Hospital CBRNE Preparedness – Are we Ready?

CBRNE Newsletter Terrorism

Volume 42, 2012

Explosive News

www.cbrne-terrorism-newsletter.com

Detecting explosives from a distance with laser beams

Source: http://www.homelandsecuritynewswire.com/dr20120228-detecting-explosives-from-a-distance-with-laser-beams

People like to keep a safe distance from explosive substances, but in order to analyze them, close contact is usually inevitable. At the Vienna University of Technology (TU Vienna), a new method has now been developed to detect chemicals inside a container over a distance of more than a hundred meters.

Laser light is scattered in a very specific way by different substances. Using this light, the contents of a nontransparent container can be analyzed without opening it.

"The method we are using is Raman-spectroscopy," says Professor Bernhard Lendl of TU Vienna. A Vienna University of Technology release reports that the sample is irradiated with a laser beam. When the light is scattered by the molecules of the sample, it can change its energy. For example, the photons can transfer energy to the molecules by exciting molecular vibrations. This changes the wavelength of the light — and thus its color. Analyzing the color spectrum of the scattered light, scientists can determine by what kind of molecules it must have been scattered.

"Until now, the sample had to be placed very close to the laser and the light detector for this kind of Raman-spectroscopy," says Bernard Zachhuber. Due to his technological advancements, measurements can now be made over long distances. "Among hundreds of millions of photons, only a few trigger a Raman-scattering process in the sample," says Bernhard Zachhuber. These scattered particles of light are scattered uniformly in all directions. Only a tiny fraction travel back to the light detector. From this very weak signal, as much information as possible has to be extracted. This can be done using a highly efficient telescope and extremely sensitive light detectors.

In this project, which is funded by the EU, the researchers at TU Vienna collaborated with private companies and with partners in public safety, including The Spanish Guardia Civil who are interested in the new technology.

During the project, the Austrian military was also involved. On their testing grounds the researchers from TU Vienna could put their method to

the extreme. They tested frequently used explosives, such as TNT, ANFO, or RDX. The tests were successful: "Even at a distance of more than a hundred meters, the substances could be detected reliably," says Engelene Chrysostom of TU Vienna.

Raman spectroscopy over long distances even works if the sample is hidden in a nontransparent container. The laser beam is scattered by the container wall, but a small portion of the beam penetrates the box. There, in the sample, it can still excite Raman-scattering processes. "The challenge is to distinguish the container's light signal from the sample signal," says Bernhard Lendl. This can be done using a simple geometric trick: The laser beam hits the container on a small, well-defined spot. Therefore, the light signal emitted by the container stems from a very small region. The light which enters the container, on the other hand, is scattered into a much larger region. If the detector telescope is not exactly aimed at the point at which the laser hits the container but at a region just a few centimeters away, the characteristic light signal of the contents can be measured instead of the signal coming from the container.

The new method could make security checks at the airport a lot easier — but the area of application is much wider. The method could be used wherever it is hard to get close to the subject of investigation. It could be just as useful for studying icebergs as for geological analysis on a Mars mission. In the chemical industry, a broad range of possible applications could be opened up.

Standoff detection of explosives with external cavity quantum cascade lasers

By Frank Fuchs

Source: http://spie.org/x85343.xml?highlight=x2412&ArticleID=x85343

There are a number of different security techniques for observing scenes, such as airports, or assessing the safety of inanimate objects, such as suitcases. For example, luggage is typically subjected to x-ray analysis at airports. This type of 'portal solution' requires the cooperation of the owner of the luggage. By contrast, 'standoff detection' can be non-cooperative and carried out by an operator and instrument that are a significant distance from the object under measurement. In the case of explosives detection, this distance is around 5–25m. For standoff detection of trace amounts of material, only laser-based techniques have the potential to provide sufficient sensitivity.[1–4] Indeed, optical detection techniques based on IR-laser spectroscopy represent a promising approach[5, 6] because almost all explosive chemicals typically exhibit strong, characteristic absorbance patterns in the mid-IR spectral range. Transparency of the atmosphere is another crucial prerequisite for detection techniques designed to work over distances of at least a few, preferably some tens of, meters. Thus, the atmospheric transmission window of λ>7:3μm, where (by chance) most organic chemicals exhibit strong light absorbance, is a suitable spectral region for this purpose. Here, we describe the design and assessment of a new mobile imaging standoff detector.

The key element of our system is the quantum cascade laser. These new unipolar semiconductor laser sources are based on intersubband transitions in indium gallium arsenide and aluminum indium arsenide heterostructure superlattices grown on indium phosphide. The gain characteristics of the laser can be optimized for high-power operation as well as for broad spectral tuning. For the present application, it is beneficial to design the quantum well system such that the initial state of the laser transition is a bound state. The broadening of the gain curve is achieved with a superlattice design offering a broadened miniband for the final state. This type of laser design is called 'bound-to-continuum.'

With these lasers, high power levels that are eye-safe can be generated in the IR spectral region. In the past, semiconductor lasers operating in this spectral range had to be operated

using cryogenic cooling. However, new classes of IR lasers are small, rugged, and can operate at room temperature. This makes real-world applications like standoff detection outside a laboratory situation possible. Additionally, quantum cascade lasers are highly wavelength-versatile semiconductor lasers owing to their gain properties, which can easily be tuned over a wide range.[7, 8] For spectroscopy of explosives, the range of the laser source needs to cover wavelengths of the fingerprint absorbance of the chemical species being measured.

Within the collaborative Infrared-Laser-based Detection of Explosives project we developed a mobile imaging standoff detection setup that enables detection of explosive traces on surfaces using backscattering laser spectroscopy (see Figure 1). The broadly tunable quantum cascade lasers we used are based on a bound-to-continuum design with a central wavelength of ~7.5μm. To further increase the spectral range covered by a single chip, we also grew lasers comprising two different active regions with central emission wavelengths of ~7.8 and ~8.8μm, respectively. We refer to this as a heterocascading, or HetCas, design. The gain characteristics of two B-to-C lasers centered at wavelengths of 7.3–9.5 and 9.5μm are combined, resulting in enhanced spectral tuning. This band is ideal for concealed observation because wavelengths of ~8μm cannot be seen with the naked eye. Only a person equipped with an IR imager would be able to see that a measurement was being performed.

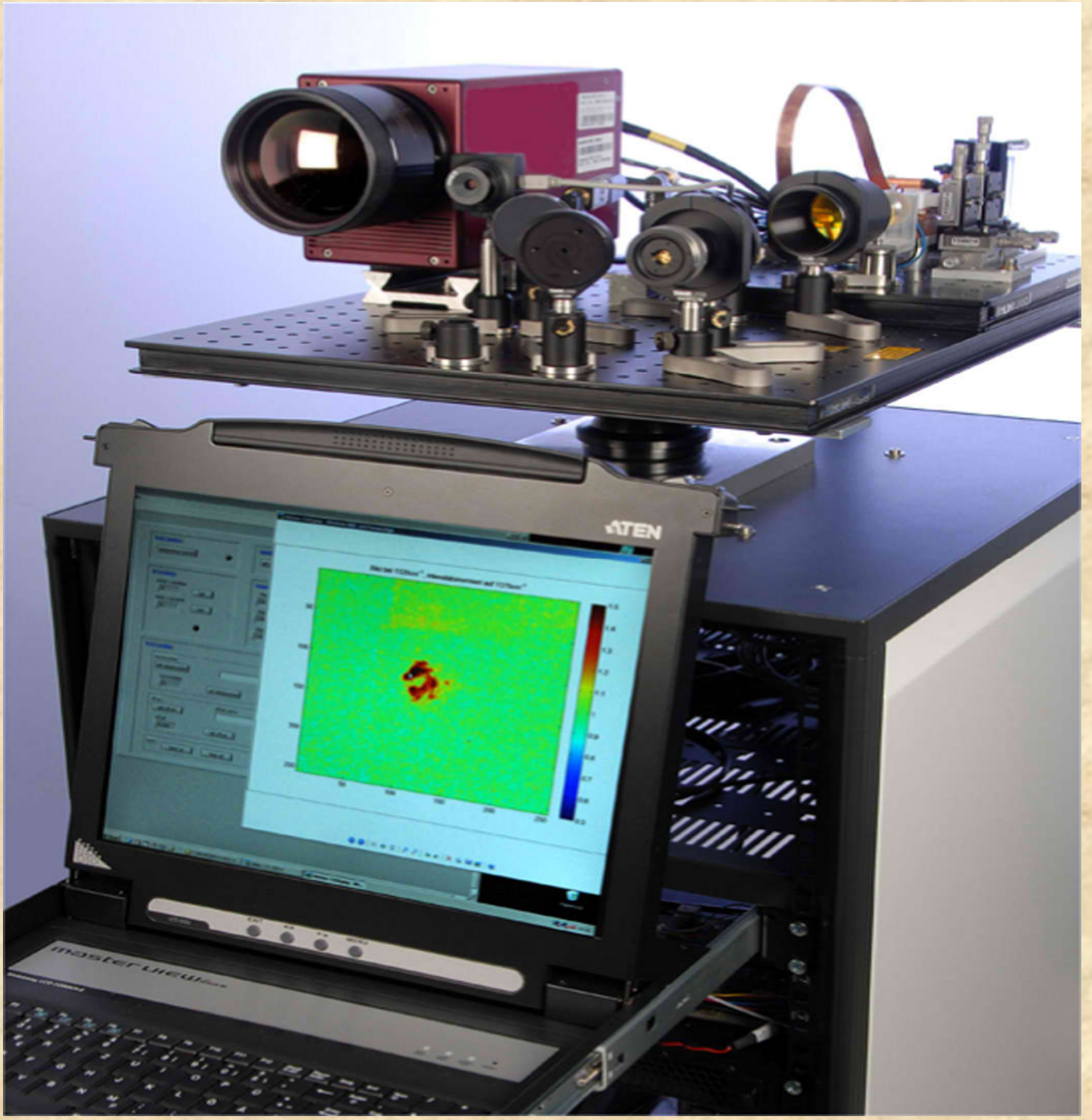


Figure 1. Our demonstration system. The sensor head comprises the tunable external quantum cascade cavity laser, an IR imager, and a visible camera. The system software enables automatic identification.

