

Issue 51, 2013

CBRNE NEWSLETTER TERRORISM

E-Journal for CBRNE-CT First Responders



CYBER NEWS

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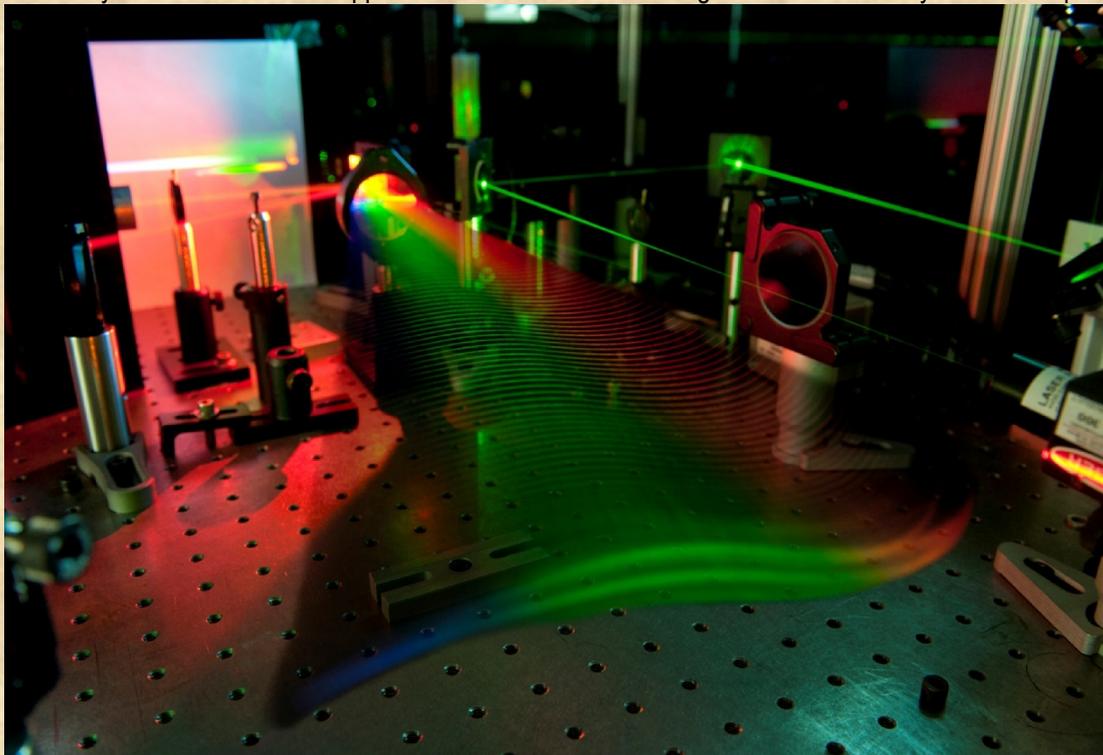
Bomb-detecting lasers to improve security checkpoints

Source: <http://www.homelandsecuritynewswire.com/dr20130910-bombdetecting-lasers-to-improve-security-checkpoints>

Research has put the possibility of bomb-detecting lasers at security checkpoints within reach by developing a laser that can detect micro traces of explosive chemicals on clothing and luggage. The laser not only detects the explosive material, but it also provides an image of the chemical's exact location, even if it's merely a minute trace on a zipper.

This does not mean that security forces will be armed with handheld laser in airports, however. This laser would more likely be in a conveyor belt, like the X-ray scanners already used for airport security. The low-energy laser is safe to use on luggage as well as passengers, he added.

A Michigan State University release reports



Michigan State University research has put the possibility of bomb-detecting lasers at security checkpoints within reach.

In the current issue of *Applied Physics Letters*, Marcos Dantus, MSU chemistry professor and founder of BioPhotonic Solutions, has developed a laser that can detect micro traces of explosive chemicals on clothing and luggage.

"Since this method uses a single beam and requires no bulky spectrometers, it is quite practical and could scan many people and their belongings quickly," Dantus said. "Not only does it detect the explosive material, but it also provides an image of the chemical's exact location, even if it's merely a minute trace on a zipper."

that for decades, scientists have been working to develop lasers that are powerful enough for detection, but safe enough to use on people. Dantus's initial spark for this breakthrough came from collaboration with Harvard University that developed a laser that could be used to detect cancer, but has the beam output of a simple presentation pointer.

"While working on biomedical imaging, I began exploring additional applications," Dantus said. "We soon learned how effective it was for detecting traces of hazardous substances from distances up to 10 meters away."

Dantus's bomb-detecting laser works as a single beam, but uses two pulses. The first resonates with certain chemical frequencies found in



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explosives. The second, a shadow pulse, serves as a reference. A discrepancy between the two pulses indicates the presence of explosive materials.

“The laser is not affected by the color or surface of clothes or luggage,” Dantus said. “The resonant pulse and the shadow pulse are always in balance unless something is detected. Our method has Raman chemical specificity, excellent sensitivity and robust performance on virtually all surfaces.”

— Read more Marshall T. Brenner and Marcos Dantus, “Standoff explosives trace detection and imaging by selective stimulated Raman scattering,” *Applied Physics Letters* 103 (2013): 061119

The release notes that an aerospace company has already expressed interest in furthering this technology. With additional funding, a standalone prototype could be created in about one year, Dantus added.

Funding for this research was provided by the Department of Homeland Security, Science and Technology Directorate. BioPhotonic Solutions is a high-tech company Dantus launched in 2003 to commercialize technology invented by his research group at MSU.

German police foil far-right 'model plane bomb plot'

Source: <http://www.foxnews.com/world/2013/09/10/german-police-foil-far-right-model-plane-bomb-plot/>



German police have arrested a man over an alleged far-right plot to use explosives mounted on a model airplane against political opponents, authorities said Tuesday. The unidentified 23-year-old suspect, a known right-wing extremist of no fixed address, allegedly incited another man, 42, to build the device, said police and prosecutors.

