent</u> of people die, and 45 percent die even with treatment.

There is a vaccine for people, but it is usually only given to <u>first responders</u> to potential terror attacks and to laboratory technicians who work with the bacteria closely.

#### The Toll It Takes

In affected countries, anthrax infection causes "significant" economic and public health problems, especially in poor, rural communities, says <u>Antonio Vieira</u>, an epidemiologist with the CDC's Division of High-Consequence Pathogens and Pathology who was not part of this research.

"Mapping hot spots or areas more susceptible to anthrax outbreaks is extremely important and helpful for preparedness and targeting interventions," he writes in an email.

The report, the researchers say, is intended as a starting point. From here, public health workers and policymakers can begin focusing on anthrax hot spots and fine-tuning their responses — from administering more livestock vaccinations to training health workers to recognize symptoms in people.

"This is the first global picture we have of this," Carlson says. "It's a little bit like the black hole photo. Now that we can look at this thing — what next?"

