Syria's WMDs – Are they under control?

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CBRNE Newsletter Terrorism

Explosive News

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Forensics New method uses gunshot residue to determine caliber, type of weapon used in crime

Source: http://www.homelandsecuritynewswire.com/srlet20120619-new-method-uses-gunshot-residue-to-determine-caliber-type-of-weapon-used-in-crime

University at Albany researchers have developed a method to determine the caliber and type of weapon used in a crime by analyzing gunshot residue (GSR). Using near-infrared (NIR) Raman microspectroscopy and advanced statistics, the new technique may play a pivotal role in law enforcement cases and forensic investigations. The research was highlighted in a recent issue of *Analytical Chemistry*.

A University of Albany release reports that gunshot residue comprises particles from the parts of the ammunition and firearm that explode or reside near points of explosion including the primer, propellant, and tiny particles of the cartridge case and gun itself. Since residue can be recovered from several locations in the crime scene, it may be utilized for both physical and chemical evidence: GSR establishes that the shooting took place and a person participated in the shooting.

"If a crime is committed that involves a gun, we can examine the gunshot residue to help determine the size and type of ammunition used," said UAlbany professor of chemistry and lead researcher Igor Lednev. "Then through comparisons and elimination, it is quite likely to determine what kind of a gun was used in the crime."

Lednev, a member of the White House Subcommittee on Forensic Science, explained, "In the absence of a weapon and discernible ammunition remainders at a crime scene, the ability to analyze and positively identify ammunition and firearms would have a significant impact on the efficiency of a criminal investigation."

The release notes that the research team combined GSR with Raman spectroscopy, in which laser light of a specific wavelength is shined on a sample, sending its molecules vibrating. Well-suited for forensic analysis, spectroscopy does not destroy evidence, requires limited sample preparation, and has a range of applications including the identification of explosives, paint, textile dyes, drugs, and bodily fluids.

Lednev concludes that more analysis is needed before CSI teams employ the method in a courtroom. One day, investigators might even be able to flip through a database of Raman spectra of different ammunitions to more quickly link that crime-scene residue to a specific kind of gun.

— Read more in Justin Bueno et al., "Raman Spectroscopic Analysis of Gunshot Residue Offering Great Potential for Caliber Differentiation," Analytical Chemistry 84, no. 10 (13 March 2012): 4334–39.

Homeland Security's new smartphone application for bomb threats

Source: http://www.dhs.gov/files/programs/st-smartphone-app-bomb-threats.shtm

At approximately 6:30 pm on Saturday, May 1,

2010, a smoking SUV in Times Square was reported by alert street vendors. Acting quickly, NYPD evacuated vast stretches on 7th and 8th Avenues, including Broadway theatres and several other buildings and hotels in the area. The entire area was barricaded. Times Square on a Saturday evening before the shows is teaming with people, and the terrorist knew that. The bomb failed, but had it detonated, it would have killed and wounded many, according to NYPD.

In the first chaotic moments after suspicion of a bomb threat, first responders have a myriad of questions, assessments, and decisions to make, all at once, and all the while the scene could be changing rapidly. Is the bomb real? How large is the potential blast radius? Where will we evacuate people? Are there any critical infrastructure or special-needs population centers in the vicinity? Any schools, hospitals nearby? What roads should be closed? Which roads should stay open for evacuees? And on and on....

What if they could get all this information in one place?

Now they can: The U.S. Department of Homeland Security's (DHS) Science and Technology Directorate (S&T) and its public and private sector partners have developed a must-have "app": the *First Responder Support Tools (FiRST)* for computers and smartphones.

The *FiRST* application was developed in partnership with the DHS National Protection and Programs Directorate's (NPPD) Office of Infrastructure Protection (IP) along with its Office for Bombing Prevention (OBP), and Applied Research Associates, Inc. (ARA). The *FiRST* app provides information directly to first responders on their smartphones or laptop computers in order to quickly define safe

distances to cordon-off around a potential bomb location, calculate rough damage and injury contours,

suggest appropriate roadblocks, determine when mandatory evacuation or shelter-in-place circumstances apply, and to identify nearby areas of particular concern: schools, hospitals, care centers. The application also provides the geospatial information regarding potential injury, glass, or structural damage impact area.
"That's why it works," said Christine Lee, FIRST program manager in S&T's First Responders Group. "Bomb threat scenarios do not reflect a one-size-fits-all approach, and this app allows users to customize information to help them make informed decisions for response."
The *FiRST* application also includes HAZMAT response information based on the Emergency Response Guidebook (ERG) which includes information on over 3,000 hazardous materials. In addition to providing health precautions and response guidance, *FiRST* also retrieves current and forecast weather to show downwind protection zones for over 600 materials that are inhalation hazards.
FiRST is available to first responders for a nominal fee (about $12 for mobile devices and $100 for Window PC version). The app will be of interest and applicable to anyone who might need to address a potential bomb or HAZMAT spill response, such as industry, HAZMAT transport, or security personnel. HAZMAT information is available to all users. Specifically defined DHS bomb standoff data is considered sensitive and is automatically made available to those that register the application with a .gov, .mil, or .us email address. Users without a .gov, .mil, or .us email address can be approved for access on a case-by-case basis in coordination with the Office of Bomb Protection. (However, any user can input into the app and define his *own* custom bomb and standoff distances, which might be applicable to certain jurisdictions and/or localities.)
The *FiRST* app uses services readily available with current smartphones: email, phone, Google Maps, Google Search, and weather and road network data. "We use existing hardware that responders are already familiar with because responders can't waste time navigating a complex interface during the chaos of an incident," said Carl Jerrett, ARA program manager. "No longer will they have to carry additional tools such as hard-copy blast standoff guidance cards, rulers, or maps." Sergeant Thomas Sharkey, the District of Columbia Metro Transit Police Bomb Squad Commander, said "Unlike other confusing software on desktop computers, this application is easy to purchase, easy to install, and even easier to use."
Once a first responder enters a general definition and location of the bomb or HAZMAT incident into the *FiRST* app, the results are instantaneous. They can run a roadblock analysis to identify which roads are best suited for closure in order to isolate a bomb threat within that specific region. Google Search features are available to identify and display locations where increased numbers of the public may be at potential risk. "*FiRST* allows responders to label a map with critical information, and this information not only helps first responders better understand an incident, but these maps can then be shared with other responders," said Jerrett. Users can quickly send results to colleagues via email, which includes a text summary, a map image, and GIS file attachments that are viewable in applications like Google Earth or WebEOC®.
The *FiRST* app is available for iPhones and iPads, Androids, and Windows personal computers. The application is available for purchase at a nominal fee on iTunes, the Google Play, and ARA's e-commerce website.
FiRST field evaluations were conducted last year by the Washington Metropolitan Area Transit Authority, bomb squad, police, EMT, firefighter, and hazmat units. United States Secret Service personnel observed the evaluations as well. After the application testing and evaluation phases were completed, Sharkey said, "This app is a *must-have* for bomb technicians and first responders."

Advanced IED detectors save lives

Source: http://www.homelandsecuritynewswire.com/dr20120706-advanced-ied-detectors-save-lives

The other day a joint Afghan National Army (ANA)-U.S. forces counter improvised explosive device (C-IED) team of seven soldiers walked down the dusty rural road in Shamulzai District, Afghanistan, ahead of their convoy;

scanning the route with their eyes for subtle clues that might help them visually identify an IED hidden on the road. When they see nothing, they make sure by sweeping the area

with their VMR-2 Minehound and VMC-1 Gizmo metal detectors in a slow precise manner before walking ahead.

"We walked a good four and a half (kilometers) in front of the whole convoy because we had just recently been hit with an IED on the route back (to Forward Operating Base Sweeney)," said Staff Sgt. Antonio Barajas, 3rd Platoon, 5th Battalion, 20th Infantry Regiment, Task Force 1st Squadron, 14th Cavalry Regiment, out of Joint Base Lewis-McChord, Washington.

"All seven of us had Gizmos and Minehounds (and were) out there clearing the whole road so the rest of the convoy could make it back to FOB Sweeney safely."

"The Gizmo is just an easy (to use) metal detector used to identify metal or you can switch it to minerals," explained Barajas when asked to describe the two devices used that day.

"It's a lot like the metal detectors you see men on the beach with, but on steroids," said one of his soldiers, Pfc. Niko Williams, also from 3rd Platoon, 5-20 Infantry, Task Force 1-14 Cavalry.

DVIDS reports that the use of such gadgetry has been a blessing to both ANA and International Security Assistance Forces in Afghanistan. For Barajas and his team, the MineHound's ground penetrating radar enabled them to discover a secondary IED earlier in the day, before the IED strike on their convoy. That IED was only a hundred meters forward of the one that hit them. Without the MineHound, Barajas' team might have missed that roadside bomb.

The Minehound and Gizmo metal detectors, by Vallon, are "the current state-of-the-art technology dual sensor detectors capable of detecting command wires, non-metallic and low-metallic signature IEDs using ground penetrating radar," according their product description online. "In addition to GPR, the Minehound uses Vallon's advanced metal detector sensor, which is the same sensor used in Vallon's VMC-1 Gizmo detector to find both metallic and non-metallic threats."

U.S. military vehicle destroyed by IED placed by Afghan militants // Source: khayma.com

Vallon claims to have more than 2,000 Minehound detectors currently in use in Afghanistan. They, along with the Gizmo, have become an invaluable item in finding IEDs and weapons caches before they can be used against ANA or ISAF forces.

DVIDS notes that the use of the Minehound and Gizmo detectors started with combat engineers and explosive ordnance disposal

personnel, but they are now issued to non-EOD units such as Battle Company 5-20 Infantry to aid in the

discovery of IEDs and weapons caches.
Since the onset of the Afghan War in 2001, homemade bombs have increasingly become the insurgent's weapon of choice here in Afghanistan and certainly their most effective weapon. Almost 60 percent of all coalition forces wounded or killed in Afghanistan since the start of the war in 2001 have been due to IEDs, according to a May 2011 report from the Joint Improvised Explosive Device Defeat Organization, a U.S. Department of Defense organization.

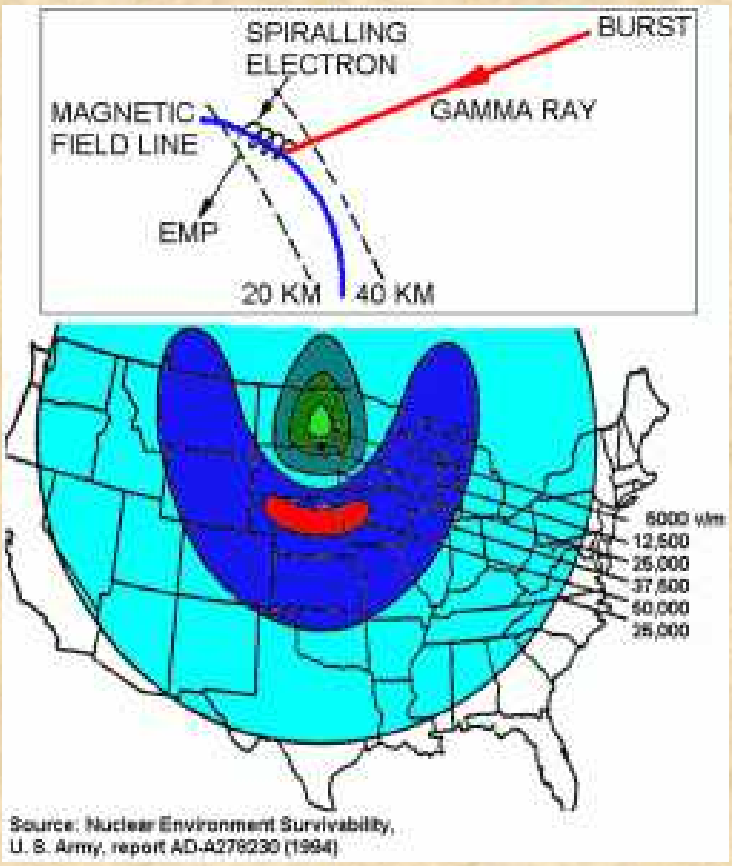
To complicate matters, insurgents in Afghanistan have been increasingly constructing IEDs to circumvent simple metal detectors. Some IEDs contain rudimentary materials such as wooden boards, foam rubber, and plastic containers. The finished product contains very little metal making it difficult for a traditional metal detector to pick up, but not for the Minehound with its ground penetrating radar.
Increasingly compact, collapsible, light-weight metal detectors, such as the MineHound and Gizmo, are finding IEDs with more frequency than ever before, all of which has reduced the number of injuries or deaths to Afghan civilians, ANA, and ISAF troops. In the hands of an infantry platoon, or similar-type unit, they are also being used to find weapons caches which often provide the insurgency with ample arms to fight for weeks or months.
"In the orchards (the Minehound and Gizmo are) good because that's where they often hide the caches," said Barajas. "So far we've found two caches with the Gizmo and Minehounds, and also with the ANA helping us out with their resources."
Improved technological devices such as the VMR-2 Minehound and VMC-1 Gizmo metal detectors are helping coalition troops across Afghanistan. "It helps a lot when we're in the orchards or going through the towns when we use the Gizmos and Minehounds because it also allows if something does get missed by sight it will pick it up," said Williams. "That's what makes the Gizmo and Mine Hound so important," said Williams. "It helps make sure people are not being taken out of the fight … (that) you're keeping them in," he said.

