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DIRTY R-NEWS

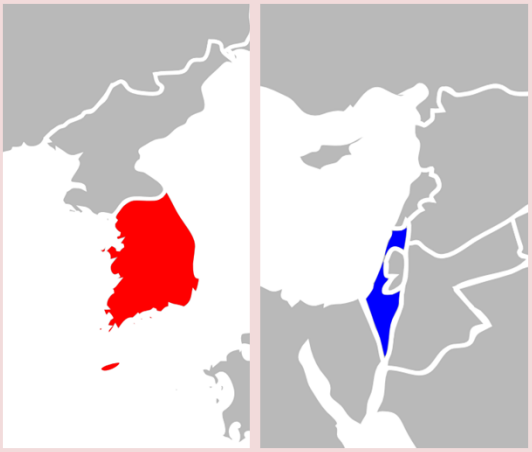
Israel and South Korea Have More in Common Than You Realize

Source: http://www.haaretz.com/opinion/.premium-1.808342

Aug 23 – North Korea is a common adversary to both Israel and South Korea. Both countries need forceful but smart deterrent strategies

The volatile situations on the Korean Peninsula and in Israel have much in common, despite the geographical distance. Israel and South Korea are vibrant and prosperous democracies – the only democracies in the world that live under what they perceive to be existential threats. South Korea is afraid of the North's existing nuclear capabilities; Israel fears Iran will go nuclear. Both countries face adversaries with radical regimes whose degree of rationality is unclear and which pose severe threats to their home fronts. The conflict in Korea may draw in China; a conflict with Hezbollah would draw in the Iranian militias in Syria and Iran itself, and complicate Israel's relations with Russia.

Both Israel and South Korea face a similar dilemma: Their adversaries have developed asymmetric capabilities that have largely neutralized their military superiority and created a situation in which the military capabilities they have built in response are not cost-effective. A South Korean (and American) attack on the North would likely lead to a nuclear holocaust and, in any event, the damage to the South would be intolerable. In the Israeli case, even if we succeed in hitting Hezbollah hard next time, the damage to the home front will exceed the benefits stemming from the time gained.



Surprisingly, perhaps, North Korea is a common adversary. The North provided Iran with extensive missile and nuclear assistance in the past, and it is likely that at least the former is continuing. The critical question today is whether North Korea is helping Iran circumvent the nuclear agreement by providing it with technologies, components and more.

South Korea is a close American ally. It enjoys the security provided by an American defense treaty and tens of thousands of U.S. soldiers are deployed in its territory. Israel has an informal American security assurance and no U.S. troops are deployed in its territory. Nevertheless, its dependence on the United States is not that much less. Both countries look at what is happening today in Washington – which is led by a president who has difficulty differentiating between reality shows and reality, governs via Twitter and spouts injudicious threats – with a sense of astonishment and concern.

No international analogy is ever perfect, but in this case even some of the solutions are similar. Both Israel and South Korea are called upon today to demonstrate maximal forbearance and restraint in the face of severe provocations, and to rely even more than in the past on diplomacy and defense. Neither country has anything to gain from a military conflict. There are no quick and easy military solutions to the threats they face, and, thus, prudence lies in long-term conflict management rather than illusory attempts to achieve decisive military victories.

The diplomatic effort to manage the conflict with North Korea has been ongoing for decades, with recurrent crises and agreements. Israel, too, has been attaching greater importance to diplomacy in its conduct of the conflict with Hezbollah, as manifested in the role it granted the United Nations in the withdrawal from Lebanon in 2000 and in ending the Second Lebanon War in 2006.

Both countries have deployed missile and rocket defense systems, but have achieved only partial protection and their home fronts remain vulnerable. In South Korea, this reality has led to a strong aversion to any military conflict. Israel, meanwhile, has yet to fully internalize the severity of the expected damage to the home front in the next round – both physical and, no less importantly, psychological – and the resulting need for a crash program to complete a national missile and rocket shield.

As with South Korea, managing the conflicts with Iran and Hezbollah requires close coordination with the United States, including understandings regarding common responses to a renewed escalation on the Lebanese border, possible Iranian violations of the nuclear agreement and the need for a follow-on agreement once it expires.

Both Israel and South Korea need forceful, though calculated, deterrent postures. South Korean deterrence is based mostly on the United States, and President Donald Trump has threatened the North with "fire and fury." Israel, for its part, has warned that the devastation Lebanon will suffer in the next war will set it back by decades. Deterrent statements such as these do not always reflect coherent strategic thinking, but can still be important. North Korea has begun showing signs of caution, while the ongoing calm on the Lebanese border stems, at least partially, from Israeli deterrence.

There is also an important difference between the two cases. Whereas South Korea shares a common border with the North, Iran is far away from Israel. Nevertheless, in recent decades Iran has succeeded in building a capability to strike Israel severely, right by its border, by means of Hezbollah and now its growing presence in Syria. Israel lacks a parallel capability and so Iran has been immune from attack.

In limited conflicts with Hezbollah in the future, Israel should continue to contain hostilities to the Lebanese arena. In a major conflict, however, when thousands of rockets hit our territory, Iran may have to pay a price as well. It might also be possible to adopt an escalatory scale – starting, for example, with attacks on Iranian targets in Syria, even the Syrian regime, and only later, if necessary, Iran itself.

The escalatory dangers imminent in a deterrent policy such as this are severe, and it is not clear it should be adopted in practice. Iran, however, must begin to fear the consequences of its actions, and it is incumbent upon Israel that it find effective ways of deterring it.

***Chuck Freilich** is a former deputy national security adviser in Israel and senior fellow at Harvard's Belfer Center for Science and International Affairs.*

This Missile Could Reach California. But Can North Korea Use It With a Nuclear Weapon?

By Broad WJ, Goendahl M, Keller J, et al.

Source: https://www.nytimes.com/interactive/2017/08/22/world/asia/north-korea-nuclear-weapons.html

Aug 27 – North Korea is speeding toward a goal it has sought for decades: the ability to hit a major American city with a nuclear weapon.

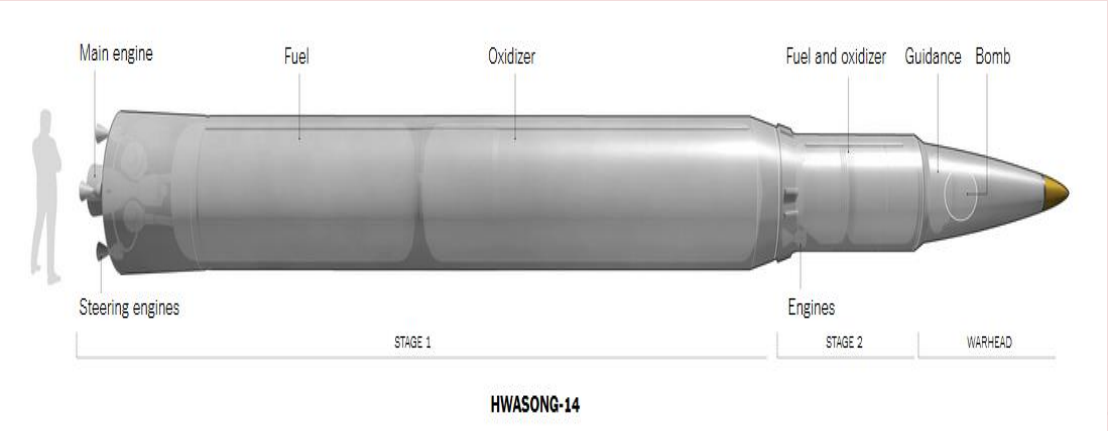
Actually striking the United States would be suicide. But the capability could help the North deter an invasion and wield increased global influence. American intelligence agencies estimate that the North could reach the milestone by next year, and some experts think it already has.

But reliably sending a nuclear warhead halfway around the globe is extremely difficult, and challenges may remain. Here are some of the systems the North needs to advance or master.

Reach the U.S. mainland

It's probably already possible.

Here's what the North's intercontinental ballistic missile looks like, at least as experts can best determine. It's the first ICBM to have flown successfully after many years of empty claims and abandoned models.

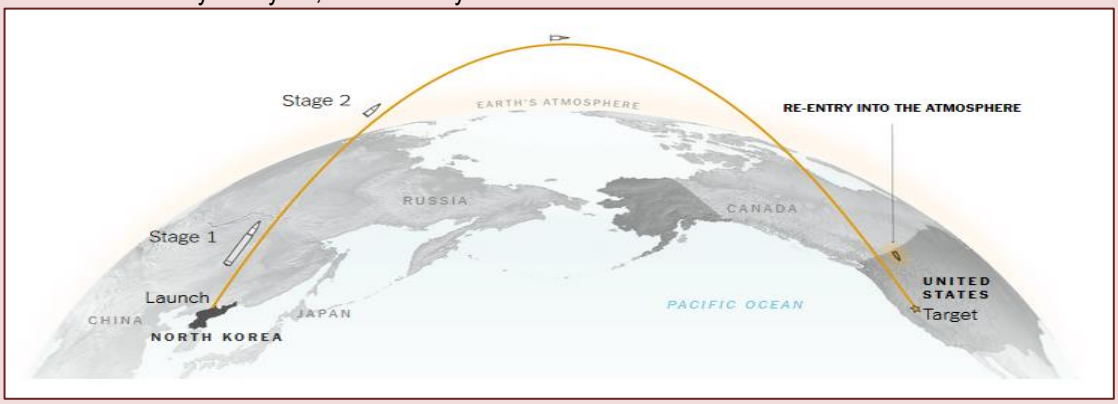


North Korea tested it twice in July. The second test appeared capable of reaching the West Coast, with Chicago and Denver also potentially in range.

The North's ICBM program was long known for modest strides and spectacular failures until it made a rush of advances this year. Analysts say a powerful new main engine lies behind the feats, calling it stronger and more reliable than past models.

A vehicle that can survive re-entry

A crude version by next year, if not already.

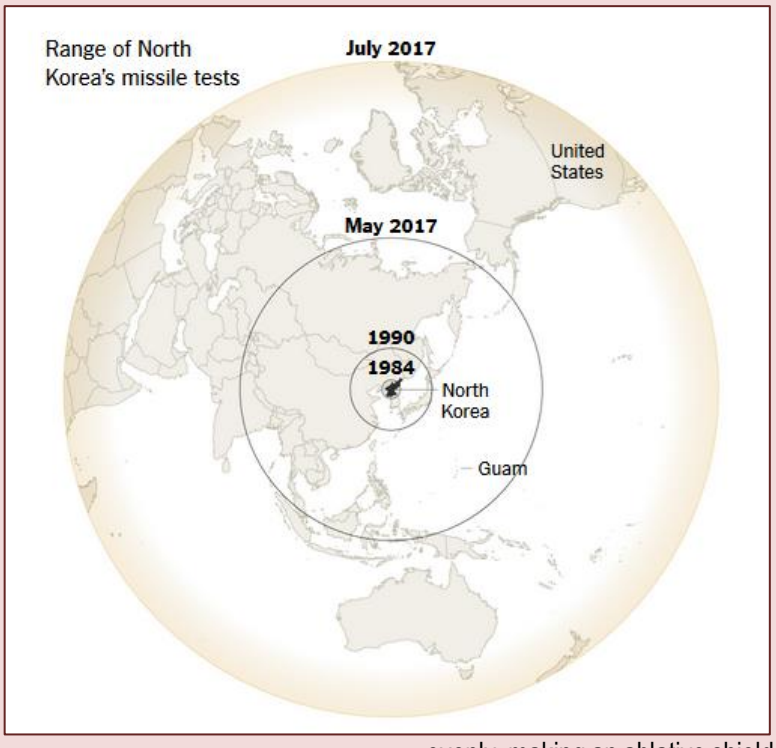


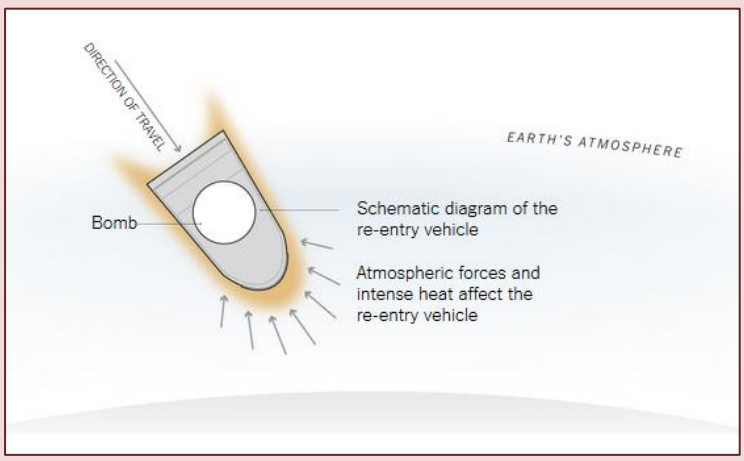
It's relatively easy to get a vehicle into space but very difficult to bring it down.

The main problem for North Korea is developing a missile warhead that can withstand the fiery heat and great violence of atmospheric reentry.

The forces at work are enormous. A warhead fired into the void of outer space by an intercontinental ballistic missile falls back to Earth at speeds of roughly four miles a second. Intense friction with the planet's thick blanket of air produces waves of blistering heat. A badly engineered warhead will burn up long before hitting its target.

One trick of designers is to coat the reentry vehicle with thick materials that burn off evenly, making an ablative shield that sends dangerous heat into the wake. But manufacturing errors can produce uneven burns that throw a warhead off course.

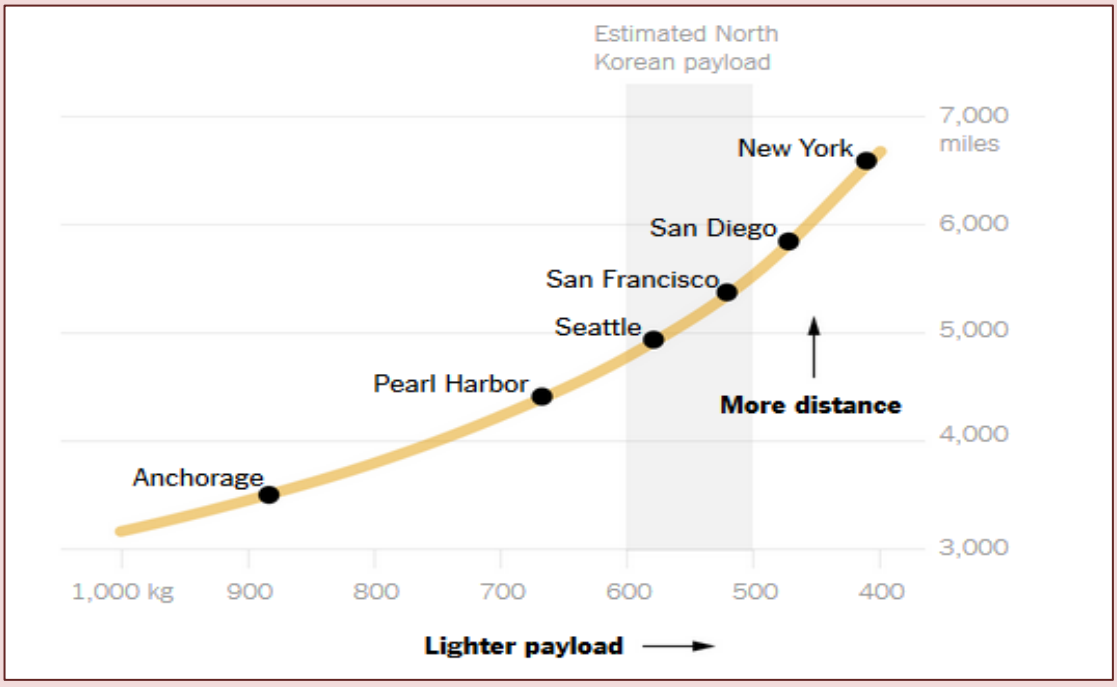




Last month, a camera in Japan caught a glimpse of a North Korean mock warhead as it reentered the atmosphere at night. At first it looked like a shooting star, but

then it seemed to shed a trail of bright sparks and shimmers before dimming and disappearing. Some experts see this video as evidence that the reentry vehicle broke into pieces.
Others are not so sure. Joshua H. Pollack, the editor of The Nonproliferation Review, says that the quality of the video is too poor to determine what happened. "Even if it did break up, it may not mean anything," he said. "It's a solvable problem."
What's clear is that the North is trying hard and making progress. Military and intelligence experts tend to assume the worst – arguably a prudent approach with weapons of mass destruction. If the North keeps up its rate of missile tests, it will likely have perfected a crude re-entry vehicle by next year, if it doesn't possess one already, private analysts say.

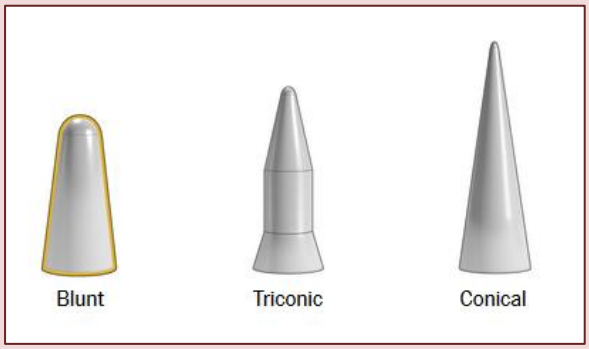
Make a bomb that can fit in a missile
Probably already completed.
Much of the technical debate over the North Korean threat has turned on whether it has miniaturized its nuclear arms so they can fit inside the cramped space of the missile nose cone.
The first atom bomb – dubbed the Gadget – was five feet wide. Last year, the North released a photo of its leader, Kim Jong-un, inspecting a shiny ball described as a miniaturized bomb meant to fit into a missile warhead. It was about two feet wide, small enough to do the trick.
It's impossible to know whether the photo shows a working weapon or a mock-up. But nuclear experts, including American intelligence agencies, judge that the North has indeed succeeded in making its nuclear arms small enough to fit atop an ICBM.
"Any country that has conducted five nuclear tests can probably do it," Mr. Pollack said. "I give them the benefit of the doubt."
The smaller and lighter the bomb, the farther it can go. The chart below estimates how the range of North



Korea's Hwasong-14 missile increases dramatically as the weight of the warhead decreases.

Hit the right place
Not perfect, but close enough.
North Korea's aim is famously poor, and accurately directing a long-range missile that throws warheads halfway around the world is extraordinarily challenging.
Highly advanced states that have worked on the problem for decades can launch ICBMs whose warheads will hit target areas roughly 200 meters wide – "an astonishing technical achievement," says Donald MacKenzie, author of "Inventing Accuracy."

One estimate for North Korea, based on the accuracy of other first-generation ICBMs, ranges between three and five kilometers, or about two to three miles. The true accuracy is impossible to determine because the North's warheads usually fall into the sea, and outside experts know little about its intended targets.



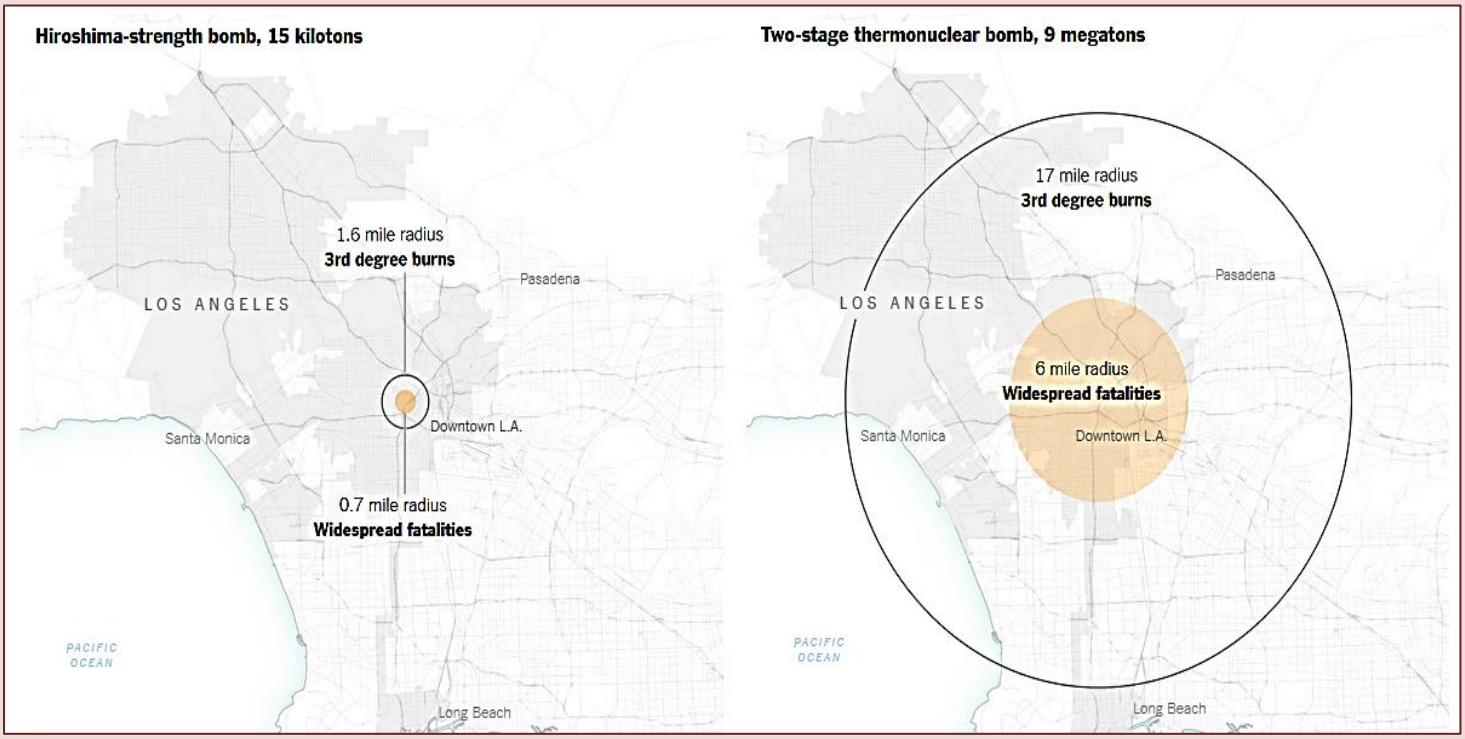
Even so, "that's good enough if you're aiming at a city," said Ian Williams, a missile defense expert at the Center for Strategic and International Studies. But it would probably be insufficient to reliably take out a hardened target like a military installation, he said.

Analysts say North Korea appears to be working toward leaner, more accurate designs for its missile warheads. It currently appears to use a blunt re-entry vehicle that is relatively easy to make but slower and less accurate than the pointy models of advanced states.

Make a more powerful bomb

Still a way off.

North Korea can sidestep the accuracy question and do more damage with a more powerful bomb. But that's difficult given the cramped spaces in a nose cone and the need to keep the weapon as light as possible.



Based on nuclear detonations at the North's underground test site, analysts say the nation currently has weapons with about the same or slightly more destructive power as the Hiroshima bomb, which destroyed the city and killed an estimated 70,000 people with its initial blast.

The standard way of raising the destructive power of a bomb, while keeping it relatively small and lightweight, is to add thermonuclear fuel. The steps are technically daunting but can produce weapons with up to 1,000 times the destructive power of the Hiroshima bomb. Generically, they are known as hydrogen bombs.

Here's a rough map of the difference in destruction if a Hiroshima-sized bomb and one 600 times stronger, the size of one of the largest ICBM warheads ever deployed, hit the center of Los Angeles.

The North Koreans have shown great interest in making hydrogen bombs, but experts have no clear sense of how far they have traveled down the thermonuclear road. The clearest indication would be a very large underground nuclear blast. So far, the North has detonated nothing that comes even close.

Get past United States defenses

Nobody knows for sure.

Can't the Americans just shoot down an incoming nuclear warhead with an antiballistic missile? Maybe. But that kind of protection has never been used against an ICBM in war, only in highly choreographed tests. Even then, the costly antimissile systems have often failed to hit the speeding mock targets.

It's a numbers game that can play to the offense. If the North fires three nuclear warheads and the United States manages to shoot down two, the North would still accomplish much of its objective with just one city's destruction.

The North is clearly exploring ways to improve its penetration of antimissile defenses, and is likely to investigate others. In March, it simultaneously fired four missiles in a salvo that would make it harder for American defenses to shoot down all the incoming warheads.

Warheads that zig and zag could foil antimissile systems. North Korea recently displayed a missile warhead that boasted fins, implying an interest in such evasions.

A final step would be clouds of inexpensive decoys. Advanced ICBMs carry large sets of such fakes alongside real warheads. The false targets provide protective cover and vastly increase the complexity of the antimissile effort.

How will we know when the North Koreans have truly attained the ability to threaten the United States? A friend recently asked Mr. Williams. "I kind of just shrugged my shoulders and said, well, you're going to see a bright light," he said.

Many experts say the North Koreans are well on their way, and they expect the first serious deployments next year. Whether the rogue state's possession of the ultimate weapon will change the world remains to be seen. In the best case, it could be just another in a long series of unthinkable standoffs the world has learned to live with over the course of two atomic centuries.

ADM300A V1B-SIM Radiation Training Simulator

Source: http://www.argonelectronics.com/adm300av1b-sim-radiation-training-simulator

Argon's ADM300A V1B-SIM radiation training simulator is the ideal training instrument for your Canberra / Mirion ADM300 series radiological survey missions enabling your teams to train without the need to involve an ionizing radiological source.

Developed as a result of collaboration between Argon and Mirion / Canberra, this high fidelity radiological simulator incorporates the menu structure and software processing of an actual ADM300A V1B meter to ensure you and your students experience the highest possible simulation fidelity.

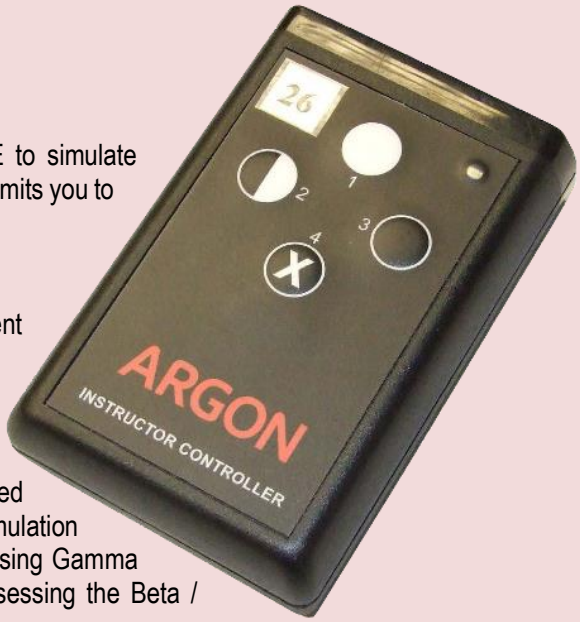
ADM300AV1B-SIM provides high quality radiation safety training:

- Responds to safe simulation Gamma sources.
- Responds to safe Beta contamination sources.
- Easy to set up radiation hazard exercises for HazMat response exercises and training scenarios.
- Good simulation of inverse square law.
- Can be used to demonstrate the principles of shielding.
- All ADM300A functions maintained.
- Beta window function and response simulation.
- A range of external probes to be developed.
- Compatible with the Argon PlumeSIM wide-area exercise system.
- Compatible with all Argon survey and dosimeter simulators.

ADM300AV1B-SIM simulates:

- Both GM detectors
- Beta window function and response.
- Dose, Dose rate and accumulated dose functions.
- All audible and visual alarms.
- All measurement units of actual ADM300A V1B
- Contamination and decontamination.

The safe simulation Beta sources are easily hidden within PPE to simulate contamination while our easy to use decontamination controller permits you to simulate the effect of partial and full decontamination.



Instructor controller

Available in configurations to display the same units of measurement as your real detector, the ADM-300V1B-SIM simulates the analogue and digital display of the detector indicating the dose rate, status of the meter with user configurable audio / visual alarm threshold settings.

Full simulation of the Gamma and Beta detection is implemented including the function of the Beta window. You can configure our simulation sources and PlumeSIM to represent a radionuclide threat comprising Gamma and Beta so that your students can practice monitoring and assessing the Beta / Gamma components of their reading.

We use the actual ADM300AV1B display, sounder and switch panel ensuring all of the visual characteristics and ergonomic / human factors user interfaces are replicated with 100% accuracy to provide the highest quality training.

The simulator is powered by commercially available Alkaline batteries and is designed to require no preventative maintenance or regular calibration ensuring low ongoing cost of ownership.

The ADM300 V1B-SIM is compatible with Argon's PlumeSIM system and a range of other Argon simulators. This enables multi-detector and multi-threat training within the same operational scenario. A range of simulation probes to support the ADM300A V1B-SIM shall also be developed.

After midnight: The July/August issue is available!

Source: http://thebulletin.org/press-release/after-midnight-julyaugust-issue-available10924

July 2017 – Over the decades since the Hiroshima and Nagasaki bombings, the worldwide taboo against the use of nuclear weapons drove agreements such as SALT, START and the INF Treaty. Over the last year, however, the taboo seems to be weakening: North Korea continues to test nuclear weapons, Russia is apparently re-thinking its commitment to the INF Treaty,

there's talk of a German nuclear weapon, and US president Donald Trump has wondered why, if the US has nuclear weapons, it would not use them.
The July/August issue of the *Bulletin*'s digital journal explores "After midnight," an unsparing look at the aftermath of the use of nuclear weapons. *Bulletin* editor John Mecklin states: "In this special issue, 'After midnight,' top experts examine the ethics and practicalities of preparing a humanitarian response to the use of nuclear weapons, some realistic scenarios that could lead to regional nuclear weapons use—mini-Armageddons, if you will excuse the oxymoron—and various ways in which nuclear warfare might be forestalled or, in the event the unthinkable begins, stopped."

Indonesian police uncover extremists' plan to explode 'radiological' bomb

Source: http://www.arabnews.com/node/1150516/world

Aug 25 – **Indonesian militants planned to detonate a radioactive dirty bomb, security sources said, highlighting the rising ambitions of extremists to wreak destruction in the world's largest Muslim-majority nation.**
But experts cast doubt on their expertise, equipment and chances of success. The plot was foiled when police raided homes and arrested five suspects in Bandung, West Java, last week, the sources with direct knowledge of the plot said. After the raids, police spoke of a plan to explode a "chemical" bomb but provided no other details.
The plot comes as Indonesia grapples with an influx of militants deported from other countries and the fallout from the Daesh-led siege in the southern Philippines city of Marawi that regional leaders and analysts worry has energized militants across Southeast Asia.
The three counter-terrorism sources, speaking on condition of anonymity, said the militants had hoped to transform low-grade radioactive Thorium 232 (Th-232) into deadly Uranium 233 (U-233).
The highly radioactive uranium would be combined with the powerful home-made explosive triacetone triperoxide (TATP) to create a "nuclear bomb," according to an instruction manual used by the militants and reviewed by Reuters.
In fact, the device would be, at best, a radiological dispersal device or dirty bomb that could spray radioactive material when the conventional bomb exploded.
A spokesman for Indonesia's national police, Inspector General Setyo Wasisto, declined to confirm or deny the plot to construct the device, but said it would have been more potent than the two bombs made from TATP that killed three police in Indonesia's capital Jakarta in May.
"If this bomb was finished, it would have had a more destructive impact than the bomb made from 'Mother of Satan'," he said, using the nickname for TATP.
"It could burn anything and make it hard for people to breathe." Thorium-232 can be transformed into Uranium-233 but requires the Thorium to absorb a neutron, a process that needs powerful irradiation, generally from a nuclear reactor, according to three analysts contacted by Reuters and the website of the World Nuclear Association, which represents reactor vendors and nuclear engineers, among other industry stakeholders.
The militants' manual advised an X-Ray machine or microwave be used instead. "X rays would not have enough punch to overcome the binding energy of the Thorium atoms," said Peter Hayes, an expert in radiological devices from the Nautilus Institute, in an e-mail.
"And, no, you can't cook Th-232 to make U-233 in a microwave and, if you could, you would have a painful and rapid death from the radioactive nature of the co-present U-232 produced alongside U-233."
One senior Indonesian counter-terrorism source said the Bandung-based cell had bought a large amount of a household item and had begun to extract the Thorium. Reuters has chosen not to name the item.
"They needed three weeks. It was still only one week (into the process when police raided)," the source said.

A Muslim's duty
Indonesia has suffered a series of mostly small attacks by extremists over the past 18 months, although police have disrupted many more.

Indonesian terrorism analyst Rakyan Adibrata fears militants have been inspired by the events in Marawi, where Daesh fighters continue to occupy part of the city despite a three-month offensive by Philippines forces to re-take it.

"They don't have the ability to occupy a city like has happened in Marawi, but they want to do something big that pleases their bosses in Islamic State," said Adibrata.

A radiological bombing could fit the bill, although Adibrata said that it was highly unlikely that the Bandung cell had either "the equipment or the knowledge" to succeed.

Most of Indonesia's recent attacks have involved members of Jamaah Ansharut Daulah (JAD), a pro-Daesh alliance of Indonesian militants. Many have been directed from Syria by an Indonesian national and JAD leader Bahrun Naim, according to police.

Naim is identified as the author on the front page of the 47-page Indonesian-language bomb instruction manual — named "Nuclear for Dummy" (sic) — and posted on a blog that has since been taken down.

"Mastering weaponry is essentially every Muslim's duty," it says.

"This paper, we hope, also can motivate the Muslim mujahideen to learn nuclear science easily and apply it."

Last week, police said the militants had been working off Naim's manual, but did not disclose its contents.

According to police, the suspected Bandung plotters were members of JAD and were considering targets like the presidential palace in Jakarta and police headquarters in Bandung and the capital.

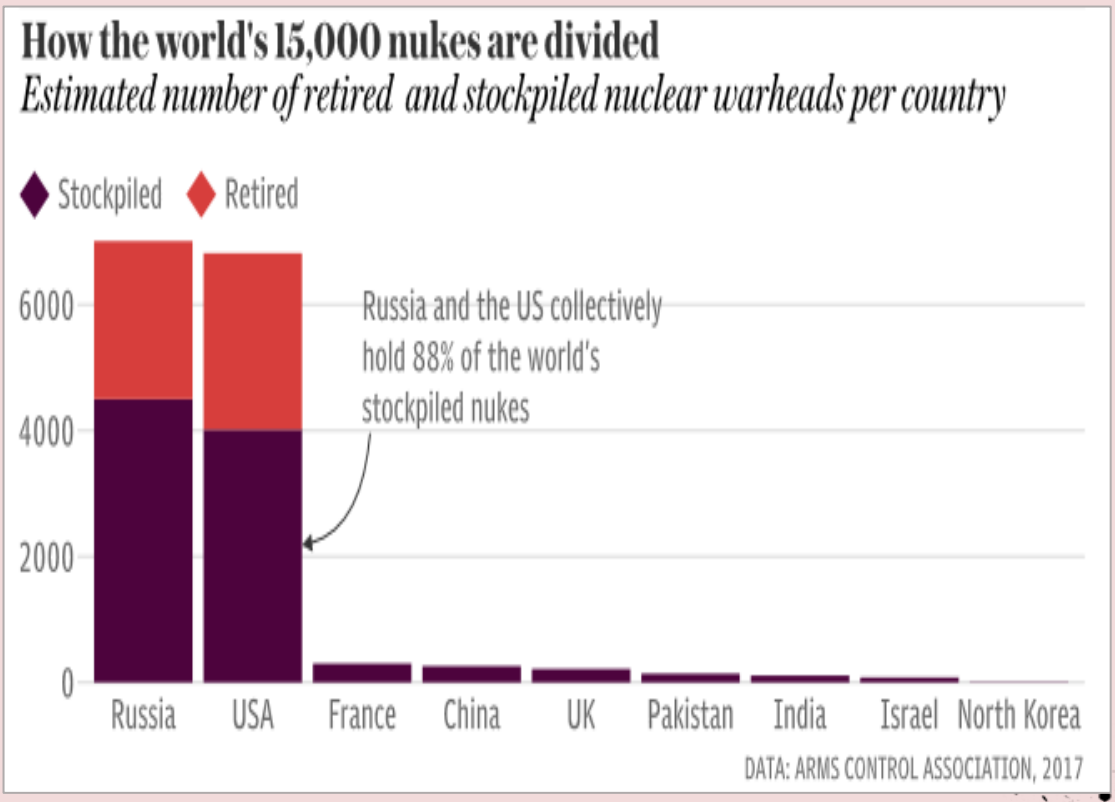
Two of the five suspects are Indonesian migrant workers deported from Singapore and Hong Kong this year for posting radical Islamist material on social media.

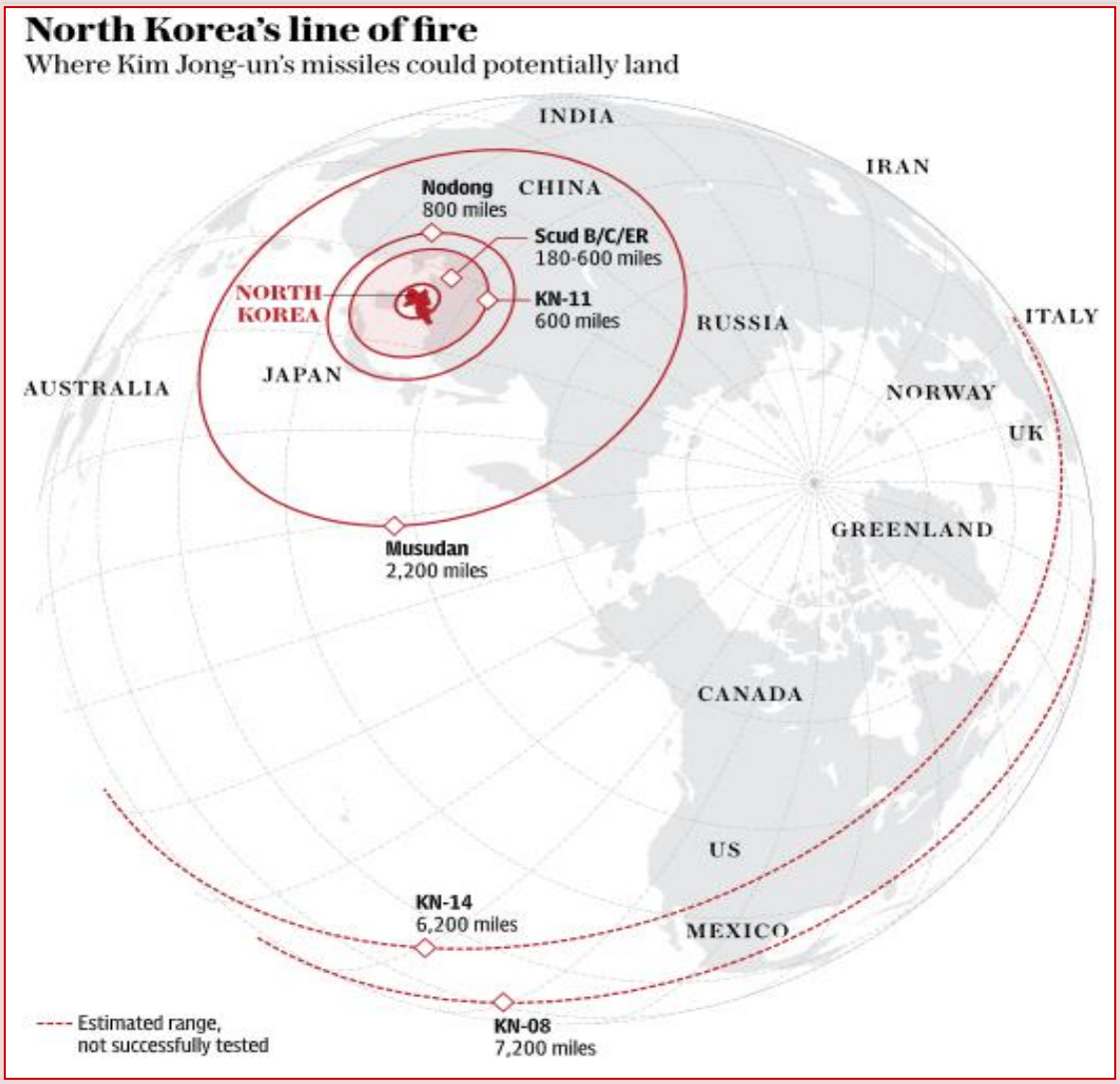
They spent a month or less in a deradicalization shelter before joining up with the other militants, sources told Reuters.

About 177 Indonesian militants have been deported from other countries this year, according to Adibrata, citing the Ministry of Foreign Affairs.

How many nukes are in the world and what could they destroy?

Source: http://www.telegraph.co.uk/news/0/many-nukes-world-could-destroy/





A uranium bank just opened in Kazakhstan to stop the spread of nukes

Source: http://www.chicagotribune.com/news/nationworld/ct-uranium-bank-kazakhstan-20170829-story.html

Aug 29 – Arms control advocates Tuesday celebrated the opening of an internationally supported repository for nuclear reactor fuel that its backers believe will dissuade countries interested in nuclear power from developing the capability to make atomic weapons.

Enriching uranium, the technology that produces fuel for a nuclear power plant, is also the process for creating a nuclear bomb, meaning that the risk of proliferation spreads when individual countries build their own fuel-making facilities.

The International Atomic Energy Agency's low-enriched **uranium bank, opened Tuesday in Kazakhstan,** is the culmination of a years-long effort to respond to this risk. The agency, which will run the "bank" independently of any country, will purchase and store low-enriched uranium, fuel for civilian reactors but not an ingredient for nuclear weapons.

The uranium repository is also a rare bright spot in the rocky U.S.-Russian relationship. Russia is a leading global supplier of uranium to the nuclear power industry and has its own uranium repository. Moscow was initially cool to the idea of an independently run uranium bank that might be seen as a competitor. Ultimately, however, Moscow agreed to support the project. Both Russia and China granted transit rights for uranium fuel being shipped to and from the Kazakh facility.

"Russia played an absolutely critical role in negotiating a transit agreement," said Andrew

Bieniawski, who oversees projects related to the security and minimization of nuclear materials for Nuclear Threat Initiative. The Washington-based nonprofit provided the initial funding for the bank courtesy of a $50 million investment from American billionaire investor Warren Buffett.

Russian Deputy Foreign Minister Sergei Ryabkov, who attended Tuesday's ceremony, hailed the project as "an important element of the international effort not just in nonproliferation but also in the sphere of expansion of the countries that are putting nuclear energy to good use."

"In some ways it's a direct derivative of long-standing U.S.-Russian cooperation on these issues," Ryabkov said.

Those efforts have largely dried up following Moscow's annexation of Crimea in 2014. Other than the notable exception of the Iran nuclear deal, U.S.-Russian programs intended to stop the spread of nuclear weapons materials and negotiations on limiting the two sides' nuclear arsenals have ground to a halt.

"There are a lot more opportunities that are going unaddressed because of the current situation," said Ernest Moniz, co-chairman of the Nuclear Threat Initiative and secretary of energy during President Barack Obama's second term.