An external cavity quantum cascade laser serves for active illumination with a maximum tuning range of about 300cm^{-1} (see Figure 2). We used a commercially available IR imager for collecting the diffusely backscattered radiation. Using this setup, we demonstrated the contactless detection of the IR fingerprints of a variety of explosives—such as pentaerythritol tetranitrate (PETN), trinitrotoluene, and cyclotrimethylenetrinitramine—on different substrates, such as pieces of factory-painted sheets from the body of cars as well as the polyamide commonly used in backpacks. The software processing of the hyperspectral datacube enables fully automatized identification against a background of nonhazardous materials.

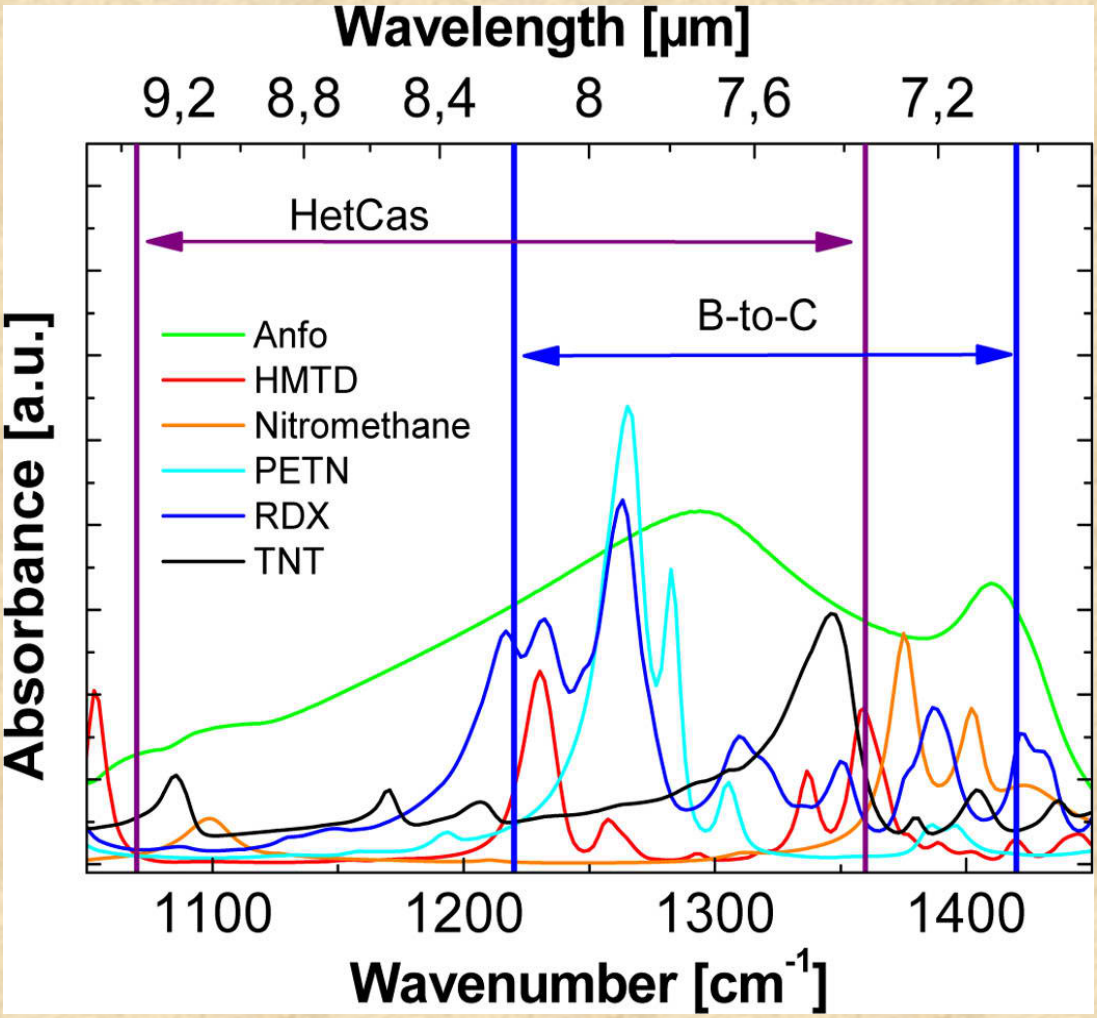


Figure 2. Absorbance spectra of various explosives and tuning range of external cavity quantum cascade laser source for two different designs—HetCas and B-to-C—of the active layer. HetCas: Heterocascading laser design. B-to-C: Bound-to-continuum laser design. Anfo: Ammonium nitrate with fuel oil. HMTD: Hexamethylene triperoxide diamine. PETN: Pentaerythritol tetranitrate. RDX: Cyclotrimethylenetrinitramine. TNT: Trinitrotoluene.

The sensitivity depends both on laser performance and the sensitivity of the IR imager. With an uncooled bolometric IR camera, our system shows reliable detection at a distance of 3–5m. Figure 3 shows a PETN-contaminated handprint on painted autobody sheet after active laser illumination at a distance of 3m. The difference of images taken with laser radiation at 1286 and 1296cm^{-1} from the raw images in a first step provides a very specific signature for PETN. More sophisticated signal processing, including image analysis, enhances the quality of the discrimination against other materials. Using a high-end IR imager operating at 77K, we could demonstrate identification of traces of PETN up to 20m.

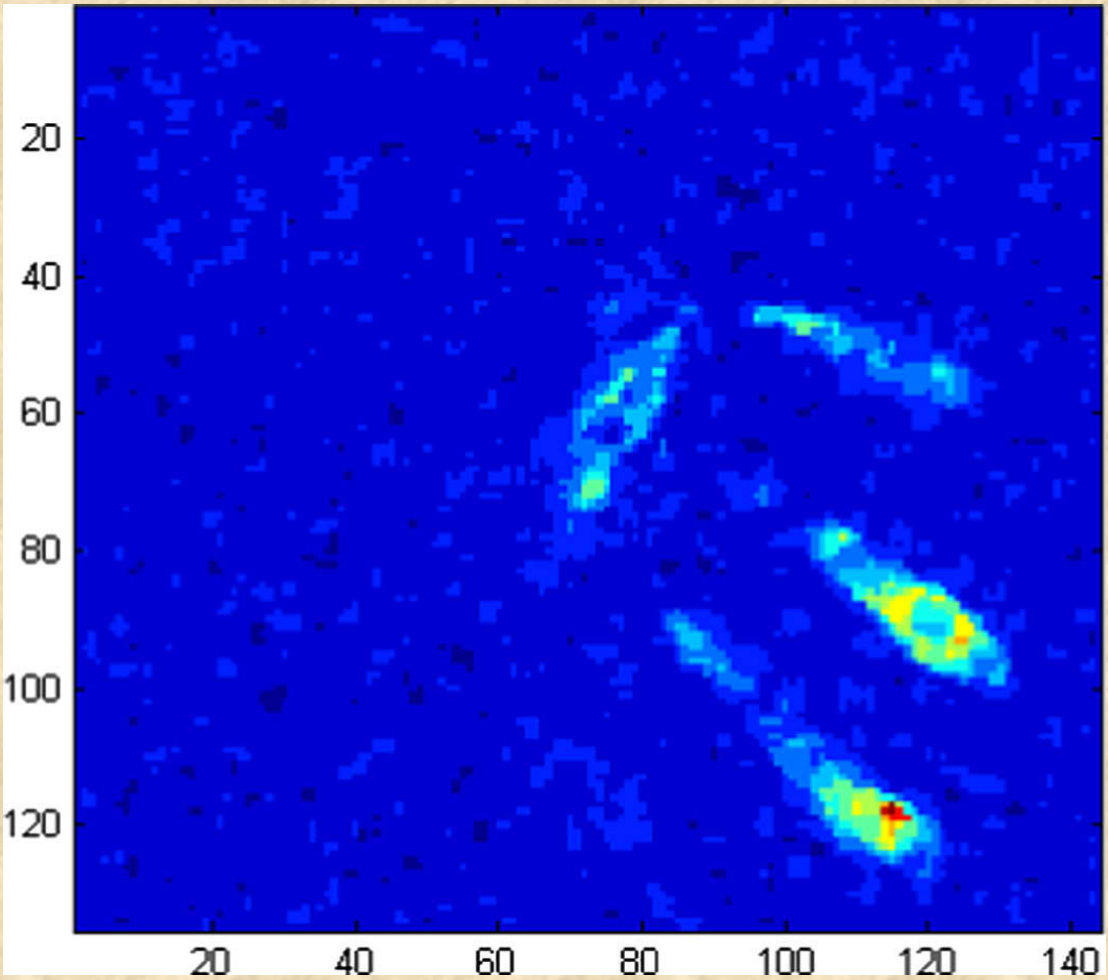


Figure 3. Typical signature from active laser illumination of a handprint of PETN on a painted autobody sheet. The difference of 1286 and 1296cm ^{1} from the raw images is shown. The axis scales corresponds to the pixel number.