If One Storm Can Turn D.C. Dark For Several Days, What Would A Massive EMP Burst Do?

Source:http://world.hawaiinewsdaily.com/2012/07/if-one-storm-can-turn-d-c-dark-for-several-days-what-would-a-massive-emp-burst-do/

Sometimes we all get a little reminder of just how completely and totally dependent we are on the power grid. Massive thunderstorms that ripped through Ohio, West Virginia, Maryland, Washington D.C. and Virginia left millions without power over the weekend. At this point it is being projected that some people may not get power back until the end of the week. The "super derecho" storm that pounded the Washington D.C. area on Friday night with hurricane-force winds is being called unprecedented. But the

truth is that there are other events that could happen that would be far more damaging to our power grid. For example, a substantial EMP burst over a major U.S. city would fry virtually all of the electronics in the city and take the power grid in the area down indefinitely. A gigantic EMP burst over the entire country (caused by a massive solar storm or a very large nuclear explosion high in the atmosphere) could theoretically take down the entire national power grid. Just try to imagine a world where nobody has any electricity, nobody can pump gas, nobody can use their credit cards or get any more money, where most vehicles won't start, where nobody has the Internet, where all cell phones are dead and where nobody can heat or cool their homes. That is how serious an EMP burst could potentially be. We are talking about an event that could be millions of times worse than 9/11.



Source: Nuclear Environment Survivability, U.S. Army, report AD-A279230 (1994)

Hopefully this latest storm has reminded Americans about how vulnerable our power grid really is and about how close we really are to being knocked back to the late 1800s.

Let's review some of the damage that this "super derecho" storm caused to the D.C. area....

-Thousands of businesses have been forced to close temporarily because they cannot operate without electricity

-Many federal agencies were closed on Monday because there was no power

-Many 911 call centers throughout Northern Virginia were down over the weekend and could not respond to emergencies

-Without electricity, many families have not been able to cook warm meals

-Without warm water, many families have not been able to take hot showers

-A "boil water advisory" was put into effect for several areas of northern Virginia

-Many families that still do not have power are in danger of losing much of the food in their refrigerators and freezers

-Many gas stations were not able to operate because of a lack of electricity and so this has made filling up the gas tank a major hassle for many families

-Hundreds of traffic lights are still out and this is making commuting a major problem in some areas

-Without air conditioning many families are absolutely sweltering as high temperatures remain well above 90 degrees

-During the power outage some people have been without cell phone service because many cell phone towers were inoperable

-Without electricity, thousands upon thousands of people have not been able to use their computers for several days and this is causing a lot of frustration

-Several major websites were totally knocked offline by the storms as Robert McMillan of Wired Magazine explained....

Hurricane-like storms knocked an Amazon data center in Ashburn, Virginia, offline last night, and a chunk of the internet felt it. The six-hour incident temporarily cut off a number of popular internet services, including Netflix, Pinterest, Heroku, and Instagram.

But to be honest this was not a major disaster.

After a few days the damage will be fixed and people will start to forget what just happened.

Well, what if the damage was permanent and the entire nation had to go without electricity for the foreseeable future? The following is from a USA Today article by Dan Vergano....

The sky erupts. Cities darken, food spoils and homes fall silent. Civilization collapses.

End-of-the-world novel? A video game? Or could such a scenario loom in America's future?

There is talk of catastrophe ahead, depending on whom you believe, because of the threat of an electromagnetic pulse triggered by either a supersized solar storm or terrorist A-bomb, both capable of disabling the electric grid that powers modern life.

As I have written about previously, an EMP attack could fundamentally change life in America in a single instant.

What would you do if such a scenario happened?

Would you try to go somewhere? Even if the electronics in your car were not totally fried, you would not be able to pump more gas anywhere.

Would you try to call someone? Most phones would be totally dead and all normal communications networks would be down. So who would you call?

Would you bunker down and try to survive on what you have at home? Most of the food in your refrigerator and freezer would rapidly go bad and most Americans only have enough food to last a few days or a few weeks. In addition, most Americans would no longer be able to heat or cool their homes, so extreme cold and extreme heat would become huge problems very quickly.

How in the world would any of us survive in a world without electricity?

In past centuries our forefathers knew how to survive in such a world, but most of us do not have the same skills or resources that they had.

The following is how an article in the Wall Street Journal once described what a massive EMP burst would do to this nation....

No American would necessarily die in the initial attack, but what comes next is potentially catastrophic. The pulse would wipe out most electronics and telecommunications, including the power grid. Millions could die for want of modern medical care or even of starvation since farmers wouldn't be able to harvest crops and distributors wouldn't be able to get food to supermarkets. Commissioner Lowell Wood calls EMP attack a "giant continental time machine" that would move us back more than a century in technology to the late 1800s.

What would you do if you were suddenly cut off from all electricity, all money, all modern forms of communication, all modern forms of transportation and all modern forms of shopping?

Don't think that it can't happen.

Scientists tell us that massive EMP bursts generated by gigantic solar storms have hit our planet in the past and that it is inevitable that it will happen again.

In addition, nations all over the planet are aware of what an EMP burst can do and have been developing "Super-EMP" weapons that can take power grids down in a single strike.

The following is a short excerpt from a statement by Dr. Peter Vincent Pry to the United States Senate Subcommittee on Terrorism, Technology and Homeland Security on March 8th, 2005....

Russian and Chinese military scientists in open source writings describe the basic principles of nuclear weapons designed specifically to generate an enhanced-EMP effect, that they term "Super-EMP" weapons. "Super-EMP" weapons, according to these foreign open source writings, can destroy even the best protected U.S. military and civilian electronic systems.

That doesn't sound good.

But perhaps even more troubling is that North Korea has been reportedly developing this type of weapon. In fact, it has been reported that North Korea may have tested a "Super-EMP" weapon all the way back in 2009....

North Korea's last round of tests, conducted in May 2009, appear to have included a "super-EMP" weapon, capable of emitting enough gamma rays to disable the electric power grid across most of the lower 48 states

In time, these kinds of weapons will get into more and more hands.

Will someone try to use this kind of weapon at some point?

Frank Gaffney, the president of the Center for Security Policy, believes that a single EMP burst could potentially end up killing the vast majority of the population of the United States....

"Within a year of that attack, nine out of 10 Americans would be dead, because we can't support a population of the present size in

urban centers and the like without electricity"

Once you understand these kinds of threats, it makes it a lot easier to understand why preppers are so busy preparing for the future.

Our world is becoming incredibly unstable. Another major economic crisis could hit us at any time, war in the Middle East could erupt without warning, earthquakes and other natural disasters are becoming more frequent and society seems to get a little crazier with each passing day.

The era of tremendous peace and prosperity that we have all been enjoying is rapidly coming to an end. In a world filled with instability and chaos, it only seems prudent to take some precautions.

You might want to get prepared while you still have time.

Improving landmine detection – and air travel safety

Source: http://today.uconn.edu/blog/2012/05/improving-the-detection-of-landmines/

Each year as many as 25,000 people are maimed or killed by landmines around the world, including large numbers of civilians.

While landmines are inexpensive to produce — about $3-$30 each, depending on the model — finding and clearing them can cost as much as $1,000 per mine. It is a slow and deliberative process. Specially trained dogs are the gold standard, but they can be distracted by larger mine fields and eventually tire. Metal detectors are good, but they are often too sensitive, causing lengthy and expensive delays for the removal of an object that may turn out to be merely a buried tin can.

A University of Connecticut release reports that a UConn chemical engineering doctoral student hopes to help. Ying Wang, working in conjunction with her advisor, associate professor Yu Lei, has developed a prototype portable sensing system that can be used to detect hidden explosives like landmines accurately, efficiently, and at little cost.

The key to the sensing system is an advanced chemically treated film

which, when applied to the ground and viewed under ultraviolet light, can detect even the slightest traces of explosive chemical vapor. If there is no explosive, the film retains a bright fluorescent color. If a landmine or other explosive device is present, a dark circle identifying the threat forms within minutes.

One of the world's top private landmine clearing companies, located in South Sudan, is currently working with Lei and Wang in arranging a large-scale field test. The results of the field test could be of interest to the United Nations, which has worked to make war zones plagued by old landmines safer through its United Nations Mine Action Service. It is estimated that there are about 110 million active landmines lurking underground in sixty-four countries across the globe. The mines not only threaten people's lives, they can paralyze communities by limiting the use of land for farming and roads for trade.

"Our initial results have been very promising," says Wang, who receives her UConn Ph.D. on 5 May. "If the field test goes well, that is a real world application. I'm very excited about it."

Doing work that has real world applications and that will help improve people's lives is an important part of what drives Wang in her research. "When I started working with landmines, I was thrilled," says Wang, who received her bachelor's degree in chemical engineering from Xiamen University in China in 2004 and her master's degree in biochemical engineering from Xiamen University in 2007. "I knew this would be a really good application of our work. It can save lives."

Wang and Lei are currently working with UConn's Center for Science and Technology Commercialization (CSTC) in obtaining a U.S. patent for their explosive detection systems.

Besides the sensing method for explosives vapor, the pair has also developed a novel test for detecting TNT and other explosives in water. They recently presented their results at the 243rd National Meeting & Exposition of the American Chemical Society (ACS) in San Diego, California. That research is also the subject of a U.S. provisional patent.

The latter application can be used to detect potential groundwater contamination in areas where explosives were used in construction. It can also be used in airports to help thwart possible terrorist threats.

Most airlines currently limit passengers to about three ounces of liquids or gels when boarding a plane because of the potential threat of carry-on explosives. That may change if Wang and Lei's new sensing system is adopted. The pair have developed an ultrasensitive real-time sensor system that quickly detects both minute and large amounts of 2, 4, 6-trinitrotoluene or TNT. When searching for trace amounts of explosives, a paper test strip with the sensing chemicals on it can be dipped into liquid samples to test for small molecules of explosive. Wang and Lei's sensor can detect TNT concentrations ranging from about thirty-three parts per trillion (the equivalent of one drop in twenty Olympic-sized swimming pools) to 225 parts per million.