They did not identify his suspected targets.

Police were also investigating two other suspects, men aged 22 and 24, over the alleged plan and had also raided their homes last week in the southwestern state of Baden-Wuerttemberg.



The arrested man had previously joined a rally of anti-immigrant group Die Rechte (The Right) on August 31 and hurled firecrackers at anti-fascist counter-demonstrators, injuring five.

A police search of the home of the alleged bomb builder netted a working explosive device, chemicals, several model airplanes, a data storage device and a video camera, said police.

Police said the 42-year-old man from Emmendingen district had no previous known history of political extremism and that he

remained free on bail.

In June, German authorities staged raids after uncovering an alleged Islamist plot to carry out bomb attacks against state targets using model airplanes.

EDITOR'S COMMENT: There are small airplane models and **big** ones...



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Reducing security threats from explosives

Source: <http://www.homelandsecuritynewswire.com/dr20131003-reducing-security-threats-from-explosives>

Researchers, as part of the Awareness and Localization of Explosives-Related Threats center (ALERT), a DHS Center of Excellence,

Charles Bouman, Purdue's Showalter Professor of Electrical and Computer Engineering and Biomedical Engineering.

Funding recently was renewed to ALERT, a Department of Homeland Security Center of Excellence.

A consortium of universities and national laboratories, ALERT is one of twelve such centers in the nation. Its second phase will be launched during a ceremony on 22 October at Northeastern.

Researchers are working to develop portable detectors as well as larger systems to scan for explosives. Some technologies will analyze the spectrum of light shining through vaporized samples; others will analyze solid residues.

"You might, for example, analyze a fingerprint to tell whether a person had been handling explosives," Beaudoin said. Bouman and Son have been working in the center for about four years, while Beaudoin recently joined the team.

Beaudoin's research focuses on detecting traces of explosives. Son's research has focused on blast mitigation using water sprays and barriers and more recently on characterizing homemade explosives so that their threat can be better assessed. Bouman focuses on using CT scanners to detect and identify explosives in luggage, cargo cases and other applications.

"As part of our work for ALERT, we are creating a new generation of algorithms for CT reconstruction in airport security scanners," Bouman said. "These algorithms have the potential to both increase the safety of travel and also reduce inconvenience and cost to the public."

Researchers are improving the performance of CT scanners and other devices using a system of

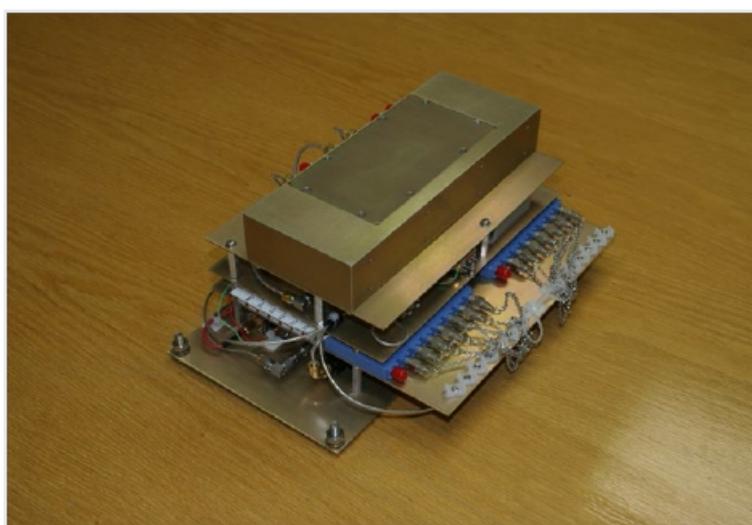


Figure 1: The concept currently being developed by ALERT (Awareness and Localization of Explosives Related Threats) involves multiple radar units that can be pointed in the direction of crowds of people. The system would scan each individual at a distance of 50 meters or more to identify suicide bombers.

are working on ways to detect explosives and neutralize their impact. The researchers are developing portable detectors as well as larger systems to scan for explosives. Some technologies will analyze the spectrum of light shining through vaporized samples; others will analyze solid residues.

Purdue University researchers are working on ways to detect explosives and neutralize their impact as part of a DHS center led by Northeastern and Rhode Island universities.

The researchers are participating in the Awareness and Localization of Explosives-Related Threats center (ALERT).

"The work we do aims to improve screening for explosives at airports, seaports and other public venues like football arenas and the civilian infrastructure," said Stephen Beaudoin, a professor of chemical engineering and director of graduate admissions in the Purdue University's School of Chemical Engineering.

A Purdue University release reports that the Purdue team also is led by Steven Son, a professor of mechanical engineering, and



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models to extract specific information from huge collections of data and then

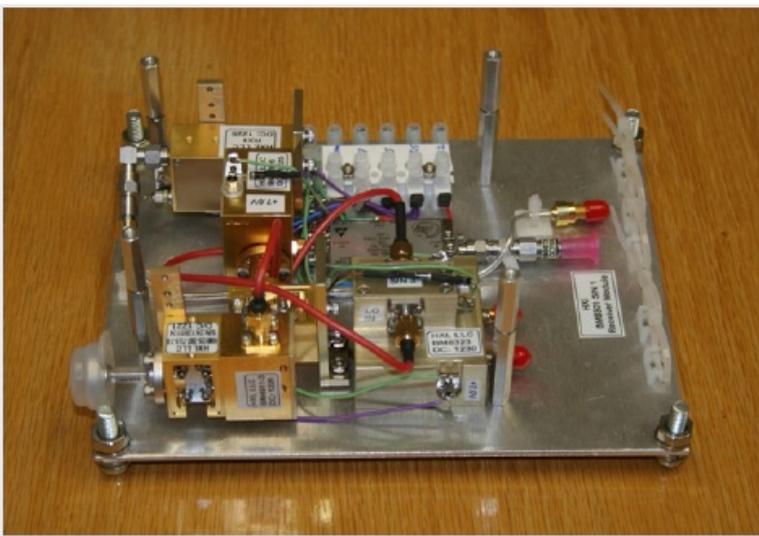


Figure 3: For the suicide bomber problem, the United States Department of Homeland Security needs a high performance radar system that can send out very specific types of signals a half a football field away and identify specific features under clothing.

reconstructing images like a jigsaw puzzle. The new approach is called model-based iterative reconstruction, or MBIR.

