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CBRNE-Terrorism Newsletter – 2015©

February 2015

Website: www.cbrne-terrorism-newsletter.com

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Full page (A4)

EDITOR

• Double pages (A4X2) 200€





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

Editor-in-Chief CBRNE-Terrorism Newsletter

Dear Colleagues,

The day after we uploaded the Jan 2015 issue (Jan 25th) we had national elections in Greece. The voting results and the days followed elections resulted in the first "left" with a touch of "right" elements

governent – ever! Time will show if people were wise or just desperate, angry or without alternative! Along with the new changes in Greece there were many EU nations that did not like this shift resulting in a new turmoil on top of existing one! The epicenter of both was of course financial but the background witnessed in the last few weeks revealed an interesting background chess game. Greece is unable to pay off the huge amount of money borrowed from EU and international "saving" organizations. Germany is insisting that we have to continue following orders by them and be nice guys or else... Russia favors Greece's decision not to implement further EU sunctions on them and promises support. China's reaction was in the same direction. US (and NATO) that do not really like Germany did the same mainly because they are afraid of a Greek shift to Orthodox Russia the moment that Turkey is out of US control and desires to be the leading power in the area. In between counties of EU south (plus UK for their own ex-empire/domination reasons) overtly or covertly support the new Greek wind while the remaining

countries still think that money speaks. So now in this multilevel most complex environment a new deal should be followed and that deal should be anthropo-centric* not pocket-centric killing people and souls**! If you ask an economist what "money" is I am sure he/she wuld be difficult to define. But they do know thousand of methodologies to take your money with interest. The whole world is accusing Greeks that we take their money and spend them provocatevely in luxury cars, villas and

good life. I can assure you that outside financial help was disappearing every time it reached our borders. Only a tiny fraction arrived to its supposed final destination – the people of Greece. So there is nobody to blame? Of course there is! There are governors, bankers, political parties and their followers who not only put their fingers in the vase with honey but also eat it all and disappear the vase itself! And now the



Greek people demand a catharsis to be done – right here; right now! We need to now how much the dept is; what the dept is for; how to pay back through progress and investments; how to have a life consistent with life! We also demand respect and equal opportunities in Europe – we are an EU member-state not a slave-state with no pride. And we do not worth the governments that

for a strange unexplained reason we elect or support. Another lesson learned in just few weeks post-election is that when we negotiate instead of obeying orders, things are totally different. It seems that now chess changed to a pocker game and recent developments start to show that this might be our game, not chess!



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While Greece is fighting its own war the rest of the world is still a mess!

In Europe, Denmark was reminded that no country is immune to terrorism. After "Je suis Charlie!" we had the "Vi er Danskere!" But would all these "We are all..." enough to wake up Europeans and look the enemy in the eyes? Or after a good protesting march we will return to our comfortable sofas reassured that this was the "last blood"? Europe also continues to face the problem of mass illegal immigration especially Italy (from North Africa) and Greece (from Asia). The situation is rapidly becomes unbearable and there are only two visible practical solutions: either to change the Schengen Convention practices in order to allow equal controlled distribution of illegal immigrants within all EU countries or the change the rules of engagement in the mostly affected countries spreding the message "No More!" to all possible directions. If Central and Northern Europe continues to believe that giving money for border protection is enough to make them sleep in peace, then they must realize that this is not the case. It is nice to speak loud about human rights and accomodation deficits when you do not face the problem in your back yard and totally different to confront an invation of hopeless people and the evil elements hidden within. Collective change of mindset is urgently needed; otherwise nobody is excused to blame countries that will sooner or later decide to take over and try to fix the problem on their own.

> Alliens of Islamic State continue their innovative death methodologies introducing the civilized population of Planet Earth with new ways to spread terror – this time by caging prisoners of war or just people they do not like and set them on fire. As if decapitations were not enough! It is amazing that nations (e.g. Egypt, Jordan)

react only when one or more of their citizens are killed, burned or beheaded.

Always post-active; never pre-emptive! The mighty planet cannot effectively deal with 20 or 30 or 40 thousand



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alliens that are occasionally atacked by air because boots are not willing to be deployed on the ground. Besides studying modern history no invation was won no matter how well planned was (e.g. Iraq, Afghanistan etc).

Then there is the big debate on who is responsible for the global terrorism problem. The West World that does not want to be surrender to Muslims or the Muslims that cannot control the extremists within the Muslim World. Leaders of big powers with the aid of main stream mass media are also playing dangerous games by trying to manipulate terminologies considering that the masses are composed of idiots that cannot figure out that when an action produces "terror" then those involved are called "terrorists". In the "Terror News" chapter of the Newsletter there are many articles on de-radicalization and control of those expressing interest to leave their countries and be involved in terrorism activities abroad. Since brain replacement is not currently available the only solution is to stop spending citizens money on failed psychology experiments and let the people travel to their final destinations but not be able to come back home – ever! It was interesting to read that the families of the three British girls that traveled to Syria to join the jihad, are blaming authorities that could not spot and stop them on time. There is something called "family" and there are some responsibilities that goes with that!

In West Africa the Embola pandemic is still progressing although in a slower pace. But it seems that we are beginning to consider that the problem is over and that the bioterrorism potential is negligable. It seems that the "airborne spread" potential of EVD is locked in a drawer for further investigation – until next time! Let us only hope that the international alert will result in some forms of treatment and excuse the vast amount of money spent so far in research. Because we do research only when there is profit or if the mankind is immediately threaten. Islamic State is interesting in the weaponization of CBR agents and this is something we should keep in mind to avoid one or more of the usual surprises we get used to experience from time to time.

So what will happen in March 2015? Much more the same! A new terrorist attack will happen in one of European countries or in a shopping mall in the US; Boko Haram will continue to kill, destroy and abduct children and women; Islamic State will be working on a new kill method never happened before in this galaxy; piracy in West Africa will continue to grow demanding perhaps a new international naval fleet to counter the problem; attrocities and collateral damages will continue in Ukraine and innocent children will continue to be killed either from bullets or hunger somewhere in this world. I must admit that collecting articles for the Newsletter is quite an arduous process and many times I envy people who have no idea about what is really happening around the world on daily basis! Reporting on actual or potential loss of life is difficult but somebody has to do that in order to keep First Responders alert an updated since they are the people that take care of all of us in difficult times! So keep on the good work and hope for the best while preparing for the worst or the unexpected!

The Editor-in-Chief

** Economic crises and government cost-cutting may have prompted sharp spikes in **suicides in Greece** between 2008 and 2012, a new study suggests. Researchers found a 13 percent rise in suicides among men beginning in October 2008, when Greece's economy took a sharp turn for the worse. A 36 percent, sustained increase in suicides among men and women occurred in June 2011, when the Greek government passed unpopular spending cuts, which were followed by bank closures and strikes that halted most public services, according to the study. "Suicides closely followed the announcements of specific government economic programs in Greece, and grew to their highest levels in 2012 as



^{*} anthropocentric: Greek word (anthropos = man + centric = center)

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economic austerity measures and public outcries accumulated in number and scale," senior study author Charles Branas, a professor of epidemiology at the University of Pennsylvania's School of Medicine, said in a university news release.

The sustained increase in suicides was larger among women than among men, a finding that challenges previous research showing that economic problems lead to larger increases in suicides among men, not women, the study authors said. The researchers also found a large, but temporary, 30 percent rise in suicides in April 2012, after the highly publicized suicide of a male pensioner in Athens' main square. That suicide was believed to be linked to government austerity measures. The researchers noted that there was a sudden, but temporary, 27 percent fall in suicide rates among men in Greece when the country began using the Euro currency in January 2002. That suggests that positive economic news can have a positive impact on mental health, according to the authors of the study published online Feb. 2 in the *BMJ Open*. "Tragically, the impact of austerity measures on suicides is more significant and lasting than prosperity-related events, such as the launch of the Euro in Greece, and appears to affect both men and women, though the trend is more pronounced in men," Branas said. The study only showed an association between fiscal crises and suicide rates, not a cause-and-effect link.

(Source: http://www.valleymedicalgroup.com/Health-Headlines-and-Videos/Health-News-Details?ArticleID=695998)





Smart Perimeter Fence: Innovations and Developments

Source: http://i-hls.com/2015/01/smart-perimeter-fence-innovations-developments/



www.cbrne-terrorism-newsletter.com

Critical sites can be secured today by a new generation of sensors that allow detection and accurate positioning of suspected intrusions with accuracy of a few meters. This allows pointing a camera automatically to the exact intrusion point. This is the pinpoint Positioning Technology.

MAGAL Security Systems, a world leader in the field of perimeter security for critical sites, develops sensor technologies and delivers them to customers worldwide. The company's products have the capability to accurately locate intruders. It should be mentioned that legacy systems were based on fence-mounted zone – sensors, typically of 100 to 200 meters long. Thus complementary means, such as observers, PTZ camera or manned patrol had to be used in order to refine the precise intrusion location. As mentioned before, the new locating sensors generation allows detection and exact positioning with accuracy of a few meters. Here is a description of the main relevant technologies:

• **Copper-based microphone cable.** This is a radar-like system in which an electric pulse is transmitted along the cable, while the system 'listens' to the echo. When the fence is static, the echo is stable. However, when a specific segment of the fence is vibrated by an intrusion attempt, the echo will fluctuate. By measuring time, the system can determine the location of the intrusion. This technology enables to cover a site with up to 3km through a single power and communication feed. The system's cost is attractive for the lion share of the market: small and medium sites (from 200m up to 5 km).

- Fiber optic detector. This is an emerging technology, based on a light pulse transmission into a fiber optic cable. A fraction of light is bounced back (backscattered) and captured by a sensitive and a sophisticated optical detector. When the fiber is static, the reflected wave is 'calm'. However, when the optical fiber vibrates, the echo fluctuates. Very fine time measurements help in determining the distance from the processor with accuracy of a few meters. The main advantage is that a single optic fiber detector, processed by a single box, can cover a perimeter of up to 16 km. The disadvantage: is the processor is relatively expensive. However, the price is significantly amortized as the site gets bigger.
- The third method is based on tiny inertial accelerometers, installed along the fence every few meters. A communication line collects signals from the miniature vibration sensors,

which are spread along the fence, and relays them to a central analyzer. Each accelerometer has excellent signal to noise performance, sensitive enough to detect low amplitude vibrations, which are typical to a rigid fence, such as the one along the Israeli-Egyptian border. Technology disadvantage: relatively complex, and also: it does not come cheap.

Hagai Katz, Senior VP Marketing and BD at Magal, explains the key advantages of the new generation of sensors:

 All detection systems should be as sensitive as possible, but without sacrificing the need for low false alarms. The new detectors have the capability of separating environmental noise (such as noise created by wind) and a local intrusion, and thus significantly improve detection performance.

- The new systems enable bolstering detection sensitivity through software and thus compensate for the lack of uniformity in the quality of installation or the fence tension.
- Cost efficiency and savings: the new generation of detectors uses long physical detection lines, divided into virtual zones, thereby enabling the reduction of required power and communication feeds. This generates significant savings, which may be critical for remote areas with limited resources.

To summarize, all the new mentioned intrusion detector technologies provide the operational benefit of accurate intrusion location.

Small drone crashes at White House complex, origin unclear

Source: http://news.yahoo.com/spokesman-secret-recovers-device-white-house-095128139.html

Jan 26 – A small drone flying low to the ground crashed onto the White House grounds before dawn Monday, triggering a



major emergency response and raising fresh questions about security at the presidential mansion.

Although President Barack Obama was not at home, the security breach prompted a

lockdown of the entire complex until officials could examine the drone. The White House later said the drone did not pose a threat.

The Secret Service launched an immediate investigation into the origins of the drone, which crashed on the southeast side of the White House grounds just after 3 a.m. Secret Service spokesman Brian Leary said officials were also working to identify any suspects and determine what their motive might have been.

The device was described as a two-footlong quadcopter — an unmanned aircraft that is lifted by four propellers. Many small quadcopters are essentially sophisticated toys that can also be useful for commercial operations like aerial photography and inspections. Often weighing only a few pounds, they sell for as little as a few hundred dollars or less, and were popular Christmas gifts last year.

The Secret Service said the drone discovered Monday was of the commercially available variety.



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The president and first lady Michelle Obama are traveling in India and were not present for



the incident, but their daughters, Sasha and Malia, may have been at home. White House officials declined to comment on the daughters' whereabouts Monday, but ahead of the president's trip aides had said the daughters would remain in Washington so as not to miss school.

"The early indications are that it does not pose any sort of ongoing threat to anybody at the White House," said presidential spokesman Josh Earnest.

Still, the incident was likely to reinvigorate a long-running public debate about the use of commercial drones in U.S. skies — as well as White House security. At the urging of the drone industry, the Obama administration is on the verge of proposing rules for drone operations that would replace an existing ban on most commercial flights.

Although remote-controlled airplanes and related toys have been available for decades, the recent proliferation of inexpensive drones has prompted growing fears about potential collisions with traditional aircraft. Technological advances have also made it easier to equip drones with advanced capabilities such as cameras, raising privacy issues as well as concerns that such devices could carry weapons. White House aides could not recall any similar incidents occurring at the complex.

Police, fire and other emergency vehicles swarmed the White House just after the crash, with several clustered near the southeast entrance to the grounds. The White House was dark and the entire perimeter was on lockdown until around 5 a.m., when those who work there were allowed inside.

After daylight, more than a dozen Secret Service officers fanned out in a search across the White House lawn as snow began to fall. They peered down in the grass and used flashlights to look through the large bushes that line the

driveway on the south side of the mansion. It was not immediately clear that the Secret Service could have done anything to prevent the incident. Yet the episode joins a string of recent security breaches at the White House that have fueled questions about the agency's effectiveness and ability to protect the president.

Four high-ranking executives were reassigned this month, and former Director Julia Pierson was forced to resign last year after a Texas man armed with a knife was able to get over a White House fence and run into the executive mansion before being subdued.

An independent panel that investigated the agency's leadership and practices after that September incident, and the disclosure of a previously unreported security breach, recommended hiring a new director from outside.

That report was the second critical review of the agency responsible for protecting the president. In November, the Homeland Security Department, which oversees the

Secret Service, released an internal investigation about the fence-scaling incident that found poor training and staffing and a



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series of missteps led to the breach. Homeland Security investigators found, among other things, that uniformed agents patrolling the White House grounds the night of Sept. 19 mistakenly assumed that thick bushes near the mansion's front door would stop the intruder.

Outdated White House defenses no match for intruding drone. An electronic fence is lacking

Source: http://www.debka.com/article/24363/Outdated-White-House-defenses-no-match-for-intruding-drone-An-electronic-fence-is-lacking

Jan 26 – The fence which surrounds the White House grounds was breached some months ago by an unhinged man brandishing a knife. The anti-air missiles posted on the roofs of government buildings surrounding the president's compount missed the Quad Copter drone which crashed onto its grounds Sunday

night, Jan. 25. debkafile's security experts ask: Isn't it time to install an electromagnetic perimeter fence to protect the White Hous by its ability to jam the communications, and control and command features of alien mobiles and smart phones in particular? Such phones can launch, operate and guide devices carrying explosive payloads, take video films in color and relay data in real time to their operators.

Had this virtual fence been in place,

the phone-operated drone which Sunday night flew at low altitude into the White House compound and crashed on its southeast side, would never have made it that far.

Under cover of dark and freezing winter storms, the unmanned Quad Copter, which is roughly one meter square with four rotors, flew undetected into the complex, when President Barack Obama and the First Lady, Michelle Obama, were in New Delhi on a state visit. The president's daughters and their grandmother were in residence.

The crash, the latest in a string of security breaches at the White House, prompted an immediate lockdown of the grounds. An investigation was then launched to determine the origin of the device and seek out suspects and motivations.

Our defense experts describe the features of the electronic fence, which should today be mandatory for essential and sensitive sites: They include jammers that emit "white noise" on the same frequencies as cell phones and areas where unmanned aerial vehicles are present. This "whitenoise" blocks off communications links and command and control capacities that would otherwise serve an external assailant.

The absence of this kind of protection means



that someone in the US secret service and intelligence community fell down on the task of guarding America's highest national symbols back in the early 2000s, shortly after 9/11.

An extremely grave security breach has undeniably occurred - no matter whether it was meant as a hoax, a game that went wrong, or a trial balloon launched by a would-be assailant to draw the White House's defense systems into showing their hand. The security principle of "terrain dominance" was shown to have broken down and its defenses permeable.

On all aerial maps used for commercial and civilian flights, the sky over the White House is marked "No Fly Zone," like hundreds of military, security and intelligence facilities across the US. They carry warnings of aggressive air defense missiles

and warplanes automatically ready 24/7 to scramble and intercept trespassers.

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But this impressive tool bag proved Sunday nigh to be lacking the right tools, because it was adjusted to the last decade and not brought up to date for repelling the unmanned aerial vehicles in routine use by every modern army and intelligence agency.

A drone operated by smartphone, which can be guided across hundreds of meters, i.e, fly over Massachusetts Ave. to land on the White House lawn on Pennsylvania Ave., is available on the Internet for \$250. A drone able to carry a small explosive payload, plus operating mechanism and camera for filming live an explosion in the White House, is available for around \$400. These sums are peanuts for terrorist organizations.

The US government has little option but to hurry up and get proper regulations in place for controlling the sale of aerial devices and their registration, with limitations on their use – even such devices which are classified at present as toys.

EDITOR'S COMMENT: Though I still support my proposal for a "dome" over the White House (Dec 2014 issue) I have two questions: (1) Will electronic fence with jamming capabilities interfere or block internal communications as well? (2) What is the purpose of "anti-air" missiles in the surrounding buildings? Will they destroy an incoming commercial airplane over Washington D.C.? Save the WH but endanger the lives of hundrends of capital's citizens from racks of intercepted plane? If the plane manages to enter forbitten skies then the system is completely wrong. What if they design an "anti-air" missile system specifically for small-medium-large drones? In that case falling debris would cause almost no harm. Could be conventional or laser or whatever. Detection of slowly flying machines is a big problem as well. How can you intercept something if you cannot see it coming? Then why not using small drones to intercept incoming drones? I strongly believe that the problem lies not on technology but on security people and planners lacking of vivid imagination. Perhaps Hollywood experts should contribute in planning!



Drones Emerging as Security Threat at Domestic Sporting Events

By Dennis Van Milligen

Source: http://www.athleticbusiness.com/stadium-arena-security/drones-emerging-as-security-threat-at-domestic-sporting-events.html?eid=276295306&bid=1001809

Marc Lovicott, public information officer for the University of Wisconsin, never misses a home



football game. But recovering from knee surgery, he was forced to watch from home as the Badgers battled the University of Illinois at Camp Randall Stadium on October 11, 2014. The game made national news, but not for the 38-28 Badgers victory. Rather, it was for what happened between the third and fourth quarters — during the "Jump Around" tradition — when an unmanned aircraft was spotted hovering over the student section.

Lovicott admits that unmanned aircraft were a safety concern that had been discussed but not one for which the university steadfastly prepared. "Pre-October 11, it was on our minds. We had discussed what we do if something like that happened, but it really was on the back burner because it wasn't something we had dealt with before or felt we would need to deal with. Now, we have a policy in place."

The University of Wisconsin's approach to unmanned aerial systems is a common one nationwide — sports security managers recognize that this increasingly popular technology is a potential threat,



but consider it something that will not directly impact their venue or event.

And while the pilot's intentions in the case of Wisconsin were likely harmless — "Jump Around" is a popular gameday tradition at Camp Randall, especially in the student section — it doesn't necessarily mean the next pilot's intentions will be. "If somebody can fly a small camera into a stadium, what else can they carry along with it?" wonders Lovicott.

Unmanned aerial systems pose a legitimate threat to sporting events in America. These devices are not only becoming cheaper and easier to own, but technology has advanced to such a point that virtually anyone — hobbyist or terrorist — can fly one.

"It's a video game now; it's not as complicated as it used to be, and it takes nothing more than a laptop or tablet with a joystick to fly one," says Ray DiNunzio, director of strategic security with the National Football League.

Even those amateur pilots with good intentions can pose a safety threat to athletes and spectators. "What if a gust of wind came or the pilot lost control and took this thing down into the players or spectators? There are a number of aspects associated with public safety that we worry about," Lovicott says.

So what can be done to protect your sporting event against these looming threats?

Taking flight

"One of the things about drones that concerns people is that it is difficult to stop something that is airborne," says Danny DeLorenzi, director of security for MetLife Stadium. DeLorenzi has only had one incident at MetLife, where there is signage strictly prohibiting the use of drones on the property. In that one case, state police officers who were in elevated positions saw the device as soon as it took off, and within minutes, the situation was under control. "You have to come up with the rule first to tell someone to stop doing it," DeLorenzi says.

Last fall (2014), the Federal Aviation Administration updated its rules to more clearly prohibit drone flights over stadiums that hold more than 30,000 people. At Arizona Stadium, for example, unmanned aerial systems now must stay above 3,000 feet within three miles of a stadium from one hour before game time until one hour after, with violators risking federal criminal prosecution.

While that rule may address outdoor stadiums, what about endurance events that are spread across many miles? Coincidentally, last year's Ironman Triathlon World Championships, which span 140 miles in Kona, Hawaii, were sponsored by GoPro, a line of portable action cameras commonly associated with drones.

"With that partnership came the realization that we might experience an abnormally high amount of unmanned aerial vehicles above the event," says John Bertsch, manager of public safety and emergency management for the Ironman World Championships. Putting even more pressure of Bertsch was an incident that occurred approximately six months earlier when a drone operator lost control of a device that was filming a triathlon in Australia, injuring competitor Raija Ogden mere meters from the finish line.

With reports of increased drone activity around the host hotel and primary venue areas, Bertsch and his team made the decision to ban drones over the immediate airspace — the lone exception was NBC's authorized unmanned aerial vehicle. Eight hours into the race, the first male finisher was approaching when Bertsch got a call.

"Reported UAV hovering 200 yards south of the finish line over the racecourse and a few thousand spectators who have lined the chute," Bertsch recalls. "Our deployment team activates, but it is quickly determined not to be hostile, so they stand down while security personnel try to find the pilot, which is not easy in a crowd. The pilot could be a half-mile away, but the crowd turns out to be the best resource, as most of them can point to the origin of flight. A few minutes later, the pilot was identified, and he voluntarily cooperated, landing his UAV."

Flight clubbed

Currently the FAA and Department of Homeland Security are working on technology

that can be used as a better defense against unmanned aerial systems, and the NFL is working with both federal agencies to ensure the safest environment



possible at each stadium through these technologies. "For the short-term, we have established policies that prohibit these devices from our stadiums on gameday, but for the long-term, we're working with the federal sector on those latest technologies, and tracking what the government is doing in terms of research and development to ensure we have the technology to be able to defend against these devices," says DiNunzio.

In addition to technology, it is critical to have the proper protocols in place. The new drone policies at the University of Wisconsin dictate when play should be stopped and how to go about locating the pilot, for example. Security and medical staff members are tasked with scanning the skies on top of their normal duties. "We're much more vigilant now," Lovicott admits. "We knew this problem existed based on other stadiums across the country, but until it happens to you, you don't really start taking notice."

Indeed, drones have become a global phenomenon. A 2016 European Championship qualifying soccer match



between Serbia and Albania ended abruptly last fall when a drone flying the Albanian flag started a fight between fans on the **pitch, requiring action from hundreds of riot police.** But cameras and banners aren't the biggest concerns now facing public safety professionals.

"If someone were to weaponize one of these devices and use it to cause harm, early detection and a response program to deal with the aftermath isn't going to prevent it from happening," adds DiNunzio. "We have to establish a way to defeat these devices, thwart the flight path and prevent them from getting into the stadium."

Sound Advice

Sports security professionals have been aware of the safety and security problems associated with drones for quite some time. But the potential impact drone attacks can have on sporting event safety has rapidly progressed. While security professionals are focusing on drones as they relate to security and privacy concerns, drones' impact on the future of event security remains unclear.

What is the best method to ward off drones? Drones produce a signature sound when they're flying, and microphones can <u>be used to listen and detect ambient</u> sounds. The signature drone sound can be tracked against a database of known stadium signatures and a text can be sent to the stadium's emeraencv response team. supervisors and command center warning that a drone is approaching the stadium perimeter. Paired with an incident management system, a drone detection solution can enhance overall awareness. Knowing where drone hot spots

exist is the first step toward implementing

appropriate detection and response measures.

Dennis Van Milligen is Editor in Chief of Athletic Business.

Campus Police Being Armed with Military Weapons

Source: http://www.athleticbusiness.com/college/campus-police-increasingly-armed-with-military-weapons.html? eid=276295306&bid=1001809

Jan 21 – Under the same program that has been criticized as "militarizing" local law enforcement, campus police departments have ramped up their armed presence, with Florida State University getting a Humvee and other university officers carrying semi-automatic rifles. Nearly all police at universities are now armed, with weapons ranging from handguns to pepper spray. About twothirds of public and private campuses employed armed officials during the 2011-2012 school year, according to a



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Bureau of Justice Statistics report released Tuesday.

The school administrators have ramped up their arms and police training in response to high-profile collegiate crimes like the 2007 Virginia Tech shootings and the Penn State child sex abuse case.



But so far there hasn't been the same heightened tensions between the officers and those participating in student campus life as has been seen in Ferguson, Missouri, said Florida State University Police Chief David Perry. Students and even parents have welcomed the extra protection, he said.

"Students love it," Chief Perry said of FSU's new Humvee in an interview with The Washington Times. "They like to see the tools. We've used it during severe weather, in the event of a crisis [or] in the event of an emergency. It's also a community-building tool to help educate people about what we do."

But critics say arming campus police with military weapons creates a

dangerous atmosphere on school grounds, which are typically safe environments.

"College campuses are some of the safest places around. The problem here is that there's a demonstrative track record of police changing how they behave when they have these weapons," said Trevor Burrus, a research fellow with the Cato Institute.

Mr. Burrus speculated that campus police will be eager to use the new tools and will end up using them in inappropriate situations like raids on rowdy campus and fraternity house parties.

"They shouldn't have [military weapons], and even local police shouldn't have them," he said in an interview. "We don't need any more of this distrust between students and faculties in college situations."

However, experts say that the problems that lead to an overmilitarized response to rioting in Ferguson don't apply to campus police, who have ramped-up arms in response to the threat

of campus shootings and other violence.

"Campus police are not beefing up to be militaristic departments, but we do want to have the life-saving tools that are appropriate for situations that we face," said Chief Perry.

"Police departments were really encouraged to use that program to fill the gap for equipment and supplies that they couldn't afford,"

Chief Perry added. Merely "because there have been flashes of events that have brought attention to this doesn't mean that there has been a misuse of the program and the materials."

More than 100 college campuses with sworn-in police departments participated in the Pentagon's 1033 program that distributes surplus military weapons to law enforcement, according to a Freedom of Information Act request by MuckRock.

Florida International University, Ohio State University and Florida State University each received surplus military equipment, including, respectively, military-grade rifles, a Mine

> Resistant Ambush Protected

vehicle and a Humvee.

Police at other universities have obtained full riot gear and M-14 and M-16 rifles."We can't ignore the tragic shootings that have taken place on public campuses and in public arenas, and in those instances the bad guys aren't using revolvers, they are using semi-automatic weapons," Chief Perry said. "This is a response to the exaggerated use of force from bad guys "

force from bad guys." The latest survey shows that university police jurisdiction is increasingly not limited to campus grounds. According to



the report, about 92 percent of public campuses used sworn police officers with full arrest powers. Most sworn officers are authorized to carry guns, pepper spray and patrol beyond campus grounds.

"We work very closely with the community, we assist other local law enforcement agencies, we have citywide jurisdiction. I would say that our relationship with the community is pretty good, we are well received and work well with the other agencies," said Bill Wyatt, associate director of communications at James Madison University, which has 45 sworn officers on campus.

The number of sworn police officers is much higher on public school campuses at about 92 percent - compared to just 38 percent of private campuses that have sworn police. But analysts expect that gap to decrease in the coming years as private colleges seek to gain a more independent campus police force that doesn't need to rely on outside departments for backup.

Statistics show that campus crime rates have decreased in recent years. Law enforcement agencies at four-year schools with at least 2,500 students handled an average of five sexual assaults or other violent crimes in 2011 and 180 property crimes, including thefts and burglaries, according to the report.

The rate of violent crime was 27 percent lower in 2011 than in 2004, while the property crime rate dropped 35 percent, the report said.

The Flying Hospital That Rushes Wounded Soldiers to Safety

Source: http://i-hls.com/2015/01/flying-hospital-rushes-wounded-soldiers-safety/



The key to getting a wounded soldier from a battlefield to a hospital is stabilization -holding off the damage done by bullet or bomb for long enough to get to surgery. So faster evacuation is always better. Now the hospital can actually meet the injured partway – in the form of a Boeing C-17 Globemaster III, transformed into a flying triage unit. On board, doctors stabilize, monitor, and treat soldiers with high-level care so they make it safely home.

Increased Range

The sooner patients can get to the ground, the better: Planes with limited range used to hopscotch between airfields, but the C-17's in-flight refueling makes for faster nonstop trips.



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The Ward

Stable patients go to the ward (pictured), which can accommodate dozens of patients in stacked, bunkbed-like pallets.

Flight Path

If an unstable patient needs to avoid turbulence, the medical teams use noise-canceling headsets to discuss route adjustments with the aircrew. They can also request an altitude change to alter cabin pressure if, say, air trapped inside a patient's body might expand and damage tissue.



Boeing C-17A Globemaster III

Emergency room

Patients enter the C-17 through the back of the cargo hold, where medics stabilize them using resuscitation, intubation, and tourniquets. Then they assign them to the other medical teams (there are three!) for in-flight follow-up.

Surgery

If a patient begins to decline rapidly during flight, doctors can insert chest drainage tubes and make emergency airway incisions. The operating room is equipped for abdominal surgery and open-heart massages too, though nobody has needed them yet.

High Temperatures

Burn victims need to stay warm to avoid hypothermia. Eighty-four strip heaters warm the floor panels from below, helping the flight crew crank the cabin temperature as high as 90 degrees Fahrenheit.

Critical Care

The ICU is equipped with pacemakers, IV fluids, and drugs for treating septic shock.

Medical Oxygen

Soldiers whose lungs can't oxygenate their blood have a flight-optimized extra-corporeal membrane oxygenation machine to do it for them. It pulls oxygen from tanks in the plane's nose and pumps it into the blood.



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20 Of The Safest Cities In The World

Source: http://www.businessinsider.com/the-20-safest-cities-in-the-world-2015-1

The Economist's Intelligence Unit has released a ranking of the safest major cities in the world, and Tokyo comes out on top.

The capital of Japan is followed by the sovereign city-state of Singapore and then by Osaka in Japan. The <u>Economist's Safe Index 2015</u> doesn't simply measure crime, but rather has a wide-ranging view of safety.

Here are the factors it ranks 50 cities on:

- Digital security This measures the quality of a city's cybersecurity, the frequency of identity theft, and other factors related to digital security.
- Health security This metric looks at average life expectancy of a city's citizens as well as the ratio
 of hospital beds to the size of the population.
- Infrastructure This looks at factors like the quality of roads and the number of people who die from natural disasters.
- Personal safety This category looks at more traditional safety measures like crime, the level of
 police engagement, and the number of violent crimes.

The Economist's ranking chose its 50 cities based on regional representation and availability of data. New York and Los Angeles are among the leaders in digital security, while Zurich takes the top spot for both health security and infrastructure safety. Here's how the other cities measure up overall.



With a population of 13.3 million people, Tokyo is both the most populous and the safest city in the ranking. It also ranks first for digital security and in the top five for personal safety and infrastructure despite its huge population and its earthquakes. The city is relatively well off and ranks first on the Index's list of "upper-middle income cities" (with per capita gross domestic product (GDP) of between \$30,000 and \$50,000). Tokyo has a well-known nightlife scene and

was immortalized in the movie "Lost in

Translation."

2. Singapore



Singapore ranks No. 1 in overall personal safety, according to the Index, which noted that traditional crimes like burglary and theft were at a decades-long low.

Singapore has notoriously tough penalties for all crimes, including low-level offenses, which might contribute to its extremely low crime rate, the BBC reported in 2013. At the time, the BBC also reported that Singapore had the second-lowest murder rate in the world (excluding Palau and Monaco).

With violent crime under control, the local police have been targeting cybercrime. President Tony Tan Keng Yam has set out to improve digital security and, he hopes, make Singapore a "smart city." The city-state should have the funds to do that. It had the highest



GDP per capita among "high income" cities (cities with more than a \$50,000 per capita GDP).

3. Osaka



The Japanese city of 2.6 million ranks second in personal safety and sixth in health security. As with Tokyo, Osaka is relatively wealthy, and it ranks second for GDP per capita among upper-middle-income cities. The city ranks lower in digital security than Tokyo, as it has fewer cybersecurity teams and privacy policies.

4. Stockholm



The Swedish capital of 909,000 ranks seventh in digital security and 10th in health security. It is the only non-Asian city to rank in the top five in personal safety. As with many European countries, Sweden has universal healthcare.

5. Amsterdam



This city of 820,000 is known for its legal marijuana, but it also has amazing infrastructure that makes it one of the safest cities in the world. Amsterdam ranks fourth in infrastructure safety, a list dominated by highand upper-middle-income cities that have reduced car accidents and pollution from traffic congestion. With its pervasive cycling culture, Amsterdam has managed to do both. The city also ranks in the top 10 for personal safety.

6. Sydney



This Australian city of 4.5 million people ranks in the top 10 for both infrastructure security and personal safety. However, Sydney lags behind in digital security and health security, in which it ranks 14th and 17th, respectively.

Australia has some of the highest incidences of cybercrime in the world: Australians have become prime targets for internet fraud and identity thieves, according to the Daily Telegraph.



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7. Zurich



Zurich ranks the highest in the categories of health safety and infrastructure security, with its excellent universal health coverage and well-designed transport systems. The city's wealth makes it easier to invest in urban safety: in the ranking's "high income" category of cities with per capita GDP of \$50,000, Zurich ranks second behind Singapore.

8. Toronto



Toronto, the most populous city in Canada, is the best city to live in terms of safety, business environment, democracy, food security, cost of living, and livability, according to the Index. It also ranks in the top 10 in the categories of infrastructure safety and personal safety. Dubbed "Hollywood North," Toronto is the frequent setting for films and movies that are supposedly filmed in the US.

9. Melbourne



The city of 4 million has the second-safest infrastructure of the 50 cities ranked and ranks eighth in the category of personal safety. It's no coincidence that Melbourne has one of the highest life expectancies of any city in the world, at 86 years. As the report notes, "Living in a safe and healthy urban environment can make a real and measurable difference to city inhabitants."

the world to live in, when factors like safety and cost of living are taken into account.

10. New York City



New York is the only US city to make it into the top 10 safest cities overall, ranking second for health security and third for digital safety. The city has come a long way since 1990, when an average of six homicides occurred every day. Still,

the city faces new dangers like terrorist threats and the potential of cyberwar that could shut down crucial infrastructure.



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Hong Kong is the fourth-safest city on the list in terms of digital security, but it drops to 40th when it comes to the safety of its infrastructure. A high percentage of the city's 7 million residents live in urban slums, and although its roads are high quality, Hong Kong has one of the highest rates of

Still, the city ranks sixth in personal safety. The city has seen high levels of police engagement and patrolling since pro-democracy protests broke out late

pedestrian deaths per year.

11. Hong Kong





GDPs of over \$50,000).

13. Taipei

The capital city of Taiwan is the 21st-best city to live in overall, according to the report. Safety is not a problem in this city of almost 3 million, which ranks fifth in the category of personal safety and ninth in the category of health security. Taipei has been at the center of rapid economic development. The city has a robust public-transport system, and many districts are undergoing urban renewal projects.



14. Montreal

Montreal is ranked as the second-best city to live in overall, with the sixth-best infrastructure and 11th-best digital security.

As the second-largest city in Canada, Montreal is also the second-largest Frenchspeaking metropolis on the planet (behind Paris) with a



last year.

12. San Francisco

that could test the city, from resource scarcity to social inequality. Currently, San Francisco ranks 10th in the category of infrastructure safety and eighth in digital security. The city also ranks fourth on the list of cities with the highest average incomes (those with per capita

San Francisco recently hired the world's first chief resilience officer - an official tasked with keeping track of everything

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population of just over 4 million. Montreal plans to invest close to \$1 billion to fix its aging roads and bridges over the next three years, according to the Montreal Gazette.

15. Barcelona



This Spanish city by the sea is one of the safest in terms of health security and personal safety. Barcelona has developed a sophisticated policing strategy, increasing police presence in the streets and on the subway. As a result, crime dropped by 32% in just over three years, the report says. The increased police presence has also made residents feel safer overall.

16. Chicago



Chicago ranks 10th in the category of digital security, but it has remained plagued by violent crime. To tackle its crime problem, the city has developed an algorithm to identify a "heat list" of individuals who are likely to be either the victims or perpetrators of a crime. Authorities then visit these individuals, warning each of them that they are at risk either of being caught or of being victimized.

17. Los Angeles



This city of 3.8 million people ranks sixth in digital security, performing much better than many European cities on the list. Cybersecurity is a priority in the city. In 2013, the city's mayor created a Cyber Intrusion Command Center to ensure the city was safe from cyberattack.

Still, Los Angeles was ranked No. 23 for personal safety. "Leaders in digital security must not overlook real-world risks," the report noted. In 2014, Los Angeles

violent crime went up

for the first time in more than a decade. Prior to that, violent crime in the city had been declining as it has in the rest of America.



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18. London

London is the highest-ranking European city in terms of digital security (the city ranks No. 16). The city of 8.3 million has also seen falling crime rates, and in 2014 burglary was at its lowest rate in 40 years, BBC reported.

19. Washington, D.C.

The capital of America is relatively affluent in addition to being safe. Washington, D.C., ranks seventh among "high income" cities that have a GDP per capita of above \$50,000. It ranks 17th for personal safety, 15th for digital security, and eighth on the ranking for "best place to live." While homicides went up slightly in D.C. in 2014, the District has seen a long-term decrease in violent crime.



It also has a reputation as a "high-amenity city," according to a real-estate expert quoted in an article last year in Forbes, which named D.C. as America's "coolest city."

20. Frankfurt



The fifth-largest city in Germany, Frankfurt has a population of 691,518 and is considered to be "upper middle income" with a per capita GDP of US \$30,000 to \$50,000. It's a major world financial center and houses the European Central Bank.



5.63

4.61

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In 2011, Bloomberg named Frankfurt one of the cities with the "best quality of life," noting the city had many garden restaurants and walking paths by the main river in town.

The Safe Cities Index 2015

EIU Safe Cities I overall ranks	ndex 2015,
Top 25 Bottom	10
Tokyo	85.63
Singapore	84.61
Osaka	82.36
Stockholm	80.02
Amsterdam	79,19
Sydney	78.91
Zurich	78.84
Toronto	78.81
Melbourne	78.67
New York	78.08
Hong Kong	77.24
San Francisco	76.63
Taipei	76.51
Montreal	75.6
Barcelona	75.16
Chicago	74.89
Los Angeles	74.24
London	73.83
Washington DC	73.37
Frankfurt	73.05
Madrid	72.35
Brussels	71.72
Paris	71.21
Seoul	70.9
Abu Dhabi	69.83
Sao Paulo	62.33
Istanbul	62.25
Delhi	61.88
Moscow	61.6
Mumbai	60.72
Mexico City	59.46
Riyadh	57.09
Johannesburg	56.26
Ho Chi Minh City	54.93
Tehran	53.78
Jakarta	53.71



Crime Index Rate

Source (interactive): http://www.numbeo.com/crime/rankings_current.jsp





Inflatable body armor

Source: http://www.bcbin.com/



BCB's Inflatable Body Armour inflates when it comes into contact with water. If the wearer were to be shot or injured in the line of duty and fell into a lake or the sea, BCB's Inflatable Body Armour System would automatically inflate within seconds. It is the only system available worldwide with a massive 275 Newtons of buoyancy. The system is self-righting which means that it will keep the wearer's airways clear from the water.

Boat stopping systems



Provided in boat-mounted and handheld formats, BCB's non-lethal fast boat stopping systems are designed to help Law Enforcement Agencies to quickly stop non-compliant boats used in narcotics trafficking, piracy or terrorist acts in our ports, docks or rivers without harming the boat or occupants.



Risk analysisNew political risk model identifies political risk exposures around the world

Source: http://www.homelandsecuritynewswire.com/dr20150202-new-political-risk-model-identifies-political-risk-exposures-around-the-world

Investors in Ukraine can expect to lose \$34 in every \$100 invested over a 10-year time frame as a result of political risks, stemming from the increased threat of escalating conflict and the country's challenging economic situation, according to new analysis from Oxford - making it the riskiest of all the major emerging economies.

Oxford Analytica says that the snapshot findings were revealed by a new political risk model, called VAPOR (Value at Political Risk), launched by Willis and Oxford



Analytica, the international consulting firm, and Willis Group Holdings, the global risk adviser, insurance and reinsurance broker.

Meanwhile, companies can expect to lose \$20 in every \$100 invested in Venezuela over a 10year horizon as a result of political risks arising from oil price volatility, political upheaval, and the possibility of a sovereign default. Over the same period the expected loss in the United States and United Kingdom, relatively low-risk jurisdictions in comparison, is \$1 in every \$100. Turning to Asia, investors in Bangladesh can expect a loss of \$8 for every \$100 invested over ten years. Given the threat of government intervention the estimated loss over the same period in China rises to \$9 in every \$100. In Russia the figure is \$30 in every \$100 as a result of sanctions and heated trade tensions Analytica last week. The model allows global companies to assess and compare the financial implications of exposure to a suite of political risks — in individual countries, regionally, or globally. Initially, VAPOR covers six different political risk perils, across eleven different industry types in 100 countries. North Korea is the riskiest investment destination currently rated by VAPOR. Companies investing there can expect an estimated political risk loss of \$40 in every \$100 invested over a ten year period. Political risks are the threats posed to businesses by political

upheavals or social change. Common examples include expropriation, political violence, and the imposition of



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trade sanctions. They are inherently unpredictable — arising, as they do, from complex, dynamic human societies - and thev often have catastrophic The identification and consequences. management of these risks in a volatile political and economic climate throughout the world represents a significant and increasingly pressing challenge for the boards of global companies. "VAPOR offers a potential solution to the challenge of putting dollar values on political

risk — for the first time," said Paul Davidson, CEO of Willis Financial Solutions. "This capacity does not currently exist anywhere; an ability to compare the financial impact of political risk exposure, in real dollar-value terms and by industry, will give corporate risk managers and financial planners a competitive edge. Companies that can estimate the cost of political risk contingencies over time to their underlying business operations will see a stepchange improvement in their strategic planning and risk management processes."

Sam Wilkin, Senior Advisor, Political Risk at Oxford Analytica, said: "Inspired by the catastrophe modelling industry, VAPOR takes a probabilistic approach that assesses whether a particular society is more or less vulnerable to experiencing a suite of discrete political contingencies over time — and then estimates the possible cost, over time, of these contingencies to business. This gives businesses the ability to evaluate the costs of geopolitical risks when deciding which industry and country to invest in."

Global Risk Monitor (<u>https://grm.oxan.com/</u>)



Are Europe's seaborne missile defence systems capable?

By Richard de Silva

Source: http://www.defenceiq.com/naval-and-maritime-defence/articles/are-europe-s-seaborne-missiledefence-systems-capa/?utm_source=1-6361871014&utm_medium=email&utm_campaign=15+02+03+ DFIQ+NL&utm_term=DFIQ_NL&utm_content=DFIQ_NL&mac=1-7028835664&disc=

According to a new study, there may be a need for investment in a "more offensive" surface warfare strategy, given the evolving global threat environment and the spectrum of utility for systems such as long-range missiles, directed energy and electromagnetic rail guns. The research, conducted by Washington D.C.based Center for Strategic and Budgetary Assessments (CSBA), recommended that the U.S. Navy not only invests further in these systems but looks to increase their impact by restructuring the



surface fleet and embracing new tactics. It argues that controlling the waters in the coming years will play a particularly vital role in strategic defence, not least because of the increasing opportunity of interoperation between naval, air, land and space assets.

Analysts are looking towards the mid-2020s as a make-or-break deadline, a period in which it is envisaged that there will be a global focus on anti-access/area-denial. A2/AD has already been causing strategic pressures in the Persian Gulf, the East China Sea, and other waters that require multinational port access, shipping routes or military patrols. When done correctly, the tactic can prevent troops from landing by sea or limit the range at which surface vessels can support forces inshore.

In tandem, there is a renewed focus among many nations on the growing threat of ballistic missiles. Spurred further by the conflict in Ukraine, fears that were last at their height during the Cold War have returned, but since this time, anti-missile strategic focus has centred primarily on asymmetric threats, such as counter-rocket, artillery and mortar (C-RAM) systems.

A great deal of interest now lies on the US Aegis Ballistic Missile Defense (BMD) system, comprising a network of warships designed to intercept ballistic missiles post-boost phase and prior to reentry. Latest tests (as of November 2014) conducted by the Missile Defense Agency in the Pacific with recent upgrades have been reported as successful.

It is interesting to note that China has also identified a need to develop its seaborne missile capability and has announced that its own version of Aegis is also to expand with plans to launch eight new warships (Types 052C and 052D) to augment its ten existing destroyers and new aircraft carrier. Construction is to begin this year.

Most recently, the US Navy sees the deployment of two additional Aegis destroyers (F-100) in Spain his year as providing a "significant deterrent", according to remarks made to Sputnik News Agency. A representative of US Naval Forces Europe stated that the placement of the vessels maximised "their operational flexibility for missions in the Atlantic and Mediterranean" while further enabling rapid response to any crisis.

The F100 Álvaro de Bazán class multi-role frigate is one of the few non-US warships to carry the Aegis Combat System and its associated AN/SPY-1 radar, along with ballistic resistant steel in the hull and anti-vibration power plants. Other nations to carry the honour are Japan, South Korea and Norway.

Captain Manuel Martinez-Ruiz, programme director for the F-100 (as well as overseeing the impending introduction of the F-110 frigates) – believes the vessels are up to the task of dealing with a range of threats in the coming years and have already demonstrated their value as an AEGIS component during recent exercises.

"The Spanish Navy's F-100 Frigates have shown excellent AAW capabilities since the commissioning of F-101 Alvaro de Bazán in 2001, and having participated in numerous NATO, US and UNO Coalition operations," Martinez-Ruiz told Defence IQ.