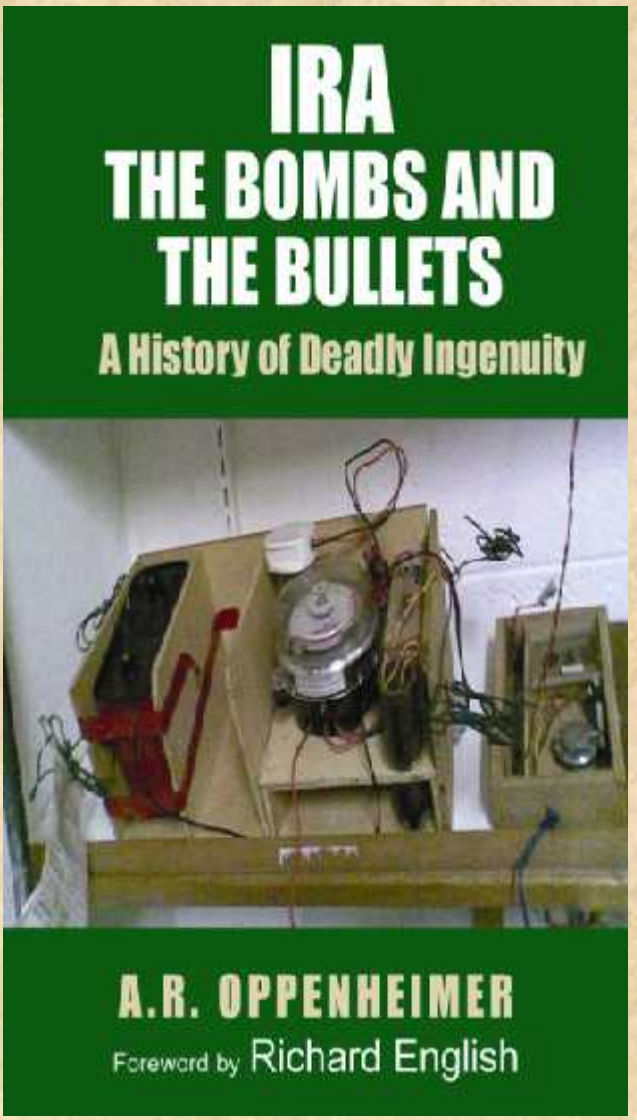
"Our new sensor based on a recently developed fluorescent polymer for explosives in aqueous samples has two sensing mechanisms in one sensing material, which is very unique," says Lei. "The sensor can easily be incorporated into a paper test strip similar to those used for pregnancy tests, which means it can be produced and used at a very low cost."

— Read more in Ying Wang et al., "Novel Signal-Amplifying Fluorescent Nanofibers for Naked-Eye-Based Ultrasensitive Detection of Buried Explosives and Explosive Vapors," Advanced Functional Materials (11 May 2012)

IRISH ACADEMIC PRESS

IRA: The Bombs and the Bullets
A History of Deadly Ingenuity
A R Oppenheimer
Foreword by **Richard English**

In this groundbreaking title, A R Oppenheimer tells how the Irish Republican Army became the most adept and experienced insurgency group the world has ever seen through their bombing expertise – and how, after generations of conflict, it all came to an end. The book is a comprehensive account of more than 150 years of Irish republican strategic, tactical, and operational details, and analysis of the IRA's mission, doctrine, targeting, and acquisition of weapons and explosives. As a leading expert on non-conventional weapons and explosives, Oppenheimer vividly presents the story behind the bombs – those who built and deployed them; those who had to deal with and dismantle them; and those who suffered or died from them. He analyses where, how, and why the IRA's 19,000 bombs were built, targeted and deployed and explores what the IRA was hoping to accomplish in its unrivalled campaign of violence and insurgency through covert acquisition, training, intelligence and counter-intelligence.



Beginning with the Fenian 'Dynamiters' in the second half of the 19th century, Oppenheimer fully describes and assesses the impact of the pre-1970s bombing campaigns in Northern Ireland and England and the evolution of strategies and tactics during the 'Troubles'. He concludes with the decommissioning of an arsenal big enough to arm several battalions – which included an entire home-crafted missile system, an unsurpassed range of improvised explosive devices (IEDs), and enough explosives to blow up several urban centres. The author scrutinises the level of deadly improvisation that became the hallmark of the Provisional IRA's expertise and ingenuity in its pioneering IED timing, delay and disguise technologies, and follows the arms race it carried on with the British Army and security services in a Long War of Mutual Assured Disruption. He also provides an insight into the bombing equipment and guns in the vast IRA inventory held at Irish Police HQ in Dublin.

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EOD Athletics

Source: http://www.navy.mil/view_single.asp?id=126178

Malaysia (June 16, 2012) Explosive Ordnance Disposal Technician 3rd Class Rendel Mews, assigned to Explosive Ordnance Disposal Mobile Unit (EODMU) 5, performs pull-ups while wearing an EOD

bomb suit during demolition materials, procedures and unexploded ordnance training. The event is part of Cooperation Afloat Readiness and Training (CARAT) 2012 Malaysia. CARAT is a series of bilateral military exercises between the U.S. Navy and the armed forces of Bangladesh, Brunei, Cambodia, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Timor Leste joins the exercise for the first time in 2012. (U.S. Navy photo by Mass Communication Specialist 3rd Class Gregory A. Harden II/Released)

Donkey bomb

Source: http://ibnlive.in.com/news/donkey-bomb-new-trick-by-afghan-militants-kills-cop/279338-2.html

A new tactic of using an innocent donkey as a bomb carrier in Afghanistan took everyone by surprise on Monday when a blast killed a police officer and injured three others in a western province.

The bombing took place in Charsadda district in Ghor province, 360 km from Kabul, Xinhua reported.

Militants planted a mine on a donkey and tied it near the gate of the district headquarters building. When the district police chief arrived at his office, the mine was exploded by remote control, killing the senior policeman on the spot, officials said.

The new tactic also killed the donkey. Three more policemen were injured in the blast.

Police blamed the attack on the Taliban, but the outfit did not make any comment.

Police said the trick exposed Taliban cruelty against both humans and animals.

Animal-borne bomb attacks

Source: http://en.wikipedia.org/wiki/Animal-borne_bomb_attacks

Animal-borne bomb attacks are the use of animals as delivery systems for explosives. The explosives are strapped to a pack animal such as a horse, mule or donkey and set off in a crowd.

Incidents

Afghanistan

In 2009, the Taliban strapped an improvised explosive device to a donkey. The gate guard noticed something suspicious when a group of men let the donkey go a short way from the camp and then hurried off. The donkey was stopped with a rifle shot. One soldier set fire to the hay with a flare provoking a "considerable explosion".

Iraq

On 21 November 2003, eight rockets were fired from donkey carts at the Iraqi oil ministry and two hotels in downtown Baghdad, injuring one man and causing some damage. In 2004 a donkey in Ramadi was loaded with explosives and set off towards a US-run checkpoint. It exploded before it was able to injure or kill anyone but itself. The incident, along with a number of similar incidents involving dogs, fueled fears of terrorist practices of using living animals as weapons, a change from an older practice of using the bodies of dead animals to hold explosives. The use of improvised explosive devices concealed in animal's carcasses was also a common practice among the Iraqi Insurgency.

Lebanon

Malia Sufangi, a young Lebanese woman, was caught in the Security Zone in November 1985 with an explosive device mounted on a donkey with which she had failed to carry out an attack. She claimed that she had been recruited and dispatched by Syrian Brigadier-General Ghazi Kanaan who supplied the explosives and instructions on how the attack was to be carried out from his headquarters in the town of Anjer in the Bekaa Valley.

United States

In 1862, during the New Mexico Campaign of the American Civil War a Confederate force approached the ford at Valverde, six miles north of Fort Craig, hoping to cut Union communications between the fort and their headquarters in Santa Fe. About midnight, Union Captain James Craydon tried to blow up a few rebel picket posts by sending mules loaded with barrels of fused gunpowder into the Confederate lines, but the faithful old army mules insisted on wandering back toward the Union camp before blowing to bits. Although the only casualties were two mules, the explosions stampeded a herd of Confederate beef cattle and horses into the Union's lines, so depriving the Confederate troops of some much-needed provisions and horses.

In the Wall Street bombing of 1920, one of the 1919 United States anarchist bombings, anarchists used a bomb carried by horse-drawn cart.

West Bank and Gaza Strip

- June 25, 1995 - At approximately 11 a.m., a Palestinian rode a booby-trapped donkey cart to an Israeli army base west of Khan Yunis in the Gaza Strip and detonated it. The Palestinian and the donkey were killed, but no soldiers were wounded. Hamas claimed responsibility for the attack. Three soldiers were treated for minor shock.
- June 17, 2001 - A Palestinian man rode a bomb-laden donkey cart up to an Israeli position in the southern Gaza Strip and set off a small explosion. Israeli soldiers destroyed the cart, and no soldiers were wounded. The Palestinian man was captured by the soldiers.
- January 26, 2003 - Palestinian fighters strapped a bomb to a donkey and then exploded it remotely on the road between Jerusalem and Gush Etzion. No humans were injured in the attack. PETA director Ingrid Newkirk wrote to PLO Chairman Yasser Arafat asking him to keep animals out of the conflict. PETA was criticized for not objecting to killing of humans in the context.
- June 8, 2009 - Palestinian gunmen approached the Karni crossing between the Gaza Strip and Israel with several trucks and at least five horses loaded with explosive devices and mines. The gunmen fired on IDF

troops who observed them, and at least four gunmen were killed in the ensuing battle. A previously unknown organization called "the army of Allah's supporters" claimed responsibility for the foiled attack. The IDF estimated that the gunmen had planned to kidnap an Israeli soldier.

- May 25, 2010 - A small Syrian-backed militant group in the Gaza Strip blew up a donkey cart laden with explosives close to the border with Israel. According to a spokesman for the group, more than 200 kilograms of dynamite were heaped on the animal-drawn cart. The explosives were detonated several dozen meters from the border fence with Israel. The animal was killed in the blast but no human injuries or damage was reported.

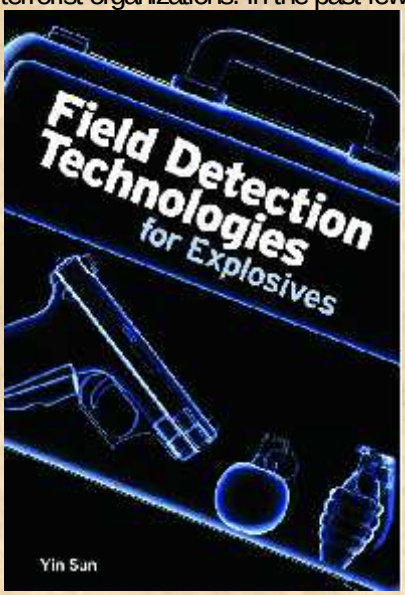
Military

During World War II the U.S. investigated the use of "bat bombs", or bats carrying small incendiary bombs. During the same war, Project Pigeon (later Project Orcon , for "organic control") was American behaviorist B. F. Skinner's attempt to develop a pigeon-guided missile. At the same time the Soviet Union developed the "anti-tank dog" for use against German tanks. Other attempts have included the attempt by Iran to develop *kamikaze dolphins*, intended to seek out and destroy submarines and enemy warships.

New book offers useful information about explosives

Source:http://www.ilmpublications.com/en-gb/Book/35921/Field_Detection_Technologies_for_Explosives.html

Explosives are historically the weapons that have been most frequently used against civilians by terrorist organizations. In the past few years, the use of explosives by terrorist groups has cost the lives of more people than the combination of all other attacks, including the use of weapons of mass destruction. Early detection of these substances is one of the most effective ways to prevent attacks using explosives from occurring.



Fast and reliable equipment to detect the presence of explosives and explosive devices is critical to fighting terrorism.

An ILMBookstore release reports that their new book, Field Detection Technologies for Explosives, covers the principles, instrumentation, and applications of current technologies used to detect explosives in the field. Both trace detection technologies and bulk detection technologies are discussed. The section on trace detection technologies includes chapters on ion mobility spectrometry, piezoelectric sensors, chemiluminescence-based detectors, polymer-based technologies, and mass spectrometry. It also discusses detection requirements, methodologies used for detector evaluation, and sampling technologies. The section on bulk detection contains chapters on X-ray, millimeter wave imaging, neutron and nuclear quadrupole resonance technologies.

The volume introduces the basic concepts of commonly used explosives detection technologies and is a resource for novice or more experienced personnel working in the explosives detection field as well as those with a general interest in this important subject.

The publisher notes that the book:

- Discusses all aspects of commonly used field detection technologies.
- Reviews detection requirements and explosives sampling methods.
- Describes specific instruments used for field detection applications, such as at airports, harbors, and border crossings.
- Includes a summary of common explosives and their important properties for easy reference.

- Provides an introduction to data fusion and receiver operating characteristic methods, both of which have recently received significant attention in the field of explosives detection.