Traditionally, imaging sensors and software are designed to detect and measure a particular property. The release notes that the new approach does the inverse, collecting huge quantities of data and later culling specific information from this pool of information using specialized models and algorithms.

Convicted bridge bomb conspirator sentenced to 10 years

Source: <http://www.wkyc.com/news/article/317016/3/Convicted-bridge-bomb-conspirator-sentenced-to-10-years>

Convicted bridge bomb plot conspirator Joshua Stafford was sentenced Monday afternoon.

He was sentenced to 120 months (10 years) incarceration with lifetime supervised released today in federal court in the Northern District of Ohio.

Stafford was previously found guilty on June 14, 2013 of conspiracy to use weapons of mass destruction, attempted use of weapons of mass destruction, and malicious use of an explosive device to destroy property used in interstate commerce.

"This defendant displayed callous disregard for our community, all in the name of making his

MBIR could bring more affordable CT scanners for airport screening. In conventional scanners, an X-ray source rotates at high speed around a chamber, capturing cross section images of luggage placed inside the chamber. MBIR, however, could enable the machines to be simplified by eliminating the need for the rotating mechanism.

Son's research for ALERT focuses specifically on the types of explosives most likely to be used by terrorists.

"We've concentrated on the small-scale explosive characterization of homemade explosives typically made by terrorists," he said. "The need to characterize explosives that could be used in threats has been increasing due to the variety of constituent materials used and relatively low costs that allow terrorist to obtain and use them."

He leads work to perform experiments and simulations using a computer code developed by Sandia

National Laboratories.

"The final goal of this work is to demonstrate that the calibrated model obtained from the small-scale experiment is able to predict the results of large-scale experiments," he said.

Researchers will work to characterize a wider variety of explosives, develop high-resolution data analysis techniques and compare experimental data to the simulations.

own ideological views known, by operating a cell phone he believed to be the device that would detonate two IED devices on a highly traveled bridge," Special Agent in Charge Stephen D. Anthony said.

"As demonstrated by the five guilty verdicts and five corresponding prison sentences in this conspiracy, the FBI and our partners are committed to confront and disrupt terrorists in order to protect our fellow citizens."

Stafford is one of five men found guilty and sentenced for their roles in a conspiracy to destroy the Route 82



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Brecksville-Northfield High Level Bridge.
According to court documents, Douglas Wright,



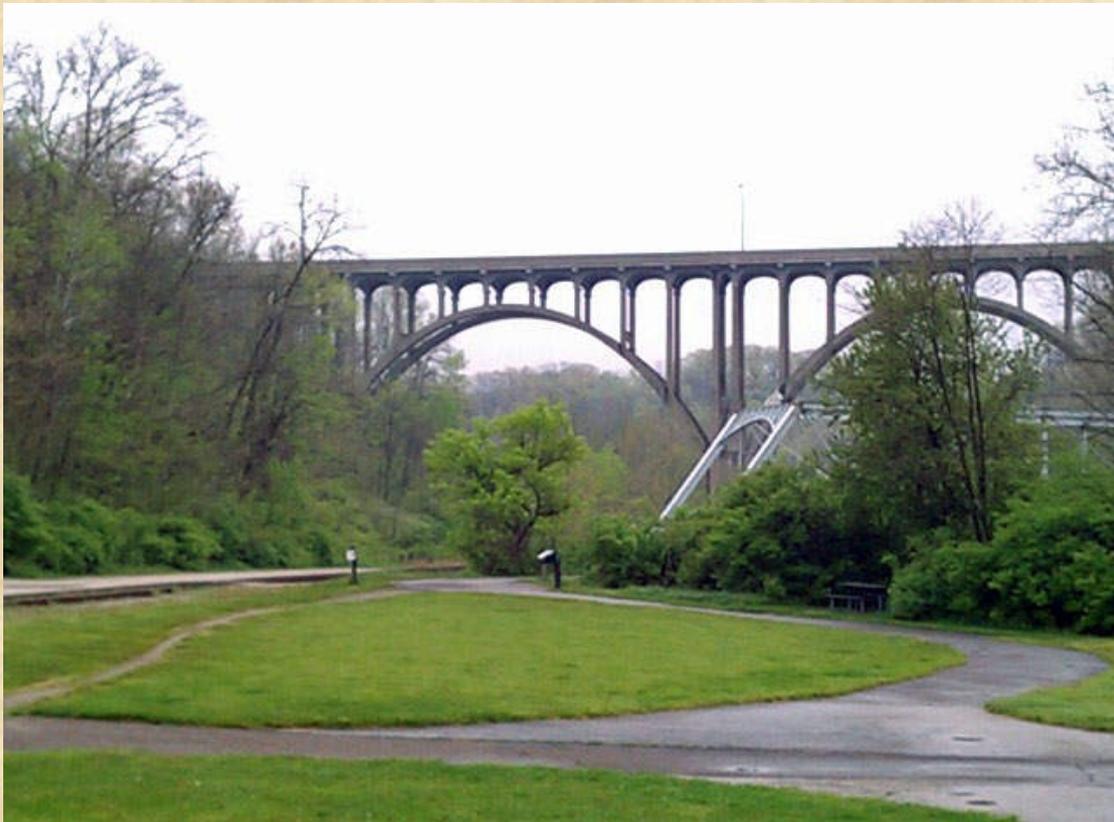
Brandon L. Baxter, Anthony M. Hayne, Connor C. Stevens and Joshua Stafford were self-

1. Conspiracy with four others to procure weapons of mass destruction
2. Knowingly using weapons of mass destruction, specifically IED's composed of C-4
3. Maliciously attempting to destroy the Brecksville Northfield high-level bridge.