Moniz said the two sides could be working on nonproliferation issues despite the chilly relationship. The Nuclear Threat Initiative and the Moscow-based Center for Energy and Security Studies earlier this year compiled a catalogue of dozens of possible U.S.-Russian projects in nuclear cooperation.

Arms-control advocates have expressed hope that the Trump administration's modest support for the uranium bank will signal a willingness to invest in other nuclear nonproliferation initiatives U.S. backing for the uranium bank includes nearly $50 million in federal financial support pledged by the administration of George W. Bush, which, like the Obama White House, embraced the bank concept with enthusiasm. The Trump administration signed off on the U.S. aid package, but did not send a high-level delegation to the ceremony in Kazakhstan.

The White House's early budget proposals have called for cuts in funding for international nonproliferation programs, and President Donald Trump's campaign speeches at times advocated expanding the U.S. nuclear arsenal while also suggesting that more countries should develop nuclear weapons.

Shortly after taking office, the administration launched a comprehensive review of U.S. nuclear weapons policy, with results expected to be announced as early as this fall.

The Trump White House has "not yet put forward a coherent philosophy about how they will address one of the president's greatest responsibilities," said Daryl Kimball, executive director of the Arms Control Association, a Washington nonprofit that advocates increased efforts to safeguard or eliminate weapons of mass destruction. "I am quite concerned about our ability to provide the necessary leadership to advance constructive ideas to reduce risk."

Other donors include Norway, the United Arab Emirates, the more than two dozen countries in the European Union, Kuwait, and Kazakhstan.

"The bank will play an important role in reducing nuclear dangers and serve as a vivid example of the benefits of international cooperation at a time when our world is in a race between cooperation and catastrophe," said former U.S. Sen. Sam Nunn, co-chairman of the Nuclear Threat Initiative, in a packed auditorium in Kazakhstan's capital, Astana.

The ceremony took place on the 26th anniversary of Kazakhstan President Nursultan Nazarbayev's decision to shut one of the Soviet Union's two major nuclear test sites, in Semipalatinsk. In 1995, Kazakhstan turned over to Russia the 1,410 strategic nuclear warheads the Soviets had stationed on its territory, as well as an undisclosed number of short-range nuclear weapons.

"The will of the people of Kazakhstan was stronger than the Cold War," Nazarbayev said at Tuesday's ceremony.

The audience, which included officials from nations that donated to the project, was shown a video feed from the new bank in Ust-Kamenogorsk, about 600 miles of largely empty steppe east of Astana. The glistening repository was empty except for circular white racks that will hold the fuel.

Eventually, the bank will hold 90 metric tons of low enriched uranium, enough to produce fuel to power a large city for up to three years.

Low-enriched uranium fuel will be purchased on the market from a commercial supplier and stored in the Kazakh repository until needed. Countries applying to receive the fuel would be required to pay the market rate.

The bank essentially guarantees that fuel for nuclear power plants will be available, in the case of future disruptions to global uranium markets, to member states of the IAEA who are in good standing with their nonproliferation obligations.

"It gives countries the kind of assurances they need to not rely on their own enrichment," Nunn said in an interview before the ceremony.

It's also intended to make governments resist the temptation to build their own factories to make enriched uranium.

"Countries would have to justify to their own citizens whey they were spending money to go into their own enrichment with a small nuclear program," Nunn said in an interview.

While 31 countries around the world operate nuclear power plants, only 14 produce their own nuclear fuel. The others purchase low-enriched uranium from a handful of international suppliers, mainly in Russia, the United States and Europe. More than 40 countries are actively planning or considering new nuclear power plants to meet help meet growing energy demands, according to the World Nuclear Association. The list includes wealthy countries such as Saudi Arabia and Singapore as well as developing African countries such as Tanzania and Ghana.

While the commercial uranium market is more than adequate to meet the growing demand, some countries could be tempted to manufacture their own enriched uranium as a hedge against future disruptions to the global supply caused by war or political crises. Iran cited concerns over market disruptions as the primary reason for constructing its massive Natanz uranium enrichment plant.

Doctors tackle nuclear weapons as nations prepare to ban them

Source: https://www.pressenza.com/2017/09/doctors-tackle-nuclear-weapons-meet-nations-prepare-ban/

Sept 02 – The launch this week of SIPRI's annual nuclear forces data highlights the growing trend towards massive investment in nuclear weapons modernisation programmes by all 9 nuclear weapons States, despite a reported 3% reduction of 460 weapons in the year.

The USA and Russia between them hold 93% of the world's arsenal, with thousands on hair-trigger alert and ready to be launched within seconds of the order being given. According to SIPRI, to take one example, the USA is due to spend up to $1 trillion over the next 30 years.

This terrifying statistic stands against another published by the International Physicians for the Prevention of Nuclear War (IPPNW) in their report of 2013, prepared for a conference studying the humanitarian impacts of nuclear weapons. Their latest climate and population models indicate that a limited nuclear war with the use of 100 warheads dropped on cities would lead to a nuclear winter that could end the lives of up to 2 billion human beings.

These worrying numbers have led civil society campaigns such as ICAN, the International Campaign to Abolish Nuclear Weapons, to heavily promote a nuclear weapon ban treaty, bringing nuclear weapons into line with chemical and biological weapons as legally prohibited weapons of mass destruction.

After years of promoting efforts to get the UN to agree to such a treaty, this year in June the text of a treaty was approved after negotiations involving over 120 states, and the treaty will

be opened for signing during the UN General Assembly in September this year. With the signature and ratification of 50 States, the treaty comes into force.
All of this forms the backdrop to the IPPNW international congress starting on Monday the 4th of September in the UK city of York, titled "Health Through Peace".
Across a series of expert-led panels, workshops and academic sessions, discussions will be held on ways to achieve health through peace – exploring topics from war and nuclear weapons, to the refugee crisis and climate change.
Pressenza will be there for the three days of the conference bringing news, photos and interviews.

Germans in Aachen get free iodine amid Belgium nuclear fears

Source: http://www.bbc.com/news/world-europe-41121761

Sept 01 – The western German city of Aachen has started issuing free iodine tablets to some 500,000 residents and people living nearby because an ageing Belgian nuclear plant is seen as a risk.
People can register on the city website to receive coupons exchangeable at pharmacies stocking the pills.
Iodine can reduce the risk of thyroid cancer after a release of radiation.

There have been German protests over Belgium's Tihange nuclear plant, some 70km (43 miles) from Aachen.
Reactors there and at Belgium's other nuclear plant, at Doel near Antwerp, have been shut down repeatedly for safety checks. There are seven reactors in total.
There have been shutdowns because of water leaks and the discovery of micro-cracks in some reactor units.
Belgium's federal nuclear agency (AFCN) says scientific checks on the micro-cracks, involving international experts, did not suggest that radiation could leak out.
Germany aims to switch off all its nuclear reactors by 2022.
Belgium plans to shut down Doel 3 in 2022, Tihange 2 in 2023, and the other five in 2025. But there are concerns about how Belgium will plug the 6,000-megawatt energy shortfall implied by that plan.
German authorities have urged Belgium to speed up the decommissioning schedule.
The Aachen move to distribute iodine tablets is highly unusual, as it is not prompted by any particular emergency. Aachen got approval for it from the North Rhine-Westphalia regional government.
Iodine is concentrated naturally by the body in the thyroid gland. The pills work by saturating the gland with an iodine dose, so that any cancer-causing radioactive iodine will not enter.
Aachen's population is about 150,000, but three surrounding areas will also qualify for the free pills. Each person can get a blister pack of six pills.

Image copyright Aachen.de Image caption The people of Aachen can get free potassium iodide pills in blister packs

Emergency doses
Potassium iodide tablets are stocked centrally in Germany and are only to be taken in a civil defence emergency.
But the Aachen authorities argued that, because Tihange is so close, there would not be enough time to supply the pills to every home in an emergency - all the more so if a nuclear accident happened at night.

The dose depends on a person's age. The authorities say people older than 46 are not getting the pills, because for them the risk of serious side-effects is greater than the risk of cancer from radioactive iodine. They can be prescribed an alternative thyroid drug - Irenat.
An initial dose of potassium iodide would be two pills per adult or child aged 13 or over.
Children aged three to 12 would get one pill, toddlers half a pill and babies a quarter of a pill.
"For more than two years we've been worried about the reactor cracks getting bigger - the population has been very worried," said Rita Klösges, acting spokesperson for the Aachen municipality.
"We had talks repeatedly with Belgium about this - the mayor of Aachen was involved too. But we didn't get them to shut down the reactors," she told the BBC.
Germans will vote in a parliamentary election on 24 September, but Ms Klösges stressed that the iodine distribution had "nothing to do with the elections". "It's just by chance that this is happening now, and it only affects one small area of Germany," she said.

Can the U.S. defend itself against North Korean missiles?

Source: http://www.homelandsecuritynewswire.com/dr20170905-can-the-u-s-defend-itself-against-north-korean-missiles

Sept 05 – North Korea has been making steady progress on three fronts: mastering the building of ever-larger nuclear devices; miniaturizing these devices; and improving the range and precision of its ballistic missiles.
The underground nuclear test North Korea conducted on Sunday was in the range of 50-120 kilotons – that is, 4-to-10 times the size of the bomb the United States dropped on Hiroshima (14.5 kilotons).
There are two questions which cannot yet be answered: 1) Was the nuclear device tested on a Sunday a hydrogen bomb, or a boosted atomic bomb? 2) Was it small enough to fit on a ballistic missile?
North Korea boasted that the answer was "Yes" to both questions, but the country's leader have embellished they scientific and military achievements in the past.
The trouble is, their embellishments have proven to be mere premature exaggerations, not complete falsehoods: Typically, within months, North Korea proved it was able to perform it boasted about.
Thus, regardless of the specifics of the Sunday test, one thing is clear: North Korea will achieve — within months, not years, and if it has not achieved this already – the capability to deliver a nuclear weapon to the continental United States and detonate it over a major American city.
Does the United States have the means to protect itself against a North Korean nuclear attack?
Since 1983, when President Ronald Reagan announced his Star Wars initiative – the goal of which, Reagan said, was to make nuclear weapons "impotent and obsolete" — the United States has invested vast amounts of money rying to develop a ballistic missile defense. The original idea, advanced by Edward Teller, was to have small nuclear explosions in space to generate laser beams which would zap Soviet missiles as they left their silos on their way to the United States.
Teller's idea and its permutations were abandoned as impractical, but more traditional kinetic methods of shooting down enemy missiles early in their flight pattern proved more promising.
The BBC notes that the reliability of the anti-missile systems deployed by the U.S. military is not high, especially if the system has to deal with many enemy missiles being launched at the same time.
Proponents of the missile defense notes that North Korea and Iran, the two countries which are likely to pose the most acute threat to the United States, are not going to have large fleets of missiles for long time to come, so that the problem the U.S. ballistic missile defense would have to deal with will be easier than trying to protect the United States against Soviet or Russian missile launch.
Experts also note the success Israel has had in the 2014 war with Hamas, when practically every missile Hamas launched against Israeli city was intercepted by Israel's Iron Dome system.
This is an important point: Iron Dome was so successful because the system's sophisticated radars and computers were able to calculate, within 6-12 seconds of launch, which Hamas missile was heading toward a populated area, and which missile was heading toward an empty field. The Iron Dome interceptors went after only those missiles heading toward urban areas.
Israel could afford to make this distinction because Hamas missiles were carrying relatively small conventional warheads. If a missile heading toward Israel was a carrying a nuclear

bomb – even if only a Hiroshima-size bomb – it would have been extremely damaging even if it were allowed to explode in an empty field 500 yards from a populated area.
This is why Israel has developed additional layers of ballistic missile defense – called Magic Wand and David' Sling — aiming to intercept Iranian missiles at great heights and long distances away from Israel.
Critics of the U.S. ballistic missile defense system say that the U.S. system are up to the job. The results of successive tests have been mixed at best – and critics say that the tests are conducted under highly stylized conditions which do not resemble real-world conditions.
The effectiveness of U.S. defensive systems would be enhanced if the United States were to degrade the North Korean launch capabilities through a pre-emptive strike against North Korea's missile fields and those mobile launchers identified by U.S. satellites. Even if this pre-emptive strike destroyed only 70-80 percent of North Korea's launchers, the task for U.S. anti-missile defense would become easier.
Such a pre-emptive strike, however, would likely lead to an all-out retaliatory strike by North Korea against South Korea's urban centers, with the number of civilian casualties reaching hundreds of thousands, if not more.
If the United States abstained from a pre-emptive strike, then the burden on the U.S. anti-missile systems would increase dramatically.

Trump can't win: The North Korea crisis is a lose-lose proposition for the United States

By Benjamin Habib
Source: http://www.homelandsecuritynewswire.com/dr20170905-trump-can-t-win-the-north-korea-crisis-is-a-loselose-proposition-for-the-united-states

Sept 05 – North Korea's sixth nuclear test confirms it is very close to perfecting a miniaturized warhead for deployment on its missile delivery systems. The 6.3 magnitude seismographic reading registered by the test blast is approximately ten times more powerful than that recorded from its nuclear test in September 2016.
There seems to be no outcome from this crisis in which U.S. power is enhanced. This adds to the gravity of the Trump administration's impending response to the nuclear test. Let's walk through the possible scenarios.

War
If the United States goes to war with North Korea, it risks the lives of millions of people across the region. U.S. Secretary of Defense Jim Mattis responded to the latest test with a threat of an "effective and overwhelming military response". This is the kind of rhetorical overreach that is undermining U.S. regional standing under the Trump administration.
There are high risks in any military action against North Korea. There are essentially no good options for compelling it with force. As recently departed White House adviser Steve Bannon said:
There's no military solution [to North Korea's nuclear threats], forget it. Until somebody solves the part of the equation that shows me that ten million people in Seoul don't die in the first 30 minutes from conventional weapons, I don't know what you're talking about, there's no military solution here, they got us.
The United States loses in any war scenario, even though its combined military forces with South Korea would inevitably win such a conflict.

Squibbing it
If the Trump administration talks tough and doesn't follow through, it leaves America's regional allies exposed – and gifts China pole position in shaping relations in northeast Asia.
America's northeast Asian alliances, particularly with South Korea, will be challenged regardless of what Donald Trump does next.
North Korea's nuclear-capable intercontinental missiles increase the risk to the United States of defending South Korea and Japan in the event of war. This undermines their governments' faith in America's security guarantee. It does not help that the Trump administration has been slow to fill the ambassadorial roles to South Korea and Japan.

Any military action that leads to an escalation to war risks a North Korean artillery attack on Seoul, and missile strikes on other targets in South Korea, Japan and further afield.
North Korea is more likely to use nuclear weapons if backed into a corner and the perpetuation of the Kim regime was directly threatened. U.S. alliances with South Korea and Japan would come under great stress if they were attacked, given that those alliances are in place to prevent such an occurrence.

Sanctions
If sanctions continue to be ineffectual, North Korea completes its end-run to having a deployable nuclear weapons capability.
This outcome undermines the nuclear nonproliferation regime. North Korea's successful nuclear weapons development weakens this system by serving as an example to other would-be proliferators that they can develop nuclear weapons without any meaningful consequences – the ineffectual economic sanctions regime notwithstanding.
This outcome will also demonstrate that the United States cannot prevent a determined nuclear proliferator from undermining its nuclear hegemony.
Nuclear monopoly, underpinned by the limit on the number of countries with nuclear weapons built into the Nuclear Nonproliferation Treaty, is one of the pillars underpinning U.S. global power. The "nuclear shadow" cast by countries with nuclear weapons provides them with greater leverage in dealing with the United States and narrows America's menu of choice for exercising power.

Trade war with China
If the United States threatens to squeeze China as a path to influencing North Korea, it risks a trade war it inevitably loses.
Trump has tweeted that the United States "is considering, in addition to other options, stopping all trade with any country doing business with North Korea". This is a not-so-veiled message to China, North Korea's largest trade partner.
Treasury Secretary Steven Mnuchin doubled down on this proposition. He claimed his department was working on a sanctions package that would strangle "all trade and other business" with North Korea.
There have also been calls to urge China to embargo crude oil deliveries to North Korea to further squeeze the Kim regime.
However, the United States consumes Chinese imports to the tune of $463 billion worth of goods. As Hillary Clinton pointed out while secretary of state, China has enormous leverage over the United States as its largest creditor.
Risking global recession through a foolish protectionist spiral or forcing China to drop the "dollar bomb" is not a credible strategy for soliciting Chinese assistance with handling North Korea.

Nuclear freeze
In the unlikely event that the United States negotiates a nuclear freeze with North Korea, it simply kicks the can down the road.
When we strip back the ritualised tough talk that regional leaders routinely articulate after North Korean provocations, and the inane repetition of the meme that diplomacy equates to "appeasement", talking to North Korea may be the least-worst option forward.
The Kim regime may agree to a nuclear weapons development and production freeze, or a missile testing moratorium to buy time.
But given the importance of nuclear weapons to Kim Jong-un's *Byungjin* development model (simultaneous nuclear weapons proliferation and economic development) to his domestic legitimacy, and North Korea's long history of coercive bargaining tactics in which it engineers crises to obtain concessions in exchange for de-escalation, this could only be a postponement of North Korea's inevitable proliferation success.
The problem with the negotiation gambit is that there is no mutually agreeable starting point. There is no outcome in which the regime willingly relinquishes its nuclear weapons program because the Kim regime is so heavily invested in nuclear weapons as the foundation of its security strategy, economic development pathway. and domestic political legitimacy.

A peace agreement

If the United States sits down to negotiate a peace treaty with North Korea, its regional prestige will be forever damaged – and the raison d'être of its military presence in South Korea will evaporate.

Another avenue for negotiations to progress may arise once North Korea has perfected and deployed its nuclear weapons capability.

At this time, North Korea may call on the United States to negotiate a security guarantee and a formal conclusion to the Korean War, which remains technically alive since the 1953 Armistice Agreement.

But why would North Korea want to engage in such negotiations? It will have greater leverage in these negotiations when backed by a nuclear deterrent.

Yet such an agreement might be the least worrying option available to the Trump administration, given the unpalatability of other options. It seems likely that regional countries will ultimately have to find a way to manage a nuclear North Korea.

A marker of U.S. decline

There are no avenues for the Trump administration to demonstrate strength and resolve that do not ultimately expose the limitations of that strength.

Could current events on the Korean Peninsula represent America's "Suez Crisis" moment? In 1956, Britain over-reached in its attempt to maintain a post-war imperial toehold in Egypt, exposing the chasm between its imperial pretensions of a bygone era and its actual power in the aftermath of the second world war.

The North Korea crisis is the most obvious face of hegemonic transition. Trump's United States is facing a set of outcomes to the current crisis that are lose-lose. They are exposing the reality of U.S. decline and the growing limitations of its ability to shape the strategic environment in northeast Asia.

***Benjamin Habib** is Lecturer, School of Social Sciences, La Trobe University.*

Why we should start worrying about nuclear fallout

Source: http://www.homelandsecuritynewswire.com/dr20170905-why-we-should-start-worrying-about-nuclear-fallout

Sept 05 – Since North Korea's recent missile tests, and Sunday's underground nuclear test, the possibility of nuclear warfare looms larger than it has in more than five decades. Nearly thirty years after the cold war ended, are we prepared to face such a challenge? How would large-scale nuclear attacks affect the world today?

Gabrielle Hecht is a senior fellow at the Freeman Spogli Institute for International Studies (FSI), professor of history, and the Frank

Stanton Foundation Professor of Nuclear Security at CISAC. Shestudies uranium mining and nuclear waste on a global scale. She tells FSI what radioactive contamination would look like today and what damage nuclear activities have already caused, unbeknownst to most of us.

Note: This is Part One of the FSI series on the consequences of nuclear war. The interview was conducted before Sunday, 3 September 2017, underground nuclear test by North Korea.

FSI:Today's nuclear conversation largely focuses on war with North Korea and development of weapons in Iran. What are we not talking about that we should be?

Hecht: The urgency of the moment—and speculation about what would happen in the event of nuclear war—shouldn't derail us from understanding the challenges posed by seven decades of intensive nuclear development. These include long-term environmental and health damage caused by nuclear testing, uranium mining and other activities; the disposal of high and low-level radioactive waste; and the security dilemmas posed by illicit trade in nuclear and radioactive materials.

What would nuclear war look like for the average person?

Hecht: This really depends on where the bombs go off, how big they are and how many go off. The closer people are to the epicenter, the more fallout they will experience. But weather patterns carry radioactive clouds unpredictably, and over very long distances: we know this empirically from decades of atmospheric testing and large nuclear power plant disasters. People can expect persistent contamination of groundwater and food sources. Over three decades after the Chernobyl accident, for example, mushrooms in Belarus are still too contaminated to eat safely. During the cold war, the United States, the Soviet Union, and several European countries built networks of fallout shelters—but even at their peak, these would not have effectively protected the majority of citizens. Nor is radioactive fallout the only problem—as CISAC's Lynn Eden has shown, the damage from mass fires triggered by nuclear bombs has been radically and persistently underestimated.

How can the U.S. meet today's nuclear challenges?

Hecht: We should be paying a lot more attention to the damage that has already been caused by nuclear activities. The biggest Superfund site in the United States, for example, is the Hanford site where plutonium was produced for the first generations of U.S. nuclear weapons. The budget for cleanup there was $921 million, which many experts judged insufficient (and which, to be clear, was merely to contain contamination—the area can never be restored to its pre-nuclear state). The Trump administration has proposed a 22 percent cut in that budget. And that's just one site. Around the country and the world, dozens of other sites involved in weapons production have left their surroundings and employees permanently contaminated.

It has been more than seventy years since the last time a nuclear weapon was dropped in a populated area. Given the technological advances since then, what would be the impacts if a nuclear bomb were used today?

Hecht: You often hear in the media that nuclear weapons have only been used twice—by which journalists typically mean Hiroshima and Nagasaki. But here's a fact that surprises most of my students: the United States is actually the most nuclear-bombed country on the planet, thanks to decades of weapons testing. Fallout is fallout, whether the bombs were detonated in "peace" or in war. Many of the U.S. atomic veterans—including soldiers present during these tests—died of consequences from exposure, or are still waiting for recognition, treatments and compensation.

I'm going to take a wild guess that there were humans (and many other living creatures) near the last North Korean test, just as there were near all the other tests. Studies of the waters around the underground testing zone of French Polynesia show ongoing contamination, which inevitably makes its way up the food chain. Again, the impacts depend on the number and extent of explosions, as well as on weather and water patterns, which affect the amount and type of exposure. Effects on human health include genetic damage, increased risk of cancers and leukemias, immune system compromise and much else. Nuclear explosions produce a large variety of radionuclides: some disappear from the environment in days, others last for centuries.

Your research focuses on Africa's role in nuclear development. How has mining radium and uranium affected the communities there?

Hecht: Places in Africa were involved in the earliest phases of nuclear science. Mines in the

Katanga region of what was then the Belgian Congo provided radium for some of Marie Curie's experiments in the early twentieth century. These same mines provided uranium for the Manhattan Project bombs that destroyed Hiroshima and Nagasaki, and continued to supply the U.S. weapons program until the Congo achieved independence in 1960. These Katanga deposits—now being mined for other minerals by small-scale miners with no workplace protections—are still highly radioactive.

Apartheid South Africa was a major uranium supplier to the U.S. and the U.K. weapons programs through the early 1960s, and to nuclear power programs worldwide thereafter. During any given year of the cold war, mines on the African continent together supplied between 20 and 50 percent of the capitalist world's uranium. Working conditions varied tremendously by time, place and politics. In some mines, workers and the environment received no protection and virtually no monitoring—that was the case in Madagascar. Other mines, such as Namibia's Rössing site, eventually conformed to international standards after considerable pressure from organized labor (and as part of Namibia's struggle for independence from South African colonialism).

Everywhere, environmental contamination will persist for decades to come. In South Africa, for example, rising waters in abandoned mine shafts react with the pyrite in exposed rock and become acidified. Residual uranium and other heavy metals—such as arsenic, mercury and lead—dissolve more readily in these acid waters, which drain into water sources and agricultural land. This situation currently poses a huge, intractable problem for the region around Johannesburg, South Africa's largest metropolitan area, with a population of over thirteen million people.

Here's another fact that most U.S. citizens don't know: France conducted its earliest atomic bomb tests in Algeria, while that country was still under French colonial rule. French veterans of those tests are beginning to get official recognition for the consequences of those tests on their health, but Algerian veterans are still struggling for such recognition.

Detecting carriers of dirty bombs

Source: http://www.homelandsecuritynewswire.com/dr20170905-detecting-carriers-of-dirty-bombs

Sept 05 – For a long time, experts have been warning of attacks using dirty bombs, where terrorists mix radioactive material into conventional explosives such that it is scattered by a subsequent explosion. This is a real danger; ISIS, for instance, claims to have access to radioactive material. Security agencies are aware of the threat: last June, a U.S. port terminal in Charleston was evacuated and closed for several hours following a warning that a dirty bomb was on board a ship moored there. Once the all-clear was given, security personnel stated that they were being deliberately overcautious and had reacted accordingly.

Fraunhofer notes that dirty bombs are not a form of nuclear weapon, since they do not rely on a nuclear chain reaction occurring after they have been set off. The radioisotopes needed to make dirty bombs, such as cesium-137, cobalt-60, americium-241 or iridium-192, are

easier to get hold of than fissile material for nuclear weapons; they are used in many nuclear medicine departments at hospitals and in research centers, but also for materials testing in industry. **"Five grams of cesium – scattered by a couple of kilograms of explosive – is enough to cause billions of dollars' worth of damage, to say nothing of the psychosocial effects and the impact on health.** People who want to build these bombs are risking death through exposure to radiation – but that is unlikely to deter terrorists," says Prof. Wolfgang Koch, a mathematician and physicist who heads the sensor data and information fusion department at the Fraunhofer Institute for Communication, Information Processing and Ergonomics (FKIE), based in Wachtberg, Germany.

Fraunhofer FKIE has developed an assistance system capable of detecting radiological threats in a stream of people and warning security personnel; this is the institute's contribution to the Franco-German REHSTRAIN (Resilienz des Deutsch-Französischen Eisenbahn-Hochgeschwindigkeitsverkehrs) project, which is researching the vulnerability of ICE and TGV high-speed trains. Fraunhofer FKIE is developing the system as a subcontractor to Hochschule Bonn-Rhein-Sieg.

Data protection writ large

The assistance system comprises several components: a sensor network, commercially available Kinect cameras, and data fusion software. The sensor network is made up of gamma spectrometers, which detect and classify gamma radiation. "Most of the materials that lend themselves to being used in a radiological bomb emit gamma radiation, which cannot be shielded. That's why we use this kind of sensor," Koch explains. The next phase of the system will be able to tell which substance is emitting the radiation, and whether it is being carried on someone's person or is present inside their body – perhaps because they are on medication such as radioactive iodine. **Although individual sensors can provide data on the type of material and the intensity of its radiation, they cannot pinpoint its location.** This calls for a network of gamma sensors connected to Kinect cameras as used in the gaming industry. The advantage of these cameras is that they provide not only images but also information about distances. Mounted on the ceiling, they record groups of people like a hilly landscape, which means they can precisely track even the busiest streams of people. "We know at any given point in time where each person is located. But of course, we don't know their identity – and that is an essential consideration for data protection," Koch adds. Biometric tracking of potential terrorists should be undertaken only when there is sufficient reason to do so.

Programm
Forschung für die zivile Sicherheit
Gemeinsame Deutsch-Französische Bekanntmachung: „Zivile Sicherheit – Schutz kritischer Infrastrukturen"

Gesamtzuwendung
1,5 Mio. €

Projektlaufzeit
10/2015 - 09/2017

Projektpartner
Universität der Bundeswehr München
Hochschule Bonn-Rhein-Sieg, Sankt Augustin
TH Köln
HBI Haerter GmbH, Heidenheim
Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin
ARMINES- LGI2P4, Nîmes
Laboratoire Central Des Ponts Et Chaussées (IFSTTAR), Bouguenais
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System clearly identifies carriers of dangerous substances

Once these devices are connected to each other, they can record people in both time and space, and their data fused. Sophisticated mathematical evaluation algorithms then filter out the desired information from the huge amounts of data. "We use **artificial intelligence** to do this. The algorithms help us calculate the movements of the only person with whom the gamma sensor readings can be correlated. That identifies the potential attacker," Koch explains.

If they were applied at critical spots – in entrance areas and approaches to railway stations and airports or other public buildings – assistance systems of this sort could report information about radiological threats to, say, transportation company surveillance systems. The question of who has access is one for security personnel and the police.

Fraunhofer FKIE has been granted permission to experiment with weak radioactive substances, and has already successfully tested its system in the laboratory under the supervision of a radiation control agent. REHSTRAIN has been officially presented as part of a project workshop at FKIE, which in addition to partners from Germany and France was also attended by potential end-users.

The REHSTRAIN project

The terror attacks on the Brussels Metro in March 2016 showed that rail infrastructure is at risk of terrorism. Security concepts and strategic security analyses are essential protective measures against possible attack. With their open, extensive rail networks, the ICE and TGV high-speed trains present a particular security challenge. In order to guarantee the security of those traveling across borders, the partners in the REHSTRAIN project – short for Resilience of the Franco-German High-Speed Train Network – are researching how vulnerable French and German high-speed train services are to terrorist attack.

REHSTRAIN aims to protect critical rail infrastructure using a range of counterterrorism measures and to adjust security requirements to match changing threats. Research is being conducted into how smoke spreads through tunnels and how tunnels behave structurally following an explosion or a fire. The findings will be transferred to a management cockpit that has an overview of the entire rail network. The software for the complex sensor network will use artificial intelligence to help prevent attacks and to deal with the consequences of an attack swiftly and decisively – for instance by calculating alternative routes.

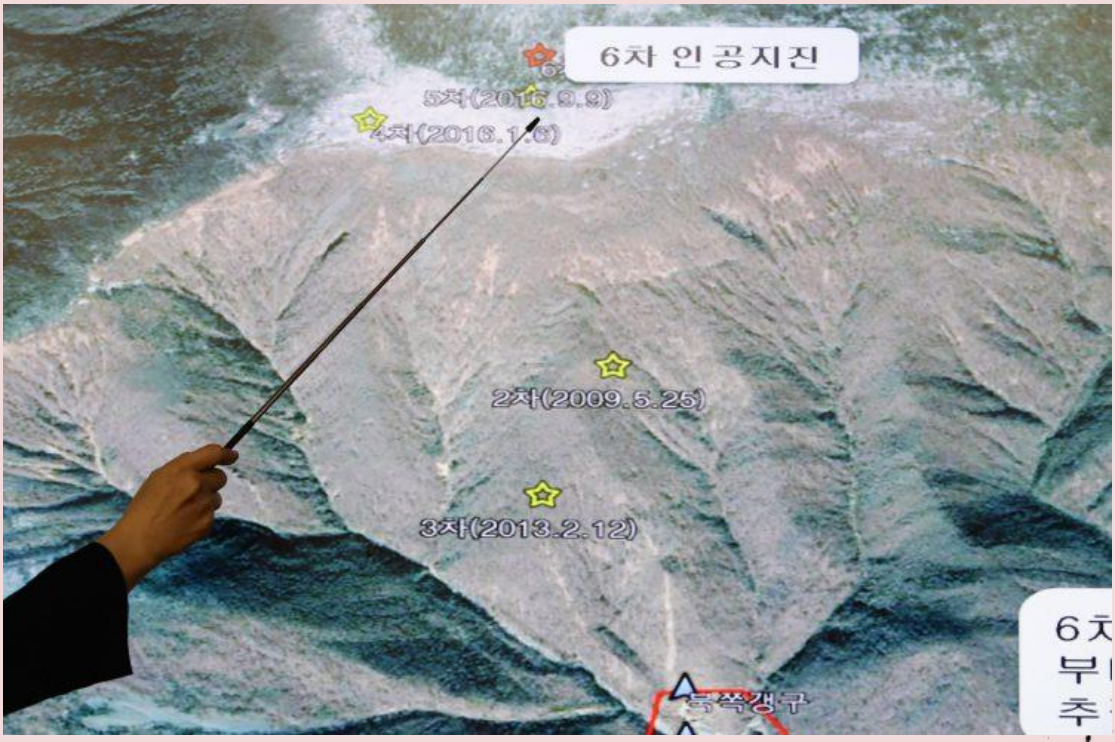
The German Federal Ministry of Education and Research BMBF is providing 1.5 million euros of funding to the project, which is scheduled to run from October 2015 to January 2018. Prof. Stefan Pickl of the Universität der Bundeswehr München initiated this groundbreaking idea and has taken on the role of project coordinator.

EDITOR'S COMMENT: With more sensitive chemical detectors this project could detect suicide bombers in mass gatherings as well.

North Korea mountain used as nuclear test site at risk of collapsing, Chinese scientist says

Source: http://www.foxnews.com/world/2017/09/05/north-korea-mountain-used-as-nuclear-test-site-at-risk-collapsing-chinese-scientist-says.html

Sept 05 – A mountain in North Korea believed to have served as the site of five of the rogue regime's nuclear tests -- including Sunday's supposed hydrogen bomb explosion -- is at risk of collapsing and



leaking radiation into the region, a Chinese scientist said Monday.

Researchers at the University of Science and Technology of China in Hefei, Anhui province, examined the Punggye-ri site and said they "were confident" underground detonations were

occurring underneath the mountain, South China Morning Post reported. Wang Naiyan, a former chairman of the China Nuclear Society and a researcher on China's own nuclear weapons program, said another test underneath the mountain can cause an "environmental disaster" if the site caves in on itself, allowing radiation to escape and "drift across the region," including into China.

"We call it 'taking the roof off.' If the mountain collapses and the hole is exposed, it will let out many bad things." Wang told the South China Morning Post.

Wang said there are limited mountains in North Korea that are "suitable" to conduct a nuclear test and vertical tunnels could reduce the likelihood of the "top" of the mountain being blown off. However, horizontal tunnels are easier to build – but more likely to cause the mountain to implode with a bigger blast.

North Korea claimed it detonated a hydrogen bomb over the weekend, calling the test a "perfect success." The test triggered an artificial magnitude 6.3 earthquake, the U.S. Geological Survey reported. A second tremor was detected minutes after the first, described as a cave-in or collapse by USGS and China's earthquake administration.

The test was estimated to have a yield of 100 kilotons, meaning a blast that was four to five times more powerful than the explosion in Nagasaki, Japan, in 1945, a South Korean defense official told the country's Yonhap News Agency. The precise strength of the underground nuclear explosion has yet to be determined and experts are still working to confirm the nuclear device was in fact a hydrogen bomb.

Despite Wang's warning about radiation, readings conducted after the test on Sunday showed no change in the air sample near China's border with North Korea, the South China Morning Post reported.

The regime's nuclear and missile program has made huge strides since Kim Jong Un took power in 2011 after his father's death. It conducted its first intercontinental ballistic missile test in July following a series of missile launches earlier this year.

North Korea is thought to have a growing arsenal of nuclear bombs and has spent decades trying to perfect a multistage, long-range missile to eventually carry smaller versions of those bombs.

Source: http://www.terravivos.com/

The central theme to all catastrophic and epic life-threatening events has typically always been to find shelter underground. The soil of the Earth itself can provide the best shelter for most catastrophes, deep below the surface. Vivos shelters are deep underground, fully self-contained complexes designed to survive or substantially mitigate virtually any catastrophe, or threat scenario including natural or manmade disasters. Whatever the threat, our shelters are built and engineered to withstand or mitigate just about everything from a pole shift, to super volcano eruptions, solar flares, earthquakes, tsunamis, pandemics, asteroid strikes, the anticipated affects of Planet X / Nibiru, and manmade threats including nuclear explosions, a reactor melt down, biological or chemical disasters, terrorism and even widespread anarchy. This illustrated bunker is below ground. The windows and ceiling are simulated flexible LED screens with

changing panoramic video of an outdoor scene.

The Vivos global network of hardened, deep underground, survival shelters is being built to survive virtually all future catastrophes and disasters. Co-own a membership interest in one of our community shelters or buy your own private underground shelter for the ultimate life-assurance, safety and security for your family. Vivos shelters are considered to be the strongest, most fortified, blast-proof shelters available. Our Quantum underground survival

shelters and bunkers are hardened, underground shelters designed for installation on your private property – anywhere in the world. Then stock it with freeze-dried foods and canned meats, along with all of your survival gear to survive for one year or more.
Be ready for the predicted planetary alignment, doomsday, the Rapture, the end times, or Armageddon. If you believe in the prophecies and predictions of the Bible, Nostradamus, the Third Secret of Fatima,

the visions of Edgar Cayce, and all of the current signs of an economic collapse, future nuclear war, WW3, a pandemic, an EMP power outage, a Yellowstone eruption, a potential asteroid collision, Nibiru, Planet X, Fukushima's eventual meltdown and widespread global radiation, the coming pole shift and/or major earth changes, **it is time to prepare!**

North Korea threatens EMP attack on U.S.

Source: http://www.homelandsecuritynewswire.com/dr20170906-north-korea-threatens-emp-attack-on-u-s

Sept 06 – North Korea's relentless march toward acquiring the capability to place a hydrogen bomb on top of an ICBM will soon pose a threat to all major U.S. cities.
There is another threat that marrying of a hydrogen bomb to a powerful rocket poses: An EMP threat. The North Koreans could launch a missile into the upper atmosphere, then detonate a high-yield hydrogen bomb in space in order to generate an electromagnetic pulse, or EMP, which would shut down the U.S. power grid and damage electrical devices.
The *Daily Mail* reports that North Korea's state news agency specifically referred to an EMP tactic in an official press release. A news announcer of North Korean TV read the release, which said that the bomb North Korea tested on Sunday "is a multifunctional thermonuclear nuke with great destructive power which can be detonated even at high altitudes for super-powerful EMP attack."
The idea of an EMP attack is not new, and in the early phase of the cold war it was openly discussed as one option a nuclear-power state could choose in order to cripple a rival nation. The purpose of an EMP attack is to overwhelm the electric grid, inflicting damage that could last weeks or even moths. Emergency equipment at hospitals would be useless, food refrigeration would not be available, traffic lights would stop working, water purification and sewage treatment facilities would stop functioning, flood gates on dams could not be opened or shut, buildings without independent generators would be without power, and much more.

The *Boston Herald* notes that in 2008, a report commissioned by Congress warned that an EMP attack could bring "widespread and long lasting disruption and damage to the critical infrastructures that underpin the fabric of U.S. society."

EMPs also occur naturally on the sun, and can disrupt electrical system on earth. A 1989 blackout in Quebec was the result of a powerful explosions on the sun which expelled a cloud of charged particles that struck earth's magnetic field.

Many scientists acknowledge that an EMP attack is theoretically possible, but they say the threat is exaggerated because it would be difficult for any rival nation, such as North Korea, calibrate any such attack with sufficient precision to cause maximum damage to the U.S. electrical grid. Unless a North Korean bomb exploded at the precise location and altitude – and such location and altitude are still theoretical constructs, because no EMP attack has ever been executed – the explosion might not do much damage.

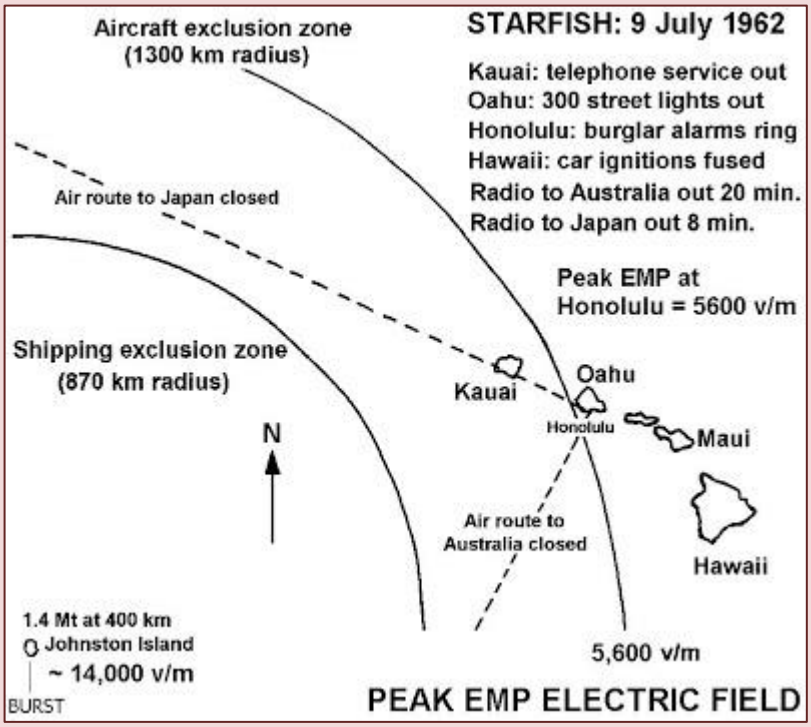
Those who argue that the threat of an EMP attack is more acute note that today's gird and electrical devices are much more susceptible to EMP disruption than what was the case in the 1960s.

Skeptics also question whether it would make sense for North Korea, if it wanted to inflict heavy destruction on the United States, to forego a traditional nuclear attack directed at a large city in favor of an untested concept such as an EMP.

Physicist Yousaf Butt wrote in a 2010 analysis a rogue state would prefer a "spectacular and direct ground burst in preference to a unreliable and uncertain EMP strike. A weapon of mass destruction is preferable to a weapon of mass disruption."

Ballistic missile defense may be one answer to the threat of an EMP attack, because such a defense, if effective, would destroy the missile carrying the bomb before it reaches the right altitude and location.

Other experts say that the threat of EMP could be reduced considerably by designing electrical-grid components to withstand sudden pulses, just as the grid already is protected against lightning strikes. In addition, building backup and redundant systems to step in would be of great help in the event of electrical grids disruption.



How EMP works

Iain Thomson explains in the *Register* how an EMP is generated:

When a nuclear weapon is detonated, it generates not only a massive ball of fire, but also three distinct levels of electromagnetic pulse.

1. As gamma rays erupt from the exploding bomb, they generate a "fast pulse" EMP, or E1, as they strike air molecules. This peaks at tens of kilovolts per meter in a few nanoseconds, lasts for a few hundred nanoseconds in total, and can induce thousands of amperes in electrical systems.
2. From around one microsecond to one second after the explosion, the interaction of gamma rays also generates E2 EMP. This is less of an issue, but coupled with the E1 pulse could cause electrical damage.
3. It is the E3 "slow pulse" that is a massive problem for industries like power generation and telecommunications, the facilities of which happen to be located below or near the blast. It is caused by the effect of the explosion on the planet's magnetic field and can last hundreds of seconds. Its effect on electrical systems using long cables is immense, generating hundreds to thousands of amperes in conducting lines.

Physicists knew about the electromagnetic pulse (some scientists call it "radioflash") generated by a nuclear explosion even before the first atomic test in 1945. It was considered an annoying side effect that could easily be protected against.

Thomson notes that in the 1960s the United States and the Soviet Union began to consider using EMP for offensive purposes. In 1962 both countries began detonating atomic bombs in the upper atmosphere and recording the effects on the ground.