Dr Yin Sun *was born in XuZhou, JiangSu, China. He studied for his BS degree at NanJing University, his MS degree at ChengDu University of Technology and his PhD at the University of Connecticut. Dr Sun has worked in the fields of analytical chemistry, environmental chemistry, and analytical instrumentation for more than 20 years. During the past 10 years, his main research has focused on the research and development of anti-terrorism detection technologies. He has significant knowledge and experience of the detection technologies for chemical warfare, explosives and toxic industrial compounds. He has tested and evaluated many different field explosives and chemical warfare detectors.*

IEDs: the home-made bombs that changed modern war

Source: http://www.iiss.org/publications/strategic-comments/past-issues/volume-18-2012/august/ieds-the-home-made-bombs-that-changed-modern-war/

Cheap, simple to use and effective, improvised explosive devices (IEDs) have been the weapon of choice for insurgents in Iraq and Afghanistan – and their use is increasingly reported in the civil war in Syria.

Sometimes called 'the artillery of the twenty-first century', these home-made bombs have been responsible for the majority (nearly 70%) of foreign military casualties in Iraq and Afghanistan, in the same way that most battlefield casualties in the twentieth century were inflicted by artillery.

Tens of billions of dollars have been spent in trying to neutralise the major threat IEDs pose. Yet, they remain likely to create further problems in future. For less than $30 in raw materials each, roadside bombs and other IEDs can wreak disproportionate damage and disruption. They can be strategic, not just tactical, weapons, by sowing fear, lowering troop morale, limiting freedom of movement and undermining public support for combat operations.

'No other widely available terror weapon has more potential for mass media attention and strategic influence,' says the Joint IED Defeat Organisation (JIEDDO), a dedicated Pentagon agency established in 2006.

As the operation in Afghanistan winds down, the US and its allies may find it a challenge to retain hard-won expertise in countering IEDs.

However, IEDs' role in civilian deaths and increasing use off the battlefield means counter-IED measures will remain vital. In the past decade, insurgents have used a weapon once overlooked by many military planners to blunt advanced armies' superior firepower and technological advantage; in the process the IED has fundamentally changed contemporary conflict.

Response in Iraq

Following the US-led invasion of Iraq in 2003 large amounts of ammunition abandoned by the disbanded Iraqi Army – and not secured by over-stretched coalition troops – made it easy for insurgents to manufacture IEDs. Their capabilities improved rapidly and by August 2003 US casualties from IEDs overtook those from small arms and rocket-propelled grenades. By the end of the year, IEDs were producing two-thirds of US fatalities.

As casualties grew, UK forces in southern Iraq applied the tactical approaches that they had used to counter IEDs during the long conflict in Northern Ireland. This was generally successful, even though some intelligence skills and capabilities that had been used with great effect against IRA bombers had been allowed to atrophy and had to be relearned. The British Army was slow to recognise the vulnerability of its lightly armoured 'Snatch' Land Rovers in Iraq, with resulting British casualties undermining popular support for the war.

The United States did not have the benefit of this experience, but the problem was quickly recognised. In December 2003 General John Abizaid, the CENTCOM commander, asked Defense Secretary Donald Rumsfeld to commission a major response to the threat. The initial Pentagon response had been both ad-hoc and insufficiently resourced. But by 2006, a 12-strong Joint IED Defeat Task Force with a budget of $20 million had evolved into JIEDDO. That organisation has since acquired several thousand dedicated government, military and contract personnel – and spent more than $18bn.

Countering the new threats not only required an array of armoured vehicles, high-tech surveillance kit, electronic jammers and remote-controlled robots; it also required close cooperation between intelligence and operations staff, scientists and industry, placing great demands on the flexibility and agility of military procurement bodies and defence ministries of all the coalition nations.

A major part of the early US response was increasing physical protection. Improved personal body armour was provided, though its weight reduced the agility and endurance of infantry. Increased protection was added to existing Abrams tanks, Bradley fighting vehicles and Stryker armoured personnel carriers. But support and logistics troops had few armoured vehicles. In the first two years of the war they struggled, with troops resorting to desperate expedients, such as adding makeshift 'hillbilly' armour, made from scrap metal, to soft-skinned vehicles. Although many armoured high mobility multipurpose wheeled vehicles (HMMWVs) were fielded in 2004–05, they were in turn quickly overmatched by insurgent IEDs and it was not until November 2006 that the requirement was identified for the more heavily armoured mine-resistant protected armoured vehicle (MRAP).

This programme benefited from the energetic involvement of new Defense Secretary Robert Gates and US forces in Iraq and Afghanistan received 15,000 MRAPs by 2010. By the time of the security transition in Afghanistan at the end of 2014, US forces will have procured about 28,000 MRAPs and similar vehicles, some of which will have been gifted to US allies. This is estimated to cost $47bn.

But despite the application of sophisticated intelligence, scientific, industrial and military resources to the problem, the battle to defeat IEDs remained one of cat and mouse between military and insurgents. The many ways of configuring bombs and the complex, cutting-edge technologies required to counter them meant that it could often take six to 12 months between emergence of a new type of IED and the fielding of a sufficient technical countermeasure by trained troops.

Shifting 'left of boom'

Eventually in Iraq, the military began – as Washington Post reporter Rick Atkinson has described it – widening the focus from 'right of boom' (ie. mitigating the blast with better armour and medical care) to 'left of boom' (preventing insurgent networks from building and laying IEDs). A counter-IED approach, developed by UK and US forces but adopted by all coalition

troops, was applied across Iraq, and later in Afghanistan. This had three planks: 'defeat the device', 'attack the network' and 'train the force'. All three needed to be integrated by rapid information exchange across forces, so that counter-IED action could quickly be initiated.

· **Defeat the device:** Great effort was put into detecting devices. Methods included hand-held detectors, sniffer dogs and sophisticated searching techniques and equipment. There was intense technological and tactical struggle between insurgent bombers and coalition troops, scientists and engineers. In Iraq many roadside bombs were remotely detonated by electrical signals passed over specially laid wires. Other devices were triggered over a radio link, which could be detected and then jammed electronically. So electronic jammers were fitted to vehicles and carried by troops on the ground.

These measures were complemented by attempts to disrupt the laying of IEDs, principally by patrols. Other tactics included rigorous controls over road movement. These had some effect, but unless there were sufficient troops on the ground to continuously dominate an area and prevent emplacement of IEDs, the initiative remained with the insurgents. This presence was not achieved in Iraq until the peak of the US surge in 2007. Moving troops and supplies by air partially circumvented the threat, although some helicopters and transport aircraft struck IEDs placed on field landing sites. Many countries bought more helicopters and isolated units were supplied by parachute, but not even the US had enough helicopters to move large numbers of troops and high quantities of supplies by air. So previously soft-skinned trucks also had armour and jammers added.

Considerable effort was also devoted to neutralising devices that were detected before detonation. Although they could often be simply destroyed with explosives, recovering them instead for forensic analysis improved intelligence. Effort was also put into developing the specialist equipment used by explosive ordnance disposal (EOD) experts.

Attack the network: 'Most of the press we get is what we are doing about the devices', said JIEDDO commander Lieutenant General Michael Barbero, speaking at the IISS in London this year, 'but really the decisive effort is attacking the network and going after the network, because otherwise you're playing what we call 'whack-a-mole', playing defence.'

In Iraq, many extra intelligence resources were deployed to identify insurgents involved in IED construction and supply, as well as those planning bomb attacks and planting and operating the devices.

Airborne surveillance, particularly long endurance unmanned aerial vehicles (UAVs), proved particularly useful in identifying insurgent teams planting devices, which could then be attacked, or in following those suspected of making or moving bombs. Although precision weapons were often used to attack insurgent networks, coalition forces preferred to detain insurgents and seize bomb-making material and other evidence for forensic and technical analysis and the development of further intelligence. Such operations were often, but not exclusively, conducted by special forces. From 2008 onwards the US fielding of biometric technology across Iraq greatly improved their ability to link bomb components to bomb makers.

· **Train the force:** No less important was training and preparing troops before they arrived in theatre. Ideally, troops were able to train with the specialist counter IED equipment they would employ on the battlefield. However, there was often insufficient equipment for pre-operational training, and troops had to learn on the job. In the case of British forces in Iraq, casualties tended to be suffered during the first weeks of tours of duty as troops learned on operations, though adequate equipment was later provided for pre-deployment training.

Intense effort in Afghanistan

The signature weapon in Iraq was the powerful explosively formed penetrator; the typical IED in Afghanistan has been a home-made fertiliser bomb with a so-called 'victim-operated' pressure plate. But despite their less sophisticated nature, IEDs have been laid even more widely in Afghanistan, with their use increasing dramatically in recent years. In 2009 9,304 IED explosions were recorded, but this rose to 15,225 in 2010 and 16,554 in 2011.

Countering IEDs is a key activity for all troops deployed as part of the NATO-led International Security Assistance Force (ISAF). All infantry

units are supplied with hand-held metal detectors. In the southern provinces of Helmand and Kandahar the density of IEDs has approached that of minefields previously laid in state-on-state warfare. At the height of Operation Moshtarak in 2010, US and British forces used heavy-armoured engineer tanks to clear routes through dense belts of IEDs by firing rocket-propelled explosive hoses that destroyed or damaged the devices.

US and UK forces have formed specialist units to clear routes at high risk from roadside bombs. The British 'Talisman' capability is a specially equipped team of armoured vehicles and expert personnel with powerful surveillance systems, small unmanned aerial vehicles, ground robots and a specially designed armoured vehicle, the Buffalo, with a long remotely operated arm. The US has similar 'route-opening detachments'. Both teams also include high mobility armoured excavators to repair damage caused by IED blasts.

Techniques used to attack IED networks in Iraq have also been refined. Dedicated surveillance systems have been fielded, including specially modified surveillance aircraft. However, NATO pays an operational price for the measures taken to protect soldiers: they have to carry very heavy weights – body armour, jamming equipment and mine detectors – and their mobility is correspondingly reduced. In addition, the large numbers and types of protected vehicles create logistical challenges and reduce operational flexibility. In addition, the need for protection limits the opportunities that NATO soldiers have to interact with the Afghan people. Increased protection has therefore saved lives, but has reduced the effectiveness of NATO forces.

Beyond Afghanistan

If IEDs are the artillery of the twenty-first century, Western militaries have discovered that twenty-first-century technology can help in the battle, but does not offer a definitive solution. With UAV-borne sensors to detect wires in IEDs, JIEDDO claims that the number of bombs found before they explode has increased to 64%, after stubbornly hovering around 50% for years. However, experts repeatedly say that the best tools remain sniffer dogs with handlers, a well-trained soldier's eye and local informants. Using such tools, teams on foot patrol have an average 80% detection rate.

While counter-measures mean that fewer troops are now killed or injured by roadside bombs, IEDs remain the single largest source of civilian deaths. In 2011, according to United Nations figures, 'anti-personnel landmine-like IEDs' killed nearly 1,000 civilians, almost one-third of all civilian fatalities. Most of these deaths were caused by civilians accidentally triggering devices that the insurgents had planted to attack NATO troops.

JIEDDO's Lt-Gen Barbero admits there is no silver bullet for combating the IED threat. 'We are not going to be able to armour our way out of this, with better protected, heavier vehicles,' he says. He argues that the threat is an 'enduring and global' one, which will require a 'whole-of-government' response, as part of wider counter-insurgency efforts.

In 2011, almost 600 IED incidents per month occurred outside of Iraq and Afghanistan, particularly in Mexico, Somalia, Nigeria, Thailand, Iran, India and Pakistan. Anti-government forces have made increasing use of them in Syria in roadside bombs and suicide car bombs, and in assassination attempts. The Syrian government claimed that there were over 700 IED incidents in May 2012 alone. By August 2012, it was clear that Syrian rebels were successfully destroying Syrian government tanks and armoured vehicles with IEDs.

To counter this widening threat, greater national and international co-operation will be required among intelligence agencies, police and security forces, scientists and the defence and security industries. However, funding for such efforts could be under pressure as NATO combat troops are withdrawn from Afghanistan. In addition, at least 30 armies now have stocks of MRAPs and other protected vehicles, which are useful in countering IED but of limited utility otherwise because of a lack of off-road mobility. Keeping inventories will be expensive, but some armies may well retain a pool of such vehicles in anticipation of future counter-insurgency operations.

Countering IEDs will remain a core requirement for land forces. Any force – whether state or irregular – seeking to combat Western forces will have observed the advantages that IED have given to insurgents in Iraq and

Afghanistan. As IED are often similar in capability and employment to conventional land mines, armies may merge counter-IED efforts with broader counter-mine capabilities. It will be important for them to institutionalise approaches to countering IEDs, keeping knowledge and expertise current even in the absence of major operations.