Stafford, 24, of Cleveland, along with four other men, were arrested in what the FBI says was a failed plot to bring down the .

The other men are Anthony Hayne, 35, of Cleveland; Brandon L. Baxter, 20, of Lakewood; Connor Stevens, 20, of Berea; and Douglas L. Wright, 26; of Indianapolis.

The five were under close police surveillance.



proclaimed anarchists who formed into a small group and considered a series of evolving plots over several months eventually settling on a plot to use explosives to destroy the Brecksville-Northfield High Level Bridge on State Route 82 over the Cuyahoga Valley National Park between Brecksville and Sagamore Hills.

A jury found Stafford guilty on three counts in June:

The FBI says the group purchased two inoperable improvised explosive devices (IEDs) from an undercover agent. The FBI stressed the devices were inert.

To date, the other four defendants have landed prison terms of six to 11 years. All were charged with use of weapons of mass destruction and conspiracy.

Stafford chose to represent himself during his trial.



Airport Employee Arrested in Dry Ice Explosions

Source: <http://abcnews.go.com/US/airport-employee-arrested-dry-ice-explosions/story?id=20584188>



Los Angeles police and the FBI are investigating how improvised explosive devices were placed in restricted areas of Los Angeles International Airport.

A Los Angeles International Airport employee has been arrested in connection with the dry ice explosions during a two-day span earlier this week at one of the nation's busiest airports, police said in a statement.

Dicarlo Bennett, 28, is being held on \$1 million bond and faces one charge of possession of an explosive or destructive device near an aircraft. Bennett is an employee of Servisair, a company that does baggage handling and ramp services at LAX, ABC News has learned.

"We are aware of the situation," Servisair said in a statement to ABC News. "We have no comment at this time."

It's unclear whether Bennett has entered a plea.

Bennett's motives are unclear, but a law enforcement official said he was riding in a van with a supervisor and other co-workers when he decided to plant one of the dry bombs, according to The Associated Press.

The others in the van were made aware of the dry ice, but no other arrests have been made, the AP



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reported, citing the official briefed on the investigation who wasn't authorized to speak publicly.

Police had previously said they didn't believe the explosions were an act of terror but could have been the work of a disgruntled employee. Authorities poured over surveillance video looking for clues and interviewed workers at the airport for two days before arresting Bennett.

No one was injured in either incident but police say dry ice can explode with the intensity of a pipe bomb. Deputy Chief Michael Downing told The Associated Press that the bombs, made by putting **dry ice in 20-ounce bottles**, could have caused serious injury to anyone in close proximity.

Authorities say all the bombs were found in restricted areas away from passengers. The first explosion happened Sunday in an employee bathroom in Terminal 2. Another exploded Monday night by the tarmac.

A third bomb was disabled before it was detonated, according to police. A fourth bottle the LAPD originally thought was involved turned out to be trash.

Passengers at LAX said they were glad a suspect is in custody and can now breathe a little easier.

"It's obviously bothersome but at the same time life's got to go on," William Hopper said. "You can't keep shutting everything down just because of some wacko doing something stupid."

Car bomb blasts Swedish, Finnish Consulates in Benghazi

Source: <http://www.foxnews.com/world/2013/10/11/libyan-official-car-bomb-badly-damages-swedish-consulate-in-benghazi-no/?intcmp=latestnews>

A car bomb exploded outside a building housing the Swedish and Finnish consulates in the eastern Libyan city of Benghazi on Friday,

seen frequent killings of Libyan security officials and a string of attacks on diplomatic facilities, most notably the Sept. 11, 2012



badly damaging it but causing no casualties, Libyan and Swedish officials said.

The blast reflected the deep insecurity in the North African nation, where multiple armed militias run rampant -- many of them dominated by Islamic militants -- and the central government is too weak to rein them in.

The violence is particularly sharp in Benghazi, the country's second largest city, which has

storming of a U.S. diplomatic post that killed the ambassador and three other Americans.

The attack comes in the wake of a U.S. special forces raid last weekend that snatched an al Qaeda suspect from the streets of the Libyan capital, Tripoli, spiriting him off to custody in a U.S. warship. Many militiamen and Islamic militants were angered by the raid, blaming the



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Libyan government -- and on Thursday, gunmen briefly kidnapped the country's prime minister.

Some militiamen have hinted of retaliation against Americans -- or other foreigners -- but there was no immediate sign Friday's bombing was linked to the raid.

The Swedish and Finnish consulates are among the few foreign diplomatic posts still operating in Benghazi.

A Libyan security official said the car bomb was detonated by remote control on Friday in the upscale neighborhood of Benghazi. The official spoke on condition of anonymity because he was not authorized to talk to the media.

The morning blast heavily damaged the windows and facade of the building, but there were no reports of injuries, Ursula Ahlen of the Swedish Foreign Ministry in Stockholm said. The facility was closed for business since Friday is a weekend day in Libya.

"All the doors were ripped up by the blast. When I walked out to the stair case it had been blackened by soot," the former honorary consul, Anders Nilsson -- who still lives at the site with his sister, the current honorary consul, told Swedish broadcaster SVT by telephone from Benghazi. Nilsson said he had just returned from morning shopping and was in the kitchen when the blast went off. He said eight or nine people were in the building at the time.

Finland's honorary consul was also in the building at the time but was not hurt, the Foreign Ministry in Helsinki said.

The consulates perform diplomatic functions like issuing visas and citizen services, but they are headed by "honorary consuls" -- nationals who were already residing in the city and were named by their home governments to represent the nations, as opposed to members of the diplomatic corps assigned there.