On 9 July 1962, the United States conducted the Starfish Prime test, detonating a 1.4 megaton bomb 250 miles up over Johnson Island in the Pacific. It caused electrical damage on Hawaii 1,400 miles away, crippled eight satellites, and killed three of them stone dead.

"While Hollywood fiction usually depicts the start of a nuclear war with masses of rockets firing off, in fact the first sign of war would probably be power failures and electronics dying," Thomson writes. "Both sides had war plans that called for the first detonations to take place in the upper atmosphere, generating a massive EMP that would hopefully cripple the enemy and reduce their ability to retaliate and recover."
Experts testifying before the Congressional EMP Commission said that in the event of a massive EMP attack on the United States using multiple high-yield warheads, around 90 percent of the American population would be dead after eighteen months due to famine, disease, and societal breakdown.

Radiation analysis software from Sandia Lab helps emergency responders

Source: http://www.homelandsecuritynewswire.com/dr20170906-radiation-analysis-software-from-sandia-lab-helps-emergency-responders

Sept 06 – When law enforcement officers and first responders arrive at an emergency involving radiation, they need a way to swiftly assess the situation to keep the public and environment safe. Having analysis tools that can quickly and reliably make sense of radiation data is of the essence.
Decision-makers in these emergencies can now turn to a new Sandia National Laboratories-developed tool called InterSpec. A software application available for both mobile and traditional computing devices, InterSpec can rapidly and accurately analyze gamma radiation data collected at the scene.

Comprehensive, easy-to-use radiation analysis tool
Software developer and physicist Will Johnson said InterSpec updates, strengthens and integrates many radiation analysis tools and resources into a single mobile or desktop application that is seamless and intuitive to use.
"InterSpec allows decision-makers to rapidly identify both radioisotopes and shielding materials around

the source," Johnson said. "InterSpec is also a valuable tool for laboratories and other academic and industrial settings where an accurate understanding of detected radiological material is crucial."

For the past four years, Sandia researchers have been making InterSpec easy to use in any situation by anyone who works with radioactive material. The Sandia team consists of Johnson and researchers Ethan Chan, Edward Walsh and Noel Nachtigal.
Sandia Lab says that InterSpec was created for people who have some radiation knowledge but are not experts. In many situations, radiation experts are not immediately available to assist law enforcement personnel and emergency responders. Using InterSpec, even people with limited analysis experience can obtain the detailed radiation information they need to make quick decisions.
"You can take the radiation data from any detector, and InterSpec will identify the radiation source, describe its shielding and calculate the radiation dose," Walsh said. "InterSpec will also tell you if it's dangerous for you to be around this source. The tool is amazing."

Multiplatform tool with more features, larger database
InterSpec provides quick, useful radiation analysis by combining radiation physics, radiation transport calculations and detector response functions with a radioisotope database that is much larger than those found in similar products. These attributes enable InterSpec to rapidly compute radiation quantities, reducing user errors.
Sandia notes that unlike radiation-analysis software packages that are limited to Windows systems, InterSpec runs on multiple platforms, including Windows, Mac OSX, Linux, iOS, and Android, and on all web browsers.
The wide range of platforms means users in different settings can quickly exchange data and share a unified view of the data. Furthermore, InterSpec works in isolated or shielded environments with no network connectivity needed.
"We've made InterSpec as easy as possible to use," Chan said. "You don't have to spend two or three years to learn the tool. InterSpec is really simple, both in how it looks and how you use it."
InterSpec features include work tracking, the ability to view and edit metadata and automatic saving of spectrum files. The spectrum files include location-embedded metadata for visualization on a map, so users can select a geographical region of measurements.
First-time users can access InterSpec's help system and tool tips that describe each button's function. In addition, intuitive icons enable users to move around the app quickly.

Using InterSpec in the field
Johnson serves on a Department of Energy team that identifies types of radiation found throughout the country.
"The goal of the team is to figure out if detected radiation is a threat or not," he explained. "InterSpec helps determine if an item is a potential threat, and if so, what kind."
Johnson said InterSpec has helped the team respond to events in the field. "The ability to analyze data before reaching a traditional computer or in situations where only a phone or tablet could be taken has proven extremely useful."
InterSpec can be used to help determine the source nuclide type, strength and shielding inside sealed boxes or cargo containers.
"The Sandia team is working to make InterSpec available to people who conduct radiation measurement analysis so they can benefit from the improved workflows, capabilities and time savings of InterSpec," Sandia Lab says.

What happened in North Korea?

By P. Andrew Karam
Source: http://www.cbrneportal.com/what-happened-in-north-korea/

Sept 07 – As we all know (at least, those of us who aren't living under a rock) North Korea recently set off their largest nuclear explosion to date. They claimed that it was a full-blown thermonuclear device; some have accepted this statement at face value while others have been dubious. Rather than weighing in on North Korea's truthfulness, let's instead briefly discuss the different types of nuclear weapons (fission, fusion, and boosted fission) and then see how we might be able to tell the difference.

Fission

When a uranium atoms splits a tremendous amount of energy is released. Breaking a chemical bond (which is what happens to conventional explosives) releases a few electron volts worth of energy; breaking an atomic nucleus releases about a hundred million times more energy. So splitting a single atom releases as much energy as about ten to a hundred million molecules reacting in a block of, say, C4. The trick is getting the atoms to start fissioning, and then keeping them fissioning until you have enough to make an explosion.

As far as initiating the fission process – this is where weapons-grade uranium and plutonium come in. One isotope of uranium (U-235) fissions fairly reading, as does one isotope of plutonium (Pu-239). Although U-235 is fairly rare, we can process uranium to enrich its concentration to the point of sustaining a chain reaction; the plutonium has to be produced in a nuclear reactor. With either of these, we must have enough material to sustain the reaction – this is called the critical mass. Not only that, but it has to be in the correct configuration – called the critical geometry – in order for the reaction to progress.

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

__Andrew Karam__ is a radiation safety expert with 35 years of experience, beginning with 8 years in the US Navy's Nuclear Power Program that included 4 years on an attack submarine. He has published over two dozen scientific and technical papers and is the author of 16 books and several hundred articles for general audiences. He has worked on issues related to radiological and nuclear terrorism for over 10 years.

Deterring North Korea: the view from Tokyo

By Caterina Perossa

Source: http://www.cbrneportal.com/deterring-north-korea-the-view-from-tokyo/

Sept 07 - As the tensions in the Asia-Pacific escalate further, the latest nuclear test performed by North Korea on the 4th of September, causing the equivalent of a 6.3 magnitude earthquake, renewed international concern over Pyongyang's belligerence and its military capabilities. The blast, the biggest so far and considered to have been over four time bigger than the one that hit Hiroshima in 1945, accompanied the claim of having developed a hydrogen bomb. Although the grounds for this claim remain limited, the test does show an unprecedented level of military sophistication that, coupled with the successful testing of an Intercontinental Ballistic Missile (ICBM) in July, suggests that great progress has been made towards the development of a missile that is able to carry a miniaturized nuclear warhead and directly target American soil.

During the past decades, Kim-Jong-Un has pursued Nuclear, Chemical and Biological programs with strong determination, in order to improve North Korea's deterrence vis-à-vis what it perceives as existential threats. It has done so despite the widespread international condemnations and sanctions, which have ultimately been proven ineffective in impacting Pyongyang's behavior or the escalating number of tests. Its regional neighbors, including South Korea and Japan, have been monitoring closely this increase in assertiveness and military capability, as it represents a direct danger to both countries. While the motives for North Korea's aggression towards Seoul find their roots in decades of hostilities and a strong desire for reunification, Pyongyang and Tokyo are not in direct conflict. However, together with North Korea's repeated shows of force, several factors reinforce Japan's concerns: its geographic proximity to the peninsula and its key role in the multilateral alliances with other regional powers.
In 2017 alone, North Korea has launched 14 missiles, most of which have landed in the Sea of Japan, often in it Tokyo's exclusive economic zone. These include the first successful test of an ICBM earlier on the 4th of July and culminate with a missile that flew over Japan's northern island of Hokkaido before falling apart in the Pacific. This test was followed by Pyongyang's declaration that the missile was "the first step of the military operation of the (North Korean military) in the Pacific and a meaningful prelude to containing Guam" and has been defined by Shinzo Abe as "an unprecedented, serious and grave threat". Only twice before North Korea had fired a missile in Japanese airspace and both times it had done so with the excuse of a satellite launch. This is, however, a deliberate show of force, also reinforced by Kim Jong-Un's threat to strike Guam, one of the biggest American bases in the region and key outpost for its power projection.

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

Caterina Perossa *is an analyst at IB Consultancy. She holds a MSc in International Relation from the University of Bristol and a Bachelor in International and Diplomatic Sciences from the University of Trieste (Italy). Her research interests are in International Security and Strategic Studies, Arms control and Defence Policy-Making, with a specific focus on East-Asia and the Asia-Pacific.*

Something else to fret about: ISIS mounting dirty bombs on drones

Source: http://www.charlotteobserver.com/news/nation-world/article171853777.html

Sept 07 – **Here's a fear that keeps counter-terrorism officials up at night: Extremists might use drones to drop dirty bombs or poison on Western cities.**

It could just be a matter of time before Islamic State fighters take drone usage from the battlefield in Syria and Iraq to urban areas of the West, security officials say.

"I understand that an openly available drone, such as a quadcopter, which is able to hold a camera, can drop some dirty explosive device," Friedrich Grommes, Germany's top international terrorism official, told McClatchy on the sidelines of a national security forum.

"Even if only a few people are affected, it serves completely the idea of terrorism," Grommes added. The payload would be "something which is poisonous. It could be a chemical or whatever is commercially available."

Concerns about such tactics grew after Australian federal police said on Aug. 3 that they had disrupted an Islamic State plot to build an "improvised chemical dispersion device" that terrorists sought to deploy in urban areas. Plotters aimed to spread hydrogen sulfide, a poisonous gas.

Such a flying dirty bomb could be attached to a drone and used in Europe or North America, counter-terrorism officials said.

"That technology hasn't quite crossed the Atlantic. It actually hasn't left the battlefield," said Chris Rousseau, director of Canada's Integrated Terrorism Assessment Centre, based in Ottawa.

Rousseau and other counter-terror experts spoke at the two-day Intelligence & National Security Summit 2017 in Washington.

After the panel, Rousseau spoke further about a drone carrying a terrorist weapon: "The question is at what point somebody's going to get the idea to use that here."

Extremists may not have the knowhow to manufacture deadly nerve or chemical agents, choosing simpler chemical components and combining them with an explosive, Grommes said.

"They will refrain from developing the complex chemical or biological attacks because they want to have the sudden spectacular blast," said Grommes, who heads a directorate focused on international terrorism at Germany's Federal Intelligence Service, known as the BND.

Counter-terrorism officials, speaking about other facets of the war on terrorism, said nations must not get complacent about a possible strengthening of Al Qaeda, the extremist faction that launched the Sept. 11, 2001, terror attacks, eventually retreating from Afghanistan to the Arabian Peninsula and North Africa amid sustained U.S.-led military pressure.

The group has been overshadowed by the Islamic State.

In a reversal of Al Qaeda's earlier tactics, Sheikh Hamza bin Laden, son of the deceased Al Qaeda leader Osama bin Laden, called in May for the group's followers to embrace the kinds of "lone wolf attacks" used by Islamic State, its bitter rival, in which jihadists execute terror operations acting largely on their own and without direction.

Experts said the latest crop of terror attacks in Europe were largely carried out by men afflicted by anger more than driven by religious fanaticism.

Khalid Masood, a 52-year-old Briton who plowed a car into pedestrians on London's Westminster Bridge on March 22, killing five people and injuring 50, left behind writings with "almost no real ideological content," said Paddy McGuinness, Britain's deputy national security adviser for intelligence, security and resilience.

Attackers find an outlet for rage in radical interpretations of Islam, McGuinness said.

"They are looking for something and they stick a sticker on it and they find their justification," McGuinness said. "Their grip on their religion is so superficial as to be less than what you'd get by watching a television documentary."

Rousseau, the Canadian official, echoed that belief.

"Religious ideology is very much the excuse," Rousseau said, noting that little differentiates the anger of white supremacists and Islamic radicals.

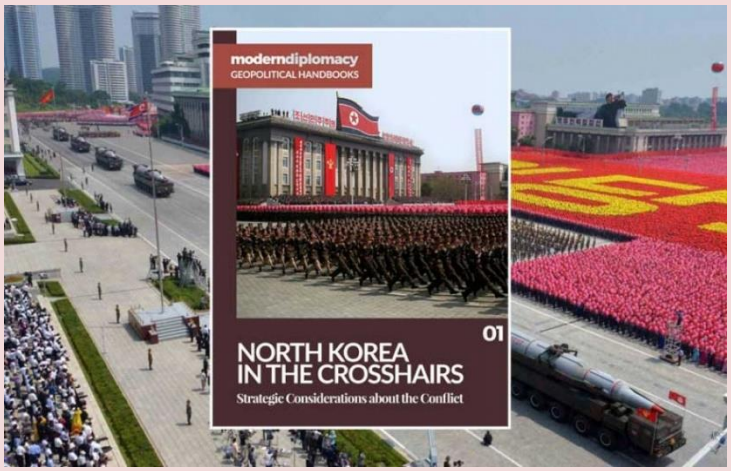
McGuinness called on Britain's allies to do more to remove radical Islamic content from the internet, where he said it becomes an echo chamber for radicals.

"People can radicalize very, very quickly," McGuinness said. Just as some countries bar pedophiles from putting content on line, he said Western countries need to fight the presence of extremists online, "not allow them to be there."

E-book: North Korea in the crosshairs

Source: http://moderndiplomacy.eu/index.php?option=com_k2&view=item&id=2938:ebook-north-korea-in-the-crosshairs-strategic-considerations-about-the-conflict&Itemid=128

This anthology put together by the Modern Diplomacy gives readers an up-to-the-minute rendering of the conflict raging on the Korean peninsula from diplomatic, military, intelligence, cultural, and political perspectives – from the local on-the-ground street level all the way up to the grandest international organization/global power level.



As is always the case with Modern Diplomacy, we seek to dissect problem issues and conflict regions with no specific agenda being pushed, no diplomatic angle being highlighted, and no one country treated as having the perfect answer or solution out of the impasse.

This is particularly important for studies on North Korea. For while the global community itself seems unanimously against the strategic, diplomatic, and military initiatives of the North Korean

leadership, it is important to place all of these events and actions in a larger regional and global context. This does not mean we are seeking to earn North Korea empathy or endorse any of the country's inconsistent or unpredictable behaviors. Rather, Modern Diplomacy believes the only way of hoping to unpack and unravel such behavior is to attempt to understand how it sees the world, its neighbors, its allies, and rivals. It isn't necessarily about putting North Korea in a global *objective* context, but seeking to understand how North Korea *subjectively* perceives itself and its own situation. Elucidating these perceptions – no matter how delirious, unstable, or uncertain they are – is the key to finding opportunities to defuse the conflict and propose workable resolutions. This is the true hope and purpose behind these short anthologies: a working resource for those decision-makers and activated global citizens who care about the world we live in and want to be better informed about all of its dangers.

So, we hope you enjoy this effort and truly find the information contained within a step in the right direction for making you more informed, more enlightened, and more willing to investigate the problem deeply, accurately, and powerfully. In a world full of misinformation and disinformation, may the readers of our anthologies be the light shining such shadows away into oblivion.

Dr. Matthew Crosston Vice Chairman, Modern Diplomacy

9 Ways the U.S. Could Bomb North Korea's Deepest Bunkers

Source: http://www.popularmechanics.com/military/research/a28147/north-korea-bunker-buster/

Sept 13 – Efforts to prevent North Korea's relentless advance toward developing nuclear ICBMs have so far achieved little. There is no end in sight to the stream of tests and new missiles and increasingly powerful warheads. If sanctions and diplomacy fail, what else is there?

Secretary of State Rex Tillerson has said that "All options are on the table." But a conventional strike against North Korea's nuclear and ballistic missile capabilities is near impossible. Vital installations are dug hundreds of feet into the sides of mountains, out of the reach of the biggest bunker busters. Now, though, it seems the U.S. has a "game changer," but we don't much about it yet.

The Defense Threat Reduction Agency (DTRA) is a Pentagon organization tasked with combating weapons of mass destruction, including WMDs stored deep underground in concrete bunkers, tunnels, and mountains. In 2015 the agency commissioned a study on Hardened and Deeply Buried Targets (HDBT) by the JASON advisory panel, then a "Counter-Weapons of Mass Destruction/ Hardened and Deeply Buried Targets Game Changer Report" was passed to the Pentagon's Advanced Capability and Deterrence Panel.

This panel, set up a year before the DTRA study, includes joint chiefs of staff, intelligence agencies, and R&D leadership. The panel oversees the Innovation Initiative, which challenges and improves the Pentagon's way of doing things. The clear implication of the study is that the DTRA has some game-changing new technology for attacking deep bunkers.

So what was in the report?

"I can tell you the study examined a variety of classified threats and military requirements and the range of possible approaches and technologies that could meet those areas," a DTRA representative told Popular Mechanics, but the rest remains classified. This is not a lot to go on. If the U.S. government does have an anti-nuke ace up its sleeve, it's well hidden. But looking at the tech developed by DTRA and its sister organizations might help paint a better picture of nuclear deterrence.

GBU-57 Massive Ordnance Penetrator

The DTRA's current biggest and best munition, a 14- ton bomb that's 20 feet long, is able to drive through more than 60 feet of concrete. While the MOP has been upgraded many times, it's not likely that more than slight improvements can be achieved, so it is hard to see this being a game changer.

Giant shaped charge

An explosive shaped charge can punch a hole through solid rock so that a follow-on warhead can destroy a deeply buried target. While impressive, this technology is difficult to scale up to a terrifically large size. The 700-pound "largest known shaped charge" developed by Sandia National Laboratories in 2003 was a major engineering achievement and drilled through 20 feet of

rock, creating a tunnel large enough for a bomb or missile to follow through. This was at the very limits of engineering at the time, and it is not clear that shaped charges can get any bigger.

Isomer bomb

Some years ago, DTRA funded research into a fundamentally new type of explosive device, triggered by energy releases from a nuclear isomer of the element hafnium, called simply an isomer bomb. Although not as powerful as a nuclear weapon, it could potentially be thousands of times more powerful than TNT. This would certainly be a game-changer—if it worked.

The problem is that many physicists doubt the feasibility of an isomer bomb. While it might be possible to release energy from isomers, it is not clear that the energy could be fast enough to be explosive. As far as we know, the project was canceled because of questions over the validity of the underlying science.

Hard Target Munition

If you cannot make a bunker buster bigger, make it faster. That's the idea behind the Air Force's next-generation Hard Target Munition. Much smaller and lighter than existing bunker busters at 2,000 pounds, the new missile can be carried internally by an F-35 and is rocket-boosted to high velocity, possibly even supersonic speed. However, basic physics limits its bunker-busting ability. Higher speeds tend to shatter the bomb on impact, and increase drag as it travels through rock. It's estimated depth, at tens of feet, wouldn't be enough to reach North Korea's bunkers some 200 feet underground.

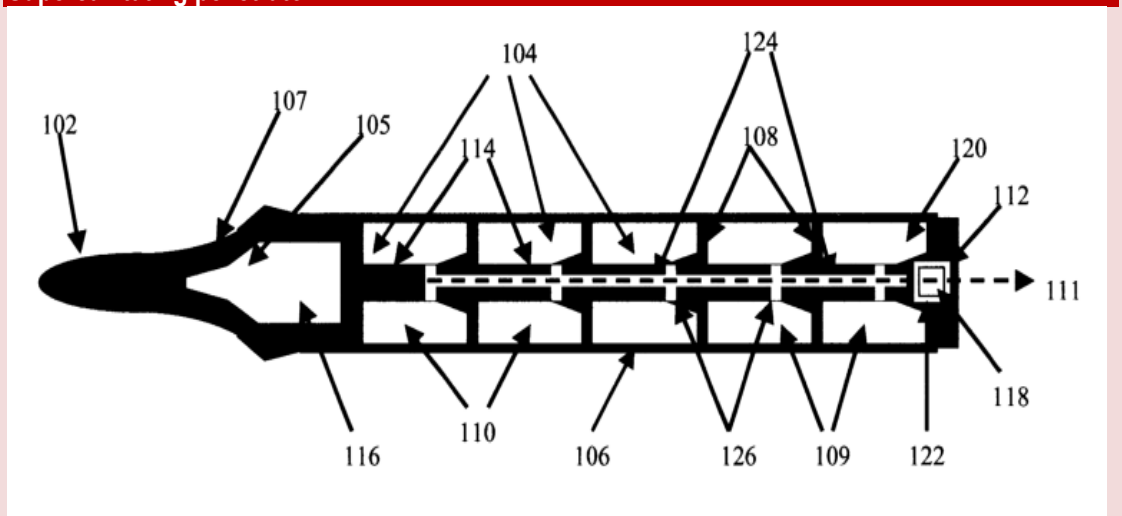
Infiltration drones

Previously the Air Force have looked at swarms of crawling drones to infiltrate underground facilities which could sneak in through air ducts or other entry points. A 2013 Air Force study included "Pipe Snakes" that could enter through sewage lines and burr-like robots that could attach themselves to people entering a facility. Harvard and other organizations have worked on similar swarming drones for non-military purposes, so the tech is possible, but this type of attack likely wouldn't work more than once.

EMP Blaster

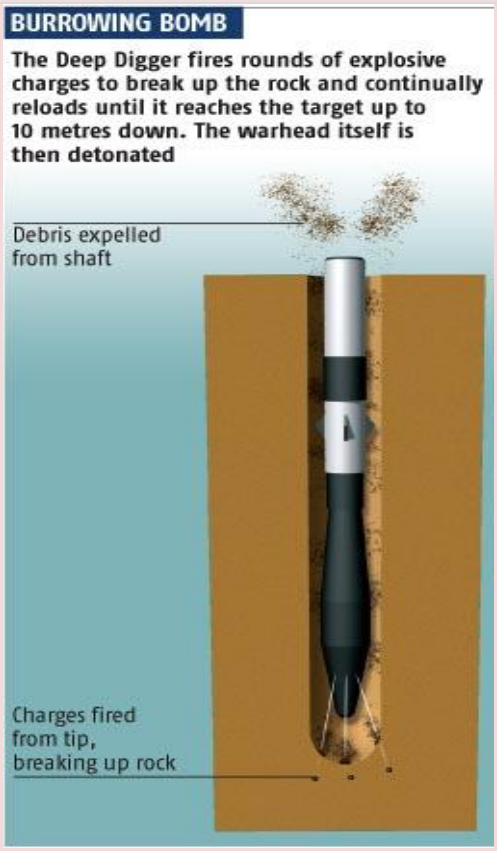
If you can't physically destroy a facility, just make it useless. Knocking out all the electronics and the power system with a powerful electromagnetic pulse will put it out of action. The U.S. Army recently developed a weapon called Phaser that destroys circuits with a beam of microwaves, while the Air Force has a similar device called CHAMP which can be carried on a cruise missile. This would take down underground nuclear production plants but would do nothing against stored warheads.

Supercavitating penetrator



Patent for supercavitating penetrator warhead

A DTRA project from a few years ago, this applied the supercavitation principle used by high-speed rocket torpedoes to bunker busting. The idea is that bombs can glide through earth



and rock behind a cushion of gas. Little has been published since then, though what little has leaked – like this 2012 Israeli paper – suggests that the concept could work.

Deep Digger

A burrowing 2,000-pound bomb, Deep Digger blasts a tunnel through up to 200 feet of solid rock with a set of nose-mounted cannon. The Army developed the tech in 2007, and the plan was for an array of Deep Diggers to be detonated simultaneously to create an artificial earthquake and collapse the deepest bunkers. Prototypes worked well, but nothing has been heard since 2009.

Robotic Underground Munition (RUM)

A cousin of Deep Digger, this 2010 DTRA concept was a robot which could be parachuted into the general area before making its way overground to the target and starting to tunnel downwards, like a more stealthy version of The Mole from *Thunderbirds*. RUM would also carry defensive systems in case anyone tried to stop it. With a suitable power source, it might get to any depth, but there is no indication that RUM made it past the proposal stage.

Designing an instrument to identify uranium, few atoms at a time

Source: http://www.homelandsecuritynewswire.com/dr20170912-designing-an-instrument-to-identify-uranium-few-atoms-at-a-time

Sept 12 – Creating a new instrument capable of detecting trace amounts of uranium and other materials will be the focus of a new research partnership spearheaded by scientists at Colorado State University.
The partnership, led at CSU by University Distinguished Professor Carmen Menoni of the Department of Electrical and Computer Engineering, is supported by the U.S. Department of Homeland Security's Domestic Nuclear Detection Office through its Nuclear Forensics Research Award(NFRA) program.
OSU says that together with researchers at Pacific Northwest National Laboratory, Menoni will oversee the design and implementation of a highly sensitive mass spectrometer capable of detecting just a few uranium atoms at a time. The instrument will also allow nanoscale imaging of the isotopic content of solid samples, in three dimensions. Such a tool could set the stage for new capabilities in nuclear forensics, to support U.S. government counter-nuclear-terrorism efforts.
The nuclear forensics award will bring Pacific Northwest National Laboratory scientist Lydia Rush to CSU as a Ph.D. student in Menoni's lab. The collaboration will involve training Rush and other students in cutting-edge, laser-based mass spectral imaging and forensics.

Existing tech, unprecedented sensitivity

"The new instrument we are going to build is going to be far more sensitive than our previous-generation, extreme ultraviolet time-of-flight mass spectrometry instrument," Menoni said. "It will employ a magnetic sector to identify uranium, thorium and their isotopes at a concentration of a few parts per million."
The imaging technology provides unprecedented sensitivity and spatial resolution because it uses an extreme ultraviolet laser for ablation and ionization. This compact laser is an innovation from the lab of University Distinguished Professor Jorge Rocca.
The laser ablation process creates a plume of ionized atoms and molecules, which the detector reads inside a vacuum chamber. A set of special plates allows the scientists to

extract and detect ions from the sample, identifying uranium (or other elements) by determining its unique ion signature, like a fingerprint.
Identifying minute amounts of various compounds has its uses in national security, but could also be applied to any process requiring identification of very small amounts of molecules.

What If South Korea Acted Like North Korea?

Source: https://townhall.com/columnists/victordavishanson/2017/09/14/what-if-south-korea-acted-like-north-korea-n2380871

Sept 14 – Think of the Korean Peninsula turned upside down. Imagine if there were a South Korean dictatorship that had been in power, as a client of the United States since 1953.
Imagine also that contemporary South Korea was not the rich, democratic home of Kia and Samsung. Instead, envision it as an unfree, pre-industrialized and impoverished failed state, much like North Korea.
Further envision that the U.S. had delivered financial aid and military assistance to this outlaw regime, which led to Seoul possessing several nuclear weapons and a fleet of long-range missiles.
Next, picture this rogue South Korean dictatorship serially threatening to incinerate its neighbor, North Korea -- and imagine that North Korea was ruled not by the Kim dynasty, but by a benign government without nuclear weapons.
Also, assume that the South Korean dictatorship would periodically promise to wipe out Chinese cities such as Shanghai and Beijing. The implicit message to the Chinese would be that the impoverished South Koreans were so crazy that they didn't care whether they, too, went up in smoke -- as long as a dozen of their nuclear-tipped missiles could blow up Chinese cities and paralyze the second-largest economy in the world. Assume that these South Korean threats had been going on without consequences for over a decade.
Finally, in such a fantasy scenario, what if the United States falsely claimed ignorance of much of its South Korean client's nuclear capability and threats. America instead would plead that it regretted the growing tension and the reckless reactions of China to the nuclear threats against it. Washington would lecture China that the crisis was due in part to its support for its North Korean ally.
For effect, the United States would occasionally issue declarations of regret and concern over the situation -- even as it warned China not to do anything to provoke America's provocateur ally.
In such a fantasy, American security experts and military planners would gleefully factor a roguish nuclear South Korea into U.S. deterrent strategy. The Pentagon would privately collude with the South Korean dictatorship to keep the Chinese occupied and rattled, while the U.S. upped shipments of military weaponry to Seoul and overlooked its thermonuclear upgrades.
The American military would be delighted that China would be tied down by having an unhinged nuclear dictatorship on its borders, one that periodically threatened to kill millions of Chinese. South Korea would up the ante of its bluster by occasionally test-launching missiles in the direction of its neighbor.
Question: How long would China tolerate having weapons of mass destruction pointed at its major cities by an unbalanced tyrannical regime?
In response, would Beijing threaten a nuclear Seoul with a preemptory military strike, even though the Chinese would know that Seoul could first do a lot of nuclear damage?
Would China conclude that the United States was the real guilty party because it tacitly sanctioned South Korea's possession of nuclear weapons?

Korea Nuclear Test Furthers EMP Bomb

By Bill Gertz
Source: http://freebeacon.com/national-security/korea-nuclear-test-furthers-emp-bomb/

Sept 14 – **North Korea for the first time this week revealed plans for using its nuclear arms for space-based electronics-disrupting EMP attacks, in addition to direct warhead ground blasts.**
The official communist party newspaper, *Rodong Sinmun*, published a report Monday on "the EMP might of nuclear weapons," outlining an electromagnetic pulse (EMP) attack produced by detonating a nuclear warhead in space.

"In general, the strong electromagnetic pulse generated from nuclear bomb explosions between 30 kilometers and 100 kilometers [18.6 miles and 62 miles] above the ground can severely impair electronic devices, electric machines, and electromagnetic grids, or destroy electric cables and safety devices," said the article authored by Kim Songwon, dean of Kim Chaek University of Technology in Pyongyang.

"The discovery of the electromagnetic pulse as a source of high yield in the high-altitude nuclear explosion test process has given it recognition as an important strike method," he stated.

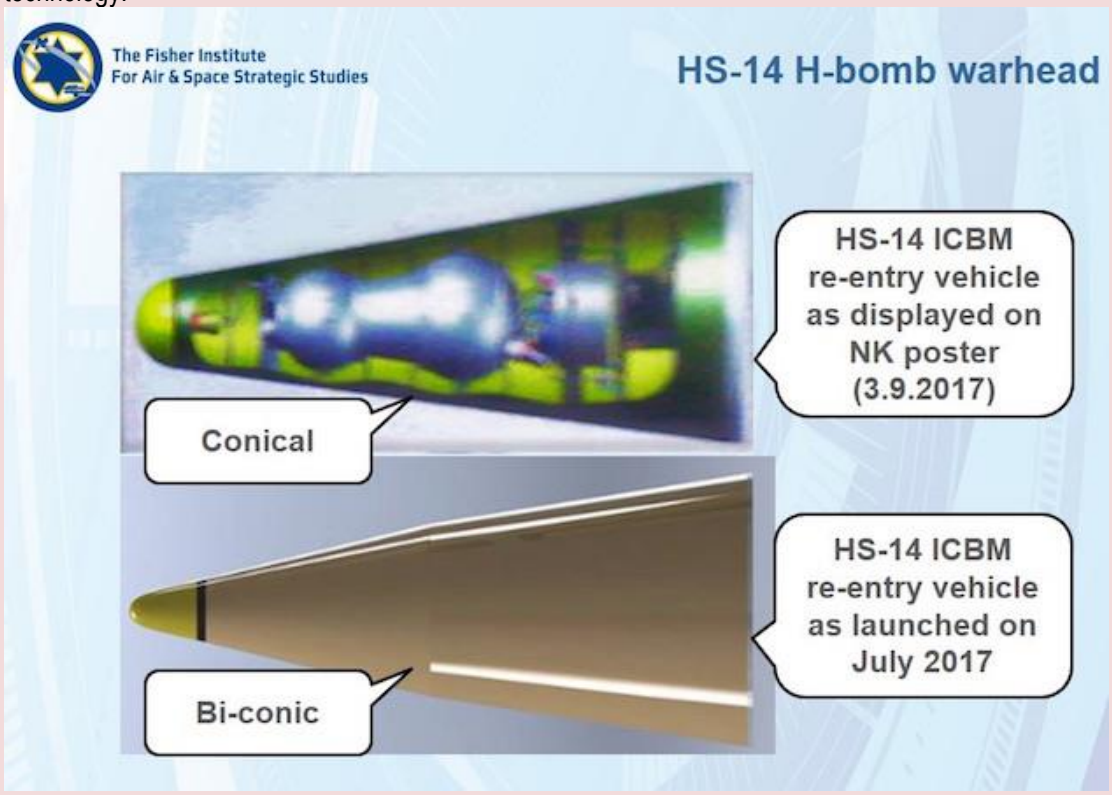
The official discussion by North Korea of plans to conduct EMP strikes will likely fuel debate over the threat. Former CIA Director James Woolsey has said North Korea is capable of orbiting an EMP nuclear weapon in a satellite.

Some liberal arms control advocates have dismissed the EMP threat from Pyongyang as far-fetched, such as arms control advocate Jeffrey Lewis, who in April dismissed the threat of an EMP attack by laughing at a reporter's question. "This is the favorite nightmare scenario of a small group of very dedicated people," he told NPR.

Disclosure of North Korea's intention to use its nuclear force for EMP attacks comes as U.S. intelligence agencies are continuing to analyze the latest underground nuclear test by North Korea on Sept. 3 that the regime said was its first hydrogen bomb explosion.

Senior administration officials said initial assessments of the nuclear blast in northeastern North Korea indicate it was the largest test detonation so far, and much larger than an underground test carried out last year. It was the regime's sixth nuclear test.

U.S. nuclear technicians have not made a definitive conclusion about the specifics of the device. Specialists are trying to determine if the test involved a hydrogen bomb, as Pyongyang asserted, or a device designed for EMP attack. They are also assessing whether the test used boosted fission technology.

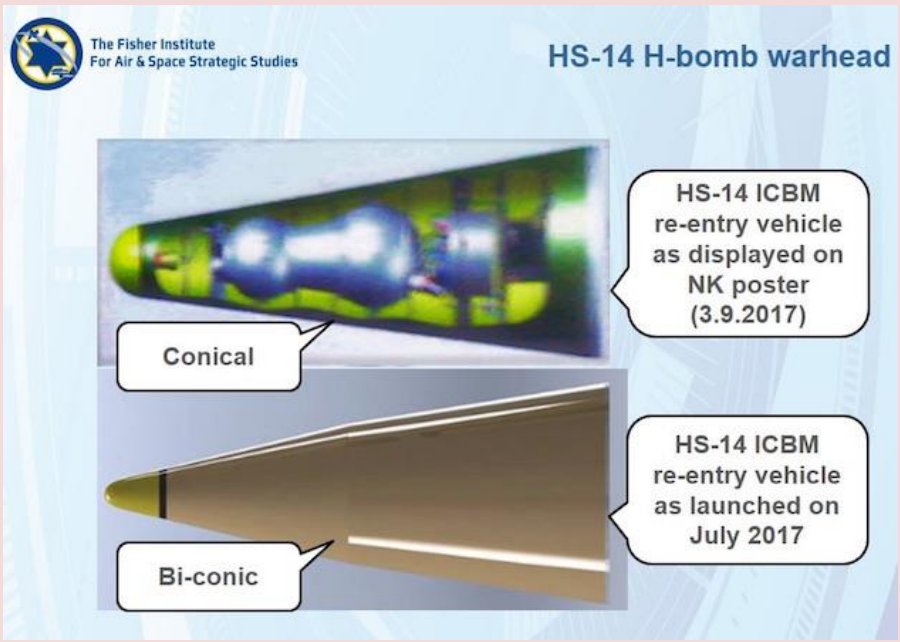


Hydrogen bombs are advanced devices that use a two-stage explosion process to produce a massive explosion. Boosted fission devices are less sophisticated technologically and require more nuclear fuel.

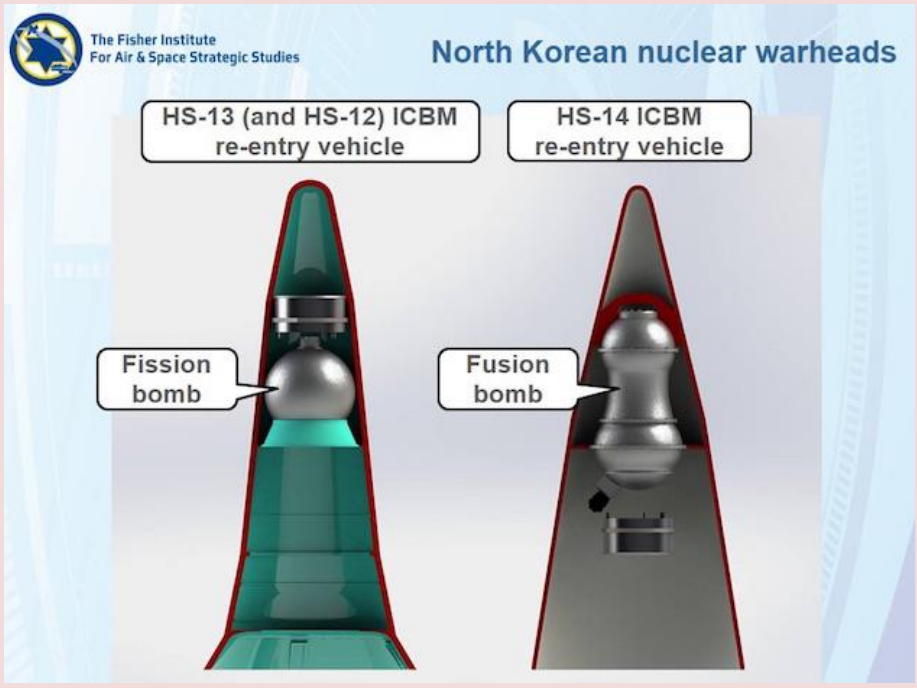
"We're highly confident this was a test of an advanced nuclear device—and what we've seen so far is not inconsistent with North Korea's claims," a U.S. intelligence official said.

However, a final conclusion on the type and yield of the blast is not expected for several days. Data from the test is being analyzed by nuclear weapons experts at Los Alamos National Laboratory in New Mexico.

Also, the large explosion—perhaps more than 100 kilotons, or the equivalent of 100,000 tons of TN—likely produced significant venting of radioactive particles into the air.
Special U.S. intelligence aircraft, including the WC-135 nuclear "sniffer" jets, are conducting flights near the test zone to gather samples of particles from the test.
Kim, the North Korean technical university dean, stated that high-altitude explosions can be conducted in the stratosphere or in space where the blast wave is limited by the lack of air or the thinness of air.



"In explosions occurring at such altitudes, large amounts of electrons are released as a result of ionization reactions of high-energy instant gamma rays and other radioactive rays," he said. "These electrons form a strong electromagnetic pulse (EMP) through interaction with the geomagnetic field."
"The detonation would create a strong electric field of 100,000 volts per meter when it approaches the ground and "that is how it destroys communications facilities and electricity grids," the report said.
The EMP report was published Monday, a day after the same state-run outlet reported on a visit by North Korean leader Kim Jong Un to a nuclear weapons facility that also mentioned plans for using nuclear weapons in EMP attacks.
"Our hydrogen bomb—whose power as a nuclear bomb can be adjusted at will from tens of kilotons to hundreds of kilotons according to the targets of strike—is a multifunctional thermonuclear warhead which not only has enormous lethality and destructibility, but also can even carry out super-powerful EMP attack over an expansive area through detonation at high altitudes according to strategic goals," the report said.



EMP was discovered by the U.S. military during above ground nuclear tests in the Pacific Ocean during the 1960s.
EMP waves produced from nuclear tests were found to disrupt electronics throughout areas up to 1,000 miles from the center of the blast.
Peter Pry, a former CIA analyst who has been active in urging greater defenses against EMP attack, said a congressional commission on EMP has been warning for years about the North Korean EMP threat.
"EMP attack, by blacking-out the national electric grid and other life-sustaining critical infrastructures, could kill far more people than nuclear blasting a city," Pry said.

According to Pry, the Congressional EMP Commission warned that nationwide blackout and subsequent disruption from an EMP strike could kill 90 percent of the U.S. population through starvation, disease, and societal chaos.

"North Korea knows this, which is why state media describes their new nuclear warhead as capable of both blasting cities and EMP," he said.

William R. Graham, chairman of the commission, also has warned that North Korea's two satellites orbiting over the U.S. could be armed with EMP weapons and detonated over the United States or U.S. allies.

Pry said despite the increasing danger from EMP, the commission will cease functioning Sept. 20 unless its charter is renewed.

"No one at the Pentagon or DHS has asked for the EMP commission to be extended," he said, adding that the commission has produced the best expertise on the threat.

The commission has urged the United States to harden the nation's electric grid and other critical infrastructure against EMP attack. But those efforts have been thwarted as the result of lobbying from the electric power industry that opposes the cost of expensive upgrades and stockpiling of transformers and other equipment.

In other developments related to North Korea, U.S. officials also said there are signs North Korea is preparing to conduct another long-range missile test. Two earlier long-range missile tests demonstrated new strike capabilities.

South Korean press reports said the next ICBM test could be launched over the Pacific and timed to a North Korean anniversary marking the communist state's founding on Sept. 9.

President Donald Trump announced Tuesday that in response to the nuclear test the United States will sell advanced arms to both South Korea and Japan as part of its policy of seeking to pressure the Pyongyang regime into giving up its nuclear arms.

"I am allowing Japan and South Korea to buy a substantially increased amount of highly sophisticated military equipment from the United States," Trump said.

The president also said tougher economic sanctions are being considered. "The United States is considering, in addition to other options, stopping all trade with any country doing business with North Korea," he said Sunday.

Trump also criticized China for failing to rein in its ally. "North Korea is a rogue nation which has become a great threat and embarrassment to China, which is trying to help but with little success," he said.

China maintains a defense alliance with North Korea that requires defending Pyongyang from any attack. China also provides some 90 percent of North Korea's trade.

The Trump administration recently imposed sanctions on Chinese and Russian entities supporting North Korea's arms programs. But the sanctions did not hit a Chinese company known to have supplied mobile missile launchers to the North Koreans for its long-range missiles.

Among the options being considered are an oil embargo on North Korea that would severely cripple the country's ability to provide energy resources. Additional sanctions also could target Chinese banks that have been working covertly with North Korea.

South Korea also is considering requesting that the United States return stockpiles of U.S. tactical nuclear weapons to the country. The weapons were withdrawn in the early 1990s.

Another step announced by the administration is the loosening of restrictions on the payload weight of missile warheads, agreeing not to oppose Seoul's plan to build bigger warheads for its short-range missiles.

South Korea had sought U.S. approval for exceeding both the range and payload limits for missiles under informal international Missile Technology Control Regime guidelines.

The MTCR limits signatories from building missiles with ranges greater than 186 miles and with warheads larger than 1,100 pounds.

In Japan, Defense Minister Itsunori Onodera said Tuesday initial assessments indicate North Korea may have successfully tested a hydrogen bomb, as the regime claimed.

Nuclear experts said the basis for early judgments about the nuclear test are based on seismic data.