In summary, we have designed a new standoff IR device for detecting organic molecules such as explosives using quantum cascading laser sources. The concept we have demonstrated offers high potential for miniaturization. The next-generation instruments will be hand-held and battery operated. Currently, we use commercially available IR cameras for detecting backscattered laser radiation. With IR detection systems optimized for the special case of active laser illumination, a significant further increase of sensitivity is expected.

References:

1. S. Wallin, A. Petterson, H. Östmark, A. Hobro, Laser-based standoff detection of explosives: a critical review, *Anal. Bioanal. Chem. 395*, no. 2, pp. 259-274, 2009. doi:10.1007/s00216-009-2844-3
2. C. W. van Neste, L. R. Senesac, T. Thundat, Standoff photoacoustic spectroscopy, *Appl. Phys. Lett.* 92, pp. 234102, 2008. doi:10.1063/1.2945288
3. M. B. Pushkarsky, I. G. Dunayevskiy, M. Prasanna, A. G. Tsekoun, R. Go, C. K. N. Patel, High-sensitivity detection of TNT, *Proc. Nat'l Acad. Sci. USA 103*, no. 52, pp. 19630-19634, 2006. doi:10.1073/pnas.0609789104
4. R. E. Hummel, A. M. Fuller, C. Schöllhorn, P. H. Holloway, Detection of explosive materials by differential reflection spectroscopy, *Appl. Phys. Lett.* 88, pp. 231903, 2006. doi:10.1063/1.2210077
5. F. Fuchs, S. Hugger, M. Kinzer, R. Aidam, W. Bronner, R. Lösch, Q. Yang, K. Degreif, F. Schnürer, Imaging standoff detection of explosives using widely tunable midinfrared quantum cascade lasers, *Opt. Eng.* 49, pp. 111127, 2010. doi:10.1117/1.3506195
6. R. Furstenberg, C. A. Kendziora, J. Stepnowski, S. V. Stepnowski, M. Rake, M. R. Papantonakis, V. Nguyen, G. K. Hubler, R. A. McGill, Stand-off detection of trace explosives via resonant infrared photothermal imaging, *Appl. Phys. Lett.* 93, pp. 224103, 2008. doi:10.1063/1.3027461

7. J. Faist, M. Beck, T. Aellen, E. Gini, Quantum-cascade lasers based on bound-to-continuum transition, *Appl. Phys. Lett. 78*, no. 2, pp. 147, 2001. doi:10.1063/1.1339843
8. R. Maulini, A. Mohan, M. Giovannini, J. Faist, E. Gini, External cavity quantum-cascade laser tunable from 8.2 to 10.4μm using a gain element with a heterogeneous cascade, *Appl. Phys. Lett.* 88, pp. 201113, 2006. doi:10.1063/1.2205183

***Frank Fuchs** – Fraunhofer Institute for Applied Physics, Freiburg, Germany – is a group manager whose most recent research concentrates on standoff detection of hazardous substances using IR laser-based optical techniques. He is project manager of the Infrared-Laser-based Detection of Explosives and the Infrared Laser-Based Fibre-Optic Sensor System for Drinking Water Monitoring projects, which are German government-funded projects.*

Terror's new weapon: Capsule bomb

Source:http://timesofindia.indiatimes.com/city/delhi/Terrors-new-weapon-Capsule-bomb/articleshow/12139641.cms

The interrogation of Lashkar terrorist Ahtesham Malik has revealed that he was assembling a 'capsule bomb' to carry out attacks at Chandni Chowk.

A police officer said they are yet to come across capsule bombs in previous blasts. Police had seized from the Lashkar operatives 3000 empty cases of capsules in three different sizes, beakers, funnel, dropper, thermometer, gloves, three packets of fire-crackers, one litre of sulphuric acid and two detonators which, the sources said, was to be used in manufacturing capsule bombs. Ahtesham told police the material was procured from Chandni Chowk, the sources said.

As many as 11 memory cards were seized from the Lashkar terrorist, which had video clips of him allegedly making bombs and using firearms. One of the videos purportedly shows Ahtesham making a capsule bomb, they said.

"Capsule bombs can inflict casualties. The explosive is put in a capsule, which is attached to a detonator. We haven't come across such bombs in the national capital in the recent past," said a senior police officer. He said, "We arrested them before they could carry out a blast in the Chandni Chowk area using IEDs."

Ahtesham has been trained in hurling grenades as well, the police officer said. "It is tough for terrorists to smuggle RDX across the border. Lashkar and JuD are now training their cadre to make bombs using chemicals bought from local markets. We are on the look out for the person who provided them with detonators," the officer said.

The probe also threw up evidence of links between Pakistan-based Jamaat-ud-Dawa (JuD) and Lashkar. Ahtesham told his interrogators he was mentored by Jamaat-ud-Dawa leader, Hanzala. They said Hanzala had given him a few stickers in Urdu espousing jihad.

JuD is the political arm of Lashkar, arranging finances in the garb of charity for LeT to carry out terror operations across India, the sources said.

Hafiz Saeed is said to be a senior leader of Jamaat-ud-Dawa, they said.

Apart from meeting Jamaat-ud-Dawa leaders in Pakistan, the Lashkar terrorist was reporting to Abu Hamza, a top LeT terrorist in Kashmir. Ahtesham, the sources said, came back to India on January 26 after undergoing terror training in Pakistan. " He motivated his friend Shafaqat in the national capital to carry out the attack. Together they conducted recce of the markets in Delhi," said the officer. Lashkar terrorists Ahtesham, Shafaqat and Tawseef Peer were arrested by police last week.

Growing use of IEDs by anti-government insurgents in Syria

Source:http://www.homelandsecuritynewswire.com/dr20120306-growing-use-of-ieds-by-antigovernment-insurgents-in-syria

The monthly number of IEDs reported in Syria jumped 134 percent from December to January; analysts say this is an indication of foreign involvement with the rebels

Whether or not elements of al Qaeda have infiltrated and Syrian insurgency against the regime of Bashar al-Assad, the rebel forces in Syria have began to use tactics favored by Islamic insurgents in Iraq and Afghanistan: IEDs.

The sheer increase in the number of IEDs aimed at Syrian government forces has led outside observers to suspect that foreign elements are now involved with the anti-Assad rebellion. The *USA Todayquotes* Army Lt. Gen. Michael Barbero, commander of the Pentagon's lead organization to combat improvised explosives, to say that "If they can sustain this trend, that indicates some external support."

The monthly number of IEDs reported in Syria jumped 134 percent from December to January, according to the Pentagon's Joint IED Defeat Organization.

To other observers, the presence of improvised explosive devices, or IEDs, and the heightened level of fighting suggests that Syria has moved beyond a citizen revolt, analysts say. "We have reached a point where it is an insurgency," said Joe Holliday, an analyst at the Institute for the Study of War.

Dagestan 'black widow' bomber kills Russian police

Source: http://www.bbc.co.uk/news/world-europe-17284554

A suicide bomber has killed herself and five police officers in Dagestan, Russia, weeks after security forces killed her husband, prosecutors say.

The bomber attacked a checkpoint in the village of Karabudakhkent using a bomb packed with shrapnel, and two other police officers were wounded.

She was later named as the widow of a militant killed by special forces along with four others in February.

Russia has a history of women suicide bombers known as "black widows".

They are associated with the North Caucasus where Islamist militants in Dagestan and neighbouring Russian republics are waging a separatist war against the Russian state.

The President of Dagestan, Magomedsalam Magomedov, has promised compensation for the families of the police officers killed on Tuesday night.

"The situation in the republic, unfortunately, is difficult and only real patriots can carry out their duty, conscientiously and courageously, in spite of the danger," he told a meeting of security officials after the attack.