Foreign diplomats have been repeatedly targeted amid Libya's continuous instability,

particularly in Benghazi, where Islamic militants are particularly strong among militias. The 2012 attack on the American diplomatic post has been blamed on militants believed to be linked to al Qaeda.

In January, militants opened fire on the car of the Italian consul in Benghazi. He was not hurt in the attack. In June 2012, the British ambassador's vehicle was attacked with rocket-propelled grenades, injuring two of his bodyguards, as he visited the city.

Last week, a mob attacked the Russian Embassy in the capital, Tripoli, climbing over its walls, pulling down a gate and firing in the air, prompting Moscow to evacuate its diplomats and their families. The attack was sparked when a Russian woman was arrested for allegedly killing a Libyan air force officer and his mother.

Libya's central government has struggled to impose its authority over the country since the 2011 ouster of autocrat Muammar Qaddafi. It has been helpless to rein in militias, which originated as rebel brigades against Qaddafi but have mushroomed into powerful forces of their own while the army and police remain weak, under-equipped and under-paid.

Militiamen abducted Prime Minister Ali Zidan from his residence in a Tripoli hotel before dawn on Thursday. He was freed hours later by another militia.

But outrage against Zidan continues among many Islamists over Saturday's U.S. raid that captured al Qaeda suspect Nazih Abdul-Hamed al-Ruqai, known by his alias Abu Anas al-Libi. Many militiamen and militants accuse Zidan of cooperating with the Americans in the operation, though the government has denied having any prior knowledge of the raid.

Al-Libi is accused by the U.S. in connection with the 1998 bombings of its embassies in Tanzania and Kenya.

Surveillance and Monitoring of Explosive, Chemical, Biological and Nuclear Hazards

Source: <http://www.prweb.com/releases/2013/10/prweb11219063.htm>

The global market for ECBN hazard monitoring, decontamination and personal protective equipment was valued at \$148.3 billion in 2012 and is expected to increase to \$193.7 billion in 2014 and then to \$387.9 billion in 2019, a compound annual growth rate (CAGR) of 14.9% over the five-year period from 2014 to 2019. ECBN hazard monitoring equipments were valued at \$128.5 billion in 2012, are expected to increase to \$168.4 billion in 2014 and then to \$340.2 billion in 2019, a CAGR of 15.1% between 2014 and 2019. Decontamination equipments were \$10.1 billion in



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2012 and are expected to reach \$24.5 billion in 2019 from \$12.9 billion in 2014, an expected CAGR of 13.7% over the same five-year period from 2014 to 2019.

STUDY GOALS AND OBJECTIVE

A hazard is a real or potential condition that can cause injury, illness or death to personnel; damage to or loss of equipment or property; or damage to the environment. Hazards can be caused by hostile forces (e.g., terrorists, conventional military force) or accidental release of chemical or biological agents (e.g., natural disaster, accidental release by governmental or commercial sectors). Hazardous material is a substance that due to its explosive, chemical or biological nature causes safety, public health or environmental concerns that require an elevated level of effort to manage. In this report, the hazards that may arise out of explosions, chemical accidents, biological accidents and nuclear incidents are considered. The main objective of this report is to analyze the methods for monitoring these hazards and minimizing the damage they can cause.

REASONS FOR DOING THE STUDY

Explosion, chemical, biological and nuclear hazards (ECBN hazards) may be the result of such generally classified actions as: Accident. Terrorism. War or war-like situations. The following table illustrates these classifications of ECBN hazards in greater detail, as well as the possible causes and proposed ways to avoid such hazards. Hazards due to industrial accident, nuclear plant accident or accidental biological agent release from a laboratory can be prevented or minimized if possible precautionary measures are set up in advance and necessary equipment and trained personnel are available to respond. Hazards created by terrorist groups are difficult to tackle, as the reasons for such actions may be beyond reconciliation through possible negotiations. The only way to face such hazards is to prepare for the possible consequences in advance. Hazards that may occur in cases of war or war-like situations could be tackled by negotiations between the concerned parties or nations, along with possible pressure from other more dominant and powerful countries or the United Nations. In the modern world, such incidents are unlikely to occur and if they do, the consequences may be devastating and all precautions are likely to be ineffective. The possibility of an ECBN hazard due to a war is not discussed in this report. The main objective of this report is to analyze the possible ways to monitor ECBN hazards that can happen because of accidents and terrorist acts using effective monitoring equipment and community preparation, including necessary decontamination and proper personal protective equipment (PPE).

INTENDED AUDIENCE

This report is intended to serve as a valuable resource for all personnel involved in the production and marketing of various types of monitoring equipment, for researchers working in the development of new technologies for monitoring various ECBN hazards, for manufacturers of different types of sensors involved in the manufacture of such monitoring equipment and for military strategists and civil defense planners to prepare for eventualities caused by ECBN hazards.

SCOPE OF REPORT

This report concentrates on the global and regional markets for technologies involved in the manufacture of different types of ECBN hazard monitoring equipment and the markets for applications in which such monitoring equipment will be utilized, as well as the basic technologies involved in the manufacture of such equipment. The report also provides profiles of various manufacturers of such monitoring equipment, their market-shares and their research and development (R&D) efforts to cultivate new technologies and equipment for better monitoring of ECBN hazards. The report also provides information concerning different patents on the technologies and monitoring equipment, along with a patent analysis.

INFORMATION SOURCES

Both primary and secondary research methods were used in preparing this report. Primary information sources for this market research include individuals within companies, various research organizations, governmental agencies and trade associations. Secondary research includes extensive literature reviews, such as trade journals, seminar proceedings, patent



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literature, company literature, published reports and government publications. Additional secondary research sources include databases, trade literature, specialized journals and government statistics.