"On the other hand, frigate F-104 Mendez Nuñez had a limited BMS&T (ballistic missile defense surveillance and tracking) role at FTM-12 (Flight Test Maritime-12) while Alvaro de Bazan conducted some interoperability tests during Maritime Theatre Missile Defence events during Combat Systems Ship's Qualification Trials. Recently, the F-100 C2 capabilities have been improved through Joint Range Extension."

"While I consider land based asymmetric threats to be something to pay attention to in the future at the tactical level, I believe ballistic missile defence threats – both current and emerging – are something that impacts us on a more strategic and political level, and involves much more complex action among our agencies and nations. What is clear however is that the Spanish Navy's future ships, such as the F-110 frigates, will be focused more on countering asymmetric threats."

As technology evolves, the opportunities for surface warship capabilities are everincreasing as long as the R&D funding can keep up. Of course, with rising complexities, new challenges also rear their heads, particularly when it comes to introducing new

systems into an existing family of systems and then testing them within the parameters of a realistic scenario.



"I think the biggest challenge is to be able to characterise anti-aircraft warfare and BMD threats in order to operate them in a coordinated way by improving 'detect-controlengage' technology," Martin-Ruiz explained. "The need to face emerging BMD and AAW threats at force level in this way requires an improved C2 architecture, sensor-to-shooter technology, as well as mission planning capabilities. Also, increasing radar sensitivity with electronic counter-countermeasures (ECCM) capabilities will be the next hurdle for radar technology."

The field is further complicated by the increasingly urgent need to ensure that multinational systems are integrated alongside

standardised methods and tactics, a situation that can only be achieved through continued multilateral naval exercises.

"That will be extremely important in the coming years," Martinez-Ruiz confirms, "as will the need to increase interoperability among NATO and allied forces. New protocols such as JRE-C and more robust data link capabilities with images and progressive streaming video transmission mechanisms (for example, JPEG2000 based on wavelets) are possibly required to face asymmetric and emerging threats. There are some exciting multinational projects underway now such as NATO's Smart Defence project and the MTMD forum in which our Navy is interested."

Richard de Silva (BA, MA) reports on defence and security at DefenceIQ.com and is the head of online content. He is a regular face at leading trade show events, including Eurosatory, DSEi, Farnborough Air Show and the Counter Terror Expo, and has interviewed some of the world's most senior military leaders, including Gen Sir Peter Wall (British Army), Gen Mike Hostage (US Air Force), Lt. Gen. Michael Flynn (Director, US DIA), and Vice Admiral Rinaldo Veri (NATO; OUP naval commander). He also co-manages production of Defence Industry Bulletin.

Rocket vs. conventional artillery...which is most effective?

Source: http://www.defenceiq.com/army-and-land-forces/articles/rocket-artillery-vs-conventionalartillery-what-ar/?utm_source=1-6361871014&utm_medium=email&utm_campaign=15+02+03+DFIQ +NL&utm_term=DFIQ_NL&utm_content=DFIQ_NL&mac=1-7028835664&disc=



Artillery in some form or another has been used on the battlefield for centuries. It dates back to medieval China where the Southern Wu used fire arrows – said to be the first rocket in both mechanism and design – in 904 during the siege of Yuzhang. Since then armies across the globe have used varying forms of mortars, rockets and artillery to bombard their enemies in preparation for an attack.

Today, rocket artillery such as the US M270 Multiple Launch Rocket System is a familiar sight on the battlefield. However, since rocket artillery was first introduced there has been



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vigorous debate over whether it is more practical and effective than conventional artillery systems.

Rocket	Conventional
Yroduces no recoil	Produces significant recoil
Very mobile and potentially has the capabilit for firing on the move	ty Cannot change position easily as needs to be braced against recoil
Backblast effect – hot and dangerous gases expelled after firing	Typically more accurate and can sustain a better rate of fire
Using precision munitions improves accurac of rocket artillery, on par with conventional	y Forward observer further improves accuracy, which isn't possible with rocket
MRSI – artillery from many systems can be timed to arrive at a target at the same time	Significant cost savings over rocket artillery
Fire signature issues - mobility helps but smoke after firing gives away position	Gun system is much larger
V Better range	More suitable for defensive fire and counter- battery fire

The global debt clock

Source: http://www.economist.com/content/global_debt_clock



Interactive map at Feb 04, 2015 – compare with date you read this article

The clock is ticking. Every second, it seems, someone in the world takes on more debt. The idea of a debt clock for an individual nation is familiar to anyone who has been to Times Square in New York, where the American public shortfall is revealed. Our clock (updated September 2012) shows the global figure for almost all government debts in dollar terms.

Does it matter? After all, world governments owe the money to their own citizens, not to the Martians. But the rising total is important for two reasons. First, when debt rises faster than economic output (as it has been doing in recent years), higher government debt

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implies more state interference in the economy and higher taxes in the future. Second, debt must be rolled over at regular intervals. This creates a recurring popularity test for individual governments, rather as reality TV show contestants face a public phone vote every week. Fail that vote, as various eurozone governments have done, and the country (and its neighbours) can be plunged into crisis.

Notes:

- This interactive graphic displays gross government debt for the globe. The clock covers 99% of the world based upon GDP. It uses latest available data and assumes that the fiscal year ends in December.
- Debt figures are derived from national definitions and therefore may vary from country to country.
- The clock shows the estimated debt at the point corresponding to the current date and time in whatever year you are viewing; this is why it increases even when you view past or future years.
- All data is mapped on modern borders (Montenegro split from Serbia in 2006, Kosovo in 2008. South Sudan split from Sudan in 2011. Data for these countries are included in their parent nations' prior to these dates).

3 Phrases That Will Instantly Calm Angry or Emotional People

Source: https://www.themuse.com/advice/3-phrases-thatwill-instantly-calm-angry-or-emotional-people

If only the world were populated exclusively by the sane and rational, your job as a business owner would certainly be a lot easier. But as we all know, some people spend much of their lives overagitated or spoiling for a fight, and even the most level-headed of us sometimes let our emotions get the best of us.

You can't always avoid having to deal with overly emotional people, but while these difficult conversations are simply part of

life, there are ways to make them less painful and more constructive. That's the message of a useful post that recently appeared on blog

Barking Up the Wrong Tree.

The piece features an interview with Dr. Albert J. Bernstein, a clinical psychologist who, while treating the truly psychotic, perfected his techniques for bringing out-of-control conversations back down to

Earth. His advice includes tips like, "If you feel like a preschool teacher, you're probably doing it right," and suggestions for soothing outraged folks on the phone, as well as these phrases to help turn down the emotional dial on your most challenging conversations.

1. "Please Speak More Slowly. I'd Like to Help."

The problem may not be that they're speaking too quickly; the problem may be they're screaming their head off or sobbing uncontrollably. Nonetheless, this phrase can work its magic, according to Bernstein. "Why does this work? It breaks the pattern in their head," the post explains. "They're expecting you to resist them but you're not. You're asking them to clarify. You're interested. This makes them shift more out of 'dinosaur brain' and into thinking. And that's good."

2. "What Would You Like Me to Do?"

This one works on similar principles to phrase number one. It knocks the over-emotional person out of using their "dinosaur brain"—the primitive, emotional part that only knows flight or fight—and forces them to start using move evolved thinking skills.



3. Any Question at All

It doesn't matter how loony the other party is being; if you want to get the conversation back on any sort of sane track, telling them they're insane or explaining how your viewpoint is more sensible isn't going to help. Why? "Explaining is almost always a disguised form of fighting back," says Bernstein. The other party will sense that and just get more aggressive and emotional.

So even if they're raving that they're Elvis back from the dead, you're better off asking where they've stashed their sequined jumpsuit than you are explaining that, in truth, they appear to be an extremely unwell psychiatric patient. "The act of listening is reflecting back the person's emotional state, not necessarily the content of what they're saying," according to Bernstein, and doing that by asking relevant questions is more likely to calm people down and lead the conversation onto firmer ground than any attempt to inject level-headed good sense.

Russian Parliament Set to Request €4 Trillion in WWII Reparations From Germany

Source: http://www.newsweek.com/russian-parliament-set-request-eu4-trillion-wwii-reparations-germany-304163



Members of the Russian parliament are creating a task force to estimate the damages inflicted on Russia by Germany during WWII, in a bid to demand financial compensation from the German state almost 70 years after the end of the conflict, Russian daily newspaper Izvestia reported on Tuesday.

The initiative is a direct response to trade sanctions imposed on Russia by the US and EU, for its annexation of Crimea from Ukraine in March and continuous support of separatist fighters in Eastern Ukraine since, according to Mikhail Degyaterov, an MP from the Liberal Democrat Party of Russia, who has proposed the task force.

"Practically, Germany paid nothing to the USSR for its wave of destruction and savagery

during the Second World War," said Degyaterov.

"After the Yalta convention the USSR took back some German assets - largely looted furniture, clothes and industrial equipment, as well as some spoils of war - but largely there was no compensation of the war's economic blow to the USSR," Degyaterov added.

According to Degyaterov, Russian satellite East Germany was not liable for the reparations because it and the Soviet Union

had a legally binding agreement not to demand reparations. Such an agreement was never made with West Germany, however, and after the USSR's collapse



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and the reunification of East and West Germany, the bill for the war should now be footed to their modern successor - the German Federation.



"Worse still, Germany continues to inflict economic damage to Russia, by extending EUtrade sanctions," Degyaterov added, referring to the series of trade restrictions the EU has imposed on Russia following the latter's backing of separatist militants in Ukraine which have caused a crisis in the Russian economy and run on the rouble.

Russia is not the only country disputing WWII reparations with Germany. Calls for greater reparations have got louder in Greece in recent years, particularly in the face of Germanimposed austerity.

Aeolus – the God of Winds (Greek mythology)

Degyaterov is among those individuals, personally blacklisted by the US and EU for his vocal support for pro-Russian forces in east Ukraine. However, he shrugged off the sanctions in July, arguing he did not have overseas assets and was not greatly affected by them.

"Throughout the duration of the war, 30% of our country's treasures and national heritage, while 1,710 Soviet cities were destroyed, alongside over 70,000 towns and villages, 32,000 industrial sites, while some 100,000 farming sites were ruined," Degyaterov said, referring to figures compiled by Stalin's USSR



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committee which estimated damages after the war.

According to Degyaterov these material damages amount to \$600 billion, while he also estimated that by virtue of the same principle which obliged Germany to pay Israel €60 billion for the Nazi regime's execution of over six million Jews during the Holocaust, Russia is owed more as a result to the loss of life on Soviet soil at the hands of the Nazi army.

"Germany paid compensation for the six million victims of the Holocaust but ignored the 27 million Soviet citizens killed, 16 million of whom were peaceful civilians."

"It appears that, with all that considered, under

initiative, lamenting the loss of "human capital" to the Soviet union as a result of the war.

"It is no secret that if there had not been a war, the Russian population would be 300-400 million today and we would be in a completely different economic condition," Komoedov said. The initiative has also received the support of Russian historian Sergey Fokin, who argued the the task force can put forward a reminder of the Russian contribution to defeating Nazism, particularly to German Chancellor Angela Merkel - one of the main supporters of the current sanctions imposed on Moscow.

"It is unlikely that Germany will end up paying anything because of this but it is necessary to



the current exchange Germany owes reparations of no less than €3-4 trillion, which it must pay to the successor of the Soviet Union - Russia," Degtyarev said.

The Russian MP expressed his hope that other countries will join the ranks of his task force and request reimbursement from Germany, extending an open invite to willing representatives of Belarus, Ukraine and other former Soviet republics.

The chairman of the Russian parliament's defence committee, admiral Vladimir Komoedov has applauded Degtyarev's

remind ourselves about history," Fokin said.

"It is possible that frau Merkel, who so longs for more sanctions against Russia, would never even have been born if it were not for the kindness of the victors towards the defeated," Fokunin said, referring to social programmes organised by the USSR in East Germany after the war.

Angela Merkel grew up in a small town north of East Berlin, making her the first German Chancellor to have been

a citizen of the Soviet occupied half of the country during the Cold war.


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In response to the economic sanctions placed on Russia by the Eurozone, led by Merkel, the Russian parliament is also currently discussing changing the historical status of the German state's reunification.

A proposal is currently being discussed by Russian MPs to recognize German reunification as an annexation of Eastern Germany by West German forces, since the two became one state after the fall of the Berlin wall in 1989.

The German embassy in London declined to comment.

EDITOR'S COMMENT: Duma proceeds to the task force mentioned in the article following the recent Greek demand for WWII reparations from Germany (165 billion euro or even 1 trillion euro).

Now just second best! Dubai soars past Heathrow to become world's busiest international airport... and it expects a record 79 MILLION passengers in 2015

Source: http://www.dailymail.co.uk/travel/travel_news/article-2929543/Dubai-passes-London-Heathrow-world-s-busiest-international-airport.html



Dubai has overtaken London's Heathrow as the world's busiest international airport as the Gulf city emerges as a major hub for long-haul flights between Asia and the West.

Dubai International Airport said 70.5 million international passengers streamed through its terminals last year, a six per cent increase over the 66.4 million travellers it handled in 2013.

Now that it has passed Heathrow for the first time on a full-year basis, the world's top international travel hub said it expects a further surge in traveller numbers in 2015. Heathrow narrowly lost its crown, reporting 68.1 million international passengers in 2014. But it remains ahead of Dubai in terms of overall passengers when domestic flights are factored in.

With domestic flights included Heathrow topped out at 73.4 million passengers in 2014, about three million more than Dubai.

But Heathrow has struggled to grow and is competing with



Gatwick Airport for the right to build a new runway.

A Heathrow spokeswoman said: 'Britain has benefited from being home to the world's largest port or airport for the last 350 years. But lack of capacity at Heathrow means we have inevitably lost our crown to Dubai.'

Dubai International Airport's surge in traffic reflects its rapid expansion and the efforts of luxury Gulf carriers Emirates, Etihad and Qatar Airways to seize a significant portion of travel between the West, Asia and Australasia, and lure customers with the introduction of widerbodied aircraft, including the world's largest fleet of Airbus A380 superjumbo jets.

Dubai serves as the base for Emirates, the largest carrier in the Middle East.

Flights to and from Western Europe saw the biggest passenger growth in Dubai, followed closely by destinations in the Indian subcontinent, Asia and North America.

In a statement Dubai Airports chairman Sheikh Ahmed bin Saeed al-Maktoum said: 'This historic milestone is the culmination of over five decades of double-digit average growth. 'The shared goal is to make Dubai a global centre of aviation and we are nearing that goal.'

Paul Griffiths, the airport's CEO, said Dubai International will handle a record 79 million passengers in 2015. The airport's traffic grew last year even though it had to redirect flights to the city's second airport, Al-Maktoum International, while it overhauled its side-byside runways for nearly three months.

Al-Maktoum International opened in 2013 and will have a capacity of 120 million travellers when completed in 2022.

Dubai International plans to boost its annual capacity to 90 million passengers this year with the opening of a new hall for arrivals and departures as part of a \$7.8bn expansion plan (approximately £5bn).

The airport and Emirates are owned by Dubai's government.

While Dubai is tops for international travel, Hartsfield-Jackson Atlanta International Airport remains the busiest passenger airport overall.

THREAT & RISK - (knowing the difference)

Source: https://www.linkedin.com/pulse/threat-risk-knowing-difference-danny-suggate-rsecp

There is a great deal of confusion in the security profession about Threat & Risk. Even those who may believe themselves to be experienced security practitioners fall foul to the Threat Vs Risk Argument. It is important to address this common misconception and ensure all security teams and personnel around the world are aware of the difference.

THREAT can be defined as:

'An individual or group with a capability and intention to cause harm to people or property.'

Forming a pivotal part of any Security apparatus, the Threat Assessment is used to determine what validity there may be from an identified threat entity to cause harm to people or property. We conduct threat assessments to evaluate human action that can adversely impact on individuals, critical infrastructure, business continuity, operations or assets.

Conversely, RISK (in a security context) can be defined as follows: 'The vulnerability of your people and property to THREAT activity and the likelihood and consequence of it occurring. '

A RISK is what may result should a THREAT commit an act against an asset or person. It is important to remember that RISKS may eventuate when there is an identified THREAT. The actions of a threat can make risks a reality.



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In a security context it is important to understand that a *THREAT must have a measure of intent. To have a measure of intent, there must be an element of human action.* Whilst in some instances a threat

made be explicit in the form of a statement made from a hostile party, there are times when potential harm posed from a threat is not so overt.

The Cyber Security space is one where confusion seems to exist over the true definition of a THREAT. THREATs must be human. To label a virus of other malicious programming as a threat is incorrect. These are CAPABILITIES that a Threat Entity (Human) may possess and INTEND to deploy to cause harm to Information Systems.

When we speak of **CAPABILITY** we are looking at a threats collective resources and knowledge. Do they have the ability through knowledge of your organisations operations and vulnerabilities to exploit these, and then the resources to implement any action?



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INTENT is a threats motivation to act. Do they actually have

enough desire to carry out any attempt to do harm? In addition, do we see in our analysis that the threat entity has some expectation that they will succeed in their endeavours to do harm, and therefore have confidence in moving from a planning to an operational activity.

The analysis of a Threat Entities capability and intent provides us with an assessment to inform the appropriate level of response to counter any attempt to do harm.

RISKS occur when a THREAT identifies and exploits our security VULNERABILITIES!

The History of 13 Countries in 15 Words or Less

Source: http://twentytwowords.com/shortest-possible-world-history/gallery/1/

If you had to summarize the history of your country in a sentence, what would it be?

When someone asked this of Reddit awhile back, numerous nations were represented in the comments.

Of course, most people responding couldn't help but be silly. What else can you do with such a brief answer? But there's some truth to a few of these, too...

We did a bunch of shit for mankind like 10000 years ago, now we re bankrupt.

Compulsory income tax on Christians drives Germans away from Protestant and Catholic churches

Source:http://www.telegraph.co.uk/news/worldnews/europe/germany/11380968/Compulsory-incometax-on-Christians-drives-Germans-away-from-Protestant-and-Catholic-churches.html



Jan 30 – Hundreds of thousands of German Christians are formally renouncing their faith and leaving the church in order to escape a controversial change in the tax laws.

Up to 200,000 Germans are believed to have filed official declarations last year renouncing their membership of the Protestant church, the highest number in almost two decades. A similar number are thought to have left the Catholic Church.

Church members in Germany are required by law to pay tax to fund church activities, which is collected by the government.

Under German law, anyone who was baptised as a child is automatically a member of the church and obliged to pay the tax, charged as a percentage of their income, regardless of their beliefs or whether they attend church services.

Until recently, many Christians have been prepared to pay the extra tax for the benefits it brings them, including access to church schools and day care facilities that are funded by the state.

But the only way out of paying the tax is to make a formal declaration renouncing your

membership of the church – and there is a government fee for this as well.

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A decision to extend the 8 or 9 per cent charge to capital gains income, or the profit earned from selling an asset, appears to have sparked the sharp decline in church membership.

The new tax regulation was "just the straw that broke the camel's back for people who were already thinking of leaving", Ruth Levin, spokesman for the Protestant church in Disnlaken, told Westdeutsche Allgemeine Zeitung newspaper.

The church tax has legally been payable on capital gains for some years, but the German government recently closed a loophole that enabled many church members to avoid paying it because they did not have to declare their capital gains income.

While in the past those leaving the church have often been young adults renouncing their parents' beliefs, over the past year many are reported to have been pensioners

fearing a raid on their savings income.

The decision to leave the church is more than just a formality.



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Although those who decide to leave cannot be excommunicated or prevented from taking part in church services, they can legally be denied certain rites, from a religious burial to access to the best state-funded schools.

Catholics who renounce their church membership are barred from confession and communion, and from the anointing of the sick, unless they are on the point of death.

The changes include German banks now having to withhold the tax on capital gains of account-holders who are church members. Around 200,000 German Protestants renounced their church membership last year, up from 138,100 in 2012, according to provisional figures from an evangelical news agency survey published by Welt newspaper. In Bavaria, the rate of desertion rose by 62 per cent.

Figures for numbers leaving the Catholic Church in 2014 are not yet available, but 178,000 Catholics renounced their membership in 2013, up from 118,000 in 2012.

Around 30.8 per cent of Germans, or 24.7 million people, are Catholics, according to the 2011 census, while 30.3 per cent, or 24.3 million people, are Protestants.

Read also: "10 facts you should know about Kirchensteuer": <u>http://blog.mygermanexpert.com/2013/06/10-Facts-about-German-Church-Tax.html</u>

Countries in Europe with the Largest Number of Muslims

	Estimated 2009 Muslim Population	Percentage of Population that is Muslim	Percentage of World Muslim Population	
Russia	16,482,000	11.7%	1.0%	
Germany*	4,026,000	~5	<1	
France*	3,554,000	~6	<1	
Albania	2,522,000	79.9	0.2	
Kosovo	1,999,000	89.6	0.1	
United Kingdom	1,647,000	2.7	0.1	
Bosnia-Herzegovina*	1,522,000	~40	<1	
Netherlands	946,000	5.7	0.1	
Bulgaria	920,000	12.2	0.1	
FYROM	680,000	33.3	<0.1	
Rest of Region	3,814,000	1.1	0.2	
Regional Total	38,112,000	5.2	2.4	
World Total	1,571,198,000	22.9	100.0	

Source: https://muslimstatistics.wordpress.com/2014/03/09/mapping-the-muslim-population-europe/

* Data for Germany, France and Bosnia-Herzegovina come primarily from general population surveys, which are less reliable than censuses or large-scale demographic and health surveys for estimating minority-majority ratios (see Methodology). As a result, the percentage of the population that is Muslim in these three countries is rounded to the nearest integer.Note: Figures may not sum to totals due to rounding.Pew Research Center's Forum on Religion & Public Life • Mapping the Global Muslim Population, October 2009

Interactive map

http://www.pewforum.org/2009/10/07/mapping-the-global-muslim-population14/#map1





BIG DOG By Boston Dynamics



Watch the Big Dog video at: <u>https://www.youtube.com/watch?v=M8YjvHYbZ9w</u>

EDITOR'S COMMENT: My Great Pyrenees dogs loved this video – you will love it as well! A fine utility machine for blind people – apart from the obvious military/security applications.

How To Prevent Fan Violence at Sporting Events

By Dennis Van Milligen

Source: http://www.athleticbusiness.com/gameday-security/how-to-prevent-fan-violence-at-sporting-events.html?eid=276295306&bid=1010251



The perception surrounding the modern professional football environment is that unruly fan behavior is escalating, forcing families to stay far away from these increasingly unstable atmospheres. Perpetuating that stigma is a steady flow of videos showing fans fighting at football venues across the country. For example, New England Patriots fan Jaclyn Nugent was punched by New York Jets fan Kurt Paschke at MetLife Stadium last fall. A fan videotaped part of the fight, including the infamous punch, on her smartphone and uploaded it to YouTube. Two months later, it had received more than 350,000 views. "Incidents used to happen within a venue and no one would really ever know outside of that venue, but because of smartphones and other technology, we're seeing these incidents being more publicized," says Tamara Madensen, associate professor of criminal justice at the University of Nevada Las Vegas and director of the university's crowd



management resource council. "Not only can that hurt the venue, but the sports league in terms of its reputation."

Each week, there seems to be a new addition to the fan violence viral video library, and that extends to the collegiate level, as well. At a popular tailgate spot for Nebraska football last fall, law enforcement officials had to clear approximately 3,000 people off the property due to unruly behavior prior to the start of a game against the University of Miami. Close to two dozen people were arrested. One of the officers tasked with keeping the peace had to be hospitalized after being struck by a full can of beer.

Violent fan behavior is a gameday tradition all sports security professionals are trying to limit or eliminate. Ray DiNunzio, the NFL's director of strategic security, has taken a variety of steps during his tenure to ensure the safest environment for the 60,000 to 80,000 fans in attendance at the nearly 300 regular and postseason football games each year. "Any fan misbehavior is unacceptable," DiNunzio says. "We're doing a number of things to respond immediately when troubling things occur, while also taking proactive measures to make sure there are consequences for violations of our fan code of conduct."

Banned in the USA

During the 2013 regular season, DiNunzio estimates there were approximately 8,000 ejections, which is less than half a percentage of total attendance. He expects those numbers to be decreased when 2014's final figures are counted, due in part to a change he implemented league-wide. "Before, if someone violated the fan code of conduct, they were simply ejected," he says. "I suspected we were having a number of repeat violators that we weren't doing anything about."

To rectify that problem, the NFL implemented a temporary stadium ban for anyone ejected for violating the fan code of conduct. Reasons for ejection may include general disruptive behavior, substance impairment that leads to irresponsible behavior, abusive language, interfering with the progress of a game, and verbal or physical harassment of fans. If ejected, a fan must enroll in and complete a fan-conduct-awareness class. That fan must also submit a request to have the ban lifted, showing adequate remorse. But this year, DiNunzio took the ban one step further to hold accountable visiting-team fans who cause trouble: If a fan is banned from one NFL stadium, he or she is banned from all NFL stadiums.

"It's about having consequences, making sure they're significant, and giving the few troublemakers something to think about," DiNunzio says. "Now, they will want to put more effort into controlling themselves or they're not going to see many football games." The common theme in many incidents is intoxication, and many leagues have set rules of when to cut off alcohol sales. In the NFL, it's after the third quarter, or, depending on the intensity of the rivalry — an Oakland-San Francisco matchup, for example — alcohol sales may cease after halftime. DiNunzio would also like to get fans into the stadium earlier, which would require opening the gates earlier and providing more entertainment value to entice the fan out of the parking lot tailgate party.

Says DiNunzio, "That would solve a number of challenges for us. We'd be able to reduce the amount of uncontrolled alcohol consumption in the parking lots, and we'll be able to get people in the stadium earlier to alleviate some of the congestion we see at the gates 15 to 20 minutes prior to kickoff."

On the college level, a different tactic is being used to achieve the same results — selling alcohol inside the stadium. More than 20 college stadiums are now selling alcohol. The thought is that this will not only generate revenue, but eliminate the excessive bingedrinking common during college student tailgating. There is the risk of already intoxicated young fans further impairing their judgment with the additional access — which could lead to an increase in incidents — but if executed properly, the likelihood of increased fan violence is low, according to Madensen.

"If it's done in a responsible way, with clear policies and well-trained people, it's unlikely to produce a tremendous amount of incidents that you haven't seen before," she says. TEAM

Coalition, for example, advocates for certain parameters to be in place prior to someone being approved to drink inside a college stadium, offering training to help facility operations personnel with responsible alcohol distribution.

Tech support

Jorge Costa has been the senior vice president of ballpark operations for the San Francisco Giants for close to three decades, and the biggest difference-maker in how he approaches security has been the evolution of technology. Technology has allowed venues like AT&T Park to gather trends and collect data, identifying problem areas or games, which helps Costa in his planning and allocation of resources. "Incident tracking has made a huge difference," Costa says. "We can track response time, how quickly we got to a problem, anticipate future problems, text to security."

Costa believes incident tracking is something that would be beneficial to athletic venues on the collegiate and high school levels, as well. "I would absolutely recommend that schools have some form of incident tracking," he says. "That's vital, because the ability to capture data in the moment and respond to it is key. It's the lifeblood of any venue or operation."

DiNunzio agrees. "Technology is playing a really big role," he says. "In terms of reacting, I'm using technology to ensure that we have the ability to capture and review in real time things that have happened in our stadiums, even outside our stadiums. With the current state of technology, there's no excuse for not having video recording of any incident that has occurred, whether in the seating bowl or concourses."

One of the things DiNunzio is looking to implement league-wide is a policy ensuring a sufficient number of cameras that have unobstructed views of every seat in the stadium, all the plaza levels and in the concourses. This has been done, most notably, at MetLife Stadium, which was equipped with the technology for last year's Super Bowl. "There were a number of incidents that were resolved as a result of having video capture and review," DiNunzio says. "In fact, in some of those incidents the instigator wasn't even present when the responders arrived, but looking at the video recording, we were able to identify and see the person flee the scene as security arrived. It's been very beneficial. It's just a matter of tooling up our stadiums with the best technology and getting this consistently at all our venues."

Physical resence

Having the right policies and technology in place are virtually meaningless if you don't have the proper personnel. A rapid response team was created in 2013 at AT&T Park consisting of security guards, guest services professionals and local police officials. Rapid response teams, which can consist of as many as 20 people, are deployed to different levels of the stadium where problems are most likely to occur.

Says Costa, "Having a rapid response team allows you to get to those incidents requiring immediate attention faster, and a lot of times, it will avert a problem or keep it from getting bigger."

DiNunzio explains that some stadiums are employing strike teams, which typically consist of a group of civilians and uniformed and undercover police officers who work in tandem to cover the bowl and perimeter. Undercover law enforcement officials have been known to wear opposing team jerseys to weed out troublemakers, as well. "The strike teams have the ability to deal with virtually any situation, and they have any emergency response tool at their disposal," DiNunzio says.

He has also made it a priority to increase the number of security personnel in the bowl, as well as increase the responsibility of guest services staff inside the bowl. "I'm looking at expanding some of the guest-services responsibilities so they mesh better with security functions in the stadiums," he says. "In this new role, guest services would not only be responsible for making sure properly ticketed fans are in a section, but also for being aware of what's happening in a section, and the only way to accomplish that is to patrol an assigned area of responsibility."

Despite these efforts, the reality is that incidents will always be a part of gameday. "Incidents are opportunities, not failures," says Madensen. "Fan behavior changes over time, and when we have an incident, it's an opportunity for us to look at what

context it occurred in, what some of the factors were, and what we could do as a league or stadium



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or team to help prevent this from happening in the future."

Serenity Now

Another way to encourage positive fan behavior is to create a peaceful, serene environment inside a venue. San Francisco Giants senior vice president of ballpark operations Jorge Costa wanted to address a traditional problem area for all ballparks — the bleachers — at AT&T Park. To create a calmer environment, the Giants created an edible garden last year behind the centerfield wall under the scoreboard. The 4.320-square-foot space boasts a variety of fruits,

vegetables, greens and flowers, while also featuring a bar, dining tables, benches and fire pits. Fans can actually use the fruits and vegetables grown there to garnish their sandwiches. "It's really serene and calming, and has really changed the vibe of the bleachers," Costa



says. "You can do things environmentally and psychologically to turn a location that's been problematic in the past, and elevate it to a certain level where it becomes a bit more unacceptable to act out."

Dennis Van Milligen is editor in chief of Gameday Security.

Why Don't the British Like Israel?

By Alexander H. Joffe

Source: http://www.meforum.org/5018/why-dont-the-british-like-israel



Anti-Israel protestors march down Regent Street in London on August 9, 2014

A recent poll shows that Britons regard Israel less favorably than any other country besides North Korea. The results came as a shock to Israelis and supporters of Israel, but they shouldn't have. After all, British supporters of the boycott, divestment and sanctions (BDS) movement are widespread, blood libels about the Palestinian 'genocide' and Israeli organ harvesting are heard from members of the peerage, and Israel remains one of the few



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countries the British royal family hasn't visited.

True, Jews are deeply integrated into British society and have felt secure for decades. But incidents of antisemitic violence have been escalating and even notables like the Jewish director of television of the BBC have expressed fear about the future of Jews in the country. Antisemitism, interwoven and often indistinguishable from anti-Zionism, has reemerged full force. New statistics on antisemitic incidents prove that the British climate is changing for the worse.

Why the animosity against Israel, which extends from the political left to the right, and across all social classes? Four sources may be suggested, each with roots in the 20th century. Britain won World War II but quickly lost the peace. Bankrupt, Britain was only preserved by an enormous loan in 1946 from the United States. Britain's most important colony, India, became independent in 1947 and promptly split with Pakistan at the cost of hundreds of thousands of lives and tens of millions of refugees. But it was Palestine, which at its peak was garrisoned by 100,000 British soldiers unable to keep the peace, which rankled most.

Losing the empire was bad enough, but losing Palestine to the Jews was a unique humiliation. Zionist anti-British violence, above all the destruction of the King David Hotel, resonated strongly for decades. It is also only now being understood that the British establishment had

Which of the following do you feel especially favourable towards?			Which of the following do you feel especially unfavourable towards?				
	2012	2014	Change		2012	2014	Chang
Australia	44	47	3	North Korea	40	47	7
Canada	44	44	0	Israel	17	35	18
United States	34	33	-1	Iran	45	33	-12
Japan	14	15	1	Pakistan	32	28	-4
India	10	8	-2	Nigeria	16	21	5
Brazil	8	7	-1	Saudi Arabia	16	21	5
South Africa	7	7	0	Argentina	29	15	-14
Israel	5	6	1	China	18	12	-6
South Korea	3	6	3	United States	8	10	2
China	4	4	0	Egypt	8	9	1
Egypt	4	4	0	India	7	7	0
Mexico	4	4	0	South Korea	6	5	-1
Argentina	2	2	0	South Africa	4	4	0
Indonesia	2	2	0	Brazil	1	2	1
Iran	1	1	0	Indonesia	3	2	-1
Nigeria	1	1	0	Japan	1	2	1
North Korea	0	1	1	Australia	1	1	0
Pakistan	1	1	0	Mexico	2	1	-1
Saudi Arabia	2	1	-1	Canada	0	0	0
None of them	21	19	-2	None of them	19	15	-4
Don't know	8	8	0	Don't know	9	9	0

First, the British Establishment, comprised of elite schools and universities, government and idea setting industries like the media, arguably never recovered from the loss of the Empire. This should not be understood as a lament for the Empire so much as the manner in which it was lost, and for what the upper classes have come to believe should have been the outcome. fought a covert war for decades against France in Syria and Lebanon, and had encouraged Arab states to invade the infant State of Israel. This strategy also backfired, helping usher in revolutionary regimes that overthrew British allies and reducing British influence still further. These multiple failures 46



embittered the British Establishment for decades.

More recently, however, a wave of politically correct guilt has swept over the British Establishment. In this revisionist view the British Empire, unlike any other empire over the preceding 5000 years, was a singular source of evil in the world, and the impact in Palestine, uniquely so.

In this view, Britain's contradictory promises to Arabs and Jews, alleged favoritism towards Zionism and repression of local Arabs, and the British role in maintaining an international system that has permitted Israel to exist, are deep wrongs, yet to be righted. Little wonder that the BBC and British media focus relentlessly on Israeli wrongdoing, real and imagined, while glossing over those of its neighbors. In contrast, the British attitude toward Palestinians is marked by expressions of guilt and patronizing behavior.

A **second** reason for current British attitudes is the gradual conversion of the British labor movement to the Palestinian cause. Until the 1960s the British labor movement saw Israel as a fellow socialist state with anti-imperialist leanings. But in the wake of the 1967 and 1982 wars Israeli success (and alignment with the United States) became increasingly unpalatable to a labor movement that could only see Jews as underdogs or victims. Coupled with an orientation towards the Soviet worldview, implacably anti-Israel and pro-Arab, that grew from the 1960s onward, the labor movement has become one of the centers of virulent anti-Israel bias in Britain.

The dramatic changes in British Christianity must be counted as a **third** cause. Jews like to point to British Christian Zionism, but in truth this was a spent force even before the Balfour Declaration in 1917. Indeed, Anglicanism is deeply supersessionist and regards Judaism as retrograde, a community forsaken by God.

Though the Anglican Church has been in steep decline in recent decades, it has been reinvigorated in part by Palestinian Christians who have reinvented traditional Christian antisemitism, converting Israelis into Romans and themselves into the new Jews. The impact of this old/new Anglican theology is seen in the degree to which the church, like the labor movement, leads the BDS movement in Britain. Finally, there is the role of Muslims in the United Kingdom. Until the early 21st century Muslims were a small minority. Now, in part thanks to the Labour Party's covert strategy of encouraging immigration under Tony Blair, including from backwards places like Pakistan, precisely to change the demographic and electoral composition of Britain. Muslims number around 5% of the total population. Muslims in Britain are at the forefront of antisemitic agitation in Britain and maintain a dizzying network of organizations to support BDS and the Palestinian and Islamist causes.

There are few reasons to think that Israel's position will become more favorable with Britons or other Europeans in the future. Ever increasing Muslim populations alone appear to ensure that political establishments will adopt voter-friendly anti-Israeli rhetoric and policies. And while local anti-Muslim sentiment is at an all-time high, the Establishment remains intent on repressing this officially through speech and thought codes, and unofficially, by denying such voices media access and legitimacy. The media in particular remains intent on making Israel the villain, regardless of the issue.

The rise of local independence movements that threaten the United Kingdom will also likely increase pro-Palestinian sentiment, since at least some of these (such as the Scottish National Party) have anti-imperialist sentiments and compete for immigrant voters. Record trade relations between Israel and Britain are one bright spot. But with BDS calls expanding in Britain there should be few expectations that trade will continue without several challenges.

Britain struggles to define itself in the 21st century – as a European or Atlantic state, as a multicultural or British society. In the end, Israel's continued belief in its own religious and national identities, and the vigor with which it defends itself, may be too much like the Britain of old for today's British to regard with much favor.

Alex Joffe is a historian and archaeologist. He is a Shillman-Ginsburg Fellow of the Middle East Forum.



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New "Google-Glass"-style goggles will provide soldiers with combat data

Source: http://i-hls.com/2015/02/idf-new-google-glass-style-goggles-will-provide-soldiers-combat-data/



The IDF's Computer Service Directorate is currently developing goggles that are similar to "Google Glass". They are designed to be worn by combat fighters in the field, to receive real time important data, such as the location of enemy forces, what lies behind a wall, how many people man the adjacent position, and so on. The new device is designed to provide fighters additional information and to prevent friendly fire.



According to the IDF's website, the Computer Service Directorate is currently developing numerous technological innovations. Sources at the directorate note that "Operation Protective Edge" was the most technological campaign in the IDF's history. Command and control systems shadowed the forces deep into the battlefield; forces were flown in and shipped in to the campaign; the participating forces received clear and sharp real time images. All this made for easier, life-saving decision making. The recent campaign further highlighter the importance of mobility during battle. This constitutes a real torque. For this reason, it will receive further technological backing in the form of upcoming innovations.

> Ever since "Operation Protective Edge", the Computer Service Directorate has been busy churning out various cutting edge technological advances, some of which were considered sci-fi not so long ago.

> Currently under development, are tablet-based applications across the board, from the level of the commander in the field all the way to the IDF Chief of Staff. One such application is already operational in the field of military logistics.

This application is based on a mobile platform – mobile logistic transportation. It shows, on the tablet screen, comprehensive data concerning all means of **48**



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transports, such as trucks which carry weapons and ammunition. Each commander can receive updated data concerning incoming supply to his or her own unit, as well as transportation means bound for other, neighboring units.

In the course of 2015, the directorate is planning to develop and subsequently unveil applications which would assist combat fighters in the battlefield. These innovations will range from target identification, an IDF alert application, and so on.

Another idea is the development of an application to identify fallen soldiers. Staffs from the IDF's Chief Military Rabbinate will use tablets to identify bodies according to biometric samples. This is but one example to expedited processes, such as post-mortem identification, right on the battlefield, as quickly as possible. Another idea is an application akin to "WhatsApp". The goal is to feature improved communication between soldiers. This application, which is designed to run on the IDF's encrypted network, will constitute a kind of one stop shop of download options. Each soldier will be able to download relevant information, in a way very similar to civilian news, transport and shopping applications.

User experience: after "Operation Protective Edge", experts from the IDF's Computer Service Directorate followed the various uses and applications of cutting edge technologies, and concluded that user experience is very important when it comes to emergency situations too. Consequently, development is underway of innovative gear featuring improved soldiers' user-experience.

The National Intelligence Strategy of the United States of America – 2014

Source: http://cryptome.org/2015/02/us-spy-strategy-2014.pdf

In support of the *National Security Strategy*, which sets forth national security priorities, the *National Intelligence Strategy* (NIS) provides the IC with the mission direction of the Director of National Intelligence (DNI) for the next four to five years. IC activities must be consistent with, and responsive to, national security priorities and must comply with the Constitution, applicable statutes, and Congressional oversight requirements. The NIS should be read along with the National Intelligence



Priorities Framework and Unifying Intelligence Strategies to inform and guide mission, as well as planning, programming, and budgeting activities.

Organizational Framework

The NIS has four main components, described as follows: (1) the *Strategic Environment* section portrays the global national security milieu; (2) the *Mission Objective* section describes key mission priorities and expected outcomes; (3) the *Enterprise Objective* section describes resource and capability outcomes needed to enable mission success; and (4) the *Implementing the Strategy* section provides broad organizational

guidance to meet the NIS's requirements.

Our success as a Community is measured as much by our defense of America's values as it is by the execution of our intelligence mission. What follows is a succinct depiction of the IC's Mission and Vision, which serves as the foundation for the Mission and Enterprise



Objectives. Fundamental to all of these elements are the Principles of Professional Ethics for the IC.

Counterterrorism: Identify, understand, monitor, and disrupt state and non-state actors engaged in terrorism-related activities that may harm the United States, its people, interests, and allies.

The dynamic and diverse nature of the terrorist threat will continue to challenge the U.S. and our interests and will require continued emphasis on targeting, collection, and analysis. The IC supports the national whole-of-government effort to protect the homeland from terrorist attack, disrupt and degrade terrorists who threaten U.S. interests abroad, counter the spread of violent extremist ideology that influences terrorist action, disrupt illicit financial and other support networks, and build counterterrorism capacity at home and overseas. Our government and our partners must anticipate, detect, deny, and disrupt terrorism wherever and however it manifests against U.S. interests. The IC will continue to monitor this threat to protect our nation, provide warning and assess the strategic factors that may enable future terror plots.

The intelligence requirements and challenges related to countering the proliferation of weapons of mass destruction (WMD) are increasing. The IC will support objectives for countering the threat and proliferation of WMD and their means of delivery as well as WMD-related materials, technology, and expertise. The IC will work with partners inside and outside the U.S. Government to better understand, detect, and warn on foreign WMD capabilities, plans, and intentions; thwart WMD acquisition and employment; and inform U.S. policies and initiatives.

Read the full report at source's URL.

The Importance of Space in Maritime Security

By Nolan McEleney

Source: http://cimsec.org/importance-of-space-in-maritime-security/14745



As long as man has walked the Earth and gazed into the stars, he's asked "what's out there what's waiting for me?" Today, our country asks that very same question, although not for what we can find, but how we can use Space and its resources to advance our scientific and military might into, and hopefully beyond the 21st century.

With the dawn of rockets and the nuclear confrontation between the United States and the Soviet Union during the height of the Cold

War, Space would soon become a vital asset for the interests of both countries and other major players for the years to come (particularly China). With the



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sudden rise of China, and the reemergence of the Russia as a major military power, it is absolutely vital that the United States once again pursue Space for economic, political, and commercial purposes, as well as for strategic military purposes which will benefit not only the military, but the United States as a whole; and how our Navy can play a big role in helping us make this happen.

As of the time of this writing, the United States and other Western European Countries are currently embroiled in a geopolitical dispute with Russia over Ukraine and the rights of its territory such as Crimea and Eastern Ukraine. As a result of this, the United States and the European Union declared economic sanctions

on Russia which are meant to cripple the Russian economy and out over force Russia its interference in Ukraine. In response to this, the Kremlin has threatened to stop shuttling Astronauts to and from the International Space Station, and cut off supplies to the ISS. In 2007, the Chinese military carried out its first antisatellite missile test when it launched a ground based missile 500 miles to destroy an aging satellite of theirs.

Both of these events are very disturbing as they easily threaten the United States and its space capability to carry out intelligence gathering and reconnaissance missions in Space using the latest technology and satellites. If these satellites, whether civilian or military, ever happen to be threatened in a time of war, the results could be catastrophic. The Navy should invest in further developing laser weapons like the LaWS that are capable of punching holes through thick steel plates on ships as well as a countermeasure against any ballistic missile that may

threaten our satellite capability in Space or onboard the ISS. Laser weapons are surprisingly very cheap and affordable. According to Rear Admiral Matthew Klunder in an interview for defense-aerospace.com, "with affordability a serious concern for our defense budgets, this will more effectively manage resources to ensure our sailors and marines are never in a fair fight." The article goes on to claim that firing this type of weapon can cost less than \$1 dollar per shot; a great bargain in a time that our military is starting to see a drawdown in military spending. Christopher Harrier, an analyst at the Institute for the Study of War was quoted as saving that: "The existing naval weapons systems, small-caliber cannons, large-caliber naval guns, and missiles, are at or near the limits of their potential capability. Guns and missiles just aren't going to get much more accurate or

U.S. Navy to deploy sea-based laser weapon The U.S. Navy is preparing to deploy a high-power laser that can disable small enemy boats and shoot down surveillance drones. The prototype Laser Weapon System (LaWS) could be operational in summer 2014 LASER WEAPON SYSTEM (LaWS) Weapon consists of six laser beams that simultaneously focus on target. Radio Power output around 100 kilowatts frequency sensor Target Provides tracking range sensor data Front Tracking mount Ream view of director beam director FLEXIBILITY Laser output can be adjusted to: Provide visible warning shot Lock on to moving target to assist Solid-state lasers friendly heat-seeking missiles Below deck of ship. linked to beam director Disable optics of enemy missile by fibre-optic cables or drone, rendering it useless Destroy target by burning it up COUNTERING ENEMY THREATS 1 Small boats: Laser cannot be 2 Unmanned aircraft: Laser negates outrun. Beam tracks targets that try need to use more expensive missiles to evade by changing direction to shoot down small drones Laser: Unlimited shots Cost as long as ship has power Laser shot: \$1 SM-2 missile: \$400,000

Deployment: LaWS temporarily installed on destroyer USS Dewey (above). System to become operational aboard amphibious ship USS Ponce Source: U.S. Navy Office of Naval Research © GRAPHIC NEWS

> lethal while lasers have significant potential for increases in range, accuracy, lethality, reliability, and cost-effectiveness."