Initial estimates of the blast registered the explosion as causing a tremor ranging from 5.8 magnitude to 6.1 magnitude on the earthquake scale. Later estimates put the blast at 6.3, indicating a much larger explosion.

David S. Maxwell, a North Korea expert and associate director of the Center for Security Studies at Georgetown University, said he did not think an underground test is a useful way to test an EMP bomb.
"An underground or ground burst has less EMP effects but as I understand it all nuclear explosions create EMP," he said, noting that during Army training in Europe, troops took down antennas and turned off all electric devices to protect them from a Soviet nuclear strike.
"It was hard back then and it will be even harder now that we are so much more dependent on electrical devices for every aspect of war fighting, and life in general," he said.
Maxwell said the rapid testing of North Korean nuclear weapons and missiles is likely designed to rapidly advance its programs in anticipation of a future negotiated freeze on the programs.
"I think the Kim family regime is banking on Russia and China being able to pressure the U.S. into a freeze, and the regime will agree to that if it believes it possesses a significant nuclear deterrent that it will not give up," he said.

***Bill Gertz** is senior editor of the* Washington Free Beacon. *Prior to joining the* Beacon *he was a national security reporter, editor, and columnist for 27 years at the* Washington Times. *Bill is the author of six books, four of which were national bestsellers. His most recent book was* The Failure Factory, *a look at an out-of-control government bureaucracy that could have been a primer for the Tea Party. Bill has an international reputation. Vyachaslav Trubnikov, head of the Russian Foreign Intelligence Service, once called him a "tool of the CIA" after he wrote an article exposing Russian intelligence operations in the Balkans. A senior CIA official once threatened to have a cruise missile fired at his desk after he wrote a column critical of the CIA's analysis of China. And China's communist government has criticized him for news reports exposing China's weapons and missile sales to rogues states. The state-run Xinhua news agency in 2006 identified Bill as the No. 1 "anti-China expert" in the world. Bill insists he is very much pro-China—pro-Chinese people and opposed to the communist system. Former Defense Secretary Donald H. Rumsfeld once told him: "You are drilling holes in the Pentagon and sucking out information."*

What are North Korea's other WMDs?

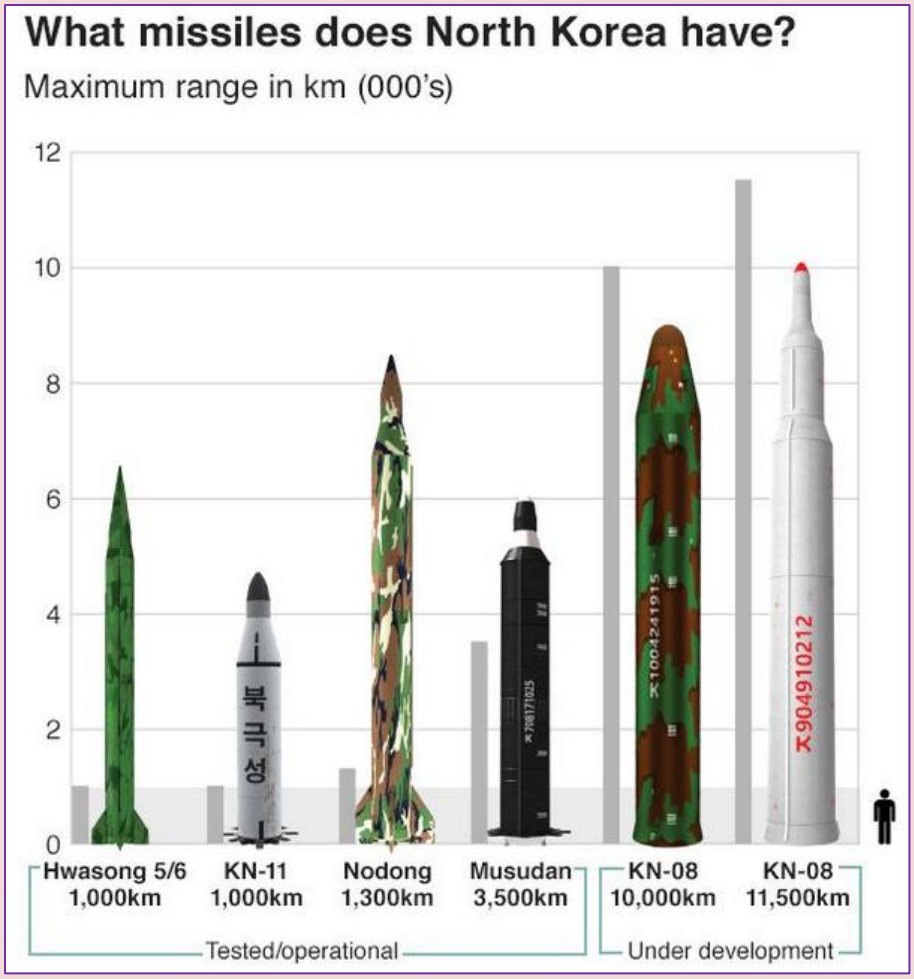
Source: http://www.bbc.com/news/world-asia-41284465

Sept 15 – The warning from the South Korean President Moon Jae-in of the potential threat from North Korean chemical and biological weapons is timely, underscoring that Pyongyang has invested heavily in a variety of weapons of mass destruction (WMD) programmes.
Mr Moon also warned of the danger of a North Korean electro-magnetic pulse (EMP) attack that could cripple a country's electrical grid and critical infrastructure.
So while attention focuses on Pyongyang's nuclear weapons programme and the long-range missiles capable of delivering a nuclear warhead, how much do we know about these other secretive WMD programmes?
North Korea makes no secret of its nuclear weapons ambitions. In marked contrast, it does not admit to having chemical or biological weapons. It has signed up to a treaty banning biological weapons, but it has not acceded to the equivalent agreement banning chemical weapons.
US and South Korean experts believe that, in fact, North Korea does have a significant chemical weapons programme, with stockpiles of munitions containing nerve, choking and blister agents; such substances as phosgene; hydrogen cyanide; mustard; and sarin.
North Korea has a huge artillery and rocket force capable of delivering such munitions, though it remains unclear if it is able to produce chemical warheads that would survive the stresses of a flight on a ballistic missile.
Much less is known about North Korea's activities in the biological weapons field. South Korean intelligence believes that the North is well-able to produce and weaponise pathogens like anthrax, botulism and typhus, but it is far from clear if these programmes have gone beyond the research stage.
The EMP threat is something that is widely written about - it has especially been taken up in US conservative circles - and the debate has gained

added currency in the wake of North Korean threats to mount such an attack.

In essence, this would involve the detonation of a small nuclear device in the atmosphere - you would not even need a nuclear missile, a balloon could be released from a cargo ship - which results in a massive power-surge that damages and disables electrical circuitry over a huge area.

Crippled infrastructure that might not be repairable for months could lead to death, chaos and lawlessness on a vast scale. In 2008, a US commission investigating the threat concluded that "the electromagnetic pulse generated by a high-altitude nuclear explosion is one of a small number of threats that can hold our society at risk of catastrophic consequences".



Media captionSouth Korea tested missiles in response to the North's new launch

Experts differ on the likelihood of such an attack emanating from North Korea, whatever the threats. Of course, in the Korean context there is already a nuclear threat and, to the extent that an EMP attack involves the detonation of a nuclear device, Pyongyang would be risking catastrophic reprisal and potentially the end of the regime.

All these fears underscore the problem of dealing with Pyongyang. There is a tension between keeping the international community united behind UN sanctions resolutions and applying the scale of pressure that the Trump administration wants (and which it believes can only come from China).

In the meantime, North Korea's programmes advance. A senior US general now warns that Pyongyang's recent test may well have been a hydrogen bomb, marking a significant advance in the North's capabilities.

And all the while, the danger of a test going wrong - of debris landing on Japan or Guam - or of miscalculation grows, and with that the threat of crisis turning into conflict.

Source: https://fas.org/wp-content/uploads/media/Nuclear-Dynamics-In-A-Multipolar-Strategic-Ballistic-Missile-Defense-World.pdf

I've sold nuclear secrets to Libya, Iran and N Korea: AQ Khan in 2004

Source: http://www.telegraph.co.uk/news/worldnews/asia/pakistan/1453353/Ive-sold-nuclear-secrets-to-Libya-Iran-and-N-Korea.html

Sept 19 – **The father of Pakistan's atomic bomb has confessed to selling nuclear weapons secrets to some of the world's most notorious "rogue states", a senior official said yesterday.**

The admission that Abdul Qadeer Khan freely sold nuclear technology to Iran, Libya and North Korea confirms one of America's worst fears - that a close ally in the "war on terrorism" has turned out to be the secret armourer of its worst foes.

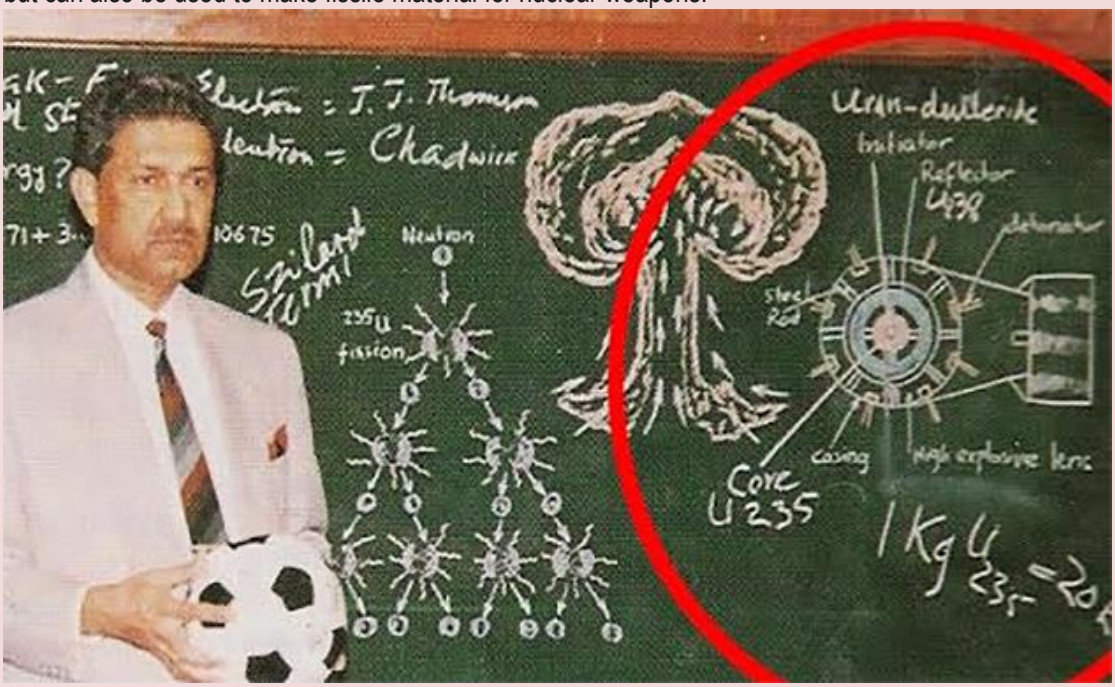
In a briefing to Pakistani journalists, the official admitted that successive governments had failed to control the activities of Mr Khan. He claimed that the technology sales were made for "personal greed" and did not involve Pakistani governments - something many experts find difficult to believe.

There were unconfirmed reports last night that Mr Khan's daughter had fled abroad with information that could compromise Pakistan's top brass.

According to journalists invited to the briefing, Mr Khan told investigators in an 11-page confession that he had provided the secrets to other Muslim countries - Iran and Libya - so they could become nuclear powers and strengthen the Islamic world.

The transfer to North Korea was supposedly "to divert attention of the international community from Pakistan".

The 69-year-old Mr Khan has been kept under 24-hour house arrest since the investigation was prompted by Iran's admission to United Nations nuclear inspectors that Pakistan had provided designs and hardware for uranium enrichment gas centrifuges. These are used to make fuel for civilian power reactors, but can also be used to make fissile material for nuclear weapons.



The government of Gen Pervaiz Musharraf has been gradually preparing public opinion for the news that one of its public heroes has betrayed Pakistan's most important military secrets.

In recent days, newspapers have reported that Mr Khan had a vast range of properties in Pakistan and abroad, and even used military transport aircraft to ship furniture to a hotel he owned in Timbuktu, Mali.

The disclosure is an acute embarrassment for Gen Musharraf. Islamic radicals accuse him of bowing to America's diktat. But the Pakistani leader is under Western pressure to tighten his grip of Pakistan's nuclear technology or risk being treated as a rogue state.

Senior Western officials have given Gen Musharraf private assurances that if he takes stern action they will take at face value his claims that nuclear technology was sold by scientists for "greed" and not at the behest that Pakistani governments.

In his confession Mr Khan absolved the army of any wrong-doing. "He does not mention the armed forces," said the official. "There were intelligence lapses on our part and we admit to them."
That is unlikely to convince international inspectors or the Pakistani public, who have long believed that the army rather than the government of the day has always controlled Pakistan's nuclear programme.
Officials said two former army chiefs have been questioned, but were not implicated in the scandal.
"Investigators have been able to establish that all this was driven by personal greed and ambition," the official said.
"He [Khan] talked unconvincingly about dispersal among Islamic states, but that does not seem very convincing as North Korea is also included."
Three nuclear scientists, two brigadiers and a major general are also among those accused of being involved. The army has so far declined to say whether anybody will be put on trial.
Officials said Mr Khan first began to transfer designs, drawings and components for gas centrifuges to Iran between 1989 to 1991. He provided similar technology to North Korea and Libya between 1991 and 1997.
They say these transfers ended in 2000. However America has said nuclear technology transfers from Pakistan to North Korea took place as late as 2002 and to Libya in August last year.

Forty years of impasse: The United States, Japan, and the plutonium problem

By Masafumi Takubo & Frank von Hippel
Source: http://www.tandfonline.com/doi/full/10.1080/00963402.2017.1364007

Recently, records have been published from the internal discussions in the Carter administration (1977–80) on the feasibility of convincing Japan to halt its plutonium-separation program as the United States was in the process of doing domestically. Japan was deeply committed to its program, however, and President Carter was not willing to escalate to a point where the alliance relationship could be threatened. Forty years later, the economic, environmental, and nonproliferation arguments against Japan's program have only been strengthened while Japan's concern about being dependent on imports of uranium appears vastly overblown. Nevertheless, Japan's example, as the only non-weapon state that still separates plutonium, continues to legitimize the launch of similar programs in other countries, some of which may be interested in obtaining a nuclear weapon option.

▶▶ **Read this very interesting paper at source's URL.**

Masafumi Takubo *is an independent analyst on nuclear issues and the operator of the nuclear information website Kakujoho.net. He is a member of the International Panel on Fissile Materials (IPFM) and a consultant for Princeton University's Program on Science and Global Security.*
Frank N. von Hippel*, a nuclear physicist, is a senior research physicist and professor of public and international affairs emeritus at Princeton University where, in 1975, he cofounded and cochaired for three decades what is now Princeton's Program on Science and Global Security. In 2006, he cofounded and cochaired for eight years the International Panel on Fissile Materials.*

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W O M D

EXPLOSIVE NEWS

Melbourne Christmas Day terror suspects had "mother of Satan" chemicals

Source: http://www.homelandsecuritynewswire.com/dr20170823-melbourne-christmas-day-terror-suspects-had-mother-of-satan-chemicals-expert

Aug 23 – A court in Australia was told that volatile chemical explosives, nicknamed "mother of Satan," were found in the possession of four men accused of plotting a Christmas Day terrorist attack in Melbourne.

The *Australian* reports that federal police chemicals expert Dr. Vincent Otieno-Alego told Melbourne magistrates court on Tuesday that he analyzed substances that **could produce up to 2g of triacetone triperoxide (TATP).**

The four defendants — Hamza Abbas, 22, his 23-year-old brother, Ibrahim Abbas, Ahmed Mohamed, 24, and 26-year-old Abdullah Chaarani — appeared in court for the second day of a pre-trial hearing.

The four men are charged with planning to use an IEDs and other weapons in a attacks on Flinders Street station, Federation Square, and St Paul's Cathedral in downtown Melbourne on Christmas Day 2016.

Otieno-Alego described TATP as "very volatile" and confirmed it was often referred to as "Mother of Satan."

Australian federal police weapons expert Bruce Schiefelbein told the court that items found in a red Tupperware container, linked to the case, were also capable of making an explosive.

The men, who were arrested during raids by the joint counter-terrorism team in Melbourne's north on 22 December, were found with a mixture made of sparklers and match heads, which they were planning to use as IED triggers.

Combating IEDs with ground penetrating radars

Source: https://www.dst.defence.gov.au/news/2017/08/28/combating-ieds-with-ground-penetrating-radars

Aug 28 – Vehicle-mounted ground-penetrating radar (GPR) equipment has been used by the ADF to detect Improvised Explosive Devices (IED) for several years, but there remains much room for improvement in the signal processing component of the technology.

A recent trial between the US and Australia provided the opportunity to test the performance of vehicle-mounted GPR equipment on different soil types, says Defence researcher Canicious Abeynayake.

"Defence's areas of operation change from time to time, so we need to have algorithms that are robust enough to work well with different soil types," Abeynayake explains.

The Polaris vehicle and sensor.

"Countries using the GPRs have recognised the need to optimise and enhance automatic target recognition algorithms to match local conditions and that's why we wanted to test the equipment in different geographical locations."

The eventual aim is to have a fused approach to IED detection – combining the strengths of mature IED detection technologies such as cable detection, metal detection and radar.

"If we can combine all three we can improve detection probability and reduce false alarms. That's our aim," says Abeynayake.

Trials pave the way for improvement

The major challenges in IED detection using GPR are caused by the localised variation in terrain and climate, and the variety of IEDs encountered. Predicting GPR performance in diverse operational scenarios requires understanding the capabilities of GPR in relation to the physical properties of soils.

Over six weeks the teams drove the US Polaris and ADF Husky GPR vehicles up and down lanes of Australian soil at sites across Australia that had been seeded with objects representing IEDs. The accumulated raw data will be used to assess improvements to the processing algorithms.

Abeynayake says the Defence Science and Technology (DST) team will be investigating the algorithms at the lowest level to see which components are underperforming in different soils and against different targets.

Signal processing important for GPR effectiveness

The quality of the signal processing algorithms plays a very important role in the ultimate effectiveness of a GPR system by transforming signals into meaningful information for the operators.

Yet Abeynayake says some current approaches to target identification in GPR lack a solid theoretical basis in the underlying physics, which is fundamental to understanding the responses from GPR.

"Only when target and clutter characteristics are both well understood can signal processing be applied effectively," Abeynayake explains.

"As targets of interest and operational environments keep changing we need ongoing research into advanced sensor configurations and algorithms."

The Ongoing Challenge of Irregular Warfare: Thoughts on Responses and Intelligence

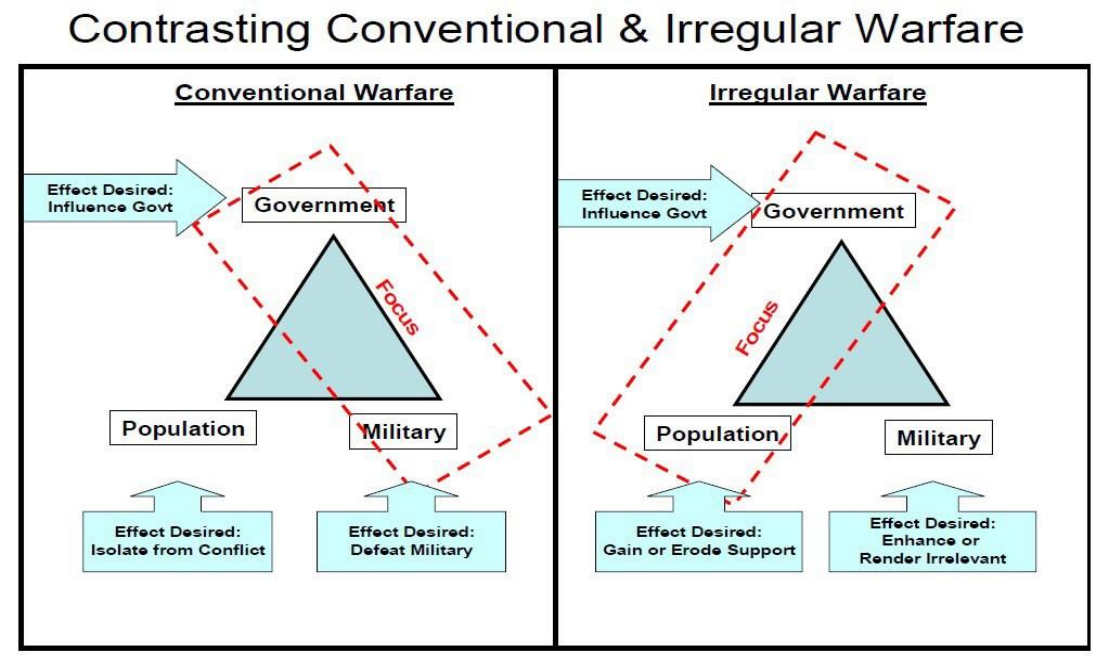
By Noah B. Cooper

Source: http://smallwarsjournal.com/jrnl/art/the-ongoing-challenge-of-irregular-warfare-thoughts-on-responses-and-intelligence

Aug 12 – The range of irregular warfare challenges faced by the United States in the future will be extensive (e.g. non-state actors – terrorists, violent extremist organizations, drug traffickers – and state actors that adopt asymmetric tactics to negate U.S. military power – Iran, North Korea, and Russia). Currently, defeating the "hybridized" threat of the Islamic State in Iraq and Syria (ISIS) and eliminating its geographical span of control in Iraq and Syria is the priority of U.S. counterterrorism actions. As the U.S., the coalition of forces, and local allies, regain territory lost to ISIS and drive the group out from its urban redoubts, the sinking morale of foreign fighters is encouraging them to repatriate their home countries. Considerable portions of these fighters originate from nations throughout the Asia-Pacific region, namely the Southeast Asian countries of Indonesia and Malaysia. As they return, the sharing of their experiences, their promotion of the ISIS ideology, and their proliferation of irregular warfare tactics presents a serious concern to the security and stability of the region.

The Asia-Pacific region has emerged as a second front in the battle against not only ISIS, but also other transnational violent extremist organizations (VEOs), local separatist groups, insurgencies, and criminal organizations. Not surprisingly, the study of this area is lacking, but several facts are worth emphasizing to illustrate the importance of the Asia-Pacific region to U.S. counterterrorism efforts. First, the region has the world's largest population of

Muslims (approaching one billion) and, as noted by Admiral Harry Harris (Commander, U.S. Pacific Command), "If a very small percentage of the Muslims in the USPACOM AOR [Area of Responsibility] are radicalized, there could be deadly results." Second, a negative consequence of the successful counter-ISIS operations in Iraq and Syria is the return of foreign fighters originally from the Asia-Pacific to their home countries and the corresponding security implications for the region. The dangers of returning



jihadists are manifold and include such activities as the proliferation of advanced terrorist practices, the spread of the volatile ISIS ideology, and of central concern, the coordination and launching of attacks in their home countries. Moreover, the growing association of VEOs in the Asia-Pacific with ISIS presents a threatening dimension for counterterrorism. These disparate groups are working together, often with deadly results.

A comprehensive analysis of each of these organizations and a detailed study of the security dynamics in the Asia-Pacific region is beyond the scope of this paper. Instead, this article will emphasize the asymmetric threat posed by such groups, in terms of both tactics and the type of weapons employed. Foremost among these armaments is the improvised explosive device (IED). It was the weapon of choice in Iraq and Afghanistan and is serving these groups equally well. Regrettably, allies and partner nations of the U.S. in this region either lack or possess only a nascent counter-IED capability in terms of doctrine, training, and equipment. This article will also incorporate a discussion of a unique component of U.S. Army Pacific's (USARPAC) efforts designed to contend with these irregular warfare threats and to bolster our allies' capacity to do the same: the Asia Pacific Counter-IED Fusion Center's (APCFC), Irregular Warfare Analysis Cell (IrWAC).

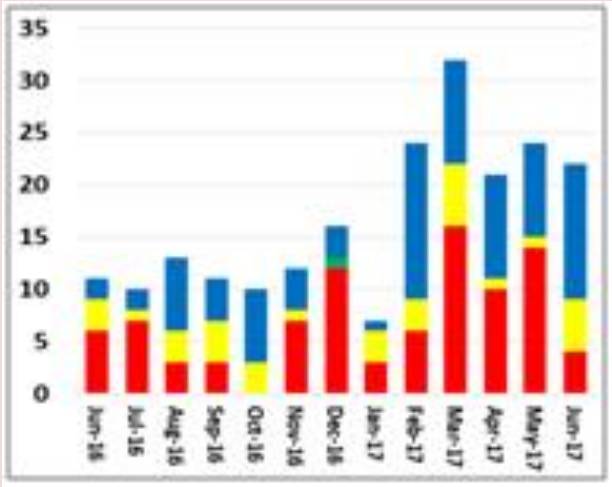
Market Saturation: ISIS in the Asia-Pacific

The threat of terrorism and the presence of VEOs is not a new occurrence in the Asia-Pacific. Following the events of 9/11, various incarnations of al-Qaeda linked and associated groups executed attacks on the Indonesian island of Bali, sunk the 10,000 ton Superferry 14 in Manila Bay, and were responsible for other, high-profile terror incidents. The group's international influence declined, as more and more nations placed increasing pressure on it; however, the materialization of ISIS has brought a new organization to the forefront of global terrorism. The military success of ISIS in Iraq and Syria and the announcement of a caliphate translated into a perception of the group's invulnerability. Because of the popularity associated to the ISIS "brand," VEOs and individuals throughout the Asia-Pacific region have pledged allegiance to the group and others will likely continue to follow this trend, further expanding the global ISIS network.

Through both "virtual" radicalization and the retreat of foreign fighters from Iraq and Syria to their nations of origin, ISIS remains a global organization. Its areas of influence are not just

concentrated in the diminishing zones under ISIS' physical control but extend well-beyond the Middle East. The predecessor to ISIS, al-Qaeda, established the precedent for globalized terror organizations, but did not achieve equitable levels of worldwide influence. Furthermore, the benefits associated to the ISIS "brand" have contributed to the pledges of loyalty and the establishment of *wilayats* (provinces) in regions beyond the claimed caliphate's borders. There are also indications of a diffusion of ISIS tactics and methods. The current situation in Philippine city of Marawi evidences the proliferation of ISIS' operational approach (i.e. the physical seizure and holding of territory and the use of obstacles and IED belts to slow offensives). Eventually, the Philippine security forces will retake the city, though similar to the recapture of Mosul, this will be a lengthy and deliberate operation and will have corresponding human and economic costs. Notwithstanding the efforts by the Philippine Armed Forces, the operational successes of the Maute Group and the Abu Sayyaf Group, (referred to collectively as ISIS in the Philippines) will no doubt strengthen the organization's prestige within the global Islamist community.

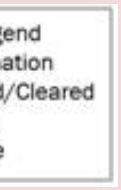
In addition to ISIS, the Philippine archipelago suffers from the presence of multiple other Islamist organizations such as the Moro Islamic Liberation Front and the Bangsamoro Islamic Freedom Fighters. The armed branch of the Communist Party of the Philippines – the New People's Army – also continues to wage the world's longest Communist insurgency. Despite possessing differing objectives, insurgent and terrorist philosophies, and operating in varied geographical locations, common among each group is their employment of the IED as a primary component of their irregular warfare approach. In the past year alone, there have been over 225 IED events in the Philippines attributed to these various militant groups.

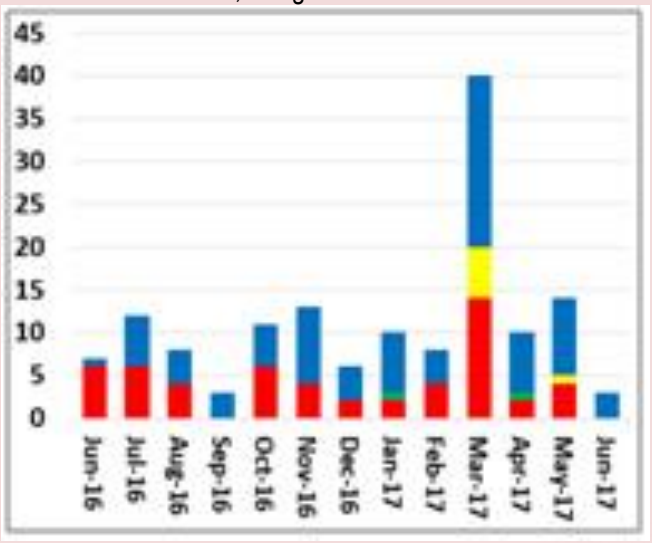


IED Events by Type: Philippines June 2016 – June 2017 (left)

IED Events by Type: Bangladesh June 2016 – June 2017 (below)

The Philippines is just one of many countries attempting to manage this threat. A common thread linking nations of the Asia-Pacific is the affliction of VEOs and their employment of the IED. For instance, Bangladesh is also struggling to address the security concerns posed by ISIS associated groups. The primary Islamist threat originates from the ISIS affiliated group, the neo-Jamaat-ul Mujahideen Bangladesh (neo-JMB). Interestingly, the Bangladeshi government is reluctant to acknowledge the existence of an international Islamist threat, particularly those that have ISIS associations or linkages. Instead, in an effort to downplay the appearance and extent of the terrorist threat, the government attributes attacks to "home-grown militants." However, the Neo-JMB targeting of writers, bloggers, publishers, and members of clergy that broadcast political and religious viewpoints in contrast to the extremist interpretations associated to Islamism, such as the bloody July 1, 2016 Holey Artisan Bakery attack in Dhaka, has complicated the Bangladeshi government's narrative of denial.





Similar to groups in the Philippines, the IED is the prime armament in the neo-JMB arsenal. The group is responsible for approximately a third of the 150 IED events in Bangladesh recorded in the last year.

A further assessment of the countries that comprise the Asia-Pacific reveals similar examples of VEOs and corresponding IED activity, which has contributed to the over 1,200 IED events and the over 1,000 casualties occurring in the region in the past year. Though these numbers are significantly less in comparison to the quantity of incidents and casualties in the Middle East, they are nonetheless a significant volume, which has the potential to magnify in the coming years.

The technology adapted for use by these organizations varies, but the primary type of IED employed is the radio-controlled IED (RCIED). Of the over 1,200 IED events in the region recorded in the past year, approximately 57% used radio-controlled switching mechanisms. This choice of means to initiate a detonation is the archetype of irregular warfare tactics, as it provides the attacker a safe distance to avoid the stronger force's response. The level of innovation and evolution associated to these devices is surprisingly minimal. Two factors account for the relatively simplistic construction of these IEDs when compared to the more advanced devices found in Iraq. First, the availability of "dual use" components, or those items that have a primary civilian function (e.g. cellular telephones or commercial grade explosives) that groups adapt for military purposes, eases the procurement of bomb-making material. Through direct cooperation and multi-national organizations (e.g. the United Nations), nations in the Asia-Pacific region have attempted to curb the flow of these goods, particularly explosive components used for mining. Second, the incipient counter-IED infrastructure of nations within the Asia-Pacific, both in terms of understanding and responding to the threat, precludes the development and fielding of advanced equipment and systems (e.g. electronic countermeasures, mine-resistant vehicles, etc.) and the implementation of operational adjustments to counter specific IED threats. As such, the insurgent and terrorist organizations possess little incentive to pursue the development and emplacement of more sophisticated devices. Stated simply, there is little participation in the game of "tit-for-tat" characteristic of the IED fight in Iraq by the nations in the Asia-Pacific afflicted with IEDs, as their counter-IED expertise and infrastructure required for the creation of countermeasures, are generally in the developmental stages.

The aforementioned discussion of the irregular threats in the forms of ISIS and other VEOs exemplifies the dangers posed by these groups to the stability of the Asia-Pacific. The irregular warfare trends in the region are disturbing: the introduction of ISIS aligned and affiliated organizations is creating a confederation of militants under a single banner and thus, fomenting complex challenges for counterterrorism efforts. Furthermore, the IED continues and, as patterns indicate, will remain the weapon of choice for such groups. Though further entrenchment by ISIS in the region by returning foreign fighters suggests that the transfer of weapons and tactics from the battlefields of the Middle East to the Asia-Pacific will undoubtedly occur. The tactical simplicity of the IED – the use of hidden or innocuous looking bombs to cause casualties and degrade an opponent's freedom of movement – belies its strategic significance – the wearing down of the will and morale of a stronger power through the slow attrition of its forces. Such a threat necessitates a response whose tactical effects will have positive, strategic implications. The following section will examine the Irregular Warfare Analysis Cell, an intelligence element that is an important means to achieve this goal.

Intelligence: The Bedrock of the Counter-IED Mission

In an effort to institutionalize counter-IED programs, policies, and practices, U.S. Army Pacific (USARPAC), under the auspices of U.S. Pacific Command (USPACOM) established the Asia-Pacific Counter-IED Fusion Center (APCFC). Following the establishment of APCFC in 2010, USPACOM designated the organization as the executive agent for counter-IED activities. The center's opening coincided with the "Afghan Surge," which necessitated the implementation of a pre-deployment counter-IED training program designed and tailored for deploying units. Over the last eight years, the scope of the center's mission has naturally expanded. Today, the APCFC is an organization designed to counter adversarial use of IEDs through the delivery of comprehensive counter-IED training; to collaborate with multiple stakeholders to field capabilities designed to "defeat the device;" and to develop allied and partner-nation counter-IED capabilities. The foundation of these efforts is the production of intelligence products on the irregular warfare threat in the Asia-Pacific region by the center's Irregular Warfare Analysis Cell (IrWAC).

The IrWAC conducts several, interrelated actions in support of counter-IED activities. Foremost, is the production of intelligence on the many topics that encompass irregular warfare threats, particularly the use of IEDs. An accurate understanding of the threat environment is integral to the provision of accurate training; it informs the development of counter-IED systems; and this intelligence assists in the development of partner nation capabilities. The principal product of this analysis is the center's IED Monthly Report, which details the IED activity perpetrated by various VEOs throughout the Asia-Pacific region. Because of the demonstrated importance of this product to the greater counter-IED enterprise, it warrants further discussion. The IrWAC analytical team levies multiple, open-source data sources (e.g. review of media, government statements, non-governmental organization reports, etc.) in the creation of this product. The analysts not only rely upon open-source data, but they also compile information via direct liaison with allies, partner nations, U.S. intelligence and law enforcement agencies, and other entities to construct a comprehensive picture of the regional IED threat. This information is then databased for future retrieval and analysis by the greater counter-IED enterprise. Despite this report's unclassified nature, it provides an accurate depiction of IED activity in the region and though it is not "actionable" intelligence, agencies of the U.S. government, to include components of the U.S intelligence community, Department of State, and law enforcement, use this information to inform their analyses. Moreover, the advantages of this level of classification are the ability to achieve a wide distribution of the product and to share it with allied and partner nations.

Personnel from the IrWAC also operate in the "traditional" intelligence realm (i.e. the production of classified products). Several IrWAC personnel work at the USPACOM Joint Intelligence Operations Center (JIOC), serving as Network Engagement analysts. To clarify, Network Engagement (formerly referred to as Attack the Network) is a framework for understanding human networks across the spectrum of military operations. Fundamentally, Network Engagement is a staff process, in which the intelligence section is a primary contributor due its inherent capability to analyze the human domain. The focus of the IrWAC personnel in the JIOC is the analysis of VEO organizations, which includes developing leadership profiles, ascertaining and understanding a threat network's dynamics, and, above all, the examination of emerging IED trends associated with a particular network. For instance, in January 2017, IrWAC analysts were responsible for the initial identification of the Neo-JMB leader, Sohel Mahfuz. Bangladeshi security forces arrested Mahfuz in July 2017. There is no definitive correlation between his arrest and the IrWAC's analytical efforts; nonetheless, the identification and the coordination with the actions undertaken on the ground demonstrate the utility of the center's intelligence capability.

An activity not normally associated to the intelligence warfighting function, but conducted by the IrWAC, is the development of partner nation capacity through subject matter expert exchanges. The "theme" of these events vary, but primarily they seek the exchange of information concerning processes and procedures associated with each organization's respective intelligence operations. Fundamentally, these exchanges are important steps in the long-term development of a partner nation's counter-IED capabilities, as they identify areas necessitating improvement or capacity gaps. From an intelligence operations perspective, the bulk of partner nations practice unique versions of the intelligence process, but typically, require assistance to refine or evolve their techniques. Furthermore, the IrWAC leverages its expertise in Network Engagement to provide instruction on this process to partner nations. The enhancing of a partner nation's tradecraft improves their ability to not only respond to their respective IED threats, but also augments interoperability between military and security forces, as each develops a familiarity with a common process, which in turn can be leveraged against ISIS and other VEOs.

The intelligence operations of the IrWAC underpins the activities of the APCFC. To further illustrate the relevance of the IrWAC, it is the sole organization that conducts such a detailed analysis on the IED threat in the Asia-Pacific region. Moreover, one cannot quantify the value of building partner capacity via expert exchanges and through the provision of instruction on the Network Engagement process, as such interactions are the bedrock of relationships between the United States and its allies.

Conclusion

The geographical size of ISIS' caliphate is constricting as Iraqi and Syrian Democratic Forces, supported by U.S and coalition airpower, reclaim territory lost to the group. Notwithstanding the successes realized by the combined ground and air components in Iraq and Syria, the "virtual" caliphate continues to propagate as foreign fighters return to their homes imbued with the ISIS ideology and a greater proficiency in the violent arts of religious

extremism. This phenomenon is particularly apparent in the Asia-Pacific region, where foreign fighters return not only to their countries of origin, but also to neighboring nations to fight, yet again, under the ISIS banner. In addition to the multiplying ISIS threat in the region, other VEO groups continue to conduct operations using irregular warfare tactics: principally, the IED.

Adversaries of the United States have recognized the susceptibility of its military to irregular warfare threats and will certainly exploit it in future conflicts. The threat of irregular warfare is global and as the United States remains the preeminent world military power, adversaries will employ tactics and practices to undermine or blunt the strengths of U.S. forces and their allies. These challenges require preparation through training, an understanding of the operating environment through extensive intelligence analysis of irregular warfare, and the establishment of a broad coalition of allies and partners. USARPAC has taken the lead with the development and employment of the APCFC. As one component of the multi-layered approach to contend with these threats, the APCFC, using the intelligence produced by the IrWAC, institutionalizes the knowledge and practice of counter-IED activities and enables U.S. partner and allied nations to take the fight to extremist organizations through the building of their counter-IED capacity.

Major Noah Cooper *in an active duty U.S. Army officer and serves as the APCFC Irregular Warfare Analysis Cell Officer in Charge. He received an MA from Johns Hopkins University and an MA from King's College London.*

Source:https://d3n8a8pro7vhmx.cloudfront.net/handicapinternational/pages/1767/attachments/original/1432137503/May_12_Report_SYRIA_Use_of_explosive_weapons.pdf?1432137503

Excessive weapons contamination in Syria is putting the lives of 5.1 million Syrians—including 2 million children—at high risk. Between December 2012 and March 2015, Handicap International analyzed 77,645 incidents—occurrences such as fighting and bombardments—and found that explosive weapons are the most commonly used weapons in the Syria conflict. In fact, more than four out of five reported incidents involved explosive weapons.

Safa is 7 years old. After being severely injured in a bombing, she had her right leg amputated. In December 2013, when she was still living in Za'atari camp, she received a prosthesis from Handicap International. She now lives with her parents and siblings in Amman. She is being followed by Handicap International again in order to get her prosthesis adapted. Here in the orthopedic devices workshop in Amman to take measurements. © Sarah Pierre/Handicap International.

ISIS Video: From Wheelchair to Suicide Bomber

Video: https://clarionproject.org/video-disabled-rehab-isis-style/

Sept 03 – In most modern societies we strive to rehabilitate people with disabilities so they can work, study or play like the rest of us. When ISIS is in charge, as this video shows, things are very different.

Dissident Irish Republican New IRA develops a new under-car bomb

By Daniel Harrington, Chief Operating Officer at Intelligence Fusion, London

Dissident Irish republicans, known as the New IRA, have developed a new variant of UVIED under-car bomb, the PSNI (Police Service of Northern Ireland) has warned. It involves a pressure plate designed to detonate when a car drives over it. The method was used by dissident republicans who targeted an off-duty officer in Derry in February earlier this year. Northern Ireland Significant Incidents

Ready-to-use home-made explosives found in Paris suburb

Source: http://www.deccanchronicle.com/world/europe/070917/ready-to-use-home-made-explosives-found-in-paris-suburb.html

Sept 08 – Homemade explosives ready for use were found Wednesday in an unoccupied flat near Paris, judicial sources said.
Gas canisters and electric wiring were also found in the flat in Villejuif, a suburb south of the French capital, and two men were arrested nearby, the sources said.
The explosive, known by the initials of **TATP**, is notoriously used by the so-called Islamic State group (IS), which has repeatedly targeted France in recent years.
Police also found ingredients that can be used to produce TATP as well as papers written in Arabic.
Anti-terror prosecutors have opened an investigation, sources close to the probe said.
One of the two arrested men, aged 36 and 47, is the owner of the flat, they said.
Paris police said a man who works at the apartment block had alerted police to "suspect items" in the apartment.
Interior Minister Gerard Collomb praised the individual for his "citizen's reflex".
A jihadist cell behind twin attacks that claimed 16 lives in Barcelona and Cambrils, Spain, last month had been preparing TATP.

Investigators probing a house that been wrecked by an explosion found acetone and other TATP ingredients, as well as **120 butane canisters and detonators**.
The car used by the assailants in Cambrils had been in the Paris area less than a week before the attacks. But a source close to the probe sparked Wednesday said: "At this stage there is nothing to link the discovery of these items (in Villejuif) to the Catalonia cell."
France has been under a state of emergency since IS jihadists struck in Paris in November 2015, leaving 130 people dead.
Since that large-scale attack and last year's Nice truck attack that killed 86, France has suffered a string of smaller assaults mainly targeting security forces.

THE MODERN IED: DESIGN AND TRENDS

By John Howell
Source: https://www.asi-mag.com/modern-ied-design-trends/

August 2017 – The Improvised Explosive Device (IED) has been around for many years, and the design can typically be categorised based on type and the components used. **John Howell** takes a look at how established training and detection instruments compare to some of the newest IED trends being developed by terrorist groups around the world.