► The report:

http://www.reportbuyer.com/industry_manufacturing/defence/surveillance_monitoring_explosive_chemical_biological_nuclear_hazards.html#utm_source=prnewswire&utm_medium=pr&utm_campaign=Nuclear_energy

Russia bus bomb: Volgograd blast kills six

Source: <http://www.bbc.co.uk/news/world-europe-24608694>

A suspected female suicide bomber has set off explosives on a bus in the southern Russian city of Volgograd, killing at least six people. Officials believe the woman was from Dagestan in the North Caucasus and was the

съёмка камерой видеорегистратора



One man whose daughter survived the explosion told Moscow Echo radio: "It was a powerful explosion - a huge blast. There were lots of students on the bus."

Another man, who was driving behind the bus, told Rossiya-24 television: "There was a blast - a bang - all the glass flew out of the windows. The cloud of smoke quickly dissipated and then I saw people start to fall out and run out to escape the bus. It was a horrible sight."

Earlier reports had suggested the blast might have been caused by an exploding gas canister.

Volgograd lies about 900km (560 miles) south of Moscow and

partner of an Islamist militant. The blast, which happened just after 14:00 (10:00 GMT), also injured more than 30 people, some of them seriously.

An Islamist insurgency in the North Caucasus region has led to many attacks there in recent years.

The BBC's Steve Rosenberg in Moscow says the bombing has raised fears that militant groups may be planning to step up attacks in Russia in the run-up to the Winter Olympics in the Black Sea resort city of Sochi next February.

Students

It is believed there were about 40 people on board the bus.

Our correspondent says that all buses in Volgograd have been ordered back to their depots to be searched for any sign of explosives.



650km north of the North Caucasus.

Vladimir Markin, of the Investigative Committee - Russia's equivalent of the FBI - told the RIA Novosti news agency: "A criminal case has been opened under articles outlining terrorism, murder and the illegal use of firearms."

Mr Markin was later quoted by the Interfax agency as identifying the suspected suicide bomber as a woman from Dagestan.

He said: "According to preliminary information, the self-explosion was



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carried out by a 30-year-old Dagestani native, Naida Akhiyalova.

"According to investigators' information, the woman entered the bus at one of the bus stops and, almost right after that, the bomb went off. That is also confirmed by one of the



passengers who survived."

'Black widows'

In recent years, Russia has seen a number of attacks by women suicide bombers known as black widows, who are often related to Islamist

militants and carry out attacks to avenge their deaths.

Female suicide bombers struck at two underground railway stations in Moscow in 2010, killing more than 35 people.

They were also believed responsible for explosions on two passenger jets at a Moscow airport in 2004 that killed about 90 people.

Separatists in Chechnya have fought two wars with Russian forces over the past two decades.

But the violence has spread across the North Caucasus in recent years, including to mainly-Muslim Ingushetia and Dagestan.

Hundreds of people, including members of the government and security services, have been killed.

President Vladimir Putin has stepped up security in the North Caucasus ahead of the 2014 Winter Olympics, which open in Sochi on 7 February.

Homemade explosives precursors – Attacking the core of IED threat

A simplified and effective CONOPS for defeating IEDs

By Grant Haber

Source: <http://www.counteriedreport.com/>

The use of IEDs is steadily increasing and proliferating worldwide for two very simple reasons. First and foremost, the HME Precursors (aka bomb making ingredients) needed to construct IEDs are inexpensive to acquire, easy to obtain, and can be converted into a wide variety of Improvised Explosives Devices. Secondly, once HME precursors are converted into explosives and incorporated into IEDs they are extremely effective. They have been successfully used against the military, police, security forces, civilians or high profile facilities around the globe with devastating results. **They have become the Weapon of Choice by Terrorists and groups waging asymmetrical warfare.** The only way to reduce the threat that IEDs pose are proactive Interdiction Missions that aggressively target these HME Bulk materials.

To defeat the IED threat it is important for everyone to first understand its core, the bomb makers and the homemade explosives precursors used to manufacture HME for an IED's main explosives charge. Even though the

techniques being employed to build, conceal and trigger IEDs continue to evolve, the HME precursors used in the main explosives charges have remained relatively constant for decades. Since bomb makers do not clearly identify themselves as a "bomb maker", interdiction missions worldwide targeting HME precursors need to become a higher priority for any Counter IED strategy to be successful. Fact: Dealing with the problem at source is always more effective than dealing with its aftermath.

In Afghanistan, for instance, it is equally important to understand that trust and confidence building with host nation tribal leaders and civilians must go hand in hand with HME Interdiction Missions. The same remains true for every other country where terrorism has taken a hold of everyday life. Without an ability to earn the trust and confidence of tribal leaders and civilians, their support will likely be extended to the bomb makers as a response to their own fears. Before discrediting such a



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bold statement, know this, the mere act of saying nothing or turning a blind eye is all the support bomb makers need to maintain a tactical edge.

Defensive countermeasures employed to mitigate the harmful effects of IEDs has proven effective for reducing fatalities; however, these costly investments have done little to slow down IED proliferation. A balance between proactive and reactive countermeasures is required for effective Counter IED strategy.



For the purpose of this article, Afghanistan will be the primary focal point; however, I must reiterate: the recommendations to be conveyed are applicable virtually in any location where IEDs are an enduring threat.

In Iraq and Afghanistan, post-commencement of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), approximately two-thirds of all fatalities and casualties of United States and Coalition Forces are attributable to IED attacks. Host Nation Military and Police, and civilians (men, women, and children) are being killed and wounded at alarmingly high rates. In Afghanistan, currently more than 93 per cent of IEDs utilise HME for the main explosives charge. In Iraq, the country is on the brink of a civil war as a result of enduring IED attacks that have taken more than 1,000 lives per month since April 2013.

Calcium Ammonium Nitrate (CAN) fertiliser, Potassium Chlorate, among other Nitrates and Chlorates (oxidizers) remain the primary HME precursors used in the manufacture of IEDs in Afghanistan today. As long as these ingredients are readily

available and easy to convert into powerful explosives, the bomb makers will continue to use them; especially when they are so inexpensive.