It is clear that if the Navy wants to confront new 21st Century threats, it must research and develop new combat systems, whether it is by land, sea, air, or space. The Russians and the Chinese are also looking into developing similar weapons systems, while also trying to implement a missile defense system capable of intercepting and eliminating enemy targets. With a resurgent Russia and emerging China, this has become a must for defense of our allies and overseas military installations all around the world. It has been stated that an enemy country wouldn't necessarily have to launch a direct nuclear strike if it wanted to destroy the United States. Countries like China and Russia could simply detonate a nuclear weapon in the upper atmosphere right over the Midwestern United States and knock out most. if not all, of the electrical power grids in the continental United States through an Electromagnetic Pulse Effect. An EMP would be devastating to the United States as it would cripple our infrastructure, down all of our technology, leave the US Government and military crippled and slow to react, and cause the global economy to collapse. It would be a scene right out of a post-apocalyptic film like The Postman or The Book of Eli. Not to mention the millions of casualties and deaths that would occur due to starvation or anarchy. It would truly be a shame and a complete lack of competence if our Government doesn't have a contingency plan already in place for an event like this.

In order for this plan on space based missile defense to work however, it must learn from the mistakes made in the 1980's when Ronald Reagan famously proposed in 1983 his SDI (Strategic Defense Initiative) or the "Star Wars Program". As many people know, SDI was announced in 1983 by Ronald Reagan as a means of countering the Soviet threat with space based weaponry capable of shooting down any Soviet missile before it entered American airspace. Unfortunately, due to the slow technological development at the time of space based missile defense systems, as well as other factors including the Dissolution of the USSR, inefficiency, and overall lack of continued public support, SDI did not succeed in meeting its goals.

In comparison to the 1980's-early 90's, America does have the infrastructure in 2015 to support a new SDI type program. For starters, in 1983 something called: "private space companies" did not exist. With companies such as SpaceX, Virgin Galactic, Orbital Sciences, and Blue Origin starting to appear and establish themselves as legitimate companies in the aerospace sector, there's no reason why they couldn't be expected to help the American military develop a space based missile defense system. Similar to how other Aerospace contractors such as Boeing and Lockheed Martin have helped the Air Force in its development of their new aircraft and weapons systems, a joint government/private program with the DoD and Navy providing the funding, and the private companies will handle the testing and development could be developed. That way there won't be as large of an outcry by the public as there was with SDI in the 1980's and the politicians/military leaders don't have to worry so much about any failures and the potential political backlash with the program, as it will fall on the shoulders of the private contractors. Plus, this program will be more affordable now than it ever was in the 1980s

SpaceX is currently developing the Falcon-9 space rocket with the intention of making it reusable and cheaper to launch into orbit. According to NASA, the average typical launch cost for the Space Shuttle Program was \$450 million dollars. With the SpaceX designed Falcon-9 rocket, that cost is now about 50-56 million USD, an absolute bargain when compared to how much NASA's launches cost. The biggest obstacle to this plan would not necessarily be the technical or financial challenges involved, but compliance with international law such as the 1967 Outer Space Treaty. Article IV of the 1967 Space Treaty states: "States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The moon and other celestial bodies shall be

used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any



type of weapons and the conduct of military maneuvers on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited. "

The key words in this text being: "Nuclear or any kinds of weapons of mass destruction." WMD's are most often defined as being either: Biological, Chemical, Radiological, or Nuclear. Since lasers do not fall into either of these specifically defined categories (as lasers are electromagnetic), this would not violate international law regarding space and weapons of mass destruction. And their primary purpose would be defensive in nature. The Navy could easily place these interceptors on ships or in bases around the world in order to be alerted by any of these threats, as well as satellites which can track and locate enemy ships and submarines before they attack.

It is obvious that space will play a critical role in the development of naval affairs and maritime security through the use of satellites and space based defense which will be used to further America's Naval supremacy in both the Sea and Space throughout the rest of the 21st century and beyond. As we can see, the Navy will not just be limited to the sea but will have an increasingly expanded role as technology and space travel progresses.

Nolan McEleney was born in Jacksonville, Florida in 1996 and is a diehard fan of the Jacksonville Jaguars. His family moved to CT in 2005, before finally settling in MD in 2008. Nolan is currently a cadet officer in the Civil Air Patrol for the Bethesda-Chevy Chase Composite Squadron where he is currently assigned as a flight commander. Nolan currently attends The Avalon School in Gaithersburg where he is the Washington house captain. In extracurriculars, he is heavily involved with the Civil Air Patrol. Nolan is also a part of his squadrons cyberpatriot team which deals with cybersecurity and other threats as part of a nationwide competition. He has also taken online courses with the Cisco Networking Academy and Hillsdale College.

Hundreds More Muslim Rape Gang Cases Discovered in UK

By Robert Spencer

Source: http://www.frontpagemag.com/2015/robert-spencer/hundreds-more-muslim-rape-gang-cases-discovered-in-uk/



The Muslim rape gang scandal in Britain just keeps getting worse. Last August, the BBC reported that "at least 1,400 children were subjected to appalling sexual exploitation in Rotherham between 1997 and 2013, a report has found. Children as young as 11 were raped by multiple perpetrators, abducted, trafficked to other cities in England, beaten and intimidated, it said." Five months later, not only has little been done to combat this scourge, but it has grown exponentially worse: hundreds of new cases have been discovered, and one of the victims says that those who abused her are "untouchable."

Sky News reported that in addition to the 1,400 cases revealed last year, "hundreds more cases were known to authorities prior to its publication and that hundreds more are being reported." The victim who spoke

to Sky News said that now all these months after the news first broke of the extent of this savage exploitation, "It's still going on if not

worse, because now they're having to hide it more. I'm still seeing my abusers driving young girls in their car. They're untouchable." She said of the



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police that "all they care about is getting a statement. Six months on we've had no arrests, we've had no charges, evidence is still being lost."

These words were reported a month after a team of government commissioners took over the Rotherham Council, after finding it in "complete denial" about the scandal.

elites, who consistently frame issues regarding jihad terror and Islamic supremacism as racial. In fact, however, the rape gangs operated not because they were made up of men of Pakistani origin, but because they were made up of Muslims who believed that infidel girls were nothing more than, in the immortal words of the Grand Mufti of Australia a few years ago,



Why is this happening? What illness has overtaken British authorities, such that they are covering up these cases and doing little or nothing to apprehend offenders? The answer lies in the fact that these are not simply criminal cases involving outlaw gangs. The rape gangs are made up of Muslims who believe that the Qur'an (4:3; 4:24; 23:1-6; 33:50) and Islamic law allow them to capture non-Muslim girls and press them into sexual slavery, as we have also seen the jihadists of Boko Haram and the Islamic State also do in the past year. And British authorities have feared to confront the problem in its full magnitude because they're afraid of the stigma of stigmas in the twenty-first century West: being called "racist."

In Rotherham, British officials "described their nervousness about identifying the ethnic origins of perpetrators for fear of being thought as racist; others remembered clear direction from their managers not to do so." The very idea that "racism" was a factor here reflects the myopia of the British government and media "uncovered meat."

In any case, the fear of being stigmatized with the "racist" charge is unmistakably what hindered the proper prosecution of the rape gangs, and hinders it still. The perpetrators are untouchable because the British authorities have yet to tackle, and may never tackle, what really makes them untouchable: the prevailing culture - not just in Britain, but in the U.S. also, and all over the West — that consigns all concerns about the activity of Muslims, whether it be jihad terror or Sharia- and Qur'an-inspired sex trafficking, as here, to "racism" and "Islamophobia." The officials who swept these cases under the rug were terrified of being called "bigots" by the likes of Nick Lowles of the Leftist organization Hope Not Hate, which acts determinedly to smear and marginalize anyone who dares raise a voice against large-scale

Muslim criminality and the Islamization of Britain; and Fiyaz Mughal of TellMamaUK, an organization dedicated to combating "Islamophobia" in 54

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Britain – by which it means even the smallest, weakest opposition to jihad terror and Islamic supremacism.

People like Lowles and Mughal have real power in David Cameron's shattered, staggering, terrified, dhimmi Britain. The members of the Rotherham Council may quite reasonably have thought that if they revealed the full magnitude of Muslim rape gang activity, and prosecuted the offenders energetically, they would be accused of exaggerating the problem, or even of fabricating it altogether, out of a deep-seated "racism" and "Islamophobia." They could consequently have lost their jobs and never gotten another one. So they kept quiet. And the victim tally grew ever higher.

As Britain races to ruin, these officials can console themselves that even as thousands of girls' lives were ruined on their watch, and the world was treated to the spectacle of a free nation submitting meekly to barbaric activity on a shocking scale, at least they were never, ever "racist."

Robert Spencer is the director of Jihad Watch and author of the New York Times bestsellers The Politically Incorrect Guide to Islam (and the Crusades) and The Truth About Muhammad. His latest book is Arab Winter Comes to America: The Truth About the War We're In.

EDITOR'S COMMENT: I tried to look for the Qur'an (4:3; 4:24; 23:1-6; 33:50) on the Internet. Seperately read they do not support rape. I also looked at Wikilslam ("Rape in Islam" - <u>http://wikiislam.net/wiki/Rape in Islam</u>) – again no strong verification despite the incriminating conclusion. But despite inability to define rape directives, there is the law and the crime (rape) that has nothing to do with interpretations, racism and all. It seems that police is not doing their duty as they should and their fake excuses will not repair broken souls and innocent lives!



How long would it take you to earn a top footballer's salary?

Source: <u>http://www.bbc.com/news/world-</u> 31110113

Global football stars earn some of the highest wages in the world. Cristiano Ronaldo's contract at Real Madrid earns him around €350,000 (£265,000) each week. How much do you get paid compared with a top footballer? Use our calculator - part of the BBC's A Richer World season - to find out.

RESULTS (Editor of Newsletter)

Cristiano Ronaldo earns €18,200,000 per year. It would take him 11 minutes to earn your weekly salary.



On your current salary, it would take you **954 years** to earn Cristiano Ronaldo's annual wage. If you had started in the **year 1061** you'd almost be finished. You earn **about the same as** the average wage in

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your country and 1.3 times the world average wage. Based on data from the International Labour Organisation, the average worker in your country earns around €18,500 per year.

Football club owners across Europe spent much of January thrashing out multi-million pound deals to sign players during the month's transfer window.

In total, a massive £950m (€1.3bn; \$1.4bn) has been spent by the 20 Premier League sides this season - an all-time high transfer outlay - and the game's highest earners now receive bigger pay packets than ever before.

Back in 2001, when Sol Campbell left Tottenham for London rivals Arsenal, his £100,000 a week contract made him Britain's first footballer to earn a six-figure weekly sum. Fourteen years later, Wayne Rooney's current deal at Manchester United, signed last February, earns the England captain almost £300,000 each week.

According to football finance experts at Deloitte, the average wage for Premier League players rose to £1.6m during the 2012-13 season - the latest available data. That equates to £31,000 a week, which is more than the average UK worker earns in a year.

NOTE: In the "Since you've been on this page" photo the right column was changing upwards continuously! 325 euro until I wrote this sentence!!!



EDITOR'S COMMENT: Do the test! It is so funny that will take your anger away! If you are a First Responder you will realize that it worths suffering and sweating and put your life into danger for your fellow citizens. C'est la vie - and "vie" is a bitch!

25 Reasons You Should Never Visit Greece

Nope, might as well stay home

BuzzFeed Posted on Feb. 12, 2015 By Nia Alavezos (BuzzFeed Staff) Source: http://www.buzzfeed.com/niaalavezos/reasons-vou-should-never-go-to-greece#.kgzO222Db

Illegal immigration in Greece (2013-2014)

Source: Greek media



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Russia's Unmanned Armed Combat Robot Fleet

Source: http://www.autoevolution.com/news/this-is-russias-unmanned-armed-combat-robots-fleet-video-92182.html



Whether it is or not connected to what's currently going on in Ukraine, one thing is certain, and neither of the parties involved will stop from pushing the weaponry development forward. And since the unmanned vehicles are the new trend, Russia is also planning to build its own fleet of remote-controlled ground robots that will be used in mine clearing missions.



We're looking at unmanned tracked robots with a weapon station on top that are currently being tested in the ex soviet country and that will eventually be used by their Strategic Missile Forces. The vehicles have been on trial last month in Russia's Astrkhan region and according to Major Dmitry Andreyev, a representative of the Defense Ministry's Strategic Missile Forces, preparation for the testing is in its final stage.



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Reports are that the testing is part of an initiative to deploy robots to protect the Defense Ministry's intercontinental ballistic missile launch sites by 2020, a plan announced by the Russian official last summer.



The robots weigh 900 kilograms, wield a 12.7 mm machine gun and are able to reach up to 45 km/h. It appears the vehicles can function for a maximum of 10 hours at one trial, but can remain operational in strand-by mode for up to one week.

The unmanned ground vehicle is the land-based counterpart to UAVs and is also remotely operated. Think of these puppies as the future's unmanned army that will be as efficient as the current heavy military ground vehicles are only that they don't need any men onboard to function properly. Is this scary? Of course! But we'll keep hoping there's no war coming and this heavy weaponry is just to show off.

The Contradictions of Media Power

By Des Freedman

Source: http://www.bloomsbury.com/uk/the-contradictions-of-media-power-9781849660693/#sthash.9v SP9KU3.dpuf



Media power is a crucial, although often taken for granted, concept. We assume, for example, that the media are 'powerful'; if they were not, why would there be so many controversies over the regulation, control and impact of communicative institutions and processes? Further, we assume that this 'power' is somehow problematic; audiences are often treated as highly susceptible to media influence and too much 'power' in the hands of one organization or individual is seen as risky and potentially dangerous. These concerns have been at the heart of recent controversies involving the relationships between media moguls and political elites, the consequences of phone hacking in the UK, and the emerging influence of social media as vital gatekeepers.

Yet it is still not clear what we mean by media power or how effective it is. This book evaluates contrasting definitions of media power and looks at the key sites in which power is negotiated, concentrated and resisted -



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politically, technologically and economically.

Combining an evaluation of previous literature and new research, the book seeks to establish an understanding of media power which does justice to the complexities and contradictions of the contemporary social world. It will be important reading for undergraduates, postgraduates, researchers and activists alike.

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MOSAIC'

CHAIRMAN OF GOOGLE

THE WAR IN IRAQ

CONCLUSION

CHAPTER 4: POWER SHIFTS AND SOCIAL MEDIA A RADICAL REDISTRIBUTION OF POWER? DECENTRALIZATION: THE RISE OF THE 'POWER

DISINTERMEDIATION: POWER TO THE PEOPLE? 'IT'S CALLED CAPITALISM' – ERIC SCHMIDT,

CHAPTER 5: CHALLENGING MEDIA POWER MEDIA, CONTRADICTION AND RESISTANCE THE DOMINANCE/RESISTANCE MODEL IN ACTION:

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CHAPTER 6: CONCLUSION – MEDIA POWER PARADIGMS REVISITED

BOOK REFERENCES

Reviews

"Over the past decade Des Freedman has established himself as one of the preeminent media scholars in the world. *The Contradictions of Media Power* is his finest work to date, demonstrating Freedman's superior command of political and social theory. Each page bristles with keen and original insights. The book is absolutely mandatory reading for anyone seeking a critical analysis of media and society." – **Robert W. McChesney, Professor of Communication, University of Illinois at Urbana-Champaign, USA, and author of Digital Disconnect**

"Des Freedman provides a much needed boost to radical approaches to power with this highly sophisticated and interrogation of the workings of media power. This book is simply the best version of the political economy reading of media power that we have. It faces head on how the economic power vested in media institutions is being reconstituted in the age of social media, while occasionally generating media products that make powerful critiques of the very processes of capitalism that produced them." – Nick Couldry, Professor of Media,



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Communications and Social Theory, London School of Economics and Political Science, UK

"Freedman brilliantly tackles the central issue concerning the media in modern life: their power. He is critical but never simplistic, rigorous without being pedantic, and passionate without ever sacrificing intellectual depth." – David Hesmondhalgh, Professor of Media and Music Industries, University of Leeds, UK

"Des Freedman is among the world's leading analysts of media power. Always cogent, always scholarly, and always lively, his work takes us into the grubbiest corners and cleanses them with brilliant illumination." – Toby Miller, Sir Walter Murdoch Professor of Cultural Policy Studies, Murdoch University, Australia, and Professor of Journalism, Media and Cultural Studies, Cardiff University, UK.

Federal judge in Texas temporarily blocks Obama's executive order

Source: http://www.homelandsecuritynewswire.com/dr20150217-federal-judge-in-texas-temporarily-blocks-obama-s-executive-order

Feb 17 – Late Monday night, U.S. District Judge Andrew Hanen, a George W. Bush appointee and an outspoken critic of the administration's immigration policies, temporarily blocked President Barack Obama's executive action to offer deferred deportation to roughly five million undocumented immigrants.

The decision. which federal bars implementation of the Deferred Action for Parents of Americans (DAPA) and expanding Deferred Action for Childhood Arrivals (DACA), was a response to a lawsuit filed by a coalition of twenty-six Republican-run states which argued that Obama had violated the "Take Care Clause" of the U.S. Constitution, which, these states' attorney generals claimed, limits the scope of presidential power. The 26-state coalition also claims Obama's orders would force them to increase investment in law enforcement, healthcare, and education.

"The court finds that the government's failure to secure the border has exacerbated illegal immigration into this country," Hanen wrote in a 123-page opinion. "Further, the record supports the finding that this lack of enforcement, combined with the country's high rate of illegal immigration, significantly drains the states' resources."

In their request for an injunction, the twenty-six states said it was necessary because it would be "difficult or impossible to undo the President's lawlessness after the Defendants (Obama administration) start granting applications for deferred action."

Had Hanen not approved an injunction against Obama's orders, the U.S. Citizenship and Immigration Services, on Wednesday ,18 February, would have begun accepting applications from those eligible for an extension of DACA, which would have granted work permits and deportation deferrals to undocumented immigrants brought illegally to the United States as children (DREAMers).

According to Mercury News, the Obama administration is expected to appeal the ruling to the 5th U.S. Circuit Court of Appeals in New Orleans; on the basis that "The Supreme Court and Congress have made clear that the federal government can set priorities in enforcing our immigration laws — which is exactly what the President did when he announced commonsense policies to help fix our broken immigration system," read a statement from White House press secretary Josh Earnest. Twelve mostly liberal states, including Washington and California, have filed a motion with Hanen in support of the administration's executive order, arguing the orders will substantially benefit states.

Law enforcement officials throughout the country, including members of the Major Cities Chiefs Association, have also filed

a motion in support of the executive order, arguing it will improve public safety by encouraging immigrant



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communities better to cooperate with police. Immigrants' rights groups have lashed out at Hanen's ruling. "Judge Hanen's ruling is not permanent and we are confident that it will be repealed in a higher court," Cristina Jimenez, managing director of United We Dream, a Washington, D.C.-based immigrant advocacy group, told the *Los Angeles Times*. "Republican attacks like this lawsuit do not scare us, they just focus our resolve to make these programs even more successful."

EDITOR'S COMMENT: Judge Hanen seems to be the only one seeing the whole picture. The rest care either for their chairs (politicians) or for their peace of mind (police). The major illegal immigrant flow comes from Mexico – see some financial data below and make your own conclusions about a more permanent solution of the immigration problem.

Source: http://www.worldsrichestcountries.com/

World's Richest Countries by 2014 GDP	Richest Countries by 2014 GDP Per Capita
International Monetary Fund statistics at October 2014	GDP per capita based on population size.
1. China: US\$17.632 trillion (up 79.4% from 2008) 2. United States: \$17.416 trillion (up 18.3%) 3. India: \$7.277 trillion (up 62%) 4. Japan: \$4.788 trillion (up 11.8%)	61. Turkey: \$19,556 (up 24.4%) 62. Romania: \$19,397 (up 18.9%) 63. Belarus: \$18,178 (up 30.7%) 64. Azerbaijan: \$17,943 (up 32.7%)
5. Germany: \$3.621 trillion (up 14.6%) 6. Russia: \$3.559 trillion (up 15.4%) 7. Brazil: \$3.073 trillion (up 25%) 8. France: \$2.587 trillion (up 11.6%) 9. Indonesia: \$2.554 trillion (up 53%)	65. Mexico: \$17,925 (up 13.6%) 66. Venezuela: \$17,917 (up 2.7%) 67. Mauritius: \$17,888 (up 29.9%) 68. Lebanon: \$17,754 (up 30.5%) 69. Bulgaria: \$17,115 (up 14.8%) 70. Device une \$10,717 (up 2.9%)
10. United Kingdom: \$2.435 trillion (up 12.2%) 11. Mexico: \$2.143 trillion (up 22.6%)	70. Suriname: \$16,717 (up 30.3%) 71. Libya: \$16,622 (down 42%)

According to IMF data, China is richest country as of October 2014. (Next update April 2015)

Richest North American Countries

2. United States: \$17.416 trillion (up 18.3%) 11. Mexico: \$2.143 trillion (up 22.6%)

15. Canada: \$1.579 trillion (up 19.7%)

13. Callada. \$1.379 thillon (up 19.776)

Non-violent 'Terrorism'?

By Rachel Meeropol

Source: http://www.huffingtonpost.com/the-center-for-constitutional-rights/non-violent-terrorism_b_6709996.html

Feb 19 – In a Chicago courtroom today, I will urge a federal judge to dismiss terrorism indictments against **two animal rights**

activists accused of freeing thousands of mink from fur farms. Tyler Lang and Kevin Johnson are charged under the federal Animal Enterprise Terrorism Act (AETA). They face up to 10 years in prison.

The Center for Constitutional Rights joined the defense team to continue our half-decade battle to have the AETA struck down as unconstitutional. The law punishes causing

property loss (which includes lost profits) to a business that sells animals or animal products -- criminalizing not only loss caused by criminal acts but also loss caused by picketing and other constitutionally-protected activity. The AETA punishes a wide swath of expression by animal rights activists if it hurts the bottom lines of corporations -- a clear

violation

of the First Amendment. Lang and Johnson's case shows, however, that criminalizing speech is not the only, or even

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the most fundamental, problem with the AETA. Though the law prohibits all kinds of property damage, it has been used solely against animal rights activists, treating criminal acts committed in the service of their ideology as lawmakers continued, "it is often difficult... to address a campaign of low-level...criminal activity...in federal court."

But why must low-level criminal activity by animal rights activists be prosecuted in federal



drastically worse than crimes committed for other reasons. Had Lang and Johnson been accused of stealing mink coats to sell for their own profit, does anyone believe they would be facing terrorism charges? This bias against the idea of animal rights turns an act of pure nonviolence into "terrorism."

Government lawyers insist there is no problem with calling such activity "terrorism" -- because they promise they "will not refer to the defendants as terrorists at trial or in any other context." Then why does the AETA punish freeing animals as "terrorism" at all? Indeed, regardless of whether prosecutors utter the term, if found guilty Johnson and Lang will be convicted "terrorists."

The government says it is appropriate to criminalize such activity under a "terrorism" law because other acts committed against animal enterprises could properly be defined as terrorism, such as arson or bombings. This is like calling every assault "murder," because murder is a particularly brutal form of assault. Moreover, as lawmakers themselves noted when enacting the AETA, "It is a relatively simple matter to prosecute [arsons and bombings] using existing federal statutes." But, court? Indeed, Johnson and Lang already pleaded guilty to state-level "possession of burglary tools" charges and served several months in state prison.

The answer becomes clear when we consider that those who lobbied for the AETA are also those who stand to lose the most as the idea of animal rights gains acceptance -- organizations like the American Meat Institute, National Milk Producers Federation, and the Fur Commission USA. The profits of these industries depend not only on keeping animals inside cages but, more significantly, on keeping the idea of animal rights marginalized. Losing a few animals is pocket change; losing a public that pours billions of dollars into those pockets risks sending Big Ag and its compatriot "animal enterprises" the way of the tobacco industry. When it comes to protecting the profits of multibillion dollar "animal enterprise" industries, the government wants to have it both ways. In the

court of public opinion, it wants to be able to wield the AETA's terrorism rhetoric against unpopular activists -- but it wants to simultaneously avoid scrutiny in



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charged as "terrorists"? The fur lobby says yes. Common sense and the Constitution

a court of law over calling nonviolent activism "terrorism."

The courts should not allow it. Should nonviolent animal rights activists really be

Rachel Meeropol is Senior Staff Attorney at the Center for Constitutional Rights.

EDITOR'S COMMENT: I will not make any comments – you already know my deep relation with animals – ALL animals. But do animals feel terrorism the same way humans do?

say otherwise.

The 12 threats to human civilization, ranked

By Matt McFarland

Source: http://www.washingtonpost.com/blogs/innovations/wp/2015/02/20/the-12-threats-to-human-civilization-ranked/



Once machines start teaching themselves, and develop intelligence that far exceeds our own, we could be in trouble. (Jewel SamadAFP/Getty Images)

Earlier this month researchers at the Global Challenges Foundation released a thorough and unsettling look at what threatens human civilization. They define a civilization collapse as a "drastic decrease in human population size and political/economic/social complexity, globally and for an extended time."

The bad news is this is a long list. I've broken down what the researchers see as the doomsday scenario for each risk, and the odds that it will happen in the next 100 years. On the bright side, the odds are generally very low, but the risks should still be taken seriously.

1. Artificial intelligence

Why it's bad: Machines with an extreme amount of technology could be difficult to control. They may hoard resources to boost their own intelligence, leaving little or nothing for humankind. That would be very bad for us. Odds of wiping out civilization: 0-10 percent

2. Unknown consequences

What to be afraid of: That's unclear. Lots of things could go wrong that we aren't even considering. Remember the Fermi paradox — alien life likely exists but we've had no known

contact. Perhaps intelligent life always destroys itself — or something else does — before it can explore the galaxy. This leaves us to guess at the causes

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that may have destroyed any other intelligent life.

Evaluating the risk: 0.1 percent

3. Synthetic biology

The issue: A pathogen could be engineered to target humans or a critical part of the ecosystem. If synthetic biology products became a part of our economy, that adds a vulnerability, as they could become an entry point for biowarfare or bioterrorism.

Judging the risks: 0.01 percent

4. Extreme climate change

Nightmare scenario: Famines, mass deaths, social collapse and mass migration ignite global conflict. Civilization crumbles.

Now for perspective: 0.01 percent chance of happening in next 200 years (all other estimates are for 100 years)

5. Nanotechnology

How this goes badly: Self-replicating nanomachines could be engineered to consume our environment, destroying humanity. Another concern is whether nanotechnology can be used to build nuclear bombs.

Odds of destroying civilization in next 100 years: 0.01 percent.

6. Nuclear war

What to worry about: An all-out nuclear war could trigger a nuclear winter, in which temperatures plunge and the ozone layer may be destroyed. The world's food supply would be at risk, likely triggering mass starvation. The chances: 0.005 percent.

7. Major asteroid impact

Uh-oh: A large asteroid collision — something about 3 miles in size – would destroy an area the size of Holland. The impact would trigger massive dust clouds, which would affect the climate and our food supply, causing political instability. The good news is an asteroid this size hits about once every 20 million years. **The risk:** 0.00013 percent

8. Global pandemic

The concern: Infectious diseases can spread easily given our advanced global transportation systems and the dense nature of human populations. A new pandemic combining the incurability of Ebola, the infectious nature of the common cold and the long incubation period of HIV would have an extreme death toll. **The odds:** 0.0001 percent.

9. Super-volcano

Why this would be very bad: Aerosols and dust would be shot into the upper atmosphere, cooling global temperatures. The effects would be similar to a nuclear winter.

The worry index: Only a 0.00003 percent chance.

10. Ecological collapse

The bad news: Species are going extinct at a faster than historic rate. If the ecosystem collapses some human lifestyles may be impossible.

The odds: not available

11. Global system collapse

The concern: The world's economic and political systems face systematic risks because of their intricate and interconnected natures. The researchers say more work needs done to clarify what parts of the system could collapse and destroy civilization. But they felt enough research is out there to include it on the list. **The odds:** not available

12. Bad global governance

The concern: Leaders don't eliminate poverty, or they build a totalitarian state. Current technology can make it easier to create a totalitarian state. The odds: not available

Matt McFarland is the editor of Innovations. He's always looking for the next big thing.

EDITOR'S COMMENT: Interesting ranking with a touch of futuristic humor. My ranking would be a bit different: (1) poverty; (2) food; (3) drinking water; (4) stupidity; (5) greed; (6) extremism; and (7) logic-resistant dominance virus. ODDS? For sure much higher that those described herein!



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Three Sci-Fi Designs for the Future of Farming

Source: http://www.wired.com/2015/02/three-sci-fi-designs-future-farming/

Bioterrorists will use the Gene Gun Hack to inject invasion weed species into crops, systematically destroying a field. Kaitlyn Schwalje

Humans love to speculate on the future. Always have. From the very beginning, the most curious among us have donned prophetic glasses and peered into the distance to make best guesses for what our world might be like in the years ahead. We're not always right.

"We're actually kinda really terrible at guessing what the future is going to be like," says Kaitlyn Schwalie. Schwalie is a recent graduate of the Copenhagen Institute of Interaction Design who, for her graduating thesis project, is making her



own best guess at the future by envisioning what farming might be like a century down the road. In Three Propositions for Future Farming, Schwalje designed objects to explore three scenarios for what farming might be like in 2115, when bioterrorism and weather manipulation are commonplace.

Aurel Insecticide is an omni-directional speaker that pipes out vibrations in order to stimulate plant defenses. Kaitlyn Schwalje

The three objects, Gene Gun Hack, Aurel Insecticide and Precision Weather Modification Device aren't real (they're non-working prototypes), but they are rooted in reality. The Aurel Insecticide device, for example, is based on a study from the University of Missouri, which found that certain plants respond to the sound vibrations caterpillars make when eating by amping up defense mechanisms. This inspired Schwalje to design an omni-directional speaker that pipes out an aural insecticide in order to stimulate plant defenses. The speaker would be positioned at crop level, and farmers could activate a library of sounds (depending on the insect) in anticipation of an infestation.





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The Precision Weather Modification Device echos Beijing's effort to control the weather during the 2008 Summer Olympics ceremony, which used rockets and shells filled with silver iodide to break up clouds heading towards the city and direct them to areas outside of Beijing. Schwalje envisions her device will be purchased by farmers and corporations who, facing increasing droughts and shortening food supply, will be able to target specific locations with rain.

The Precision Weather Modification Device will target specific locations with precipitation. Kaitlyn Schwalje

Schwalje's Gene Gun Hack is more ominous. Taking inspiration from *Phragmites australis*, an invasive weed that poisons the soil around it, the designer imagines a time when bioterrorists are able to hack genetic modification guns to do agricultural harm. "Injecting the gene marker to a targeted few plant hosts within a crop fields begins a systematic devastation of the field," she explains.

The three speculative scenarios are just that—totally hypothetical. In actuality, they'll never manifest, at least not precisely as Schwalje presents them. But that's not the point. Schwalje's scenarios don't paint the futures as utopian nor dystopian; there's enough imaginative wiggle room to let your mind wander in both directions, and that's a good thing. But like we've shown with Alexandra Daisy Ginsberg's Designing For the Sixth Extinction project and the Extrapolation Factory's design work, projects like this can at least get a conversation started around what kind of future we'd like to build for ourselves.



The Harmful Effects of Prejudice and Discrimination

Paperback – December 17, 2014 By Shabbir Tankiwala (Author) Source: http://www.amazon.com/The-Harmful-Effects-Prejudice-Discrimination-ebook/ dp/B00PAC2LIW

Most individuals around the World often becomes Victim of Prejudice, The Prejudice hit person suffers Unequal and Unfavourable Treatment in society or at place of work, Please read this Book that Provides Most Informative and In-Depth understanding of Prejudice and Discrimination, Most people needs to be made to understand that intolerance and prejudice is dangerous for civil society. People, it seems, are rather more prejudice than they think they are. One's prejudice it seems is based on fear. individuals

embittered with Religious and Racial antagonisms, Also we need to discover the fact, that, Does the Religion Benefits us or harms us?



TOP-10 Military Gadgets Involved in the Russian Aggression Against Ukraine

Source: https://en.informnapalm.org/top-10-evidence-russian-aggression-ukraine-materials-informnapalm/



Read more details at source's URL.



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7 dead in Mexico maternity hospital gas blast

Source: http://www.cnn.com/2015/01/29/world/mexico-explosion/index.html

Jan 29 – Four children are among the seven deaths confirmed so far after a natural gas

explosion, according to government and emergency officials.



Some 37 injuries have been reported, according to Mexico City's Civil Protection agency.

A truck was supplying natural gas to the hospital when apparently a hose burst and the resulting leak caused an explosion, Mexico City Mayor Miguel Angel Mancera said.

At least eight people were seriously injured, he said. The Red Cross reported that it provided 23 ambulances and more than 40 rescuers to the efforts.



the outskirts of Mexico City on Thursday morning.

There are fears that more babies and adults may be trapped in the debris of the hospital, which was on the verge of collapsing after the area hospitals. Many others were being treated for cuts from flying glass after the blast, he said.



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The Cuajimalpa Maternal Hospital is located on the southwest outskirts of Mexico City. It was founded in 1993 and is part of the city's government health system.

Photos from the scene show that the gas truck belongs to Gas Express Nieto, a natural gas

distributors in Mexico, according to the company.

Gas Express did not immediately comment on the explosion. Its Twitter account is private and its Facebook page appeared to have been taken offline.



One of the city's publicly accessible webcams captured the blast, showing a plume of smoke rising from the direction of the hospital.

Some witnesses reported seeing a fire burning at the hospital. Mancera said it was a controlled fire designed to burn off the leaking

provider among the four biggest gas

gas from the delivery truck.

Chinese ownership of a methanol plant worries Louisiana parish residents

Source: http://www.homelandsecuritynewswire.com/dr20150130-chinese-ownership-of-a-methanol-plant-worries-louisiana-parish-residents

Jan 30 – Roughly 150 petrochemical companies and seventeen refineries



operate in a zone between Baton Rouge and New Orleans; an area locals' call "Cancer Alley" due to the health concerns that have arisen during the past few decades of industrialization. In Mossville, a town a few hours west of Baton Rouge in Southern

Louisiana, 91 percent of residents claim they are experiencing health complications as a result of the fourteen facilities which manufacture, process, store, or discharge toxic substances in the area.

Al Jazeera reports that many of the residents of communities along Cancer Alley have had little or no say before chemical companies set up new plants in their communities.

Last July, residents of St. James Parish held a town hall meeting at St. James High School, near the site of a proposed methanol plant,

to discuss the new facility. The plant will be operated by Yuhuang Chemical Inc., a



www.cbrne-terrorism-newsletter.com

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subsidiary of Chinese natural gas giant Shandong Yuhuang.

"We never had a town hall meeting pretending to get our opinion prior to them doing it," said Lawrence "Palo" Ambrose, a coordinator at St. James Catholic Church. "They didn't make us part of the discussion," he added.

Residents disapprove of the new plant and

methanol plant can be found on the DEQ Web site using the agency's interest number for the application, 194165. She adds that the information could be obtained through a public records request.

Still, many locals claim they heard nothing about the project prior to the July 2014 announcement. "Really, I haven't heard a lot



believe the St. James Parish Council, which approved the project, purposely failed to inform them of the plant until the sale of the property. "I don't think the way they went about getting the plant was right. They bought the property before they tell people it's going to happen," said Edwin Octave, who lives in the area.

Environmentalists say it is not unusual for some rural communities to be excluded from the permit process. Darryl Malek-Wiley, an environmental justice organizer in New Orleans for the Sierra Club, said the state's Department of Environmental Quality (DEQ) fails to disseminate information clearly. "You have to know to read the legal pages and superfine print," he said. "We have talked about the need for the community to be noticed right at the beginning (of negotiations)," he added, but it is not a legal requirement. "They don't know about something until they get a press story saying it's a done deal."

DEQ spokeswoman Jean Kelly claims community members are notified when a company applies for a chemical plant permit. "A proposed permit is public noticed, and the community has an opportunity to comment on it," she said. Information on the proposed about it," said Raymond Zeringue, a worker on a local sugar cane farm. "Other than there's a methanol plant that's being built, no information has been made public. They should have had better information handed out — more pros and cons to it."

Recently, Shandong Yuhuang, parent company of the proposed plant in St. James, has received bad press in China for reportedly neglecting environmental laws, including releasing toxic emissions in the city of Heze. which environmentalists have connected to rising cancer rates and contaminated water. St. James residents fear that the new plant will not only release toxic waste in the area, but regulators will fail to notice violations before it is too late. "It's not feasible to just hope they will abide by regulations. Most of the industry environmental reporting requirements are done by companies without a secondary check with the Department of Environmental Quality or EPA," said St. James Parish gas station owner

Kenny Winchester. "In effect, if a company was doing wrong, it would have to write itself a ticket. I know every time I'm going down the interstate too fast and there's



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no cop, I pull over and write myself a ticket ... No, it doesn't happen that way."

The St. James plant is to be one of several plants in the works between Chinese firms and Louisiana development authorities. The state plans to give Yuhuang Chemical an incentive package worth \$9.5 million over the next five years if the project proceeds and a sizable portion of the plant's 400 jobs are sourced locally.

"St. James benefits from its location on either side of the Mississippi — deep water access," said Greater New Orleans Inc.'s (GNOINC) president and CEO, Michael Hecht. GNOINC, an economic development nonprofit which receives 25 percent of its funding from the state government, helped select the plant's site. "When you have our labor rates, the abundance of cheap natural gas as a feedstock, we're becoming — if not a low-cost — a good-cost, high-convenience location for foreign companies."

Hecht anticipates the New Orleans and Baton Rouge markets will receive at least one major new plant announcement per year in the coming years. He warned, however, that the "challenge we have in Louisiana is to figure out how to engage ... Chinese investment in a way that not only benefits the Chinese investor but the Louisiana community. That is still a question to be determined. What type of investment do we want? What requirements do we want to put on it? That's a question to answer as a community."

The DEQ is currently studying the plant's impact on the local environment and will deliver its decision on 6 March.

Training for GCC customs officials on chemical weapons

Source: http://www.gulf-times.com/qatar/178/details/425506/training-for-gcc-customs-officials-on-chemical-weapons



Staff Major General (Air) Nasser bin Mohamed al-Ali and other officials at the opening session

Feb 01 - Representatives from the GCC customs departments were introduced yesterday to the technical aspects of transporting chemical materials, especially those for dual use.

The sub-regional training course for GCC customs authorities was inaugurated yesterday by Staff Major General (Air) Nasser bin Mohamed al-Ali, chairman of **Qatar National Committee for the Prohibition** of Weapons (NCPW).

The two-day training has been organised by Doha Regional Centre for Training on Conventions on Weapons of Mass Destruction in co-operation with the Organisation for the Prohibition of Chemical Weapons (OPCW) for the seventh consecutive year. It aims at enhancing the awareness and capabilities of customs officers in the region on related issues.



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Pankaj Sharma, representative of OPCW, briefed the officials about the history of chemical weapons and their use in different wars in various forms. He pointed out that the world recognised the imminent risk such weapons pose for human existence and well-being. Accordingly, a convention was agreed upon to ban such weapons and limit their use.

A presentation was given to introduce the trainees to dual use chemicals, which has a potential of being used to manufacture chemical weapons, while they can be also used for common industrial purposes.

The customs inspectors were briefed on the necessary procedures to be taken when handling such substances at the various entry points of the country, such as verifying the documents on source certificate and the purchase order, besides ensuring that the targeted destination of any such cargo would actually use it for the designated industrial purpose.

The concluding day of the training, which is today, will include training on risk assessment and management and an open discussion on the various import and export scenarios, among other related topics.

The training is being held under the patronage of Staff Major General (Air) Ghanim bin Shahin al-Ghanim, Chief of Staff of the Qatari Armed Forces.

First of 12 Chemical Weapon Production Facilities in **Syria Destroved**

Source: http://www.opcw.org/news/article/first-of-12-chemical-weapon-production-facilitiesin-syria-destroyed/

Feb 03 – The destruction of an underground structure in Syria that previously hosted a chemical weapon production facility - the first of twelve planned to be destroyed was completed on 31 January 2015. OPCW inspectors verified and declared the structure as destroyed on the same day.

At the same time, destruction activities and preparatory work at the eleven remaining structures continue.

"I welcome the destruction of the first facility, which had been delayed due to some technical reasons. I am hopeful that remaining destruction activities will proceed according to the plan," said Director-General Ahmet Üzümcü.

98% of chemical weapons declared by the Syrian Arab Republic have so far been verified by the OPCW as destroyed. This includes 100% sulfur mustard of and

methylphosphonyl difluoride – a precursor chemical for the nerve agent sarin - which were neutralised aboard the US Cape Ray. Only 29 metric tones of Hydrogen fluoride remain to be destroyed at facilities in the

United States and United Kingdom. Progress towards destruction of effluent arising

from sea-based destruction of sulfur mustard and methylphosphonyl difluoride continues to be made at facilities in Germany and Finland, respectively - 63% of 333,520 kg of sulfur effluents and 52% of 5,867,000 kg of fluorinated effluents have been destroyed.

The Declaration Assessment Team of the OPCW, whose mandate is to assist the Syrian authorities to complete their declaration, has undertaken its seventh visit to Syria and will submit its report at the next meeting of the Executive Council.

Iran Chemical Milestones: 1929-2011

Source: http://www.iranwatch.org/our-publications/weapon-program-background-report/iran-chemicalmilestones-1929-2011

November 1929: Iran accedes to the Geneva Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare. September 1980: The Iran-Iraq War begins.







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November 1983: In a communication to the United Nations, Iran alleges that it has been targeted with chemical weapons by Iraq.



1983: According to a U.S. Defense Intelligence Agency study, Iran's offensive chemical weapon program begins in response to Iraq's use of chemical agents on the battlefield. The D.I.A. believes that the program began under the auspices of the Islamic Revolutionary Guard Corps, with some assistance from the Ministry of Defense.

April 1984: The U.N. Security Council releases a report confirming that aerial bombs with mustard gas and tabun, a nerve agent, have been used against targets in Iran.

1985: The Australia Group forms in reaction to the U.N. documented use of chemical weapons in the Iran-Iraq War. Member states pledge to harmonize export licensing for chemicals used in the manufacture of chemical weapons.

July 1987: The United States imposes controls on the export of eight chemicals, useful in the production of chemical weapons, to Iran, Iraq, and Syria.

1987: Iran is able to deploy limited quantities of mustard gas and cyanide against Iraqi troops using artillery shells, according to the U.S. Department of Defense.

May 1988: U.N. Security Council Resolution 612 is unanimously adopted, condemning the use of chemical weapons in the Iran-Iraq war and calling on both sides to adhere to the Geneva Protocol.

August 1988: Iran-Iraq war ends in a stalemate.

1989: Media reports reveal that an Iranian diplomat arranged for a West German firm to purchase 210 tons of thiodiglycol from a supplier in the United States and then ship it to Iran in three installments, from March 1987 to April 1988. Reportedly two shipments totaling 90 tons successfully made it to Iran, while the third 120 ton shipment was intercepted by U.S. Customs agents. Thiodiglycol is a chemical weapon (blister agent) precursor.

March 1989: Iran allegedly acquires 60 tons of thionyl chloride from India's government-run State Trading Corporation. Thionyl chloride is a chemical weapon (nerve agent) precursor.

March 1990: A U.S. Defense Intelligence Agency report confirms Iran's indigenous chemical weapon production capability, including sulfur mustard gas.

October 1992: The United States passes the Iran-Iraq Non-Proliferation Act. This act opposes the "transfer to Iran or Iraq of any goods or technology… [that] could materially contribute to either country's acquiring chemical, biological, nuclear, or destabilizing numbers and types of advanced conventional weapons."

January 1993: Iran signs the Chemical Weapons Convention.



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November 1994: The United States sanctions one Austrian, one Australian, and one German citizen under the Arms Export Control Act and the Export Administration Act of 1979, allegedly for supplying Chinese chemicals to Iran.

February 1995: The United States sanctions three entities operating in the Asia-Pacific region for chemical weapon proliferation under the Arms Export Control Act and the Export Administration Act of 1979, allegedly for supplying Chinese chemicals to Iran.

February 1996: The Central Intelligence Agency estimates that Iran has one of the largest chemical warfare programs in the developing world. Its arsenal of several thousand tons of chemical agents includes sulfur mustard, phosgene, and cyanide, which can be delivered using artillery, mortars, rockets, aerial bombs and perhaps Scud warheads. The C.I.A. also estimates that Iran is capable of producing an additional 1,000 tons of chemical agent each year.

1997: In its report to Congress on worldwide proliferation, the Central Intelligence Agency says Iran has "manufactured and stockpiled chemical weapons, including blister, blood, and choking agents and the bombs and artillery shells to deliver them," and has continued to import "material related to chemical warfare" from China.

May 1997: The United States imposes sanctions on seven Chinese entities and one Hong Kong entity under the Arms Export Control Act and the Export Administration Act of 1979, for "knowingly and materially" contributing to Iran's chemical weapon program.

November 1997: Iran ratifies the Chemical Weapons Convention.

May 1998: At the Third Conference of States Parties to the Chemical Weapons Convention, Iran acknowledges for the first time that it had a chemical weapon program during the Iran-Iraq war, but claims that the program was terminated after the war. The U.S. State Department assesses that Iran has not submitted an accurate declaration under the Convention and claims that Iran is attempting to "retain and modernize key elements of its CW program."

June 2001: The United States imposes sanctions on a Chinese entity under the Iran Nonproliferation Act of 2000, reportedly for assisting in the construction of a facility in Iran which manufactures dual-use equipment that can be used to produce chemical weapons.

September 2001: Pars Company Inc. of Cary, North Carolina, pleads guilty to exporting two STX gas monitors from the United States to the United Arab Emirates and transshipping the monitors to Iran. The monitors are controlled for export by the U.S. Department of Commerce because of their possible use in the development or production of chemical and biological weapons.

May 2002: The United States imposes sanctions on two Armenian, eight Chinese, and two Moldovan entities under the Iran Nonproliferation Act of 2000 for transferring to Iran technology controlled under multilateral export control lists. Reportedly, four of these companies were sanctioned for providing chemical weapon materials.

April 2003: At the First Review Conference of the Chemical Weapons Convention, the United States accuses Iran of continuing "to seek chemicals, production technology, training, and expertise from abroad" for a chemical weapon program. The United States believes that Iran has stockpiled blister, blood, choking and perhaps nerve agents.

July 2003: The United States imposes sanctions on five Chinese and one North Korean entity under the Iran Nonproliferation Act of 2000 for transferring to Iran technology controlled under multilateral export control lists. Reportedly, some of the companies were sanctioned for selling chemicals and equipment that could be used in chemical weapons production.

October 2003: The head of the Iranian delegation to the Eighth Conference of States Parties to the Chemical Weapons Convention states that Iran has submitted all declarations and information required by the CWC and criticizes the continued application of Australia Group export controls to CWC States Parties.