Relatives of the bomber identified her as the widow of a militant killed on 10-11 February near Karabudakhkent, a village 40km (24 miles) south of the republic's capital, Makhachkala.

Dagestan, a predominantly Muslim, multi-ethnic republic which borders Chechnya, has seen some of the worst militant violence in the North Caucasus in recent years.

At London Olympics, dogs have sniffed out a key anti-terror role

Source: http://worldnews.msnbc.msn.com/_news/2012/03/09/10608188-at-london-olympics-dogs-have-sniffed-out-a-key-anti-terror-role

Benson's tail wagged lazily as he weaved through the crowds in London's St. Pancras railway station.

"Good morning ladies and gents, police dog working," said the pooch's handler, Graham Rowlstone of the British Transport Police, as the pair strode beneath a soaring glass-and-blue-steel ceiling. "Just making sure it's nice and safe for you."

Some travelers and commuters smiled, laughed and said hello to the black lab. A few petted him. But mostly the pair slipped easily through the concourse.

Suddenly, Benson cocked his ears, lifted his tail and picked up the pace. He trotted in front of a nondescript man in a dark blue fleece, sat down and looked up expectantly.

"Good morning, sir. Where are you traveling today?" Rowlstone asked.

It was a drill to show that Benson's explosives-sniffing skills were still sharp. The dog passed the test and the man in blue – dog trainer and police officer Paul Saunders – dropped a tennis ball, which Benson chewed enthusiastically.

Dealing with threats

As Britain gears up for the estimated one million visitors expected to descend on the city for the 2012 Olympic Games, bomb-sniffing teams like Benson and Rowlstone are preparing to deal with the threats that come with the big crowds.

Benson is a relative newcomer to the explosives-detection space, which has been long dominated by "proactive" dogs, which concentrate on inspecting places such as lost-luggage departments and suspicious packages left on trains and buses. In other words, they deal with stationary targets.

About three years ago, the British Transport Police and others began to train so-called passive dogs like Benson, which search for explosives among crowds of people, essentially following a scent until it stops.

NBC News

Officer Graham Rowlstone of the British Transport Police pats Benson after he correctly identifies a threat in London's St. Pancras Station.

Bomb-sniffer dogs are an integral part of the system in place meant to keep travelers safe and public transport running smoothly, British Transport Police Inspector Ed Purchase told msnbc.com.

"The dogs are an extended part of the security operation within London and around the country, making sure the railways are safe, members of the public are safe and that we can keep all the transport system open," he said.

With the biggest and oldest dog unit in the country, the British Transport Police – in charge of policing Britain's railways and subways – know what they're talking about.

Attack highly likely?

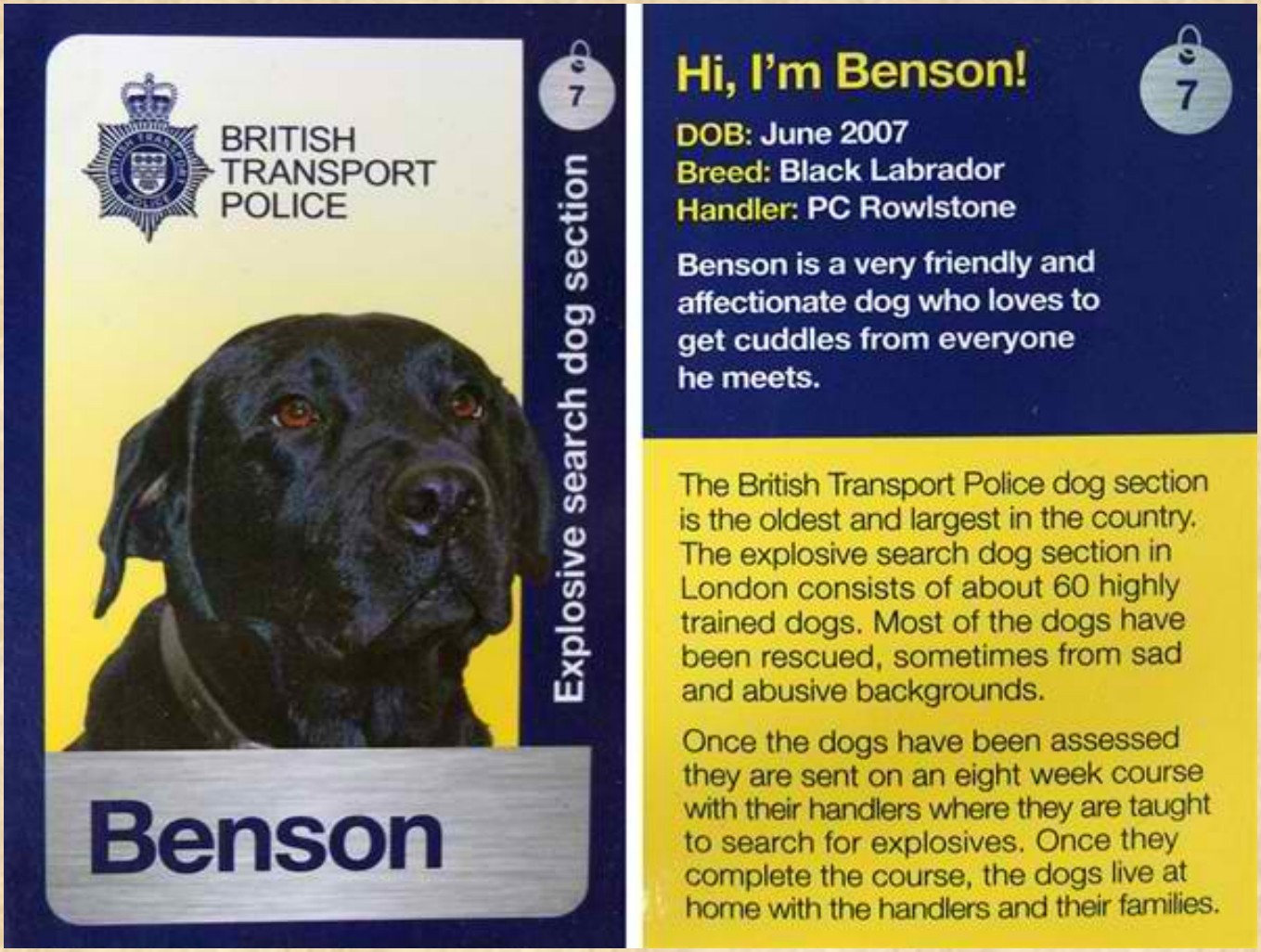
Britain has faced threats to its mass transit systems for well over a century – the first terrorist strike on London's

underground network was in the 1880s.

And just a day after the announcement was made to award the Olympics to London on July 6, 2005, the city suffered its worst peacetime attack when four suicide bombers killed 52 commuters.

So it comes as no surprise that the issue of security on the country's transport system weighs heavily on the minds of the Olympics organizers.

The games will see the U.K.'s largest peacetime security operation involving tens of thousands of security officials, with 13,500 military personnel, 12,000 police and 10,000 private contractors.



Current potential dangers to London come from a variety of sources including al-Qaida and related jihadi groups, right-wing extremists and Northern Ireland-related militants, according to officials.

The U.K.'s alert level is expected to be raised to "severe" during the games, meaning that an attack is considered highly likely, the government says.

Four-legged ambassadors

For Benson and his canine colleagues it will be a busy time. But while they are most valued for their keen noses, the dogs also have a key public relations role to play.

"(The dogs) are a tool … effective across a range of activities – reassurance, engagement with the public and detection – that's why they're attractive to us," Superintendent Philip Trendall, of the British Transport Police's Counter Terrorism Support Unit, told msnbc.com.

"People notice us a lot more," said Constable Tony Mart, who works with another black lab, named Pete. "They will always see a police officer with a dog. The interaction with the public is great," he said.

About a dozen passives have been incorporated into the team over the last three years, Trendall said, but declined to discuss their success rates.