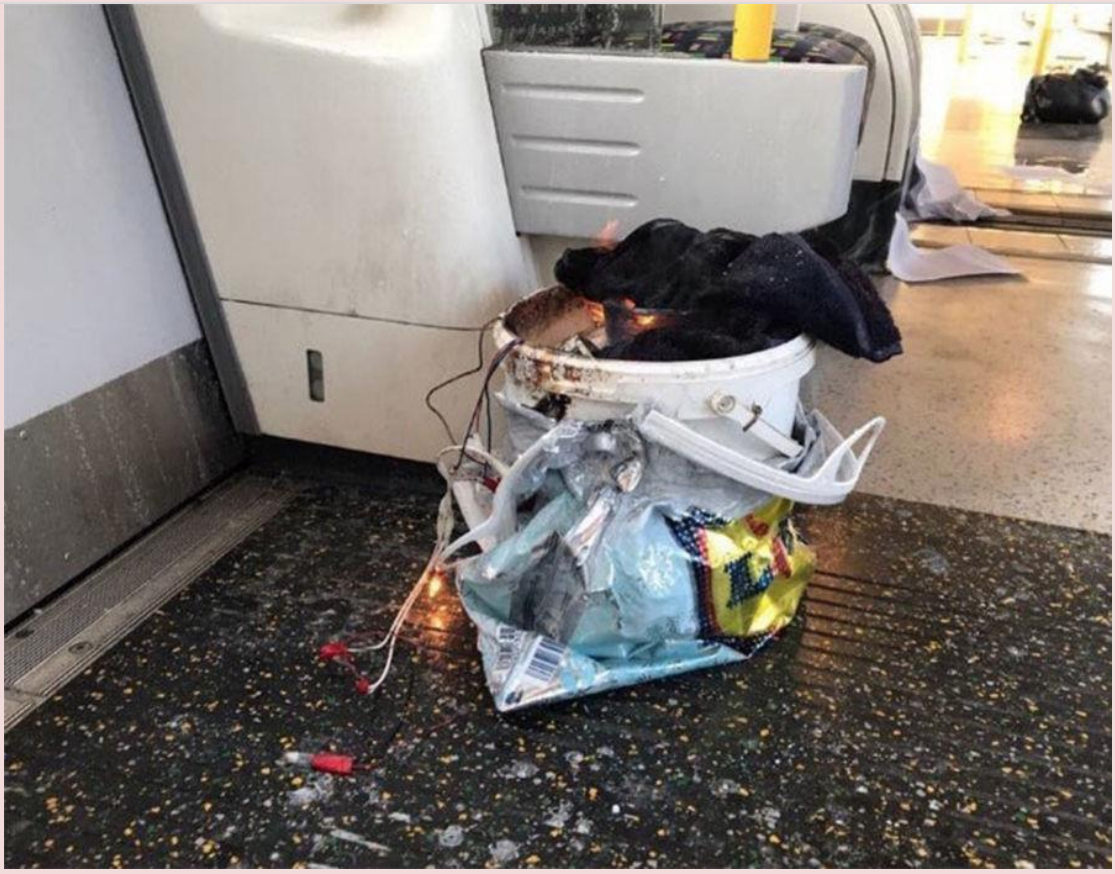
John Howell *is the Director of Explosive Technologies at DSA Detection. Before joining DSA, John was a Physical Security Specialist and EOD Technician with the Department of Justice U.S. Marshals Service. From 2007 until 2011, he served as an EOD Technician with the U.S. Army National Guard, and from 1999 to 2007 with the U.S. Department of State Diplomatic Security, where he was the lead instructor for the Diplomatic Security Explosive Countermeasures Unit. He served with the U.S. Marines for 12 years (1987–1999), which included a tour of duty in the Persian Gulf during the Gulf War.*

Explosion on Tube train at Parsons Green, London - many injured

Source: http://www.express.co.uk/news/uk/854476/parsons-green-explosion-tube-train-london-terror

Sept 15 – The explosion devastated the District Line Tube train at Parsons Green station, in west London. Police launched an immediate terror investigation – but the cause is still unknown.

However eye-witnesses said victims suffered facial injuries after a white cannister exploded.
One witness said there were "lots" of people injured after the explosion and a subsequent stampede.
Another said a "fireball flew down the carriage".
One woman said on Twitter: "I'm safe - just had to run for my life at #ParsonsGreen station - huge stampede, lots injured. Not sure why - fire/explosion mentioned."
Police confirmed they are investigating an "incident".



A photo shared on social media appears to show the object which exploded on the train this morning.
It appears to be a white, bucket-type container contained in a Lidl bag.
The photo showed the container still burning with passengers' bags scattered across the carriage.
Another photo appears to show wires hanging out of the container.

One witness, Richard Aylmer-Hall, said several people had been injured in a stampede following the explosion.
He said: "I was blissfully reading my paper and listening to a podcast and suddenly the whole world charged past me down the platform, down the Tube.
"There was panic, lots of people shouting, screaming, lots of screaming.
"There was a woman on the platform who said she had seen a bag, a flash and a bang, so obviously something had gone off.
"It was an absolutely packed, rush-hour District Line train from Wimbledon to Edgware Road.

U.K.: Defective London Bomb Is Likely the Work of an Amateur

Source: https://worldview.stratfor.com/article/uk-defective-london-bomb-likely-work-amateur

Sept 15 – An improvised explosive device detonated at the Parsons Green subway station in London during the morning rush hour commute on Sept. 15. The device, which in images from the scene appears to be a white bucket concealed in a grocery bag, is likely the work of an amateur bombmaker.

Though the device's timer was set to detonate during rush hour, the charge failed to achieve its maximum impact. Rather than inflicting the type of injuries usually associated with a large explosive device, the bomb injured 29 people and caused additional flash wounds and burns. Images of the device also show that the perpetrator used Christmas lights to detonate the main charge — a design that has appeared in bombmaking instructions published in al Qaeda in the Arabian Peninsula's Inspire magazine. This suggests that an aspirational jihadist may have carried out the Parsons Green attack.

It is also notable that the device was timer-detonated, a tactic typically used to conduct simultaneous or serial attacks. Coupled with the fact that Inspire magazine's last issue called for grassroots militants to carry out attacks on trains, train stations and rail lines, this indicates that additional attacks should be expected.

The bombmaker is still at large and could remain a threat if he or she is able to increase the efficacy of the bomb design. London has already suffered vehicular and knife attacks by terrorists earlier this year. Nevertheless, given the surveillance and forensics available to London authorities, the perpetrator will likely be detained quickly.

Islamic State claimed London commuter train attack.

EDITOR'S COMMENT: "Defective", "amateur" – are they the right words for 29 injured in a subway system under heavy and constant CCTV surveillance. OK there were some nails missing and the detonator was old fashion but it exploded – yes? Caused panic – yes? Wounded the government – yes? Added one more little "terror-stone" – yes? So why defective and amateur? Just to downgrade the opponent? Us professionals demand professional terrorists as well? Finally: good to remember that terrorism is not about killing people; it is rather showing to all of us that we are next!

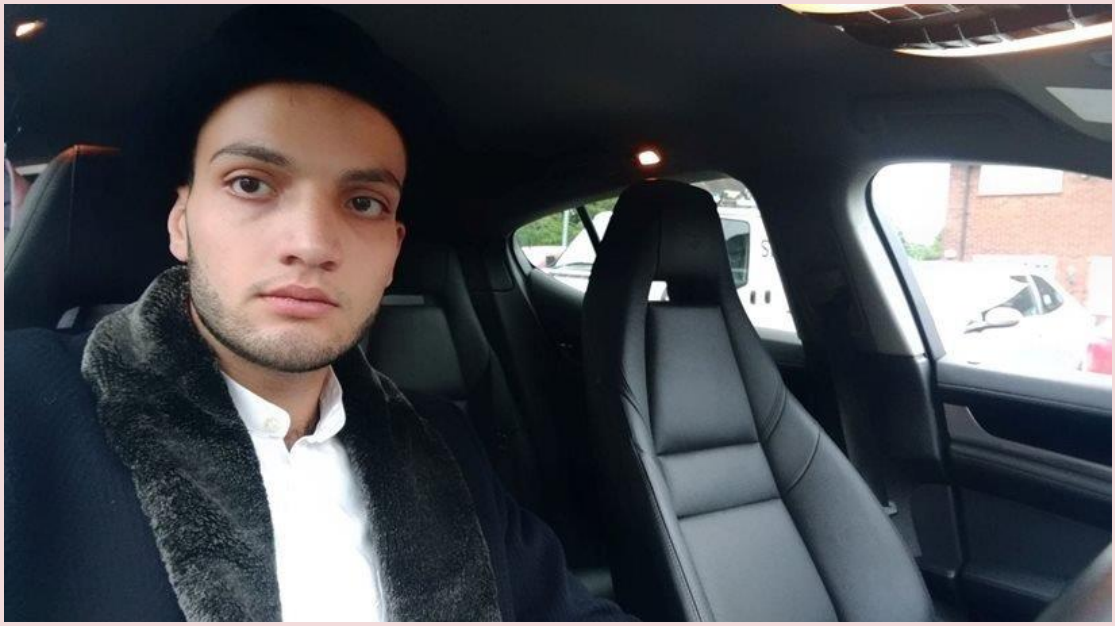
18yo man arrested by police investigating Parsons Green bomb attack

Source: https://www.rt.com/uk/403533-terrorist-parsons-green-london-arrest/

Sept 18 – Twenty-nine people were injured by an improvised explosive device which detonated on a tube train on Friday morning. British authorities have classed the incident as a terrorist attack.

*"The **18-year-old man** was arrested by Kent Police **in the port area of Dover** this morning, Saturday, 16 September, under section 41 of the Terrorism Act,"* police said in a statement.

"The man remains in custody at a local police station. He will be transferred to a south London police station in due course."



Police identified the attacker using CCTV footage and a manhunt was underway Friday. In their statement on the arrest, the Met said that investigators have spoken to 45 witnesses and received over 70 images and videos from the public.

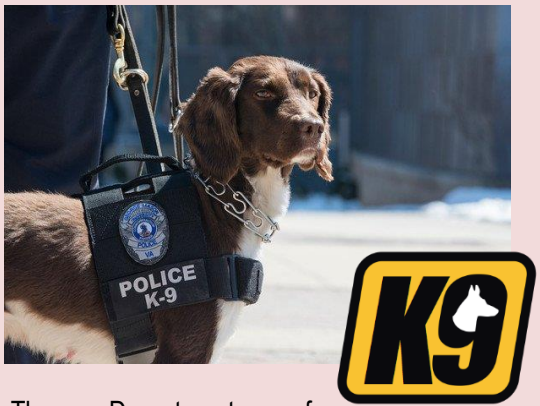
The attack is the fifth to take place in Britain in the last six months.

The UK's terror threat level has been raised **from severe to critical,** indicating a further attack may be imminent. This is the fourth time that the terror threat level has been placed at "critical" in the past 11 years - with Mr Rowley adding that the extra military support will free up 1,000 armed police officers.

S&T, the Pentagon changing K-9 bomb detection

Source: http://www.homelandsecuritynewswire.com/dr20170915-s-t-the-pentagon-changing-k9-bomb-detection

Sept 15 – Sunny is a very friendly Springer Spaniel who loves attention and affection. But if you were to see Sunny on the street or in a crowd, you might not realize he is one of the few dogs in the world trained to detect person-borne explosives.



The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) Detection Canine Program partnered with the Pentagon Force Protection Agency (PFPA) to assist in developing a training initiative to add person-borne improvised explosive device (PBIED) detection capabilities to their canine teams. Traditionally, dogs sniff out "left-behind" bombs, but Sunny and the other members of his K-9 unit are also trained to pick up explosive scents on a person or any moving target.

"I started a PBIED program before I retired from the Maryland State Police with the help from DHS S&T," said Major Scott A. Wayne, Commander of the Special Operations Branch. "Once I arrived at this police agency, I knew what my first project would be. Our current PBIED Program has not only given us this valuable capability, it has also made my Explosive Detector Dog (EDD) Program better than before. DHS has updated techniques and methods used by our EDD handlers."

S&T says that it performed operational readiness tests that

provided real world training scenarios, said Wayne. Those tests made handlers more cognizant of their surroundings and identifying their canine's change of behavior. The K9 Unit has evolved and grown extensively since implementing the DHS PBIED Program. PFPA started their third class in August with four more PBIED teams.

The canine teams (dog and handler) were trained by subject matter experts (SMEs) from Johns Hopkins University's Applied Physics Laboratory, which is contracted by S&T, and will join a cadre of highly proficient teams in the National Capitol Region that S&T assesses as part of their research program. The SMEs not only trained new dogs, but worked with a few "traditionally" trained dogs as well.

"Canines are the best, most versatile mobile detection tool we have to protect the homeland," said Don Roberts, S&T Explosives Division's (EXD) Program Manager. EXD is part of S&T's Homeland Security Advanced Research projects Agency. "The growing threat of PBIEDs has led to the need for explosives detection canine teams to develop person-search capabilities. By working with PFPA to bring this type of detection capability into their mission space, we are also gathering statistically significant evidence to help drive policy and investment decisions for DHS and the first responder community."

Corporal Kyle Murdock, Sunny's handler, said dogs like Sunny can scan up to 200 people per minute simply by tracing an odor to its original source, even in crowds as large the 2016 Marine Corps Marathon or the 2017 Rolling Thunder event. "Detection canine teams are a good physical deterrent at Pentagon events," says Murdock. "Having PBIED detection capability is just one more way we are securing the Pentagon."

One of the goals of the S&T partnership with PFPA is to work together in research and development activities to improve the proficiency of explosive detection canine teams. In the future, Murdock hopes the dogs will be able to detect explosives on a dynamic target. Applying the findings from ongoing research will strengthen PBIED capabilities for canine teams deployed in force protection roles.

Spain terror cell made 100 kilos of TATP explosive: report

Source: http://www.i24news.tv/en/news/international/europe/155461-170914-spain-terror-cell-made-100-kilos-of-tatp-explosive-report

Sept 14 – TATP has become explosive of choice for the IS group as it is made from easily obtainable ingredients

The terror cell that carried out deadly attacks in Spain in August had been planning to use 100 kilos of TATP explosive to cause even more carnage, a Catalan daily reported Thursday.

This is far higher than any of the known seizures in Europe of the easy-to-make explosive known as the "mother of Satan" and used by jihadists everywhere from Paris and Brussels to the battlefields of Syria and Iraq.

According to the *Periodico de Catalunya* daily, Mohamed Houli Chemlal, the only survivor of an explosion in a house used as a bomb factory by the cell, told a judge investigating the attacks they were making 100 kilos of the explosive.

Asked by reporters, Interior Minister Juan Ignacio Zoido refused to confirm the information, as did Spain's National Court, which deals with terror cases.

Chemlal told the judge that the blast happened when members of the terror cell were in the final stage of making the explosives, which they wanted to put into 20 bags divided into three vans to wreak havoc near famous landmarks, the daily said.

TATP has become the explosive of choice for the Islamic State group, as it can easily be made from ingredients such as acetone and oxygenated water that are easily available in high street stores.

Investigators found 15 kilos of the explosive in a flat near Brussels after suicide attacks at the Belgian capital's airport in March 2016.

It was also used in attacks in Paris in November 2015 and in Manchester in May.

According to the Catalan daily, the first floor of the house in Alcanar used by the terror cell "was completely covered with the substance that was drying." But something went wrong and the house exploded, prompting the surviving members of the cell to carry out their

vehicle rampage attacks in Barcelona and the seaside resort of Cambrils on August 17 and 18. The attacks left 16 people dead.

Fluorescent polymer detects traces of explosive devices

Source: http://counteriedreport.com/fluorescent-polymer-detects-traces-of-explosive-devices/

Sept 08 – Bomb plots could be thwarted with the help of a portable system for detecting traces of high explosives using fluorescent polymer nanoparticles, developed by A*STAR. Coated on to paper, these polymers display an explosive-detection performance far more robust than previous materials with similar properties.

Many methods have been developed to detect traces of high explosives such as trinitrotoluene (TNT), but most require large, lab-based analytical instruments such as UV absorption detectors or mass spectrometers, says Jianwei Xu from the A*STAR Institute of Materials Research and Engineering, who led the work. "We aimed to develop a portable, quick, inexpensive and highly sensitive alternative."

Xu focused on fluorescent polymers whose light emission dims when exposed to vapors of molecules such as TNT that contain 'nitro-groups'—the nitrogen-rich structure that give high explosives their energetic properties.

Although explosive-detecting fluorescent polymers have been developed before, there have been obstacles to their practical use, Xu explains. Some lost part of their fluorescence in solid form through a process called aggregation-caused quenching. Others lacked the necessary porosity for explosives vapor penetration, only retaining an effective response when formed in layers of around 2.5 nanometers—so thin, the sensor would be very difficult to fabricate cheaply.

Xu and his colleagues have been developing polymers that, rather than losing their light emission in the solid state, become brighter, an effect known as aggregation-induced emission (AIE). "Our previous research demonstrated that porous films obtained from AIE active copolymers show a strong response to the vapor of nitro-compounds," says Xu. **The team has now developed two new polymers, poly(triphenyl ethene) (PTriPE) and poly (tetraphenyl ethene) (PTPE), designed to maximize AIE, porosity and nitro group sensitivity.** The polymers' multiple bulky phenyl groups help keep them rigid and maximize light emission following aggregation. But in the presence of nitro-groups, electron transfer between polymer and analyte rapidly quenches the light.

Explosion that was heard across Manchester was caused by a NAIL BOMB say police as they probe who planted the crude device

Source: http://www.dailymail.co.uk/news/article-4890710/Bang-heard-Manchester-caused-NAIL-BOMB-say-police.html

Sept 16 – A bomb which exploded outside a café was packed with nails and screws.

It was left under the shutters of The Lounge in Pendleton, Salford, earlier this week.

It damaged the shutters, canopy, windows and pavement outside the cafe.

The bang was heard across Greater Manchester at around 12.30am on Tuesday.

Police said the nature of the device is still the subject of forensic examination.

A source said: 'It was packed full of nails and screws and forensics have been pulling them all out of the woodwork.'

Another person close to the investigation confirmed nails were in the device.

The explosion came after a car was blown up with an industrial style firework in Eccles, also in Greater Manchester, three days earlier.
Bomb disposal units were dispatched to both scenes and police believe the incidents could be linked.
A baffled family in Grafton Avenue, where the firework was attached to a Vauxhall Corsa's exhaust, said they had no idea as to why it was targeted.
Gina and Tom Harrison say the firework ripped the bumper and back lights off the vehicle.
Their son, Tom, heard a car 'screeching' down the road at around 6.30pm while watching football upstairs with a friend.
When the young men looked outside they saw a 'red glow' underneath the car and heard a 'huge bang'.
Four men have been arrested on suspicion of possession of explosives after a police chase.
At about 7pm on Thursday officers saw a Lexus car on Stockport Road, which was thought to be stolen and linked to the explosions.
Officers followed the Lexus for a short time before it stopped and reversed, ramming the police car near to Regent Road, Salford.
The occupants abandoned the car and attempted to escape on foot but officers soon caught up with them and detained them.
The men, aged 20, 24, 24, and 29, have since been bailed pending further enquiries.

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CYBER NEWS

How to prepare for cyberattacks that strike during a public health crisis

By Nitin Natarajan

Source: http://www.healthcareitnews.com/blog/how-prepare-cyberattacks-strike-during-public-health-crisis

Aug 22 – When large-scale cyberattacks happen, information security professionals should not just be looking at those incidents separate from non-cyber incidents because the next generation of attacks will coordinate the two.

Public health crises, whether naturally occurring or the result of an attack, provide a ripe environment for cyber exploitation. Bad actors want to steal personally identifiable information, financial or emergency response data and the potential opportunities increase significantly during disasters.

Know this: During a large-scale incident hospitals' IT capabilities may need to be rapidly surged to handle volunteers and new staff, particularly those unfamiliar with your organization's IT security operations.

We must ensure that the individuals on the front lines of our cyber defense efforts are also engaged and maintain a heightened sense of awareness during these emergencies.

Already available resources

Bioterrorism is not new to the United States. Whether it was the salmonella release in Oregon in 1984 or the failed attempts to poison the Chicago water supply in the 1970s, we have seen and will most likely continue to see these types of incidents on U.S. soil. And in the last few years, there have been a number of global public health emergencies like the influenza pandemic, Zika virus and Ebola outbreak.

The U.S.'s history of preparing for bioterrorism, not to mention the billions of government and taxpayer dollars spent, have created resources and strategies that hospitals should keep pace with and have access to during the next crisis.

The first step is to update your existing public health emergency plans to include a cyber element. These plans need to be exercised and corrective actions from those exercises should revise those policies. Similarly, cyber plans must be assessed to take into account public health emergencies.

Additional scrutiny should also be paid to potential breaches and attacks during times of heightened operations. Essentially, work already occurring in your organization in two independent spheres must be brought closer together and integrated during the steady state to successfully collaborate during emergencies.

Look to government resources

While these steps sound easy, they'll require the support, and at times, direction from the most senior levels of your organization. Individuals responsible for looking at enterprise risk and mitigation must be willing to accept this new reality and prepare for what will happen in the future.

Federal, state, local, tribal and territorial governments and the private sector have established global biosurveillance capabilities, enhanced domestic laboratory capabilities and capacity, prepared our healthcare infrastructure for surges in patients, established stockpiles of medical countermeasures and countless other activities over the last two decades. We've conducted thousands of exercises of all shapes and sizes and continue to maintain capability and capacity in times of dwindling resources. Some examples within these categories include: Biosurveillance • Centers for Disease Control (CDC) National Syndromic Surveillance Program/BioSense Platform • Department of Defense Global Emerging Infections Surveillance and Response System • Department of Homeland Security National Biosurveillance Integration Center

Laboratory Capabilities/Capacities

- CDC Laboratory Response Network
- State/local chemical and biological laboratory capability/capacity

Medical Countermeasure stockpiles

- CDC Strategic National Stockpile
- CDC Chempack Program
- State/local/hospital stockpiles of medical countermeasures to biological and chemical agents

The exercises conducted have yielded many lessons learned. Hospitals have tested and exercised their ability to respond to a variety of situations including contaminated patients, natural disasters, power outages,

active shooter events, and mass casualty events. The lessons learned from these events allowed them to revise their emergency plans to be stronger and better prepared for real-world events.

Not just patient data

In parallel with developing the aforementioned emergency resources, the healthcare industry has seen significant investments in IT infrastructure and security. As technology continues to evolve at a record pace, the threat of cyberattacks grow as well. Both insider and external threats seem to be constantly evolving and becoming more complex and coordinated. We've already seen the synthesis of coordinated cyber and ground attacks in military operations.

There have been attacks against the healthcare and public health sector for many years and as recently as May with the WannaCry ransomware attacks.

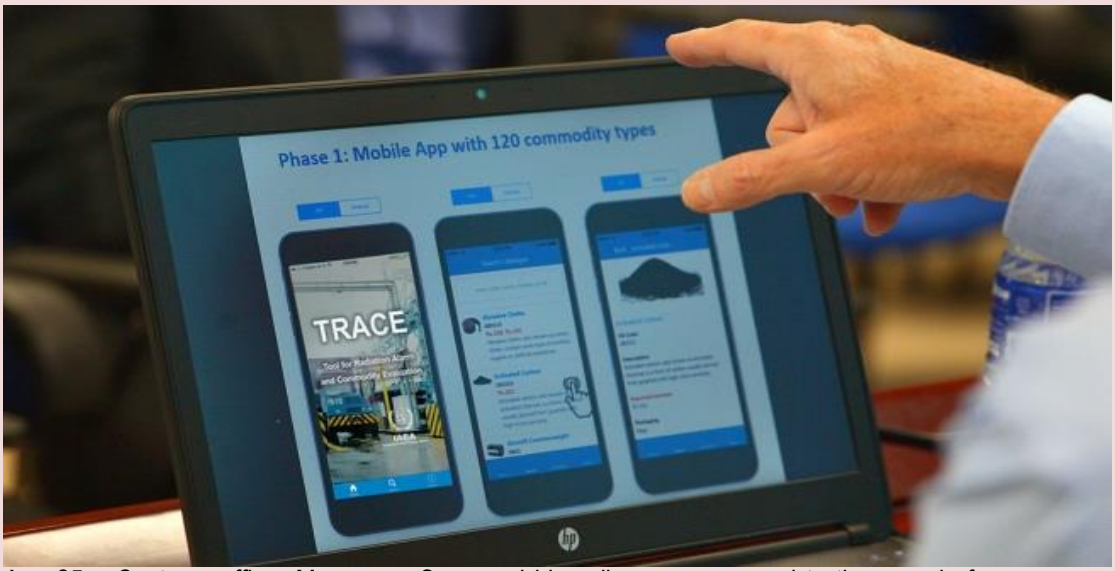
During a public health emergency, individuals might attempt to nefariously access other information. For example, hackers may want information on the location, quantity or shipping routes for medical countermeasures, if they feel they don't have access to appropriate care. Foreign entities may be interested in developing a deeper understanding of available U.S. resources, while others might verify whether the data we're sharing with partner nations matches what public systems are reporting. This type of international interest is also directed at state and local governments, which are perceived as having the same type of data — but on more vulnerable and potentially easier to access networks.

We will see naturally occurring and manmade biological events again. The best way to prepare for this next generation of attacks is to force these two worlds to collide. Only together, can we build and maintain a system to tackle this new frontier of challenges that are just out on the horizon.

__Nitin Natarajan__ is a principal at Cadmus, a business management consulting firm in Washington, DC. Natarajan has more than 20 years of experience leading homeland security, emergency response, healthcare and public health and environmental initiatives at the Environmental Protection Agency, the National Security Council, the Department of Health and Human Services and local government.

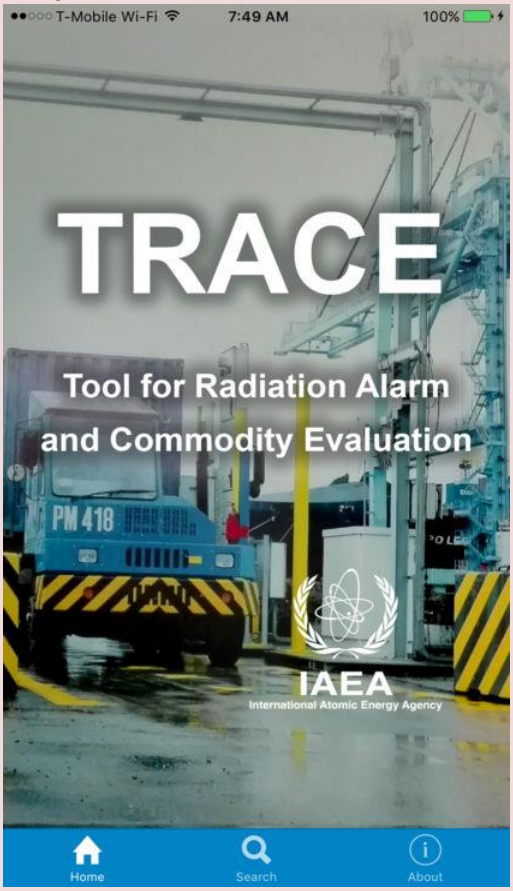
New app helps improve radiation detection at ports

Source: http://www.homelandsecuritynewswire.com/dr20170825-new-app-helps-improve-radiation-detection-at-ports



Aug 25 – Customs officer Mengsrom Song and his colleagues are used to the sound of radiation alarms. One third of cargo container shipments passing through the Phnom Penh Autonomous Port set off alarms on the sensitive radiation portal monitors intended to catch smuggled radiation sources and nuclear material.

All of the alarms since the device was installed in July 2016, however, have been caused by material such as tiles, fertilizers and construction materials, said Song, Deputy Chief of the customs office at the port, located on the Mekong River just outside Cambodia's capital. The port handles a quarter of the country's foreign trade.



"Evaluating radiation alarms represents a huge challenge for us as they require us to perform secondary inspections on dozens of containers a day," Song said. "This takes time and resources, and detracts from our other work." Secondary inspections involve the time-consuming use of hand-held radionuclide identification devices, which measure the amount of radiation and identify its type and source, as well as analysis of the radiation portal monitor's data to check the commodity type and origin.

The IAEA says that a new smart phone application launched by the IAEA will help distinguish between alarms due to harmless amounts of naturally occurring radiation and alarms that might be a cause for concern from a security standpoint and warrant further investigation.

The app is the outcome of an IAEA coordinated research project that aims to improve the assessment of initial alarms. Researchers from the IAEA and twenty countries have worked together to improve the alarm assessment process by developing tools and algorithms for the detection software, with the goal of enabling it to distinguish between radiation from potentially smuggled man-made sources and naturally occurring radiation.

The app may be downloaded from iTunes and Google Play.

The key to the research is to be able to distinguish between the radiation characteristics of these different substances, said Charles Massey, nuclear security officer at the IAEA, who coordinates the research. The distinction cannot be based on the quantity of radiation, because the detectors need to catch even small amounts of nuclear or other radioactive material that may be present. Instead, researchers are looking into ways to identify the make-up of radiation from different isotopes that characterize each material. The software will need to identify and record these, so that it can screen out radiation from naturally occurring materials that match these profiles. This would filter out most of the innocent alarms, allowing customs officers to concentrate on the remaining unclear cases.

Even while researchers are working on new algorithms for use in software programs that will be installed in the detection systems, the new app called TRACE (Tool for Radiation Alarm and Commodity Evaluation) includes a detailed compendium of naturally occurring radioactive substances and their typical radiation characteristics. "This is a big step in the right direction, as using the app will reduce the time spent deciding whether a container setting of the alarm requires further investigation," said Sokkim Kreng, customs officer at Cambodia's largest sea port in Sihanoukville.

IAEA guidance recommends that countries use radiation detection equipment as part of their national nuclear security programs to check commercial goods exports and imports, as a way to intercept smuggling in nuclear and radioactive material.

A Cyber Norms Hypothetical: What If the USS John S. McCain Was Hacked?

Source: https://www.cfr.org/blog/cyber-norms-hypothetical-what-if-uss-john-s-mccain-was-hacked

Aug 23 – The collision between the *USS John S. McCain* and an oil tanker in the Straits of Malacca has led some to speculate—without any evidence—that the tragedy could have been caused by a foreign nation that hacked the destroyer's navigation system. Some of the speculation connected the *McCain* collision with the incident earlier this summer when a container ship struck the *USS Fitzgerald* off the Japanese coast in June. The *Fitzgerald* investigation has turned up no indications of cyber foul play and identified other factors behind the collision, such as poor seamanship. The evaluation of the *McCain* incident will probably produce similar conclusions. **However, the incidents provide an interesting hypothetical: how would international law treat the collisions if they were the result of state-sponsored cyber operations? And what would it mean for the cyber norms debate?**

The *Fitzgerald* and *McCain* accidents resulted in significant damage to naval vessels and deaths and injuries to sailors. If done by a foreign nation, then hacking the navigation systems would be an illegal use of force under international law. As the *Tallinn Manual 2.0* states, "consequences involving physical harm to individuals or property will in and of themselves qualify a cyber operation as a use of force." Compromising navigational systems through cyber means clearly creates serious risks to ships and crew associated with collisions at sea, especially for ships, such as the *McCain*, sailing in heavily trafficked waters. Creating these risks satisfies the need for cause and effect to be closely related in acts considered uses of force under international law.

In this scenario, the targets were naval vessels not merchant ships, which means the hacking threatened and damaged core national security interests and military assets of the United States. In the peacetime circumstances of these incidents, no nation could argue that such a use of force had a plausible justification under international law. And every country knows the United States reserves the right to use force in self-defense if it is the victim of an illegal use of force.

Further, hacking maritime navigation systems implicates the law of the sea. The *Fitzgerald* was sailing through Japanese waters towards the high seas and exercising navigation rights protected by international law. A foreign nation's hacking of its navigation system would interfere with Japan's sovereignty over its territorial waters, the U.S. naval vessel's right of innocent passage through Japanese waters, and the right of freedom of navigation on the high seas. The *McCain* was sailing in a location both Singapore and Malaysia claim is within its respective territorial waters, and any hacking of its navigational system would violate the sovereignty the legal regime of territorial waters accords to the coastal state. These rights in the law of the sea are so important for so many nations that their violation through navigational hacking would constitute a grave development.

This analysis highlights that, if a foreign nation hacked the *Fitzgerald* and/or *McCain*, the cyber operations would constitute, individually and collectively, a very dangerous escalation in cyber operations in clear violation of international law.

The prevailing *modus operandi* of states has been to conduct cyber operations that do not risk causing injury, death, significant property damage, or escalation into kinetic contexts. Much of the difficulty experienced with clarifying and applying international law to cyberspace has arisen because the vast majority of cyber operations take advantage of the technical and legal challenges of attribution, a permissive legal environment (e.g., concerning espionage), and/or long-standing difficulties in applying existing legal norms, such as the principles of sovereignty and non-intervention. For example, the Obama administration could not bring itself to categorize Russian efforts to interfere with the U.S. election in 2016 as a violation of the non-intervention rule.

In addition, as seen in the deadlock reached in the UN's Group of Governmental Experts (GGE), some countries want less discussion of international law in the cyber realm. Hacking U.S. naval vessels would, instead, trigger more attention on the international law on sovereignty and the use of force that experts, such as Jim Lewis, identify as potentially promising areas for talks in the post-GGE context. Such hacking would strengthen U.S. preferences for clarifying the application of international law in cyberspace and, where necessary, the development of additional norms. It would also justify the efforts made in the *Tallinn Manual* project for sustained, authoritative analysis of the international law applicable to cyber operations. Thus, hacking U.S. naval vessels would transform the relationship between international law and cyber operations and bolster U.S. positions on the application of international law in cyberspace. Why any adversary of the United States would risk these outcomes reinforces that the hacking speculation should not be taken too seriously.

Why It's Still A Bad Idea to Post or Trash Your Airline Boarding Pass

Source: https://krebsonsecurity.com/2017/08/why-its-still-a-bad-idea-to-post-or-trash-your-airline-boarding-pass/

Aug 24 – An October 2015 piece published here about the potential dangers of tossing out or posting online your airline boarding pass remains one of the most-read stories on this site. One reason may be that the advice remains timely and relevant: A talk recently given at a Czech security conference advances that research and offers several reminders of how being careless with your boarding pass could jeopardize your privacy or even cause trip disruptions down the road.

In What's In a Boarding Pass Barcode? A Lot, KrebsOnSecurity told the story of a reader whose friend posted a picture of a boarding pass on Facebook. The reader was able to use the airline's Web site combined with data printed on the boarding pass to discover additional information about his friend. That data included details of future travel, the ability to alter or cancel upcoming flights, and a key component need to access the traveler's frequent flyer account.

A search on Instagram for "boarding pass" returned 91,000+ results.

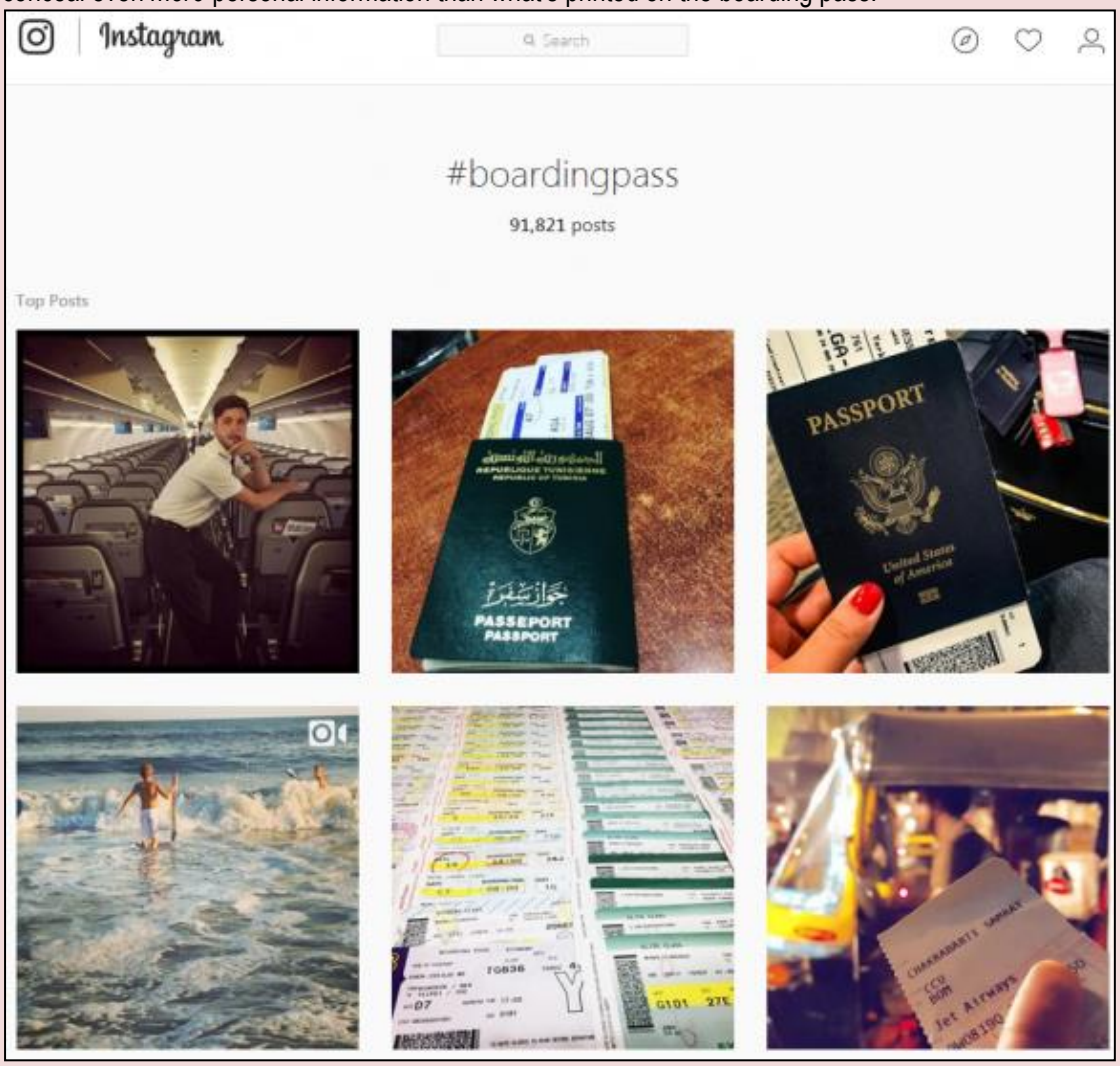
More recently, security researcher Michal Špaček gave a talk at a conference in the Czech Republic in which he explained how a few details gleaned from a picture of a friend's boarding pass posted online give him the ability to view passport information on his friend via the airline's Web site, and to change the password for another friend's United Airlines **frequent flyer account.**

Working from a **British Airways** boarding pass that a friend posted to **Instagram**, Špaček found he could log in to the airline's passenger reservations page using the six-digit **booking code** (a.k.a. **PNR** or **p**assenger **n**ame **r**ecord) and the last name of the passenger (both are displayed on the front of the BA boarding pass).

Once inside his friend's account, Špaček saw he could cancel future flights, and view or edit his friend's passport number, citizenship, expiration date and date of birth. In my 2015 story, I showed how this exact technique permitted access to the same information on **Lufthansa** customers (this still appears to be the case).

Špaček also reminds readers about the dangers of posting boarding pass barcodes or QR codes online, noting there are several barcode scanning apps and Web sites that can extract text data stored in bar codes and QR codes. Boarding pass bar codes and QR codes usually

contain all of the data shown on the front of a boarding pass, and some boarding pass barcodes actually conceal even *more* personal information than what's printed on the boarding pass.



As I noted back in 2015, **United Airlines** treats its customers' frequent flyer numbers as secret access codes. For example, if you're looking for your **United Mileage Plus** number, and you don't have the original document or member card they mailed to you, good luck finding this information in your email correspondence with the company.

When United does include this code in correspondence, all but the last three characters are replaced with asterisks. The same is true with United's boarding passes. However, the customer's full Mileage Plus number is available if you take the time to decode the barcode on any United boarding pass.

Until very recently, if you knew the Mileage Plus number and last name of a United customer, you would have been able to reset their frequent flyer account password simply by guessing the multiple-choice answer to two secret questions about the customer. However, United has since added a third step — requiring the customer to click a link in an email that gets generated when someone successfully guesses the multiple-choice answers to the two secret questions.

It's crazy how many people post pictures of their boarding pass on various social networking sites, often before and/or during their existing trip. A search on **Instagram** for the term "boarding pass", for example, returned more than 91,000 such images. Not all of those images include the full barcode or boarding record locator, but plenty enough do and that's just one social network.

For anyone interested in how much of today's airline industry still relies on security by obscurity, check out this excellent talk from last year's **Chaos Communication Congress** (CCC) in Berlin by security researchers **Karsten Nohl** and **Nemanja Nikodijevic**. Nohl notes that the six digit booking code or PNR is essentially a temporary password issued by airlines that is then summarily printed on all luggage tags and inside all boarding pass barcodes.

"You would imagine that if they treat it as a password equivalent then they would keep it secret like a password," Nohl said. "Only, they don't, but rather print it on everything you get from the airline. For instance, on every piece of luggage you have your last name and the six-digit (PNR) code."

In his talk, Nohl showed how these PNRs are used in code-sharing agreements between and among airlines, meaning that gaining access to someone else's frequent flyer account may reveal information associated with that customer's accounts at other airlines.

Nohl and his co-presenter also demonstrated how some third-party travel sites do little to prevent automated programs from rapidly submitting the same last name and changing the PNR, essentially letting an attacker brute-force a targeted customer's PNR.

My advice: Avoid the temptation to brag online about that upcoming trip or vacation. Thieves looking to rob someone in your area will be delighted to see this kind of information posted online.

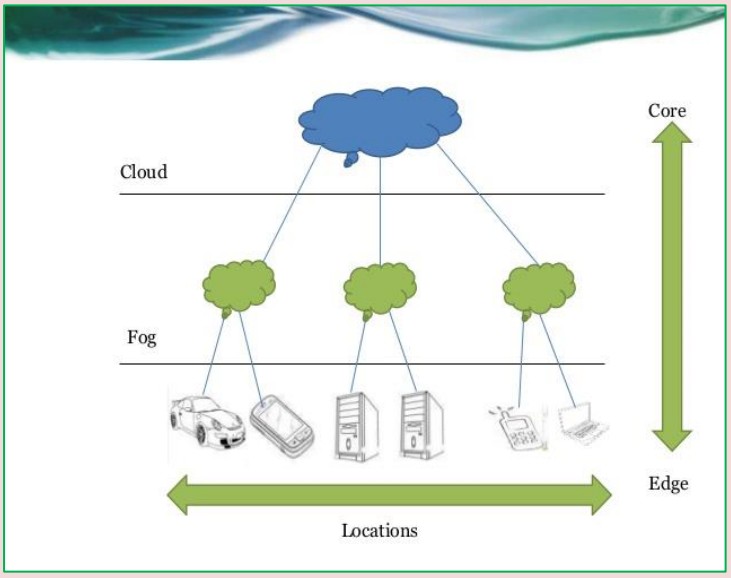
Don't post online pictures of your boarding pass or anything else with a barcode in it (e.g., there are currently 42,000 search results on Instagram for "concert tickets").

Finally, avoid leaving your boarding pass in the trash at the airport or tucked into that seat-back pocket in front of you before deplaning. Instead, bring it home and shred it. Better still, don't get a paper boarding pass at all (use a mobile).