Al Shabaab 'promised kidnapped kids paradise to become suicide bombers'

Source:http://www.hiiraan.com/news4/2012/aug/25498/al_shabaab_promised_kidnapped_kids_paradise_to_become_suicide_bombers.aspx

Al-Qaeda inspired Somali terrorist group Al Shabaab kidnapped young children in the troubled country and brainwashed them to become suicide bombers to launch future attacks on the West, it has emerged.

'Terrorist school': A Somali boy sits with his legs chained at a religious school in Waxar Ade district, north of capital Mogadishu

Punishment: The school claimed the boys' legs were chained as punishment for skipping school

The group was running 'terrorist schools' to keep the children, some as young as seven, chained on to beds while they were taught an extreme version of Islam.

The kids, all under 10-years-old, were taught about suicide bombings and told they would go to paradise if they killed themselves in 'martyrdom-operations,' the Daily Mail reports.

According to the paper, terror investigator Neil Doyle revealed the pictures of the locked-up children after authorities carried out a raid on a school in Mogadishu.

The raid was one of a number of operations sanctioned by the government in recent months and led to the arrest of 200 people.

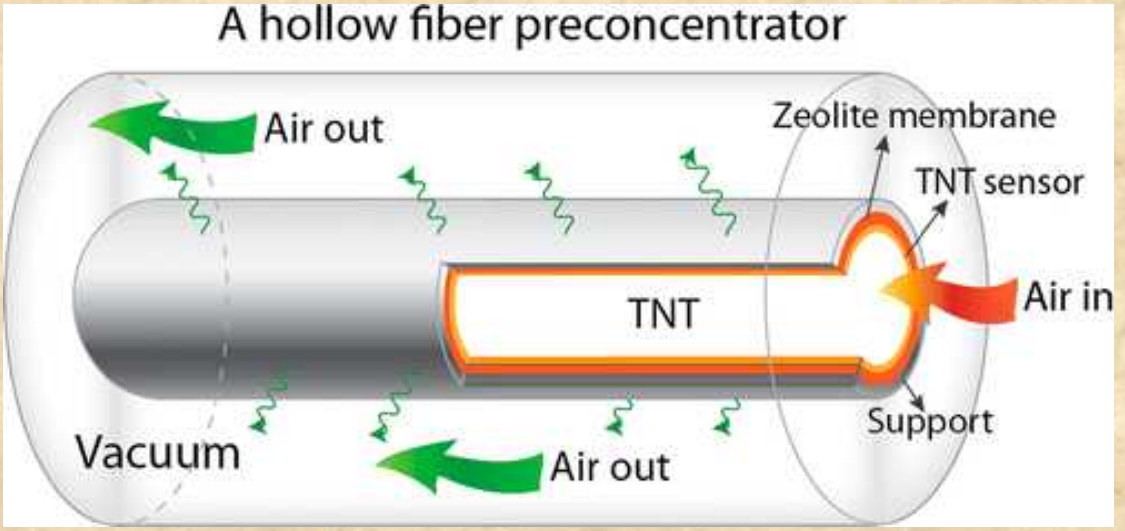
The paper quoted a teacher, as saying that the children were in chains because they missed classes.

The latest revelation comes just days after Al Shabaab claimed responsibility for a remote-controlled bomb that killed at least eight Somali government troops when it hit their vehicle in Mogadishu.

Advanced explosives detector sniffs out previously undetectable amounts of TNT

Source: http://www.homelandsecuritynewswire.com/dr20120813-advanced-explosives-detector-sniffs-out-previously-undetectable-amounts-of-tnt

With the best explosive detectors often unable to sniff out the tiny amounts of TNT released from terrorist bombs at airports and other public places, scientists are reporting a potential solution. Their research in the American Chemical Society's (ACS) journal *Analytical Chemistry* describes development of a device that concentrates TNT vapors in the air so that they become more detectable.



An ACS release reports that Yushan Yan and colleagues point out that TNT and other conventional explosives are the mainstays of terrorist bombs and the anti-personnel mines that kill or injure more than 15,000 people annually in war-torn countries. In large, open-air environments, such as airports, train stations, and minefields, concentrations of these explosives can be vanishingly small — a few parts of TNT, for instance, per trillion parts of air. That can make it impossible for conventional bomb and mine detectors to detect the explosives and save lives.

They describe development of a preconcentrator that increases the levels of TNT and related explosives by 1,000 times in less than one minute. The scientists made a "molecular sieve" membrane on the surface of holes about as big as a speck of dust. Molecules of explosives get trapped in these holes and concentrated enough that security agents could detect previously undetectable levels of explosives.

— Read more in Jie Zhao et al., "Highly Selective Zeolite Membranes as Explosive Preconcentrators," Analytical Chemistry 84, no. 15 (18 July 2012): 6303–07

ABSTRACT

Highly selective thin zeolite MFI membranes are synthesized on porous stainless steel and α-alumina supports using a seeded growth method. An ultraviolet (UV) light treatment is employed as a low temperature alternative to remove the organic structure-directing agent (SDA) to avoid membrane cracking. The feasibility of the use of the MFI membranes as an explosive preconcentrator is examined by measuring the permeation of nitrogen (N_2, an air surrogate) and 1,3,5-trimethylbenzene (TMB) (a 2,4,6-trinitrotoluene (TNT) surrogate) in a mixture of N_2 and TMB. High N_2/TMB selectivity (>10 000) and reasonable N_2 flux (13.5 mmol/m^2·s) are observed. On the basis of the flux, a hollow fiber array based preconcentrator is proposed and estimated to provide 1000× concentration within about 1 min using a hollow fiber with a 50 μm internal radius. This high performance explosive preconcentrator may open a new venue for the detection of subppb or lower level of explosives simply in conjunction with conventional explosives detectors.

U.S. soldiers wired to record blast effects

Source: http://www.gizmag.com/i-bess-army-blast-data/23499/

Improvised Explosive Devices (IEDs) have been a major hazard for Coalition and NATO forces in Afghanistan for over the past decade. The toll that they've taken in lives and equipment has been terrible, but the U.S. Army hopes to alleviate some of this with new vehicle and body blast sensors shipping to Afghanistan in August 2012. These sensors, built jointly with Georgia Tech Research Institute and the Army's Rapid Equipping Force are part of wireless information network designed to aid doctors and engineers by collecting blast and pressure data from the vehicles and soldiers themselves.

IEDs are a major problem for the military because even though they are very widely used and a lot is known about the sort of damage they can do, there's not much consistent data on how blasts affect a particular individual in a particular situation. Part of the reason for this is that the only time and place to get that data is when an IED actually goes off in the field.

That's the idea behind the new sensors being deployed in Afghanistan. They're part of the Integrated Blast Effect Sensor Suite (I-BESS). This is a system of smart, wireless sensors installed in a combat vehicle's body along with four worn on each soldier's torso (two front, two back) called the Soldier Body Unit and one in the helmet called HEADs II. These sensors detect pressure and acceleration, but they're not simply measuring instruments. Each of these are "smart" devices that talk to one another and respond depending on the situation.

For example, if a group of soldiers is traveling in a vehicle and it runs over a bomb, the sensors in the vehicle will record the blast data and store it in a black box recorder for later download and analysis. So far so good, but the vehicle is also aware of the sensors the soldiers are carrying and downloads their data through their seats. If the soldiers leave the vehicle, their sensor packs "wake up" and will record data in the event of a blast. When the soldiers return to the vehicle, the data is downloaded when they sit down and the sensors go back to sleep.

A Stryker lies on its side following a buried IED blast in Iraq in 2007

The goal of the I-BESS system is not just that it can collect data, but that it doesn't interfere with combat operations, is easy for soldiers to understand, can be easily installed in all existing vehicles and is

upgradable. In addition, the system components have to be robust and rely on government-owned, standard software and interfaces.
One thousand Soldier Body Units are scheduled to be deployed along with sensors for forty two combat vehicles. The Army hopes that the data collected will lead to more effective countermeasures and medical treatment. This data may be of importance even outside of the combat zone because vehicle accidents, such as rollovers, involve similar force.

► **See the video:** http://www.youtube.com/watch?feature=player_embedded&v=ZsPHMS4PSYI

Homeland Security releases an app for bomb threat response

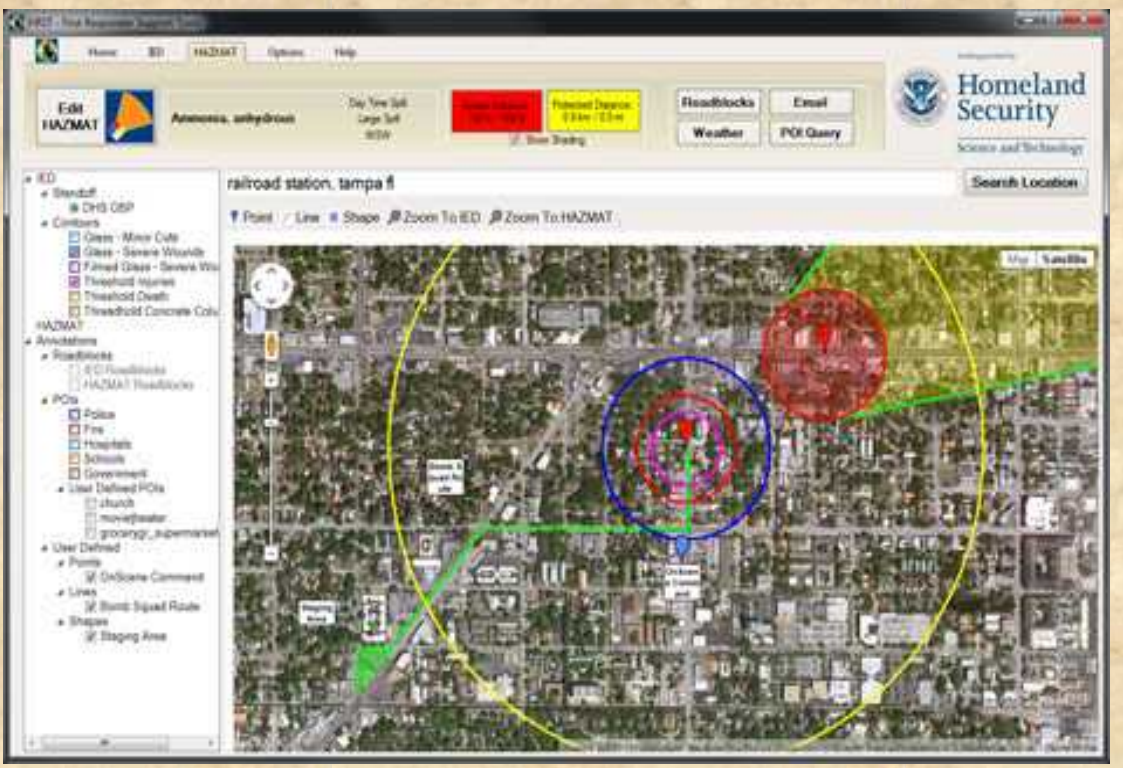
Source: http://www.gizmag.com/homeland-security-first-bomb-threat-app/23091/

Imagine if you were a police officer who suddenly realized that the abandoned vehicle you were assessing contained a bomb. While you might have had some training in how to handle such situations, would it all easily come back to you in the heat of the moment? Well, even if it wouldn't, you might still know what to do ... if you were using the FiRST app.