December 2005: The United States sanctions two Indian companies under the Iran Nonproliferation Act of 2000, reportedly for the export of phosphorus oxychloride and trimethyl phosphite to

Iran; both are Schedule 3 chemical precursors, according to the Chemical Weapons Convention, and can be used in the production of nerve agents.

January 2006: According to *The Guardian*, an intelligence assessment drawing on material gathered by European governments claims that Iran has developed an extensive



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purchasing network for its biological and chemical weapon programs. Purchase requests and acquisitions are "registered almost daily," according to the assessment, and target suppliers in Western Europe and the former Soviet Union.

June 2006: The U.S. Treasury Department sanctions four Chinese companies and one U.S. company for having supplied missile-related and dual-use components to Iran's military for use in chemical weapon-capable missiles. The companies were designated under Executive Order 13382, an authority intended to financially isolate firms that proliferate weapons of mass destruction or missiles capable of delivering such weapons.

July 2009: U.S. officials reportedly accuse the Chinese company Zibo Chemet of having supplied technology to manufacture glass-lined chemical reactor vessels to the Iranian firm Shimi Azarjaam.

March 2010: The Office of the Director of National Intelligence reports that "Iran is capable of weaponizing CW agents in a variety of delivery systems," that "Iran maintains the capability to produce chemical warfare (CW) agents," and that Iran "continues to seek dual-use technologies that could advance its capability to produce CW agents."

More crude-oil trains means more accidents, spills

Source: http://www.homelandsecuritynewswire.com/dr20150205-more-crudeoil-trains-means-more-accidents-spills

Feb 05 – In 2013 U.S. railroads carried more than 400,000 car loads of crude oil, a sharp increase from the 9,500 they carried in 2008. Crude oil from North Dakota's Bakken Shale region has fueled most of the surge, and this surge has increased the potential for rail accidents.

Each train carrying more than a million gallons of Bakken crude could cause damage similar to what occurred in July 2013, when a runaway train derailed in Lac-Megantic, Quebec, killing forty-seven people. Another derailment near Lynchburg, Virginia in April 2014, (photo) spilled about 30,000 gallons of Bakken crude oil into t he James River.

The Pipeline and Hazardous Materials Safety Administration notes that Bakken crude may be more flammable than traditional crude.

Between twenty and thirty-five

trainloads of Bakken crude oil passes through Erie County, Pennsylvania weekly, according to the state's Emergency Management Agency (PEMA). For residents who live near the train tracks, first responders, and emergency management officials, a train derailment could disable local economies, contaminate local water, and endanger hundreds of lives.

"There have never been any problems here, but there are always concerns about a train derailing, especially where I'm at and especially with these trains," said Jeff Figurski, who has lived in Erie County for twenty-three years. "If one of them went off the track and exploded, I wouldn't have any chance. My whole house would be gone."

Erie County Emergency Management Director



Dale Robinson is also worried about a potential oil spill into the local water system. "A million gallons of oil and water don't mix," Robinson said. "It doesn't make sense to me putting one million-plus gallons of this stuff so close to Lake Erie every day. We don't have the equipment to do oil skimming operations."



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The state's Department of Environmental Protection (DEP) and PEMA are working with

New York Department of Transportation inspectors in December 2014 found 100



rail companies to train local emergency responders on how to respond to oil train accidents. PEMA is working with railroads to post oil train shipment schedules and safety information on its Web site. DEP has provided county emergency officials with a procedure to access information on public water supply intakes should an oil train spill. The agency also regularly revises its emergency action plans to deal with oil train accidents, focusing especially on county-level responses to protecting drinking water, sensitive areas, and vulnerable populations. Yet, most of the planning has been focused on reacting to an oil spill. There has been no joint effort to assess and address Pennsylvania's oil train risks, said emergency officials. The Erie Times-News reports that in New York, where CSX transports Bakken crude to East Coast refineries, Governor Andrew Cuomo in January 2014 ordered a comprehensive review of the state's crude oil accident prevention and response capabilities. Roughly half of the resulting recommendations for improvement have been implemented. A targeted inspection by Federal Railroad Administration (FRA) and defects in 704 oil tankers and ninety-five miles of track used by oil trains.

"We haven't seen anything like that here," Robinson said of New York's initiative.

The FRA and Public Utility Commission (PUC) inspect track and rail equipment in Pennsylvania, and while there have been no targeted oil train inspections, officials are aware of lines that transport oil and can focus on those areas, PUC spokeswoman Denise McCracken said. "We are making every effort to focus on these crude oil unit trains," she said.

Railroads are also playing their part to safely transport oil through the East Coast. In Erie County, CSX has provided the only training to help local firefighters and emergency management officials respond to an oil train accident. The industry has also agreed to reduce the speed of oil trains to 40 mph in urban areas and 50 mph elsewhere. "It seems to me that the majority of oil trains are slowing down," Robinson said, "and that's good

risk management."



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WaterDangerous levels of arsenic found in many U.S. wells

Source: http://www.homelandsecuritynewswire.com/dr20150206-dangerous-levels-of-arsenic-found-in-many-u-s-wells



National map of arsenic in drinking water. Source: USGS.

Feb 06 - Naturally occurring arsenic in private wells threatens people in many U.S. states and parts of Canada, according to a package of a dozen scientific papers published this week. The studies, focused mainly on New England but applicable elsewhere, say private wells present continuing risks due to almost nonexistent regulation in most states, homeowner inaction, and inadequate mitigation measures. The reports also shed new light on the geologic mechanisms behind the contamination. The studies come amid new evidence that even low doses of arsenic may reduce IQ in children, in addition to well documented risks of heart disease, cancer, and reduced lung function. The reports comprise a special section in the journal Science of the Total Environment.

"Arsenic is the biggest public-health problem for water in the United States it's the most toxic thing we drink," said geochemist Yan Zheng, an adjunct research scientist at Columbia University's Lamont-Doherty Earth Observatory who coedited the special section and coauthored some of the articles. "For some reason, we pay far less attention to it than we do to lesser problems." Much long-term work on arsenic in the United States and southeast Asia has been done via an extensive program at Lamont-Doherty and Columbia's Mailman School of Public Health.

An LDEO release reports that many rocks and sediments have inert, harmless traces of arsenic locked into them. In recent years, however, geologists have observed that some geologic formations can become enriched in arsenic, and certain chemical conditions may cause rocks to react with groundwater and liberate the element into aquifers. Since the 1990s, the problem has been identified in some seventy countries; it is worst in southeast Asia, where as many as 100 million people are exposed.

Largely unregulated private wells serve some forty-three million Americans; previous work by the U.S. Geological Survey indicates that 6.8 percent



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tested nationwide violate federal standards governing arsenic in public water supplies. This could be interpreted to mean that some three million people are affected; but USGS



hydrologist Joseph Ayotte, the special section's other coeditor, says the distribution of high arsenic levels is spotty, so it is hard to extract a reliable number. Maps show hot spots in many states, with patches breaking out not only through New England, but the Great Lakes, and from the Pacific Northwest and California, across the western states into Texas. Twenty percent of wells in eastern New England are above limits, affecting some 80,000 people in Maine alone, where the contamination rate in the central part of the state is 45 percent. In 2001, the U.S Environmental Protection Agency lowered the permissible standard from 50 parts per billion down to 10.

Public water supplies serving more than twenty-five people are supposed to meet that standard, and most do — some, by filtering water if necessary. According to a 2014 study, however, done in part by the Columbia Water Center, 500 mostly small rural public utilities are still in violation, mainly due to cost.

Private wells are almost certainly a much greater problem in terms of the number of people exposed. The researchers did much of their work in Maine, where half the population relies on private wells. Unlike the public utilities, these remain completely unregulated, and often untested for arsenic. In one study, the researchers found that 41 percent of well owners in a 17-town study area of central Maine had never had their wells tested — and of those who did, many did not remember the

results. Based on this and other data, the authors estimated that nearly a third of the people in the study area could be exposed to levels above the federal standard.

As part of the work, a study led by Lamont-Doherty researcher Sara Flanagan surveyed a subgroup of homeowners who remembered being notified three to seven years earlier that their wells were tainted. Among them, 43 percent had since installed filtration systems, and 30 percent had taken other measures such as drinking bottled water. The other 27 percent, however, had done nothing. The study says that many people tended to be too optimistic, underestimating their own risk compared with their neighbors'.

Another study of an arsenic-affected area in Nova Scotia, led by Dalhousie University, also found that people were unjustifiably confident that their well was safe.

"People say, 'I'm not going to worry about it maybe I'll get cancer, maybe I won't," said pharmacologist Joseph Graziano, a leading arsenic expert and Earth Institute professor at Mailman who oversees Columbia's work on the issue. "For [local and state] government, it's a hardy perennial — once in a while it gets some press, there's a little shuffle of activity, then it dies again until the next study comes out."

In the Maine study area, the research showed that even when households did install filtration systems, 15 percent failed to produce water meeting the EPA standard. A separate study in the package, done by researchers from Rutgers University in an arsenic-plagued part of New Jersey, reported that filters treating water only at the kitchen sink are less effective at reducing exposure than systems that treat a home's entire water intake. Reduced exposure, however, comes at a cost: wholehouse systems cost an average of \$2,740 to install, while faucet filters average \$365.

The 10-parts-per-billion federal standard itself could be deficient. Risks of heart disease and lung, skin and bladder cancers

are well documented above such levels, but a study last year of three Maine school districts by a related team of Columbia researchers found that even

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subtler traces — 5 parts per billion — took 5 or 6 points off the IQs of children who were studied. Maine state officials say that 20 percent of the state's wells may violate this



lower level. "The risk for pregnant women and children is much higher. We're hoping that recognition may be a turning point in getting more action," said Graziano. New Jersey, one of the few states to have any regulations regarding arsenic, has already lowered its limit to 5 parts per billion.

A half dozen of the new studies examine geologic factors that introduce arsenic into wells. In Maine, Vermont, New Hampshire, and neighboring states, however, many penetrate so-called low-grade metamorphic rocks such as slate and phyllite. These form when sedimentary rocks such as shale are squeezed and heated just a bit more — a process that tends to form minerals rich in arsenic, the studies find. Groundwater high in organic

> matter and low in oxygen may then react with such rocks to dissolve the certain poorly poison; known microbial communities may also play a role. According to one study of Maine wells, led by Lamont-Doherty scientist Qiang Yang, undissolved particles of arsenic-rich iron minerals may be swept through fissures and sucked up possibly one of the major pathways of arsenic transport in this kind of aquifers, said Yang. In other parts of the country, tainted wells draw water not from fractured bedrock, but from deep jumbles of rocky debris and sediment left behind by retreating glaciers; the hydrology may work differently in these regions. Another study in the package by researchers at Lehigh University found that in parts of New Jersey and Pennsylvania, highly alkaline water was more apt to take up arsenic.

> Zheng (also a professor at City University of New York) said such findings will help geologists draw better maps of hazardous areas. But, she said, underground terrain can vary so much, individual tests are the only way to know about a particular well.

In conjunction with the Maine Geological Survey and Maine Center for Disease Control and Prevention, the Columbia team is now embarking on a project to test ways to motivate well owners in one county to test their water. Maine legislators are also considering a law requiring that a well be tested whenever a house is sold.

The release notes that much of the work in the special issue was funded by the U.S. National Institute of Environmental Health Sciences Superfund Research Program.

- Read more in Yan Zheng and Joseph D. Ayotte, eds., "Arsenic in private well waters of the northeastern United States and Atlantic Canada," Special Section of Science of The Total Environment 505 (1 February 2015): 1237-1380



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Food safet levels of mercury in Hawaiian yellowfin tuna increasing

Source: http://www.homelandsecuritynewswire.com/dr20150209-levels-of-mercury-in-hawaiian-yellowfin -tuna-increasing

Feb 09 – Mercury concentrations in Hawaiian yellowfin tuna are increasing at a rate of 3.8 percent or more per year, according to a new University of Michiganled study that suggests rising atmospheric levels of the toxic

substance are to blame. Mercury is a toxic

trace metal that can accumulate to high concentrations in

fish, posing a health risk to people who eat large, predatory

marine fish such as swordfish and tuna. In the open ocean, the principal source of mercury is atmospheric deposition from human activities, especially emissions from coal-fired power plants and artisanal gold mining.

For decades, scientists have expected to see



mercury levels in open-ocean fish increase in response to rising atmospheric concentrations, but evidence for that hypothesis has been hard to find. In fact, some studies have suggested that there has been no change in mercury concentration in ocean fish.

A U-M release reports that by compiling and reanalyzing three previously

published reports on yellowfin tuna caught near Hawaii, U-M's Paul Drevnick and two colleagues found that the concentration of mercury in that species increased at least 3.8 percent

per year from 1998 to 2008.

A paper about the study was published in the journal *Environmental Toxicology and Chemistry* on 2 February. The other authors are Carl Lamborg of the Woods Hole Oceanographic Institution, now at the University of California at Santa Cruz, and ... Martin Horgan.

"The take-home message is that mercury in tuna appears to be increasing in lockstep with data and model predictions for mercury concentrations in water in the North Pacific," said Drevnick, an assistant research scientist at the U-M School of Natural Resources and Environment and at the U-M Biological Station. "This study confirms that mercury levels in open ocean fish are responsive to mercury emissions."

Drevnick and his colleagues reanalyzed data from three studies that sampled the same yellowfin tuna population near Hawaii in 1971, 1998, and 2008. In each of the three studies, muscle tissues were tested for total mercury, nearly all of which was the toxic organic form, methylmercury.

In their re-analysis, Drevnick and his colleagues included yellowfins between 48 and 167 pounds and used a



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computer model that controls for the effect of fish body size. Data from 229 fish were analyzed: 111 from 1971, 104 from 1998, and 14 from 2008.

The researchers found that mercury concentrations in the yellowfins did not change between the 1971 and 1998 datasets. However, concentrations were higher in 2008 than in either 1971 or 1998. Between 1998 and 2008, the mercury concentration in yellowfins increased at a rate greater than or equal to 3.8 percent a year, according to the new study.

"Mercury levels are increasing globally in ocean water, and our study is the first to show a consequent increase in mercury in an openwater fish," Drevick said. "More stringent policies are needed to reduce releases of mercury into the atmosphere. If current deposition rates are maintained, North Pacific waters will double in mercury by 2050." Yellowfin tuna, often marketed as ahi, is widely used in raw fish dishes — especially sashimi or for grilling. The Natural Resources Defense Council's guide to mercury in sushi lists

yellowfin tuna as a "high mercury" species.

— *Read more in Paul E. Drevnick et al., "Increase in mercury in Pacific yellowfin tuna,"* Environmental Toxicology and Chemistry (2 *February 2015*),



Key risks in Europe

ECHO Factsheet – Disaster Risk Management – 2015 - Page 2/3

Source:http://ec.europa.eu/echo/files/aid/countries/factsheets/thematic/disaster_risk_management_en.p df



An analysis of national risk assessment studies identified 12 most commonly occurring hazards, underlined the cross-border nature of the incurring risks and considered a number of emerging risks such as climate change, ecosystem degradation, space weather and anti-microbial resistance.

The analysis revealed floods to be the most common risk addressed by the countries. Many countries consider pandemics and severe

weather conditions - e.g. storms, heat or cold waves, ice and snow - and fires to present a main risk. Other man-made threats such as industrial accidents, loss of critical infrastructure, transport accidents, terrorist or cyber-attacks are also identified as major risks for these countries.

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Scientific Committee					

EDITOR'S COMMENT: As member of the Didactical Board, I highly recommend both degrees of importance to CBRNe First Responders and Advisors! Both are accredited/supported by NATO and OPCW. Read more at source's URL.

Maritime Security – Applications and Perspectives to combat Chemical, Radiological and Explosive threats

Source: http://www.mastercbrn.com/uploads/various/20141126468426116_Pirelli_paper.pdf

F. Pirelli, O. Cenciarelli, V. Gabbarini, A. Malizia, G. Famà, A. Sassolini, F. D'Amico, D. Di Giovanni, M. Carestia, L. Palombi, C. Bellecci & P. Gaudio. DEFENCE S&T TECHNICAL BULLETIN, 2014; vol. 7, Issue 2, Pages 90-98, ISSN: 1985-6571

Abstract

In a globalised world, the potential for crisis in the exchange of goods through sea routes continues to increase due to its low costs and technological progress. The worldwide terrorist threat has increasingly identified transports as a main target, showing several

gaps in the field of security to which international conventions and organisations have tried to find solutions. The development of regulations that has followed the awareness of risks



in the maritime sector has determined the creation of a complex organisation attending to prevention procedures and emergency measures.

The control of maritime security is based on risk analysis and deterrence measures. This modus operandi, which involves public and private actors with different skills, has allowed the achievement of important results. In this work, we analyse maritime security by discussing the method used for risk assessment of passenger and cargo ships in relation to chemical, radiological and explosive threats, and available technologies that can be used to avoid illicit acts on board ships.

Recovering from CBRN Emergencies (NEW COURSE)

Source: http://www.epcollege.com/epc/training/courses/courselist/cbrn/



EPC are delighted to introduce this one of a kind course 'Recovering from CBRN Emergencies'. By combining the knowledge and experience of CBRN experts we have put together this 2 day interactive course to tackle the latest issues surrounding decontamination and site clearance after a CBRN incident.

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With representation from all key agencies including DEFRA (Department of Environment, Food and Rural Affair) the very latest national and international CBRN expectations, management strategies and arrangements will be examined to help you put together a CBRN recovery plan.

Over the 2 day course you will be given a general introduction to CBRN, an overview of the principles of recovery, the role DEFRA and the Government Decontamination Services play, who would be involved during a response, funding, public engagement and issues that could arise surrounding humanitarian and contaminated fatalities.

If you are responsible for site clearances, waste management and environmental health this advanced course is a must for you, it will better prepare you for the CBRN recovery phase.

Who should attend?

Those with responsibilities for CBRN Response and Recovery and also portfolios such as site clearance, waste management, environmental health

Course Aims

To examine key principles of a CBRN recovery process

Objectives

- Prepare a CBRN recovery plan
- Understand requirements and obligations relating to decontamination and site clearance after a CBRN incident
- Examine what national and international expectations and response will be in the Recovery phase of a CBRN incident
- Exercise aspects of a CBRN response



Pre-attendance Requirements

No specific entry criteria but prior knowledge of emergency response and recovery will be assumed

This course is available on the following dates:

Event Ref	Start Date	Start Time	End Date	End Time	Location	Fee
2015/16/PC1	15 Apr 2015	09:30	16 Apr 2015	17:30	EPC	£835

To avoid disappointment please telephone to check availability before booking+ 44 (0) 1347 825056



National Model EMS Clinical Guidelines

Source: https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/documents/National-Model-EMS-Clinical-Guidelines-23Oct2014.pdf

National Association of State EMS Officials

Feb 06 – Following the conclusion of a two-year project initiated by the National Association of State EMS Officials Medical Directors Council, the National Model EMS Clinical Guidelines are now available. The project was developed to help state emergency medical services (EMS) systems ensure a more standardized approach to prehospital patient care.

Toxins and Environmental
Poisoning/Overdose Universal Care
Acetylcholinesterase Inhibitors (Carbamates, Nerve Agents, Organophosphates) Exposure
Radiation Exposure
Topical Chemical Burn
Stimulant Poisoning/Overdose
Cyanide Exposure
Beta Blocker Poisoning/Overdose
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▶ Pages 175-204 are of secial interest to CBRN First Responders (study the full document at source's URL).

Toxic orange cloud outside Barcelona after chemical blast

Source: http://rt.com/news/231683-chemical-blast-barcelona-igualada/

Three people were reportedly injured in a chemical explosion in northern Spain, which created a toxic orange cloud. Residents in towns around Barcelona were told to stay indoors. The restrictions were lifted after about four hours.

The accident in northeastern Spain appears to have been caused by two chemicals accidentally mixing while on their way during delivery, the regional government in Catalonia said, as cited by Reuters



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The explosion and fire happened at Simar, a chemical distribution company. The explosion resulted in a thick orange cloud, which prompted government warnings for residents in



nearby towns to stay indoors and shut their windows. Authorities also shut down several roads. *"Unfortunately there isn't much wind in the area so the toxic cloud is taking longer to disperse,"* the Catalan Interior Ministry's Ramon Espadelar told El Pais. The six towns are home to thousands of people. Igualada, Catalonia, is still largely engulfed in the orange mist. One of the two chemicals involved was nitric acid, which is corrosive and toxic.



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The explosion took place at 9:00 local time (10:00 GMT) Thursday, according to the daily La Vanguardia.



What led to the chemicals mixing was an accident during the unloading of the trucks. This caused a fire, injuring the people, whose condition is still not known, it reported.

The recommendation to stay indoors was partially withdrawn an hour later, Reuters reports. However, infants and the elderly were advised to be kept indoors in the six towns affected by the cloud.

Spain's emergency services have taken to Twitter, recommending that people remain calm. They discouraged citizens from going outdoors and taking pictures until the containment order is fully lifted. The containment order was lifted about 13:40 local time (12:40 GMT).

EDITOR'S COMMENT: This is how things are happening in real life and out of a sudden. Six cities were in the direction of the contaminated plume. Were citizens of Igualada and other five cities (65,000 in total), aware on how to apply the "shelter-in-place" directive ordered? This is why the most important player in all state emergency response plans should be not left in the corner but should be incorporated and properly trained and educated. Until next time with something more deadly in the air we breathe...



Toxnet class

Source: http://www.cbrneworld.com/news/toxnet_class#axzz3RmzOqxCB

The National Library of Medicine (NLM) Training Center (NTC) is offering an online, asynchronous class called "Discovering TOXNET" from March 2-27, 2015.

Discover TOXNET® and other NLM environmental health databases through videos, guided tutorials, and discovery exercises. The class is taught online in thirteen independent modules. TOXNET is a web-based system of databases covering hazardous chemicals, environmental health, toxic releases, chemical nomenclature, poisoning, risk assessment and regulations, and occupational safety and health. The independent modules cover TOXLINE, ChemIDplus, TRI, TOXMAP, Hazardous Substances Data Bank, IRIS, Haz-Map, LactMed, WISER, CHEMM, REMM, LiverTox, and more. You'll learn about the resources through videos, guided tutorials, and discovery exercises.

Who should take the class?

Health sciences librarians and health or environmental sciences professionals interested in unlocking the information in TOXNET and the other environmental health and toxicology



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resources.

How much time?

You will work on your own time over a period of 4 weeks to complete the modules that are of interest to you. There is one required module; the remaining modules are optional. This class is offered for variable MLA Continuing Education credit. Each module will be offered for 0.5 to 2.0 credit hours, for a total of up to 12 hours. Credit will not be awarded for partial completion of a module. Total credit awarded will be based on completed modules with a minimum of 1.0 credit hours.

What happens during the class?

This course is offered asynchronously through Moodle, open-source learning platform. You will work at your own pace. Each module consists of guided interactive online tutorials AND/OR tutorial videos as well as discovery exercises. Instructors will be available to answer questions and provide assistance throughout the course.

The modules are:

- 1. Introduction to TOXNET: 0.5 hour (Required)
- 2. TOXLINE: 1.0 hour
- 3. ChemIDplus: 2.0 hours
- 4. Integrated Risk Information System & Risk Assessment: 1.0 hour
- 5. Hazardous Substances Databank: 1.5 hours
- 6. Toxic Release Inventory: 1.0 hour
- 7. TOXMAP: 1.5 hours
- 8. Household Products Database: 0.5 hour
- 9. LactMed: 0.5 hour
- 10. Haz-Map: 0.5 hour
- 11. WISER & CHEMM: 1.0 hour
- 12. REMM: 0.5 hour
- 13. LiverTox: 0.5 hour

How do I register?

- Space in the class are limited. Register now
- For questions, contact the NTC at ntc@utah.edu
- Web: <u>http://nnlm.gov/training/schedule/</u>

TOXNET®: Toxicology Data Network

Source: http://toxnet.nlm.nih.gov/

TOXNET Toxicology Data Network

TOXNET® (TOXicology Data NETwork) is a group of databases covering chemicals and drugs, diseases and the environment, environmental health, occupational safety and health, poisoning, risk assessment and regulations, and toxicology. It is managed by the Toxicology and Environmental Health Information Program (TEHIP) in the Division of Specialized Information Services (SIS) of the National Library of Medicine (NLM). A mobile version of TOXNET is available.

Information in the TOXNET databases covers:

- Specific chemicals, mixtures, and products
- Chemical nomenclature
- Unknown chemicals
- Special toxic effects of chemicals in humans and/or animals
- Citations from the scientific literature.



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TOXNET provides links to PubMed®, NLM's free web interface to the world's biomedical literature, and to additional sources of toxicological information.

Chemical Nomenclature and Structure

<u>ChemIDplus</u>®

ChemIDplus contains over 400,000 chemical records. More than 300,000 of those records include chemical structures. ChemIDplus is searchable by Name, Synonym, CAS Registry Number, Molecular Formula, Classification Code, Locator Code, Structure, and/or Physical properties. Enhanced structure display is available in ChemIDplus Advanced.

Toxicology Data

<u>CCRIS</u> (Chemical Carcinogenesis Research Information System)

CCRIS is developed and maintained by the National Cancer Institute (NCI). It contains over 9,000 chemical records with carcinogenicity, mutagenicity, tumor promotion, and tumor inhibition test results. Data are derived from studies cited in primary journals, current awareness tools, NCI reports, and other special sources. Test results have been reviewed by experts in carcinogenesis and mutagenesis. CCRIS provides historical information from the years 1985 - 2011. It is no longer updated.

<u>CPDB</u> (Carcinogenic Potency Database)

CPDB provides standardized analyses of the results of 6540 chronic, long-term animal cancer tests conducted since the 1950s and reported in the general published literature or by the National Cancer Institute and the National Toxicology Program. This database was developed at the University of California, Berkeley, and Lawrence Berkeley Laboratory. CPDB covers 1980 - 2011. It is no longer updated.

<u>CTD</u> (Comparative Toxicogenomics Database)

CTD contains manually curated data describing cross-species chemical-gene/protein interactions and chemical- and gene-disease relationships. The results provide insight into the molecular mechanisms underlying variable susceptibility and environmentally influenced diseases. These data will also provide insights into complex chemical-gene and protein interaction networks. CTD is developed with funding from the National Institutes of Environmental Health Sciences (NIEHS) at North Carolina State University (NCSU). The database is updated several times a year.

<u>GENE-TOX</u> (Genetic Toxicology)

GENE-TOX was created by the U.S. Environmental Protection Agency (EPA) and has genetic toxicology test results on over 3,200 chemicals. Selected literature was reviewed by scientific experts for each of the test systems under evaluation. GENE-TOX covers the years 1991-1998. It is no longer updated.

HSDB® (Hazardous Substances Data Bank)

HSDB provides toxicity data for over 5,700 potentially hazardous chemicals. It also has information on emergency handling procedures, industrial hygiene, environmental fate, human exposure, detection methods, and regulatory requirements. The data are fully referenced and reviewed by a Scientific Review Panel.

Haz-Map®

Haz-Map is an occupational health database designed for health and safety professionals and for consumers seeking information about the health effects of exposure to chemicals and biological agents. The database is a "map" of workplace hazards to help you prevent occupational diseases. Haz-Map links jobs, hazardous tasks with occupational diseases and their symptoms, and other non-occupational diseases such as hobbies.



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Household Products Database

The Household Products Database has information on the potential health effects of chemicals contained in common products used inside and around the home. Information is also available for some industrial grade products. Products can be searched by brand name, product type, manufacturer, ingredient/chemical name, and by health effects. The record for each product shows the ingredients as reported by the manufacturer. For many products, a link to the manufacturer's Material Safety Data Sheet (MSDS) is provided which includes more information such as handling, disposal, and health effects.

IRIS (Integrated Risk Information System)

IRIS, developed by the U.S. Environmental Protection Agency (EPA), is a human health assessment program that evaluates information on health effects (cancer and non-cancer) that may result from exposure to environmental contaminants, and which is subsequently compiled into a database. Reviewed by EPA scientists and representing EPA consensus, IRIS covers over 550 chemicals as of mid-2014.

ITER (International Toxicity Estimates for Risk)

ITER provides health risk values and cancer classifications (with links to source documentation and more details) for chemicals of environmental concern, from a variety of organizations worldwide. It presents risk data in a tabular format for easy comparison between organizations, and includes synopses explaining data variations where they exist. It is compiled by Toxicology Excellence for Risk Assessment (TERA) and contains over 700 records as of mid-2014.

LactMed® (Drugs and Lactation)

LactMed is a database of over 1,000 drugs and other chemicals to which breastfeeding mothers may be exposed. It includes information on the levels of such substances in breast milk and infant blood, and the possible adverse effects in the nursing infant. Suggested therapeutic alternatives to those drugs are provided, where appropriate. All data are derived from the scientific literature and fully referenced. Data are organized into substance-specific records, which provide a summary of the pertinent reported information and include links to other NLM databases. Supplemental links to breastfeeding resources from credible organizations are also provided. LactMed is updated monthly.

TRI (Toxics Release Inventory)

TRI is a set of publicly available databases containing information on releases of specific toxic chemicals and their management as waste, as reported annually to the EPA by U.S. industrial and federal facilities. This inventory was established under the Emergency Planning and Community Right to Know Act of 1986 (EPCRA). TRI's data, beginning with the 1987 reporting year, covers air, water, land, and underground injection releases, as well as transfers to waste sites. In agreement with the Pollution Prevention Act of 1990, source reduction and recycling data is also included in TRI.

TOXMAP®

TOXMAP is a Geographic Information System (GIS) using maps of the United States to show the amount and location of toxic chemicals released into the environment. Data is derived from the EPA's Toxics Release Inventory (TRI), which provides information on the releases of toxic chemicals into the environment as reported annually by industrial facilities around the United States. TOXMAP also contains information from the EPA's Superfund Program.

Toxicology Literature

TOXLINE®

TOXLINE provides bibliographic information (1840s to present) covering the biochemical, pharmacological, physiological, and toxicological effects of drugs and other chemicals. It contains over 5 million references, most with abstracts, indexing terms, and Chemical Abstracts Service (CAS) Registry Numbers. The toxicology subset of MEDLINE®/PubMed



is part of TOXLINE. TOXLINE also contains references from specialized journals, government reports, meeting abstracts, and other relevant collections of toxicology literature.

DART® (Developmental and Reproductive Toxicology Database)

DART contains references to reproductive and developmental toxicology literature. DART is created from a search profile run against PubMed. DART previously contained additional citations from various sources that no longer exist, and from journals which are now indexed by Medline.

GIFT CBRN

Source: http://www.giftforensics.eu/

CBRN terrorism remains a real threat to European countries, one of the most important elements of this response is ensuring a successful court prosecution.



The successful interrogation of evidence either at a crime scene contaminated with chemical, biological, radiological or nuclear (CBRN) agents, or of the agents themselves back at the lab, is an absolutely vital part of CBRN defence. Not only will processing these agents, or being able to handle traditional evidence in a hazardous environment, be vital to the successful trial and prosecutions of the individuals that

carried out the attack, but it might provide vital information as to what agent was used and what medicine needs to be given to the survivors.

The Generic Integrated Forensic Toolbox for CBRN Incidents (GIFT CBRN) is designed to close up the many gaps inherent in this complex area and provide an integrated law enforcement CBRN capability that is world class. At present forensic investigation is hampered by a lack of protocols and training in carrying out forensic analysis on CBRN-contaminated materials. The aim of GIFT-CBRN would be to develop a forensic toolbox for investigating CBRN incidents providing: (1) procedures, sampling methods and detection of CBRN agents at the crime scene, (2) traditional forensic laboratory methods for contaminated evidence and (3) laboratory methods for profiling the CBRN agents released at the incident.

The procedures and methods will be set up and validated according to ISO17025 and the system validation will be performed by a final exercise. In addition to this there will be quality control for chain of custody procedures, that will ensure the integrity of the evidence and investigations done on the evidence from crime scene to court will be developed. An education and training curriculum related to the developed procedures, best practices and methods will be designed and implemented.

There will also be an active research element, which will develop novel methodologies to enable traditional forensic science (DNA, fingerprint and electronic devices) to be carried out on CBRN contaminated exhibits and analytical procedures to be carried out that not only provide information about the CBRN agent itself but also through CBRN profiling provide in-depth information which can give valuable forensic information (on points of origin for example).

The program is split into nine Work Packages (WP):

WP1: This is the management work package; it keeps the entire consortium on track and liaises with the Commission, amongst other things.

WP2: WP2 is composed of threat assessments, gap analysis and toolbox design. It aims to define the forensics community's needs; once this is completed it will allow identification of what needs to happen to allow

responders to perform their tasks safely, quickly and properly. Once the requirements have been identified the various needs will be mapped and prioritized based on the necessity of the gaps being filled. A gap assessment will

be performed to see which parts are within GIFT and which parts are outside our scope. This will see a road map being delivered which can be used by forensic

organisations for further prioritisation and selection of future research and development directions.

WP3: Once much of the groundwork has been completed in WP2 then the project can start in earnest. WP3 has two central themes, one being the development of protocols for use in the crime scene and the other is the development of investigative methods for when the evidence is contaminated with chemical. biological or radiological agents. Forensic technicians need to be aware that the problem of contamination doesn't end at the hot zone, and that samples originating from a CBRNrelated incident need to be packaged and transported in an appropriate manner. This means that methods need to be validated that can maintain the integrity of the evidence even after decontamination. The debate about 'how clean is clean' has no end in sight, and it is often a concern that contamination might spread through a lab, shutting it down. Best practice however, would be to process the evidence at the site. GIFT will develop procedures, guidelines and technology that will enable faster, cheaper, accurate and reliable crime scene investigation at CBRN incidents through effective decontamination. It is clear that the deployment of these protocols and the implementation of the methods must be compatible with the CBRN protocols that have already been developed and implemented within EU member states. Special efforts will be made to ensure the active co-operation of responders in the development of these protocols and methods. Thankfully we have an active End User Group who will observe and advise on the activities proposed during the testing and validation phases of GIFT.

WP4: This will develop procedures and methodologies to enable traditional forensic science (DNA, fingerprint and electronic devices) to be performed on CBRN contaminated exhibits. Procedures and methodologies will be related either to decontamination (i.e. allow forensic science through

removal of the CBRN contamination) or to forensic investigation on contaminated exhibits under protective conditions (i.e. allow forensic science through containment of CBRN contamination). Much of the research on this subject is not designed for forensic operations, so much of the work in this WP will be ground breaking. For example after this work package has finished we should be able to say with a strong degree of certainty how we can lift DNA (both digital and physical) from CBRN contaminated evidence.

WP5: This work package looks at the agent itself, whether we can further develop analytical procedures on the agent and also whether we can identify signatures in the agent that could lead to methods of production and where key elements originated from. While there has been some work on chemical attribution signatures (CAS) done in the past many agents of interest are still missing, and WP5 will fill in some of the most important gaps. It is not just chemical agents that will be looked at, while some work has been done in terms of analysing the source of nuclear materials, very little similar work has been done on the origins of non-nuclear radiological material. Another important element of any agent analysis is making sure that you have a good, viable sample and this work package will look at a range of technical and procedural ways to do this.

WP6: Like the management WP, the integration package is essential to the success of the program. This WP will focus on the integration of the forensic toolbox and will also link with on-going FP7 and other nationally funded project that are involved with CBRN detection to investigate whether these technologies can be applied to the proposed forensic toolbox. This WP will also develop a web based forensic toolbox which will link closely with technology proposed in WP3 and 5. It will cover all aspects of integration of the various technologies, sensors and analysis techniques developed in WPs 3 and 5 and also develop a portable remote detection system and a bench-top fully integrated multiparameter detection platform system. It will also focus on the integration of the detectors, fluidic components, data transfer and wireless

communication devices, hardware interface circuitries and the development of suitable data processing software for all the

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sensor modular configurations proposed in this project.

WP7: This work package validates the procedures and methods developed in WP3. 4 and 5. Even though they will have been tested by the individual developers this WP will test the procedures and methods in a broader way. There will be an improved quality assurance offered in this WP through lab and field exercises : this will see the usability of the procedures and methods demonstrated in realistic scenarios and contexts. An education and training curriculum 'CBRN forensics' for end users will be developed in this work package. This will teach forensic investigators and forensic police teams how to use and apply with the forensic toolbox, procedures and methods.

WP8: This WP will study the legal, ethical and societal aspects of the project in order to provide stakeholders with the appropriate guidance to avoid any negative impact during the project execution or in an eventual future deployment based in this research. Since the final fruits of this project will be used in a court of law it is vital that legal and ethical issues are

given a high importance. The WP plan will provide an early alert on every issue, avoiding the risk of having to redesign significant parts of the system that have been already developed. The project team includes forensic research laboratories, potential users of the expected developments, including public and private users, and SMEs who will be able to bring the new technologies developed within the project to market.

WP9: Is the dissemination workpackage. This will create a CBRN forensics community that will be able to help guide and validate the whole project. This community will be created through interactive workshops, conferences, articles and publications in a variety of disciplines. To learn more about attending one of these events, or to invite a GIFT speaker to your event email enquiries@cbrneworld.com

The project team includes forensic research laboratories, potential users of the expected developments, including public and private users, and SMEs who will be able to bring the new technologies developed within the project to market. Find out who does what within the project by clicking on the people link above.

C.I.A. Is Said to Have Bought and Destroyed Iraqi Chemical Weapons

By C. J. Chivers and Eric Schmitt

Source: http://www.nytimes.com/2015/02/16/world/cia-is-said-to-have-bought-and-destroyed-iraqichemical-weapons.html?hp&action=click&pgtype=Homepage&module=second-columnregion®ion=top-news&WT.nav=top-news&_r=1&assetType=nyt_now



United Nations workers prepared for the destruction of Iraqi nerve-agent weapons by sealing leaks in the rockets. Credit British Ministry of Defense

The Central Intelligence Agency, working with American troops during the occupation of Iraq, repeatedly purchased nerve-agent rockets from a secretive Iraqi seller, part of a

previously undisclosed effort to ensure that old chemical weapons remaining in Iraq did not fall into the hands of



terrorists or militant groups, according to current and former American officials.

The extraordinary arms purchase plan, known as Operation Avarice, began in 2005 and continued into 2006, and the American military deemed it a nonproliferation success. It led to the United States' acquiring and destroying at least 400 Borak rockets, one of the internationally condemned chemical weapons that Saddam Hussein's Baathist government manufactured in the 1980s but that were not accounted for by United Nations inspections mandated after the 1991 Persian Gulf war.

The effort was run out of the C.I.A. station in Baghdad in collaboration with the Army's 203rd Military Intelligence Battalion and teams of chemical-defense and explosive ordnance disposal troops, officials and veterans of the units said. Many rockets were in poor condition and some were empty or held a nonlethal liquid, the officials said. But others contained the nerve agent sarin, which analysis showed to be purer than the intelligence community had expected given the age of the stock.

The buying of nerve-agent rockets from an Iraqi seller in 2006 was the most significant recovery of chemical weapons until that point in the Iraq War.

A New York Times investigation published in October found that the military had recovered thousands of old chemical warheads and shells in Iraq and that Americans and Iraqis had been wounded by them, but the government kept much of this information secret, from the public and troops alike.

These munitions were remnants of an Iraqi special weapons program that was abandoned



long before the 2003 invasion, and they turned

up sporadically during the American occupation in buried caches, as part of improvised bombs or on black markets.

The potency of sarin samples from the purchases, as well as tightly held assessments about risks the munitions posed, buttresses veterans' claims that during the war the military did not share important intelligence about battlefield perils with those at risk or maintain an adequate medical system for treating victims of chemical exposure.

The purchases were made from a sole Iraqi source who was eager to sell his stock, officials said. The amount of money that the United States paid for the rockets is not publicly known, and neither are the affiliations of the seller.

Most of the officials and veterans who spoke about the program did so anonymously because, they said, the details remain classified. The C.I.A. declined to comment. The Pentagon, citing continuing secrecy about the effort, did not answer written questions and acknowledged its role only obliquely.

"Without speaking to any specific programs, it is fair to say that together with our coalition partners in Iraq, the U.S. military worked diligently to find and remove weapons that could be used against our troops and the Iraqi people," Rear Adm. John Kirby, the Pentagon press secretary, said in a written statement.

Retired Army Lt. Gen. Richard P. Zahner, the top American military intelligence officer in Iraq in 2005 and 2006, said he did not know of any other intelligence program as successful in reducing the chemical weapons that remained in Iraq after the American-led invasion.

> Through the C.I.A.'s purchases, General Zahner said, hundreds of weapons with potential use for terrorists were quietly taken off the market. "This was a timely and effective initiative by our national intelligence partners that negated the use of these unique munitions," he said.

An image from the 1990s showing the destruction of Iraqi nerve-agent weapons. Credit UNSCOM



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Not long after Operation Avarice had secured its 400th rocket, in 2006, American troops were

Weapons Bought

The buying of nerve-agent rockets from an Iraqi seller in 2006 was the most significant recovery of chemical weapons until that point in the Iraq War.



exposed several times to other chemical weapons. Many of these veterans said that they had not been warned by their units about the risks posed the chemical by weapons and that their medical care and follow-up were substandard, in part because military doctors seemed unaware that chemical munitions remained in Iraq.

In some cases, victims of exposure said, officers forbade them to discuss what had occurred. The Pentagon now says hundreds of other veterans reported on health-screening

forms that they believed they too had been exposed during the war.



Aaron Stein, an associate fellow at the Royal United Services Institute, said the belated acknowledgment of a chemical-rocket purchases, as well as the potentially worrisome laboratory analysis of the related sarin samples, raised questions about the military's commitment to the well-being of those it sent to war.

"If we were aware of these compounds, and as it became clear over the course of the war that our troops had been exposed to them, why wasn't more done to protect the guys on the ground?" he said. "It speaks to the broader failure."

The first purchase under Operation Avarice, according to veterans and officials familiar with the effort, occurred in early September 2005, when an Iraqi man provided a single Borak. The warhead presented intelligence analysts with fresh insight into a longstanding mystery.

During its war against Iran in the 1980s, Iraq had fielded multiple variants of 122-millimeter rockets designed to disperse nerve agents.

The Borak warheads, which are roughly 40 inches long and attach to a motor compatible with the common Grad multiple rocket launcher system, were domestically produced. But no clear picture ever emerged of how many Iraq manufactured or how many it fired during the Iran-Iraq war.

In confidential declarations in the 1990s to the United Nations, Iraq gave shifting production numbers, up to 18,500. It also claimed to have destroyed its remaining stock before international inspectors arrived after the Persian Gulf war.

The C.I.A. is said to have bought and destroyed at least 400 Iraqi nerve-agent weapons like these Borak rockets, which were discovered separately. Credit U.S. Army

The mystery deepened in 2004 and early 2005, when the United States recovered 17 Boraks. The circumstances of those recoveries are not publicly known. Then came Operation Avarice and its promise of a larger haul. It began when the Iraqi seller

delivered his first Borak, which the military secretly flew to the United States for examination.

The Iraqi seller would then periodically notify the C.I.A. in Baghdad that he had more for sale, officials said.

The agency worked with the Army intelligence battalion and chemical weapons specialists, who would fly by helicopter to Iraq's southeast and meet the man for exchanges.

The handoffs varied in size, including one of more than 150 warheads. American ordnance disposal technicians promptly destroyed most of them by detonation, the officials said, but some were taken to Camp Slayer, by Baghdad's airport, for further testing.

One veteran familiar with the program said warheads were tested by putting them in "an old cast-iron bathtub" and drilling through their metal exteriors to extract the liquid sarin within.

The analysis of sarin samples from 2005 found that the purity level reached 13 percent higher than expected given the relatively low quality and instability of Iraq's sarin production in the 1980s, officials said. Samples from Boraks recovered in 2004 had contained concentrations no higher than 4 percent.

The new data became grounds for concern. "Borak rockets will be more hazardous than previously assessed," one internal report noted. It added a warning: the use of a Borak in an improvised bomb "could effectively disperse the sarin nerve agent."

An internal record from 2006 referred to "agent purity of up to 25 percent for recovered unitary sarin weapons."

Cheryl Rofer, a retired chemist for the Los Alamos National Laboratory, said such purity levels were plausible, because Iraq's sarin batches varied in quality and the contents of warheads may have achieved an equilibrium as the contents degraded.

Military officials said that because the seller was a C.I.A. source they did not know his name or whether he was a smuggler, a former or current Iraqi official, a front for Iraq's government, or something else. But as he continued to provide rockets, his activities drew more interest.

The Americans believed the weapons came from near Amarah, a city not far from Iran. It was not clear, however, if rockets had been retrieved from a former forward firing point used by Iraq's military during the Iran-Iraq War, or from one of the ammunition depots around the city.

Neither the C.I.A. nor the soldiers persuaded the man to reveal his source of supply, the officials said. "They were pushing to see where did it originate from, was there a mother lode?" General Zahner said.

Eventually, a veteran familiar with the purchases said, "the guy was getting a little cocky."

At least once he scammed his handlers, selling rockets filled with something other than sarin.

Then in 2006, the veteran said, the Iraqi drove a truckload of warheads to Baghdad and "called the intel guys to tell them he was going to turn them over to the insurgents unless they picked them up."

Not long after that, the veteran said, the relationship appeared to dry up, ending purchases that had ensured "a lot of chemical weapons were destroyed."

C. J. Chivers contributes to the Foreign and Investigative desks of The Times, and frequently posts for the At War blog, writing on conflict, politics, crime and human rights from Afghanistan, Iraq, Russia, Georgia, Chechnya and elsewhere on a wide range of assignments. In addition to writing, he shoots video and, occasionally, photographs. He served as Moscow correspondent from June 2004 through mid-2008. He has also covered war zones or conflict in the Palestinian territories, Israel and Central Asia. From 1999 until 2001 he was a Metro reporter covering crime and law enforcement in New York City, working in a three-reporter bureau inside the police headquarters in Lower Manhattan. While in this bureau, he covered the attacks on the World Trade Center on Sept. 11, 2001.

Eric Schmitt is a senior writer who covers terrorism and national security issues for The New York Times. Since 2007, he has reported on terrorism issues, including assignments to Pakistan, Afghanistan, North Africa and Southeast Asia.



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He is the co-author, with The Times's Thom Shanker, of "Counterstrike: The Untold Story of America's Campaign Against Al Qaeda," published in 2011.