CBRN Device Neutralization

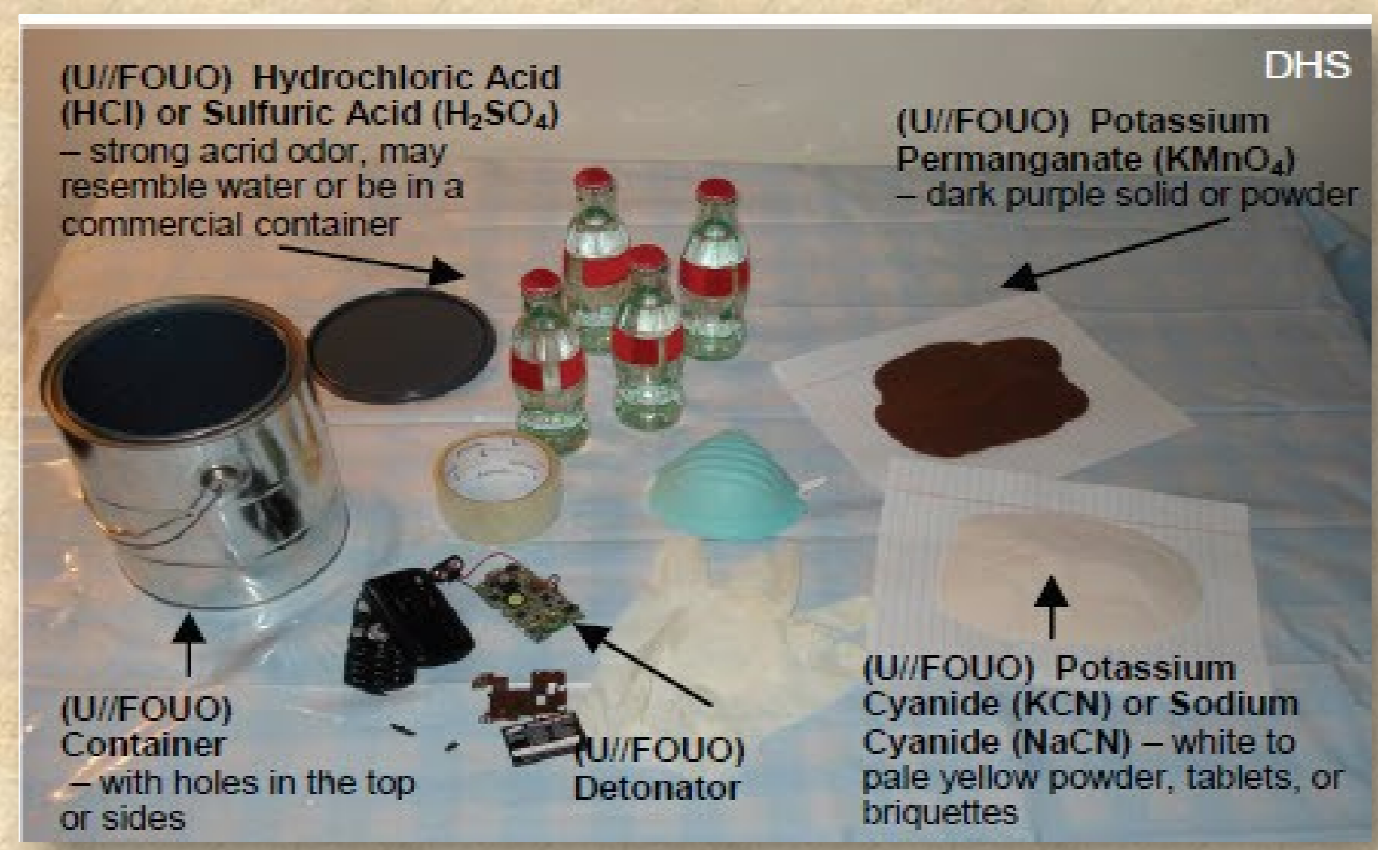
By Warren Melia

Source: http://cbrnresourcenetwork.com/newsDetail.cfm?id=29

The threat of CBRN attack has been assessed as significant for over 10 years in the UK, the need for capability is well established and millions of pounds are spent annually on providing adequate protection to the public yet it is still a threat for which there is minimal dedicated response capability for. Analysts have compared this situation to the need for an insurance policy to cater for an incident that may never happen - resulting in the decision to obtain minimal cover.

Historical incidents have highlighted the potential for mass casualties, 1984 Rajneesh sect in US infecting 751 casualties with Salmonella and in 1994 Aum Shinrikyo killing 19 and injuring 1900 with Sarin gas attack on the Tokyo subway. The main focus of CBRN provision has therefore been focussed on Mass Decontamination, Detection, Containment, and Mitigation to reduce the impact of a release and manage the consequences effectively rather than developing an effective response to neutralise a suspected CBRN threat.

What has yet to be fully experienced is a multiple CBRN attack or prolonged campaign with simple devices such as the **Mubtakkar chemical weapon** designed by AQ and intended for use on subways in New York in 2005; my experience as both an EOD commander and FRS instructor has highlighted how few CBRN trained responders are aware of this existing threat, how it operates, or the hazards it poses. Current operational structures do not cater for neutralising this threat because EOD is still a separate capability to CBRN. A good example of this is the ORBAT of the NATO CBRN Task Force whose role is limited to detection, monitoring, sampling and protection. Another factor to consider is that commercial providers focus on selling detection and protection equipment which further isolates the need to incorporate



neutralisation capability as a primary component of CBRN capability.

The development of comprehensive policy and multi-agency co-ordination planning is generally excellent with numerous training events taking place at National and Regional levels every year in many countries - all vital in mass casualties scenarios. Counter proliferation and intelligence are other aspects which have received considerable attention and are potentially significant factors for the denial and deterrence of bulk quantities of quality CBRN materials being obtained illegally.

A CBRN device is likely to include some form of improvised initiation system, a mechanism which is defined by the NATO definition for an IED:

"A device placed or fabricated in an improvised manner which incorporates destructive, lethal, noxious, pyrotechnic or incendiary materials designed to destroy, disfigure or harass. They may incorporate military stores but normally use non-military equipment"

Developing effective CBRN neutralisation capability has to be considered as an essential element of a National capability with an emergency level of capacity available to first responders. Dealing with the threat before it becomes a consequence is cheaper, the response quicker and ultimately this approach is much more effective in the long term. The European Defence Agency has taken a great step forward by developing a CBRN & EOD Planning Team in 2006 to study and exercise these 2 capabilities concurrently to examine their potential as a single strand.

Emergency neutralisation options for CBRN devices are limited, the consequences of failure are considerably high and this is possibly why capability has been focussed on consequence management. The question however is this - is it better to effect neutralisation and achieve something or to allow a device time to initiate as intended? Emergency neutralisation is a critical element of CBRN capability, in the event of a live incident this is the option which provides commanders with a time critical solution. Without it the only recourse is to prepare for a worst case scenario and wait for specialist teams to arrive.

CBRN capability that can be delivered by EOD teams includes: device diagnostics to quickly determine complexity and possible hazard; options for emergency neutralisation and emergency mitigation to reduce device effectiveness.

Terrorist attacks now rarely arrive in single numbers or with just one device, history has evolved the capacity for terror groups to understand how to achieve an aim despite elaborate and robust security measures. In 2006 the Target Europe study concluded that 25% of all terrorist plans since the mid-1990s were intended to be CBRN attacks. The need to execute terrorist attacks using multiple devices, distractions, secondary devices and hoaxes is also well established. An emergency neutralisation option delivered by an EOD team supported by CBRN assets will help to filter the incident categories quickly and enable task priorities to be determined effectively.

While considered and argued as essential, emergency neutralisation options do not need to be executed unless the Operational Commander believes it is viable and appropriate based on the perceived outcomes; deliberate plans can and should still be developed if time or intelligence permits.

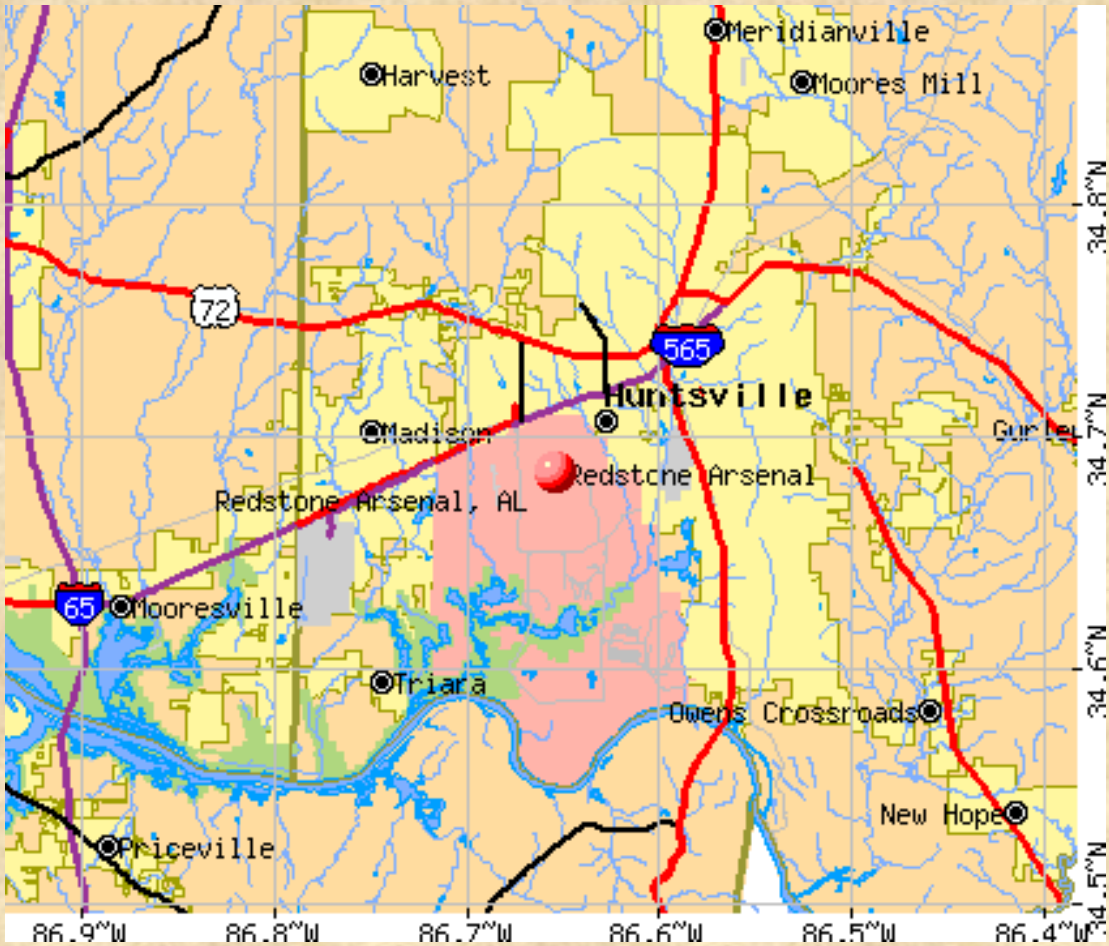
Warren Melia, *MIExpE retired from military service in 2008 as the Command Senior Ammunition Technician at HQ Land Forces, where he was the technical advisor to the Capability Director for UK CBRNE operations. Since then, he has worked for West Midlands Fire Service Academy as a CBRNE instructor and is currently a freelance consultant.*