In 2010, approximately 90 per cent of the Afghanistan IEDs utilised Ammonium Nitrate-based fertilisers. Potassium Chlorate use represented a low single digit percentage, though when considering 15,000+ IED events averaged annually in Afghanistan since 2010, a single digit percentage still represented a high

number of IED events for Explosives Ordinance Disposal (EOD) to deal with. Needless to say, EOD is working overtime given the scope and magnitude of this enduring threat.

Following the publishing of the Government of the Islamic Republic of Afghanistan (GIROA) Presidential Decree prohibiting Ammonium Nitrate fertilisers for import, production, transportation, use,

sale, and storage due to its use as an explosives precursor, the bomb makers slowly began shifting to an alternative HME precursor to reduce the risk of capture and interdiction of their bomb making materials. In 2010 after this Presidential Decree was published and interdiction missions targeting Ammonium Nitrate fertilisers became a higher priority, bomb makers began using Potassium Chlorate. Less than 3 years later about 60 per cent of the IEDs utilise Chlorates and about 35 per cent are utilising Nitrates in the HME manufacturing process.

Given the 15,000+ IED events per year in Afghanistan, regardless of the fact that Potassium Chlorate has taken the lead as the HME precursor of choice, Ammonium Nitrate fertiliser interdiction should not become less of focal point as its use in IEDs is sharply reduced. When focusing on Ammonium Nitrate fertiliser interdiction almost exclusively, Potassium Chlorate use surged. This was by design, not by chance.

Interdiction and destruction of both Nitrate fertilisers and Chlorates must



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become an enduring requirement for Afghan National Security Forces (ANSF) in order to defeat the enduring IED threat in Afghanistan. If President Karzai expanded the Presidential Decree banning Ammonium Nitrate fertilisers to also include Potassium Chlorate, with the help of NATO's 28 member nations alliance serving in an advisory capacity to help prepare Afghan National Security Forces (ANSF) for post 2014 operations, ANSF's gains against Afghanistan's Number One Threat, "The IED" would rapidly increase. The Afghanistan Ministry of Defence (MOD) and Ministry of Interior (MOI) should then inform both the International Security Assistance Forces Joint Command (JIC) and NATO Training Mission – Afghanistan (NTM-A) of their requirement to employ standard issue interdiction tools for Nitrates and Chlorates.

Now that you understand which HME precursors make up the core of the IED threat and why targeting these bomb making



ingredients must become an enduring requirement, let's discuss trust and confidence building between host nation security forces (military and police) and local tribal leaders. Without an effective strategy to establish much needed trust and confidence, it is absurd to expect tribal leaders to help ANSF defeat an insurgency who utilises IEDs as their weapon of choice and a weapon of strategic influence. Maintaining this trust and confidence is vital to combatting an enduring IED threat. Local

civilian groups are crippled by the fear that is echoed with every terrorist interaction; an effective strategy understands this and strives to provide a balance of justice and safety.

To establish trust, a balance between cultural considerations and an effective screening Concept of Operations (CONOPS) is required to enable ANSF to inspect people and vehicles in a manner that will yield measurable gains without violating trust. The desired outcomes include increases in interdiction and destruction of HME precursors, increases in lawful detentions, increases in freedom of mobility, decreases in IED events, and decreases in IED related fatalities and casualties.

In Islamic cultures making physical contact with an individual using your left hand is offensive and violates trust, as is, having men touching women. What further violates trust is the uneasiness that results when individuals being screened for trace explosives residues do not understand what is being done to them when

an Afghan Soldier or Police Officer grabs their wrist with one hand and with the other hand starts swabbing their hands, fingers, clothes, etc. Keep in mind, many of the people being screened are unfamiliar with the capabilities employed in airports or at government buildings for explosives trace detection screening. Consider: How helpful would you be if someone was doing something to you deemed outright offensive by yourself and

everyone around you? How helpful would you be if a tribal leader, family member, or someone you looked up to was detained because a foreign test concluded there was invisible explosives residue on their hands, clothes, or a personal belonging? How long do you think it will take before Afghan tribal leaders and civilians learn that explosives residue can transfer from person to person or surface to person unknowingly in environments contaminated from IED events?



To effectively build trust requires a screening

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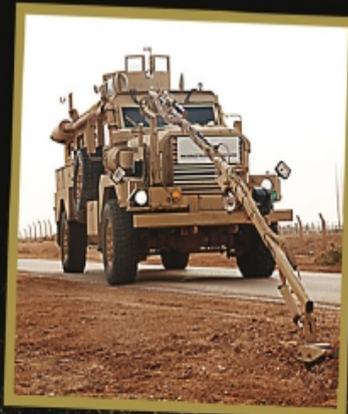
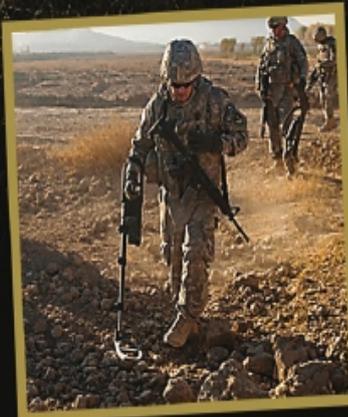
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CONOPS that delivers on the desired outcomes without violating trust in the process. By advocating and implementing bulk material identification requirements for primary screening and shifting away from trace detection for primary screening, a foundation for trust becomes easier to establish in an Islamic culture. If you are unfamiliar with the difference between bulk identification and trace detection, this is what it is: trace focuses on detection of invisible residues, whereas bulk identification focuses on samples of unknown yet visible materials, aka bulk.