Fog Computing to Replace Cloud Technology

Source: https://i-hls.com/archives/78288

Aug 28 – When disaster strikes, it's crucial that first responders have reliable access to a controlled network, allowing them to receive and deliver critical information while ensuring an effective emergency response. Unfortunately, this is currently not the case. Due to cell tower damages, the infrastructure for communications is not readily available during the response to an incident or disaster, and furthermore, the cost of this infrastructure is unreasonable, even for large organizations. In response to this, Dr. Radu Stoleru, professor in the Department of Computer Science and Engineering at Texas A&M University, and his collaborators have proposed a way to enhance the resilience of public safety mission critical systems and services in the face of connectivity challenges.



According to today.tamu.edu, the Middle Class Tax Relief and Job Creation Act of 2012 produced the First Responder Network Authority (FirstNet), which was designed to provide emergency responders with the first nationwide, high-speed, broadband network dedicated to public safety. AT&T has just been selected by FirstNet and awarded $6.5 billion to build the wireless network, with construction beginning later this year.

Stoleru's current project centers on the development of DistressNET-NG, a fault-tolerant, energy-efficient and load-balanced solution for mobile broadband communication and mobile edge computing for FirstNet. Edge/fog computing is a method of optimizing cloud computing systems by performing data processing at the edge of the network near the source of the data.

"DistressNet-NG provides a scalable and resilient wireless interconnection fabric for first responder communication equipment," Stoleru said. "Smartphones carried by first responders are capable of performing analytics using the computing and storage power of nearby devices, eliminating the need for constant

high capacity connections to the internet. In order to accelerate this process, several high-performance computing nodes that are built using common-off-the-shelf components can be deployed in the area."

"While cloud computing was still emerging, I realized that in a disaster area, a cloud environment might not be available due to the disruption in the networking/communication infrastructure," Stoleru said. "I then proposed the concept of 'fog,' which is a not well-defined cloud over an intermittently connected network infrastructure. It is rewarding to notice that CISCO recently (2013) adopted the term 'fog computing,' a concept we've been thinking about and working on since 2008."

After joining Texas A&M in 2007, he saw immediate application in the Texas A&M Engineering Extension Service (TEEX) and Disaster City and began working on fog computing in 2008. In 2011, Stoleru received a grant to continue his research and begin building DistressNet.

Fog computing moves the computations from data centers to mobile devices of end users, because the centers where cloud computing can be done might not be available shortly after a large-scale disaster.

Stoleru was also recently awarded a $1.8M grant from the National Institute of Standards and Technology (NIST), which is part of the U.S. Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards and technology.

AI computer chips made of mice neurons that can SMELL explosives could transform airport security

Source (+video): http://www.dailymail.co.uk/sciencetech/article-4829464/In-new-leap-AI-computer-chips-smell.html?ito=social-twitter_mailonline

Aug 28 – A technology expert has created a computer chip based on mice neurons that could recognise the smell of explosives.

The device could be implanted into the brain of future robots, which could be trained to recognise danger via odours, replacing traditional airport security.

The Koniku Kore device is a 'world first' that is able to breath in and smell air, meaning it could detect volatile chemicals and explosives or even illnesses such as cancer.

This means in the future passengers could skip tedious airport security lines, while the special device sniffs out explosives silently in the background.

While those in the field of Artificial Intelligence (AI) are working furiously to create machines that can mimic the brain, or - like tech entrepreneur Elon Musk - implant computers in our brains, one researcher has found a way to merge lab-grown neurons with electronic circuitry.

Nigerian neuroscientist Oshiorenoya Agabi says his supercomputer - the pictures of which cannot yet be publicly revealed - could simulate the power of 204 brain neurons.
As many grapple with the finite processing power of silicon, the 38-year-old said he had looked to the brain which is 'the most powerful processor the universe has ever seen.
'Instead of copying a neuron, why not just take the biological cell itself and use it as it is? That thought is radical. The consequence of this is mind-boggling,' he said.
So he and a team of geneticists, physicists, bio-engineers, molecular biologists and others set about doing just that, focusing on the problems that were particularly hard for silicon devices to solve.
The device was developed by his Silicon Valley-based start-up Koniku and unveiled at the TEDGlobal conference in Tanzania on Sunday.

Hackers Can Remotely Access Wireless Syringe Infusion Pump

Source: https://www.hackread.com/hackers-can-remotely-access-wireless-syringe-infusion-pump/

Sept 08 – Another day, another set of critical vulnerabilities in wireless medical devices – This time; high severity flaws identified in Smiths Medical Syringe Infusion Pumps.
The Medfusion 4000 Wireless Syringe Infusion Pump that is manufactured by Minnesota-based firm Smiths Medical is reportedly plagued with not one or two but eight vulnerabilities. Some of these can easily be exploited by remote hackers, and this would affect the intended operations of the device.
ICS-CERT issued an advisory on Thursday in which it was reported that above-mentioned syringe infusion pump from Smiths Medical could be remotely exploited.

It is worth noting that these pumps are used across the globe for delivering small doses of medicines from a syringe, and these are typically used in acute care settings.
According to ICS-CERT, the purpose of syringe infusion pump is to accurately deliver medication in critical care patients such as neonatal and pediatric intensive care units as well as the operating room. Smiths Medical is one of the leading firms in the US that manufactures specialty medical devices.
The company is currently trying to figure out the solutions for fixing the vulnerabilities in its wireless syringe infusion pumps, and the company has promised to release patches for the identified flaws in the upcoming version 1.6.1 of the device. The new version will be releasing in January 2018.
An independent security researcher Scott Gayou has identified these vulnerabilities. As per the findings of Gayou, the flaws are present in version 1.1, 1.5 and 1.6 of the firmware. The researcher hasn't revealed much about the vulnerabilities to prevent exploitation until a patch is released, but it is being claimed that the flaws are highly severe and critical.
According to ICS-CERT, the pump has one of the most critical of all security holes the 'CVE-2017-12725' which has CVSS score of 9.8 can automatically establish wireless network connection unless the default configuration of the device is changed. Other high severity vulnerabilities identified in the pumps include a buffer overflow flaw tracked as CVE-2017-12718.
This can be exploited by attackers for code execution in certain situations. Then there is the lack of authentication and hard-coded credential for the FTP server of the device issues that are tracked as CVE-2017-12720 and CVE-2017-12724. Another flaw is the lack of proper host certification authentication tracked as CVE-2017-12721. It makes the pump vulnerable to man-in-the-middle attacks.
Other flaws are of medium severity as these let the attacker crash the communications module of the device, authenticate to telnet through hard coded credentials

and access passwords by exploiting the configuration files.

Smiths Medical has suggested users assign static IP addresses to the device until a patch is released. Furthermore, the company urges customers to remain cautious about malicious DNS and DHCP servers or any malicious activity, set unique and strong passwords, create backups on a regular basis and to install the device on isolated networks only.

ICS-CERT, on the other hand, suggests that the FTP server should be disabled, unused ports must be closed and the traffic is going to the pump must be duly monitored. There must be firewalls behind the devices and it is also advised that the pumps be disconnected temporarily from the networks until the patches are released.

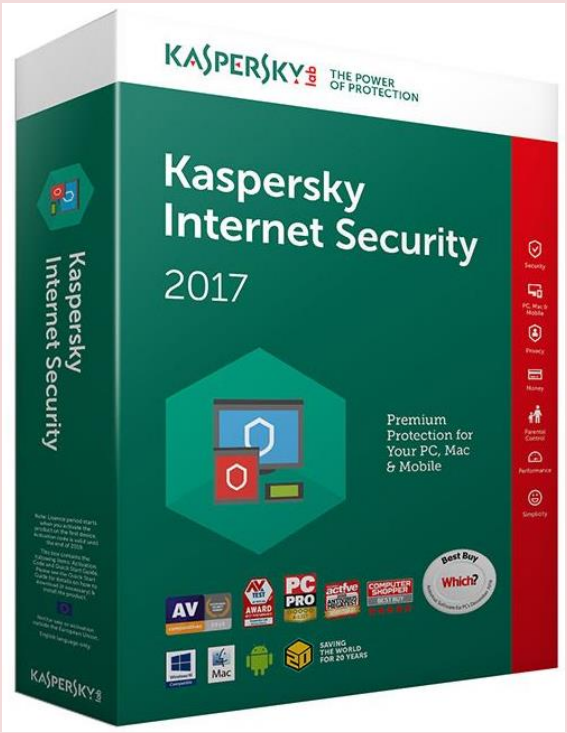
This is the second time in one month that a medical equipment has been found vulnerable to life threatening vulnerabilities. Last week, Food and Drug Administration (FDA) revealed that 465,000 pacemakers are vulnerable to cyber attacks.

DHS instructs government agencies to stop using Kaspersky Lab's software

Source: http://www.homelandsecuritynewswire.com/dr20170914-dhs-instructs-government-agencies-to-stop-using-kaspersky-lab-s-software

Sept 14 – DHS on Wednesday, referring to reports about the links between the Russian cybersecurity company and Russian intelligence agencies, ordered all U.S. government agencies to stop using Kaspersky Lab software products.

DHS gave the agencies thirty days to identify any Kaspersky products they were using, and ninety days to remove all such products.



The DHS directive was signed by Elaine Duke, the acting DHS chief.

"The department is concerned about the ties between certain Kaspersky officials and Russian intelligence and other government agencies, and requirements under Russian law that allow Russian intelligence agencies to request or compel assistance from Kaspersky and to intercept communications transiting Russian networks," Duke wrote.

Kaspersky, a Russian software company run by a London-based holding company, reported $644 million in revenues last year. The company claims that 400 million users around the world – among them 270,000 corporate clients — are using its anti-virus and anti-malware software.

Kaspersky angrily reacted to the DHS directive, calling the allegations "completely unfounded" and said "it does not have unethical ties or affiliations with any government, including Russia."

Kaspersky's four-paragraph statement continued: "Kaspersky Lab has never helped, nor will help, any government in the world with its cyber espionage or offensive cyber efforts and it's disconcerting that a private company can be considered guilty until proven innocent, due to geopolitical issues."

The BBC reports that the DHS directive is the latest sign of growing U.S. concern about the Russian cybersecurity company.

- In July, the General Services Administration (GSA) dropped Kaspersky from a list of approved vendors for some government purchases.
- In a May Senate intelligence committee hearing, the leaders of the U.S. intelligence community all said they would not be comfortable with Kaspersky software on their computers.

Cyberexperts say that antivirus software offers a would-be hacker a perfect vehicle. These applications operate in "God mode", being allowed access to every part of a user's hard drive and transmitting digital information back and forth to a remote server controlled by the antivirus provider.

Experts say that, theoretically, the Russian government could instruct Kaspersky to compromise U.S. government computers by implanting malicious software update. "If it were controlled by a malicious cyber actor, because of the technology, he's going to have access to every single file on your computer," said Anthony Ferrante, senior managing director of FTI Consulting in Washington.

The BBC notes that U.S. counterintelligence agencies have been monitoring Kaspersky for several years. Around 2012, the FBI investigated an informant's tip that the company had compromised the U.S. government's encrypted telephone system. This summer, FBI agents interviewed several Kaspersky employees, including Eugene Kaspersky, the company founder.

Kaspersky was educated at a KGB-backed technical college and briefly worked for a Russian defense ministry scientific institute.

A former FBI official told the BBC that "He wouldn't help us at all… From the early 2000s, it was felt Kaspersky was an FSB [the successor agency of the KGB] guy and everything he'd developed was just a huge front."

James Lewis of the Center for Strategic and International Studies (CSIS) said that U.S. reliance on Russian cybersecurity products was a legacy of better relations in the immediate aftermath of the end of the cold war. "The Russians were supposed to be our friends," he said. "There's a lot of leftovers in US policy since the time we thought the world would all be happy market democracies."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Risk reduction: What drives preparedness?

Source: http://www.homelandsecuritynewswire.com/dr20170823-risk-reduction-what-drives-preparedness

Aug 23 – A new study across Austria, England, and Romania finds room for improvement in both public and private schemes that could help encourage risk reduction behaviors and reduce losses in future disasters.

"Currently neither insurance nor governments successfully encourage risk reduction. Increased and more targeted efforts particularly from local authorities will be important, and have the capacity to change the picture. This will be exceedingly important considering extreme events from climate change," says IIASA researcher Susanne Hanger, who led the study. "This in turn is important for insurance to remain viable and for governments to not overspend on disaster aid."

The study, published in the journal *Risk Analysis*, provides a detailed look at different public and private incentives for risk reduction and their association with actual risk reduction behavior, in three European countries.

Public versus private

IIASA notes that the study also finds little support for the idea that compensation for flood damage make people less likely to take personal risk reduction measures, such as taking actions to prepare for an eventual flood or installing structures or technologies that can help protect homes from damage. Instead, the study finds that neither private insurance nor public compensation after a disaster is linked to less risk reduction at an individual level.

"There is an idea that public compensation schemes are bad for risk reduction behavior—that is, that if people know they will be compensated in the event of a disaster, they will be less likely to take measures that could help protect their property from damage," says Hanger. The new study does not disprove this idea, a tenet of economic theory, but it suggests that if the link does exist, it may not make a difference in overall behavior, which is driven by many different factors. Unfortunately, the study suggests that insurers and public authorities may be the least of these factors.

International perspective

The study is one of the first to take a multi-country look at whether insurers' and public efforts make a difference in flood risk behavior. Hanger and colleagues in Austria, England, and Romania surveyed over 1,800 individuals in the three countries, which have very different insurance and compensation schemes. In Austria for instance, post-disaster relief is available from the government in the form of a catastrophe fund. Yet Austrians had taken more structural measures to protect their homes (45 percent) than Romanians (23 percent), or the English (19 percent), who have less access to public assistance after disasters. For awareness and preparedness measures, Austrians were equally likely to have taken awareness and preparedness measures compared to the English and Romanians.

While the researchers found no link between post-disaster compensation and reduced individual preparation, they did find a connection between public infrastructure measures such as flood dams, which may be linked to a sense of increased safety. In both England and Austria, the researchers found that public risk reduction infrastructure, such as dams and levees, were associated with a lower rate of individual investment in risk reduction measures. Interestingly, in Romania neither insurer's nor government efforts showed any effect on household risk reduction behavior. Hanger speculates that this may be a result of insufficient public capacity to provide this kind of support.

In England, the study shows that national efforts by the U.K. government to inform the public about disaster risk reduction have reached many households, which is positively associated with preparedness. In Austria, where national level information efforts are limited, households respond almost exclusively to local awareness raising and support.

Across all countries, the researchers find room for improvement in both public and private schemes that could help encourage risk reduction behaviors and reduce losses in future

disasters. Instead of increasing efforts to privatize all flood risk insurance, Hanger says, "We need to better coordinate public and private schemes in order to design not only efficient, but also socially just and politically feasible solutions."

— Read more in S. Hanger-Kopp et al., "Insurance, public assistance and household flood risk reduction: A comparative study of Austria, England and Romania," Risk Analysis (2017).

Responding to Unique Operating Environments

By Seth Komansky
Source: https://www.domesticpreparedness.com/healthcare/responding-to-unique-operating-environments/

Aug 23 – First responders are often deployed to unique operating environments, which include large-scale special events with many participants and spectators: street festivals; road races or marathons; concerts; and sporting events. These environments require leadership to take a forward-thinking posture in the planning process to develop strategy. It also relies on front-line personnel to execute tactics that vary from day-to-day operations.

Emergency Medical Services (EMS) is called to respond to an increasing number of incidents that occur within unique operating environments (UOEs). These environments have the potential to tax available resources or challenge standard methods for response operations.

Challenges

Considering the landscape at UOEs, for most jurisdictions, the population surge to a condensed area creates the greatest challenge. With any mass gathering, EMS responds to all of the usual call types, both medical and traumatic in nature, including: allergic reactions; cardiac and chest pain; respiratory; trips and falls; heat-related emergencies; or overdoses. However, these UOEs pose the challenge of seeing these calls at a much higher volume. Normal deployment models do not account for the surge of people into an area usually covered by a single response unit, such as college and professional sporting events or concerts. Although there are defined times for the actual event, spectators tend to arrive many hours earlier to partake in tailgating activities. This expands the footprint of the event beyond the confines and comforts of the walls of the stadium. Stadiums can hold 60,000-100,000 people and that number soars with those who just come for the tailgating to enjoy the environment. Hazards such as hot grills, the combination of moving vehicles with intoxicated pedestrians, and environmental exposures could increase call volume.

Street festivals pose similar challenges to the sporting events and concerts. A significant difference exists: these events typically occur on roadways that are traditionally open to moving traffic. The road closures inherently challenge EMS response, both within the event and to the nearby buildings for routine requests for service. It also increases vehicular traffic to nearby streets, thus complicating response. Further, the surge of population tends to sprawl beyond the confines of the event footprint to area parking decks or parking lots, area businesses, and nearby roadways and sidewalks.

When considering a road race or marathon, EMS must take into account the sprawling nature of the event. Although the route is defined, a single event crew cannot possibly cover the entire route effectively. This is particularly true of a marathon or triathlon, which may sprawl over several jurisdictions. This requires coordinated planning with several different stakeholders. Road closures and changing detours complicate response by potentially closing typically used routes to calls outside of the event. It is important to communicate with race coordinators to determine if participants' medical history

and contact information will be on the back of their race bibs in the event the runner is incapacitated. If not, knowing who will have the participant emergency contact information is critical.
With any of these situations, a mass casualty or multi-patient incident is increased just by the inherent fact that there are more people in a smaller and compact area. In addition to all of the above challenges, those responsible for planning must consider a nefarious act at any of these venues or footprints. Threats using small arms, edged weapons, improvised explosive devices, or vehicle ramming remain just a few things to think about when evaluating the "what ifs" for low-frequency, high-consequence incidents.

A Unique Approach for a Unique Operating Environment
In order to best approach the management of a UOE, a unique outlook and approach are needed. First and foremost, each EMS system must develop a way to communicate with community leaders and planners from a variety of disciplines, particularly with those responsible for organizing events. If not part of the permitting approval process, it is important to communicate with those that are to ensure cooperation with approved events and perhaps have input on potential impacts prior to the event's approval. Without the awareness of an event happening and not having a seat at the planning table, EMS considerations may be lacking.
Internally, it is important to establish resources on hand to manage the challenges the event presents. These could include ambulances and personnel, but also specialized services and units trained to deploy to UOEs such as bike teams, foot teams, carts, command assets, and command posts. Each of these assets has its own advantage. For example, a bike team is able to reach much further in a quicker time frame than a team on foot and typically with greater ease and more safely than an ambulance crew. In more crowd-dense areas, bikes may not be able to navigate the crowds, leaving a foot team as the best option. In both cases, they are limited with transport capabilities to a rendezvous point with an ambulance, so the use of carts or a utility vehicle modified with a stretcher mount or space for a supine transport on a backboard or other similar device and/or seating would be a better option. A combination of these resources improves capabilities. It is beneficial to work smarter, not harder!
It is also important to consider allied partners, "Do the hospitals in your area have response teams or assets that may be used for triage or treatment, cooling stations, or workforce multipliers in these environments?" If so, with daily interaction with these hospitals, this partnership would likely be seamless. EMS systems must have a way to "flip the switch" for a modified operations plan when working with these UOEs. When there is an event that is either resource dependent or results in a mass casualty or multi-patient incident, the ability to mobilize an appropriate response becomes necessary. Some ideas to incorporate into this plan include:

- ***Staging areas:*** Evaluating possible staging areas able to accommodate all responding disciplines and apparatus. This could be a regionalized concept so the jurisdiction has some predetermined areas and these may also be used during normal operations. Remember, a desired parking lot differs in usability on weekdays to weeknights and weekend days to weekend nights. It is important to assess these options for various operational periods.
- ***The incident within the event:*** There needs to be some foresight to determine how incoming units will integrate into an already existing organizational structure. Regardless, whether treating it as an incident within the event, to build a new incident command structure, or using the existing structure to build divisions or groups into the existing command structure, the threshold for a mass casualty or multi-patient incident should be considered to determine when to execute the plan.
- ***System coordination:*** Whether operating a single department or multiple departments in a single jurisdiction or across several jurisdictions, it is important to establish a person who can step back and take on the roll of "air traffic controller." Ideally, if possible, this could be someone who takes a position at the dispatch center helping to make decisions about changes to deployment. It is a strategic position and should be a person with the knowledge and authority to alter responses. This modification allows for the following: vetting and altering traditionally multi-unit responses to fewer or even single units during this time period; determining which calls can be held for a period of time; or calling and managing other mutual aid. By removing this person from the mix of the other operations, they are able to objectively assist with managing all of the other needs and requests for service, modifying response as appropriate. Ideally, as guidelines, modified operations plans are developed ahead of time, such as for severe weather, time when resources are depleted, or when an incident occurs at a UOE.

- ***Transportation decisions:*** Having transportation plans ahead of time allows for less just-in-time decision making for crews on the scene in the heat of the moment. This determination requires early communication with the emergency departments about a multi-patient response. If possible, it is beneficial to disburse patients to several facilities instead of overloading a single location. Working on relationships early with area mass transit bus options or local school district bus assets are good options to move many people with few ambulances.

Building the Ranks

The initial groundwork at an incident within a UOE must be laid early on, sometimes before senior leadership and command staff arrives on location to build out the incident command system. With this in mind, it is just as important to build the capabilities of front-line personnel as it is to continue to develop the leadership's incident command capabilities. Building the team through tabletop or scenario-based training not only improves comfort of incident management at UOEs, mass casualties, and multi-patient incidents, but also utilizes sharing of ideas and collaboration to support best practices. This further allows for the reinforcement, familiarization, and review of standard operating guidelines, protocols, and agency policies.

Additionally, specialized training should be delivered to those who serve on special operations or specialized service units operating in these UOEs. The need to incorporate unit-specific training for bike teams, venue-specific teams, or special event units should incorporate the protocols used in routine operations coupled with the challenges faced in these environments. The goal is for personnel to sharpen their skills for unique delivery.

Preparing for Future Events

The reality is communities will continue to host events and street festivals, performers will continue to put on concerts for fans, and sports teams will continue to compete. EMS should support these UOEs within the communities served and, as a discipline bridging the public safety and healthcare industries, EMS has a responsibility to deliver services in these environments. Of course, while it is easier to have a grasp on an event before a major incident occurs within that event, through enhanced awareness and planning – and by modifying a few plans and delivering training for UOEs – personnel become increasingly comfortable and prepared to operate within these environments, either as deployed and dedicated assets or when responding to a 911 call and arriving first without a pre-deployed cache of assets and personnel.

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Mass Fatality Incidents & Challenges for First Responders

By Daryl D. Sensenig

Source: https://www.domesticpreparedness.com/preparedness/mass-fatality-incidents-challenges-for-first-responders/

Aug 23 – Mass fatality incidents present many challenges. To effectively plan for such events, certain key factors must be taken into consideration: common causes and challenges, as well as resources available. By communicating with the local medical examiner/coroner, being familiar with mass fatality plans, and learning about any pertinent capabilities and limitations, emergency planners can make informed decisions and close existing gaps.

A mass fatality incident (MFI) is essentially a surge issue. Just as a mass casualty incident is a surge

on the emergency medical transportation and trauma care systems, an MFI is a surge of the medical-legal system in the authority having jurisdiction (AHJ). The medical-legal system is the system within the AHJ that is responsible for determination of the cause and manner of death and the identification of unknown decedents and the issuance of a death certificate document.

For planning purposes, some first responder organizations define an MFI by the number of victims – for example, three times the normal caseload for the AHJ within 24 hours of the event. The problem with setting a minimum number is that it does not take into consideration the level of available response capabilities or the condition of the remains. Twenty fatalities caused by a single incident could be overwhelming for a small community, but a larger medical-legal system would find those numbers well within their capabilities. A more practical approach to consider is to ask:

- What is the maximum number of the deceased that the local system can handle, taking into consideration that fragmented or contaminated remains may complicate the problem?
- Then, what plans and exercises should be developed to reflect the reality of local resources, and how would they need to be augmented?

Common Causes of & Challenges Related to an MFI

The most common causes of an MFI are: transportation (air, rail, motor coach, marine vessels) accidents, structure fires or collapses, floods, hazardous materials releases, and mass homicides. These events are often the results of earthquakes, tsunamis, hurricanes, tornadoes, and criminal (terrorism included) acts. Pandemic illness can factor into this, though pandemics generally are not acute situations and are often regional events and may develop over time. Pandemics can impose a sustained "surge" on the AHJ that lowers the threshold for becoming overwhelmed. In some jurisdictions, the opioid epidemic is having this effect.

First responders face six challenges when dealing with an MFI. The first challenge is the "It won't happen here" or "It's not my job" challenge. In some planning models or threat analysis programs, an MFI is a low- to medium-probability event, and then only if there is a target hazard such as an airport in the jurisdiction. That being the case, the "It will not happen here mindset" kicks in and there is little to no attention paid to MFI planning or budgeting or inclusion of the medical examiner/coroner in drills and exercises. It would be wise to take a closer look at MFI probability factors. If major highways or rail lines are within the community, the risk of an incident that causes many fatalities is real. If tornadoes or earthquakes threaten the area, the potential for an MFI may be significant, and any town can experience mass fatalities from a shooter with automatic weapons and a desire to kill.

Second, the resolution of MFIs will last for days, weeks, or more. Prepare for a multi-operational period event. If the event includes an extended recovery of the remains – like the Oklahoma City bombing in 1995 or the World Trade Center in 2001 – the process will take several days or weeks. If the remains are less than intact, as often is the case with aircraft accidents or explosions, the collection and processing of the fragments will take a lot of time. The remains could be contaminated with a hydrocarbon, toxic industrial chemical, or chemical-warfare agent. Clearly, there will be a need for a significant command post and resources to support a logistically intense operation. If the event is a crime scene, like the Pulse Nightclub (Orlando, Florida), expect a major law enforcement presence and that bodies will not be moved until law enforcement is finished with the investigation. That process could take days.

Any major incident that involves a large number of government agencies, medical facilities, and other community resources requires a management system that can address: the multi-agency, multi-jurisdictional operations; the planning, logistical, and administrational issues; and the tracking costs. A system is needed that can expand and sustain itself for weeks and address public information, safety, and liaison needs. The obvious solution is Incident Command System, and the fire service is often the only local agency that can think of sustaining operations for days or weeks. The fire department's role may evolve as the incident moves from response to recovery to identification. The role of the fire department may be to provide the functions of an "overhead team." Similar to the U.S. Forest Service, the fire department's role would be to assist in the development and publication of the Incident Action Plan.

Media coverage is the third challenge. There must be a plan to manage media response – a designated area for the media, with controls on unwanted or illegal intrusions that are enforced by the police, especially at and around the scene and near the families of the victims. A joint-information center/process/plan is a must.

Fourth, the expectations of the deceased loved ones or Next of Kin (NoK) can be challenging:

- What will the families or the NoK be told about the process of identifying and releasing the remains?
- Where do the families go to receive timely accurate information regarding their loved ones?
- Once the deceased is legally identified, what is the process and structure for notifying the NoK? The medical examiner and often law enforcement handle this step, but it is important that all first responders are aware of who is responsible for this task.

Few people outside the forensic community understand what is involved in the accurate, positive identification of the deceased, why it needs to be done a certain way, and that the process takes time. Distraught family members may agonize through the hours between the incident and the final confirmation of the loved one's death. There are expectations that the accurate, positive identification of the deceased can occur within an hour. This misconception is reinforced by the entertainment industry with forensic-based television programs and movies. In these programs and films, family members are routinely shown the bodies to visually verify their identities. These expectations are neither realistic nor are they considered to be scientifically appropriate methods for positive, legal identification. Identifications need to be properly done and done only once. That will take time. If DNA collection of ante mortem evidence is needed, then the process of collecting and analyzing the evidence can be time consuming and requires communications with NoK.

It is essential to develop and test a plan for standing up a family assistance or victim assistance center. A single, centralized location for the release of official information and privacy for the NoK can be accomplished on the terms that they are compassionate, respectful of privacy, and timely. The example in Oklahoma City in 1995 after the Murrah Building bombing is considered a model for this type of center. A large church in the downtown area was used as a center because it was an easily located landmark. Ample parking was available and a commercial-grade kitchen was on-site. There were private rooms for notification and grief counseling out of sight of the public. One element not present was overnight lodging accommodations, as this was primarily a local event. In an event where families may be traveling some distance, considerations for lodging have to be included. There is much more information available at the U.S. Department of Justice's Office for Victims of Crime website. The National Transportation Safety Board (NTSB) also has resources available through the Aviation Disaster Family Assistance Act of 1996.

The fifth challenge is determining which specialists might be needed to augment local capabilities and to mobilize those resources. Conversely, first responders need to have a plan to deal with the likelihood of unneeded, or self-dispatched responders driven by curiosity or a desire to be at "the big one." MFIs related to disasters and other high-visibility events have often brought out many unrequested, self-dispatched responders who can cause significant problems for the jurisdiction already strained by the event. These responders can be in a variety of disciplines, such as forensic canine (K-9) handlers, mental health providers, and off-duty first responders from other jurisdictions. There should also be a policy on unrequested responders in disaster plans.

A final challenge is the "We got this" syndrome, which is when authorities resist reaching for assistance. This challenge is not limited to public safety; the medical examiner/coroner is not immune to this syndrome. An exercise that focuses on an MFI with complicating circumstances is one of the best ways to demonstrate when/where a community can be overwhelmed. If mutual aid is needed, then make sure these resources are included in a mutual aid plan and that the plan is up to date and has been exercised. If assistance is requested, ascertain the logistical and support needs of the resources and the estimated time of arrival as well as the length of time the resource can provide assistance.

Several items have been mentioned in this article, specifically, the need for an overall MFI response and recovery plan as well as a media/communications plan, a family assistance plan and a mutual/aid assistance plan. Many communities today are training and

exercising for an "active shooter" event. However, in the design of the exercises and training, do not stop when the last Basic Life Support unit leaves the scene. Instead, start the second phase or next exercise with the scenario that all of the living have been transported or treated: law enforcement has completed their investigation and is now providing perimeter security. Then consider what is next.

Available Mortuary Resources

There are various types of assistance available to local agencies, private sector groups, and state and federal level response teams. Funeral directors associations have response capabilities that can assist the AHJ with management and release of remains. These

teams can respond in less than 24 hours and provide assistance with handling bodies and communications with the NoK. Funeral directors associations may not be able to provide assistance in the forensic part of the process, as they do not have the expertise or equipment to do so.

Florida and Michigan, for example, have state-level teams that can assist with victim identification. These teams are sometimes partnerships between the state and universities that have forensic science programs. Like funeral directors associations teams, state teams can respond quickly, generally in less than 24 hours. Some of these teams have equipment that can support or supplement the AHJ with morgue operations. A limitation of the state teams as well as the funeral directors associations is the length of time they are available to assist in the identification process. Many of the providers on these teams have limits on how long they can be away from their primary place of employment. However, for smaller numbers of decedents, a state-level team may be the appropriate resource.

Federal assistance is available through the Department of Health and Human Services, National Disaster Medical System (NDMS). NDMS has a Disaster Mortuary Operational Response Teams (DMORT) in each FEMA region and two national teams. These teams are staffed with specialists that become temporary federal employees for the duration of their deployments. These teams can provide two-week rotations that can continue for several months as needed. This was the case in New York after 9/11 and in Louisiana after Hurricane Katrina.

DMORT has three deployable morgue units that are strategically located throughout the country. These units can be delivered by trucks and generally set up in less than 72 hours in the continental United States. One of the national teams (Victim Assistance) can be brought in to assist with the family/victim assistance functions, while the other national team (DMORT-WMD/All-Hazards) can decontaminate the remains. To request these teams, local government asks the state for assistance, which, in turn, requests federal help under Emergency Support Function #8 (ESF-8).

In preparation for an event with mass fatalities, become familiar with the local or state medical examiner/coroner. Become familiar with their plans or plans of the agency (often state or local emergency management) that address fatality incidents. Learn the capabilities and limitations of their staff, their facilities, and their equipment. By doing so, informed decisions can be made regarding the gaps between the "surge" from the incident and capabilities of the medical-legal system.

Note: *Since this article was first drafted, the National Disaster Medical System, as part of a larger reorganization and re-alignment of resources, has "terminated" the mission of the DMORT-WMD All/Hazards team. Emergency planners should review their MFI plans to determine if this change has an effect on their plans and expectations of federal assistance via ESF-8.*

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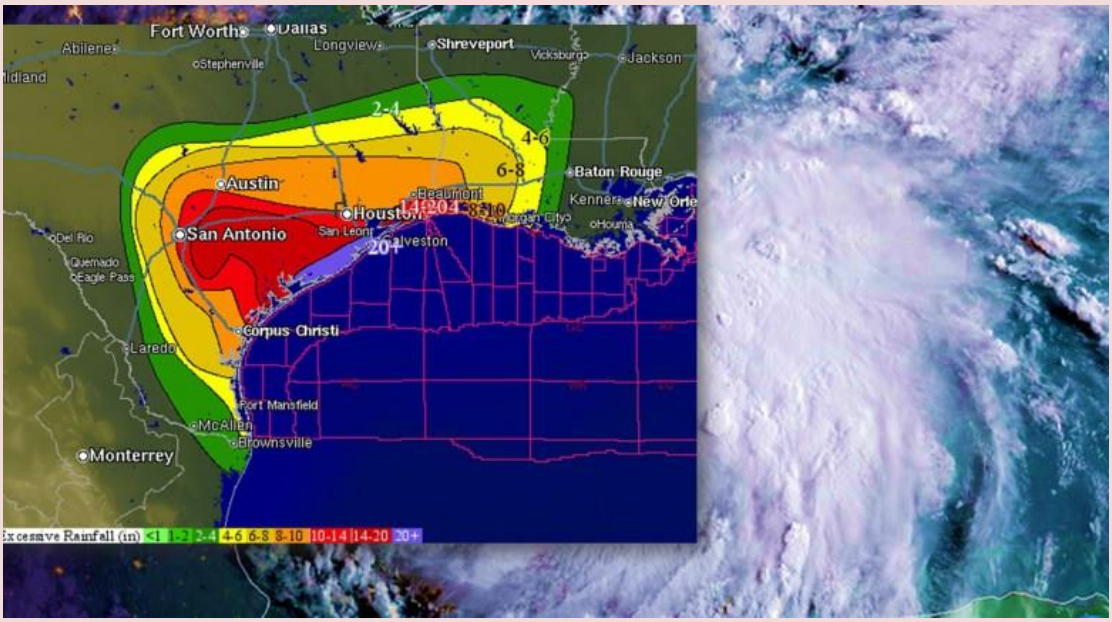
Why Houston isn't ready for Hurricane Harvey

By Neena Satija, Kiah Collier, and Al Shaw

Source: http://www.homelandsecuritynewswire.com/dr20170828-why-houston-isnt-ready-for-hurricane-harvey



Aug 28 – The brunt of Hurricane Harvey is projected to miss Houston, but the sprawling metropolis is likely to face massive flooding from its third crippling storm in the past three years.

It underscores a new reality for the nation's fourth-largest city: Climate change is making such storms more routine. Meanwhile, unchecked development in the Houston area is wiping out the pasture land that once soaked up floodwaters. Last year, we explored in detail how Houston's rapid expansion has greatly worsened the danger posed by flooding.

How bad things get in Houston depends on where and how quickly the rain falls. But many are already drawing comparisons to 2001's Tropical Storm Allison — the worst rainstorm to hit an American city in modern history. Allison dropped 40 inches of rain on the city in five days, killed nearly two dozen people and caused $5 billion in damage in the county that includes Houston. The map below shows how many homes, businesses, schools and other structures flooded. As you

can see, a lot of flooded areas were outside the 100-year floodplain — the area the federal government says faces a 1 percent chance of flooding every year.

Tropical Storm Allison largely spared western parts of the Houston area. But that wasn't the case during a more recent storm that also crippled the sprawling metropolis. A flood in April 2016 — nicknamed the "Tax Day" flood because it fell on the deadline to file federal income taxes — paralyzed northwestern

portions of the city and surrounding suburbs. Those areas have exploded in population in recent years.

The Tax Day flood happened just 11 months after another devastating event — the "Memorial Day" flood in May 2015, which swept through areas north and west of downtown Houston. Again, many neighborhoods outside the known floodplain ended up underwater.

Together, the Memorial and Tax Day floods killed 16 people and caused well over $1 billion in property damage. Such torrential rains are supposed to be a rarity, but Houston's history is punctuated by major

back-to-back storms. Many residents say they are becoming more frequent and severe, and scientists agree.

"More people die here than anywhere else from floods," Sam Brody, a Texas A&M University at Galveston

researcher, told us last year. "More property per capita is lost here. And the problem's getting worse."

Why?

Many scientists, experts and federal officials say Houston's explosive growth is largely to blame, along with climate change. As millions have flocked to the metropolitan area in recent

decades, local officials have largely rejected stricter building regulations, allowing developers to pave over acres of prairie land that once absorbed large amounts of rainwater. In the decade after Tropical Storm Allison, about 167,000 acres were developed in Harris County, home to Houston. The map below shows that a lot of the new development is in or near floodplains.
Some local officials flat-out disagree with the scientific evidence that shows development has worsened the effects of big storms. Mike Talbott, the former longtime head of the local flood control agency, told The Texas Tribune and ProPublica last year that large-scale public works projects — like drainage basins — are reversing all the effects of Houston's recent growth (His successor shares that view).
"You need to find some better experts," Talbott said. When asked for names, he would only say, "starting here, with me."

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Don't blame climate change for the Hurricane Harvey disaster – blame society

By Ilan Kelman
Source: http://www.homelandsecuritynewswire.com/dr20170830-don-t-blame-climate-change-for-the-hurricane-harvey-disaster-blame-society

Aug 30 – Weather and climate don't cause disasters – vulnerability does. Perhaps counter-intuitively, this means that the widespread discussion as to whether the Hurricane Harvey disaster was caused by climate change or not becomes a dangerous distraction.

The hurricane was born off the coast of South America in mid-August and then tracked through the Gulf of Mexico, making landfall in the United States on 25 August. The storm surge and winds devastated coastal settlements, after which the storm stalled, dumping immense rainfall over Houston. At the time of writing, the confirmed death toll had just reached 14 and there are expectations that this will soon rise.

A disaster involving a hurricane cannot happen unless people, infrastructure and communities are vulnerable to it. People become vulnerable if they end up lacking knowledge, wisdom, capabilities, social connections, support or finances to deal with a standard environmental event such as a hurricane.

This can happen if lobbyists block tougher building codes, planning regulations, or enforcement procedures. Or if families can't afford insurance or the cost of alternative accommodation if they evacuate. Or if limited hurricane experience induces a sense of apathy.

Often, people with disabilities rarely have their needs met when away from home. Fear of harassment or assault could stop others from entering a communal shelter. Legal or undocumented immigrants might not understand warnings and might fear the prospect of detention if they seek help.

These possible scenarios represent reasons why people in Texas might end up and remain in harm's way. Anecdotes point to all these issues having played a part during Harvey, but only careful research in the months ahead will be able to confirm or refute them. It is nevertheless such vulnerability issues that cause the disaster. None relate to the hurricane's physical characteristics.

Climate change

Yes, climate change can and does influence hurricanes. The ocean's temperature – to a certain degree – drives hurricane intensity, especially the coastal flooding level and the amount of rainfall. If the Gulf of Mexico was warmer than usual, or if some atmospheric winds were weaker than usual, then part of Harvey's strength might be attributable to human-caused climate change. Harvey stalling above Houston might also be linked to climate change's effects due to changing wind patterns.

But climate change does not affect people's vulnerabilities to the hurricane. Neither the climate nor the hurricane's characteristics made Houston an industrial center of 2.3m people (2017 estimate), an increase of 40 percent since 1990. They did not force Texans to build along the coast or in floodplains without adequate measures, as occurs around the United States. They did not pave over green spaces leading to reduced rainfall absorption. And they did not create the ingrained racism and desperate social inequities prevalent across the state.

In fact, storms striking Texas represented problems long before human-caused climate change appeared. One of the deadliest storms in U.S. history occurred in 1900, when a hurricane swept ashore over

Galveston, killing more than 6,000 people – more than triple Hurricane Katrina's death toll in 2005. We often do not know details about the strength of past hurricanes or the height of their floodwaters. But we do know that fewer people lived – and much less infrastructure lay – along the storms' paths. Yet tragedies such as Galveston still manifested, irrespective of climate change.

These historical disasters – and more recent ones such as Hurricanes Katrina and Rita in 2005 – spurred the disaster prevention measures which saved many lives but which were not implemented fully in Texas. This left far too many people vulnerable and in danger.

"Turn Around, Don't Drown"

The first mandatory evacuation notice in Texas for Harvey was issued about 36 hours before the hurricane's landfall. The ability to forecast hurricane tracks and traits, to communicate the necessary responses and to plan for masses of people moving have emerged from decades of dedicated science.

Compared to the 1900 Galveston disaster, thousands of lives were saved by scientists and government officials collaborating to serve those who were vulnerable. Many structures withstood Harvey's 200+ km/h wind gusts with debris because engineers and lawyers wrote building codes while the government enforced the regulations. The "Turn Around, Don't Drown" message to stay out of floodwater comes from combining research and experience on flood physics and communication science.

But the news is not all good, especially since much of this lifesaving work is currently undergoing budget cuts.

And politics created further vulnerability. State and local leaders disagreed about evacuating Houston. Development in the city's floodable areas had been encouraged to support the oil-fueled economy, increasing both the population living in floodplains and the paved surfaces which augments run-off. As usual in disasters, poor and marginalized people seem to be bearing the brunt of the impacts, despite plenty of science showing the importance of social services for fostering self-help and for collectively avoiding disasters.

All this work prevents deaths during any hurricane, irrespective of climate change. Climate change might have augmented Harvey's rainfall, storm surge, or wind. If not, Texas would still have implemented exactly the same measures to reduce the disaster's effects. And Texas would still have had exactly the same political difficulties propping up the remaining vulnerability.

Disasters are not natural

Hurricane Harvey was an expected natural event, even if potentially modified or exacerbated by climate change. The Hurricane Harvey disaster was caused entirely by society creating and perpetuating vulnerability to these natural events.

Because vulnerability is not natural, many disaster researchers avoid the phrase "natural disaster." Nor must hurricane disasters be our natural state of affairs, even though hurricanes have always happened. A hurricane need not become a hurricane disaster – but society let a disaster happen.

To help those affected recover quickly, Texas needed improved pre-disaster mechanisms such as more widespread insurance coverage and more widely available social services targeted at the most needy. Society must permit affordable insurance, without bankrupting the companies. Society needs regulators to ensure that payouts are reasonable and prompt while identifying claimant fraud. Society requires sufficiently skilled and resourced authorities to support everyone affected in helping themselves, no matter their background or abilities.

Many voting records in Texas are for lower taxes, for less government intervention, against tackling systemic inequities and against helping marginalized people help themselves. This choice actively creates the vulnerabilities which cause disasters. It is an ideological choice to vote for creating disaster vulnerability and voters have the right to do so. The consequences are known based on decades of disaster science.