Arsenal offers explosives, anti-terrorism training

Source: http://www.dailycomet.com/article/20120318/APN/1203180536?p=all&tc=pgall

There's a small town on Redstone Arsenal where would-be terrorists regularly plant explosives in the post office, church and airline terminal; where a disgruntled ex-husband mad at the government is always busy building a bomb in his room on "Twin Towers Ave."

It would be the most dangerous, bad-luck burg in all the world if anyone lived here.



This is a group of 14 tiny training villages set up by the FBI Hazardous Devices School. It opened in 1971 in partnership with the Army, and every certified civilian bomb disposal technician in the United States has graduated from here.

Classroom lessons about bomb suits, robots and methods of dealing with an explosive device are applied to real-life scenarios on these streets, where an "Anarchist Bookstore" sits next to the U.S. Army Recruiting Office, and the movie theater marquee features "The Hurt Locker."

But today the arsenal also is home to a growing enterprise devoted to shielding citizens and soldiers around the world from the indiscriminate carnage of Improvised Explosive Devices and other blasts.

The Bureau of Alcohol, Tobacco, Firearms and Explosives moved its National Center for Explosives Training and Research here into a new headquarters that opened in October 2010. And soon, ground will be broken on new laboratories and offices for the FBI's Terrorist Explosive Device Analytical Center, now located at Quantico, Va.

"The FBI looks forward to expanding our presence at Redstone Arsenal and joining our partners in helping to eradicate the IED threat both domestically and abroad," said FBI Special Agent Ann Todd.

Known as TEDAC, the Virginia center was created to help the Department of Defense counter the IED threat in Iraq and Afghanistan, according to the FBI. It uses state-of-the-art forensic and intelligence techniques to examine IEDs from those countries and from allies overseas - more than 71,000 since the first was received in October 2003.

The TEDAC team also includes representatives from the DoD, ATF, the intelligence community and international partners. They use the evidence and intelligence gathered

from the IEDs to prevent future attacks, disarm or disrupt the devices, identify and prosecute those involved, and more.
The work is secretive, of course.

But TEDAC's role in an FBI investigation that led to the arrest last year of two Iraqi nationals living in Bowling Green, Ky., made the news. Waad Ramadan Alwan and Mohanad Shareef Hammadi were indicted for allegedly trying to send weapons overseas to assist al-Qaida .
According to published reports, Alwan allegedly

told an informant how he had built and placed IEDs in Iraq. TEDAC experts later matched his fingerprints to those on an unexploded IED recovered by U.S. troops there in 2005.
"(TEDAC's) work is going to be very consistent with the type of training that goes on at the Hazardous Devices School and the type of training that goes on here," said Carl Vasilko, director of the ATF's National Center for Explosives Training and Research. "The three I think will mesh very well ... and form a comprehensive network of training, research and exploitation" of evidence and intelligence.
Behind the red-brick walls of the ATF's new explosives center in Huntsville are 83,500 square feet of classrooms, a mock courtroom, laboratories, a full suite of audio-video facilities and offices. There is a full-time staff of 20 ATF agents and instructors, along with some part-time help.
"We do all of our internal explosives training for ATF personnel," Vasilko said. Those include certified explosives specialists, industry operations investigators, explosives enforcement officers, and others.

In addition, training programs are offered to local, state and international law enforcement professionals. Areas covered include post-blast investigation techniques and processing of an explosives crime scene. Another is "Homemade Explosives Investigation Techniques," which includes the improvised explosives that have become prevalent in the United States as well as overseas, he said. They also offer advanced training on how to dispose of explosives.

"On many occasions, explosives are recovered by ATF personnel, by state and local bomb technicians, that are hazardous materials," Vasilko said. "They are explosive materials, but they are not IEDs. So those materials have to safely be destroyed. It could be anything from free-flowing black powder, smokeless powder, deteriorated commercial explosives ... Even off-the-shelf commercial explosives can deteriorate."

Last year, the ATF center's first full year, saw just over 1,000 students in the regular one- and two-week classes, and another 250 or so that were in special one-day special classes. Vasilko expects those numbers to grow by 40 to 50 percent this year.

He emphasized the value of being located on the arsenal with the FBI's Hazardous Devices School and other federal resources. The Army's Ordnance Munitions and Electronics Maintenance School, which among other things trains soldiers in explosive ordnance disposal, moved last year from the arsenal to Fort Lee, Va. But the Army and Department of Defense are still "very much a partner with us here," Vasilko said.

"The prime example of that partnership is the homemade explosives course. It's attended by military EOD as well as state and local bomb technicians, other federal agents and ATF personnel. The class is mixed intentionally," Vasilko said.

As more explosives resources are located on the arsenal, Vasilko expects even more benefits from the interaction.

"Everybody is looking to collaborate and cooperate. What we're trying to achieve is an all-of-government approach to the counter-IED and explosives problem," Vasilko said. "That's everybody's goal. I think we're well along and going to be further along when TEDAC relocates here to Redstone Arsenal."

Syrian rebels take on army tanks with home-made bombs

Source:http://www.google.com/hostednews/afp/article/ALeqM5ixWay2ieAshoHqiFC07dObHSm7Og?docId=CNG.69b619386661df32b641f3b9750e525c.4f1

The electric fuse connects to the battery, Abu Suleiman shouts "Allahu Akbar!" and the gas canister explodes, tearing up the road just a few kilometres (miles) from a Syrian army position.

For the rebel chief, whose men control a mountainous region of northern Syria, preventing the army from using this route near the Turkish border is a matter of life or death.

"I have cut off three roads into the village that they still control, so they now only have one and we can attack it," says the bearded 35-year-old, from Hama, whose father was killed in a 1982 massacre of Muslim Brotherhood rebels.

To supply his men with weapons, Abu Suleiman buys Kalashnikov assault rifles from mostly Lebanese arms traffickers, but for the explosives needed to blow up the roads and strike army tanks, his group turned to the Internet.

"I found what materials were needed to build a home-made bomb on the web, I copied the information onto a memory stick and brought it here," explained one of his men.

Abdullah is builder by profession, but was an army bomb expert during his military service. He is in charge of the workshop that produces

the rebels' home-made bombs -- a bare room built from breeze-blocks near a rebel safe house.

Inside, aluminium nitrate, fertilizer and diesel fuel are mixed together and heated to create an explosive paste, and the detonators are then made from small tubes filled with the paste and wired up to an electric fuse.

"It's not very difficult, and with heavy equipment we have already managed to stop the tanks,"

said Abdullah, who opened his laboratory last July, four months after the anti-regime protests and bloody crackdown first began.

"Stopped, not destroyed. We damage the tracks so they can't advance. To destroy the tanks we would need something more powerful, which we don't have. But we are stopping them, and they are starting to get scared."

Tools and materials lie on the ground -- drill, pliers, batteries, metal, welding machine. Car alarms are used to make remote control detonators.

In the corridor, three gas canisters filled with explosives are wired up and ready to use. Five cartons of aluminium nitrate lie in a pick-up truck outside.

Abdullah also makes bombs from 20-centimetre (eight-inch) metal pipes, welded at both ends and covered with pieces of metal for shrapnel.

"It is dangerous, it's true ... You have to be careful."

In a nearby house, he points to the walls that were shaken and the ceiling blackened in an accidental explosion.

"Just 200 grammes. It blew up while we were making the mix ... Luckily it was on a plate, and we were only lightly hurt. If it had been in a tube we would have been killed."

The rebels use the same explosive mix to build hand grenades -- a piece of metal tube closed at both ends with a wick sticking out.