Examining a Rare Nerve-Agent Shell That Wounded American Troops in Iraq

By C.J. Chivers and John Ismaydec

Source: http://www.nytimes.com/2014/12/05/world/middleeast/examining-a-rare-nerve-agent-shell-that-wounded-american-troops-in-iraq.html?_r=0

Dec 2014 – The attack began like many others. Early on May 15, 2004, an American patrol was sweeping a highway in Baghdad, trying to clear the route for a convoy. An attacker in hiding, watching a spot where a roadside bomb had been hidden, detonated the bomb as the patrol neared the anticipated kill zone. There was a small blast, but something was clearly different from the typical explosions that accompanied roadside bombs.

Although the soldiers did not yet know it, they had just been attacked by a previously unseen type of makeshift bomb: a device made from an artillery shell designed to disperse a nerve agent.

The resulting release of sarin, which several munitions analysts describe as the first case in history of a nerve agent being used in an improvised explosive device, eventually wounded two American explosive ordnance disposal technicians, Staff Sgt. James F. Burns and Pfc. Michael S. Yandell, who shared their account of the attack in a recent report in The New York Times.

After that report, another veteran of the Iraq war came forward with a set of photographs of the Army's initial examination and liquid sampling of the sarin shell. The veteran asked not to be identified, and said he had not taken the photographs. But he gave permission to publish the images, to add detail to the study of chemical warfare programs and munitions, and to allow open-source analysts to view one of the most unusual weapons seen during the American occupation of Iraq.

Chemical Weapons Found by American Forces in Iraq

Between 2004 and 2010, American forces in Iraq encountered thousands of chemical munitions. In several cases, troops were exposed to chemical agents.



Background: A Binary Sarin Shell as a Makeshift Bomb

It is important to note that for all of the emotional and political energy that attaches to chemical weapons and their use, this bomb was only marginally effective. The shell was not fired as it was designed to be, and it did not disperse a nerve agent over a wide area. It killed no one. According to the available accounts, it wounded only the two people who handled it without wearing protective clothing and masks. The highway quickly

reopened. The war went on as before. For a socalled weapon of

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mass destruction, the damage was limited.

This is not to minimize the seriousness of sarin's effects on Sergeant Burns and Private Yandell. Those effects were striking and pernicious: Sergeant Burns, now retired, reported a lingering cluster of neurological complaints, including problems with memory, dexterity and balance. But the bomb, as it was constructed and used, did not prove to be a grave menace. Had the bomb maker used a conventional high-explosive shell instead of the sarin round, the device might have done more harm.

Many of the ordnance technicians who have reviewed the attack say they suspect that the bomb maker who fielded the weapon, using a shell from the 1980s, was not even aware that the shell was a chemical round, and that if he was aware, he did not know how to maximize its potential sarin dispersal. It is also worth noting that even if the bomb maker knew what he had, an improvised explosive device containing a nerve agent would not have been a new concept. It would have been a low-tech echo of a far more efficient design worked out in the United States during the Cold War.

In the 1950s, the United States developed the M23 land mine, which contained roughly 10 pounds of the V.X. nerve agent. And in the 1960s, a laboratory affiliated with Cornell University proposed a pop-up adapter for the M23 mine that would launch a V.X. canister as high as 65 feet in the air, where it would burst and disperse the nerve agent as an aerosol. The laboratory's report noted that this bounding, airbursting package of V.X. could be actuated "by booby-trap devices." So the sarin improvised explosive device in Iraq was a comparatively weak version of a weapon that Western arms designers contemplated decades ago.

Back to the moment after the attack: Thinking they had been targeted by a conventional bomb that had not functioned properly, the soldiers on the highway called for an ordnance disposal team to clean up the scene and remove the bomb's debris. Sergeant Burns and Private Yandell arrived to find the shell lying on the asphalt, its nose open and cracked. The technicians mistook it for a conventional shell and carried it back to their truck for destruction later in a safer place.

At that point, Sergeant Burns and Private Yandell did not realize the risk. According to a later report by the Iraq Survey Group, a task force established by the C.I.A. after the American-led invasion, the two soldiers were transporting one of Iraq's rarest weapons: a prototype 152-millimeter binary sarin shell, a limited-production experimental item from the 1980s, which was now leaking sarin in their truck.

It was at this point — in the confines of a vehicle, with the technicians sitting on the front seats and the shell in the back — that the shell became much more dangerous.

152mm Binary Sarin Round



Chemical precursors are kept in two separate canisters, which break after launch. The precursors then mix together, forming liquid sarin.

Binary chemical shells work by a simple principle. Rather than have an active chemical agent in a reservoir within the weapon, two precursor chemicals are stored in separate canisters that are designed to rupture as the shell is fired. The chemicals are then mixed by the shell's rotation in flight, creating freshly brewed agent.

In theory, such designs make weapons safer (because leaks are less likely, and less likely to be lethal) and potentially more reliable (because, in this case, Iraq's sarin was unstable and prone to swift degradation in storage).



How many of the 152-millimeter binary shells existed in Iraq's inventory is an unsettled question. In its confidential declaration to the United Nations in 1996, Iraq claimed to have experimented with adapting 152-millimeter propaganda shells (used for distributing leaflets) to hold aluminum, and possibly plastic, canisters of sarin precursors instead. The declarations said that as many as 27 of these special shells had been expended in firing tests.

Another quantity of the shells — a later C.I.A. document suggested a handful to as many as 40 — may have been stored for a long-term leak test at a laboratory at Al Muthanna State Establishment, the former center of Iraq's chemical warfare agent production.

Between Iraq's secrecy and the small quantity of shells involved, this model of shell was quite rare, and almost completely unpublicized. Jack McGeorge, a munitions analyst for the United Nations Monitoring, Verification and Inspection Commission, the group monitoring Iraq's arsenal, did manage to include an image of what he believed to be one of the shells in the Chemical and Biological Munitions and Related Material Recognition Handbook, a confidential United Nations field guide to Iraq's unconventional munitions. An excerpt from that book is below.

Iraq's Rarest Weapon

An excerpt of the confidential field guide to Iraq's unconventional munitions produced by the United Nations showed what it believed was a rare prototype 152-millimeter binary sarin shell. Zoom

The rarity of the display above is important in understanding how the shell ended up in the technicians' truck. There was very little published record of these shells for ordnance disposal teams to refer to in the field. When Sergeant Burns and Private Yandell encountered the shell, it was not in the standard



American guidebooks used to identify munitions loose in Iraq. This, to some degree, explains why they misidentified it and put it in their truck without sealing it in plastic, which would have prevented its sarin vapors from filling the enclosed space around them.

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A Navy explosive ordnance disposal team in 2004, sealing the sarin shell that had wounded Sergeant Burns and Private Yandell. Credit Christopher Jewett/ United States Navy

Instead, the soldiers became ill as they drove. Upon arriving at their base, Camp Ferrin-Huggins in Baghdad, the technicians were suffering the effects of nerve-agent exposure, including confusion, pinpointed pupils, labored breathing and headaches. Soon they were in a clinic, and their treatment and monitoring began.

From this point, the record picks up a visual component, and we can refer to a photograph that accompanied the main Times article and shows the same shell wrapped in plastic on the tailgate of a military truck. The process of wrapping, shown below, is known as a leak-seal and package. It signified a shift in the incident from a routine explosive ordnance disposal call to a chemical-warfare response.

Temporary sealing was meant to contain the remaining sarin residue in the shell. It was being performed by a Navy explosive ordnance disposal team, which bunked with Sergeant Burns's team in 2004. That Navy team soon passed custody of the round to a small group of Army chemical warfare specialists, known as a technical escort unit. The soldiers seen



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in the images that pick up from here, which show a team reopening the packaging and obtaining sarin samples, appear to be from that unit.



A soldier with a warfare-agent detector prepared to cut open the plastic wrap. Credit The New York Times

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The Times shared copies of these photographs with the Army to check their veracity. In an email reply, Brig. Gen. J. B. Burton, commanding general of the 20th Chemical, Biological, Radiological, Nuclear, Explosives Command, the Army's primary unit to counter weapons of mass destruction, said the team was "following standard procedures for sampling, sealing/wrapping, protection, decontamination and detection" of a chemical warfare shell.

By the time the first layer of outer wrapping had been removed, above, the screen on the warfare-agent



detector had begun indicating the presence of a nerve agent.

The Navy team had sealed the shell's nose with a cloth plug; apparent traces of sarin had spilled down the shell's side. Credit The New York Times

Fully removing the plastic wrap revealed that the Navy team had closed the shell's nose with duct tape over a cloth plug, which the soldiers removed. At this point, the risks were rising, and several ordnance

disposal technicians who reviewed these photographs for The Times had misgivings about what the photographs show.



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Why, they asked, was the team unsealing the shell on an occupied American base, squarely beside a work space? The safer alternative would be to move the shell to a remote location or a demolition range, and to seek a sample there.

General Burton said the reasons for unsealing the round were not clear. "We are uncertain why this procedure was done in close proximity to living space or occupied buildings," he wrote.



Soldiers siphoned sarin from the shell. Credit The New York Times

Next, the soldiers extracted samples of the liquid in the shell, siphoning it out with a small syringe pump and tube. The photograph shows a stream of dark liquid as it is drawn out, and although references describe sarin as colorless, the darkness is not surprising. The shell, at the former fuze well at its nose, shows signs of internal burning, perhaps from the effect of a blasting cap on the canisters inside as the



shell was fired as an improvised explosive device. Judging by how one soldier tilts the shell in the image at right, the shell was not full. (This aligns with Sergeant Burns's memories of the shell on the road. It was not full when they first saw it, though it did leak a small puddle in the back of his truck, he said.)

Although sarin is described as colorless, a dark liquid was extracted, revealing signs of internal burning. Credit The New York Times

The soldiers then transferred

the liquid into a specimen cup, and sealed the cup in a plastic bag. Judging from the many photographs The Times received, the team took several samples for lab work later.



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Various sources have indicated that the nerve-agent sample from the shell tested at 43 percent purity. The C.I.A. document mentioned above described the shell as "containing a 40 percent concentration of sarin." Either figure suggests that the two precursor chemicals were in reasonably good shape, and that even with the imperfect mixing that would occur in an improvised explosive device blast, a quantity of dangerous sarin was produced inside a prototype shell that would have been, if Iraq's declarations to the United Nations were accurate, roughly 16 years old.

Avon Protection unveils new PPE technology

Source: http://bioprepwatch.com/news/avon-protection-unveils-new-ppe-technology/340930/

Feb 17 – Avon Protection and SecureBio, Ltd. have developed a new line of personal protective equipment (PPE) that will be showcased at the International Defense Exhibition and Conference (IDEX) in Abu Dhabi, United Arab Emirates, from Feb. 22 through 26.

Avon specializes in the development of PPEs that are specifically designed with chemical, biological, radiological and nuclear (CBRN) threats in mind. The new line of protective equipment is based on the company's NH15 escape hood.

"Avon is enhancing the world-leading NH 15 with a range of ensembles offering respiratory protection, suits, gloves and personal decontamination solutions, and biological and explosives detection," Hamish de Bretton-Gordon, managing director of Avon's CBRN program and former chief operating officer of SecureBio, said. "Suits and gloves and personal decontamination equipment – evidence shows that secondary decontamination is the biggest killer post a CBRN event and hence our individual packs cover all eventualities."

Avon also recently announced that it will be offering support services to security teams for major global events. This would include consultation and equipment to facilitate proper response for CBRN and hazardous materials-related threats or attacks.

"This comprehensive service will give major event organizers a cost-effective means of providing comprehensive CBRN and HAZMAT protection for their events, safeguarding the public and their employees in the current challenging environment of terrorist threats," De Bretton-Gordon said.

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CBRN Action Response Equipment (CARE)

Source: http://www.securebio.co.uk/cbrn_action_response_equipment_care/

SecureBio is pleased to announce the launch of the CBRN Action Response Equipment (CARE) and CARE Plus. The CARE pack provides respiratory and touch protection from a broad range of CBRN, TIC threats and all Riot Control Gases combined with the ability for the user to perform immediate decontamination. The equipment is discreetly contained in a shoulder bag enabling the user to respond rapidly to an incident or event. Close liaison

with the client ensures the CARE Pack contents are tailored exactly to meet the needs of the

client.

CARE Contents

- Full Respiratory and Eye Protection
- Touch Protection
- Disposable Coverall
- Biological Decontamination
- Chemical/TIC Decontamination
- Shoulder Bag
- Instruction Card
- Disposal Bags

CARE Plus

- CARE Items
- Access to 24/7 Advice and Support line



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SERVICE KEY POINTS

- Protection from a broad spectrum of CBRN Threats which can be honed to specific customer requirements
- User Friendly
- All Equipment NIOSH Approved
- Discreet packing (Branded and un-branded options available)
- 24/7 Advice and Support (Available as part of the CARE Plus Pack)
- Training package at an additional charge
- Excellent protection from all current Riot
 Control Gases
- Adult and Children sizes available

CARE Contents Pack



Chemical, Biological, Radiological and HAZMAT Crash Pack (CRASH)

Source: http://www.securebio.co.uk/chemical-biological-radiological-and-hazmat-crash-pack/



SecureBio, using evidence collected from law enforcement, existing clients and open source reporting, estimate that since 2001 there have been some +65,000 deliberate incidents involving white powders and toxic substances in the work place. The impact of these global chemical or biological incidents can be very high, resulting in the loss of business activity for a matter of hours, days and in extremis weeks. The impact on staff morale, safety, security and business as usual activity can be significant, regardless of the incident being a nuisance hoax or posing a genuine and credible threat to life. Many of the incidents involving unknown substances, be they hoax or genuine, originate from

disgruntled employees, disaffected customers, hate groups, activists and terrorist organisations making them unpredictable and traditionally difficult to mitigate. SecureBio's CRASH pack has been developed to meet the exacting needs and specific requirements posed by this threat, providing the client with the confidence to respond, mitigate and neutralise the disruption to business as usual.



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Chemical, Biological, Radiological and HAZMAT Crash Pack

Response

On receipt of an unknown substance, be it chemical or biological, a rapid and considered response is essential. The CRASH pack provides the user with complete protection from a broad range of chemical and biological threats, the ability to rapidly neutralise and decontaminate chemical warfare agents, acids, toxic industrial chemicals and biological agents and safely contain the unknown substance enabling the speedy return to normality and supporting follow action from law enforcement or HAZMAT.

- Chemical Warfare Agents
- Biological Warfare Agents
- 99.999% of Viruses
- 99.999% of Bactieria
- Toxic Chemicals
- Radiological Dust

Protection

CRASH Pack is a simple and effective solution designed to provide clients with a suite of emergency Personal Protective Equipment (PPE), tailored to meet the needs of corporate security, mailroom employees, front of house staff and crisis management teams. The system is ideally suited as an emergency response solution when evacuating a specific area, such as a mailroom, or alternatively for in house first responders requiring protection when confirming the scope and creditability of an unknown substance.

Robust

CRASH Pack is housed in a toughened transport case, containing Respiratory, Eye, Nose, Skin and Touch Protection for a broad spectrum of hazards including Chemical, Biological, Radiological and toxic Chemicals, the ability to decontaminate these hazards and appropriate package materials to contain the unknown hazard.

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Contents



- NIOSH Approved Escape Hood. An easy to use full face hood, providing the wearer with complete respiratory protection from toxic chemical compounds and radiological dust.
- Safety Goggles and Oral Protection Mask. A lighter alternative to the escape hood, providing the wearer with a high level of particulate protection from powders dust and microbial hazards.



- Our low key, self conducted, test ensures minimal disruption and intrusion to your business needs. Reliable. Utilising the latest in proven technology ensures complete accuracy, every time.
- Nitrile Gloves and Chemical Protection Suit. Providing protection when handling or moving unknown substances.
- Chemical and Toxic Chemical Decontamination. A technological advanced decontamination system capable of neutralising a broad spectrum or chemical threats, including chemical warfare gents and acids.
- Biological Decontamination. Developed to provide rapid personal and area neutralisation and decontamination of 99% of all biological hazards.
- Packaging. A suite of packaging material to allow the client to rapidly contain any unknown chemical or biological hazard; preventing the spread of further contamination and facilitating follow up action such as HAZMAT or police responders.
- Step-By-Step user guide.

Guidance on decontamination of buildings, infrastructure and open environment

Last updated: 10 February 2015

Source: https://www.gov.uk/government/publications/strategic-national-guidance-the-decontaminationof-buildings-infrastructure-and-open-environment-exposed-to-chemical-biological-radiological-ornuclear-materials

Strategic National Guidance: The decontamination of buildings, infrastructure and open environment exposed to CBRN materials has been produced for those in the public and private sector responsible for contingency planning. It gives basic information on the decontamination and



remediation that may be required following a deliberate or accidental release in the UK as outlined below.

This document was revised and updated following a consultation in September 2014. All links have been updated and recent changes to the names and structures of organisations have been reflected in the revised document. Various other changes have been made to improve the information provided within the guidance and ensure it is up to date.

An incident, whether deliberate or accidental (Hazmat), involving chemical, biological, radiological or nuclear (CBRN) materials can potentially lead to the loss of life, contamination of the built and open environment, disruption of society and consequential damage to the UK economy. It is therefore important that plans are in place to minimise the effects of such an event, and to plan for recovery following this type of incident.

This guidance covers key elements in the decontamination process following an incident - from developing the

initial recovery strategy through to managing waste and returning things to normal. The principal roles and responsibilities of key organisations have been identified and listed, and



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planning and precautionary measures have been highlighted to promote better preparedness. In view of the different types of potential incidents, and the variety of buildings, environments and infrastructure that could be affected, the guidance in this document is necessarily generic. It provides a

starting point for the development of more detailed contingency plans to deal with specific incidents. This document also describes the current legal powers available to local authorities in the event of such an incident.

The guidance is part of sensible contingency planning and does not mean that there is an increased risk of terrorist attack using CBRN materials.

Read the full document at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/402645/Strategic_Nation_ al_Guidance_4th_Edition.pdf

How to Keep Chemical Weapons From Terrorists

By Helia Ighani

Source: http://www.newsweek.com/how-keep-chemical-weapons-terrorists-307353

Since 2001, major metropolitan cities have increasingly conducted gas and chemical attack simulations in subway systems. Police



departments carry out these exercises with odorless, colorless and non-toxic gases to determine how to evacuate passengers in the event of an actual biological or chemical attack, and to identify safeguards that could be implemented to prevent potentially catastrophic consequences.

Demands for these simulations are based on real ambitions by terrorist groups to acquire biological and chemical weapons. Most recently, a laptop belonging to a member of ISIS (the Islamic State of Iraq and Syria) was found to contain instructions in Arabic on how to develop biological weapons and weaponize the bubonic plague from infected animals.

The 19-page document suggested using "small grenades with the virus and throw them in closed areas like metros, soccer stadiums, or entertainment centers." While these terrorist groups may not yet be capable of carrying out such sophisticated attacks, these types of weapons are definitely on their radar. Al-Qaeda has also attempted to develop chemical

weapons, even before the 9/11 attacks, and the United States has regularly made efforts to stunt its progress.

This is a valid concern for U.S. policymakers, but also for scientists and researchers working to advance the field of synthetic biology. In synthetic biology, engineers tinker with the DNA of existing biological systems by isolating, replicating or adding pieces of DNA. A new Center for Prevention Action discussion paper by Gigi Kwik Gronvall, *Mitigating the Risks*

of Synthetic Biology, looks at the possible outcomes of advancing synthetic biology research.

The origins of synthetic biology date back to the beginning of the 20th century. In 1912, French biologist Stéphane Leduc demonstrated that he wanted to enable man "by directing the physical forces which are its cause" to synthesize life forms and enhance the way the world understands science. Nearly a century later, Craig Venter revolutionized the field by sequencing the human genome.

The field has rapidly advanced over the last decade. It is a growing industry with labs all over the world. Some estimate that the

synthetic biology industry market will jump from \$1.6 billion in 2011 to as high as \$16 billion by 2018. However, this



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growth also brings a host of possible risks as well as benefits.

The greatest risk to U.S. national security is bioterrorism and the deliberate misuse of synthetic biology. For example, as foreign fighters with scientific and medical know-how flock to join the ranks of ISIS and other terrorist groups, they could return to their home countries and carry out an attack on the West.

The prevalence of do-it-yourself bio labs is also increasing, with regard to scientific development and research. One of these amateur bio labs has produced seeds for



glow-in-the-dark plants, which were sold to more than 8,000 people via a Kickstarter campaign. But since these labs are unregulated, they could also easily be used to re-create harmful pathogens (such as the Ebola virus or influenza). Moreover, there is no all-comprehensive reporting system for biological accidents that occur in unofficial and official bio labs.

On the other hand, the advancement of synthetic biology could produce many humanitarian and ecological benefits. It has been used for the development of an antimalarial drug in endemic regions in Africa. Synthetic biology could open the way to more innovation, including possible cures to world hunger, cancer and environmental degradation. The United States is currently the lead funder of synthetic biology research and innovation. In 2010, more than half a dozen U.S. government agencies had pledged funding for synthetic biology research, spending over \$430 million on research since 2005.

There are many benefits to the development of synthetic biology, but a lack of regulation or oversight could produce disastrous results. Over sixty staff members were unintentionally exposed to anthrax in June 2014 at the Centers for Disease Control and Prevention, where national regulation and oversight are a priority.

Helia Ighani is a research associate in the Center for Preventive Action at the Council on Foreign Relations.

CBRN Project 10

Source: http://cnscourseware.com/



This project seeks to raise awareness of the threat posed by chemical, biological, radiological, and nuclear (CBRN) materials among both technical and policy-making community.

It provides mid-to-senior level officials with responsibilities in CBRN detection, response and mitigation with the technical knowledge necessary for the development of appropriate policies in these fields. It is expected that this comprehensive and unrestricted e-learning platform will serve as a key learning tool in raising awareness of CBRN risk mitigation. The project may also serve as a valuable source for educating other audiences, such as civil society and the private sector on CBRN threats and risk mitigation strategies.



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The Course

The online training course consists of seven training modules:

- Module 1: Introduction to CBRN and chemical weapons
- Module 2: Nuclear and radiological weapons
- Module 3: Bio-hazards Natural and deliberately caused diseases
- Module 4: Bio-security and bio-safety Preventing biological warfare and terrorism
- Module 5: Strategic trade controls and CBRN
- Module 6: CBRN risk assessment and management
- Module 7: Identifying an event: Case study and analysis



The course material has been designed in accordance with recognized best practices in adult and online pedagogy. The course also exploits innovations in information technology and social networking, including interactive exercises, dynamic media, video presentations, additional references and resources, and links to related information and on-line courses. It will be available in English, Arabic and French.

The educational materials produced will also be made available in an offline, CD-based format so as to allow for distribution to audiences with unreliable internet connections.

New devices may soon help Soldiers nose out chemicals, bio threats

Source:http://www.army.mil/article/143059/New_devices_may_soon_help_Soldiers_nose_out_chemical s_bio_threats/



Feb 18 – Researchers are refining for Army use a commercial technology that will allow Soldiers to accurately and rapidly detect an array of chemical and biological hazards - from

there, for now, on the center's 3D printers. The device reads the result of chemical detection paper and can then transmit the results into the Army's network via the

mustard agent to anthrax and then transmit those results to their higher command.

At the same time, the technology is smart enough to differentiate between those chemicals which are dangerous and those that the Soldier has carried with him into the environment on his own skin, such as bug spray or hand sanitizer. The VOCkit system (photo) is a small electronic device developed at the Army's Edgewood Chemical Biological Center, or ECBC,

and even manufactured



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Soldier-worn "Nett Warrior" smartphone system.

At the heart of the system is a colorimetric detection assay, a swatch of paper about the size of a postage stamp, that is printed with a grid of several dozen indicator chemicals arranged in a grid of small dots. Each dot is made from a differently-colored indicator chemical that will have a unique color change in response to any compound it comes in contact with: from chemical threats, to biological threats, to common household cleaning products and cosmetics.

"You have almost one hundred reactions going on and the combination of those reactions gives you a unique signature," said Peter A. Emanuel, Ph.D., ECBC's BioScience division chief. "Some react, some don't ... some intensely. The signature, the collection of those dots, gives us a unique fingerprint for what that agent is."

The colorimetric detection assays they are using are placed inside a small plastic hockey puck-shaped cartridge that has a removable plug on one side. Researchers can open that plug and put a drop of a test substance inside so as to expose the assay to a chemical.

The odor of whatever chemical is being tested interacts with the assay to create reactions - or a lack of reaction - among each of the indicator chemicals.

"Everything emits an odor, essentially, even if you can't distinguish it," said Aleksandr Miklos, Ph.D., a senior scientist at ECBC. "Virtually everything that's out there emits something of itself into its environment. That's how your sense of smell works."

Miklos said the detection assays perform a function similar to a human nose.

"This is essentially a little piece of paper that does what your nose does," Miklos said. "It is not quite as good as your nose in some regards, but better than your nose in others."

Miklos said a human nose has a "couple hundred" receptors to recognize odors. But that doesn't mean that a nose is capable of recognizing only a couple hundred odors. "You can actually recognize up to a billion odors," he said.

Miklos said that chemical receptors in a human nose don't each detect one smell. "There isn't one receptor in your nose that is for the scent of a rose," he said. "Everything you smell triggers every receptor to a slightly different extent. And what your brain does - it's very clever - is it recognizes these patterns. Odors establish a pattern in your nose and your brain recognizes it. Odors establish a pattern on this assay."

The colorimetric assays have at least one distinct advantage over the human nose, Miklos said. "A human could not sniff a container of sarin, because you would die," he said. "But the paper ticket doesn't care."

The colorimetric assays react differently to a variety of chemicals, Miklos said. But in the case of existing, fielded colorimetric strips, two chemicals might produce very similar results. So he and team member Melissa Dixon are testing the colorimetric arrays against a variety of products commonly used by Soldiers to ensure that if something like rifle cleaner indicates the same chemicals as sarin gas, Soldiers will know about that.

"The problem is that common stuff confuses the strips," said Miklos of the currently-fielded strips. "We know certain solvents will look a lot like VX. That's not particularly helpful."

In his lab, Miklos and Dixon are exposing the arrays to common chemical items: lotions, bug sprays, lubricants, fuels, baby wipes, alcohol, etc.

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"We want to use them to make sure we are not getting any kind of cross-reactivity," Dixon said. "If Soldiers clean themselves with baby wipes, we want to have a background for baby wipes, as opposed to being VX."

Dixon's husband is a Soldier, she said, and he provided her and Miklos with some common items that Soldiers use in the field so that those could be tested.

Miklos and Dixon are building a database of colorimetric array reactions to a variety of common, relatively safe chemicals. On the other side of ECBC, Miklos said, in labs equipped to handle more dangerous materials, they are exposing the assays to more dangerous things, like VX.

The hardware

Already, ECBC has a device called the SmartCAR, short for "smart color-metric assay reader."



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That hand-held device was developed by ECBC engineer Colin Graham. The SmartCAR







does not read the same color-metric assays that Miklos and Dixon are working on - the ones with the array of colored dots - but instead uses electronics and a camera to read test strips similar to a pregnancy test.

Those strips are in common use today in the Army, and they can evaluate for one biological agent at a time.

(A) M8; (B) M9; and (3) M256A1 kit

Graham designed the circuit boards for the device and wrote the software for it. The shell for it was built in-house on ECBC's 3D printers. He said from concept to completion took about six months.

The SmartCAR was evaluated recently in South Korea during an advanced technology demonstration that explores bio-surveillance, Emanuel said. In South Korea, the device was used in the field by Soldiers during scenarios that involved anthrax and plague.

"What they did was they ran the assays and it got the result, it interpreted the result, it told them what the answer was and then it

immediately uploaded it to the cloud and put it up on a screen so that anybody in Korea could see," Emanuel said. "The advantage is that the machine takes the



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ambiguity out of the read, and also uploads and archives the image so that every battlefield commander can see what's going on. It shows up like a little pin on Google maps."

The SmartCAR, in conjunction with the **Nett** Warrior device (below), can run the Miklos researches in his lab, growing detection functionality beyond the SmartCAR.

"We are trying to move away from one ticket one test, to one ticket many tests," Emanuel said. "Then it evaluates and beams from the evaluator to the phone and into a cloud where



evaluation, capture the results, and transmit the results, along with latitude, longitude and time to a central location on an Army network so that it can be used by commanders, Emanuel said.

Emanuel said he envisions a scenario where multiple Soldiers are running similar evaluations across a theater, and their results are plotted real-time for commanders to see the result.

"That's the whole idea of bio-surveillance, it's not just being able to see things, but see them in real time and have everybody see them," Emanuel said. "What we are trying to do is inform the common operating picture."

Emanuel said they'll take the device back out in June for another evaluation.

The new VOCKit system that ECBC is developing will read the colorimetric arrays that

everybody can know what's going on." Emmanuel said that the goal is for these technologies to ultimately replace the ECBCdeveloped M8 and M9 chemical detection paper currently used in the field today.

"It's [M8 and M9] indicator paper and they touch liquids, and it turns like blue, and they say they think it might be something," Emanuel said. "But the new tickets instantaneously and vividly not only indicate, but tell you exactly what the liquid is. We are moving quickly to replace M8 and M9 paper with a new kind of indicator paper. We are creating a dipstick that will tell you what that chemical was. This has applications for the Soldiers. It could be used for customs agents."

Emanuel said ECBC expects to have a working prototype in about 18 months.



Ebola outbreak: where we are now and what happens next

By Colin Brown

Source: http://www.homelandsecuritynewswire.com/dr20150122-ebola-outbreak-where-we-are-now-and-what-happens-next

Jan 22 – Ever since its discovery, it has been appreciated that Ebola poses a serious risk to global public health. Infectious diseases represent a global threat, not just to those within the country or region of emergence. With the current increase in the movement of people (rural to urban, within countries and across borders), this risk will inevitably increase. While the current priority should be to contain the present outbreak, there is a great need to plan for prevention of future events. The development of an international response group tasked with immediate assessment of and initial response to emerging pathogens is needed, backed by sufficient international political will, clinical expertise, and funding. This needs to be agile and responsive, with clear chains of command, and able to engage early.

Ebola virus disease was first discovered in the Democratic Republic of the Congo in 1976, and by 2013 had caused about twenty recorded outbreaks across East and Central Africa. These had been restricted to rural areas and confined to small clusters of villages. In each case containment was achieved within a few months and after fewer than 500 confirmed cases. The world assumed that Ebola was too efficient at killing its hosts, doomed to quickly burn out wherever it arose.

The 2014 West African outbreak has changed everything. It was the "Black Swan" — the inevitable consequence we did not foresee. As we head into mid-January 2015, there have been more than 21,000 reported cases spread across nearly every region in three adjacent countries, and more than 8,000 people are known to have died.

Cases have cropped up in the United States, Mali, Senegal, and Nigeria. Patients have been treated across Western Europe. Until early November 2014, there was no sign of a reduction in transmission and case numbers were rising exponentially. As we wrote in the journal *Tropical Doctor*, though numbers are now slowing in Guinea and Liberia, there is still an increase in cases in Sierra Leone where 500 healthcare workers have died. There is no certainty the other affected countries will not again see an upsurge in new cases.

Estimates of how many people could be affected have varied widely and included projections of up to 1.4 million, or up to 25,000 cases per day by mid-January 2015. This was a dramatic increase since the World Health Organization (WHO) projected a maximum of 20,000 cases in August 2014, highlighting how difficult it is to predict the future epidemic direction, though organizations such as Médecins Sans Frontières highlighted their concern as early as March 2014.

Current expert opinion suggests that an overall decline will be likely in the next few months, however the "tail" of the epidemic curve will be protracted and punctuated by many smaller, localized outbreaks.

Mathematical modelling is challenging and cannot easily account for conflict, mass movement of people, or breakdown of civil society, but though the very high case numbers may not be reached, one thing is certain: this will be a terrifyingly large outbreak, something never before faced on a global scale.

Same but more virulent virus

Given Ebola's appearance in a setting thought solely home to Lassa Fever, there was initial speculation that this was a different virus than had been seen before. The same — but different: more virulent, more transmissible.

Modelling now firmly places the current outbreak strain as belonging to the Zaire strain (EBOV), with entry into the West African animal population around the mid-2000s from central

Africa. One discrete contact with one infected animal is responsible for all the disease seen.

Early analysis of some eighty samples from Sierra Leone shows



that in one month, 400 mutations were identified. It is unclear if those mutations carry any fitness advantage, or whether this epidemic will evolve differently than those seen before. Currently, Zaire Ebola in West Africa is not behaving differently to what has previously been seen. There is no change in route of transmission, no suggestion of aerosolized spread, no gross differences in disease presentation.

Therefore we know the measures required to control this outbreak: contact tracing, adequate testing and isolation, onward referral for treatment, communications with communities, improved logistics to support a fragile health system. These are the stalwarts of public health control across the last decades.

Why did the situation get so bad?

We cannot attribute the failure of early containment on differences in virulence or transmission of the virus. The reasons for lack of control are complex, multi-factorial and open to debate. Emergence was in Guéckédou, a remote and difficult-to-access area in West Africa, with porous borders across the three post-conflict nations most affected: Guinea, Liberia, and Sierra Leone.

As with much of Africa, these boundaries were European-drawn and do not correlate with different community identities or languages. Radio messages were initially in official languages only. Spread between countries was likely.

In this region, where availability of mainstream healthcare was already severely limited, the care of unwell individuals is vastly different to that available in the West. Sick relatives are nursed at home by family members, and further care is often sought from traditional healers, unofficial providers and private pharmacies rather than government health facilities.

Peripheral health units are only equipped to diagnose and treat malaria, pregnancy, and a few other key conditions, and if patients do go to hospital, in many settings there is a lack of basic equipment such as gloves, aprons, running water and soap. The number of trained healthcare professionals of all cadres is very low.

Additionally, there is huge stigma associated with Ebola, similar to those seen in the early years of HIV care. The present Ebola outbreak began very close to where civil war erupted in Sierra Leone in 1991, and trust in the government in this region is low. Although acceptance of Ebola is rapidly increasing, there was initially disbelief about its existence, and conspiracy theories about population control were prominent and sometimes roused by media.

This constellation of palpable fear and deep mistrust inhibited early engagement and sound communication about the threat of Ebola. It was understandable, therefore, that families were reluctant to hand over their relatives to treatment center staff wearing masks and suits. This is particularly true when there was a high likelihood of never seeing their loved ones or their bodies again.

These factors have all increased the risk of transmission of Ebola, both in the community and within hospitals, and lead to a delayed and disjointed response both in-country and internationally. By keeping family members at home to die, burial practices involving body preparation and touching by mourners further facilitated spread.

Early in the outbreak, families also buried their own dead due to insufficient staff to bury bodies safely. Given that many of these factors are present in the settings of Uganda and the Democratic Republic of Congo, where previous outbreaks have centered, the emergence of a disease thousands of miles from where it had been seen previously also contributed to spread. Lassa Fever is endemic and may have led to a false sense of security among healthcare workers regarding the transmissibility and mortality associated with viral hemorrhagic fevers. Furthermore, wearing full personnel protective equipment in a humid environment comes with considerable difficulties, with differing opinions on which option is best to use. Safely incinerating waste in the rainy season brings its own challenges.

There is general agreement that a sufficient early international response, when traditional control strategies of case isolation, contact tracing and geographical containment were feasible, were not forthcoming. The WHO was

slow to deploy experts, not appreciating the potential seriousness from the outset. Approaches used in smaller outbreaks were followed, and

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institutions were slow to adapt to new models of care. There was an initial dearth of organizations willing to deploy clinical staff to the field and many traditional health nongovernmental organizations withdrew their incountry staff. Fear led to delays as they adapted to the disease. And unlike Severe Acute Respiratory Syndrome (SARS), major travel routes with potential spread into the West were not affected. The world watched but did not engage.

New therapies

Novel therapeutics are on the horizon. TKM-Ebola, ZMapp, Favipiravir, Brincidofovir, and other novel agents are being fast-tracked by regulatory authorities and rolled out for testing in clinical settings.

Convalescent plasma (using blood plasma from Ebola survivors) — long thought useful in a variety of viral illnesses including SARS, influenza, Crimea-Congo haemhorragic fever — offers a potential treatment option that can be delivered locally using modified existing transfusion services. Any reduction in circulating and replicating the virus may allow the body vital time to produce immunity; however this has not proved effective for Lassa Fever and needs to be evaluated formally.

There are three major vaccine developments underway, entering Phase I and II trials, likely eligible for roll-out by early 2015. However, though these offer hope for the future, they are unlikely to shape the control efforts of this outbreak. Earlier trial intervention was hampered by a lack of ability to conduct research given the burden of treatment needs, so we're still waiting for evidence of their effectiveness from the field. Simple treatment interventions such as aggressive electrolyte replacement and treatment using anti-diarrhea agents remain untested.

What can be done now?

The only human-to-human transmission of Ebola occurs via direct contact with body fluids of an infected individual. Importantly, the chance of transmission is greatly increased in the advanced stages of the disease, when diarrhea, vomiting and bleeding can occur and viral load is high. Disease control is therefore aimed at interrupting this transmission and consists of early case identification and testing, effective isolation and contact tracing. None of these were reliably being achieved early in the outbreak: cases were identified in the late stages when substantial exposure had occurred; testing suspects took several days to perform; treatment centers were at capacity; and contact tracing was disorganized.

What was needed in West Africa was a multifaceted international response, integrating different agencies and spanning all affected countries, with the cornerstones of disease control at its heart. As case numbers grew, and more regions were affected, achieving a coordinated response became increasingly difficult. Each new case exponentially increased the workload for clinical and public health staff; hence every case and every day compounded and threatened to overwhelm any response, especially where a fragmented health service was already present.

Hope is on the horizon. We are seeing a redoubling of efforts along with disease spread - international agencies and regional funders have ramped up their response, there are money and material human resources being deployed daily. Governments are stepping up to the challenge. As well as financial commitment. logistical assistance is paramount. Armed forces, which have the responsiveness and capacity to stage a meaningful intervention, are being deployed to deliver infrastructure, logistics and engineering support. In Sierra Leone, holding and treatment centers are being built apace, staffed by local workers with technical support and oversight from international agencies. Most importantly, this response is happening now.

We're building a robust model of care at King's Sierra Leone Partnership, which aims to help build Sierra Leone's health system by strengthening training, clinical services, policy and research. One way we're doing this is by building units in existing healthcare facilities for testing and holding, allowing these centers to stay open for care of other health needs: pediatric vaccination, maternal care, HIV management. Onward referral to dedicated treatment centers keeps the existing infrastructure and prevents fragmentation of care.

In addition to tried-and-tested control methods, the seriousness of this outbreak represents an 114



opportunity for using new approaches if potential harms and benefits are properly considered. For example, the employment of Ebola survivors as "patient champions" has been proposed, both in advocacy and clinical work within communities and hospitals.

Once numbers begin to fall, complacency must not set in. Control efforts must be maintained until every case has been treated.

Looking to the future

In the event that Ebola is brought under control in West Africa over the coming months, it is paramount to remember how badly damaged the remaining health infrastructure will be. As is the case with humanitarian disasters, there has been a crippling effect on other programs for communicable and non-communicable diseases alike.

In Sierra Leone we recently observed a reversal of steps to improve health since the civil war ended twelve years ago. Other activity essential to a functioning democracy such as food supply, security, industry (particularly mining) and trade sectors are facing significant challenges. A response that strengthens these institutions in addition to control efforts is needed.

Ever since its discovery, it has been appreciated that Ebola poses a serious risk to global public health. Infectious diseases represent a global threat, not just to those within the country or region of emergence. With the current increase in the movement of people (rural to urban, within countries and across borders), this risk will inevitably increase. While the current priority should be to contain the present outbreak, there is a great need to plan prevention of future events. for The development of an international response group tasked with immediate assessment of and initial response to emerging pathogens is needed, backed by sufficient international political will, clinical expertise, and funding. This needs to be agile and responsive, with clear chains of command, and able to engage early.

We may have been fortunate to have avoided an outbreak of this scale before now. Will we be ready next time? And will we succeed now? The upcoming months will be vital in determining the direction of the response. Time is not on our side, but the will and effort is now here for the humanitarian catastrophe of our time. Let it continue.

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Colin Brown is Infectious Diseases Lead, King's Sierra Leone Partnership at King's College London.



Genetic safety switches could help curb potential bioterror risks

Source: http://phys.org/news/2015-01-genetic-safety-curb-potential-bioterror.html

The potential threat of bioterrorism using man-made biological organisms could be reduced, thanks to a new method developed by scientists.

Synthetic biologists - who can design and modify the DNA of living organisms to give them novel, useful functions - have devised a way of containing their products to help ensure that they work only as intended.

Researchers have developed a set of genetic switches that can be built into engineered organisms, to control the function of genes they need to survive.

The genetic switches are controlled by the addition of a mixture of naturally occurring chemicals, which can be customised for a variety of products.

These could prevent potential harm from either the theft or misuse of these substances, which are used in biofuels, food, and medicines.

Researchers at the **Universities of Edinburgh and NYU Langone Medical Center** have developed two types of molecular switch that work in yeast, a commonly used model organism.



The team inserted a second set of on and off switches to target another vital gene, to mitigate the risk that changes in the live yeast might enable it to circumvent chemical control.

The study, published in *Proceedings of the National Academy of Sciences*, was funded by the US Defense Advanced Research Projects Agency and the Biotechnology and Biological Sciences Research Council.

Dr Patrick Yizhi Cai of the University of Edinburgh's School of Biological Sciences, who jointly led the research, said: "Synthetic biology is a fast-developing field with huge potential to benefit society, but we need to be mindful about its potential risks and take active steps to limit them in our biological designs. With these genetic safety switches, we can contain engineered organisms with a special combination of small molecules."



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Ebola Response: Detecting the Disease

By Steve Melito

Source: http://tacticaldefensemedia.com/blog/2015/01/23/ebola-response-detecting-the-disease/

In October, Liberian Thomas Eric Duncan became the first person to die of Ebola in the U.S. after medical staff at Texas Health Presbyterian hospital initially misdiagnosed his condition. Later that month, the Food and Drug Administration (FDA) emergency use of the Center authorized the for Disease Control's (CDC) Ebola Virus VP40 Real-Time RT-PCR assay on the 7500 Fast Dx Real-Time PCR instrument from Applied Biosystems (ABI), Inc. This polymerase chain reaction (PCR) real-time instrument uses nucleic acid amplification and five-color fluorescence detection for in

The FDA's Emergency Use Authorization (EUA) is limited to qualified laboratories designated by the CDC, but today ABI is just one of several companies to hold an EUA for Ebola detection. Laboratory-based technologies play an essential role at both civilian and military hospitals, but detecting the disease in the field and at the point



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of care (POC) are also critical. That's why S&BP has researched Ebola detection products and interviewed companies that, pending FDA approval, will supply technologies that could affect the marketplace.

Laboratory Results Without Pipetting

In October, BioFire Diagnostics (Murray, UT) received an FDA EUA for FilmArray BioThreat-E, the first commercial Ebola test to be authorized for emergency use on patients with signs and symptoms of infection with the Ebola Zaire virus. As the company explained in a press release, its FDA-



cleared clinical molecular biology diagnostic device is already used in hundreds of hospitalbased laboratories across the U.S. According to the Salt Lake Tribune, the Film Array was used at Emory Hospital in Atlanta, where four patients with Ebola have been treated.

BioFire received an FDA EUA for the FilmArray BioThreat-E. (BioFire Diagnostics)

The BioFire Film Array system does

not require pipetting—the use of a dropper—and generally provides results in 60 minutes. The Film Array machine, which was derived from technology developed at the University of Utah and patented in 2012, is about the size of a toaster. The EUA for the Ebola test does not constitute official FDA clearance or approval, but does enable hospitals that already own FilmArray equipment to make Ebola diagnoses. BioFire also received an FDA EUA for an Ebola test to be used in laboratories designated by the Department of Defense (DoD).

POC Multiplex Testing

Outside of the lab, providing fast, accurate, and easy-to-obtain test results for the Ebola Zaire virus is a challenge that several diagnostic technology companies have undertaken. POC tests could provide an alternative to tabletop equipment such as the ABI 7500 or BioThreat-E. John Sperzel, CEO of Chembio Diagnostic Systems, called Ebola containment a "race against time." In an interview with S&BP, Sperzel described the Ebola epidemic as a "humanitarian crisis" that must be addressed



urgently, emphasizing that "every day matters" in the development of POC testing.

Chembio DPP technology is also used in the rapid detection of HIV antibodies. (Chembio Diagnostic Systems)

Under current FDA EUAs, Ebola hemorrhagic fever can be diagnosed only in specialized laboratories. "This

limitation," Sperzel said, "significantly delays the identification and isolation of the patients who have Ebola and in turn makes it more difficult to control an outbreak." Pending successful development and regulatory approvals, however, medical personnel will be able to use Chembio's patented DPP technology platform for stand-alone POC Ebola testing. Chembio also plans to include an Ebola assay as part of its DPP



Febrile Illness Assay, which can detect antigens from a variety of viruses, bacteria, and parasites. Developed in under eight months, the DPP Febrile Illness Assay is now in clinical trials in several countries, including areas of West Africa. As Sperzel told S&BP, Chembio partnered with a U.S. government agency to develop this 20-minute, multiplex POC test. "With a single, finger-stick drop of blood," he says, the DPP Febrile Illness Assay can detect different antigens, and do so without "sophisticated instruments or refrigerated reagents." Chembio has also partnered with Integrated BioTherapeutics of Gaithersburg, MD, a biotechnology company that has developed proprietary Ebola reagents.

"Chembio has a track record of developing point-of-care tests for infectious disease," Sperzel said, adding that his company's three FDA-approved, CLIA-waved POC HIV tests are "more than at any other firm." Pending FDA approval, Chembio plans to produce its Ebola assay on existing DPP manufacturing equipment at the company's Long Island, N.Y., facilities, which total more than 60,000 square feet and are registered with the FDA, licensed by the Department of Agriculture, and ISO certified.

Silicon Chip Solution

On the West Coast, San Diego-based Genalyte has developed a standard 10-minute Ebola test that uses proprietary silicon chip technology and its existing Maverick Detection System platform. As Cary Gunn, Genalyte's president, CEO, and co-founder told S&BP, the system is designed for "in-theater use



at pop-up or mobile labs." The technology can also be used at hospitals, airports, and other locations where electrical power is available. Gunn described the power requirements as "basic," and the instrument is equipped with a power converter that can generate the correct voltage from a number of inputs.