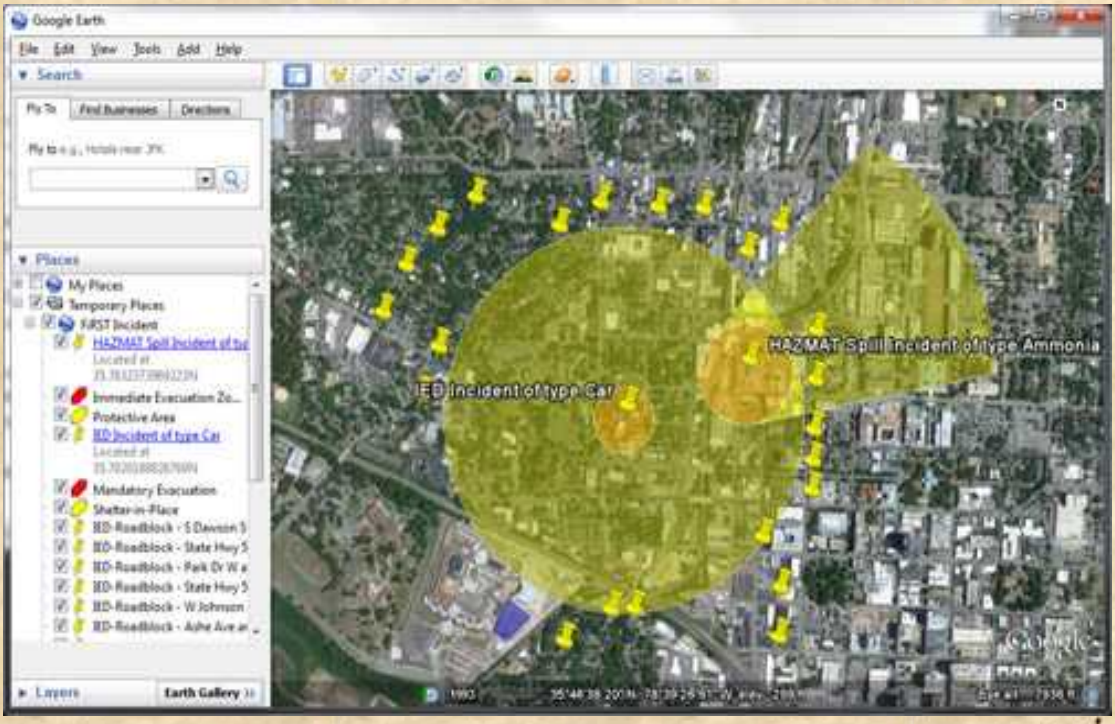
The U.S. Department of Homeland Security developed the application for emergency response personnel, to serve as a step-by-step guide for managing bomb threats.
FiRST (First Responder Support Tools) utilizes tools that first responders will already be familiar with, such as Google Maps, Google Search, email, phone, plus road and weather data – this saves users from having to learn new systems while under pressure.
Users start by entering what they know about the (possible) bomb, including its geographical location. The app will then advise them on factors such as the distance around the bomb that should be cordoned off, the best locations for road blocks, what buildings should be evacuated or serve as shelter sites, and what some of the local "areas of concern" are – places such as schools, for instance, or other areas where large numbers of people are at risk. It will also estimate what to expect in the way of structural damage and injuries, should the bomb go off.
Because no two bomb threat scenarios are identical, there are many opportunities for users to provide information on their own unique situation, so the output of the app will

be custom-tailored to them. Maps of the area can then be labelled by the

user, and shared by email with other personnel.
The app can also be used in the event of toxic substance spills, as it includes information on the handling of over 3,000 hazardous materials. Using its weather feature, users can additionally determine the likely route that airborne substances will be carried by prevailing winds, and then warn or evacuate people accordingly.



FiRST works on iOS and Android devices, along with PCs. It is available to first responders only, at a price of US$12 for the mobile version, or $100 for the desktop.

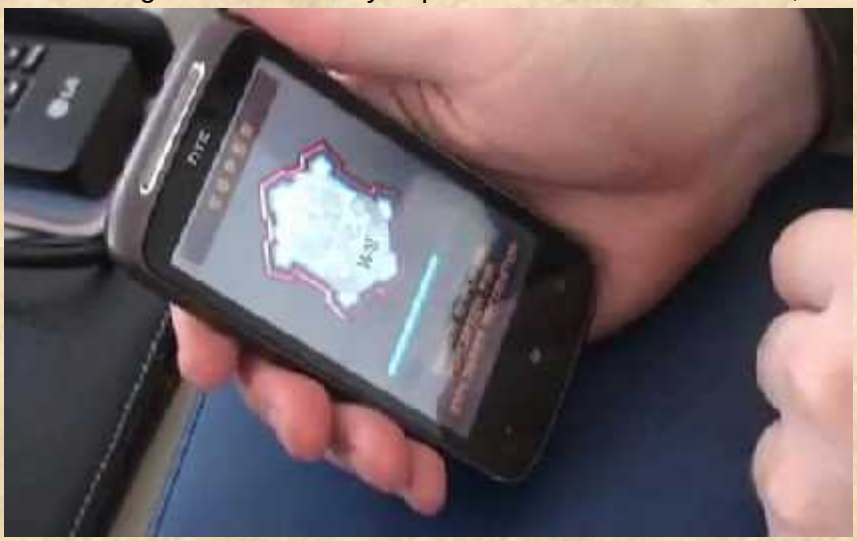


SAPER app turns a smartphone into a mobile bomb sniffer

Source: http://www.gizmag.com/saper-explosives-detector-app/22614/

With unexploded ordnance and land mines remaining a serious global problem, we've seen many efforts to develop new technology to detect these dangers, such as using terahertz waves and inkjet-printable sensors. But instead of relying on the development of new technology, some students at the Military University of Technology in Warsaw have sought to use an existing one in a new way with the development of their SAPER explosives detection app for smartphones.

"Saper" is the Polish term for "minesweeper" and, at the same time, an acronym for "Sensor Amplified Perception For Explosives Recognition." The aptly named application uses the magnetometer - normally responsible for your phone's compass-like functionality - to detect minute disturbances in the magnetic field around an explosive material. Forty different kinds of explosive materials can be sniffed out from 30 cm (11.8 inches) away.



Before the suspected area can be inspected, the application, which has been successfully field tested, needs a short while to calibrate to the environment. Once that's done, all you need to do is wave the phone in the air as if painting a grid measuring a maximum of 30 cm by 30 cm, no further than 30 cm away from the potential threat source (the distance can be increased with an outstretched arm - or with a stick, for that matter).

The app connects to a cloud-based server and compares the recorded magnetic disturbance signature with other signatures in the database. If a threat is detected, the app returns a warning message and identifies the likelihood of there being a certain type of explosive material in the sampled area. GPS connectivity is used to pinpoint the site and to immediately alert the authorities. The threat alert message can also be automatically pushed to social networks.

"We do not intend for SAPER to replace mine detection devices, but only to provide additional help when none are available", says Mariusz Chmielewski, the mentor of the student team behind the app.

A Polish entry to Microsoft's Imagine Cup competition, the application has been developed exclusively for the Windows Phone operating system, but it is to be made available on other platforms shortly. Other planned developments include an external wireless magnetometer that will allow for the remote detection distance to be increased to one meter (3.28 feet).

The team also plans to explore the possibilities of using the magnetometer to track other kinds of magnetic field disturbances, with potential uses including the detection of wires within a wall and pinpointing foreign objects in the human body. Meanwhile, see the Imagine Cup entry video below for more details about the current version of SAPER.

► **See the video:** http://www.youtube.com/watch?feature=player_embedded&v=ybqQkMgRCpI

New inflatable tourniquet designed to reduce battlefield deaths

Source: http://www.gizmag.com/abdominal-aortic-tourniquet/21094/

Insurgents are commonly taught to aim just below a soldier's body armor, which is where the abdominal area meets the legs. When a bullet hits this area it causes massive internal bleeding which often proves fatal in a matter of minutes. Two physicians specializing in emergency medicine have now developed a tool designed to treat rapid lethal war injuries. The device, which is known as the abdominal aortic tourniquet effectively slows bleeding and gives much needed time to stop the flow of blood which could save a soldier's life.

"There is no way to put a tourniquet around it, so soldiers are getting shot in this area and dying within several minutes," said Dr. Richard Schwartz, Chairman of the Department of Emergency Medicine in the Medical College of Georgia at Georgia Health Sciences University. Compressing the injury proves difficult due to the inability to compress the aorta from behind. The aorta runs parallel to the spine, so it can't be approached from the back and the injury is often several inches inside the abdomen of even the thinnest soldiers, which makes a traditional tourniquet all but useless.

Dr. Richard Schwartz and Dr. John Croushorn, both having served in the military, developed the inflatable abdominal aortic tourniquet for use in combat situations after witnessing first-hand what kind of damage a well-placed bullet could do.

Before now, no instrument existed to combat this injury, so soldiers were often forced to compress the injury by pressing a knee into the mid-abdominal area to slow bleeding. This often did as much harm as good, as it slowed bleeding, but blocked the passage of blood to the legs.

The wedge-shaped device is designed to be wrapped around the abdomen and inflated via hand pump. Once inflated, the tourniquet slows blood flow by compressing the damaged blood vessels, giving the medical crew much-needed time to stop the bleeding.

"By effectively cross-clamping the aorta with the abdominal aortic tourniquet, you are essentially turning the faucet off," said Dr. John Croushorn, Chairman of the Department of Emergency Medicine at Trinity Medical Center in

Birmingham, Alabama. "You are stopping the loss of blood from the broken and damaged blood vessels. You are buying the patient an additional hour of survival time based on blood loss."

Schwartz and Croushorn first tested the prototype device, which was funded by the U.S. Department of Defense, on pigs by inflating it to the point in which there was no blood flow from the aorta to the femoral arteries. Once blood flow was adequately restricted, they left the pigs constricted for an hour and documented the results. After an hour, they saw no potentially deadly increase in potassium levels in the blood and the tissue in the leg remained healthy. The next trial was on humans, albeit for a shorter duration, which yielded the same results.

The Food and Drug Administration (FDA) has given premarket clearance for the abdominal aortic tourniquet and Schwartz and Croushorn have a manufacturer lined up. Currently they are receiving orders from the U.S. Military as well as law enforcement agencies worldwide.

Physicians are also interested in the product for its potential in helping CPR recipients. When giving CPR, the chest compression is designed to push blood away from the internal organs and into the extremities. This device may prove to be a more effective tool in achieving this goal.

"With this device, you could, in theory, double the blood flow to the kidneys, heart and brain," Schwartz said. Schwartz also believes the device could help focus drugs given during CPR to the location in which they are needed.

"Now when a medic pushes a cardiac drug during cardiac arrest, the drug is circulated through the toes before it reaches steady state concentrations in the heart," Croushorn said.

Toy planes and miniature bombs: How al-Qaeda plots terror

Source: http://english.alarabiya.net/articles/2012/08/14/232236.html

Lethal 'play time': A remote controlled model of the U.S. Navy's 1950s Sabre jet fighter that allegedly belonged to a man inspired by al-Qaeda ideology. (Photo courtesy of CNN)

Picture this: Members of a terrorist cell meet to plot attacks. Shrouded in secrecy, they scheme to wreak chaos and protect themselves from enemy advances.

We assume the fighters huddle together in a rural area, drawing vast plans using complex bomb technology in underground laboratories.

But it's more simple than that.

A video reportedly shot by al-Qaeda this week shows how members of the group used "dumbed down" mock ups for attacks. A toy plane depicts a drone. A miniature package depicts a real bomb.

The grainy video, believed to be shot in southern Spain and recovered and released by Spanish security services, shows al-Qaeda members training for an attack that would use a model plane and explosives.

A colorful remote-controlled plastic plane, which is about three meters long, is seen taking off and dropping two small objects from either wing. The objects fall to the ground and a man enters the frame to retrieve them.

CNN reported that Spanish officials believe this video was "made not by an enthusiastic hobbyist, but by a committed terrorist trying to convert a toy plane into a potentially deadly bomber."

"Terrorists innovate and adapt to security measures. We have to always keep this in mind," Spanish terrorism analyst Fernando Reinares

told the news channel, stirring concern that a toy plane carrying out terror attack may not be far-fetched.

Security officials are well aware pilotless drones could deliver a fatal attack -- model planes have been used before in terrorist plans.

In July, Rezwan Ferdaus, a Muslim-American Massachusetts resident, admitted that he plotted to use remote-controlled model planes packed with explosives to blow up the Pentagon and U.S. Capitol. The plot would also involve using improvised explosive devices detonated by modified cellphones.

In the plan, a small model of the F-86 Sabre, a fighter jet used in the Korean War, was among the those to be packed with C-4 explosives , court documents stated.

According to media reports, Ferdaus, 26, was inspired by al-Qaeda's ideology.