On the road where the rebels detonated the gas cylinder wedged inside a drainage duct, Abu Suleiman rushes to inspect the damage. On the right, the road is blown away, but on the left it is merely damaged.

"Quick! Bring me another!" he orders his men.

Another bomb is inserted in the tunnel, a car approaches within sight of the armed men, does a U-turn and disappears, the men run for cover and another loud blast rings out.

This time the crater is huge and the road is impassable.

In a small village below, a.armed residents emerge on their doorsteps.

Abu Suleiman makes the victory sign and shouts: "Up yours, Hafez al-Assad!" father of the current president, who was in power at the time of the Hama massacre, an event that for so many defined the brutality of the Assad dynasty.

Afghanistan Terror Plot: 11 Suicide Vests Reportedly Found At Ministry Of Defense

Source: http://www.huffingtonpost.com/2012/03/27/afghanistan-suicide-vests_n_1382227.html

The Afghan Defense Ministry was locked down for two hours Tuesday after an intelligence report warned that the highly secured compound in the heart of Kabul was under threat of attack. Afghan officials said later the report was false.

In other incidents across Afghanistan, a NATO service member died in an explosion in the south, and a militant who led operations for an al-Qaida-linked terror group was killed by Afghan and coalition troops in the north.

In Kabul, two Afghan officials, who spoke on condition of anonymity to discuss the lockdown at the ministry, said the threat emerged from faulty intelligence.

Several news organizations reported that on Monday, nearly a dozen vests packed with explosives were found, and more than a dozen suspects, including Afghan soldiers, were arrested in connection with an alleged plot to attack the ministry.

The ministry issued two statements on Tuesday, both calling the media reports baseless.

The second statement said, "Sixteen people have not been captured. Eleven suicide vests have not been recovered."

On April 18, 2011, a suicide attacker managed to sneak past security at the defense ministry, killing two Afghan soldiers and an Afghan army officer.

Also Tuesday, the U.S.-led military coalition said a NATO service member died in a roadside bombing in southern Afghanistan.

The coalition did not disclose the nationality of the service member or other details about the incident.

So far this year, 86 international troops have been killed in Afghanistan.

Also, the coalition said the leader of the Islamic Movement of Uzbekistan in Afghanistan was killed Monday in Faryab province. During the operation in Shirin Tagab district, insurgents fired on Afghan and coalition troops. The joint force returned fire, killing Makhdum Nusrat, NATO said. Two other insurgents were detained along with a cache of weapons.

The coalition said Nusrat, the movement's highest-ranking insurgent in Afghanistan, led attacks against Afghan and coalition troops in Northern provinces for the past eight months and was plotting the assassination of a member of parliament in Kabul.

The Islamic Movement of Uzbekistan was formed in 1991, originally aiming to set up an Islamic state in Uzbekistan, which borders

Afghanistan. Later it expanded its goal to seeking an Islamic state across Central Asia. Aligning itself with al-Qaida, it has been most active in the northern provinces of Afghanistan.

April 27, 2011

Al Qaeda & Google's YouTube Presents: How To Make A Suicide Vest

Source: http://mypetjawa.mu.nu/archives/207575.php
Via Andrea: Students of jihad, cover this material well in your quest for martyrdom

Enter the1black1wolf, gracing the jihad halls of YouTube with impunity since June 28, 2010. A perfect example of internet users with fifty videos that cover violence, propaganda, snipers, executions and - a suicide bomber assembling his own vest:

NOTE: All the relevant has been deactivated but who knows for how long they were easily accessible…

Test strip detects TNT and other explosives in water

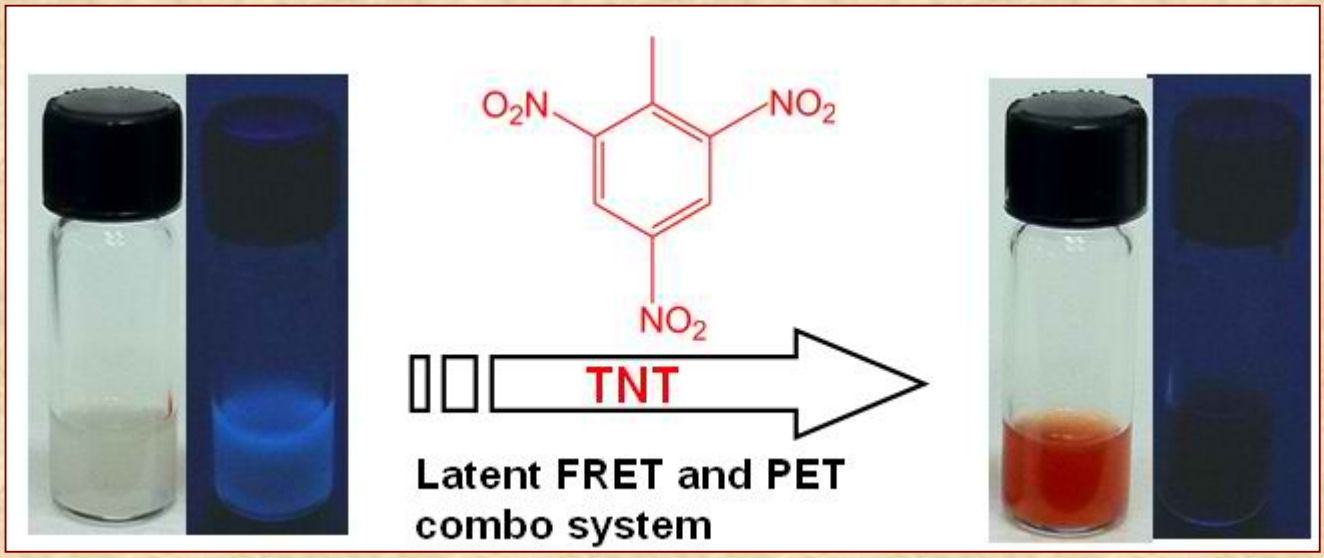
Source:http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=222&content_id=CNBP_029665&use_sec=true&sec_url_var=region1&__uuid=20f21021-9794-46c5-839b-ff2caafa7839

Scientists yesterday described development of a new explosives detector that can sense small amounts of TNT and other common explosives in liquids instantly with a sensitivity that rivals bomb-sniffing dogs, the current gold standard in protecting the public from terrorist bombs. They reported on the technology, suitable for incorporation into a TNT test strip, at the 243rd National Meeting & Exposition of the American Chemical Society (ACS), being held in San Diego this week.

The sensor also has potential uses in detecting water pollution involving TNT, according to Yu Lei, Ph.D., and Ying Wang, who developed the sensor. Such contamination can occur from production, obsolete storage facilities, and other sources. TNT contamination of drinking water carries a risk of serious health disorders.

An American Chemical Society release reports that Wang, a graduate student in Lei's laboratory at the University of Connecticut, said there has been a long-standing need for a fast, simple, accurate way to detect so-called "nitroaromatic compounds" in salt water, fresh water and other liquids. That family of compounds

includes 2,4,6-trinitrotoluene — TNT — which is so widely used in construction, agriculture and military applications that it has become the standard for measuring explosive force, even for nuclear weapons.



"Law enforcement or homeland security officials concerned about the presence of TNT in a harbor at docks need an answer quickly so they can take steps to protect people and property," Wang pointed out. "That's not easy with traditional testing methods."

Those tests involve taking a sample of water and shipping it to a full-scale laboratory. The sample must be concentrated because water currents dilute the explosive, leaving only minute amounts in the sample. And water samples must be prepared in other ways before analysis with expensive laboratory instruments.

"Our new sensor promises to provide answers on-the-scene almost immediately," Wang added, noting that it is based on a color change that occurs when a sensing molecule in the device attaches to an explosive. Lei explained that the device can detect very small amounts of TNT, as well as larger amounts. The broad sensing range, high sensitivity and dual action make this new sensor unique among those that work on water-based samples, he noted.

So far, Lei and Wang have been able to detect concentrations of explosives, such as TNT, ranging from about thirty-three parts per trillion (equivalent to one drop in twenty Olympic-sized swimming pools) to 225 parts per million.

Lei and Wang explained that the sensor is already easy to use, but they plan to make it even more user-friendly by incorporating it into a paper strip, similar to the test strips used to test for pregnancy. That way, an explosives expert or airport screener would simply dip the filter paper into a sample of ocean water or other liquid, and put that filter paper into a machine that would read the fluorescence and detect the presence of explosives in real time. The sensor also could be used to detect TNT that leaches into the environment, in streams or rivers near munitions testing sites and manufacturing facilities.

Al Qaeda bomb-making expert publishes magazine detailing how to make explosives

Source:http://www.nydailynews.com/new-york/al-qaeda-bomb-making-expert-publishes-magazine-detailing-explosives-article-1.1058969#ixzz1rf4gwACs

Al Qaeda's many-headed media beast is back at it — a bomb-making expert has published a new e-magazine providing how-to info for would-be terrorists.