Genalyte's Maverick Detection System uses silicon photonic technology. (Genalyte)

With the Maverick Detection System, Ebola testing occurs while blood is flowing over a silicon chip. "There's no mixing, measuring, or adding of particles," Gunn added. Whereas other immunoassay formats

require fluorescent, luminescent, or radioactive labels, Genaltye's Maverick Detection System measures wavelength resonance shifts to perform label-free detection of protein binding events. In other words, the silicon chip is coated with antibodies that bind to the proteins in the Ebola virus.

Each chip costs approximately \$10 and can process two samples. Users can perform one Ebola test at a time, or load blood samples onto multiple silicon chips. This facilitates the "rapid screening of large groups of people," Gunn said, such as airplane passengers or medical personnel. System features include a monitor, keyboard, and mouse. The Maverick Detection System also includes FDA Part 11 compliant software with traceability and data integrity.

Importantly, Genalyte's detection device also provides multiplexed testing, a key feature in both Africa and, now, the U.S. By testing for "an entire portfolio of pathogens at once," Gunn explained, medical personnel can avoid misdiagnoses. Otherwise, a patient in Africa may suffer from both

Ebola and malaria, receive medical treatment only for malaria, and then return to a home village where the Ebola virus then spreads. The Maverick Detection System performs what Gunn called a "battery of tests," including malaria, dengue fever, Lassa fever, and Ebola.



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Small Footprint, Large Reaction Volume

The Ebola virus isn't new, but the global epidemic has led to new applications for existing detection technologies. Lyle L. Probst, president of PositiveID, once directed biodetection programs at Lawrence Livermore National Laboratory and managed a series of biodetection initiatives for the Department of Homeland Security (DHS). A principal developer of the BioWatch mobile laboratory, he also managed the Bioagent Autonomous Networked Detector (BAND) program for the DHS Science and Technology Directorate.

As Probst told S&BP, PositiveID's Firefly Dx biodetection device is a handheld version of an 800-pound instrument that was developed as part of the BAND program and deployed in Boston, MA, both at the harbor and in the metro. The Firefly, however, neither incorporates air collection nor runs continuously on 30-day service cycles when the reagent is replaced. Although the portable detector's footprint is much smaller, "the chemistry is identical," said Probst. Moreover, the real-time PCR that the Firefly uses is the "industry's gold standard" and what the CDC trusts for its own assays.

PositiveID's "sample in, results out" device is designed for the "unskilled user," Probst added. First, the tester inserts the sample into the cartridge. Next, the nucleic acid is exposed and purification occurs.



In the chamber, the sample is mixed with the PCR reagents. "You get the same number of cycles and the same reaction volume as with laboratory equipment," Probst said, "but you get results in a matter of minutes instead of hours." Finally, the test taker can either read the results on an optional display, or transmit them via Bluetooth or wireless communications to an operations center.

PositiveID's Firefly technology is a handheld version of an 800-pound instrument. (PositiveID)

The Firefly is powered by a rechargeable battery that Probst compared to the powerplant for a cellphone. "Typically, users carry around a few batteries," he added, and then replace them as

necessary. The portable detector also has an adapter so that users can connect to a wall outlet when plug-in power is available. Although the Firefly is designed for field use, it's not yet ruggedized for military applications. According to Probst, PositiveID plans to "military harden" the Firefly, conduct field trials next summer, and begin production by the end of 2015.

Product Evaluation and Procurement

Like some industry analysts, Probst expresses skepticism towards claims by companies that boast of creating faster, cheaper Ebola detectors. "We have a track record," he said of PositiveID, and "we don't rush to market." BioFire Defense, Chembio Diagnostic Systems, and Genalyte can also point to past successes that could help predict future results. In what may soon be a crowded marketplace, however, buyers will have to look beyond the



www.cbrne-terrorism-newsletter.com

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headlines and make procurement decisions not just about the Ebola Zaire virus, but about the next epidemic that is sure to come.

This article originally appeared in the Winter 2014/15 issue of CST & CBRNE Source Book and Security & Border Protection magazine.

Steve Melito is the Editor of Security & Border Protection magazine.

Ebola infection of humans linked to population density and vegetation cover

Source: http://www.medicalnewstoday.com/articles/288355.php?tw

Jan 22 – Ebola is a "zoonotic" disease: the virus starts out in animal populations - believed to be fruit bats - and then spills over into humans. Now, a new study that investigates landscape features of where spillover occurs suggests human population density and vegetation cover may be important factors.

The study is the work of two researchers from SUNY Downstate Medical Center in Brooklyn, NY, who write about their findings in the openaccess journal *PeerJ*.

First author Michael G. Walsh, assistant professor of epidemiology and biostatistics in SUNY Downstate's School of Public Health, says they found significant interaction between density of human populations and the extent of green vegetation cover in the parts of Africa that have seen outbreaks of Ebola virus disease (EVD).

However, he also warns that because of the observational nature of the data, the study cannot prove that the specific pattern of interaction between human populations and forested land causes the spillover of Ebola from animal reservoirs into humans. The most it can do is suggest that they may help it along. We first got to know about EVD in 1976 when it broke out in today's Democratic Republic of the Congo and South Sudan. Since then, there have been 24 outbreaks of EVD in 10 countries in Central and West Africa.

Due to its high rate of fatality - ranging from 32-90% - EVD causes fear and disruption when it strikes. "Never has this been more apparent than during the 2014 EVD outbreak in West Africa, which is currently underway," write the authors.

The current outbreak in West Africa is the largest EVD event ever documented. The latest

EVD case counts from the Centers for Disease Control and Prevention (CDC) show there have been 21,689 lab-confirmed cases and 8,626 deaths from the disease in the three worst affected countries: Guinea, Liberia and Sierra Leone.

EVD spillover tied to interaction between human population density and forestation

For their study, the authors used precise geolocations of where EVD had spilled over from animals into humans in West and Central Africa. They applied what they call an "inhomogeneous Poisson process model" to the locations.

Even after accounting for other potential influencing factors, such as climate and altitude, the analysis showed that while population density was strongly associated with spillover from animals to humans, there was significant interaction between population density and green vegetation cover.

In locations where human populations were sparse, increasing vegetation cover was linked to a decrease in risk of spillover. But as human population density increased, increased vegetation cover was linked to increased risk of spillover of EVD from animals to humans.

Prof. Walsh comments on what they found:

"The reservoir species of the Ebola virus is believed to be fruit bats, with a secondary source being non-human primates. As human populations increase and move into forested areas that are home to these animals, the risk

of humans contracting EVD appears to increase, judging from our analysis of EVD outbreaks in Central and West Africa."



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Toxic Ebola protein fragment identified

Source: http://www.medicalnewstoday.com/releases/288374.php?tw

Jan 22 – William Gallaher, PhD, Emeritus Professor of Microbiology, Immunology & Parasitology at LSU Health New Orleans School of Medicine, has discovered a fragment of an Ebola virus protein that is toxic to cells and may contribute to infection and illness. The findings were published online in the open access journal, *Viruses*.

The fragment was found within a grouping of amino acids that is made in parallel with the protein involved in attachment of the virus to cells. Called the "Delta peptide," it has been shown recently to block the Ebola virus from attaching to already-infected cells. The new findings suggest that Delta peptide possibly functions by changing membrane permeability. Following his discovery, Dr. Gallaher contacted Robert Garry, PhD, Professor of Microbiology and Immunology at Tulane University School of Medicine, a longtime collaborator, to produce a structural model and potential mechanism of action. The results of that modeling work were fashioned into a manuscript that was subjected to rigorous peer view by experts in the field and are being made public only after acceptance into a special issue on "Advances in Ebolavirus, Marburgvirus, and Cuevavirus Research 2014-2015" in Viruses.

Although preliminary studies using synthetic peptides have confirmed the potential of the fragment, its specific role and potency in its natural environment within Ebola virus-infected cells are yet to be determined. However, Dr. Gallaher and his colleagues have determined how to deactivate the toxic properties of the Ebola protein fragment in the laboratory environment. He and his colleagues are also developing inhibitors of the toxic mechanism, which may ultimately be useful as drugs, should a role for Delta peptide in Ebola virus disease become established by future studies.

According to the Centers for Disease Control and Prevention (CDC), the 2014 Ebola epidemic is the largest in history, affecting multiple countries in West Africa. Two imported cases, including one death, and two locally acquired cases in healthcare workers have been reported in the United States. As of January 16, 2015, the CDC and World Health Organization report 13,510 laboratoryconfirmed cases and 8,483 deaths worldwide.

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Reference: Gallaher, W.R.; Garry, R.F. Modeling of the Ebola Virus Delta Peptide Reveals a Potential Lytic Sequence Motif. Viruses 2015, 7, 285-305

Pathogens and Global Health asks: what is the cost of an Ebola case?

Source: http://www.medicalnewstoday.com/releases/288458.php?tw

Jan 26 – In a recently-published article in *Pathogens and Global Health*, public health economics experts from John Hopkins University make the first attempt at accurately quantifying the total costs of an Ebola case, suggesting that the current epidemic in three of the worst-hit African countries has, to date, cost over US\$82 million, and possibly much more.

As the recent outbreak of the Ebola virus in West Africa continues to grow, an unanswered question is what is the cost of a case of Ebola? Sarah M Bartsch, Katie Gorham and Bruce Y Lee of the Johns Hopkins Bloomberg School of Public Health, developed a mathematical model to estimate 'The cost of an Ebola case' from provider and societal perspectives in the three most affected countries of Guinea, Liberia, and Sierra Leone.

In their study, the authors took into account the costs of supportive care (based on symptoms), personal protective equipment, personnel wages, and productivity losses for absenteeism

and mortality. Their model estimates that the total societal cost of an Ebola case with full recovery ranges from \$480 to \$912, varying by age and



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country, while that of an Ebola death ranges from \$5,929 to almost \$19,000, due in a large part to the loss of productivity that results from a death. They concluded that, as of 10 December 2014, the estimated total societal costs of all reported Ebola cases in these three countries range from \$82M to potentially over \$356 million.

In the article, the authors discuss how this compares with the cost of other disease outbreaks, such as measles, cholera, malaria and meningococcal meningitis, and whether an Ebola case has more impact than a case of these other diseases. Understanding the cost of a single disease case is critical to efficiently developing strategies to prevent or mitigate the effects of future cases and outbreaks - not only budgeting and planning for future epidemics, but also individual cases and periodic smaller outbreaks. This research is critical to understanding how the current epidemic undermines the resilience of already fragile health responses to other diseases. In this context, and in the near future, it will be of great value to review the incidence of infectious diseases in this region. The research suggests far-reaching and long-term effects on health systems in the region, and in a Western context, it helps plan budgeting for the significant aid that may be required to assist these countries. In the context of Ebola and other epidemic outbreaks, this research significant implications for enabling has decision makers to plan more effectively and budget for responses, policies, treatments, surveillance, and other interventions for the Ebola virus disease - which are being rapidly developed in response to the current situation in West Africa.

▶ **Reference:** The cost of an Ebola case, Sarah M. Bartsch; Katie Gorham; Bruce Y. Lee, *Pathogens* and *Global Health*, DOI: 10.1179/2047773214Y.0000000169, published January 2015.

Ebola – Another Opportunity to Plan & Prepare

By Robert C. Hutchinson

Three previous public health articles in the November 2013, March 2014, and July 2014 issues of the *DomPrep Journal* broadly examined serious pathogenic threats that are emerging and evolving around the world to assess preparedness levels before their possible arrival in the United States. Not long after the delivery of the July 2014 issue, the discussion of U.S. preparedness for a serious novel pathogen became more than academic. The Ebola virus arrived in the United States within both expected and unexpected international travelers from West Africa – stressing again the great benefits and challenges of trade and travel in an ever-expanding globalized economy.

The arrival of Ebola and several other serious viruses in the United States provides another opportunity to evaluate strategies, policies, plans, procedures, and agreements through a whole-of-community or multisector approach. The strong public reaction and evolving policy response to the arrival and treatment of the Ebola virus demonstrates there is room for improvement in many diverse public and private sector organizations. Lessons have been learned and procedures have been modified to address a novel public health threat. The greater challenge may be to truly translate the lessons into tangible planning and preparedness achievements beyond the last serious novel pathogen arriving on U.S. soil.

Source: http://www.domesticpreparedness.com/pub/docs/DPJJanuary15.pdf

Robert C. Hutchinson is a supervisory special agent (SSA) with the U.S. Department of Homeland Security, U.S. Immigration and Customs Enforcement's Homeland Security Investigations in Miami, Florida. He was previously the deputy director and acting director for the agency's national emergency preparedness division. SSA Hutchinson's writings often address the important need for coordination and collaboration between the fields of public health and law enforcement. He



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received his graduate degrees at the University of Delaware in public administration and Naval Postgraduate School in homeland security studies.

Scientists ask if Ebola immunizes as well as kills

Source: http://www.reuters.com/article/2015/01/27/us-health-ebola-asymptomatic-idUSKBN0L00R2201 50127

Jan 27 – A recent sharp drop in new Ebola infections in West Africa is prompting scientists to wonder whether the virus may be silently immunizing some people at the same time as brutally killing their neighbors.

So-called "asymptomatic" Ebola cases - in which someone is exposed to the virus, develops antibodies, but doesn't get sick or suffer symptoms - are hotly disputed

among scientists, with some saying their existence is little more than a pipe dream.

Yet if, as some studies suggest, such cases do occur in epidemics of the deadly disease, they may be a key factor in ending outbreaks more swiftly by giving secret protection to those lucky enough to be able to bat the infection away.

"We wonder whether 'herd immunity' is secretly coming up - when you get a critical mass of people who are protected, because if they are asymptomatic they are then immune," Philippe Maughan, senior operations administrator for the humanitarian branch of the European Commission, told Reuters. "The virus may be bumping into people it can't infect any more."

Latest World Health Organization data show new cases of infection in West Africa's unprecedented Ebola epidemic dropping dramatically in Guinea, Sierra Leone and particularly in Liberia.

Most experts are sure the main driver is better control measures reducing direct contact with contagious patients and corpses, but there may also be other factors at work.

So-called herd immunity is a feature of many infectious diseases and can, in some cases, dampen an outbreak if enough people get asymptomatic, or "sub-clinical" cases and acquire protective antibodies. After a while, the virus - be it flu, measles, polio - can't find non-immune people to be its hosts.

But some specialists with wide experience of disease outbreaks are highly skeptical about

whether this phenomenon happens in Ebola, or whether it could affect an epidemic.

"There is some suggestion there may be cases that are less severe... and there may even be some that are asymptomatic," said David Heymann, an infectious disease expert and head of global health security at Chatham House.

"But herd immunity is just the wrong term. There could be household immunity

developing, but even that is only hypothesis."

Others are more hopeful and are urging researchers in West Africa to seek out and test possible asymptomatic cases with a view to using the secrets of their silent immunity.

Steve Bellan of the University of Texas in the United States argues that if scientists can reliably identify asymptomatic people, they could help with disease-control tasks like caring for patients and conducting burials, reducing the number of non-immune people exposed in these risky jobs.

Bellan points to two studies in particular. One, conducted after an Ebola outbreak in Gabon in 1997, found that 71 percent of "seropositive" people - those with traces of the Ebola virus in their blood - did not have the disease. The other, published in April 2002, found 46 percent of asymptomatic close contacts of patients with Ebola were seropositive.

With the largest Ebola epidemic on record raging through three of Africa's most underresourced countries, scientists and medics have, understandably, focused all efforts on the sick and dying and not on testing people with no symptoms.

If they do, however, and if they were to find what Bellan and some others

suspect, it could prompt a reappraisal of what jolted a relatively sudden downturn in new cases.

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Some researchers say they have identified a few cases in the current outbreak with mild symptoms and low concentrations of Ebola virus in the blood. One was a Guinean student who traveled to Senegal and is not known to have infected anyone else, despite having contact with dozens of people.

lan MacKay, a virologist at Australia's University of Queensland, agrees that possible

sub-clinically-acquired immunity is one of many unexplored mysteries of the Ebola virus.

"One thing that this particular outbreak shows is that we really don't know an awful lot about these kinds of infectious diseases," he said. "We tend to think we can answer all the questions, but this is one of those things we may end up being taught by the virus itself."

EbolaEbola epidemic edding: WHO

Source: http://www.homelandsecuritynewswire.com/dr20150130-ebola-epidemic-ebbing-who

(Data up to 25 January 2015)

8622

8810

Deaths

Copyright World Health Organization (WHO), 2015

10 518

2917 1910

3686

3199

Jan 30 – The World Health Organization (WHO) has reported fewer than 100 new cases of Ebola in West Africa in the last week, which means the outbreak could soon reach its end. Some of the resources

8

20

10

10

0

4

Guinea

Liberia

Mali

Nigeria

Senegal

America

Total

United Kingdom

United States of

Spain

Sierra Leone

have been stopped by tracing and monitoring people who might have made physical contact with someone infected with the virus. Currently, only 50 percent of new cases in Liberia are from people who are known contacts of those

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The shift in tactics is occurring just as scientists in Guinea report that the virus is mutating, "We know the virus is changing quite a lot," human geneticist Dr. Anavaj Sakuntabhai told the BBC. "That's important for diagnosing (new cases) and for treatment. We need to know how the virus (is changing) to keep up with our enemy."

Researchers at the Institut Pasteur in France are now trying to track mutations that could make it easier or

allocated to building treatment centers for thousands of sick people are now being diverted to contact-tracing efforts. "Efforts have moved from rapidly building

Cases

infrastructure to ensuring that capacity for case finding, case management, safe burials and community engagement is used as effectively as possible," read the WHO's latest situation report.

The *Guardian* reports that all previous outbreaks, although on a far smaller scale,

could make harder for the virus to infect others.

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Viruses mutate to increase their chances of survival. With Ebola, there have been cases of people who were infected but showed no symptoms. "These people may be the people who can spread the virus better, but we still don't know that yet. A virus can change itself to less deadly but more contagious,

and that's something we are afraid of," Sakuntabhai said.



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The reduction in new Ebola cases will make it challenging to trial vaccines against the

safety concerns, but researchers claim the sixty human volunteers did not experience "as



Trials the disease. of vaccine by GlaxoSmithKline, were due to start among health and burial workers in Liberia, but the country only received four new cases last week. Sierra Leone had sixty-five new cases, while Guinea had thirty. The trial will compare the numbers of people who will become ill among vaccinated and unvaccinated groups of people. The New England Journal of Medicine recently published results from a second round of safety trials of the same vaccine conducted by Oxford University. The results showed no strong an immune system response to the vaccine as scientists would have liked."

"These results show that the vaccine has the potential to work, particularly in the people who responded strongly, but I have some doubts about its ultimate effectiveness as the vaccine moves into tests in Africa," said Dr. Ben Neuman, a lecturer in virology at the University of Reading.

Since the start of the epidemic, about 8,800 people have died out of the 22,000 Ebola cases reported in West Africa.

Ebola can be weaponized for bioterrorism in UK: Study

Source: http://www.presstv.ir/Detail/2015/02/01/395598/Weaponized-Ebola-could-be-used-in-UK

The Ebola virus could be weaponized to kill thousands of people in Britain, UK germ warfare experts have warned.

According to an investigation carried out at the **Defense Science and Technology** Laboratory at Porton Down in Wiltshire, there are three scenarios in which the virus could be weaponized for use in the UK, British media reports.

The study was conducted following a request by the government for guidance on "the feasibility and potential impact of a non-state actor exploiting the Ebola outbreak in West Africa for bioterrorism," The Mirror reported on Saturday.

Following the assessment which was carried out last October, the British government called

for the screening of passengers at Heathrow airport.

The results of the study have emerged in a redacted version edited by the Ministry of Defense (MoD) and show it would difficult for Ebola to be weaponized by terrorists without the backing of a government, implying the possibility of the bioterrorist act.

"This scenario would be logistically and ... technically challenging for a non-state group," read part of the redacted document about the first scenario.

"There are practical issues with such a scenario that of themselves are often not insurmountable but taken together add enormously to the complexity of successfully



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undertaking this attack," The Mirror excerpted in relation to the second scenario.

Regarding the third scenario the report said it would be very technically challenging.

The report was redacted by the MoD because it "contains details whose disclosure would prejudice the capability and effectiveness of our forces and safety of UK citizens." Ebola is a form of hemorrhagic fever, whose symptoms are diarrhea, vomiting, and bleeding. The virus spreads through direct contact with infected blood, feces, or sweat. It can be also spread through sexual contact or the unprotected handling of contaminated corpses.

EDITOR'S COMMENT: Just another title to attract reading audience while the content is full of "IFs"! It would be extremely helpful if we could read a study about the "airborne" potential of EBV. This could be the real threat!

New biosurveillance Web site offers comprehensive information on outbreaks, responses

Source: http://www.homelandsecuritynewswire.com/dr20150202-new-biosurveillance-web-site-offers-comprehensive-information-on-outbreaks-responses

Feb 02 – A new online resource, called the **Biosurveillance Gateway**, is in place at Los Alamos National Laboratory, **providing a**



centralized portal for all news, information, resources, and research related to biosurveillance at the laboratory.

"The goal of the site is to support global disease surveillance, providing useful tools developed at Los Alamos for professionals around the world to reference from a single location," said Alina Deshpande, the project's leader.

Biosurveillance, an emerging field of importance for national security, is the process of gathering, integrating, interpreting, and communicating essential information that might be related to disease activity and threats to human, animal, or plant health.

An LANL release reports that the site offers a variety of Los Alamos-developed biosurveillance tools that can be used for decision support in disease surveillance.

Examples of tools include sequence databases for HIV and viral hemorrhagic fevers such as Ebola, apps for contextualizing disease outbreaks based upon historical data, as well as advanced bioinformatics software packages. Continuing updates and expansions will occur over time, offering more tools and information for the technical audience, Deshpande said.



"The projected audience would be health professionals in the US and worldwide who need rapid reference materials

immediately at hand," said Deshpande, "so they can understand potential outbreaks and take related actions to help improve response times."

In addition, the Web site points to:

- Resources: Access to Los Alamosdeveloped biosurveillance resources
- Research: More about the latest biosurveillance research, capabilities and news at the Laboratory
- Outreach: Presentations and publications about biosurveillance

The team plans to expand the site's offerings in the near future, broadening the reach to include additional Los Alamos-developed tools and potentially those from national and international sources, as well as collecting relevant research papers that can help provide a deeper contextual reference.

"With this website and associated tools, we offer a capability to enhance situational

awareness and surveillance for infectious diseases worldwide, a major need that has been called out recently by experts in this field," said Deshpande.



Preparing for the Next Pandemic: What Will It Be?

By Margaret Steen

Source: http://www.emergencymgmt.com/health/Preparing-for-Next-Pandemic.html



The recent Ebola outbreak has spread both disease and worry, though it wasn't a pandemic. Still, it has raised interest in what the next pandemic might be — and what can be done to either stop it or prepare for it.

A pandemic is an infectious disease in human populations that has spread worldwide and affected many people in almost all countries, said Thomas Campbell, professor of medicine in the Division of Infectious Diseases at the University of Colorado School of Medicine.

"What we're talking about is the global spread of an infectious disease," he said. (This is why Ebola doesn't meet the definition; the cases are concentrated in just a few countries, with a few others having a handful of cases.)

The spread doesn't have to be fast for a disease to be considered a pandemic — HIV is a recent example of a slow-spreading pandemic — and the illness doesn't have to be deadly. "Severity is not part of the pandemic definition, but we are more concerned about the ones that are severe and have the most potential to cause death or harm," Campbell said.

What makes a particular pathogen dangerous? One factor is a prolonged incubation period or an asymptomatic phase. For example, most people don't know when they are first infected with HIV, so they can easily spread the illness before they experience any symptoms of it themselves.

Are pandemics increasing? It's not clear.

"We're at the most risk we've ever been for pandemics. We're doing so many things on the planet that cause them to emerge, and we're so connected to everywhere else," said Peter Daszak, president of the EcoHealth Alliance, a nonprofit focused on global health issues.

On the other hand, international travel has been happening for centuries, albeit more slowly than today, Campbell said. The introduction of smallpox by the Europeans into the Native American population is an example of a disease that spread that way.

"The difference between pandemics today and pandemics from centuries past is that now we have a much better scientific understanding of the factors that cause pandemics," Campbell said. "We're much more able to maybe not prevent the pandemic but to lessen the effects."

For example, he said, although the bubonic plague still exists and sickens some individuals, better living and sanitary conditions keep it from wiping out millions of people as it did in the Middle Ages. In addition, a strong public health infrastructure allows outbreaks to be identified and stopped early, and victims can be treated with antibiotics.

"It's a combination of knowing the science and having good public health and medical care," Campbell said.





It's not possible to know exactly what types of pandemics are in our future or when they will occur. However, it's possible to evaluate the most likely ways for them to originate and potential candidates.

There are two main kinds of pandemic, Campbell said. Some originate from an animal reservoir — there are infections that occur in animals that cross into people and then spread through the human population. This happens frequently with influenza, for example.

These diseases don't usually kill the animals that are their hosts. "From the pathogen's standpoint, it's not a good strategy to kill your host as fast as you can," said Robert T. Schooley, professor of medicine and head of the Division of Infectious Diseases at the University of California, San Diego.

But they can be deadly when they spread to humans.

"What is worrisome is that when there is that cross-species transmission, if humans haven't been exposed to it, there may not be any herd immunity," said Campbell. Herd immunity, in which some members of a population are immune to an illness, helps to slow its spread. The Spanish flu epidemic of 1918 is an example of a flu strain that rapidly spread around the world once it appeared in humans.

How do these viruses make the jump from animals to people? One common way is through the food supply or in the process of butchering animals for food.

"Pandemics generally originate in the tropical countries where there's a lot of wildlife diversity and human activity," Daszak said. For example, SARS (short for severe acute respiratory syndrome) came from bats and has probably existed in bats for a long time since it doesn't kill them. Eventually people got infected and it started to spread.

"Once a pathogen is able to go from human to human and it gets into a city, people get on planes and travel," Daszak said.

"There are lots of different animals out there, and they have lots of different viruses and bacteria," said Campbell. "And we don't know about all of them."

The second type of pandemic comes from a disease that exists only in human hosts. These are "less troublesome," Campbell said, because they're better known. "We're able to know about them and take measures like developing a vaccine to keep them from spreading."

The Candidates

What will the next pandemic be?

"If we knew what it would be, we'd be preparing for it," Schooley said.

Still, it's possible to consider some possibilities, with some more likely to pose a threat than others.

Measles and pertussis

Experts agree that although resistance to vaccinations has caused some outbreaks of these illnesses, they are not likely to cause a pandemic since we have vaccines and understand how to stop the diseases. "It would be very unlikely that that would become a pandemic as long as we maintain adequate vaccination rates," Campbell said.

Lower vaccination rates do carry some risk, though, both to the people who are not vaccinated and to the population as a whole, since a smaller fraction of the society will be immune, Schooley said.

Ebola

Ebola is not a pandemic today — "the vast majority of countries around the world have not had a single case," said Campbell — although it's definitely an epidemic in West Africa.

And it's not clear if Ebola is a strong candidate to cause a pandemic. "Ebola is not very smart: It causes an acute disease and kills a large fraction of its infected people," Schooley said. There is a very short period, perhaps none at all, when an infected person can transmit the disease but does not yet have symptoms.

"And once you get over it, it's gone," Schooley said. "It doesn't have a latent form that allows it to be in a human over long periods of time and get transmitted to other people who don't realize the person is a carrier." This makes it easier to halt the spread, especially when the disease is recognized early and the health-care system can respond.

Monkeypox

Monkeypox, a relative of smallpox, came to the United States a few years ago from Africa with some imported pets. "The outbreak got controlled, and



they banned the importation of rodents from West Africa," Daszak said. "But the big concern was, what if it had gotten into wild populations of groundhogs? That's really hard to get rid of."

Rift Valley fever

This fever, carried by animals such as antelope and sheep, can kill people. It can also be transmitted by mosquitoes. "If that gets into the United States, it's a virus that could persist in our animals and then be very difficult to eradicate," Daszak said.

Chikungunya

This virus is working its way through the Caribbean, and Schooley suspects it will be seen more often in the Southeast and eventually the Southwest of the United States. Like West Nile virus, it is carried by mosquitoes.

Dengue or malaria

Climate change may affect where pandemics can take hold. "Mosquitoes that used to be restricted to warmer climates are finding places where they can propagate more effectively," said Schooley.

This could lead to a resurgence of illnesses like dengue and malaria in places where they haven't been common.

Influenza

Flu pandemics happen when a new strain of flu — that people are not vaccinated against or immune to — enters the population. They have happened in the past, and "we can certainly expect" influenza pandemics in the coming years, Campbell said. In fact, this is one type of pandemic that has received a lot of preparation.

Unknown virus

It's quite possible, of course, that the next pandemic will be an illness no one has yet identified. The biggest threat, Daszak said, is a disease that is spread by mosquitoes or that can be transmitted through the air.

What to Do

What should those in charge of preparing for pandemics — including public health officials and emergency managers — be doing? Emergency managers are on the front lines for these sorts of events, Daszak said. "Pandemics are like any other threat or danger: It's all about managing risk and getting ready to deal with it when it happens."

One key is that management is a lot easier and more cost-effective at the beginning or even before the outbreak.

Looking at trends over the past 60 years to see where diseases such as West Nile virus, SARS and Ebola have emerged and how they have spread, some patterns become clear. "The primary drivers of pandemics are things that we do on the planet: chopping down forests, more intensive farming and increasing travel networks," Daszak said.

On a broader level, experts warn that actions people take now could increase the risks of, and from, pandemics.

For example, people build logging camps in tropical forests and send in workers, telling them they can hunt for their food. "We're effectively placing people right in the middle of a virus hot spot and telling them to go out and hunt wildlife," said Daszak. That's a classic way that previous pandemics have emerged.

The creation of more intensive farms, particularly for poultry, is another cause for concern, Daszak said. "To a virus, a very intensive chicken farm is just a big pile of protein waiting to be infected."

Of course, it's not necessarily practical to stop practices, from intensive farming to international travel, that could help pandemics emerge. "The truth is, this is what we do: We need food, we need to travel and have a trade network," Daszak said. "We should get ready for the risk and not just hope it doesn't happen."

For example, when companies build roads into a forest, they should also build a food supply chain to reduce the risk that workers will go hunting on their own.

And a good surveillance system in the healthcare system is crucial.

"We're much better prepared now to deal with pandemics than we have been in the past," Schooley said. Sophisticated microbiological techniques can identify organisms

we didn't previously know about. Improving the health-care systems, especially in parts of Africa, Asia and Central America 129

where new pathogens often originate, is another key to preparedness. The Ebola outbreak does show how important a good health-care system is in preventing the spread of a disease. When the current outbreak started, authorities initially believed it was cholera. The Ebola outbreak might not have reached the U.S. if the health-care system in West Africa had been more robust. Even in the U.S., when an early victim appeared in an emergency room, he was initially sent home.

Public and private organizations should have pandemic plans, said Bo Mitchell, former police commissioner of Wilton, Conn., and founder of 911 Consulting. The plan should be "evergreen," he said. "It doesn't matter what the virus is called."

Some of these plans may cover questions that were raised with the Ebola cases: How do you protect caregivers? Can health-care workers be forced to provide this care? Should they be guarantined?

Another key issue with pandemic planning is economics. "The economy has to keep on going," Mitchell said. Most cities do not have enough food to feed the population if a quarantine won't allow deliveries or employees to go to work for an extended period.

"We don't know what the next pandemic will be or where it will come from," Campbell said, "but we have to be prepared."

Margaret Steen is a contributing writer for Emergency Management magazine.

Less than half \$2.9bn Ebola money reached affected countries – UN study

Source: http://www.theguardian.com/world/2015/feb/04/less-half-ebola-money-un-study

Almost \$2.9bn (£1.92bn) was pledged by the end of 2014 in donations to fight west Africa's Ebola epidemic, yet only about 40% had actually reached affected countries, researchers have said.

A study by the UN Office for the Coordination of Humanitarian Affairs that tracked international donations showed barely \$1.09bn had reached the worst affected countries by the end of last year, they said.

"These delays ... may have contributed to the spread of the virus and could have increased the financial needs," said Karen Grepin, a global health policy expert at New York University who led the study and published it in the BMJ British medical journal.

The west Africa Ebola epidemic, the worst in history, has killed more than 8,800 people since it began more than a year ago, decimating already weak health systems in Guinea, Liberia and Sierra Leone. Its spread now appears to be slowing, especially in Liberia which now has just five cases.

Grepin analysed the level and speed of pledges made to fight Ebola and how they

aligned with estimates of funds required to control the epidemic.

She found not only that more than half of funds pledged by international donors had not reached the target countries, but also that global agencies had failed to reliably estimate the amount of money needed. While Guinea first informed World the Health Organisation of a "rapidly evolving outbreak" of Ebola on 23 March 2014, the first major international appeal was not until August, when

some \$71m was asked for.

By mid-September 2014, around six months after the epidemic started, the United Nations estimated \$1bn would be needed, only to raise that in November to an estimate of \$1.5bn.

"Clearly, international leaders have found it challenging to estimate the financial requirements to tackle this rapidly spreading outbreak," Grepin said in a

commentary about her findings. "The problem has not been the generosity of donors but that the

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resources have not been deployed rapidly enough."

UN Ebola chief, David Nabarro, said last month a further \$4bn – equivalent to all aid committed so far – was needed by relief agencies and authorities in the worst affected countries to end the epidemic, with UN agencies alone needing \$1bn of that to fund their part in the fight.

Measles outbreak raises questions about vaccination exemptions

Source: http://www.homelandsecuritynewswire.com/dr20150205-measles-outbreak-raises-questions-about-vaccination-exemptions



Map above charts the resurgence of diseases that were essentially eradicated in the U.S. (Source: http://mic.com/articles/85525/3-diseases-that-have-suddenly-made-a-comeback-thanks-to-anti-vaccine-truthers)

Measles	•
Mumps	•
Rubella	•
Polio	•
Whooping Cough	•
Other	•

Feb 05 – The recent measles outbreak has, again, forced to the surface an issue which refuses to go away: the alleged connection between vaccination and autism. The qualifier "alleged" should not, in truth, be used — "discredited alleged" should be used instead — because science has conclusively and indisputably shown that there is no such connection.

The notion that vaccinating children makes them more susceptible to autism gained credence in 1998, when a British physician, Dr. Andrew Wakefield, published an article in the respected medical journal *The Lancet* in which he claimed to have found a link between

measles-mumps-rubella (MMR) vaccine and autism.

Wakefield's article raised a storm – until it was found to be fraudulent. He wrote it for a simple reason: money. He was on the payroll of the plaintiff bar, and trial lawyers were hoping to use his "findings" to win millions for parents of autistic children – and hefty fees for themselves and Dr. Wakefield. He had also planned to launch a company which would perform "tests" which would "prove" that autistic children became autistic as result of vaccination.

Real scientists examined Wakefield's concocted "evidence" and found it to be a fake. In 2010 *The Lancet* withdrew the article and Wakefield lost his medical license.

Wakefield's fraud

Wakefield's assertions about the connection between MMR vaccine and autism ran into problems shortly after the publication in *The Lancet*, when other researchers could not reproduce his findings or confirm his hypothesis. Six years later, in 2004, a *Sunday Times* investigation found that Wakefield did not disclose to his



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co-authors or to *The Lancet* a financial conflict of interest relating to his research: Wakefield



had planned to launch a new business venture which would exploit the MMR vaccination scare created by his article. The venture would profit from medical tests, which his new company would offer, and "litigation driven testing," which his company would perform.

In the wake of the *Times*'s revelations, Wakefield co-authors withdrew their support for the study's interpretations.

Wakefield's problems were only beginning. The British General Medical Council (GMC) launched an investigation into how Wakefield and two of his former colleagues mistreated children with autism by subjecting them to unnecessary invasive medical procedures without the required ethical approval from an institutional review board.

On 28 January 2010, the GMC's investigative panel found that nearly forty misconduct charges against Wakefield were proven, including twelve counts involving the abuse of developmentally challenged children. The GMC panel ruled that Wakefield had "failed in his duties as a responsible consultant"; that he acted against the interests of his patients; and that he had conducted himself "dishonestly and irresponsibly" in his published research.

Acting on the GMC's findings, *The Lancet* immediately and fully retracted Wakefield's 1998 article, explaining in an editorial that elements of the manuscript had been falsified. Richard Horton, *The Lancet*'s editor-in-chief, said Wakefield's paper was "utterly false" and that the journal had been "deceived."

In May 2010 the GMC struck Wakefield off the Medical Register, explaining that Wakefield had employed deliberate falsification in *The Lancet* research. The GMC barred Wakefield

from practicing medicine in the United Kingdom.

In January 2011, an editorial in *BMJ*, the *British Medical Journal*, referring to an article in the same issue of *BMJ* by Brian Deer — the investigative reporter who wrote the 2004 *Sunday Times* report — explained that Wakefield's work was an "elaborate fraud."

In the following issue of BMJ, Deer laid out Wakefield's elaborate two-step hoax: the first step was to create an MMR vaccination scare by publishing fake "research" results which would show a connection between vaccination and susceptibility to autism; the second step was to create a medical testing company which would benefit from this artificially created scare (see Brian Deer, "How the vaccine crisis was meant to make money," BMJ [11 January 2011]).

In November 2011 *BMJ* published another article by Deer showing that Wakefield made false claims not only about the connection between MMR vaccination and autism, but also about the connection between MMR vaccination and bowel disease (see Brian Deer, "More Secrets of the MMR Scare: Pathology reports solve 'new bowel disease' riddle," *BMJ* [9 November 2011]).

2015 MMR vaccine debate

As the *Wall Street Journal* notes, the Web site of the American Academy of Pediatrics offers a list of more than forty scientific studies which thoroughly refute Wakefield's autism claims. "These studies do not show any link between autism and MMR vaccine, thimerosal [a preservative], multiple vaccines given at once, fevers or seizures," the AAP pointedly concludes.

The *Journal*'s editorial, titled "The Weird Vaccine Panic," chides leading Republican politicians like Senator Rand Paul (Kentucky) and Governor Chris Christie (New Jersey) for vacillating on the issue of vaccination so as not to offend vaccine-skeptics among Republican primary voters (the *Journal* correctly notes that right-wing GOP vaccine-skeptics share this skepticism with left-leaning organic-food-and-

yoga Democrats in places like Santa Monica and Beverly Hills). The *Journal* should have noted that while Paul and Christie merely vacillated on the issue of



vaccination and autism, other GOP politicians, such as former Representatives Dan Burton (Indiana) and Michele Bachmann (Minnesota) have confidently asserted that the vaccinationautism connection was scientifically proven (but then, so does liberal celeb Jenny McCarthy).

The recent outbreak of measles appears to have put the vaccine-skeptics on the defensive. L awmakers, healthcare officials, and parent groups are again debating whether states should make it easier or more difficult for parents to exempt their children from vaccinations.

The percentage of American children who obtained non-medical vaccine exemptions increased from 0.98 percent to 1.49 percent between 1991 and 2004. States with more lax exemption laws saw a higher increase, according to the *Journal of the American Medical Association*.

Lawmakers in California and Arizona, two of fourteen states suffering from the measles outbreak, are introducing measures which would require schools to publish their immunization rates. "Certainly the outbreak is prompting us to think about, are there additional steps we need to take as well?" said state Senator Richard Pan (D), a doctor who proposed the California bill. Supporters claim the bill would allow parents to know the



percentage of unvaccinated students on a campus, thereby letting them calculate their children's exposure to risk.

In Maine, where more than 200 children got sick last year from whooping cough, lawmakers

are looking to make opting out of vaccinations more difficult by making parents first consult a doctor. nurse, or physician assistant. Minnesota lawmakers are reviewing a bill which would allow parents to opt out of a child's vaccination if they obtained a signature from a healthcare provider and renew the signature as a child enters the seventh grade. According to Politico, public health officials and organizations are optimistic that this outbreak could be a turning point in the battle to discourage legislation which supports vaccine exemptions. Many have pointed to author Roald Dahl's letter, written twenty-four-years after the death of his seven-year-old daughter from measles in 1962.

The measles had turned into a terrible thing called measles encephalitis and there was nothing the doctors could do to save her. That was twenty-four years ago in 1962, but even now, if a child with measles happens to develop the same deadly reaction from measles as Olivia did, there would still be nothing the doctors could do to help her. On the other hand, there is today something that parents can do to make sure that this sort of tragedy does not happen to a child of theirs. They can insist that their child is immunized against measles.

> "I think we're all hoping that this will encourage ... people. particularly policymakers, to strengthen their vaccine laws and not weaken them and look very carefully at any exemptions they go to approve," said physician Georges Benjamin, head of the American Public Health Association. He added, however. that "there is no reason to believe it will be different."

Those who want to make vaccine exemptions easier are also hoping this outbreak will bring their case for parental choice to light. "This is an issue that affects

a minority population" of parents, said Dawn Richardson, director of advocacy at the National Vaccine Information Center, which advocates more parental choice.



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"Like any minority issue, it's a challenge to be heard."

Both supporters and opponents of vaccines agree on the dangers posed by a measles outbreak. "This virus is incredibly contagious," said Sandra Hassink, president of the American Academy of Pediatrics. "When measles was more common in the U.S., hundreds of children died from this virus every year."

Paul Jarris, executive director of the Association of State and Territorial Health Officials, believes the current measles outbreak will spark conversations about parents' responsibilities to their communities in terms of vaccination. "The effort is cumulative, of course, but I think this will be one more effort at strengthening those laws." "Measles is bad," Jarris continued. "It's more than just a little rash that kids get. I'm hoping that this episode once again demonstrates how we must be vigilant at all times."

The Centers for Disease Control and Prevention has tallied 102 measles cases in the United States. Last year, the country counted 644 infections in twentyseven states.

"As for Mr. Paul," the *Journal* concludes, "he will have to avoid these libertarian dormitory passions if he wants to be a credible candidate.... Let's chalk up the weird science of Messrs. Paul and Christie to a lack of information, and we're happy to send them 13 years of vaccine editorials if they want to study up."

Forensic Specialists Present New Analytical Strategies for Identification of Hoax Bioterrorism Powders

Source: http://www.selectscience.net/industry-news/forensic-specialists-present-new-analytical-strategies-for-identification-of-hoax-bioterrorism-powders/?&artID=36313

Specialists in forensic science will explain how Morphologically Directed Raman Spectroscopy (MDRS), a relatively new analytical technique for component-specific particle size and shape

analysis, can be used to analyze hoax powders used in bioterrorism attacks, at the American Academy of Forensic Sciences (AAFS) 2015 conference, February 16 – 25 2015, Orlando.

Dr Andrew Koutrakos will present research carried out with Dr Brooke Kammrath at the University of New Haven which shows how MDRS, as implemented with the Morphologi

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G3-ID from Malvern Instruments, can rapidly and reliably analyze unidentified white powders during forensic investigations. The paper is entitled "Forensic Analysis of Hoax Powders using Morphologically Directed Raman Spectroscopy", and will be presented at 11:00 on Friday February 20. Malvern will exhibit the Morphologi on booth #316 and experts will also be present to demonstrate how MDRS is performed.

The automated process involves just a few steps:



Hoax white powders often contain a variety of commercial substances, such as artificial sweeteners, flour and chalk. These may be detectable on the basis of variations in particle size and shape but also exhibit clear chemical differences which can be used to differentiate morphologically similar powders. The **Morphologi G3-ID MDRS** workflow combines the capabilities of image analysis for particle size and shape analysis with chemical identification by Raman spectroscopy, providing an efficient technique for this type of detailed analysis. More generally MDRS has a range of applications in forensics, providing non-destructive analysis that does not require contact with the sample, for rapid and reliable results.



Scientists just cracked the viral equivalent of the Enigma code

Source: http://www.washingtonpost.com/news/morning-mix/wp/2015/02/05/scientists-just-cracked-the-viral-equivalent-of-the-enigma-code/



Feb 05 – Peter Stockley is at war with the common cold. It's a wily adversary: a single, seemingly indecipherable strand of genetic material that lacks a brain or even a complete cell, yet somehow knows how to latch on to an unsuspecting respiratory lining and replicate itself, wreaking havoc on the immune system.

But now **Stockley, a professor at Britain's University of Leeds** (photo), thinks he has the upper hand. He has cracked the viral equivalent of the Nazi "Enigma code," which proved key to winning World War II: a genetic message embedded within the virus's RNA that tells it how to assemble new versions of itself during replication.

"Down at the kind of molecular level, this kind of biology is like molecular

warfare," Stockley told The Washington Post in a phone interview from his home in Leeds (where he happened to be battling a viral infection of his own). "And this code is a vital part of how the virus attacks."

Stockley's findings, which were published in the Proceedings of the National Academy of Sciences Wednesday, are the result of a collaboration between Leeds and the University



of York. The first breakthrough came in 2012, when Stockley and his team at Leeds published the first observation of how viruses are assembled.

Viruses consist of a strand of genetic information, RNA, encased in protein. Once they have attached to a host cell (in the case of a cold, those that line the lungs of their victim), they unspool their genetic contents and take control of the cell's machinery to churn out copied versions of the RNA strand and the protein shell it comes in. What happens next was documented for the first time in Stockley's report: The newly created proteins instantaneously fold the RNA up and encase it within themselves, as if by magic. In an essay for the Huffington Post, Stockley called the phenomenon viral assembly's "Harry Potter moment."

Stockley is a biologist, not a wizard, and he knew that the proteins must be getting instruction on how to "pack" the RNA from somewhere. The strands of RNA offered no guidance — the genetic material they contained appeared entirely benign (except for the whole infecting people part).

It took mathematician Reidun Twarock, a professor at the University of York, to crack the code: The instructions for assembly were right there among the mundane material of the RNA — but they only appeared once the RNA had been folded.



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(Courtesy of Peter Stockley)

Understanding the code — and finding a way to disrupt it — could lead to vastly improved treatments for a whole class of viral infections, not just the common cold but also polio, HIV, hepatitis C and the winter vomiting disease norovirus.

That's because viruses mutate so quickly that traditional treatments, like vaccines, aren't effective at teaching the body to recognize and combat them. A drug that scrambled the viral assembly code would preempt the body's immune response by disarming the virus before it can reproduce itself.

Stockley's team has done preliminary studies on a potential scrambling mechanism, but he warns that a cure for the common cold is still a long way off.

He should know — he's still got one himself.