A person in possession of a bulk material that tests positive for targeted homemade explosive precursors would then be subject to secondary screening (trace analysis) which includes physical contact with their skin, clothes, personal belongings, etc. This secondary screening would enable Military and Police Officers to determine if the individual they detained for possession of HME precursors also came in contact with explosives. By following a bulk first, trace second HME screening CONOPS, the detained individual will have a hard time pleading innocence or drumming up sympathy support from local tribal leaders and civilians when a non-invasive (non-offensive) screening method was utilised to determine that they were in possession of bomb making precursors.

As IED attack frequency sharply decreases as a result of successful HME Interdiction campaigns that reduce the amount of HME precursors reaching the bomb making factories, tribal leaders will slowly begin to advocate support for an ANSF that employs bulk material identification as their primary screening methodology. With tribal leader's support, comes trust. YES, in the short term bomb makers may gain freedom of mobility if they are not subject to a trace detection analysis. However, as ANSF starts earning the trust of tribal leaders and civilians, bomb makers, facilities used to store bomb making materials, locations where suicide bombers are trained, and the vehicles used to transport these materials will start being exposed.

Trust between ANSF and Afghan Civilians is vital for attacking the core of the IED threat.

Of course, for any interdiction CONOPs to be effective, the capabilities employed must be reliable. Bulk material identification tools must only indicate on targeted HME precursors, not legal fertilisers or other bulk materials not

classified as targeted bomb making ingredients. They must also effectively detect the targeted precursors even if they are masked with other ingredients or already converted into HME. The trace detection tools to be employed for secondary screening must reliably detect trace amounts of a broad array of explosives without false alarming on lotions, colognes, perfumes, detergents, fuel, or other common ingredients an individual may apply to their person or clothes, or come in contact with.

Without effective tools to attack the core of the IED threat, TRUST cannot be earned.

Detaining individuals who are not possessing bulk HME precursors because of false alarms will instantly kill trust with tribal leaders and civilians. Destroying legal fertilisers or other non-HME, non-targeted bulk materials because of false alarms will also kill trust with tribal leaders and civilians. It's that simple.

Confidence on the other hand needs to start from within the Afghan Military and Police forces. Only after confidence is established from within, can it effectively be conveyed outward toward tribal leaders and civilians. In Afghanistan, IEDs are delivering the greatest percentages of fatalities and casualties to ANSF therefore it is understood why ANSF's confidence in defeating this enduring threat is low. Civilians are being killed and wounded at an alarming high rate; therefore, it is understood why tribal leaders and civilians do not have confidence in ANSF's ability to defeat the IED threat. Many argue the IED threat is unbeatable; however, it is easy to speak on behalf of ongoing failures when the strategies employed remain primarily reactive and relatively unchanged for more than a decade.

Equipping and training the entire ANSF with a standard issue tool to interdict the bulk HME precursors used in more than 90 per cent of the IEDs is vital for building ANSF's confidence. With more than 15,000 IED events annually since 2010, it is understood why confidence within ANSF is low. Especially when the United States and Coalition Forces have been unable to defeat or slow down the IED threat for 12 years.

Fortunately, there are now simple to use bulk material identification kits capable of bridging literacy gaps with picture instructions.

Detection of the Nitrates and Chlorates (oxidizers) are now possible in seconds without false alarming on legal fertilisers or other



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non- HME bulk materials. If the Afghan MOD and MOI create requirements to leverage their 352,000 Soldiers and Police Officers to interdict these targeted bomb making ingredients: IED attacks will decrease, fatalities and casualties will decrease, lawful detentions will increase, freedom of mobility will increase, and the long term support needed from both tribal leaders and civilians will increase too.

By aggressively ramping up proactive efforts to interdict HME precursors and detain members of the growing bomb maker's networks, the enduring IED threat can be defeated.

Given ANSF's size (Soldiers - 195,000, Police 157,000) and knowing their literacy challenges, the primary screening tool selected for bulk material identification must be simple to train and use, effective at detecting and identifying the leading threats in the shortest amount of time, and sustainable over long periods of time (1 or 2 years minimum) by unskilled operators. Fielding tools that target bulk materials beyond the scope of the leading threats creates complexities that prolong learning curves which in turn slows the pace of the desired outcomes that can be achieved. To effectively build confidence from within ANSF requires detection and identification tools that are simple to use, effective, and sustainable.

As Interdiction efforts targeting bulk HME precursors become more successful, confidence from within ANSF can quickly and effectively be conveyed outward to tribal

leaders and civilians. As the supply of bulk HME materials is choked by an effective interdiction strategy, IED attack frequency will decrease and explosive charge sizes will also decrease. All of which is required for confidence building. As the enemy's footprint gets smaller, IED attacks will decrease further and faster, and freedom of mobility will increase exponentially. These outcomes are instrumental in reducing fatalities and casualties.

Bridging Literacy Gaps and providing ANSF enablers to interdict Nitrate and Chlorate HME Precursors without false alarming on legal fertilisers or other non-targeted bulk materials needs to become a higher priority if defeating the IED threat is a desired outcome for Afghanistan.

In closing, defeating the IED threat ultimately requires Leaders with a desire to win, Leaders with the integrity to accept failures and move on from what is not working, and Leaders with the willingness to ensure what is working is ramped up and employed across the fighting forces. It requires effective communications up and across chain of commands to enable informed and timely decisions. With strong leadership, effective communications, and a Counter IED strategy focused on Attacking the Core of the IED threat (Bomb Makers and Homemade Explosives Precursors), defeating the IED threat is achievable in relatively short order and at minimal expense.

Grant Haber has been involved with explosives detection, blast mitigation, and bomb containment technologies since 1998, and serving the law enforcement/ first responder community since 1995. As VP of American Innovations, Inc. (Ai) Mr. Haber works with government and military labs, military EOD, civilian bomb squads, explosives manufacturers, subject matter experts, and elected officials to ensure the materiel solutions and train the trainer programs developed by Ai will effectively Counter current and evolving IED threats.