"Al-Qaeda could plan something smarter than the September 11th, 2001 attacks with this technology," Pakistan-based risk and security analyst Shaukat Qadir told Al Arabiya English.

"It may be less dramatic and damaging than the 9/11 attacks, but it would be smarter in regards to their technological capabilities."

However, "these plans are not from the mother ship," said Mustafa Alani, Director of Security and Defense Studies at the Gulf Research Center told Al Arabiya English, implying that the al-Qaeda associates using toy planes to visualize their attacks were not necessarily carrying out orders from top al-Qaeda leaders.

A U.S. State Department report on terrorism released earlier this month said the killing of bin Laden has sent al-Qaeda's core leadership into a downward spiral "that will be difficult to reverse." But the report also noted that regional affiliates of the terror network remain a threat.

While the death of its leader and other top operatives has weakened al-Qaeda's leadership particularly in Western Pakistan, affiliates in Yemen, Iraq and northern Africa have made advances.

"They have shown resilience; retain the capability to conduct regional and transnational attacks; and, thus, constitute an enduring and serious threat to our national security.

"As al-Qaeda's core has gotten weaker, we have seen the rise of affiliated groups around the world," the report reads.

Handout photo released by the Spanish Interior Ministry shows a remote controlled airplane in a video confiscated from Turkish Cenzig Yalcin, one of three alleged al-Qaeda members, who were arrested in Spain.

For these fractured affiliate groups, analysts said, planning an attack with a toy plane guided by GPS would be relatively simple.

Model versions of the plane - between 5 feet and 6 feet, and capable of speeds greater than 100 mph - can be acquired "for less than $200 from websites serving model plane enthusiasts," reported CNN.
A promotional statement for the model on one website reads: "Provides authoritative rudder control so you can execute point rolls and knife-edge flight with precision."
"There is nothing surprising about this," said security analyst Qadir. "The U.S. has been using drones with regularity. It is about time that we expect that somebody imitates them."

Sophisticated terrorism

Dubai police released photos of the printer bomb, with a cartridge stuffed with PETN white powder. U.S. authorities say it originated in Yemen and was bound for Jewish sites in Chicago.

Qadir noted that with the global spread of al-Qaeda, high-end technological advancements are becoming more viable.
"[Al-Qaeda] was mostly concentrated in Afghanistan and Pakistan, but now the group's members are appearing in Western regions, where technology is more accessible.
"They may not have all the gadgetry available for the research and development phases that, say, the U.S. goes through, but they've got good engineers, with innovative minds who think of ways to defend themselves," added Qadir.
As terror tactics evolve to new heights, concerns are now swarming over al-Qaeda's technical capabilities. Bomb-making developments and advances in disguising detection.
In recent years, two bomb designs have defined al-Qaeda's "ingenious" technological capabilities, according to counterterrorism analysts: The "Christmas Day" bomb and the "printer bomb."
A bomb smuggled aboard a U.S.-bound plane on Christmas Day 2009 by a young Nigerian, Umar Farouk Abdulmutallab, was specially sewn into a pouch in his underwear. It contained the main PETN explosive charge, which was connected to a detonator.
"PETN is a white, odorless powder that cannot be detected by most X-ray machines. An explosives expert says that a likely explanation for the failure of the underwear device to fully detonate was wear and tear during Abdulmutallab's lengthy transit through Africa," explained a report from CNN citing U.S. officials.
Meanwhile, printer bombs delivered to UPS and FedEx offices in the Yemini capital of Sana'a in October 2010 were another sign of al-Qaeda's amplified technological sophistication. Inside the ink cartridge, 400 grams of PETN was found – a bomb that was not detected by specially trained dogs or an X-ray scanner.
"They proved to the world their high technological abilities – the underwear and printer bombers could not be discovered," Mustafa Alani, Director of Security and Defense Studies at the Gulf Research Center told Al Arabiya English.
Qadir said that improvised explosive devices were also being regularly improved by al-Qaeda, noting in May the FBI announced it was analyzing a device that was similar to one used in a failed attempt to kill a senior Saudi security official, Muhammad bin Nayef, in August 2009.
U.S. officials believed the device, an improved version with a better detonation system, to be built by al-Qaeda's affiliate in Yemen in an effort to target Western aircraft.
"It is clear that AQAP [al-Qaeda in the Arabian Peninsula] is revamping its bomb techniques to try to avoid the causes of the failure of the 2009

device," an unnamed US intelligence official told US media in response to the FBI analysis.

Al-Qaeda 'videography'

Osama bin Laden had frequently publicized al-Qaeda's plans in videos and messages to the world. (Reuters)

Alani said al-Qaeda had made good use of remote-controlled planes to spy on U.S. bases in Iraq, but the videos of toy plane enactments managed to create the "fear factor," even if such an attack would not be as large at the one on the World Trade Center.

"These videos create imaginative publicity. After the death of Osama bin-Laden, al-Qaeda leaders are not doing much to publicize their strength and threats. They do not appear in videos as much, for instance," he said.

"This is an image al-Qaeda wants to create in the minds of the public. Another attack by air, which may not have much operational value – but the publicity is immense."

Meanwhile, the threat of an airborne remote-controlled attack would bear similar hallmarks as the 9/11 attack, noted Alani.

"This sort of plane," explained Alani, "could do some damage if in fact an attack is carried out this way [by loading with explosives], but issues with accuracy and the size of bomb would make this attack not entirely feasible."

U.S. Army trains rats in explosives detection

Source: http://www.homelandsecuritynewswire.com/dr20120816-u-s-army-trains-rats-in-explosives-detection

A rat may never be man's best friend, but the Rugged Automated Training System (RATS) research sponsored by scientists with the U.S. Army Research Laboratory, in collaboration with engineers at West Point and the Counter Explosives Hazards Center, will determine whether and how these animals can be trained to save Soldiers' lives. A U.S. Army Research Laboratory release quotes Micheline Strand, chief of the Army Research Office's Life Sciences Division, which manages the program, to say that in July, Barron Associates Inc., of Charlottesville, Virginia was selected for an award under the Small Business Technology Transfer, or STTR, program to develop and test a rugged, automated, and low-cost system for training rats to detect improvised explosive devices (IEDs) and mines.

Rat being trained for mine detection // Source: laguia2000.com

"The automated system we're developing is designed to inexpensively train rats to detect buried explosives to solve an

immediate Army need for safer and lower-cost mine removal," said William Gressick, senior research engineer and the project's principal investigator at Barron Associates.

"Beyond this application, the system will facilitate the use of rats in other search tasks such as homeland security and search-and-rescue operations. In the long-term, the system is likely to benefit both official and humanitarian organizations."

"If we can demonstrate that rats can be trained inexpensively to be reliable detectors, then this method would not only lower costs for the Army but would also create new opportunities for using animals to detect anything from mines to humans buried in earthquake rubble," Strand said.

The release notes that it is well established that animals are capable of identifying explosives at lower concentrations than abiotic systems. The Department of Defense currently relies on dogs as the animal of choice for explosives detection. The goal of this STTR program is not to replace the use of dogs, but to expand the Army's detection capabilities.

"Training dogs is very expensive. If we can significantly reduce the cost of a trained animal, then we could provide more animals to protect soldiers." Strand explained.

Trained rats would also create new opportunities; rats can search smaller spaces than a dog can, and are easier to transport.

Landmines kill between 15,000 and 20,000 people a year, and continue to kill adults and children decades after a conflict ends. An automated system to train rats to find mines could accelerate worldwide efforts to clear mined areas and return mined land to farming or other productive uses.

Lifelike, cost-effective robotic hand disables IEDs

Source: http://www.homelandsecuritynewswire.com/dr20120817-lifelike-costeffective-robotic-hand-disables-ieds

Sandia National Laboratories has developed a cost-effective robotic hand that can be used in disarming improvised explosive devices, or IEDs.

The **Sandia Hand** addresses challenges which have prevented widespread adoption of other robotic hands, such as cost, durability, dexterity, and modularity.

"Current iterations of robotic hands can cost more than $250,000. We need the flexibility and capability of a robotic hand to save human lives, and it needs to be priced for wide distribution to troops," said Sandia senior manager Philip Heermann.

A Sandia Lab release reports that the Sandia Hand project is funded by the Defense Advanced Research Projects Agency (DARPA).

Principal investigator Curt Salisbury said the goal was to build a capable but affordable robotic system.

"Hands are considered the most difficult part of the robotic system, and are also the least available due to the need for high dexterity at a low cost," Salisbury said.

The Sandia Hand is modular, so different types of fingers can be attached with magnets and quickly plugged into the hand frame. The operator has the flexibility to quickly and easily attach additional fingers or other tools, such as flashlights, screwdrivers or cameras. Modularity also gives the Sandia Hand a unique durability. The fingers are designed to fall off should the operator accidentally run the hand into a wall or another object.

"Rather than breaking the hand, this configuration allows the user to recover very quickly, and fingers can easily be put back in their sockets," Salisbury said. "In addition, if a finger pops off, the robot can actually pick it up with the remaining fingers, move into position and resocket the finger by itself."

The operator controls the robot with a glove, and the lifelike design allows even first-time users to manipulate the robot easily. The robot's tough outer skin covers a gel-like layer to mimic human tissue, giving the Sandia Hand the additional advantage of securely grabbing and manipulating objects, like a human hand.

Using Sandia's robotic hand to disable IEDs also might lead investigators to the bomb makers themselves. Often, bombs are disarmed simply by blowing them up. While effective, that destroys evidence and presents a challenge to investigators trying to catch the bomb maker. A robotic hand that can handle the delicate disarming operation while preserving the evidence could lead to more arrests, and fewer bombs.

The release notes that Sandia partnered with researchers at Stanford University to develop the hardware and worked with consulting firm LUNAR to drive costs down drastically. In current commercially available robotic hands, each independently actuated degree of freedom costs roughly $10,000.

"The Sandia Hand has 12 degrees of freedom, and is estimated to retail for about $800 per degree of freedom — $10,000 total — in low-volume production. This 90 percent cost reduction is really a breakthrough," said Salisbury. Additionally, because much of the technology resides in the individual finger modules, hands with custom numbers and arrangements of fingers will be quite affordable.

"At this price point, the Sandia Hand has the potential to be a disruptive technology," added Heermann. "Computers, calculators and cell phones became part of daily life and drastically changed how we do things when the price became affordable. This hand has the same potential, especially given that high-volume production can further reduce the cost."

DARPA is funding a separate software effort in a parallel track to the hardware work.

New device dismantles pipe bombs safely, preserving forensic evidence

Source: http://www.homelandsecuritynewswire.com/dr20120821-new-device-dismantles-pipe-bombs-safely-preserving-forensic-evidence

DHS Science and Technology Directorate's (S&T) new low-cost device for dismantling

dangerous pipe bombs may look like a tinkerer's project, but this is no accident. The Semi Autonomous Pipe Bomb End-cap Remover (SAPBER) is unassuming in appearance, but sophisticated enough to preserve the forensic evidence needed to track down the perpetrator. "From ten paces away, you might mistake the contraption for a pressure washer," says S&T program manager Christine Lee. "But step closer and you'll find an ingenious device bristling with four video cameras, radios, a telescoping mast, cutting wheels, a twisting wrist, an electric motor, and a chain-driven gear, all powered by a pair of 12-volt batteries."

Eurekalert, citing a DHS S&T release, reports that thousands of pipe bombs are made each year, and thousands of pipe bomb threats are called into local police and FBI authorities across the country. Many are false alarms, but those that are not can be deadly.

Dismantling a pipe bomb is tricky and serious business, and missteps during the dismantling process can produce catastrophic results. Law enforcement authorities ideally would like to preserve all evidence related to pipe bomb attacks, but the main focus of responders is the safety of the public and current pipe bomb render-safe techniques often limit the amount of evidence that can be collected. Not so with SAPBER (say-ber).

S&T says that pipe bombs can be constructed from many different pipe materials, and filled with many different explosive materials. Making it even more challenging, they can also be constructed with shrapnel on the outside. SAPBER is designed to carefully disassemble the pipe bomb without disturbing the deadly explosive materials inside. Once the pipe bomb is dismantled, the filler explosive materials can then be emptied, and both materials and the pipe itself can be preserved as evidence. The SAPBER system is able to use these special techniques on a wide variety of pipes including straight steel, galvanized steel, copper, and PVC plumbing plastic.