Lack of Middle East Respiratory Syndrome Coronavirus Transmission from Infected Camels

Source: http://wwwnc.cdc.gov/eid/article/21/4/14-1949_article?utm_source=02%2F06%2F2015%3A +The+Role+of+Camels+in+MERS+Transmission&utm_campaign=ptyson%40upmc.edu&utm_medium= email#suggestedcitation

Hemida MG, Al-Naeem A, Perera RAPM, Chin AWH, Poon LLM, Peiris M. Lack of Middle East respiratory syndrome coronavirus transmission from infected camels. Emerg Infect Dis. 2015 Apr.

Cases of Middle East respiratory syndrome (MERS) in humans continue to be reported from the Arabian Peninsula and the Middle East. The largest number of cases has been reported by Saudia Arabia: 818 cases leading to 351

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deaths as of December 5, 2014 (1). The causative agent is MERS coronavirus (MERS-CoV), which is endemic to and ubiquitous among dromedary camels in the Arabian Peninsula and East and North Africa; seroprevalence among adult animals is typically >90% (2). MERS-CoV infection causes mild upper respiratory illness in dromedaries and remains detectable in nasal swab specimens for \approx 1 week (3).

To look for serologic evidence of MERS-CoV infection in humans extensively exposed to a herd of infected dromedaries, we assessed seroprevalence among persons in close contact with an infected herd of \approx 70 animals in Al Hasa, Saudi Arabia, during peak calving season, December 2013–February 2014 (4). The study was approved by the King Faisal University Research Ethics Committee.

The Study

The dromedaries were maintained in a fenced enclosure with barns. MERS-CoV was first detected in this herd on November 30, 2013; by December 30, of 11 sampled dromedaries, 9 were positive for viral RNA by reverse transcription PCR. The viruses isolated in November and December were genetically identical, suggesting ongoing transmission arising from introduction of a single virus (4).

In February 2014, serum samples were obtained from persons with various levels of exposure to camels. Persons were divided into 5 groups.

Group 1 comprised 4 herdsmen who were in daily contact with the infected herd (feeding, grooming, administering treatment when needed). They frequently consumed fresh unboiled milk from the camels, of which at least 1 dam and 7 calves were retrospectively confirmed to have been MERS-CoV infected (4).

Group 2 comprised 8 persons who had intermittent but regular (several times/week) direct contact with the infected herd (animal management, feeding, manure removal) and included veterinary staff and attendants. Because this herd was also used for veterinary teaching and research, animals were frequently handled for clinical examination and specimen collection. With the exception of disposable gloves, which were worn by the veterinarians during examinations, personal protective equipment (masks, gloves, eye protection) was not used.

Group 3 comprised 30 veterinary surgeons and clinical support staff working at the Clinical Research Center at the Faculty of Veterinary Medicine and Animal Resources, King Faisal University, Saudi Arabia, who were not exposed to the infected herd. This largest clinical veterinary center in southeastern Saudi Arabia also serves the adjacent countries of the United Arab Emirates, Qatar, Bahrain, Kuwait, and Oman. Camels from across Saudi Arabia and the Gulf states are brought to this research center. Although we did not conduct MERS-CoV testing on camels brought for routine clinical care, some animals may have been shedding MERS-CoV. Staff members came into daily contact with domestic livestock of all species, including dromedaries, of which at least 20 arrived daily for treatment. Disposable gloves were used for examinations, but no respiratory or eye protection was used.

Group 4 comprised 3 workers in a camel abattoir in Al Hasa, where 25–35 camels were slaughtered daily. These workers did not wear personal protective equipment.

Group 5 comprised 146 persons in the same (AI Hasa) region who were not exposed to camels in their professional work. This group served as negative controls.

Serum from these 191 persons was tested for MERS-CoV antibodies by using a pseudoparticle neutralization assay that has been previously described, validated, and demonstrated to be at least as sensitive as microneutralization assays (5,6). Evidence of a >50% reduction of signal was also sought as a more sensitive signal of neutralization, which would have been further confirmed in virus plaque neutralization assays.

Of the 191 human serum samples tested, none had serologic evidence of infection, even when a 50% reduction in luciferase signal was used as the threshold for suspected antibody (including those in groups 1 and 2 who had repeated close contact with the infected herd through December 2013). The virus infecting the herd was genetically similar to viruses that had previously infected humans.

including in the amino acid sequence of the virus spike protein (4). We previously demonstrated that MERS-CoV 137

from this infected herd had the capacity to efficiently infect ex vivo cultures from the human respiratory tract (7). These findings imply that group 1 and 2 members were repeatedly exposed over at least 1 month to dromedaries shedding a virus that was potentially competent to infect humans.

Conclusions

We conclude that MERS-CoV was not highly transmissible from dromedaries to humans with various levels of exposure to this infected dromedary herd. Two other studies have reported lack of serologic evidence of MERS-CoV infection among persons with various levels of exposure to dromedaries (*11,12*), but neither study documented MERS-CoV infection in the relevant animals. Studies of MERS-CoV RNA prevalence in nasal swab specimens from dromedaries in the field or abattoirs have found rates of 0%–15% (by PCR) among adults and 35% among calves (1 study) (*4,8–10*).

A study limitation is that precise events of individual-level human exposure to infected animals cannot be ascertained because different animals were infected at different times over the 1-month period. The timing of serum collection (4–6 weeks after putative exposure) from persons exposed to the infected herd was optimal in terms of detecting a serologic response. However, data on antibody titers after asymptomatic or mild MERS-CoV infections are limited, and our conclusion about lack of human infection must be subject to that caveat.

Our findings do not imply that dromedaries are not a source of infection for humans. Spillover infection of humans may be more common in other settings in which humans are exposed over sustained periods to animals among which virus prevalence is higher. For example, animals from diverse origins with varying immune status that are housed together in abattoirs before slaughter may provide opportunity for virus amplification and persistence, analogous to that seen with avian influenza virus in live poultry markets (13). Our study period (December–February) was timed to coincide with the calving season. However, human cases seem to peak during April–June, although this peak may be skewed by clusters of human-to-human transmission. Future longitudinal studies of dromedaries should be of longer duration.

Our finding that MERS-CoV is poorly transmissible from dromedaries to humans compatible with observed is the epidemiology of MERS-CoV infection in humans, in which human disease is not directly proportional to potential exposure to a virus that seems to be common in dromedary camels. Infections in dromedaries in settings such as abattoirs are regularly documented; thus, the numbers of humans exposed to virus-infected animals must greatly exceed the number of humans with diagnosed MERS-CoV infection. Conversely, some persons seem to acquire infection with apparently minimal or no apparent exposure to camels, even when secondary transmission from other infected humans is excluded. This setting is analogous to that observed for avian influenza (H5N1) virus, in which the virus can be ubiquitous in live poultry markets in some settings but human infection and disease remain stochastic and rare (i.e., not directly proportional to exposure) (13). The biological basis for such an epidemiologic pattern remains obscure for both viruses, avian influenza (H5N1) and MERS-CoV, but the heterogeneity of host susceptibility is a hypothesis to be explored (7, 14).

Further studies on the mechanisms by which MERS-CoV is transmitted from dromedaries to humans, whether by direct or indirect routes, and the heterogeneity of human susceptibility to this virus are needed.

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References are available at source's URL.

Dr. Hemida is an assistant professor of molecular virology at King Faisal University, Saudi Arabia. His primary research interest is virus-host interactions and the molecular biology of coronaviruses.



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Ebola Exposure Mishap the Latest in Chain of CDC Laboratory Safety Lapses

By Amanda Vicinanzo (Senior Editor)

Source: http://www.hstoday.us/single-article/ebola-exposure-mishap-the-latest-in-chain-of-cdc-laboratory-safety-lapses/b0f8309b9316643b5341b6924fb1f8c4.html

The ability of the Centers for Disease Control and Prevention (CDC) to safely handle the world's deadliest pathogens was recently called into question after a biosafety accident that could have resulted in a CDC laboratory worker's exposure to



the Ebola virus. But CDC says it's made significant process in addressing the problems that could have exposed workers.

"CDC has made real progress over the past year to improve laboratory safety, but we have more to do," CDC Director Tom Frieden said in a statement. "Our scientists will continue to work to make the agency a model not only of laboratory excellence but also of laboratory safety."

On December 22, 2014, staff from CDC's Viral Special Pathogens Branch were conducting an animal-model study of the Ebola virus in a biosafety level 4 lab in Atlanta. The study involved taking two oral swabs daily from each of the study animals and then placing the swabs in two sets of tubes—one for live-virus studies and one for inactivated samples. The tube for the live-virus studies was inadvertently sent to a lower level lab instead of the tube with the inactivated samples. The following day CDC scientists discovered the mishap and reported the incident to leadership. A team of CDC laboratory scientists conducted

> an internal investigation of the incident. Although no illness resulted from accident, the report indicated the incident "highlights the need for continued improvements in laboratory safetv practices across the agency." CDC pointed to a number of underlying causes behind the incident including lack of a centralized point of contact for laboratory safety, lack of project oversight and day-today leadership continuity and failure to implement recent laboratory safety enhancement requirements, such as filling out a Material Transfer Certificate prior to transferring anv material from hiah containment laboratories to

lower biosafety level laboratories. However, the overriding cause behind the incident was lack of a written study plan that had been approved by a supervisor—a problem that has been behind other dangerous CDC safety mishaps in the past.

To improve lab safety practices, CDC said it's crucial that appropriate lab safety procedures are followed and that laboratory safety practices are continually improved.

CDC also plans to establish a new office of the Associate Director for Laboratory Science and Safety. The new position will report to the CDC

director and have responsibility to provide agency-wide leadership and accountability for laboratory science, safety and quality.

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CDC indicates that, "Moving forward, this individual will engage leadership from high containment laboratories both within and outside of CDC to gather lessons learned and establish practices and standardization across CDC that can directly and effectively enhance laboratory safety."

This is not the first time the CDC's laboratory safety practices have been called into question. *USA Today* reported last year government reports uncovered more than 1,100 laboratory incidents involving bacteria, viruses and toxins that pose significant or bioterror risks to people and agriculture were reported to federal regulators during 2008 through 2012.

Moreover, in early 2014, CDC crosscontaminated a benign strain of bird flu, H9N2, with a deadly one, H5N1. The contaminated specimens were sent to a US Department of Agriculture lab, which discovered the contamination issue after chickens in their research became seriously ill and died.

Similarly, in June, *Homeland Security Today* reported that approximately 75 Atlanta-based CDC staff were unintentionally exposed to live Bacillus anthracis—a bacteria that can cause severe infectious disease— "after established safety practices were not followed."

The incident occurred in a biosafety level 3 laboratory at CDC where the laboratory used a procedure that may not have adequately inactivated the B. anthracis samples. The samples were sent to lower biosafety level laboratories for experimentation where the proper protective equipment for handling infectious samples was not used, since the researchers were unaware that the samples may not have been inactivated.

Like in the Ebola exposure lab mishap, CDC determined the scientists' failure to follow an

approved, written study plan that met all laboratory safety requirements led to dozens of employees being potentially exposed to anthrax.

In addition, the report also found that there was a lack of standard operating procedures to document when biological agents are properly inactivated in laboratories.



BSL-3

BSL-4

In the after-action review, CDC commented that "This is not the first time an event of this nature has occurred at CDC ... At the time of this writing, CDC is aware of four other such incidents in the past decade."

Although the review of the incident determined it was unlikely any workers were exposed to B. anthracis, CDC concluded that, "response to the incident should have been better organized from the outset" and "this was a serious and unacceptable incident which should never have happened."

During a congressional hearing last year, Frieden said, "With the recent incidents, we recognize a pattern at CDC where we need to greatly improve the culture of safety. What we're seeing is a pattern that we missed, and the pattern is an insufficient culture of safety."

But with the recent Ebola exposure incident, CDC's pattern of laboratory safety mishaps continues.

PathoMap: NY subway shelters bubonic plague, anthrax, 600+ unknown organisms

Source: http://rt.com/usa/229831-ny-subway-microbe-dna/

Scrutinized trashcans and handrails of New York's subway infrastructure reveal that the system houses potential threats to health, such as yet-unstudied microorganisms, accompanied by more common bacteria leading to meningitis or food poisoning. The majority of the microbes inhabiting the New York City subway system are harmless, but in several parts of the city samples of disease-causing bacteria can be found,



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estimated at 12 percent. These include drug-resistant species, or even DNA fragments of anthrax and Bubonic plague, both, however, at very low levels and likely not alive.

What's more, nearly half (48 percent) of the sequences of DNA that had been collected couldn't be identified by the National Center for Biotechnology Information or the Centers for Disease Control and Prevention.



Pathomap - a molecular portrait of New York City



The results of an ambitious year-and-a-half-long project, demonstrated by an interactive *"pathogen"* urban map, were published by New York's Weill Cornell Medical College researchers in the journal Cell Systems on Thursday.

Detected bacteria were related to the most commonly associated body parts

According to the study's senior investigator, Christopher Mason, repeated "PathoMap" sampling could be used for "long-term, accurate disease surveillance, bioterrorism threat mitigation, and large scale health management for New York".



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"Our data show evidence that most bacteria in these densely populated, highly-trafficked transit areas are neutral to human health, and much of it is commonly found on the skin or in the gastrointestinal tract," Mason said in a press release. "These bacteria may even be helpful, since they can out-compete any dangerous bacteria."



Heatmap of the **Pseudomonas genus**, the most abundant genus found across the city. Hotspots are found in areas of high station density and traffic (i.e. lower Manhattan and parts of Brooklyn).

"Despite finding traces of pathogenic microbes, their presence isn't substantial enough to pose a threat to human health," Mason added. "The presence of these microbes and the lack of reported medical cases is truly a testament to our body's immune system, and our innate ability to continuously adapt to our environment."

The researchers collected DNA samples using nylon swabs inside the trains, as well as in all open subway stations in 24 subway lines across the five boroughs – and even the closed South Ferry station, which was damaged by Superstorm Sandy in



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2012. They were also equipped with a specially designed mobile app, to log the data on precise time and location of each sample.



"We built maps that detail what organisms are present in each area of the city, creating a molecular portrait of the metropolis," said co-lead author Cem Meydan.

Volunteer swabbing for "genetic material"

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"We built maps that detail what organisms are present in each area of the city, creating a molecular portrait of the metropolis," said co-lead author Cem Meydan.

The international team of scientists also managed to find positive correlations between demographic data and human DNA samples found. They could trace the

density of population, as well as the ethnicity of the neighborhood. For instance, a Hispanic area near Chinatown in Manhattan *"appeared to hold a strong mixture of Asian and Hispanic human genes."* In 2013, New York City's subway system was used by an average of 5.5 million people per day, according to the city's Metropolitan Transportation Authority.



PathoMap module workflow. The PathoMap module aligns reads to the target library and removes any sequences that align to the filter library.

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"You wouldn't want to lick all the poles, even though you'd probably be fine," Mason told Gothamist blog. "Wash your hands and don't walk around with a gaping wound."

The study also has collaborators across the country, who have collected samples from airports, subways, transit hubs, taxis and public parks located in 14 states, including Texas and California. The scientists hope that sequencing of the DNA to be collected in the future, they will be able to compare the country's major urban areas.

Microorganisms comprise an important factor of human health, as there are 10 times as many microbes as human cells, and their function include resistance of various infectious diseases, regulation of metabolism and even obesity risk control.

Read more on PathoMap at: <u>http://www.cell.com/pb/assets/raw/journals/research/cell-systems/do-</u>not-delete/CELS1_FINAL.pdf

Visit PathoMap at: <u>http://www.pathomap.org/</u>

U.K. military examined feasibility, impact of terrorists using weaponized Ebola virus

Source: http://www.homelandsecuritynewswire.com/dr20150210-u-k-military-examined-feasibility-impact-of-terrorists-using-weaponized-ebola-virus

Feb 10 – At the height of the Ebola crisis in West Africa last year, British military experts were asked to investigate the feasibility and

likely impact of a an Ebola virus "weaponized" by terrorists.

The report was prepared last October, and the U.K. Ministry of Defense on Friday released a heavily redacted version of it. The report identified three potential scenarios of terrorists exploiting the Ebola virus for bioterrorism.

The Guardian reports that details of the first scenario are completely blacked out, as are most of details of the second scenario, which is described as "logistically and technically challenging for a non-state group to undertake."

The report adds: "Clearly there are practical issues

involved with such a scenario that of themselves are often not insurmountable but taken together add to the complexity of successfully undertaking this attack." The **third scenario**, the details of which are also mostly redacted, was described as the "most technically challenging." The guidance



be prepared, and whether it was senior civil servant or a minister. The report states, however, that it was sought after a phone conversation on "the feasibility of

was drawn up by the MoD's Defense Science and Technology Laboratory at a time when there was a growing concern about the spread of Ebola in west Africa, and a plan to test travelers at U.K. airports was being put in place. The Guardian notes that it is not clear who requested that

the

guidance
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a non-state actor exploiting the Ebola outbreak in West Africa for bioterrorism."

The document was released by the MoD on Friday after a Freedom of Information request. The MoD noted a number of exemptions which allowed the information to be redacted, including on the grounds that disclosure would prejudice the capability and effectiveness of the armed forces and public safety. Jennifer Cole, a senior research fellow at the Royal United Services Institute for Defense and Security Studies, said she was not surprised the report had been drawn up. "The U.S. and U.K. military have been carrying out research for some time into infectious diseases," she said. "The fact that vaccines are so far along in development is because of concerns that the U.S. has had about the virus being weaponized."

Read the documents mentioned at: <u>https://www.gov.uk/government/publications/foi-responses-released-by-mod-week-commencing-26-january-2015</u>

Use of Non-Pathogenic Biological Agents as Biological Warfare Simulants for the Development of a Stand-Off Detection System

Source:http://www.mastercbrn.com/uploads/various/20150203268718584_Paper_JMBT2..pdf

O. Cenciarelli, S. Pietropaoli, V. Gabbarini, M. Carestia, F. D'Amico, A.Malizia, M. Gelfusa, R. Pizzoferrato, A. Sassolini, D. Di Giovanni, F.M. Orecchio, L. Palombi, C. Bellecci and P. Gaudio. Microbial & Biochemical Technology. J Microb Biochem Technol 2014, 6:7, Volume 6(7): 375-380 (2014); ISSN: 1948-5948 JMBT.



Figure 2: Bacterial spore structure. From the inner to the outer: a) nuclear material and b) inner membrane constitute the core of the spore; c) cortex protect the spore from high temperature and maintain the core in a dehydrated state; an d) outer membrane divide the cortex from the e) protein coat, which is involved in germination and in conferring spore resistance to heat and chemical agents. Exosporium, a facultative external structure present only in some bacterial spores, plays a role in the protection of the spore and in its environmental interactions.

work, different BWA-S was evaluated for the application in the development and training of stand-off detection systems. This study is the basis for the use of simulants in the

Abstract

Development of new technologies for Biological Warfare Agents (BWA) stand-off detection implies several safeties. logistic and economic drawbacks that involve production of different highly virulent bacteria and viruses, their isolation and characterization under adequate bio-containment and sample preparation for each agent to evaluate the testing method. In order to overcome these difficulties most of the research activities and tests reported so far, are performed usina simulants: Biological (BA) Agents which are phylogenetically or structurally related to BWA. The use of the simulants (BWA-S) show. however, some limitations: they can share some of the properties of the biological warfare agents but have different antigens, proteome and genome. this In



development of an Ultraviolet Laser Induced Fluorescence (UV-LIF) based detection systems.

Immunovaccine Study Demonstrates Early Protection Against Anthrax with Single-Dose Experimental Vaccines

Source:http://www.domesticpreparedness.com/Industry/Industry_Updates/Immunovaccine_Study_Dem onstrates_Early_Protection_Against_Anthrax_with_Single-Dose_Experimental_Vaccines/

Feb 05 – Immunovaccine Inc. a clinical stage vaccine and immunotherapy company, recently announced that three different recombinant protective antigen (rPA) vaccines formulated with its novel DepoVax[™] enhancement technology protected animals against a lethal anthrax challenge after a single vaccination. The National Institutes of Health (NIH) led study demonstrates the potential of DepoVax as a universal enabler of single dose rPA-based anthrax vaccines.

The anthrax challenge study was designed to evaluate the early protection potential of single dose DepoVax/rPA vaccines. A very low dose of rPA that is known to provide partial protection in the rabbit model was used. This allowed a comparison of the potency of the various rPA vaccines formulated in DepoVax.

Rabbits were exposed to a lethal dose of the anthrax causing bacterial spores (B. anthracis) 28 days following a single vaccination. The DepoVax/rPA vaccines provided good protection to animals against anthrax with a single dose, protecting a total of 15 of 24 animals across the three different rPA sources. As expected, control animals injected with a saline solution all succumbed to the anthrax challenge. Animals given a placebo DepoVax vaccine with no antigen also succumbed to anthrax, demonstrating that

protection is mediated by the combination of DepoVax and rPA.

This study shows that DepoVax is compatible with multiple sources of rPA and can enable a single dose rapid response anthrax vaccine. We will be working to establish a path with an rPA provider to advance a DepoVax/rPA vaccine towards Phase I human clinical trials," said Dr. Marc Mansour, chief executive officer of Immunovaccine.

BioThrax® is the only FDA-licensed anthrax vaccine. However multiple immunizations of BioThrax are needed to provide the necessary protection against exposure to anthrax. Threedoses of intramuscular injections of BioThrax are indicated at 0, 1, and 6 months, followed by booster injections at 12 and 18 months. There is currently no licensed anthrax vaccine that can provide early protection with one dose.

Studies performed to date by the NIH were intended to evaluate Immunovaccine's DepoVax adjuvanting technology and advance the development of next generation biodefense vaccines. This latest study was conducted under the National Institute of Allergy and Infectious Diseases (NIAID) of the NIH's preclinical services program Animal Model of Infectious Diseases contract.

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About DepoVax[™]

DepoVax[™] is a patented formulation that provides controlled and prolonged exposure of antigens plus adjuvant to the immune system, resulting in a strong, specific and sustained immune response with the potential for single-dose effectiveness. The DepoVax[™] platform is flexible and can be used with a broad range of target antigens for preventative or therapeutic applications. The technology is designed to be commercially scalable, with the potential for years of shelf life stability.

About Immunovaccine

Immunovaccine Inc. develops cancer immunotherapies and infectious disease vaccines based on the Company's DepoVax[™] platform, a patented formulation that provides controlled and prolonged exposure of antigens and adjuvant to the immune system. Immunovaccine has advanced two T cell activation therapies for cancer through Phase I human clinical trials. Lead cancer vaccine therapy, DPX-Survivac, is expected to enter Phase II clinical studies in both ovarian cancer and glioblastoma (brain cancer), with Immunovaccine also



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exploring additional studies in other indications including lymphoma and recurrent ovarian cancer. The Company is also advancing an infectious disease pipeline including innovative vaccines for respiratory syncytial virus (RSV), anthrax and Ebola virus.



Free from Ebola, survivors complain of new syndrome

Source: http://in.reuters.com/article/2015/02/04/us-health-ebola-survivors-idINKBN0L81WA20150204

Romeo Doe, a 29-year-old tailor who survived Ebola in Liberia (photo), is struggling to cope



with the impact of a disease that killed seven members of his family and now threatens his livelihood.

Since he was released from an Ebola center in the capital Monrovia in November, **pressure is rising in his eyes and affecting his vision - a complaint some doctors say is common among survivors of the West African outbreak.**

There are a growing number of survivors of the disease in the region, between 5,000 and 10,000 according to the United Nations, and some complain of side effects months after their recovery - a condition some doctors are calling "post-Ebola Syndrome" (PES).

"Since I was discharged I have felt this pain in my eyes," said Doe. "They, as you can see, are red; they are hurting me. I want the government to help me get back on my feet." Ebola, which has killed almost 9,000 people across Guinea, Liberia and Sierra Leone, initially causes fever and vomiting, then attacks the immune system and vital organs, often causing internal and external bleeding. About 60 percent of Ebola patients have died in the current outbreak, typically from shock or organ failure.

Some of those who have survived the disease report a mixture of symptoms after their recovery, including vision problems, joint pain, hair and memory loss and anxiety attacks.

Margaret Nanyonga, a doctor who treated Ebola patients in the town of Kenema in Sierra Leone, said she had seen survivors go blind. Overall about half of those she saw recover reported declining health, she said.

Doctors say it is not yet clear how long the symptoms last. There is also no scientific literature or medical consensus on any new syndrome among West African survivors or how many people might be affected.

Dan Kelly, founder of the non-profit organization Wellbody Alliance and a doctor specializing in infectious diseases, says the situation can be complicated by poor medical records making it hard to separate any new symptoms from pre-existing conditions. Ebola, like many severe infections, may also weaken survivors and make other illnesses more likely. Kelly said some Ebola after-effects appear linked to the infection itself, with some patients developing symptoms similar to so-called autoimmune disorders - where the immune system is over stimulated and begins to attack the body's own tissues. Other patients develop symptoms similar to uveitis, he said, an eve inflammation causing blindness.

"With post-Ebola syndrome there is an autoimmune response: it's revved up, and we don't really know why," he told Reuters by telephone from Sierra Leone where he is helping with the Ebola response.

Neglect

When Korlia Bonarwolo left an Ebola treatment center in Monrovia last year, his blood was free of the virus but he had caught two other life-threatening



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diseases: malaria and pneumonia.

The 26-year old doctor's assistant blames his health problems on poor care, rather than complications related to Ebola infection. At the John F. Kennedy medical center in

Monrovia, draughts from the open-air corridors left him exposed, he says, while frightened

Symptoms of **Ebola** nurses threw him juice boxes which he was often too weak to retrieve.

Headache – Red Eyes –

- Pharynx and lungs - Hiccups
- Sore throat
- Difficulty breathing

Back

- Difficulty swallowing
- 07

Muscular - Aches

Systemic

Lack of appetite
Internal bleeding

- Fever

- Weakness

Joints —

- Aches

Intestines -

- Diarrhea

- Chest pain -- *Stomach*

- Pain - Vomiting
- *− Skin* - Rash - Bleeding

home, medical colleagues

shunned him and he had to insert his own intravenous drip. Six months afterwards he has fully recovered but, as president of a survivors' association, wants to ensure others get better support and health information.

"The questions survivors are asking about where they are going to be health-wise in the future deserve answers," Bonarwolo said at a survivors' meeting organized by the United Nations.

The outbreak is now ebbing, and the health ministry says there are fewer than 10 cases in the country, but even survivors with no worrying symptoms say it is hard to get back to normal life with so many unanswered questions about Ebola's impact.

One of the ongoing concerns relates to sexual health. Some female Ebola survivors say they have stopped menstruating. The virus can also remain in semen for months.

The links between Ebola and mental health disorders is also little understood. A friend of Bonarwolo's survived Ebola only to develop a mental illness afterwards.

Research window

Ben Neumann, a virologist at Britain's Reading University who studies Ebola and other viruses



and their effects, notes that Lassa virus, which comes from West Africa and causes a similar disease to Ebola, has also been reported as having longer-term health effects.

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"(Lassa) survivors often report signs of nerve damage such as loss of hearing," he told Reuters, adding that it would be "surprising that something as damaging as Ebola did not have lasting effects".

The current lack of knowledge about post-Ebola health effects is probably "due to Ebola being a rare virus that left few survivors before this outbreak", he said.

Some after-effects of Ebola have been reported in previous outbreaks since the disease was first detected in 1976, but past epidemics were smaller and often more deadly, meaning there were fewer survivors to generate interest to warrant research.

So this outbreak creates a unique opportunity to learn more.

Kelly agrees, and wants swift follow-up.

"We are at risk of missing the window," he said. "We need to start catching

survivors as they leave treatment centers."



Escherichia coli 0104:H4 outbreak in Germany-clarification of the origin of the epidemic

By Radosavljevic V¹, Finke EJ² and Belojevic G³

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Source: http://www.ncbi.nlm.nih.gov/pubmed/24736168



BACKGROUND – In 2011, Germany was hit by one of its largest outbreaks of acute gastroenteritis and haemolytic uraemic syndrome caused by a new emerging enterohaemorrhagic Escherichia coli O104:H4 strain. The German Haemolytic Uraemic Syndrome/Enterohaemorrhagic E. coli (GHUSEC) outbreak had unusual microbiological, infectiological and epidemiological features and its origin is still only partially solved. The aim of this article is to contribute to the clarification of the origin of the epidemic.

METHODS – To retrospectively assess whether the GHUSEC outbreak was natural, accidental or a deliberate one, we analysed it according to three published scoring and differentiation models. Data for application of these models were obtained by literature review in the database Medline for the period 2011-13.

RESULTS – The analysis of the unusual GHUSEC outbreak shows that the present official assumption of its natural origin is questionable and pointed out to a probability that the pathogen could have also been introduced accidentally or intentionally in the food chain.

CONCLUSION – The possibility of an accidental or deliberate epidemic should not be discarded. Further epidemiological, microbiological and forensic analyses are needed to clarify the GHUSEC outbreak.

Eur J Public Health. 2015 Feb;25(1):125-9. doi: 10.1093/eurpub/cku048. Epub 2014 Apr 15.



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Abu Dhabi man dies after contracting MERS coronavirus

Source: http://www.thenational.ae/uae/abu-dhabi-man-dies-after-contracting-mers-coronavirus

An expatriate has died after contracting the Mers coronavirus, the first reported case in the UAE in more than six months.



The 38-year-old man, who lived in Abu Dhabi, developed symptoms of the virus in December last year and was admitted to hospital last month after his symptoms worsened.

The patient was in critical condition and died in intensive care eight days later, on February 6, according to reports published on Thursday by the World Health Organisation.

Investigations are continuing to determine if the man had recently had any contact with camels. He had no chronic or long-term medical conditions and no history of exposure to other known risk factors in the 14 days before the onset of symptoms, the WHO said.

Dr Fanie Jute, the regional medical director for International SOS, a company of experts in global health issues, said the latest case showed how important it was to practise basic infection-control measures.

"This case is a reminder that everyone should always practise simple methods to help prevent contracting infectious diseases.

"Companies should continue to ensure that their employees are educated and prepared for any medical issues known in the countries they may be travelling to," Dr Jute said.

The Health Authority of Abu Dhabi did not respond to a request for comment on the most recent case.

The last known cases of Mers in the UAE were reported to the WHO on July 14 last year.

The first case was an elderly man who owned and had frequent contact with camels. The second case was identified on a farm where a camel tested positive for the virus.

Last month, international infections experts praised the actions of UAE health authorities in controlling the outbreak.

The Middle East Respiratory Syndrome, first identified in 2012, is a virus causing acute, serious respiratory illness with symptoms including fever,

cough, shortness of breath and difficulty breathing.

To date, the WHO has been notified of 977 laboratory-confirmed cases of infection, including at least 359 related deaths.

Affected countries in the Middle East include Egypt, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia and Yemen.

More than 85 per cent of cases have been reported in Saudi Arabia and the majority of victims have been male.

The WHO's emergency committee held a meeting last year calling on countries to strengthen their surveillance. The next meeting is due next month. The WHO encourages member states to continue their surveillance for acute respiratory infections.

The health body said infection prevention and control measures were critical in preventing the possible spread of the coronavirus in healthcare facilities.

Those with chronic conditions, such as diabetes, renal failure or lung disease or those with a weak immune system, should avoid close contact with animals, particularly camels,

when visiting farms, markets, or barn areas where the virus is known to be potentially circulating, said the WHO.

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Melioidosis treatment mechanism shows promise

Source: http://bioprepwatch.com/news/melioidosis-treatment-mechanism-shows-promise/340899/

Feb 12 – Soligenix presented preliminary data on Tuesday from trials of its potential treatment for melioidosis at the American Society of Microbiology (ASM) Biodefense and Emerging Diseases Research meeting.

SOLIGENIX The **treatment**, **SGC943**, acts as a strengthening mechanism for the host's immune system, rather than attacking the infectious agent itself. In mice, the compound was shown to be affective against a lethal strain of pneumonic melioidosis compared with subjects that received antibiotics alone.



This treatment falls under the company's line of innate defense regulator technology (IDR) and makes



the immune system of those who take the medicine more potent against infectious agents. The company said this method has been shown to be effective against bacteria that have developed resistance to most antibiotics on the market.

Melioidosis is considered to be among the top five priorities listed in the Public Health Emergency Medical Countermeasure Enterprise Strategy and is a Tier 1 biothreat, the National Institute of Allergy and Infectious Disease (NIAID) said.

The U.S. Centers for Disease Control

and Prevention classifies the bacteria as a category B bioterrorism agent. Symptoms include cough and other respiratory distress, chest pain, high fevers and drastic weight loss.



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Top Iraqi Scientist Visits Mason to Study and Present on Biorisk Management

Source: http://newsdesk.gmu.edu/2015/02/top-iraqi-scientist-visits-mason-study-present-biorisk-management/? utm_source=Mason+News&utm_campaign=97e837b74c-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_ term=0_3ec8f92cf1-97e837b74c-13413737

Mahdi Al Jewari, Visiting Research Fellow in the Biodefense Program and Head, Biology Department, Iraq National Monitoring Authority, Iraq Ministry of Science and Technology. Photo by Alexis Glenn.

Feb 13 – Mahdi al-Jewari arrived at George Mason University a few weeks ago to

learn as much as he can about the globally vital subject of biorisk management. His intention is to return home to Iraq and apply what he learned at George Mason to help keep his home country, and perhaps even the planet, safer from biological dangers.

As the head of the biology department of the Iragi National Monitoring Authority in the Iraq Ministry of Science and Technology, the Bioscience Fellow at Mason is on a mission to develop a program in Irag that will oversee the country's risks associated with infectious pathogens. He's being hosted by Mason's Biodefense Program in the School of Policy, Government, and International Affairs and is sponsored by CRDF Global, an Arlington, Va.-based nonprofit that international promotes scientific collaboration.

On Thursday, Feb. 19, al-Jewari will be the featured speaker in the first of a series of biodefense policy seminars on Mason's Fairfax Campus. The seminar is called "Global Biorisk



Management: The View from Iraq" and is open to the public. The program begins at 6 p.m. at Merten Hall's Room 1204 with light refreshments at 5:30 p.m.

"CRDF usually places scientists in laboratories, but they realized that they needed an organization that could help Mr. al-Jewari combine good science with smart policy," says Mason biodefense professor Gregory Koblentz. Mason was chosen as host because of the program's combination of education and research on biosecurity issues.

"Mr. al-Jewari will be working with biodefense faculty to conduct research on best practices in biosecurity and will have the opportunity to receive training in state-of-the-art biosafety practices," Koblentz says.

Iraq has had plans for a biorisk management system since 2008, but despite international aid, the program has not gotten off the ground.

"This is the first time in history for us we are dealing with biorisk management," al-Jewari says. "All the states in the world have to control biological agents. This is our main task, to control this material. This is important for us now."

March's biodefense policy seminar will feature David Christian Hassell, deputy assistant secretary of defense for chemical and biological defense. In April, Gary Ackerman, director of Unconventional Weapons and Technology Division of the National Consortium for the Study of Terrorism and Responses to Terrorism, will be the seminar guest.

How a method used to wipe out smallpox is making a comeback in the fight against Ebola

By Amy Brittain

Source: http://www.washingtonpost.com/blogs/worldviews/wp/2015/02/14/how-a-method-used-to-wipe-out-smallpox-is-making-a-comeback-in-the-fight-against-ebola/

Feb 14 – Scientists are launching tests of two experimental Ebola vaccines in West Africa. In one of the countries, Guinea, they are turning

to a method that helped wipe smallpox off the globe.



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In the 1960s, as smallpox raged across parts of Africa, Asia and South America, the leading global strategy was to vaccinate masses of people against the disease. Smallpox, which is caused by the variola virus, spreads by direct

contact or through droplets of saliva transmitted in a person's breath.

In Nigeria at about that time, a medical missionary named Bill Foege was faced with the challenge of containing a smallpox outbreak. He questioned of the strategy mass vaccinations and helped develop a different approach. It reflected his experience as a young

man fighting forest fires in the Pacific Northwest. The thought was pretty simple: A fire can't live without fuel or oxygen.

"And so you develop a ring around the fire," he said in a recent interview. If you created a ring of immunity - in this case, of vaccinated people around each smallpox The strategy also became known as the "ring vaccination theory" or "surveillance" or "targeted" vaccination. "The whole emphasis is not on protecting people en masse. It's on being so intelligent that you can out-think the virus ... and look at who is at risk and where the virus is," Foege said. "You protect those people rather than other people." The success was soon evident.

"What surprised us was how fast the smallpox stopped," Foege said. Within six months, the outbreak in Nigeria had been contained. Foege went on to lead the U.S. Centers for Disease Control and Prevention and later earned the Presidential Medal of Freedom, largely for his work in developing the theory of ring vaccination. The World Health Organization officially declared smallpox eradicated in 1980. It had killed, by some estimates, more than 300 million people in the 20th century alone.

Defeating smallpox "stands as one of the greatest accomplishments of the 20th century, if not one of the greatest human accomplishments of all time," two authors

From Global Scourge to 571 Lab Samples

Smallpox was back in the news this week, as the U.S. and Russia girded for international efforts to set a deadline to destroy the last known samples of the virus, kept in those two nations. They want to keep them for research to combat bioterrorism. Those who would destroy the samples want to send a moral message that possession of them is itself a crime against humanity. - Betsy McKay and Joe Shoulak

Circa 10000 B.C. Smallpox believed to emerge in humans. Earliest evidence: rash on mummy of Pharaoh Ramses V

A.D. 180 Roman Emperor Marcus Aurelius dies of smallpox, accelerating decline of empire.

1521 Spanish conquer Mexico after Aztecs weakened by smallpox spread by a slave brought from Africa.

The mummified remains of Ramses V, below, with a close-up of his mottled skin, possibly a sign of smallpox. At right, Marcus Aurelius

1636 Harvard College founded, followed by College of William and Mary in 1693 and Yale College in 1701. Smallpox in England prompted British colonists to educate their sons in the New World instead

1694 Virus kills Queen Mary II of England, then King Luis I of Spain in 1724, Tsar Peter II of Russia in 1730 and King Louis XV of France in 1774

1738 Up to half the Cherokee Indian population succumbs to smallpox, which was imported by European settlers.

1775-76 Multiple outbreaks in Continental Army: Continental troops forced to retreat from Quebec City after epidemic reportedly unleashed by British.

1796 First smallpox vaccine developed by Edward Jenner.

> Edward Jenner, left, and a

19th-century inoculating device



1967 WHO intensifies eradication campaign.

1977 Last natural case in world. 1980 WHO declares smallpox eradicated.

1984 Stocks of virus consolidated in two repositories in U.S. and USSR.

terrorists possess smallpox samples

1996 World Health Assembly agrees to destroy smallpox stocks. Fifteen years of hesitation and reprieve follow.

2011 World Health Assembly to decide in May whether to set deadline for virus destruction.

Sources: "Scourge: The Once and Future Threat of Smallpox, by Jonathan B. Tucker; WHO; CDC Photos: Getty Images (Ramses and syringe); AISA/Everett Collection (Aurelius); Everett Collection (Jenner); Associated Press (anthrax)

case — the disease could be wiped out much more efficiently, he believed. Foege and his team sent messengers into remote Nigerian villages and mapped out a plan to vaccinate people who had come into contact with infected patients.

wrote in the Journal of Clinical Medicine Research.

Of course, the Ebola epidemic in West Africa is completely different from the smallpox epidemic. Roughly 9,000 people have died



in the region since the outbreak began in Guinea in 2013, with a death rate of about 60 percent for those diagnosed with Ebola. Unlike smallpox, there is no proven vaccine.

The Ebola outbreak has significantly receded in recent months. That makes testing treatments and vaccines for Ebola more difficult, as scientists need a good number of cases to scientifically prove that any of these interventions work.

Officials from the World Health Organization plan to set up 190 "rings" in Guinea to test two experimental Ebola vaccines. That means that they need 190 Ebola patients, who make up the center of the rings. They plan to start the trial later this month.

A spokeswoman for the WHO, Daniela Bagozzi, said that Donald Henderson, who

directed the organization's Global Smallpox Eradication Program, has given advice for the ring vaccination plans in Guinea.

Health workers plan to identify new Ebola cases and then find the recent contacts of those patients, including family members, neighbors and co-workers. Half of the rings will be vaccinated immediately, while the other half will be vaccinated several weeks later. If the vaccines work, the immediate group would likely develop fewer cases of Ebola.

One person eagerly watching the developments is Foege, who is now 78 and lives in Washington State. "This is exactly what I've spent my life doing," he said, referring to his work with infectious diseases. "I know it can be stopped."

Amy Brittain is a reporter for The Post's investigative team.

The little-known Tulane Primate Center: What sort of research is done there, why; what's its future?

Source: http://www.theneworleansadvocate.com/news/11577906-172/the-little-known-tulane-primate-center

Feb 15 – From the ground, not much can be seen of the Tulane National Primate Research

landscaping and larger signs announce the primate center, but forbidding gates block

access to narrow lanes disappearing into the piney woods. 154

But view the center using something like Google Earth, and it's a different story. The full scope of the sprawling 500-acre complex is clear: Dozens of buildings form the main administrative and laboratory complex on the north side of Three Rivers Road, while the south side is

Center.

JLANE

TIONAL PRIMATE SEARCH CENTER

> A standard green sign on U.S. 190 directs motorists down narrow Three Rivers Road south of Covington and past a couple of apartment complexes. There, pleasant

laid out in a massive grid of cages that house enough monkeys to make the center the fourth largest municipality in St. Tammany

woods. But view th using so like Google

> rid of cages monkeys to purth largest Tammany

Parish — if those monkeys were a different primate.

Normally preferring to remain low-key and unobtrusive, center officials found themselves thrust into the spotlight Feb. 7 when a hastily called Saturday evening news conference featured parish, state and federal officials talking about Burkholderia pseudomallei, the bacterium that causes melioidosis, or Whitmore's disease.

Two monkeys at the center had been infected with the bacterium, which was supposed to be kept in strict quarantine in the center's lab. Then, an investigator sent to look into the infection reported symptoms consistent with the disease and checked herself into a hospital. Of the two monkeys, one had to be euthanized; the other recovered.

A news release Friday said subsequent tests on the investigator indicated that she probably was not infected while at the Tulane center.

Although center and local officials said they believed the risk to the public from Burkholderia pseudomallei was negligible, the federal Centers for Disease Control and Prevention ordered the primate center to



suspend all work with so-called "select agents" — those that could pose a significant risk to human or animal health — while the infections were investigated.

Wisconsin National Primate Research Center

Yerkes National Primate Research Center

In addition, some public officials grumbled that center officials hadn't kept them informed, and they vowed that things would be different in the future.

Those events all raised questions about the center — what sort of research is done there and why, and what the future of the facility may be.

Growing with the community

The National Primate Research Center is not a recent arrival on the north shore. The 500 acres of land for the center were purchased from the Alexius family in 1962 — in fact, the Alexius House, which dates to the early 19th century, still sits on the property just south of the Abita River.

After the land was purchased, the center opened in 1964 as the Delta Regional Primate Center in what was then mostly piney woods.

Even in its first few decades, research at the center stirred some controversy. In the mid-1980s, activists complained about monkeys at the center being spun at high rates of speed and having their vomiting rated in experiments that were part of the space program. In the late 1980s and early 1990s, concerns were raised over three monkeys that, as part of experiments on spinal cord injuries, had nerves cut that cost them the use of their arms and legs; their brains also were pierced with electrodes.

Those controversies did not slow the growth of the center, however. Like the community around it, the Tulane center has grown exponentially since 1964. Then, the area around the center was a largely undeveloped area known as Alexiusville. Now, though, the U.S. 190 corridor between Mandeville and Covington is a major thoroughfare. Northlake Christian School, which opened in 1978, is adjacent to the center. Three neighborhoods sit close by, as well.

Today, the Tulane center is part of a network of eight national primate centers spread across the country, each of which is largely funded by the National Institutes of Health. The centers provide facilities and support for scientists who wish to

do work on nonhuman primates, according to Dr. John Harding, of the NIH.



The center operates as its own entity within Tulane University, but it is affiliated with Tulane's health science schools, including the medical school, a spokesman said.

Bioterrorism threats

Growth at the center accelerated beginning in 2001, due to a growing awareness of the need for biodefense, the ability to deal with a possible bioterrorism attack, according to Andrew Lackner, the center's director, who arrived that same year.

"The anthrax event in 2001 brought into focus that the U.S. had very little facilities that were capable of doing any work with those types of agents," he said. "And it had very little in terms of people to do the work."

Lackner attributed that mindset to one that originated earlier, a late-20th-century attitude that infectious diseases were a thing of the past due to the effectiveness of antibiotics.

But after the Sept. 11, 2001, attacks, infectious diseases rose to the forefront of the national consciousness, and the Tulane National Primate Research Center is at the center of research into those diseases, Lackner said. The center has large research programs on HIV/AIDS, tuberculosis and Lyme disease, he said. It's not all disease work, though; devising ways to counter potential bioterrorism threats is also part of the center's work.

A November news release trumpeted research at the center on a ricin vaccine. **Ricin** — which can be found in castor oil plant seeds — is considered a leading bioterrorism threat, and even tiny doses of it can be deadly. In April 2013, two ricin-laced letters were discovered at mail-screening facilities in Washington, D.C., prompting fears of a widespread bioterrorism vulnerability.

The increased awareness of threats from disease and bioterrorism has been good for the center. Since 2001, it has undergone a \$75 million expansion, quadrupled the amount of its external funding and doubled the number of employees, to about 300.

The center's budget is about \$30 million per year, the "vast majority" of which comes from the National Institutes of Health, Lackner said.

Neighbors' issues

The rapid growth has, at times, made some of the neighbors uneasy.

In 2003, two dozen monkeys escaped. Most were lured back using a veritable delicacy for them: oranges. In 2005, a similar breakout involved more than 50 monkeys. Most were recaptured within a day or so.

A planned zoning change at the site in 2010 was fiercely opposed by some residents who live nearby. The new rules would have allowed 100-foot-tall buildings, which some neighbors felt would harm the value of their property. After working with members of the St. Tammany Parish Council and local residents, the center agreed to limit buildings that tall to sites set back at least 250 feet from the center's property line.

Some residents also complained at the time about smells from the cages, but a Department of Environmental Quality inspection revealed no significant odor issues.

In 2004, Lackner helped form the Community Focus Group, a board made up of government, business, educational and medicine leaders, as well as representatives of the three nearby neighborhoods. The group's stated objectives are to help center officials communicate and relate to the community, to provide a means for accurate information about the center to be disseminated and to provide a forum for public input.