Blaming climate change, or even just the weather, for the hurricane disaster distracts from individuals' and society's responsibility for where we live, how we live and how we support people who cannot help themselves. This vulnerability, not nature and not climate change, causes hurricane disasters.

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Four things Houston-area leaders must do to prevent future flooding disasters

By Kiah Collier and Neena Satija

Source: http://www.homelandsecuritynewswire.com/dr20170830-analysis-four-things-houstonarea-leaders-must-do-to-prevent-future-flooding-disasters

Aug 30 – An unprecedented amount of rain has fallen on the Houston area in the past few days, causing what is likely the worst flooding event

that the nation's sixth-largest metropolitan area has ever experienced — even worse than 2001's Tropical Storm Allison.

This may seem like a freak occurrence. But it is the third catastrophic flooding event this region of 6.5 million people has experienced in three years. And scientists and other experts say that much of the devastation could have been prevented. While the Houston area's history is punctuated by major flooding events, they argue that local officials — under political and legal pressure from developers — have dug themselves into a hole for decades by flouting smarter development policies. They say local officials need to account for more frequent and intense rains that are sure to come with climate change, rather than looking to what has happened in the past in their search for solutions.

Here is what local leaders could have done to protect the region — and what they must do to prevent such disasters in the future.

Preserve and restore as much prairie land as possible

Much of northwest Houston used to be covered in prairie land, where tall grasses could absorb huge amounts of floodwater.

But most of it has been paved over in the past two decades amid rapid development and a massive influx of people. Between 2000 and 2010, this part of Houston grew by nearly 70 percent to a population of 587,142 — equivalent to that of Milwaukee. Restoring or preserving prairie can't prevent flooding altogether, but it can be a tremendous help in mitigating the damage.

Some local officials flat-out disagree with this conclusion; they believe you can erect public works projects to catch and manage runoff — essentially fighting water with concrete — and don't need more green space.

But the vast majority of scientists believe the region needs to impose stricter regulations on those who want to develop prairie land.

Restrict development in floodplains and buy flood-prone homes

Buildings continue to go up in vulnerable floodplains all over Harris County. A few years ago the city of Houston tried to ban new development in the most flood-prone areas. But developers sued, and the policy was severely weakened by the city council. Although some have chosen to elevate their lots to protect homes and businesses from rising floodwaters, that strategy may only increase the flood risk for those around them.

Local officials also have pursued some buyouts — purchasing homes that have been badly damaged by floods or that are known to flood repeatedly. But Harris County hasn't done enough. The county will need a lot more money to buy out more homes, and local owners will have to be willing to move.

Plan for climate change

In planning for flooding from future storms, local officials largely look to past rainfall totals and weather patterns. But climate change will heighten the risks that the region

already faces. That's particularly true because it sits so close to the Gulf of Mexico, where sea levels are rising and waters have been warming as the planet gets hotter. Warm water means more evaporation and more water vapor in the air — so when a storm comes along, there is more water to pick up and dump on nearby land. This is exactly what's happening with Tropical Storm Harvey.

"The exact same storm that comes along today has more rain associated with it than it would have 50 or 100 years ago," renowned climate scientist Katharine Hayhoe told *The Texas Tribune* last year. Hayhoe said Houston needs to plan for more frequent and intense rainstorms, just like many other cities in the country. But local county officials have previously said they have no intention of doing so.

Educate the public

Hundreds of thousands of people have moved to the Houston area in recent decades; it is consistently ranked as one of the nation's fastest-growing cities. But people who move to flood-prone areas are often unaware of the risks. They purchase homes in low-lying areas and assume that if they're not in the 100-year floodplain, they won't flood. But homes often flood outside floodplains in Houston — and realtors do not always tell homebuyers that.

Some past efforts the city made to educate Houstonians have been met with pushback. A few years ago, government officials put up visible flood gauges in low-lying coastal areas meant to show how the high water could get during hurricanes, but real estate agents revolted and the signposts were removed. Local officials need to be willing to tell their constituents some hard truths.

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Flooding from Hurricane Harvey causes a host of public health concerns

By Neil S. Grigg

Source: http://www.homelandsecuritynewswire.com/dr20170831-flooding-from-hurricane-harvey-causes-a-host-of-public-health-concerns

Aug 31 – The historic rainfall dumped by Hurricane Harvey has already led to deaths by drownings and the destruction of many homes.

Houston's drinking water system is being stressed by overflowing water reservoirs and dams, breached levees and possible problems at treatment plants and in the water distribution system. Failure of drinking water systems could lead to water shortages.

As a civil engineer who has studied how flooding affects water systems, I also see a number of public health concerns. Raw sewage, dead bodies in the water and release of dangerous chemicals into the floodwaters could lead to the spread of disease through contact with contaminated water and to infection through open wounds.

And because Houston has at least a dozen sites that have been designated environmentally hazardous, there is a risk of petrochemical contamination. Indeed, companies have reported that pollutants from refineries have already been released.

As if those are not bad enough, the "unprecedented" amount of water leads to the perfect breeding opportunities for mosquitoes, which are vectors of Zika and many other infectious diseases.

Flood response systems

Flood impacts hit hardest on the most vulnerable and exposed people, especially children, the elderly and disabled, and the poor.

In Houston, several authorities are involved in flood mitigation and rescue efforts, beginning with city government, which handles street runoff and storm drains as well as emergency response. The Harris County Flood Control District, which was organized in response to devastating Houston-area floods in 1929 and 1925, has a regional flood control program. It works with the U.S. Army Corps of Engineers, which operates local reservoirs that were built in the 1940s to prevent flooding.

The National Guard and the Federal Emergency Management Agency also are helping, along with local shelters and community members.

Toxic soup

The scenes of rescues during and immediately after the storms from Harvey may suggest that relief has arrived, but these images hide the aftermath of disease and misery. This includes the risk of contamination from floodwaters from many unsavory sources, beginning with raw sewage from failing sewer pipes. Other sources of bacteria and disease agents are landfills, septic tanks, medical wastes, feedlots, cemeteries and portable toilets.

This toxic soup can lead to a host of infectious diseases, diarrhea and wound infections, among other medical problems, when bacteria and parasitic organisms in floodwaters penetrate the body.

Yet despite the threats from polluted floodwaters, most diarrhea is caused by failed drinking water systems. The massive supplies of bottled water distributed after the flood can help, but getting drinking water systems up and running again is essential, albeit a formidable challenge. These systems are designed to provide multiple barriers to protect the water sources, treatment plants and distribution pipes from contamination.

Mold and mildew, meanwhile, can harbor disease agents that affect respiratory systems long after floodwaters have dried. Mosquito-borne illnesses such as malaria and dengue are endemic in flooded areas. Then, chemical and explosive hazards can affect people in ways ranging from cancer to exposure to fire and detonations.

Beyond infections

There is also trauma from flooding which can can take many forms, such as blunt force injuries due to flash floods or explosions. Objects such as propane bottles and fuel tanks should be anchored to prevent them from being released.

Traffic disruption and failure of structures, such as bridges and culverts, can cause injuries as well. Thirty years ago, a New York State Thruway bridge collapsed from flood damage, killing 10 people. The cause was damage from erosion to supporting bridge piers, which travelers could not detect or see.

If we are to learn more about flood-induced injuries and diseases, better data are needed. Epidemiological studies of flood impacts are limited, particularly in study of long-term mental health, mortality risks after flooding, risks of infectious and vector-borne diseases following floods, and the effectiveness of public health measures in reducing flood-related health burdens.

Moreover, the health-related costs of flooding are not considered adequately in decisions about remedies, and little is known about the effects of climate and land-use change on flood risk and health burdens in different settings.

The Houston disaster was caused by an unprecedented flood, but other rare and extreme ones occur. They are in the U.S. headlines for a few days, and then they disappear, especially when they happen in faraway places. The 2010 Pakistan flood affected 20 million people, but it disappeared from the news within days. In worst-case scenarios, floods can kill hundreds of thousands and maybe millions, as one did in China in 1931. In countries with limited resources, people are mostly left to fend for themselves.

What can be done to alleviate future suffering from such massive events? Flood science has some of the answers, but not a complete solution. The good news is that most flood threats occur from frequent events, which can be mitigated by a combination of steps that include adequate infrastructure and so-called nonstructural tools, which means they involve measures such as zoning, flood warning and insurance.

These, along with pollution control programs, can go a long way toward alleviating the worst impacts of flooding. The catch is they must work, and this requires the rule of law and good governance, which are unfortunately lacking in many parts of the world.

Neil S. Grigg is Professor of Civil and Environmental Engineering, Colorado State University.

Houston's flooding underscores disaster management challenges of years to come

Source: http://www.homelandsecuritynewswire.com/dr20170831-houston-s-flooding-underscores-disaster-management-challenges-of-years-to-come

Aug 31 – As the Earth's climate changes, many scientists predict that warmer temperatures could lead to intensifying hurricanes, with individual storms dropping more rain.

As such, the massive flooding caused by Hurricane Harvey in and around Houston may presage the challenges that disaster managers will face in the years ahead, says University at Buffalo disaster researcher Chris Renschler.

Renschler, an associate professor of geography in UB's College of Arts and Sciences, researches extreme events, including soil erosion and flooding.

"In Houston, the situation is absolutely devastating," he says. "This is an unprecedented precipitation event, but it should give us the motivation to think about these unprecedented events, particularly in hurricane-prone areas.

"These kinds of floods are not wholly natural," he says. They are the result of both natural and human-driven processes. Humans can't fully control nature, but we can control decisions such as where to build new residential developments, where and how to build temporary storages for flood water, and when to open the floodgates of a dam. We can also control how we communicate with the public about the risks of flooding."

These quandaries are not unique to Houston — communities across the U.S. face similar challenges and should continuously revisit and adapt their emergency plans and communication procedures, says Renschler, who is teaching a class this semester that focuses in part on building community resilience against floods and other extreme events.

He says that to protect communities, emergency managers, public officials and other decision-makers must work together, training for worst case scenarios and planning ahead so that people who may be affected by flooding understand the risks long before a crisis has begun.

Renschler notes that decisions made years in advance can have a huge impact on the severity of a disaster. Land use-planning, for example, influences not only how water moves through a landscape, but also who will be in the path of a flood.

"In the Houston metro area, which had some of the country's fastest population growth over the past decade, development of residential and commercial areas in the watersheds of important flood protection reservoirs increased impervious surfaces. This exacerbated runoff by reducing the infiltration of water into the soil," Renschler says.

"It also transformed a rural landscape into suburbs, worsening the emergency by putting more people and structures in potential harm's way and limiting the options once such storms hit," he says.

In the case of the Addicks and Barker Reservoirs, which were built in the 1940s in a mostly undeveloped landscape to capture water upstream of the Buffalo Bayou, development left the Army Corps of Engineers and local emergency managers with limited options.

When the reservoirs began to fill, officials had to decide how to release water from dams in a way that balanced the needs of two groups of residents — those living in developments built upstream near the reservoirs, and those living downstream. Open the floodgates and water moves downstream, but keep them closed and more of the water stays upstream, flooding adjacent subdivisions that sit against the dams.

"Where flash flood management is an issue, different agencies and stakeholders must better work together on short-term management of crisis situations, as well as long-term sustainable growth and careful development," Renschler says.

Lessons from Tropical Storm Irene

Buffalo notes that Renschler is a member of the Local Emergency Planning Committee in Erie County, New York; was part of Governor Cuomo's Respond Commission after Superstorm Sandy; and is working for the United Nation's International Atomic Energy Agency with more than a dozen country representatives as an invited expert on flood risk mitigation and post-flood rehabilitation efforts in Asia.

At UB, Renschler directs the Landscape-based Environmental System Analysis and Modeling (LESAM) lab.

Together with Jared Flagler — a UB geography master's graduate who specializes in watershed modeling and landscape analysis and management with GIS, Renschler is monitoring the situation in Houston. They are keeping track of reservoir water levels, stream gauge data, and the dissemination of emergency information to the public by water resource and disaster management officials.

Though Renschler is not involved officially in the Hurricane Harvey response, his past work includes disaster assessment.

In 2011, for example, after Tropical Storm Irene, he led UB researchers on a mission to document flood damage in the Schoharie Creek watershed, west of the Catskill Mountains. The team combined these field site observations with hydrological data, aerial imagery and elevation data to determine the extent of the flooding and destruction, verifying that the disaster was a 500-year event, and describing the challenges of communicating flood dynamics around dams.

The research, published this year in the International Journal of Applied Earth Observation and Geoinformation, could help emergency planners to utilize existing and newly collected data, and develop more accurate watershed models and flood maps to better protect and prepare Schoharie Creek communities how to respond to future extreme events.

When it comes to water management, the challenge is "to anticipate changes and prepare and invest in realistic planning scenarios in time to not get in these situations with rather limited management options," Renschler says

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Harvey's losses "would reach $190 billion or 1 percent of the nation's GDP": AccuWeather

Source: http://www.homelandsecuritynewswire.com/dr20170901-harvey-s-losses-would-reach-190-billion-or-1-percent-of-the-nations-gdp-accuweather

Sept 01 – Dr. Joel N. Myers, founder, president, and chairman of AccuWeather, and sometimes called the "father of commercial meteorology," predicted on Wednesday, 30 August, that "The total losses from this storm would reach $190 billion or one percent of the nation's gross domestic product (GDP), countering the expected growth in the economy for the rest of this year."

"This is the costliest and worst natural disaster in American history," Myers said. "Business leaders and the Federal Reserve, major banks, insurance companies, etc. should begin to factor in the negative impact this catastrophe will have on business, corporate earnings and employment. The disaster is just beginning in certain areas. Parts of Houston, the United States' fourth largest city, will be uninhabitable for weeks and possibly months due to water damage, mold, disease-ridden water and all that will follow this 1,000-year flood."

Most economic experts had predicted between the end of August through December there would be economic growth of approximately 0.8 percent. The one percent loss that AccuWeather is predicting will be spread out over the next 12 months, but the bulk of it will occur over the next four months.

The economic growth that had been predicted for the rest of this year will at least be cut in half as a result of the devastation from Hurricane Harvey, according to AccuWeather.

Myers explained that the additional costs beyond the insured losses are uninsured losses, earnings by businesses, lost jobs and salaries, increased cost to consumers across the country due to increased gasoline and heating oil costs directly attributed to the storm, and crop losses in the affected areas. Crop losses will not only be felt by individual farmers, but also by all Americans as a result of the impact on food prices and other perishables due to supply chain interruption.

Catastrophic flooding will continue in Houston, Beaumont, and Port Arthur, Texas, to Lake Charles, Louisiana. Standing water may lead to disease, hazardous mold and other concerns like outbreaks of mosquitoes.

"The meteorologist forecasting community as a whole did a very good job in warning people about this storm. Public officials were slow, in some cases, to react or to know what to do, which affected too many people and caused the loss of property and damage and destruction. This was unfortunate because when a natural disaster threatens, minutes and hours count and preparation and risk avoidance is imperative. While AccuWeather forecasts were a few hours ahead of the competition in alerting people and companies to the severity of the impacts that were coming. The entire meteorological community did a first-rate job, and it's frustrating that some entities were slow to take action. We are gratified that many people told us because of AccuWeather forecasts they did get to safety and out of harm's way and many businesses we serve reported they took immediate action to minimize losses," Myers said.

"AccuWeather cautions that the negative impacts from the storms are far from over. There will be more flooding, damage, fatalities and injuries," Myers said. "We urge all citizens near the path of Harvey to remain vigilant and be prepared to take immediate action if floodwaters rise."

Animals in Distress: A Community Preparedness Checklist

By Lacie Davis and Richard Green

Source: https://www.domesticpreparedness.com/preparedness/animals-in-distress-a-community-preparedness-checklist/

Sept 06 – Recent studies have shown that pets have the ability to relieve stress, provide purpose, and give unconditional love and support to those who need them. This profound connection is referred to as the "human-animal bond." During an emergency or disaster, this bond is exhibited with the great lengths people go to both remain with and save their pets, including putting themselves and others at risk. A new tool addresses this gap.

Based on experiences during disaster responses, members of the American Society for the Prevention of Cruelty to Animals (ASPCA) have observed a high likelihood of people not evacuating without their pets. For this reason, it is essential to consider pets in state and county disaster plans, and include these members of the family in disaster response efforts. An integral part of helping people in disasters is helping their pets. A new tool is designed to help jurisdictions assess animal response capabilities and identify ways to address any gaps.

Human-Animal Bond

The American Veterinary Medical Association (AVMA) notes that, due to a lack of more traditional support systems in modern society, for many people, companion animals are the sole source of emotional and social support. Companion animals provide significant psychological and physical health benefits, especially to children, the elderly, the disabled, the mentally and physically ill, and the incarcerated. Given this bond, AVMA believes that, "when disasters strike, saving animals means saving people."

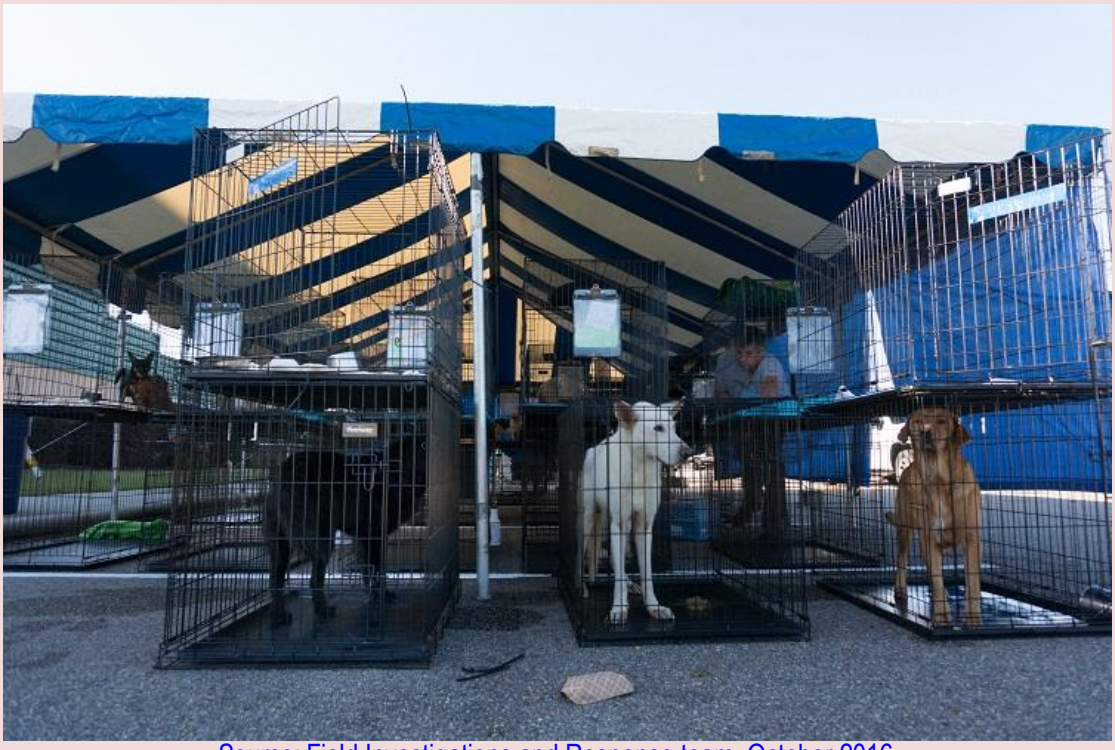
Without question, human-animal bond dynamics influence people's responses in disaster situations – causing them to behave in ways that put themselves, responders, and others at risk. In his November 2000 paper, "A Study of Pet Rescue in Two Disasters," Sebastian E. Heath of the Department of Veterinary Clinical Science at Purdue University found that up to an 80% reduction in premature reentry into evacuated areas could be achieved if pets were evacuated with their owners. He noted that, of those who rescued their pets, 65% felt it was worth risking their lives to do so, and that having children or having more than one pet greatly increased the likelihood of rescue. Based on his findings, he strongly recommends the full integration of animal welfare groups and responders into emergency planning, so they can be an integral part of all evacuations and responses to mitigate these risks. Providing care for animals during an emergency may facilitate the personal safety and care of a large segment of the human population.

First Responders Save Lives

In the ASPCA's disaster response work, most animal emergencies occur within the first 24-48 hours of disaster onset, which means that local responders often perform the initial search, rescue, and sheltering activities. It typically takes state and national responders 24-

48 hours to arrive and assist with search and rescue activities. Enhancing animal response capabilities through an established, skilled, and actively engaged Community/County Animal Response Team (CART) that is recognized by emergency management and supports animal control efforts saves lives. These responders provide an invaluable service to emergency management and to their communities. Their unique resources and expertise in managing animal populations are critically important to governmental and nongovernmental agencies charged with responding to and managing human and animal populations in a disaster.

Animal response teams should recognize that rescuing humans is always the first priority, with animal search and rescue occurring only when it is safe and does not interfere with human rescue activities. However, it is not always possible to clearly separate human rescue and animal rescue operations, especially when communities do not include animals in their evacuation and sheltering plans. With appropriate planning and training, animal rescue organizations can safely assume animal rescue responsibilities, while other first responders are focused on rescue activities for humans. Often, they may work in tandem.



Source: Field Investigations and Response team. October 2016.

Animal Emergency Preparedness Checklist

In 2016, the ASPCA developed a three-pronged approach to build animal response capabilities nationwide. The first step was to conduct a national survey, the National Capabilities for Animal Response in Emergencies, to determine strengths and weaknesses at the county and state levels. The survey concentrated on state and local animal response teams and their capabilities, as well as the availability and access to the equipment and supplies needed to respond to animals in disasters. The second step was to develop a preparedness checklist that would assist agencies in identifying best practices for developing response capabilities in the community. The final step is to provide assistance through grants, training, and subject matter expertise to requesting agencies located in strategic areas throughout the country that are seeking to enhance animal response capabilities. The Animal Emergency Preparedness Checklist was developed after watching so many communities struggle to handle animal issues following a disaster.

Experiences during disaster responses showed that jurisdictions simply did not have a structure in place to address rescue and sheltering challenges. The concern was validated with the survey and with agencies having primary jurisdictional responsibilities for animals in emergencies requesting subject matter expertise assistance with planning for and responding to emergencies (specific to animals) in their communities. Based on

conversations with emergency managers about what their needs were and areas where they felt they fell short, the checklist was developed.

To ensure that important areas of focus were not overlooked, the checklist was reviewed with subject matter experts and strategic partners throughout the country. It was then tested in a number of small and large communities across the country. The checklist can be used as an analysis tool, as a blueprint for improvements, or as a road map to building animal response plans. The checklist helps identify where a community is well resourced and where additional support may be needed in six key areas:

- Essential Infrastructure
- Organization & Leadership
- Written Plan Elements
- Equipment & Systems
- Rescue, Sheltering & Reunification
- Personnel, Volunteers & Training

Agencies that are in the initial stages of planning for animals in emergencies can utilize the designated high-priority items as areas to begin.

An initial strategic area to concentrate on is identifying and including planning partners that play roles in disasters, including but not limited to: fire, law enforcement, animal control, agriculture, animal welfare groups, and organizations charged with sheltering such as the Red Cross. By including these organizations in initial discussions, the planning process and final outcome become a collaborative effort and provide better awareness and buy-in from the related emergency response agencies. The written plan guides all of the elements of preparedness and response: mutual aid agreements, search and rescue, sheltering, equipment, supplies, and personnel. Collaboration with partners in this process ensures these areas are addressed.

Equally important to the written plan is establishing co-located shelter locations and equipment caches. The checklist suggests a cache of equipment and supplies to support sheltering for a minimum of 50 small animals and 50 large animals. The equipment necessary for small and large animals is vastly different, thus planning partners with experience in small and large animal sheltering can provide valuable input.

Ensuring adequate animal response capabilities means recruiting, training, and equipping volunteers in the community to support the operation. Having an already identified agency or group to provide sheltering support is central to rapidly standing up sheltering operations once evacuations begin and search-and-rescue operations are underway. The goal is to have the capabilities and resources to provide shelter and care for 50 animals for 72 hours. This is where agreements with other counties, rescue groups, and national nongovernmental agencies are so valuable.

Conclusion

For many households, animals are recognized as members of the family. Consequently, when disasters strike, emergency management must manage both human and animal issues. The Animal Emergency Preparedness Checklist was developed to provide communities with a method for identifying animal response strengths and weaknesses and to provide a roadmap for ultimately enhancing response capabilities. It would be most effective when the whole community is engaged in the process. The ultimate goal of the checklist is to build community resources and capabilities that enable communities to effectively and safely manage animals in disasters, thus building stronger, more disaster resilient communities.

***Lacie Davis**, MPA, is manager of disaster response for the American Society for the Prevention of Cruelty to Animals (ASPCA). She joined the ASPCA in 2015 as the disaster response manager and manages the ASPCA Midwestern Disaster Resiliency Program, serving as the ASPCA's key liaison with agencies in the targeted region. Prior to joining the ASPCA, she worked in various roles in the emergency management and animal welfare community. During her time in emergency management, she developed partnerships with community stakeholders, leading to a more robust and responsive Emergency Support Function 17 (Animal Issues) for her county. She has deployed on various field operations with the ASPCA, including the California wildfires in 2015, and Hurricane Matthew. She has a Master of Public Administration Degree from Old Dominion University.*

***Richard Green**, Ed.D., is senior director of disaster response for the American Society for the Prevention of Cruelty to Animals (ASPCA). He leads the efforts of the Disaster Response department, which covers natural and manmade disasters as well as large and small animal rescue operations. He also oversees the ASPCA's internal disaster readiness program and develops partnerships with national and local agencies to enhance the country's disaster response capabilities. Following Hurricane Katrina, he established and chaired the National Animal Rescue and Sheltering Coalition (NARSC), the first coalition in the nation dedicated to working with all levels of government and nongovernment agencies in finding collaborative solutions to major human-animal emergency issues. He is a frequent speaker on such topics as best practices in animal evacuations, relief, and recovery efforts. He has a doctorate in education from Brigham Young University, and was an assistant professor at Gonzaga University and the University of Puget Sound.*

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6 rules for rebuilding infrastructure in an era of "unprecedented" weather events

By Thaddeus R. Miller and Mikhail Chester
Source: http://www.homelandsecuritynewswire.com/dr20170908-6-rules-for-rebuilding-infrastructure-in-an-era-of-unprecedented-weather-events

Sept 08 – Before Hurricane Harvey made landfall on 25 August, there was little doubt that its impact would be devastating and wide-ranging.
Unfortunately, Harvey delivered and then some with early estimates of the damage at over $190 billion, which would make it the costliest storm in U.S. history. The rain dumped on the Houston area by Harvey has been called "unprecedented," making engineering and floodplain design standards look outdated at best and irresponsible at worst.
But to dismiss this as a once-in-a-lifetime event would be a mistake. With more very powerful storms forming in the Atlantic this hurricane season, we should know better. We must listen to those telling a more complicated story, one that involves decades of land use planning and poor urban design that has generated impervious surfaces at a fantastic pace.
As the Houston region turns its attention to rebuilding and other cities consider ramping up efforts to make their infrastructure more resilient, it is this story that can provide valuable lessons for policymakers, planners, engineers, developers and the public. These lessons are all the more important against the backdrop of a Trump administration that has stripped requirements for infrastructure projects to consider climate impacts and may try to offer an infrastructure investment package.
We draw from our research as a social scientist and an engineer

and from our experience helping to lead the Urban Resilience to Extreme Weather Events Sustainability Research Network (funded by the U.S. National Science Foundation). Here are six rules for investing in infrastructure for the twenty-firstst century that recognize the need to rethink how we design and operate our infrastructure.

If we design with the technologies, needs and climate conditions of the twentieth century, we will no longer serve society and the hazards we will encounter now and in the future.

A strong foundation

Proactive maintenance first. In 2017, U.S. infrastructure was given a D+ by the American Society for Civil Engineering Infrastructure Report Card. The bill to repair all those deteriorating roads, bridges and dams would tally $210 billion by 2020, and $520 billion in 2040. For example, the US Army Corps of Engineers estimates there are 15,460 dams in the U.S. with "high" hazard ratings.

Yet, when our cities and states spend on infrastructure, it is too often on new infrastructure projects. And new infrastructure tend to emulate the models, designs and standards that we've used for decades – for instance, more highway capacity or new pipelines.

Meanwhile, resources for long-term maintenance are often lacking, resulting in a race to scrape together funding to keep systems running. If we want to get serious about avoiding disasters in a rapidly changing world, we must get serious about the maintenance of existing infrastructure.

Invest in and redesign institutions, not just infrastructure. When analyzing breakdowns in infrastructure, it is tempting to blame the technical design. Yet design parameters are set by institutions and shaped by politics, financing and policy goals.

So failures in infrastructure are not just technical failures; they are institutional ones as well. They are failures in "knowledge systems," or the ability to generate, communicate and utilize knowledge within and across institutions.

For example, the levee failures during Hurricane Katrina are often interpreted as technical failures. They were, but we also knew the levees would fail in a storm as powerful as Katrina. And so the levee failures were also failures in institutional design – the information about the weakness of the levees was not utilized in part because the Hurricane Protection System was poorly funded and lacked the necessary institutional and political power to force action.

In the wake of Harvey, basic design and floodplain development parameters, like the 100-year flood, are being acknowledged as fundamentally flawed. Our ability to design more resilient infrastructure will depend on our ability to design more effective institutions to manage these complex problems, learn from failures and adapt.

Resilience and uncertainty

Design for climate change. When it comes to infrastructure's ability to handle more extreme events that are predicted to come with climate change, the primary problem is not bad engineering or faulty technical designs. Instead, it's that infrastructure are typically sized based on the intensity and frequency of historical events. Yet these historical conditions are now routinely exceeded: since 1979, Houston alone has experienced three 500-year storms.

Climate change will make preparing for future storms much harder. These events are not just associated with precipitation and inland flooding but include more extreme heat, cold, drought, wildfires, coastal flooding and wind. Buildings, roads, water networks and other infrastructure last decades and designing for historical events may result in more frequent failure as events become more frequent or intense with climate change. Infrastructure designers and managers must shift from risk-based to resilience-based thinking, so that our systems can better withstand and bounce back from these extreme events.

Manage infrastructure as interconnected and interdependent. In his 1987 essay, "Atchafalaya," writer John McPhee explores efforts by the U.S. Army Corps of Engineers to control the Atchafalaya and Mississippi River systems. He brilliantly showed that rather than bringing predictability to a complex and meandering riverine system, the Old River Control system created unpredictability. "It's a mixture of hydrologic events and human events… This is planned chaos… Nobody knows where it's going to end."

While floodplain management has made advances since then, the impact of development and infrastructure design is still often considered on a piecemeal basis. As Montgomery County engineer Mark Mooney

noted in a recent Houston Chronicle article, "I can show you on any individual project how runoff has been properly mitigated. Having said that, when you see the increase in impervious surfaces that we have, it's clear the way water moves through our county has changed. It's all part of a massive puzzle everyone is trying to sort out."

Infrastructure planning and design must consider the legacy of past decisions and how risks build up over time as ecological, technological and human systems interact in increasingly uncertain and complex ways.

Infrastructure and equity

Create flexible infrastructure. Given that our infrastructures are centralized and satisfy demands that don't change rapidly (we use water and electricity much in the way we did over the past century), they tend to be inflexible. Yet we need our urban systems and the infrastructure that support them to be resilient. And flexibility is a necessary precondition for resilience.

Current designs favor robustness and redundancy. These infrastructure tend to be difficult to change and the managing institutions are often structured and constrained in ways that create barriers to flexibility. Consider the difference in flexibility of landline versus mobile phones, in terms of both use and changing the hardware. Similarly, new strategies are needed to incorporate flexibility into our infrastructure. In the case of hurricanes, roadways with smart signaling and controls that dynamically adjust stoplights and reverse lanes to allow vehicles to evacuate quickly would be of significant value.

Design infrastructure for everyone. Large disasters almost always highlight systemic social inequalities in our communities, as we saw in the 1995 Chicago heat wave, Hurricane Katrina and now Hurricane Harvey.

Yet as cities rebuild and other cities watch to glean lessons, we consistently sidestep the historical legacies, public policies and political-economic structures that continue to make low-income and minority populations, such as homeless people, more vulnerable to extreme weather events. For this to change, infrastructure must be designed with the most vulnerable in mind first.

Too often the services delivered by climate-resilient infrastructure are first built for the communities that have the economic and political power to demand them, resulting in what some have called ecological gentrification. Policymakers and planners must engage diverse communities and ensure that infrastructure services are designed for everyone – and communities need to demand it.

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Are catastrophic disasters striking more often?

By Jay L. Zagorsky

Source: http://www.homelandsecuritynewswire.com/dr20170911-are-catastrophic-disasters-striking-more-often

Sept 11 – No sooner had Hurricane Harvey's record rains receded from Houston and neighboring cities than the residents of Florida began bracing for a wallop from an even more powerful storm. And hurricane season hasn't even peaked yet.

This begs the question: Is the number of major natural disasters striking the United States actually increasing, or does the media's natural tendency to overhype conflict only make it seem so?

The federal government's National Oceanic and Atmospheric Administration actually maintains a website that can help answer this question. Its list of billion-dollar disasters goes back to 1980 and records the date, location, number of deaths and total cost of each one.

As an economist, I take a different approach from how a climate or environmental scientist might answer the question. Major disasters can wreak tremendous damage, such as destroying wild habitats, rerouting major rivers and killing innocent people. However, assigning specific values to these kinds of damages is difficult.

Assessing the direct economic damage of a disaster is comparatively simpler. Insurance companies and government agencies receive damage and loss claims for specific amounts. These figures are then adjusted to account for the uninsured to produce a total.
In my own analysis, I will start with these figures but make an additional adjustment which I believe more accurately answers whether catastrophic disasters are indeed occurring at a greater frequency.

How the government tracks disasters

The government has gone to great efforts to make sure its disaster data are reliable by combining data from government agencies like FEMA, the USDA and private insurance claims.
And it doesn't just track the hurricanes making headlines right now, but all kinds of large disasters, from winter storms and heat waves to droughts and floods. The data also include winters when subfreezing temperatures destroy billions of dollars of crops and kill large numbers of livestock.
The government ensures the costs are measured accurately. The total cost of each event includes both losses covered and not covered by insurance. The losses include damage to buildings, roads and infrastructure, as well as items destroyed within buildings when a major disaster strikes. The figures also include some amounts lost by businesses because they were temporarily forced to shut down.
The figures, however, do not assign any value to lives lost. Even if a storm kills hundreds, no adjustment is made for these deaths.
Finally, the figures are adjusted for inflation. This is very important because US$1 billion in 1980 is actually equivalent to $3.15 billion today after adjusting for price changes. Hollywood movies consistently break box office records because the industry does not adjust ticket sales for inflation. Without an adjustment, disasters would consistently look more expensive over time and, like Hollywood films, seem to always shatter records for damage – even when they don't.

What the data show

Since 1980 there have been 212 disasters, which NOAA calculates resulted in over $1.2 trillion in damage.
My analysis of the NOAA data shows that the number of billion-dollar disasters has indeed been increasing over time. A typical year in the 1980s experienced on average 2.7 such disasters in the U.S. In the 1990s and 2000s, that average had climbed to 4.6 and 5.4 a year, respectively.
Since then, the frequency of costly disasters has soared. In this decade so far, each year has seen an average of 10.5 disasters. The scale of this increase amounts to one additional billion-dollar disaster every four years.

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What lessons will Houston-area officials learn from Harvey? History gives us a clue

By Neena Satija

Source: http://www.homelandsecuritynewswire.com/dr20170911-what-lessons-will-houstonarea-officials-learn-from-harvey-history-gives-us-a-clue

Sept 11 – **A growing chorus of voices — from scientists to some government officials to members of the public — say big policy changes need to be made in the Houston region after Hurricane Harvey dumped a record amount of rain there and swamped thousands of homes.**

With the recovery process just getting started, local officials haven't said much about what those policy changes might be. And in a statement to the *Texas Tribune*, Houston Mayor Sylvester Turner's spokesman said Harvey would have flooded the "relatively flat city that is crisscrossed by waterways … regardless of what planning and land usage regulations were in place."

But the Bayou City has been here before. The worst rainstorm to befall an American city in modern history before Harvey was Tropical Storm Allison, which dumped more than 40 inches of rain on Houston in five days, flooding 73,000 residences and 95,000 vehicles. Allison caused $5 billion in damage to Harris County alone — and Harvey's cost is expected to soar well past that level.

Houston and Harris County officials pursued a number of major policy changes after Allison. Some of them had modest success; some were abject failures. Many are likely to come up again after Harvey, on an even bigger scale than before. Here are the big ones:

Buying out homes most likely to flood again

Just months after Allison, Harris County began to pay people to leave their homes, ultimately spending hundreds of millions of dollars of mostly federal money. The county targeted thousands of families who suffered flood damage and lived in 100-year floodplains — areas with at least a 1 percent chance of flooding in a given year. The idea was that it would be cheaper to pay residents to live elsewhere than to constantly pay out flood insurance claims.

Experts say the program was a good one but didn't go far enough. Since Allison, the county's flood control district has purchased about 2,400 homes, but a recent study said that at least 3,300 more should be targeted for immediate buyouts. Even if those homes were bought out, that still leaves tens of thousands in the 100-year floodplain.

Local officials will surely ask for more money to buy out homes after Harvey. But they'll have to depend largely on the generosity of Congress — and if they get more money, they'll have to convince many Houstonians who haven't been willing to take the money and move after previous floods.

The Harris County Flood Control District has already started asking homeowners whether they're interested in buyouts post-Harvey, though no money is available yet.
"Buyouts are on the table … voluntary and involuntary," said Harris County Judge Ed Emmett. "That's got to be an option."

Re-mapping the floodplain

Harris County devoted tens of millions of federal dollars after Tropical Storm Allison to re-map its floodplains. The process took a lot longer than expected and resulted in numerous lawsuits. But experts say the redrawn maps still don't reflect the true floodplains.
That's partly because the flood maps don't account for what climate scientists say is an increase in the number and frequency of massive rainfall events. Harris County is in the middle of a large study that could result in updating some of those rainfall expectations.
There may be calls to re-map floodplains again after Harvey. But if Texas officials secure the money to do it, it would take years. Meanwhile, experts also say the whole concept of the 100-year floodplain is becoming less and less useful. During Tropical Storm Allison, more than half the homes that flooded were outside the 100-year floodplain; that didn't change during subsequent floods even after the maps were updated.

Restricting building in flood-prone areas

As part of a broad effort to revisit development policies after the devastation of Tropical Storm Allison, in 2006 the city of Houston tried to restrict building in the "floodway" — an area within the floodplain that is at particular risk of being damaged by flooding because it's directly in the central current of floodwaters.
It seemed like a no-brainer to many at the time. Since the mid-1960s — well before people fully understood what floodplains were — a Houston ordinance had technically forbidden building in a floodway. But the policy was riddled with exceptions that led to thousands of dwellings being built in floodways. Five years after Allison, the city decided to get rid of those exceptions.
The result was a political catastrophe. As the floodplain maps were redrawn after Allison, hundreds of new properties were suddenly included in the floodway. That meant their owners could no longer renovate them or build anything new. Property values dropped instantly. A series of lawsuits and a political firestorm pressured the Houston City Council into severely weakening the restrictions two years later.
Today, some members of the public and scientists are mystified that it is still possible to build in the floodway in the city of Houston. But many people who strongly opposed the floodway ordinance are still influential in Houston.
For instance, Paul Bettencourt — now a Republican state senator — was tax assessor for Harris County when the floodway ordinance was adopted. At the time he bitterly complained that the policy would cost the area millions in tax revenue. And Adrian Garcia, then a city councilman who would later serve as Harris County sheriff, represented many residents who lived in floodways.
Garcia, now a private consultant, said he doesn't regret weakening the restrictions. "The floodway ordinance was just a fraction of the solution," he said. "If we were to take a truly comprehensive, multi-dimensional approach to our flooding and drainage issues, then it could be brought to the table as part of a total package."

Updating old infrastructure

After Allison, federal disaster relief money helped accelerate projects the county was already working on, such as upgrading the infrastructure around the bayous that carry floodwater through and away from Houston. Hundreds of millions of federal and local dollars have already been spent, and Harvey may help secure more money needed to finish these projects.
But many of the bayou upgrades have taken years longer than anticipated, and the damage from Harvey might set them even farther back. Meanwhile, none of this work would prevent flooding from a massive event like Harvey. Flood control officials say the upgrades wouldn't even protect homes from events on a much smaller scale than Harvey, like the 2016 Tax Day floods.
Harvey has widely been referred to as at least a 500-year flood — a disaster with just a .2 percent chance of occurring in any given year. Flood control officials say protecting neighborhoods surrounding all of Harris County's bayous from just a 100-year flood would cost $25 billion.

Currently, the county has been spending about $80 million a year on these upgrades. At that rate it would take 400 years to get the job done. Harvey relief dollars may increase that level of spending, but it's still an daunting task.
On top of public works projects around bayous, the region has also tried to improve its dismal drainage system. Former Mayor Annise Parker's "Rebuild Houston" initiative, an $8 billion program approved by Houston voters in 2010, called for a dedicated drainage fee to address the problem. But the fee and the program have been beset with controversy and lawsuits.
Bettencourt, the Republican state senator, said he led opposition to Rebuild Houston because many of its initial promises were abandoned. He added that much of the money being collected in drainage fees is not actually being used for drainage.
"There's clearly a need to take what happened with Harvey and figure out really how to prevent any mistakes that were made … [and] more importantly, find the lessons learned that people knew in the past," Bettencourt said. **"It's just time that we collect everything we've learned, everything that we saw and do the best to implement fixes for future generations of Texans."**

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Economic costs of Harvey, Irma $200-$300 billion; insured cost to reach $70 billion

Source: http://www.homelandsecuritynewswire.com/dr20170918-economic-costs-of-harvey-irma-200-300-billion-insured-cost-to-reach-70-billion

Sept 18– The insured cost of Hurricanes Harvey and Irma is likely to reach $70 billion, while the economic cost — which includes uninsured losses – is in the range of $200 billion to $300 billion, leading insurers say. Lloyd's of London said the claims would make 2017 one of the worst years for natural disasters with the hurricane season not yet over.

Considerable progress since 9/11 in U.S. public health emergency preparedness

Source: http://www.homelandsecuritynewswire.com/dr20170918-considerable-progress-since-9-11-in-u-s-public-health-emergency-preparedness

Sept 18 – Sixteen years after terrorist attacks at the World Trade Center in New York City, and on the heels of destructive Hurricane Harvey, the *American Journal of Public Health* is releasing a special supplementfocused on public health emergency preparedness.
A new studyin this special supplement completed by the Centers for Disease Control and Prevention's Office of Public Health Preparedness and Response found that in the sixteen years since 9/11, the Uniteed States has made considerable progress in its public health preparedness capability.
APHA says that the study evaluated awardees of the Public Health Emergency Preparedness program from 2001 to 2016, which provides funding to state, local and territorial governments to advance public health to prevent, protect, respond and rapidly recover from health emergencies. The research examined six domains of public health preparedness: biosurveillance, community resilience, countermeasures and mitigation, incident management, information management, and surge management.
Researchers found that the number of jurisdictions, which included 50 states, 8 territories, and 4 localities, able to carry out emergency countermeasures and mitigations has doubled since 2016. By 2016, all jurisdictions in the program reported 100 percent incident management infrastructure capability.
Other articles in the supplement examine emergency preparedness in the primary care system, preparedness funding, vaccination planning and other topics.