The SAPBER pipe bomb dismantler takes the pipe bomb from a bomb-disposal robot, disassembles it, empties the pipe, makes a video, and carefully preserves all of the evidence.

The prototype and its remote-control software were developed by RE2 Inc., of Pittsburgh, Pennsylvania. As an operator controls the device from a distance, SAPBER takes the pipe bomb from a bomb-disposal robot, disassembles it, empties the pipe, makes a video, and carefully preserves all of the evidence.

The 140-pound (64-kg) 2-wheeler is small enough to squeeze into a current bomb-squad truck while sharing space with a bomb-disposal robot. Once off the truck, SAPBER is towed into place by hand or by the robot. On-scene, the robot lifts the pipe bomb and gently lays it onto SAPBER's transfer tray to be cleanly disassembled. When the pipe is opened, the material inside — powder, detonator, shrapnel, and all — fall into SAPBER's collection trough, to be studied later and used as evidence.

In May SAPBER underwent trials conducted by the S&T Bomb Squad Test Bed at the Army's Fort Meade.

During these trials, the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) fabricated "live" pipe bombs for the Baltimore County Police Department Bomb Squad to test in four different, operational scenarios and each operator had to control SAPBER remotely, using the tool's video feed. The SAPBER system has also been tested using "live" explosives and has gone through an extensive evaluation by several bomb squads including the Allegheny County and Fairfax County Bomb Squads.

"To keep it affordable (currently around $12,000) and easy to maintain, RE2 Inc. designed and built the device from proven commercial parts that are mass-produced and easily replaced," says Lee.

S&T notes that everything that S&T's First Responders Group (FRG/R-Tech) funds must appeal to cash-strapped, cost efficient responders. If SAPBER looks more like a boy's go-cart, and not a sleek racecar, this is no matter to them. Cost saving is a practice encouraged by S&T's First Responders Group (FRG), whose R-Tech program funded SAPBER's development. The final design was shown to the National Bomb Squad Commander's Advisory Board and municipal bomb squads, and SAPBER proved its mettle — at the conclusion of the user evaluation, two SAPBER prototypes were transferred to ATF to disarm the scores of pipe bombs its agents have confiscated.

Bomb Squad Commander Corporal Robert Conroy of the Baltimore County Police Department-Hazardous Devices Team says: "The most unique feature of the SAPBER is its simplicity and ease of use. Personally, I liked that the operating system was computer based and didn't require any extra hardware outside of a standard modem and Wi-Fi hotspot (included with the SAPBER). In addition, the ability of the SAPBER to remotely dismantle pipe bombs in various ways is very unique."

According to Cathy Parker, RE2's manager of business development, "With the SAPBER system, bomb squads will be able to replace dangerous pipe bomb disassembly tools and techniques with a totally remote solution. This tool ushers in a new era of capability for dealing with pipe bombs."

"This means disarming a pipe bomb safely is no longer a pipe dream," says Lee.

CUTLASS next generation Bomb Disposal Robot

Source: http://www.gizmag.com/go/7533/

June 28, 2007 Northrop Grumman demonstrated its CUTLASS unmanned explosive ordnance disposal (EOD) vehicle to the U.K. Under-Secretary of State for Defence last week. The CUTLASS system offers the latest technology in a modular design, enabling the user to deal with the full range of both military and improvised explosive devices. Its highly versatile design means that it is capable of accommodating a wide range of payloads, sensors and tools. The manipulator arm is equipped with a state-of-the-art gripper and has nine degrees of freedom for greater movement and agility inside limited spaces, such as the interior of a car. The robot is able to creep along at deliberately slow speeds for delicate operations and may accelerate to high speeds to enable rapid travel. The six-wheeled design offers mobility on all types of hard and soft terrain and in all weather conditions.

The impressively large and robust-looking prototype robot will soon replace the Wheelbarrow as the next generation bomb disposal vehicle for the U.K. military.

Northrop Grumman is providing 80 CUTLASS vehicles to the U.K. Ministry of Defence (MoD) under a contract awarded to its Remotec subsidiary in December 2006. The CUTLASS unmanned bomb disposal vehicle will be used by the MoD for anti-terrorism operations worldwide.

India's 'CBR' Security Challenge

By Rajeswari Pillai Rajagopalan

Source: http://thediplomat.com/indian-decade/2012/08/21/indias-cbr-security-challenge/

The use of **ammonium nitrate** in the recent **Pune blast** signifies yet again India's vulnerabilities in the Chemical-Biological-Radiological (CBR) security domain. Trafficking and trading of chemicals such as ammonium nitrate, which are used in explosives, have become common among terrorist groups and criminal gangs.

In an effort to arrest criminal use and to control the easy and unrestricted availability of the chemical, the government in 2011 categorized ammonium nitrate as an "explosive." However, the catch was that ammonium nitrate is in large-scale use in the agricultural sector and therefore, the government loosened the regulation to say that "its possession and use

would invoke penal action only if the composition had 45% or more ammonium nitrate content." Terrorists and criminal groups have been able to exploit this loophole effectively, which has allowed them to repeatedly use it in major and minor terrorist incidents in India.

Amending India's Explosives Act is long overdue. The law must take into account the changing circumstances and the more challenging ways in which state and non-state actors are aiding and abetting terrorism. One of the major shortcomings of the act is its sole focus on the safety of these materials in terms of managing the handling and storage. The security of such materials is often overlooked.

India's small- and medium-scale industries have continued to argue that any theft of chemicals is done only for pecuniary reasons, which would mean that the security of these materials – the material falling into the wrong hands – is often overlooked. Pilferage is often rubbished as stolen material for commercial purposes; simply put, to earn some extra money. But they do pose serious security threats to India's internal security, as was evident in the Pune blast. India has now witnessed several recent incidents of such security breaches, including the July 2011 Mumbai attacks.

Recently, a committee set up by the central government to look into the distribution and handling of explosives suggested that the Home Ministry may be better suited to regulate the flow and trading of these chemicals instead of the Department of Industries, Policy and Planning, as is the case currently. However, the Home Ministry's already much too overstretched to be assigned additional tasks. Regardless, one agency must be invested with the sole responsibility to lead on this issue.

A separate internal security ministry with a department focused on CBR security with adequate manpower is truly needed. With India's expansive and expanding network of educational

institutions and associated labs as well as private industrial units, the use of ammonium nitrate and other chemicals is likely to grow manifold.

Consequentially, India should be monitoring and addressing the weaknesses in the current approach of controlling the material technical know-how of the product. The need for an integrated approach cannot be overstated.

India's ancient rules are another set of issues that need urgent attention. The Explosives Act of 1884, which was last amended in 2002 need to be overhauled again in the face of new challenges.

A recent study by ORF and RUSI on the subject, *India & Non-State Actors: Chemical, Biological & Radiological Threats*, which was largely based on primary research, highlighted some of these loopholes while also suggesting ways to remedy some of the gaps.

While the central government-appointed committee is looking into some of these recommendations, it appears to be focusing a great deal on coordination between different departments handling these chemicals. This is by no means unimportant; indeed, as noted above, a whole-of-government approach is needed to properly address the threat. Nonetheless, a host of other issues also require greater attention.

For example, transportation remains a significant weakness. Additionally, industry rarely considers the dangers of these materials from falling into the hands of terrorists, criminals, and third parties who may sell the materials to terrorist groups.

The huge variation between the large, medium and small-scale industries in their approach to security of these dangerous materials is significant. The government has to devise innovative measures to control and streamline the production and distribution of such materials. The wide-scale disparity in the training and security provisions and the lack of standardization of private security agencies puts India at serious risk. An accreditation and audit mechanism, with periodic security audits and a reporting structure for audit findings to be signed off by a designated regulator, should become standard practice in industries. Industries also have to be alert to insider threats that go undetected by and large because of inadequate background threats.

A related issue is the lack of threat communication and training at the grassroots level among ordinary security agencies. While senior-level officers may be aware of CBR threats, the forces that form most of the front-line security layers are not adequately aware of the dangerous materials they deal with. In cases where they are alert, moreover, they are not adequately equipped with in-house security forces and certainly cannot afford to pay for a Central Industrial Security Force (CISF) contingent. Also small, profit-driven units are not as concerned about the security of these materials. Addressing this effectively could be done by encouraging greater resource-pooling among smaller units to employ good security outfits as a way to reduce costs while strengthening the impact of security spending.

Lastly, India's mindset about having precedents before strengthening measures needs to undergo change. We have to become sensitive to threats as they evolve rather than wait for incidents to happen and react thereafter.

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New era in camouflage makeup: Shielding soldiers from searing heat of bomb blasts

Source:http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=222&content_id=CNBP_030567&use_sec=true&sec_url_var=region1&__uuid=8df7418b-b049-472c-95e8-39d7af1cb59c

Camouflage face makeup for warfare is undergoing one of the most fundamental changes in thousands of years, as scientists today described a new face paint that both hides soldiers from the enemy and shields their faces from the searing heat of bomb blasts. Firefighters also could benefit from the new heat-

resistant makeup, according to the report.

It was part of a broader symposium on innovations in ingredients for personal care products held during the 244th National Meeting & Exposition of the American Chemical Society, the world's largest scientific society. The meeting, which includes almost 8,600 reports on new discoveries in science and other topics, continues through Thursday. The other reports (abstracts appear below) included new hairsprays, mousses, denture adhesives, tartar-control toothpastes, mouthwashes and personal cleansing products.

Robert Lochhead, Ph.D., who presented the report, explained that soldiers have used face paint for centuries for one kind of protection — to help their skin blend in with the natural environment and shield them from enemies. The new material continues that tradition, but also provides protection from the searing heat of roadside bomb blasts and other explosions that have claimed a terrible toll in Iraq, Afghanistan and other conflicts.

"The detonation of a roadside bomb or any other powerful explosive produces two dangerous blasts," Lochhead said. "First comes a blast wave of high pressure that spreads out at supersonic speeds and can cause devastating internal injuries. A thermal blast follows almost instantaneously. It is a wave of heat that exceeds 1,112 degrees Fahrenheit. That's as hot as a burning cigarette. The thermal blast lasts only two seconds, but it can literally cook the face, hands and other exposed skin."

In an effort to protect soldiers from this threat, the U.S. Department of Defense has been seeking a solution that Lochhead initially regarded as an impossibility: A material that soldiers could smear on their faces like suntan lotion, leaving a coating that although thinner than a sheet of paper, could protect against that intense heat. Dr. Paige Buchanan, Kelli Booth, Michelle McClusky, Laura Anderson and Lochhead were the team that tackled the challenge. Not only did they succeed, but they discovered a formulation that protects in laboratory experiments way beyond the 2-second heat-wave threat from improvised explosive devices and other bombs.

The new camouflage makeup protects the face and hands for up to 15 seconds before its own temperature rises to the point where a first-degree burn, which is a mild burn, might occur. In some tests, the new face paint can protect for up to 60 seconds, which could be important in giving soldiers time to move away from blast-related fires and also for use by civilian firefighters.

The makeup had to meet several key criteria: It had to reflect intense heat; have camouflage colors suitable for day and night use; be easy to apply and remove; be waterproof; and be non-irritating to the eyes, nose and mouth.

The trickiest part was that the University of Southern Mississippi team had to avoid the use of mineral oil, mineral spirits, fatty substances and other traditional hydrocarbon makeup ingredients. Hydrocarbons can burn in contact with intense heat in the flame spectrum. The team turned to silicones, which are not as flammable because they absorb radiation at wavelengths outside of the intense heat spectrum. Silicones have been replacing hydrocarbons in many commercial cosmetic makeup products as cosmetics companies improve products to confer better feel properties and transfer-resistance.

Another challenge was adding DEET, an insect repellent. The military mandates that all camouflage makeups contain 35 percent DEET. "DEET also is flammable, so when the Department of Defense asked us to incorporate it, we didn't think we could do it," Lochhead noted. But the team successfully included DEET by encapsulating it in

a hydrogel substance, a water-rich material that prevented DEET from catching fire.
It already has passed the preliminary laboratory tests needed to determine whether development should continue. Lochhead's team also plans tests of the material on other surfaces to try to protect clothing, tents and other items from burning, and a colorless version is being developed for firefighters.