But the Community Focus Group was not notified about the monkeys' infection with Burkholderia pseudomallei until Jan. 17 — after a reporter asked parish officials about it and parish officials in turn asked the center which caused some to wonder why the focus group wasn't informed earlier.

Tulane officials said they were convinced there was no threat to public health resulting from the potential release of the bacterium, which is transmitted through direct contact.

Monkey business

At the heart of the work at the Primate Research Center are the monkeys: roughly 5,000 of them, of which about 4,000 form what is called the center's "breeding colony."

Monkeys in the breeding colony live in cages set up on the property, often in family groups. They are charged with staying healthy and reproducing so that the scientists at the center



have a steady stream of healthy animals on which to conduct their research. Most of the monkeys are **rhesus macaques**, but the center also has pigtail macaques, cynomolgus macaques and smaller populations of several other types of monkeys, including baboons and squirrel monkeys.

The research at the cent

and other facilites like it is vital, the NIH's Harding said.

A center like Tulane's "has all the animals, veterinarians, core labs to support an investigator from the outside that wants to do research," he said. Tulane's center keeps eight veterinarians on staff, overseeing the animals' care.

Harding added that doing the research on primates is key.

"Lower animals, like mice, are useful for some things," he said. "But you can see the limitations where a mouse is not close" to a human in terms of physiology and biology, he said.

Primates are similar enough to humans, both genetically and immunologically, that they make a far better study animal than other mammals, Harding said. Key research into AIDS has been done on

nonhuman primates as well as, more recently, important work on treatments for Ebola, he said.

Is it necessary?

Not everyone agrees that it's necessary to do research on primates, however.

Dr. John Pippin, with the Physicians Committee for Responsible Medicine, said the use of

monkeys might even be counterproductive. "It doesn't answer any questions that can't be answered in other ways," he said. "And so it's unnecessary."

Other technologies, such as stem cell research, have a better chance of positive results than testing an animal like a rhesus macaque, Pippin said.

"When you get out of your own species, you open a Pandora's box," he said.

He pointed to research on chimpanzees, which he said is gradually being phased out. Chimps and humans share 98 percent of their DNA, and chimps are great apes like humans; to use another type of monkey is to move further away on the evolutionary tree, which diminishes the chance of a good result, he said.

Kathleen Conlee, of the Humane Society of the United States, said monkeys need social stimulation that they are unlikely to get in primate centers. Rhesus macaques in the wild can cover large distances and live in large groups, something it's difficult for them to do living in captivity in a primate center, she said.

And the animals that are taken for research often are forced to live alone in much smaller



cages, she said.

However, the Humane Society is not advocating an outright and immediate ban on animal research. Rather, the society is trying to help researchers find alternatives to animal research in the hopes of eventually ending the practice, she said.



www.cbrne-terrorism-newsletter.com

The NIH's Harding doesn't see that happening anytime soon.

"Vaccines for Ebola and the treatments for Ebola were all developed using nonhuman primates," he said. "These kinds of medical questions are not going away." One question remains, however: Will Tulane be allowed to work with "select agents" again, and, if so, when will that happen?

There is no timeline for the program's resumption, Lackner said. But, he added, he fully expects it to be reinstated.

Biosurveillance Gateway Maps Epidemics in Effort to Learn Ways to Stop Contagion's Spread

Source: http://www.emergencymgmt.com/health/Biosurveillance-Gateway-Maps-Epidemics.html



Feb 09 – New Mexico hasn't had its first zombie infection yet, but if that happens, Nick Generous and others on a Los Alamos National Laboratory team will probably map it on their new Biosurveillance Gateway website.

All epidemics — whether ebola, measles or zombie apocalypses — begin with patient zero. "In the earliest stages of outbreak, there's this critical period of time that officials can enact certain interventions to minimize and prevent the spread," said Generous, a molecular biologist who helped develop the Biosurveillance Gateway. "So, how do you decide what to do?"

Quarantine, vaccinate or, in the case of that nasty zombie, just shoot its head off?

Looking at how other communities and countries have handled outbreaks can help

public health officials determine best approaches for managing a new one.

The <u>Biosurveillance Gateway</u> showcases lab databases and other tools that help health officials and researchers track disease outbreaks around the world and analyze their spread.

Still in its beta stage, the website provides information about diseases and other health threats to people, animals and plants. The website's databases run the gamut from theoretical computational software for researchers analyzing virus genomes to a

Biosurveillance Research Directory that's more geared for public health doctors and officials. "Most people associate LANL with the nuclear weapons research

side of things, but what most people don't realize is that we do a lot of biological and epidemiological research as well, everything from helping develop AIDS vaccines to predicting how disease outbreaks will unfold, like the H1N1 virus in 2009," Generous said. "All these different efforts have never really been centralized in a single location."

Generous and half-dozen others began developing the website about a year and a half ago, a few months after President Barack Obama released his National Strategy for Biosurveillance.

Biosurveillance is a broad and growing field that predicts the emergence, spread and impact on societies of diseases and natural disasters, as well as biological, chemical and nuclear weapons. Obama called it essential to national security.

Disease epidemiology alone is a huge field because researchers have to understand how people interact with each other, animals and their environment to figure out how diseases spread.

"Really this is the idea of one health. You have to understand the intricacy, the whole of the ecosystem, to understand the spread of disease," Generous said.

Public health officials can use the Biosurveillance Gateway to look at how some diseases had spread during epidemics and how they were stopped. As old diseases reemerge in the United States, like measles, or new ones start taking root, like Dengue fever, those comparisons could be useful.

Measles once infected more than 90 percent of people in the United States prior to 1963, when a vaccine was developed. Each year, an average of more than 3 million people had measles, and 450 died. With the vaccination, measles cases declined by 98 percent.

But the recent measles outbreak at Disneyland in California has public health officials on edge and other states worried.

Enter New Mexico's single measles case from last year on the website's Surveillance Window App, along with population and other information, and the site pulls up outbreaks that shared similar factors. The most similar outbreak occurred in 2012 in New South Wales, Australia, where one case became more than 160 cases of measles in six months. The likely cause of the spread was a decline in vaccination rates and international travelers, according to the Australian Department of Health.

The Gateway site is packed with links to other databases. One goes to the U.S. Geological Survey, which has maps of diseases spread by mosquitoes and other vectors. The one for Dengue fever shows how the virus is spreading in the United States. California, Arizona and Texas have all had cases, but not New Mexico as of Jan. 14.

Generous, a private pilot when he's not studying diseases, said he's always been drawn to applied science that has a tangible impact. "There's a lot of room for growth in this field, and that excites me," he said. "I can talk about diseases for hours."

And he definitely, just for fun, wants to plot what a zombie outbreak would look like. "What is zombie biology? What happens over time and how transmissible is the virus?" Generous asked, noting there is no such disease. Not yet.

AnthraxSandia Labs anthrax detector wins national technology transfer award

Source: http://www.homelandsecuritynewswire.com/dr20150217-sandia-labs-anthrax-detector-wins-national-technology-transfer-award

Sandia National Laboratories won the Federal Laboratory Consortium's (FLC) 2015 Award for Excellence in Technology Transfer for a credit-card-size device that can detect bacteria that cause anthrax. BaDx (*Bacillus anthracis* Diagnostics) works in places with no power, refrigerated storage, or laboratory equipment. It requires minimal or no training and makes anthrax testing safer, easier, faster, and cheaper.

A Sandia Lab release reports that the annual Award for Excellence recognizes employees of FLC 159

member laboratories and non-laboratory staff who have accomplished outstanding work in transferring federally developed technology. A panel of experts from industry, state and local government, academia, and the federal laboratory system judge the nominations.

A Laboratory Directed Research and Development (LDRD) project in Sandia's International Biological Threat Reduction Program led to BaDx. While a large team

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competition for this year's award was especially tough. "Sandia's BaDx technology transfer recognition was one of only three selected across all of the Department of Energy laboratories for successful technology development and deployment," she says. "It is very satisfying to be recognized by our peers."

A deadly bacteria

Bacillus anthracis, the anthrax bacteria, is



helped develop the detector, the FLC award recognizes scientists Thayne Edwards, Melissa Finley and Jason Harper.

The technology was licensed to Aquila, a New Mexico woman-owned small business that specializes in the design and manufacture of technologies and services for nuclear security and international safeguards.

"It has been a remarkable experience to not only work with a Sandia research team in developing cool technology, but also with dedicated business partners to transfer that technology to," Edwards said. "The awards that have recognized these efforts are another reminder to me of the great people I get to work with and the reward of solving difficult problems together."

Jackie Kerby Moore, Sandia's manager of Technology and Economic Development and the labs's representative to the FLC, said the found in soils worldwide and can cause serious, often fatal, illness in humans and animals. It can survive in harsh conditions for decades. Humans can be exposed through skin contact, inhalation of spores or eating contaminated meat.

Currently, samples for testing must be propagated in a laboratory that uses specialized tools requiring a consistent power supply, something often unavailable in the developing world, said Finley, who helps veterinary labs in less-developed countries improve safety, security and efficiency at diagnosing infectious diseases. "Working with dangerous samples like B. anthracis spores places laboratory staff at risk."

she said. "Concentrating many positive test samples in a lab could also tempt someone to



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steal positive anthrax samples for nefarious uses."

Another barrier is cost. "Farmers in many developing countries don't make a lot of money, so they don't pay for diagnostic testing often," Finley said. "When they do, they can't afford to pay a lot for it."

falling into the wrong hands. "The device amplifies the B. anthracis so it can detect as few as 100 spores instead of the typical 1-10 million required for detection," Harper said.

Harper and Edwards developed the microfluidics platform with the patent-pending



The most common diagnostic test for anthrax costs around \$30, which is out of the reach of many farmers, perhaps discouraging them from testing animals they suspect are infected, Finley said. The new device, which is like a pocket-sized laboratory, could cost around \$5-\$7 and does not require specialized tools.

Complex and sensitive, but simple to operate

BaDx needs no battery or electric power or special laboratory equipment. It is hardy against wide temperature variation and can detect very small numbers of B. anthracis spores. A field technician puts a sample swab into the amplification chamber, which contains selective growth media. The device then uses a lateral flow assay, similar to a common pregnancy test, to detect B. anthracis. Magnetically operated valves allow the sample to advance from stage to stage to complete the testing process. A colored line appears on the device several hours later, if the test is positive for the bacteria.

The technician can then initiate a chemical process that sterilizes the device, avoiding the risk of positive samples accumulating and

magnetic valves that move the sample through the testing process. Bioscientist Bryan Carson, with technologists Jackie Murton and Bryce Ricken, developed the selective media, worked on building and testing the device and helped develop the decontamination strategy.

Nanotechnology researchers George Bachand and Amanda Carroll-Portillo are working on improved strips for the lateral flow assay. Bill Arndt, a researcher in Sandia's International Biological Threat Reduction Program who regularly works in the developing world, provided guidance on device design.

The release notes that their work builds on Sandia's long-standing expertise in bioforensics, most visible in the work the Labs did in response to the anthrax spores mailed to media offices and two U.S. senators in the fall of 2001, killing five.

"This is a wonderful example of where very sophisticated technology has enabled a practical solution to a very important problem"

said Pete Atherton, senior manager of Industry Partnerships at Sandia. "Aquila has been a great partner for several years and their commercializing of this

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technology will help us fulfill our mission of serving the public good."

The FLC is a nationwide network of about 300 members that provides a forum to develop strategies and opportunities for linking laboratory mission technologies and expertise with the marketplace.

The FLC Awards Program annually recognizes federal laboratories and their industry partners for outstanding technology transfer efforts and has become one of the most prestigious honors in technology transfer. Since it was established in 1984, the FLC has presented awards to more than 200 federal laboratories.

New antibiotic offers promise against antibiotic-resistant infections

Source: http://www.homelandsecuritynewswire.com/dr20150217-new-antibiotic-offers-promise-againstantibioticresistant-infections

Feb 17 – Estimates of deaths from methicillin-resistant Staphylococcus aureus (MRSA) in the United States range upwards of 19,000 annually. Around 1960, when Staphylococcus aureus developed resistance to first-generation penicillin, methicillin and other second-generation beta-lactam antibiotics were adopted to fight

the illness. The modern variants of the bacterium have developed resistance to the four drugs now used to treat it.

A Notre Dame release reports that a team of researchers led by Shahriar

Mobashery and Mayland Chang at the University of Notre Dame has discovered a promising new antibiotic, a vital weapon against disease as pathogens evolve to develop resistance to long-used drugs. The antibiotic proved effective in a mouse model infected with MRSA, a bacterium that emerged in hospitals in the 1960s and has spread to the larger population since the 1990s.

Mobashery and Chang adopted an unprecedented strategy in inhibiting the way the pathogen builds its cell wall. They conducted a rapid computational screening of **1.2 million drug-like compounds** that might interfere with the process, then refined the filtering in stages until they identified **118 lead** compounds to test for antibacterial activity

against a range of species. The lead quinazolinone compound that emerged from these efforts underwent additional rounds of synthesis and evaluation, producing the antibiotic, which exhibited activity in a mouse

infection model.

The researchers said the discovery has implications beyond MRSA as pathogens continue to evolve resistance to existing drugs. "Antibiotics are

losing effectiveness," Mobashery said. "This means that infections cannot be treated effectively. Some infections by pathogens kill as many as 50 percent of the patients. But the problem goes way beyond this. We depend on antibiotics to a degree that often might not be intuitively obvious. Without antibiotics, we could not perform many medical treatments. One could not have a hip surgery, or an athlete could not have a knee repaired." Cancer treatment would be virtuallv nonexistent, and most elective surgeries and some essential ones could no longer be performed in the absence of antibiotics. Mobashery said, "We assume that antibiotics will always be there, but this is not for certain."

— Read more in Renee Bouley et al., "Discovery of Antibiotic (E)-3-(3-Carboxyphenyl)-2-(4-cyanostyryl)quinazolin-4(3H)-one," Journal of the American Chemical Society 137, no. 5 (28 January 2015): 1738-41





Ebola Preparedness: Emergency Department Training Modules

Source: http://www.cdc.gov/vhf/ebola/healthcare-us/emergency-services/emergency-department-training.html

Who is this for: Emergency department (ED) staff.

What is this for: Training to help ED staff prepare to evaluate whether or not a patient might have EVD. Staff members should use this information to follow the 3 steps within the "Identify, Isolate, and Inform" strategy. CDC recommends that staff members screen all patients with travel histories, exposure, or clinical symptoms that might suggest the person could have EVD.

Watch the four (4) training videos at source's URL.

Drug targeting Ebola virus protein VP24 shows promise in monkeys

Source: http://www.medicalnewstoday.com/releases/289273.php?tw



Feb 11 – An experimental medication that targets a protein in Ebola virus called VP24 protected 75% of a group of monkeys that were studied from Ebola virus infection, according to new research conducted by the U.S. Army, in collaboration with Sarepta Therapeutics, Inc. The study was published this week in *mBio*®, the online open-access journal of the American Society for Microbiology

The research compared drugs called phosphorodiamidate morpholino oligomers (PMOs) --- synthetic "antisense" molecules that

target the genetic code within Ebola and similar viruses, preventing their ability to reproduce. While previous work by the authors showed that a combination PMO targeting the genes that code for proteins called VP35 and VP24 protected rhesus monkeys from Ebola virus infection, the current study revealed that targeting VP24 alone was sufficient to confer

protection from Ebola virus, whereas an agent targeting VP35 alone resulted in no protection. The majority of monkeys treated with a medication called



AVI-7537, which targets VP24, survived infection with Ebola virus and showed substantial reduction of virus in their bloodstreams within eight days of treatment, compared to animals receiving a placebo.

"The study demonstrates that we can protect non-human primates from Ebola virus, using only a single antisense agent," said lead study author Travis K. Warren, PhD, a principal investigator in the Molecular and Translational Sciences Division at the U.S. Army Medical Research Institute of Infectious Diseases in Fort Detrick, Md.

Response in these animals is generally considered a gold standard to predicting similar response in humans, he said. Many of the products that are being used by doctors to treat patients infected with Ebola virus in West Africa have not been tested in any animal model or in non-human primates, he said. Despite many efforts to develop vaccines and antiviral medicines against filoviruses like Ebola, there are currently no licensed medical countermeasures against these viruses.

During the study, researchers gave Ebola virus-infected rhesus monkeys one of three medications: AVI-7537; AVI-7539, which targets VP35; or a combination treatment that included both AVI-7537 and AVI-7539, called AVI-6002. A fourth group of monkeys received

just saline and served as the control group. The animals received these treatments intravenously, once a day for up to 14 days.

Seventy-five percent of animals treated with AVI-7537 and 62 percent of animals receiving the combination treatment, AVI-6002, survived until the end of the study. By contrast, animals receiving saline developed progressive signs of Ebola disease and succumbed within an average of eight days following infection, and animals treated with AVI-7539 succumbed within 10 days of infection.

Additional tests showed that AVI-6002 and AVI-7537 were similar in their ability to reduce viral load, substantially reducing or eliminating infectious virus and viral RNA in the animals' bloodstreams. Animals treated with AVI-6002 and AVI-7537 also had less liver and kidney damage, a common complication of filovirus infection, than those treated with placebo or AVI-7539.

"The work demonstrates that impairment of VP24 alone is enough to protect against Ebola virus infection and that targeting VP24 may lead to the development of more effective countermeasures against this important viral pathogen," said senior study author Sina Bavari, PhD, Science Director for the U.S. Army Medical Research Institute of Infectious Diseases.

Ebola can survive in victims' bodies for days

Source: http://www.medicalnewstoday.com/articles/289415.php?tw

Feb 13 – After testing swabs and tissue samples from the bodies of deceased Ebola-infected monkeys, scientists determined the virus can stay alive for up to 7 days in a dead victim. They also found that non-infectious viral genetic material can remain for up to 70 days after death. The researchers - from the National Institute of Allergy and Infectious Diseases (NIAID), a part of the National Institutes of Health (NIH) report their findings in the journal *Emerging Infectious Diseases*.

The authors note that until their findings, the efficiency of detecting Ebola virus from corpse samples had not been systematically studied.

They say the study shows it is possible to catch Ebola from dead victims of the

disease for several days after death and confirms the importance of safe handling and burial of their bodies.

The study also confirms that taking mouth swabs of bodies is a reliable and safer alternative for determining whether a person has died of Ebola than riskier procedures, such as tissue biopsy.

However, the authors also note that mouth swabs may not be a reliable diagnostic alternative to taking blood samples in the case of people who may have been in the early

stages of Ebola virus infection when they died - presumably from other causes.

To stem an outbreak, it is important to determine whether

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people are carrying Ebola when they die, not only to assess the spread of the disease but also to decide whether it is necessary to trace the people they may have been in contact with. For the study, the researchers tested samples from five deceased macaques used in Ebola studies that were euthanized after showing signs of disease.

They put the bodies in a chamber that simulated the environmental conditions in West Africa - the location of the current outbreak, which is thought to be the worst in the history of the disease.

Read the WHO protocol at:

http://apps.who.int/iris/bitstream/10665/137379/ 1/WHO_EVD_GUIDANCE_Burials_14.2_eng.p df Tests revealed that live Ebola virus was present in surface swabs for up to 7 days and in tissue samples of internal organs for up to 3 days after death.

The team also found viral RNA in several swab and tissue types up to 10 weeks after death.

In the West African countries affected by the current Ebola outbreak, it is customary for members of a dead person's family or community to be involved in the washing and handling of the body in preparation for burial.

When the body belongs to a victim of Ebola, this religious and cultural tradition can unfortunately help spread the disease. According to Dr. Pierre Formenty, a World Health Organization (WHO) expert on Ebola, at least 20% of new infections occur during

World Health Organization Field Situation: How to conduct safe and dignified burial of a patient who has died from suspected or confirmed Ebola virus disease

- Step 1: Prior to departure: Team composition and preparation of disinfectants
- Step 2: Assemble all necessary equipment
- Step 3: Arrival at deceased patient home: prepare burial with family and evaluate risks
- Step 4: Put on all Personal Protective Equipment (PPE)
- Step 5: Placement of the body in the body bag
- Step 6: Placement of the body bag in a coffin where culturally appropriate
- Step 7: Sanitize family's environment
- Step 8: Remove PPE, manage waste and perform hand hygiene
- Step 9: Transport the coffin or the body bag to the cemetery
- Step 10: Burial at the cemetery : place coffin or body bag into the grave.
- Step 11: Burial at the cemetery : engaging community for prayers as this dissipates tensions and provides a peaceful time.
- Step 12: Return to the hospital or team headquarters

burials of people who died from Ebola virus disease.

An important element in the control of the outbreak is deciding how best to intervene in this practice without undermining the traditions and needs of the bereaved and losing the trust and cooperation of communities. In November 2014, *Medical News Today* reported a new WHO protocol on safe and dignified burials of people who have died from suspected or confirmed Ebola virus

Over a period of 10 weeks, they took samples from seven body surfaces and four internal organs.

disease (12 Steps). The procedures include meaningful and safe alternatives for touching and bathing the deceased.

Biocartis to develop Rapid Ebola Virus Triage Test

Source: http://www.medicalnewstoday.com/releases/289250.php?tw

Biocartis has announced that it is in the testing phase of a Rapid Ebola Virus Triage Test that it is developing in association with Janssen Diagnostics and the Institute for Tropical Medicine in Antwerp (Belgium) for its Idylla[™] system, a fully automated molecular diagnostic platform that is CE-IVD marked in Europe.



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The Rapid Ebola Virus Triage Test is designed to enable healthcare workers, even in challenging



environments, to test blood samples and aims at providing accurate and fast diagnosis of Ebola. The test is designed to offer a unique combination of speed, sensitivity, accuracy and ease-of-use required for outbreaks where time is of the essence.

The test uses 0,2 ml blood that is added directly to the ldylla[™] cartridge, which contains all necessary reagents on board for performing the analysis on Biocartis' fully automated, molecular diagnostics system. A complete analysis of the sample takes around 90 minutes and can be operated by healthcare professional in most settings, including in the field, making the test ideal for use in regions with limited infrastructure.

Biocartis believes its Rapid Ebola Virus Triage Test could provide a sustainable solution for rapid



detection of Ebola-infected patients even after the current Ebola outbreak. After testing of synthetic virus samples in Belgium and the US, Biocartis has now registered for fieldtesting in West Africa to gather additional clinical evidence for the test performance.

Rudi Pauwels. Biocartis' Chief Executive Officer commented: "This test aims not only to improve the diagnosis of the Ebola virus for hardpressed healthcare professionals in the field, but to lay the foundations for better and faster diagnostic а infrastructure after the current

outbreak has receded, both in this region and around the world. One of the lessons of the Ebola outbreak has been the urgent need for faster and more accurate diagnostics. Biocartis is pleased to be working, alongside prestigious partners, on what it believes could offer a viable solution for healthcare workers around the world to enable faster testing of infectious diseases in virtually any setting."

Protein in fish skin may help wounds heal safely

Source: http://www.medicalnewstoday.com/articles/289326.php?tw

Feb 12 – Applying collagen to wounds can help skin heal faster, but when the collagen comes from animals such as cows and pigs, it brings with it a small risk of disease. Now, a new study suggests **collagen from tilapia fish** - an increasingly popular seafood in the US - may offer a safer alternative.

Tian Zhou, from the Shanghai Jiaotong University School of Medicine in China, and colleagues report their findings in the journal ACS Applied Materials and Interfaces.

Collagen is a structural protein that accounts for around a quarter of all the protein in our bodies. It is the major constituent of connective tissues, tendons, skin, bones, cartilage, blood vessels and membranes.

Collagen is the "warp and woof" that holds tissue together in different forms - from molecular cables that strengthen tendon fibers to resilient sheets that support the skin and internal organs.

And when you add mineral crystals to collagen, you have the basic material for making bones and teeth.

Wound dressings made from collagen have several advantages - they keep out bacteria, they are



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easy to apply, they are natural, hypo-allergenic and pain-free.

However, because they are made from collagen taken from cows and pigs (bovine and porcine collagen), collagen wound dressings also carry a slight risk of transferring conditions

such as foot and mouth disease. Fish collagen would

not pose such a disease risk but does it perform well as a wound dressing? The team behind the new study decided to find out.

For the study, they made nanofibers from the collagen of tilapia fish and used them to cover skin wounds on rats. The team found rats with the nanofiber dressing healed faster than those without it. In lab tests, the researchers found various ways in which the fish collagen nanofibers "could promote the viabilities" of human skin cells, including stimulating genes that code for various binding proteins and growth factors. **Cell tests also showed the fish collagen**

was unlikely to cause an immune reaction an important requirement for a wound dressing. The team suggests the tilapia collagen should now be tested and developed for clinical use.

Tilapia is a tropical, freshwater fish that thrives naturally in the very warm waters of Africa and the Middle East.

Tilapia is an increasingly popular seafood in the US, where it is grown in closed tank systems. However, most tilapia sold in the

US is imported from Latin America and Asia, where the fish are raised in outdoor freshwater

farms. In Australia, tilapia is causing serious negative impact in some waterways. In Queensland, the authorities have declared tilapia a noxious fish, and there

are stiff penalties for releasing the fish alive or dead into waterways there.

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The National Natural Science Foundation of China funded the study.

In May 2014, *Medical News Today* learned how new research conducted at the University of Manchester Healing Foundation Centre in the UK showed wound healing is affected by bacteria living on skin. The researchers said it may be possible to could swab a wound and look at the profile of bacteria to see if it is likely to heal quickly or persist. Such information could also be useful in deciding how to treat the wound.

Limited airborne transmission of Ebola is 'very likely,' new analysis says

By Lenny Bernstein

Source: http://www.washingtonpost.com/news/to-your-health/wp/2015/02/19/limited-airborne-transmission-of-ebola-is-likely-new-study-says/

Feb 19 – A team of prominent researchers suggested Thursday that limited airborne transmission of the Ebola virus is "very likely," a hypothesis that could reignite the debate that started last fall after one of the scientists offered the same opinion.

"It is very likely that at least some degree of Ebola virus transmission currently occurs via infectious aerosols generated from the gastrointestinal tract, the respiratory tract, or medical procedures, although this has been difficult to definitively demonstrate or rule out, since those exposed to infectious aerosols also are most likely to be in close proximity to, and in direct contact with, an infected case," the scientists wrote. Their peerreviewed analysis was published in mBio, a journal of the American Society of Microbiology.



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How big is an Ebola virus particle?

The Ebola virus is transmitted through close, direct physical contact with infectious blood, feces, vomit, breast milk and semen. It is also found in the saliva of people after they have developed symptoms and is small enough to be carried by a sneeze droplet. However, Ebola symptoms do not include sneezing or coughing.

A U.S. dime has a diameter of 1.791 cm. Only the edge is shown here.



Sources: World Health Organization, AAA Scientists

PATTERSON CLARK/THE WASHINGTON POST

The paper's lead author, Michael T. Osterholm, an epidemiologist at the Center for Infectious

Disease Research and Policy at the University of Minnesota, touched off a small furor and was condemned by some experts last Sept. 11 w hen he raised the same possibility in an op-ed piece in the New York Times as concern over the spread of the deadly disease was increasing rapidly.

Less than a month later, Thomas Eric Duncan, a Liberian infected with Ebola in his home country. died in a Dallas hospital, but not before two nurses who treated him became infected, sparking fears about how prepared U.S. hospitals were to handle the disease. Public health authorities reassured Americans they were in no danger of contracting the hemorrhagic disease from casual contact with others. Ebola is transmitted by contact with infected body fluids -mainly blood, feces and vomit -experts around the world have said. This is why health care workers and people who had contact with victims were most likely to become infected in the current epidemic, they said.

"There was almost a rush to ensure the public that we knew a lot more than we did," Osterholm said in an interview Wednesday night, repeating a theme he has raised many times before. "But we're saying you can't rule out respiratory transmission."

Osterholm's September opinion piece focused on the possibility that the virus could mutate and eventually become airborne, a theory that other experts widely dismissed as

extremely unlikely. In contrast, Thursday's review examines the idea that minuscule



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droplets of body fluid containing the virus could hang in the air and be inhaled by others, providing an unrecognized, if minor, pathway for the virus.

This time Osterholm was joined by Gary P. Kobinger of Canada's Public Health Agency, Pierre Formenty of the World Health Organization's pandemic response unit and Clarence J. Peters, of the Galveston National Laboratory at the University of Texas Medical Branch, among many others.

The paper, titled 'Transmission of Ebola Viruses: What We Know and What We Do Not Know," takes pains to note that respiratory transmission of Ebola is unproven and that contact with infected body fluids is by far the most common way that the virus is passed from one person to another. Indeed, as health experts and aid workers have persuaded West Africans to adopt safe burial practices and isolate people infected by the virus, the disease has virtually disappeared in Liberia, though it is still more prevalent in Sierra Leone and Guinea.

As of Wednesday (Feb 19), Ebola had sickened 23,253 people, killing 9,380 of them, all but a handful in the three West African countries, according to the World Health Organization.

As evidence, the research notes that Ebola virus has been found on the outside of face masks worn by health workers caring for victims of the disease. It also points out that the virus has been passed between animals via respiration. And the authors say that Ebola can infect certain cells of the respiratory tract, including epithelial cells, which line body cavities, and macrophages, a type of white blood cell that consumes pathogens.

The paper notes that breathing, sneezing, coughing and talking can release droplets of fluid from the respiratory tract that travel short distances and most likely cause infection by settling on a mucous membrane. Those actions also release smaller airborne particles capable of suspension in mid-air that can be inhaled by others. Technically, both qualify as aerosols, the paper says. The debate has centered on whether Ebola can be transmitted via those smaller particles. William Schaffner, an infectious disease specialist at Vanderbilt Medical Center who did not take part in the study, praised it for raising the issues "in a thoughtful fashion" and predicted it would be "very, very widely read."

He said he could imagine the possibility of respiratory transmission of Ebola from close-in contact, perhaps a distance of three or four feet. Even so, Schaffner said, it would be rare; as the study points out, it has never been demonstrated in humans.

The common mode of transmission--contact with body fluids--"those are the highways of transmission," Schaffner said. "Could respiratory transmission occur? Yes. But it's probably a byway, a little trail in the forest."

Asked why many more people who were near Ebola victims had not become infected, Osterholm said the Ebola virus may be much less contagious than other diseases spread by respiration, such as measles. He likened it to tuberculosis, which is more difficult to contract this way.

In an e-mail, Kobinger said that "we hope that this review will stimulate interest and motivate more support and more scientists to join in and help address gaps in our knowledge on transmission of Ebola (and other filoviruses). Important policies and biosafety regulations must be evidence-based, not [by] using opinions and beliefs as guiding principles."

The review itself points out that "to date, investigators have not identified respiratory spread (either via large droplets or smallparticle aerosols) of Ebola viruses among humans. This could be because such transmission does not occur or because such transmission has not been recognized, since the number of studies that have carefully examined transmission patterns is small."

But it concludes by adding: "The West Africa Ebola epidemic surprised even the most astute infectious disease experts in the global public health community; we should not assume that Ebola viruses are not capable of surprising us again at some point in the future."

Lenny Bernstein writes the To Your Health blog. He started as an editor on the Post's National Desk in 2000 and has worked in Metro and Sports.



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Soldier-scientists begin closure of Ebola testing labs

By Staff Sgt. Terrance D. Rhodes

Source:http://www.army.mil/article/142951/Soldier_scientists_begin_closure_of_Ebola_testing_labs/?____scoop_post=535b6760-b7aa-11e4-93b2-842b2b775358&__scoop_topic=4004019#__scoop_post=535b6760-b7aa-11e4-93b2-842b2b775358&__scoop_topic=4004019





Feb. 17 – As the mission of Joint Forces Command - United Assistance, or JFC, comes to an end, there are a few more tasks that Service members, deployed in support of



Operation United Assistance, or OUA, have to complete.

The 1st Area Medical Laboratory, or 1st AML, based out of Aberdeen Proving Ground,

Maryland, deployed as Task Force Scientist in support of OUA, is closing all four of its Ebola testing laboratories in Liberia.

The 1st AML is designed as a deployable analytical laboratory with а diagnostic capability to detect and identify environment contaminations that could harm Service members on the battlefield. professionals provide The combatant commanders with health hazard assessments of environmental. occupational, endemic chemical, and biological, radiological, nuclear or high-yield explosive threats, or CBRNE, in support of force protection and weapons of mass destruction missions.

Made up of microbiologists, biochemist, and laboratory technicians from the 1st AML, Task Force Scientist also includes Sailors from the



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Naval Medicine Research Center, and civil affairs and military police Soldiers.



With the motto of "Soldier-scientists," the command tests air, water, soil, food, waste and vectors including insects, animals and blood, for various kinds of contaminants. To do this, the unit was structured into three specific areas: biological, chemical, and occupational and environmental health, said Col. Patrick Garman, commander of 1st AML.

"The 1st AML has brought state-of-the-art analyzers and experienced personnel who have been able to analyze and identify Ebola in human samples as well as other endemic diseases in a very professional manner," Garman said.

The laboratory's main mission was to establish four Ebola testing laboratories in austere environments at Tappita, Sanniquellie, Greenville and Zwedru since arriving in mid-October. The Soldierscientists have tested more than 4,500 Ebola suspected samples<mark>,</mark> said Garman, a native of Troy, Ohio.

Zwedru was the first Ebola testing lab to close, shutting down operations Feb. 9, while the other three labs are scheduled to shut down over the next few weeks.

"It has been more than 90 days since the last confirmed Ebola case [in Grand Gedeh County]," said Capt. Shawn Palmer, a biochemist for the Zwedru lab, with the 1st AML, and a native of Loma, Colorado.

On an average day, the Zwedru lab would receive samples in the morning and began the testing process with paperwork and safety preparations, Palmer said.

After all the paper work is filed, the technicians decontaminate the samples by extracting the Ribonucleic acid from each sample, a process that takes about three

hours, Palmer said. "Here at the Zwedru lab, we haven't received any positive samples for Ebola, which is great for the people of this community," Palmer said. For Palmer, being a part of this mission was a chance to experience something new and different. "This was an great opportunity to come to Liberia and help the community and the locals try to eradicate Ebola," Palmer said. Proud of what has been accomplished, it's the Soldiers and the support received that has made this mission success. "We have received nothing but the utmost support from the JFC, 101st [Airborne] Division, and our Soldiers have benefited from that," Garman said.

"We have Soldiers out in austere locations and hours away from the headquarters; they have been part Peace Corps, part diplomats, part scientist, but always professional Soldiers," Garman said.

A Flock of Bird Flu Viruses

Source: : www.upmc-cbn.org | www.UPMCHealthSecurity.org

In recent months there has been a spate of bird flu viruses causing human and avian disease all over the world. Some strains are infecting only birds; others are infecting both birds and people. This is producing confusion among those who seek to keep abreast of the status of these various viral strains. Indeed, such situational awareness is an essential component of preparedness, as it provides the basis for surveillance for human and animal disease, for understanding the genetics of the viruses, and for guiding vaccine development. Here I give a brief update on the most noteworthy of the varied avian fur-

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viruses now circulating.

H5N1

Of all the avian influenza viruses circulating, H5N1, with its 60% case fatality rate, has generated the most concern. Various strains of it have been causing animal and human infections since 1997 and have infected more than 600 people, killing over half. Outbreaks in birds continue to pop up in widespread locations in Asia, Europe, and Africa. Most recently, this virus has been responsible for several poultry outbreaks in Egypt and Nigeria while also causing a limited number of human infections in Egypt. Interestingly, the virus isolated in the poultry outbreaks has been shown to harbor mutations that are associated with efficient human-to-human transmission, but such changes have not been seen in human isolates.

H5N1 consists of myriad clades, some associated with human infection and some not. Recently, for the first time ever, H5N1 has been detected in North America in avian species in both Canada and the US. The clade detected has not been one associated with human disease. Thus far, there has been just 1 human H5N1 case in North America, in an infected traveler from Asia who ultimately succumbed to the illness.

H7N9

Second in terms of the number of human cases is H7N9, which is responsible for an ongoing outbreak in China beginning in 2013 with secondary importations to Taiwan, Malaysia, and Canada. Thus far, more than 500 human cases have accrued, with a case fatality rate of about 1 in 3. Since most cases are linked to direct or indirect poultry exposure, control measures have focused on limiting contact between humans and potentially infected poultry. In recent weeks a surge in new cases has been reported in China. Though links to poultry have been found in most cases, there remains concern regarding limited human-to-human transmission and mild cases serving to spread the virus.

Other Avian Flu Viruses to Track

Several other flu viruses merit attention as well:

H5N8: This virus, which has yet to cause a human infection, has recently been found in poultry flocks in California and Oregon as well as Taiwan.

H5N2: Taiwan is reporting 29 poultry farms have been afflicted with this virus, which has also been found in wild birds there. Culling of birds has been performed to minimize spread. This strain of virus has not been demonstrated to cause clinical disease in humans, but seroconversion has been shown in close contacts of infected poultry.

H5N3: Taiwan has also reported that 3 dead wild birds were noted to be infected with this strain of avian flu, which thus far has not infected humans.

H5N6/H6N1/H10N8: These 3 avian influenza strains have each been recently linked to isolated human cases, marking the first incursions of these strains into humans.

Continual Vigilance Needed

Influenza viruses are clearly one of the most successful of human pathogens and have proven, in pandemic after pandemic, that they can infect and kill at an alarming rate. As pandemic flu viruses can emanate from avian influenza species, it is crucial to study and survey avian flu viruses as part of influenza preparedness. It is very difficult to predict which flu strain--which H and N combination--will be responsible for the next pandemic. Despite the uncertainty, heightened surveillance of avian flu viruses provides the best chance to be prepared.

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ISIS and the Ebola epidemic drive significant spending in global \$10.2bn CBRN defence market

Source: https://www.asdreports.com/news-3559/isis-ebola-epidemic-drive-significant-spending-global-102bn-cbrn-defence-market-says-new-study-asdreports?utm_source=linkedin.com&utm_medium=referral&utm_campaign=discussion-dh

Chemical, biological, radiological, and nuclear defence continues to play an absolutely indispensible part in any country's security and defence systems. Although nuclear and radiological agents are relatively difficult to obtain by a non-state actor or terrorist organisation, chemical and biological warfare agents are much easier to produce and often require small labs to manufacture – an environment perfect for modern day terrorist organisations.

ISIS has been recently identified by Western intelligence agencies as aiming to weaponise a number of biological agents. With the rise of homegrown terrorism affiliated with ISIS, the biological and chemical terrorism threat is currently on the increase, which is clearly visible in the previously unexpected increased spending on CBRN. The outbreak of the Ebola epidemic in West Africa is also a significant factor driving growth in the CBRN market with some Western countries spending heavily on developing vaccines and biodefence countermeasures. Finally, CBRN defence is also an important part of safety and security infrastructure of any state with civilian nuclear energy generation programmes.

A detailed analysis of the latest political, economic and technological trends lies at the heart of this unparalleled quantitative and qualitative analysis of the CBRN Defence market. This 370 page report provides a thorough quantitative and qualitative analysis of the global market, with 4 submarkets forecasts, and 20 leading national markets forecast, analysed and evaluated. 30 leading companies are also profiled in detail within this report, alongside 229 tables and charts, over 600 companies and organisations mentioned

and 328 contracts detailing major ongoing programmes.

The 58,000-word report also includes a detailed qualitative analysis of the strengths, weaknesses, opportunities and threats (SWOT) underpinning the market for the period 2014-2024. CBRN Defence Market Forecast 2015-2025: Chemical, Biological, Radiological, & Nuclear Detection, Protection, Decontamination, Simulation Equipment therefore provides an unrivalled level of detail in its analysis of market trends and commercial prospects.

The report's findings are reinforced by exclusive interviews with Avon Protection and Bruker Corporation- each leading companies in the CBRN Defence environment.

Matthew Machowski, the analyst responsible for the CBRN Defence Report, summarised its findings:

"The current geostrategic circumstances surrounding the Syrian Civil War, the international campaign against the terrorist organisation of ISIS, and the continuously spreading Ebola virus epidemic in West Africa have led to an increased interest in Chemical, Biological, Radiological and Nuclear Defence. Strong growth in the developing world, still in the process of creating their own significant CBRN capabilities will offset the strong financial constraints of the Western nations. CBRN defence remains an indispensible part of the strategic security preparedness of all nations. This important characteristic of the

market assures a consistent growth over the forecasted period."

CBRN Defence Market Forecast 2015-2025: Chemical, Biological,



Radiological, & Nuclear Detection, Protection, Decontamination, Simulation Equipment, is an invaluable reference offering extensive market analysis and evaluation of future commercial prospects.

Top-secret military warning on Ebola biological weapon terror threat

Source: http://www.theguardian.com/uk-news/2015/feb/21/top-secret-ebola-biological-weapon-terrorwarning-al-qaida-isis

Feb 21 – Scientists at the top-secret military research unit at Porton Down, Wiltshire, have been assessing the potential use of Ebola as a bioterrorism weapon, according to confidential documents.

<u>A three-page memo, marked 'UK secret UK eyes only',</u> reveals that the unit, where chemical, radiological and biological threats are analysed, was tasked with evaluating whether terrorist organisations such as al-Qaida and Islamic State (Isis) could use the deadly virus to attack western targets.

The heavily redacted document, which has been released under the Freedom of Information Act, reveals that the unit was asked last October to provide "guidance on the feasibility and potential impact of a non-state actor exploiting the Ebola outbreak in west Africa for bioterrorism".

It goes on to explain that non-state actor threat assessments are "provided by the joint terrorism analysis centre", while threats to "UK deployed forces are provided by defence intelligence". The memo outlines three possible scenarios under which terrorists might seek to exploit the Ebola outbreak, which so far has killed more than 9,000 people in the three most affected countries, Guinea, Sierra Leone and Liberia.

The first scenario outlined is completely redacted, illustrating the acute sensitivity about the issue. The second scenario is heavily blacked out but, according to the memo, "would be both logistically and technically challenging for a non-state group to undertake". It observes: "Clearly there are practical issues involved with such a scenario that of themselves are often not insurmountable but taken together add enormously to the complexity of successfully undertaking this attack." A third, also heavily redacted, scenario "constitutes the most technically challenging of the scenarios considered here".

Concerns that terrorist groups might look to "weaponise" Ebola have been raised by several thinktanks and politicians. Last year Francisco Martinez, Spain's state secretary for security, claimed that Isis fighters were planning to carry out "lone wolf" attacks using biological weapons. Martinez said that his belief was informed by listening in to conversations uncovered in secret chatrooms used by terrorist cells. The claim has since been played down by others.

Jeh Johnson, the US department of homeland security secretary, said last October that "we've seen no specific credible intelligence that Isis is attempting to use any sort of disease or virus to attack our homeland".

Dr Filippa Lentzos, a senior research fellow at King's College London and an expert on bioterrorism, said terrorists looking to use the virus as a weapon would encounter problems. "It doesn't spread quickly at all," she said. "Terrorists are usually after a bang and Ebola isn't going to give you that."

On average, a person infected with Ebola will infect two more people. In a developed country such as the UK transmission would be even more limited.

"People with Ebola are infectious only when they show symptoms," Lentzos said. "Could terrorists go to west Africa, get infected, then come back and sit on the tube? Sure, but they're not likely to be functional for very long. They're going to be very sick and you'll see that. So they would have only a very small window in which to operate. And in a country

with a developed public health system like the UK, there would be plenty of chances to clamp down on an outbreak."



Other biological weapons would potentially be more attractive to terrorists, experts suggested. Unlike Ebola, which requires the transmission of body fluids, anthrax spores can be dried and milled down to form tiny particles that can be inhaled.

However, even the suggestion that Ebola could be weaponised made it a potentially powerful weapon for terrorists, Lentzos suggested. "If your aim is not to kill a lot of people, or even make them ill, but instead to frighten them and cause a huge level of societal disruption, then bioterrorism would do that. It elicits exceptionally high levels of fear, disgust and abhorrence."

The use of pathogens as a weapon has been tried before. Following the attacks in New York and Washington in 2001, five people died in the US after opening letters laced with anthrax. In the 1980s, a cult in Oregon spread salmonella on salad bars in restaurants in an attempt to keep voters from the polls so its preferred candidates would win.

"The risk of small-scale bioterrorism attacks is possible and very likely," Lentzos said.

Porton Down is known to have experimented with Ebola but a specific request for the laboratory to analyse the virus's potential use by "non-state agents" highlights the growing concern that terrorists are becoming increasingly inventive in their choice of weapons.

One scenario could see terrorists combining genes from different pathogens to synthetically create super pathogens that could spread disease far more effectively than Ebola. But Lentzos suggested this was unlikely. "It's pretty damn hard to make dangerous pathogens from scratch in the lab. Experts have a really hard time doing that. At this point I'm not sure that's what we need to worry about."

Lentzos said that focusing on the terrorist threat posed by Ebola risked losing sight of the bigger picture. "To beat Ebola we have to worry less about terrorism and more about public health. Disease knows no borders."



Probable Crimean-Congo HFV transmission occurred after aerosol-generating medical procedures in Russia

By Natalia Yurievna Pshenichnaya and Svetlana Alexeevna Nenadskaya

Rostov State Medical University, Rostov-on-Don, Russia

Source: http://www.ijidonline.com/article/S1201-9712%2815%2900005-3/abstract?elsca1=etoc&% 3Belsca2=email&%3Belsca3=1201-9712_201504_33__&%3Belsca4=Infectious+Diseases #.VOeFRyqUZul.linkedin

Highlights

- We describe nosocomial cluster of Crimean-Congo hemorrhagic fever (CCHF)
- We demonstrate that airborne transmission of CCHF is a real risk.
- Airborne precautions are essential during any aerosol-generating procedures.

Summary

We report here a fatal case of laboratory confirmed Crimean-Congo hemorrhagic fever (CCHF), which caused nosocomial infection in eight health care workers (HCWs), who had provided medical care for the patient. All the HCWs survived.

The report demonstrates that airborne transmission of CCHF is a real risk, at least when the CCHF patient is in a ventilator. During performance of any aerosol-generating medical procedures for any CCHF patient airborne precautions should always be added to standard precautions, in particular, airway protective N95 mask or equivalent standard, eye protection, single airborne precaution room, or a well-ventilated setting.

Read the full paper at: <u>http://www.ijidonline.com/article/S1201-9712%2815%2900005-3/pdf</u>



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