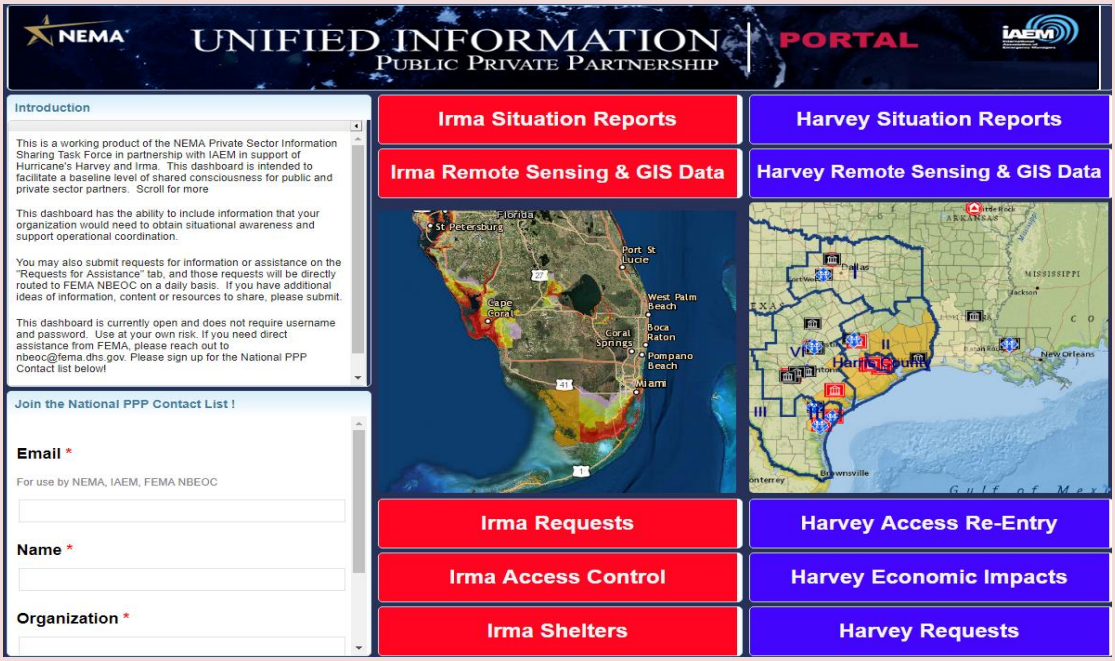
How 9/11 and Irma are related

By Eric Kant (Kant Consulting Group, LLC)

Source: https://www.linkedin.com/pulse/how-911-irma-related-eric-kant/

Sept 12 – As I write this we are currently on generator as Irma came within a few miles of our house. We decided to shelter in place and although we lost power, we never lost connectivity due to a generator @FEMA bought us over 10 years ago after hurricane Charlie & our Verizon unlimited plan. You can find my Irma photos here @eTechOps.

If you have not seen a few of my posts from the last few weeks, we have been working with IAEM & NEMA to build a unified information portal to provide information operations & decision support for Harvey & now Irma. You can access the portal here: http://ppp.trustedops.com This portal has been built using



low code/no code solutions, if you don't know what this is see my past posts at Trustedops.com. Long before Harvey & Irma I learned information operations & implementation of critical solutions in the information environment to save lives, effect operations & provide actionable insights.

Integrating advanced technology into live operations has formed the foundation for a career focused on technical operations, command and intelligence in order to protect lives and enhance security. As a young EMT my crew responded to the first attack of foreign terrorism on US soil and as a firefighter/paramedic and emergency manager on multiple presidentially declared disasters, the first being the Florida Night of Tornados.

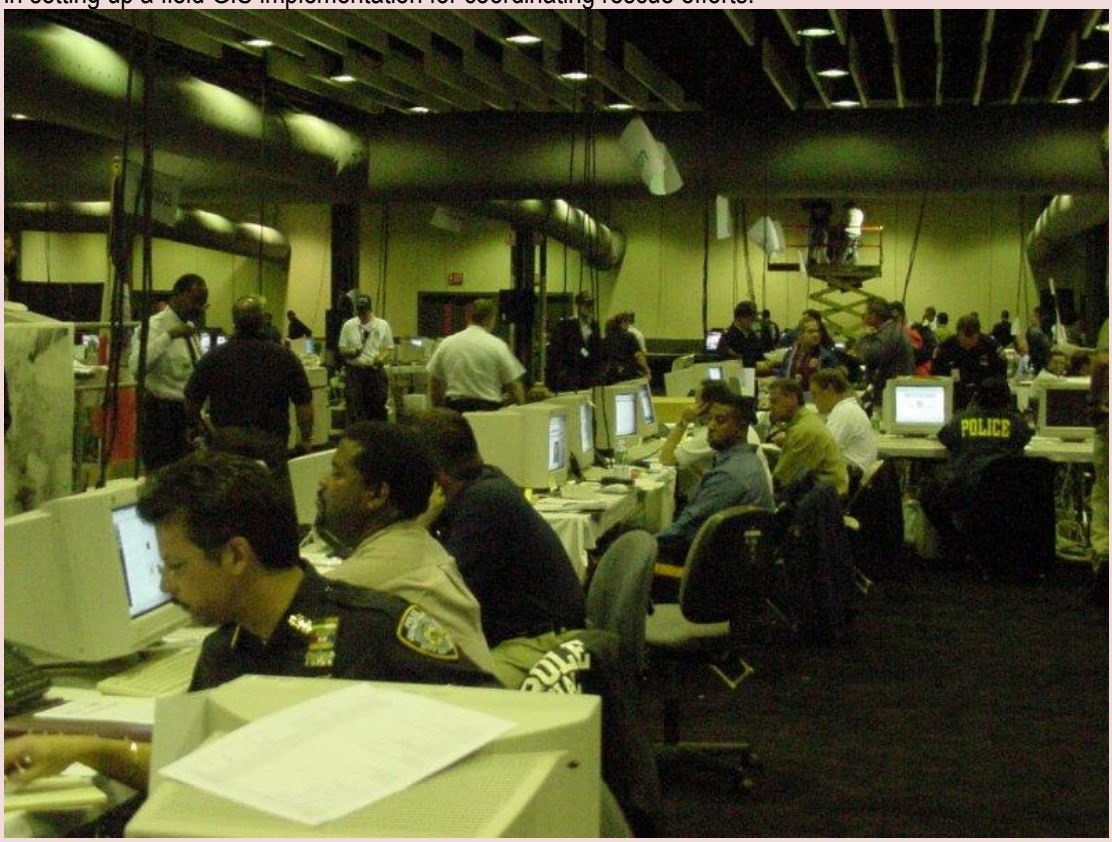
It is an honor and privilege to serve and forever guides my actions to implement technology that can save lives and ease suffering, here is my 9/11 story.

Responding to this disaster was made more challenging because New York City's Emergency Operation Center (EOC), which had been located in Building Seven of the WTC, was also destroyed in the collapse of the towers. The City ultimately relocated the EOC to a shipping pier.

Emergency personnel from more than 200 city, state, and federal agencies and private companies, such as Consolidated Edison, Verizon, Esri, and AMTRAK, responded to the September 11 disaster. Coordinating immediate rescue efforts and long-term recovery plans required sharing information among responding personnel.

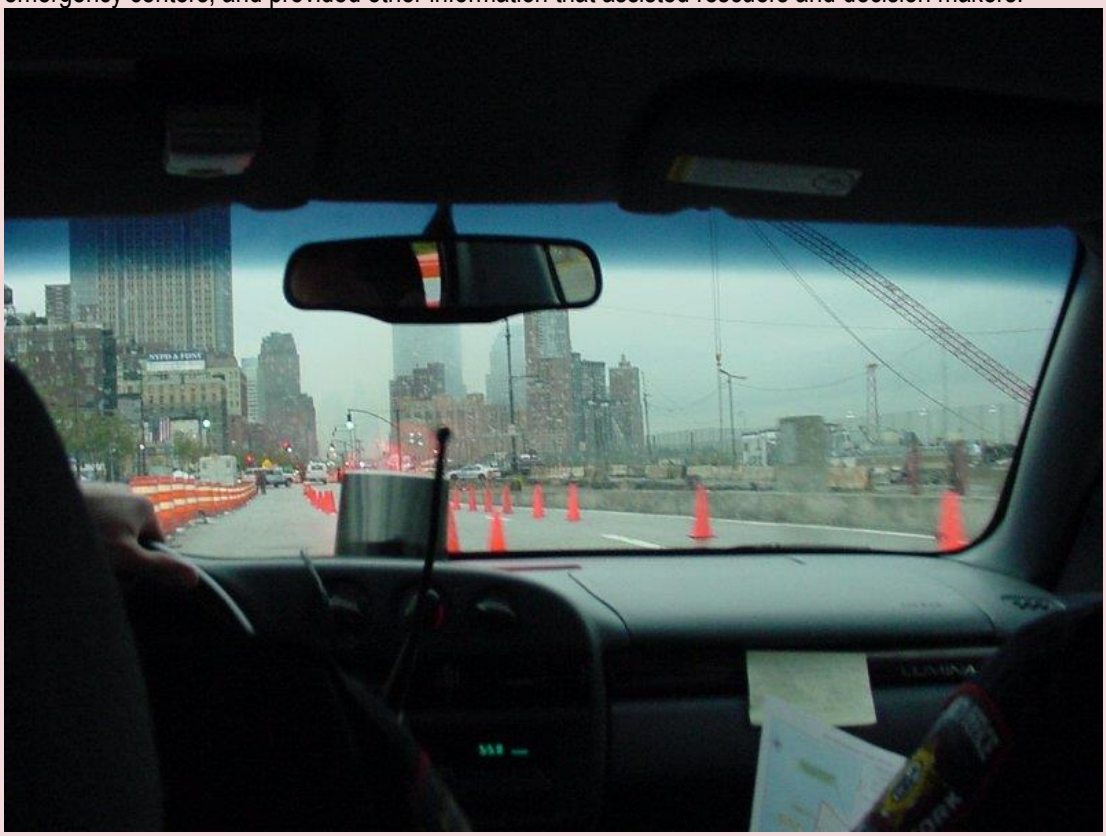
Prior to the incident, New York City had selected emergency and event management system software from a vendor, an Esri business partner. This system uses advanced GIS mapping by ESRI as its mapping component and takes advantage of the cross-platform capabilities of the Internet to deliver vitally needed information to virtually anyone connected to the Internet. Users log on to the system via secure Web site and access constantly updated information on an incident.

Although Incident management system had been chosen, this decision was made only one week before the disaster--insufficient time to install, set up, or train the intended users. The author, a technology specialist and emergency manager from Osceola County, Florida, traveled to New York City and assisted in setting up a field GIS implementation for coordinating rescue efforts.



I arrived in New York City on September 15, the Saturday after the disaster. By that time, the New York City Mayor's Office of Emergency Management (OEM) had set up an impromptu EOC at Pier 92 on the west side of Manhattan. The Emergency Mapping Center at the EOC, consisting of 20 workstations running ArcGIS, five plotters, and a data server running ArcSDE, was impressive. An online map request system allowed quick entry of map requests into a database and provided a prioritized queue to the Emergency Mapping Center staff.

The center supplied maps that showed destroyed, damaged, and unstable buildings; helped route debris removal; described the path of asbestos plumes; illustrated power outages; showed the location of emergency centers; and provided other information that assisted rescuers and decision makers.



We met with two senior staff members to work out a game plan for setting up the incident management system as the framework for emergency operations communications among the more than 200 computers at the EOC. Osceola County's Office of Emergency Management was the first local agency on the East Coast to use the web based incident management system. While responding to several presidentially declared disasters, we at Osceola County personnel had become familiar with the software.

Instead of removing or replacing operational procedures or verbal communications, the incident management system provides tracking, documentation, and accountability. In the past, information conveyed by conversations between emergency personnel would be limited to a few people and perhaps be documented by some notes. This static information could be accessed by only a few people.

Entering information into the Incident management system provides not only content but also metadata concerning communications (e.g., persons spoken to, information sources, GIS mapping links, contact information). The incident management system moves incident information from a static data model to a dynamic routable information workflow that is available to every participant on the system with explanations, GIS mapping layers, attachments, and contact information.

On September 11, we had full operational capacity for New York City on the system service provider (ASP) and contacted OEM with information on how to access the application over

the Web within a matter of hours of the collapse of the towers. In just a few days, OEM staff could access maps that provided an overview of the operation as well as the detailed underlying information. Detailed maps of ground zero were distributed using ArcIMS, which provided the foundation for disseminating geographic information and mapping services.

Because most people have used browsers to access the Internet, training on the Incident management system is relatively easy and takes just a few minutes. Creating the link between operations and the system takes a little longer and is a common problem in implementing technology solutions. Osceola County, which has been managing disasters using the Incident management system for more than three years and has activated the County EOC more than a dozen times, has been able to integrate operations with the application by thoroughly understanding both the Incident Command system and the technology being applied.

On Saturday night, September 15, we provided training and operational support to OEM staff who were located at the podium. All EOC operations were coordinated from the podium, a square platform in the middle of the EOC.

EOC staff at work

After initial training, most EOC staff were quickly able to apply New York City operations within the Incident management system framework.

After initial training, most EOC staff, who were familiar with New York City operations, were quickly able to apply those operations within the Incident management system framework. After training podium staff, we turned our attention to the emergency support functions (ESF) including the remote staging areas and mobile command posts. Troy and John handled most of the support functions while I started working on the mobile setup.

Pioneering a Wireless Solution

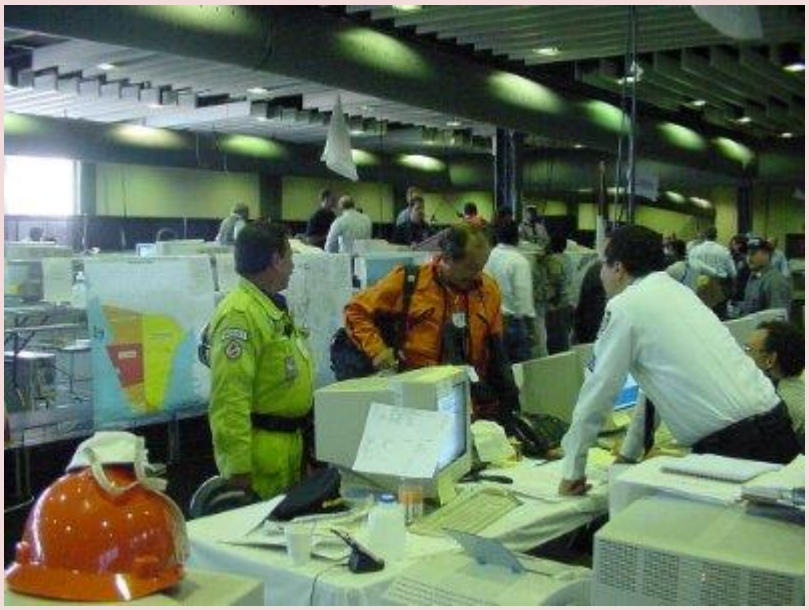
The incident management system supplied real-time data from multiple locations in New York City that improved rescue and recovery operations. The system functioned so well that the next step was to deploy it to forward command posts and forward staging areas. To accomplish this proactive step, a wireless solution was needed, as the communications infrastructure had been damaged in the collapse of the towers.

Although we had done some testing using the system with wireless communication, we were really pioneering the wireless solution. We decided the best configuration would be to run the Lotus Domino server on each client (i.e., mobile unit) along with ArcIMS. In the background every few minutes, the server would replicate data with the central OEM computers using a wireless connection. The client would experience no noticeable performance loss when utilizing this system, and it would allow efficient exchange of data.

Panasonic TOUGHBooks with built-in Serria wireless modems were chosen because these notebook computers ship with the Integrated Wireless solution that supports Cellular Digital Packet Data (CDPD), a specification for supporting wireless access to the Internet and other public packet-switched networks. These rugged computers were also chosen for their shock-, moisture-, and dust-resistant design.

Preliminary Field Testing

Late Sunday night, September 16, we had the first unit up and were ready to perform preliminary field tests. I have learned from many years of experience in deploying technology to field operations in fire rescue, emergency medical services, and emergency management situations that rapid testing in the field was necessary.



Technology is like any other tool. Providing a carpenter with a hammer that does not work properly just makes the carpenter's job much more difficult, perhaps impossible. Field personnel at the WTC were already doing one of the hardest jobs in the world. If our wireless solution was going to work, it would have to perform as expected without any complications. Technology that works is phenomenal; technology that doesn't work hurts people.

In the early morning hours of Monday, September 17, Troy and I went to the 1010 Duane Street command post with the mobile units. For most of the trip, the wireless connection was good, and the databases were replicating properly as confirmed by the systems administrator. As we neared the command post, wireless communication became intermittent-it would spike for a few seconds then go back to a search mode.

These connection problems were due mostly to the loss of cellular towers in the area. When we finally arrived at the command post, the connection was not working. Although the system would perform fine locally because the server was

installed on the computer, the database could not update and the user would have only static information. We were unable to close the loop from the field to the EOC and staging areas. John put me in touch with a representative from Motorola who helped me locate wireless connectivity specialists at Verizon. I learned that most of Verizon's infrastructure was still operational and that Verizon had set up mobile transmission sites called Cows (communications on wheels) to support the area. CDPD wireless connectivity could be utilized with a few minor adjustments.
If we provided specific maps of the area needing coverage, Verizon would ensure reliable connectivity. Verizon provided me with a new IP address for the mobile units and assured me that, by the morning, the area would be saturated with coverage.

Sending for Reinforcements

Throughout the setup and testing of the six mobile systems, we were also providing training and support to the entire EOC. By Monday afternoon, September 17, it had become quite clear that Troy, John, and I could not keep up with ever-growing EOC staff and training requirements. We agreed to bring in additional people from Osceola County. Emergency management specialist Georgianne Cherry and emergency management director Matt Meyers, both of Osceola County, joined the New York City rescue efforts the next morning and Dave Fletcher, a system administrator.
We had also received an additional shipment of six laptops that would be used as mobile units and felt confident that Verizon could provide the required infrastructure. I continued configuring the mobile units for deployment while providing technical and training support to the OEM staff.
It took most of Tuesday, September 18, to complete configuration of the mobile units, meet with the new arrivals, and get everything squared away. Matt would provide additional training and operational support while we set up a training area for Georgianne. Using the five computers set up in the training area, she began providing training to the EOC staff every half hour-around the clock. Dave and I continued to plan, configure, and deploy the mobile units. Once we finished preparing the mobile units, things started to come together.
Even in the EOC, where signal strength had been low, we had excellent coverage. That evening Matt and I deployed the units to the staging area, provided training, and tested the wireless infrastructure at the command posts located at ground zero. The staging areas were being staffed by Air and Army National Guard, and training for those personnel was completed quickly. All the wireless components were now working.

Up and Running

The last step was to retest the wireless connectivity in the zone. Just as Verizon's staff had promised, the zone was now saturated. All areas on and around ground zero were covered so the mobile units would work as first planned. By the end of the week, the commanders at ground zero were saving time by using TOUGHBooks for requesting equipment directly from the staging area and, because the laptops were running incident management software, those in the field could view the same maps as those staffing the EOC.
The Emergency Mapping Center supplied maps that showed current conditions including destroyed and damaged buildings, no power zones, and hazardous areas.
In the early hours of Wednesday, September 19, the team closed the loop. Most, if not all, of the EOC staff were utilizing the system. The field units could participate and coordinate with EOC operations. Requests for resources went directly to staging personnel who could fulfill them or forward them on to logistics. The EOC staff could monitor critical equipment and resource requests for the more than 200 agencies involved and generate situation reports.

Conclusion

This project could not have been completed without a team effort. I found it refreshing to see so many different agencies working toward a common goal. The personnel involved in all aspects of the operation should be commended. Without their commitment, expertise, and dedication, this effort could never have succeeded. As a native of Coney Island, Brooklyn, I felt it was a privilege and an honor to be able to assist in this effort.

When Natural — or any — Disaster Strikes, Being Prepared Matters

Source: http://www.govtech.com/em/disaster/When-Natural--or-any--Disaster-Strikes-Being-Prepared-Matters.html

Motorists in Houston pass a sign warning of Hurricane Harvey as the storm intensified in the Gulf of Mexico, Thursday, Aug. 24, 2017. AP/David J. Phillip

Sept 15 – Earthquakes, floods, fires, wind storms, oh my.

These are just a few examples of the potential natural disasters that could hit Ridgecrest and the Indian Wells Valley.

In light of the aftermath of Hurricane Harvey, which flooded Houston and other Texas cities, and Hurricane Irma, which hit Florida and the Caribbean islands, it's best to prepare for such disasters, according to Kern County Emergency Services Manager Georgianna Armstrong.

"There are ongoing disasters that are ever present and they can affect us in ways to varying degrees," Armstrong said. "The control that they can affect us directly correlates to how well we have been preparing our families and ourselves to withstand those events."

"When we talk about preparing for disaster, we are really talking about building family strength and resiliency," Armstrong said.

Emergency contact information

"A family communication plan is one of the basic recommended actions," Armstrong said. "It doesn't cost you anything and it's basically a way of saying to your family members that if something were to happen and can't be reached by phone, there is a better chance of making long distance calls out of the affected area."

Some ways to prepare a family communication plan include having a designated plan of contact, and have that name and number written down and in a safe place like a wallet.

"Everybody is going to call Grandpa Joe to check in and say they are OK," Armstrong said.

She stressed writing contact information is essential. "After an event, if your phone is destroyed or not with you, most of us don't remember phone numbers anymore. They are programed into our phones — we've lost that ability or in a stressful situation we may not be able to recall it."

Pre-designated meeting places are another part of the communication plan.

"For some reason if you are displaced from your home and can't get back there, it's best to know where you can go and expect

to find your family members," Armstrong. "These don't cost anything and are basic tools of where you can come together and know one another are well after an event."

A disaster situation also means preparing to act on your own. In advance of Hurricane Irma, Florida Gov. Rick Scott urged residents in the storm's path to evacuate, noting that emergency responders would likely not get to everyone.

Armstrong noted as much.

"When you have an emergency situation, you are going to have more people who need assistance than there are first responders, at least initially," Armstrong said. "In a very big event, resources are going to come pouring in from other areas, but that takes time. The more strength and resiliency you have to take care of yourself in the immediate after effect of an event, the better prepared you are to withstand that event."

"We are all our first line of defense," she added.

Be prepared

That includes stocking up on non-perishable foods, water, manual can opener, flashlights, batteries, a first aid kit and heavy shoes and gloves (to help protect against broken glass or heavy debris).

Examples of lists can be found online at ready.gov/build-a-kit or via the Red Cross at redcross.org, or via the Kern County Fire Department website at kerncountyfire.org.

People should also take into account medications and the needs of their pets.

"For people who take medications on a regular basis, one of the recommendations is to have a list of your medications with the Rx number, dosage and the name of your doctor with you," Armstrong said. Having that information will help safeguard against incorrect dosage or delays if a person were displaced from a home and relocated to a shelter.

"One of the lessons learned from Hurricane Katrina was that for the folks who evacuated, who relied on medication for chronic conditions, were unable to obtain their medication for a period of time and that very severely damaged them," she said. "It's always in your best interest to obtain provide that information quickly and accurately in a disaster event."

Another thing if in a home following an earthquake: check utilities.

"One of the first things you want to do after an earthquake is check for a gas leak, and if you do smell gas, have the knowledge and tools there to shut off your gas to protect your from a house fire," Armstrong said.

She advised the knowledge and preparation are all essential, because in a natural disaster, a situation will get worse before it gets better.

"You want to be able to take immediate action so you can stabilize your family's situation," she said.

Money is another thing to keep in mind, i.e. keep some hard cash tucked away should the power grid be knocked out. Gas in your tank is also important.

"Not only will you not have access to your ATM card, you aren't going to be able to go to pump fuel," Armstrong said. "Look at your gas tank and readjust your thinking so that half a tank in your mind is an empty tank; never let it get down to the end because what if that moment you're running on fumes, you have a power outage and you can't refuel?"

A short term supply of cash is a good first step, but Armstrong also advises to think long term: the proper insurance.

"A lot of people think that if something happens, FEMA (Federal Emergency Management Agency) is come in and make you whole again," Armstrong said. She said those moments that FEMA is directed to do so are very rare. "Your first line of defense is to have your own insurance for your home and property and to know the kind you have. Your general insurance doesn't cover earthquakes or flood, so if you live in an area subject to those, do your best to have that insurance because that's your first line of beginning to recover from a disaster."

Resources

Both Kern County and the city of Ridgecrest have their own emergency plans in place. The Ridgecrest Police Department, the city's public works department and the Kern County Fire Station are all hooked into emergency or natural disaster planning.

Armstrong said the Indian Wells Valley, like a lot of Kern County, has a very active Community Emergency Response Team presence. CERT educates citizens and volunteers on disaster preparedness for hazards that might impact the area; the program also trains in basic disaster response skills like fire safety, light search and rescue and team organization.

"They can come into an event supplementing first responders'

resources," Armstrong said. "They don't do what first responders do, it's at a different level but it's for immediate needs. Going through the CERT training, you can be better prepared for your immediate family and part of this team that helps the community."

She said a community who has a team that is prepared and organized "is an incredibly valuable resource."

Another group that plays a pivotal role in emergencies and natural disasters are ham radio operators. Ham radio operators, through groups like ARES and RACES, are citizens trained and licensed to operate radio communications.

Armstrong cited a quote from a skilled emergency services manager she knew. "If she had to choose between water and the ham radio operators, she would take the ham radio operators," Armstrong said. "They can be your last line of defense when communications fail so they are incredibly important to overall communications."

Kern County has provided grant funding for ham radio equipment at its Emergency Operation Center, and a similar site at Ridgecrest Police Department.

"If communications were lost, at least we have something in place where hams can help with communication between the county and the city," Armstrong said.

On communication, Armstrong said social media postings can vary from being solid to too unreliable.

Information coming from official sources like Kern County Fire or RPD will carry accurate information.

"Social media when it's just everyone throwing their voice in there sometimes is very ripe for rumors," Armstrong said. "You always want to be wary of listening to unsubstantiated information and rumors."

She advises that residents sign up for ReadyKern (readykern.com), the county's emergency notification system. It's free, secure and used only when there is an official notification that needs to be put out over a wide area. The information is recorded and sent out via telephone, email and text to registered users.

Lessons Learned from Irma Will Help for Future Storms

Source: http://www.govtech.com/em/disaster/Lessons-Learned-From-Irma-Will-Help-for-Future-Storms.html

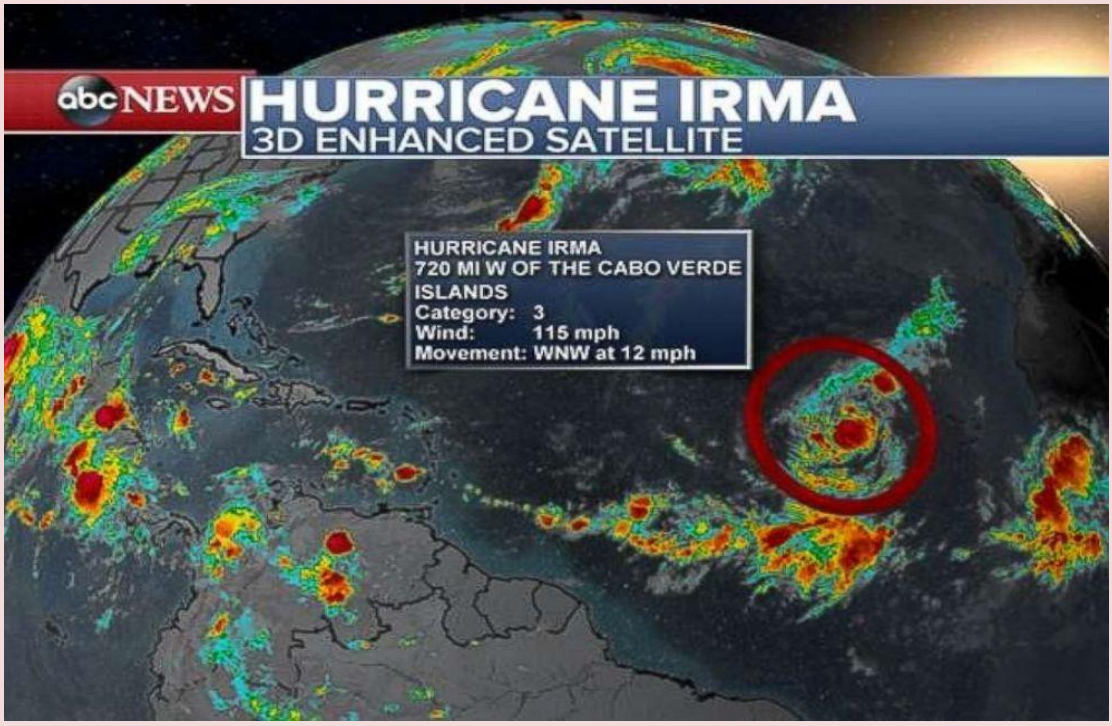
People at a Red Cross shelter set up at North Miami Beach Senior High School eat lunch, Friday, Sept. 8, 2017 in North Miami Beach, Fla. Cuba evacuated tourists from beachside resorts and Floridians emptied stores of plywood and bottled water after Hurricane Irma left at least 20 people dead and thousands homeless on a devastated string of Caribbean islands and spun toward Florida for what could be a catastrophic blow this weekend. AP/Wilfredo Lee

Sept 18 – Hurricane Irma brought out stories of unity and resolve throughout the state. Neighbors helping neighbors. Responders working tirelessly to treat injured and restore normalcy following the deadly storm. Irma's shifting path brought the eye of the massive storm right through Alachua County as a Category 1 hurricane late Sunday night into Monday morning just as its organization tore apart. It moved on as a tropical storm. Still, it caused widespread flooding, downed power lines and extensive property damage. There were no storm-related fatalities reported here.

As with any natural disaster, adjustments were made and lessons were learned that could be applied to future storm preparation.

"One of the things we kept talking about prior to the event was, we don't have this is the manual," Alachua County commissioner Ken Cornell said. "There's no Cat 5-coming-straight-up-the-state in the manual, so we need to create the new manual."

What did Cornell take from the storm? "It's really about making sure that all the necessary folks are in the room that need to handle a situation," Cornell said.



Alachua County Emergency Management Director John Shaw, hired last February, is no stranger to natural disasters. Shaw, 31, grew up in the San Francisco Bay Area during an earthquake that registered 8.1 on the Richter scale and interrupted the 1989 Major League World Series between the San Francisco Giants and Oakland Athletics.

Shaw said what stood out to him was the accessibility of leadership from within the community, from Cornell, to Alachua County Sheriff Sadie Darnell, to Fire Chief William Northcutt, to Alachua County manager Michelle Lieberman.

"Everyone has been very accessible," Shaw said.

Along the way, decisions were made on the fly to help prepare for the storm. The county called in the Florida National Guard, with Santa Fe College offering its buildings to host the reserves, to help prevent looting of stores (none was reported). A third pet-friendly hurricane shelter was opened at Eastside High School in Gainesville, joining the Easton Newberry Sports Complex and Waldo School shelters.

"I don't know how many lives that were saved because we were able to house pets in our shelters," Shaw said. "I think that was an outstanding effort."

All told, more than 25,000 area residents and evacuees from South Florida were housed in 18 shelters throughout the county. The University of Florida was initially reluctant to offer shelter space to the general public. But after its shelter capacity of 205 at Steinbrenner Hall was filled by students and shelter volunteers, UF offered space to the public for its second shelter at the Southwest Recreation Center. With a capacity of 2,000, the center housed 600 people, including shelter volunteers.

"We were ready and prepared to open other shelter locations as demand called for it," said Janine Sikes, a UF spokesman.

Alachua County, like the rest of the state, dealt with a gasoline shortage following the storm. It was exacerbated by an already limited supply of imported gas coming from Houston due to Hurricane Harvey. Gas supply was further stressed by evacuees filling their tanks while passing through on Interstate 75 in the days leading up to the storm.

Gainesville resident and former FEMA Executive Director Craig Fugate said the gas shortages were inevitable due to the fact that systems are built for day-to-day consumption. Florida Gov. Rick Scott offered police escorts for fuel trucks in an effort to refill empty gas stations throughout the state, but gas lines stretched for blocks days after the storm.

"This is all private sector," Fugate said. "Are you willing to give them tax credits or extra money to build excess capacity that they don't use 99 percent of the time, to deal with the 1 percent? And that if that is something that you feel that strongly about, then the Florida Legislature needs to figure out how they pay or incentivize the private sector to do that. Otherwise, what industry would build excess capacity?"

Gainesville Regional Utilities (GRU) was able to secure 12,000 gallons of fuel from Lewis Oil to avert the possibility of a disruption in the water supply. GRU officials said the water is safe to drink and few experienced interruptions in water service after the storm.

By the Friday following the storm, GRU reported 92 percent of its customers had power restored. Fugate said many power companies throughout the state, since Hurricane Wilma in 2005, have more actively communicated to customers who experience outages following storms. The power grid throughout the state also has become more resilient, Fugate said.

"We've seen a rebalancing of putting more investment back in the infrastructure maintaining it," Fugate said. "I know that Florida Power and Light and some of the bigger utilities have had very substantial long-term investments and building resiliency in it." But he noted that even with regular trimming, Gainesville's broad tree canopy will bring down power lines in big storms.

Flooding on the Santa Fe River due to Irma's heavy rainfall caused flooding that nearly closed I-75 at Mile Marker 408 near High Springs. The river crested at 57 feet on Thursday morning before receding. The high water caused temporary road closures on U.S. 41, U.S. 441 and U.S. 27.

River levels were already high due to Alachua County experiencing a record 39.02 inches of rain during a three-month stretch from June to August. Gainesville is on track to set a record for rainfall this year.

"That's what happens when you put that much rain on a situation," Fugate said. "And again, this is natural drainage up here. This isn't like you've got pumps and levies and things you can do."

After years in control rooms during natural disasters, the former FEMA director rode out the storm as a private citizen. When power went out at his Gainesville home, Fugate turned to his battery-powered radio for information.

"It changes your perspective," Fugate said. "It also reaffirmed what I knew when I was up there, you need to be up front with people and tell them what to expect. Don't sugarcoat stuff, but you don't have to scare them, you just need to get them information so they can make an informed decision about how to prepare."

BY THE NUMBERS

Gainesville Fire & Rescue responded to 221 calls Sunday and Monday, during and immediately after the storm, roughly double the number of normal calls. They included:

- 8 Motor vehicle crashes
- 4 Water rescues
- 32 fires (several trees from electrical lines)
- **11 Hazmat calls: Fuel spills, leaks and odors of gas**
- 14 Electrical hazards, wires down
- 36 Collapse, confined space or no longer entrapped (most of these were trees on houses)
- 42 Citizen assists
- 67 Alarms
- 7 Other unknown type calls


IOI
International
CBRNE
INSTITUTE
CBRNE-Terrorism Newsletter
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Introduction: The evolving threat of hybrid war

By John Mecklin

Source: http://www.tandfonline.com/doi/full/10.1080/00963402.2017.1362905

As has often been pointed out, the term "hybrid war" is used imprecisely enough that it could be (and has been) attached to any combination of irregular and regular armed conflict, going back to the American Revolution and even the Napoleonic wars.[1]. And in the twentieth century, the United States certainly used covert and sometimes lethal action by its security services and various proxies to influence events and governments around the world, from Iran[2] and beyond, in what some might call hybrid ways.

The current sense of "hybrid war," however, was introduced in 2005, when James N. Mattis, now the US defense secretary, and National Defense University researcher Frank Hoffman called it "a combination of novel approaches – a merger of different modes and means of war."[5]. The term reached wider prominence in the aftermath of the 2006 war between the state of Israel and the Shiite militia group Hezbollah in southern Lebanon. There, Hezbollah fighters experienced remarkable success, using rockets and other arms supplied by the Iranian and Syrian governments, advanced communication systems, and a vast network of tunnels to attack advancing Israeli tanks and infantry units. "Hezbollah fighters use tunnels to quickly emerge from the ground, fire a shoulder-held antitank missile, and then disappear again, much the way Chechen rebels used the sewer system of Grozny to attack Russian armored columns," the *New York Times*'s Steven Erlanger and Richard Oppel Jr. wrote.[6].

But this conflict involved more than guerrilla tactics and asymmetrical armaments. It was also a battle for world public opinion. "[N]ot until this war have networks actually projected in real time the grim reality of the battlefield – pictures of advancing or retreating Israeli troops in southern Lebanon, homes and villages being destroyed during bombing runs, old people wandering aimlessly through the debris, some tailed by children hugging tattered dolls, Israeli airplanes attacking Beirut airport, Hezbollah rockets striking northern Israel and Haifa, forcing 300,000 to evacuate their homes and move into underground shelters – all conveyed 'live,' as though the world had a front-row seat on the blood and gore of modern warfare," veteran journalist Marvin Kalb and international security expert Carol Saivetz wrote. "To do their jobs, journalists employed both the camera and the computer, and, with the help of portable satellite dishes and video phones, 'streamed' or broadcast their reports from hotel roofs and hilltops, as they covered the movement of troops and the rocketing of villages – often (unintentionally, one assumes), revealing sensitive information to the enemy. Once upon a time, such information was the stuff of military intelligence acquired with considerable effort and risk; now it has become the stuff of everyday journalism. The camera and the computer have become weapons of war" (Kalb and Saivetz 2007 Kalb, M., and C. Saivetz 2007. "The Israeli-Hezbollah War of 2006: The Media as a Weapon in Asymmetrical Conflict." Shorenstein Center on the Press, Politics and Public Policy, Harvard University, Kennedy School of Government. Presented at the US-Islamic World Forum in Doha, Qatar, February 18.

In little more than a decade, the use of hybrid warfare techniques has expanded dramatically as technology has advanced at what sometimes seems light speed, roiling international affairs on a constantly shifting basis. Russian, Chinese, and US security experts have all noted this new form of international conflict, which can combine Internet-enabled propaganda, a global "dark web" of encrypted communications, cyber attacks, positive and negative economic pressure, espionage, irregular military action, and other efforts that aim to advance political interests without progressing to full-scale war. Sometimes also called "new-generation warfare," "non-linear war," "ambiguous war," or "gray-zone conflict," hybrid war is perhaps best illustrated by the Russian government's efforts to undermine the government of Ukraine via a combination of cyber attacks on electrical, banking, and other infrastructure, sophisticated propaganda, and support for irregular forces known as "little green men" (efforts that some suggest are responses to perceived US hybrid support early in this century for so-called "color revolutions" in parts of the former Soviet Union and the Balkan Peninsula). But governments and terror groups alike have seen that advantage can be sought and gained, just below the threshold of open war, and many countries – including, beyond Russia and

the United States, China, Iran, Israel, and North Korea, among others – and non-state groups – such as the Islamic State, al Qaeda, and Hezbollah – are using hybrid or "gray" strategies to push their international agendas.
In this issue, top experts look at the hybridized strategies of Russia, China, and Iran and, more generally, at a militarization of the Internet that seems to foreshadow a continued increase in global conflict just below the level of full war. The hybrid tactics used in Ukraine have already raised tensions between Russia and NATO, leading to nuclear saber-rattling and large-scale military exercises that include simulations of nuclear attacks.[7]. According to recent reports, hackers have targeted computer systems at US nuclear power plants.[8]. Western authorities have complained about Russian propaganda and cyber efforts that appear aimed at subverting elections in the United States and several European countries.[9]. The question is obvious: What can be done to reduce the risk that simmering hybrid conflicts will escalate into open – and perhaps even nuclear – warfare? The answers in this time of unparalleled technological change are less easily seen.

John Mecklin *is the editor-in-chief of the* Bulletin of the Atomic Scientists. *Previously, Mecklin was editor-in-chief of* Miller-McCune *(since renamed* Pacific Standard*), an award-winning national magazine that focused on research-based solutions to major policy problems. Over the preceding 15 years, he was also: the editor of* High Country News, *a nationally acclaimed magazine that reports on the American West; the consulting executive editor for the launch of* Key West, *a regional magazine start-up directed by renowned magazine guru Roger Black; and the top editor for award-winning newsweeklies in San Francisco and Phoenix. In an earlier incarnation, he was an investigative reporter at the* Houston Post *and covered the Persian Gulf War from Saudi Arabia and Iraq. Writers working at his direction have won many major journalism contests, including the George Polk Award, the Investigative Reporters and Editors certificate, and the Sidney Hillman Award for reporting on social justice issues. Mecklin holds a master in public administration degree from Harvard's Kennedy School of Government.*

Special Issue: How dangerous is hybrid war?

Bulletin of the Atomic Scientists; Sept/Oct 2017

The current sense of **"hybrid war,"** was introduced in 2005, when **James N. Mattis**, now the US defense secretary, and National Defense University researcher **Frank Hoffman** called it "a combination of novel approaches—a merger of different modes and means of war." Since then, the use of hybrid warfare techniques has expanded dramatically, from Iran's blend of military and paramilitary tools to China's use of a "gray zone" approach in the areas close to its coast, and to the "netwars" launched by anonymous states and non-state actors, alike. In this issue, top experts look at the hybridized strategies of **Russia**, **China**, and **Iran** and, more generally, at the militarization of the Internet that seems to foreshadow a continued increase in global conflict just below the level of full war.

Here's what you need to know:

Introduction: The evolving threat of hybrid warfare
John Mecklin
Free-access article
"Netwar": The unwelcome militarization of the Internet has arrived
Jonathan Zittrain
Free-access article
Thinking clearly about China's layered Indo-Pacific strategy
Zack Cooper and Andrew Shearer
How Iran's hybrid-war tactics help and hurt it
Melissa G. Dalton
Hybrid war: Russian contemporary political warfare
Christopher S. Chivvis


ICI
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INSTITUTE
CBRNE-Terrorism Newsletter
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CONTINUITY
OPEN FOR
BUSINESS
AS USUAL
Business Interruption
Disaster Event

Ransomware: What's the Cost to Business?

Source: https://www.infosecurity-magazine.com/white-papers/ransomware-whats-the-cost-to

If you haven't yet been a victim of ransomware, chances are you soon will. With talk now of the ransomware business model', recent research across the US, UK, Germany and France highlights that ransomware attacks are on the rise, with 48% of businesses seeing attacks in 2016[1]. And experts predict that we will continue to see multiple, new ransomware variants emerging from attackers who are both knowledgeable and skilled. Ransomware is no longer just an IT issue, but a very real business problem.

Read this paper to discover:

- How ransomware is evolving including the attack methods
- The cost to your business
- What steps you must take to mitigate the risk of attack