The first installment to circulate through jihadist online circles is ominously titled Al Qaeda Airlines and features an image of a silhouetted twin-engine airliner climbing into the sunset.

The 73-page text was penned by longtime jihadist and explosives guru Abdullah Dhu al-Bajadin, according to the SITE Intelligence Group, which

monitors jihadist Web traffic. The mysterious figure is credited with writing an Internet encyclopedia of terror tradecraft, and once fielded online questions about bomb-making from wanna-be evildoers.

The first installment outlines chemistry fundamentals and a recipe for the poisonous anesthetic chloroform.

"We chose that because the beginner mujahid can prepare it at home using materials that are available in grocery stores and supermarkets," the author wrote, according to a SITE translation.

Al Qaeda previously shared bomb-making tips in its Arab affiliate's English-language e-magazine Inspire. Its run ended last year when a U.S. drone strike in Yemen took out publisher and former New Yorker Samir Khan, along with radical American Imam Anwar al-Awlaki.

Cops charge that Manhattanite Jose Pimentel consulted a 2010 Inspire article titled "How to Make a Bomb in the Kitchen of your Mom" in a plot to attack U.S. service members. "We continue to be concerned about terrorist Internet publications, which were used most recently by Jose Pimentel," said Deputy NYPD Commissioner Paul Browne. "That's why we monitor the Internet for terrorist recruiting and training."

The Airlines title appeared Saturday on a prominent jihadist forum, which mysteriously went offline along with five others late last month; it reappeared April 4.During the blackouts, another forum featured a graphic depicting the New York skyline with the words "Al Qaeda coming soon again in New York."Debate persists over whether to take down the forums or to stand back and mine them for crucial intelligence.

Former State Department terrorism analyst Will McCants, who advocates the latter approach, noted that such technical information is already widely available.

Hands-on terror training is much harder to come by, he said

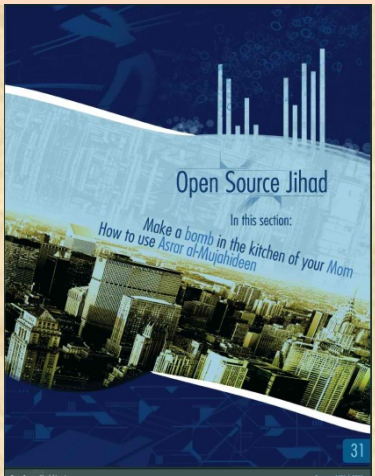
Ex-White House homeland security advisor Frank Cilluffo, who is now withGeorge Washington University, argued the U.S. should disrupt forum activity, especially tradecraft that "obviously poses stronger concerns" than pure rhetoric and propaganda.

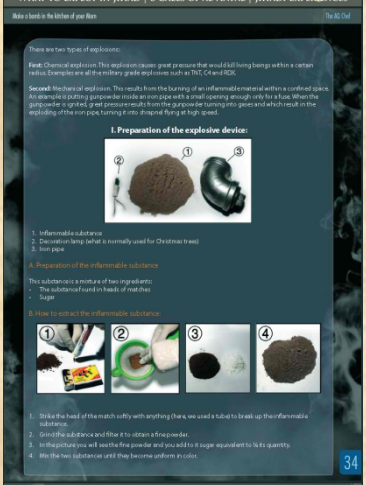
House Homeland Security Committee head Pete King (R-L.I.), said the new pub "underscores the growing threat from radicalization within the Muslim-American community and 'lone wolf' terrorism, which I have repeatedly argued pose one of the gravest threats to U.S. national security."

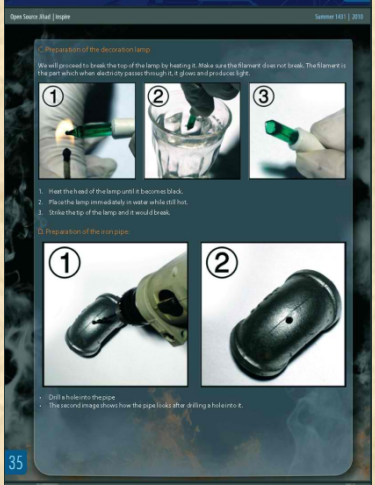
AQ Chef – Make a bomb in the kitchen of your mom

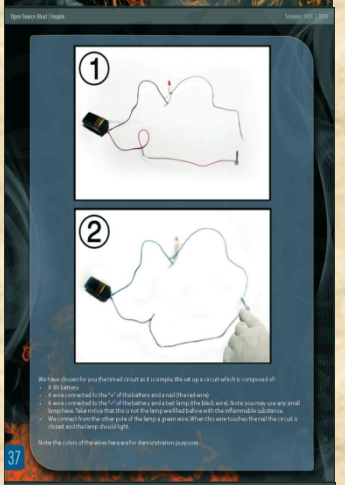
Source: http://cryptome.org/0001/mom-bomb/mom-bomb.htm

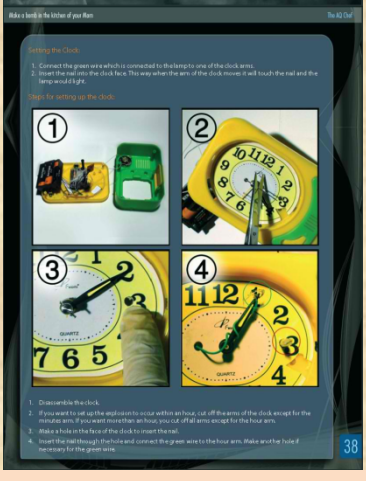
Excerpted from *Inspire*, Summer 1431/2010

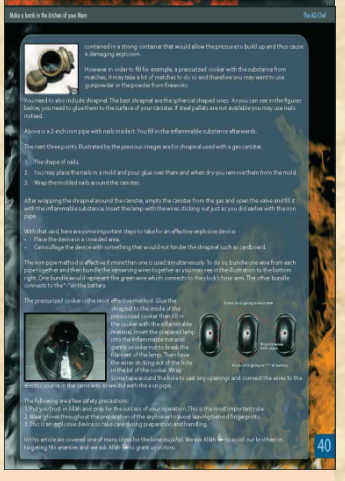












► **NOTE:** Visit source for viewing details in wide screen.

Early Warning systems Developers
KYKLOTRON Ltd

D.R.A.M.S. Early Warning System

Explosives, Ammunitions, Contraband, Drugs, Humans & Bom Detection, Localization & Digital Recording System

DRAMS offers remotely finding and localization of any known explosive from long distance. Explosive detection based on the Magnetic tuned phenomenon (NQR), a tech that detects all common nitrogen & potassium chlorine-based, ammunitions and explosives. Designed to do a quick and efficient survey of any material structures in distances from 0 to > 20.000 meters, setting aside every similar substance. DRAMS is a fully C4ISR system, giving to chief of operations the ability to remotely control and monitoring operations in real time and could:

- Be a very useful tool to 'Clean' (detect and localize in order to remove) an area (city – railway station – port – airport – bus station – building – camp etc) from explosives.
- Protect (detect and localize explosives in real time from a long distance) an area 24 hours a day (city – port – airport – bus station – building – camp, etc) from explosives and narcotics.
- Search, Detect and Localize commercial or non-commercial (hand-made) explosives, IDE's, any Trap embedded explosives, any kind of ammunition in ground, on a long range, underground and deep into the water or sea.

KYKLOTRON E3 sensors works independent from parapet buildings or any kind of barriers, under water or ground.
Detection Range (in tests) : Ground level: 0 to > 20.000 meters (tests carried out in various conditions with no clear line-of-sight. From Aircraft: Up to 6000 meters (4+ miles) Under Water: Up to 50 meters (150+ feet) Underground: Up to 25 meters (75 + feet).
DRAMS technology developed by Kyklotron Ltd and is Certified by 4 Reserved Patents, owned by the company : GR1004926/2005-06-30, GR1005224/2006-06-13, GR20060100352/2008-02-05 , GR20070100067/2008-09-19

Drams Early Warnig System :

- Enables an aggressive policy ability against errorist
- Gives the ability to neutralize AREAS from explosives
- Activates tactics for huge area PROTECTION
- Unique tactical surprise advantage opportunities to security forces
- Precision in detection
- Simultaneous Detection of Multiple Types of Explosives
- Effective Detection of target materials in difficult conditions
- Advanced Architecture
- Long Distance and Accuracy
- Working Environment Flexibility
- Maintenance Free
- Working Environment Flexibility

Detects and Localize the exactly position of :

- Any human carrying explosives.
- Any kind of explosive or ammunitions (missiles, rockets, land and sea mines, mortar shells, projectile weapons, torpedoes, IDE's, any kind of explosives, mixtures and traps).
- Not exploded projectiles.
- Any kind of vehicle, boat, ship, helicopter, train, submarine under water etc that inside of it existed ammunitions or even bullets.
- Any type and kind of building, home, depot, barracks, stations, under ground bolt holes, etc that ammunitions or bullets are been hidden, under ground or under water. Also narcotics, living or dead humans, and other pre-defined material structures.

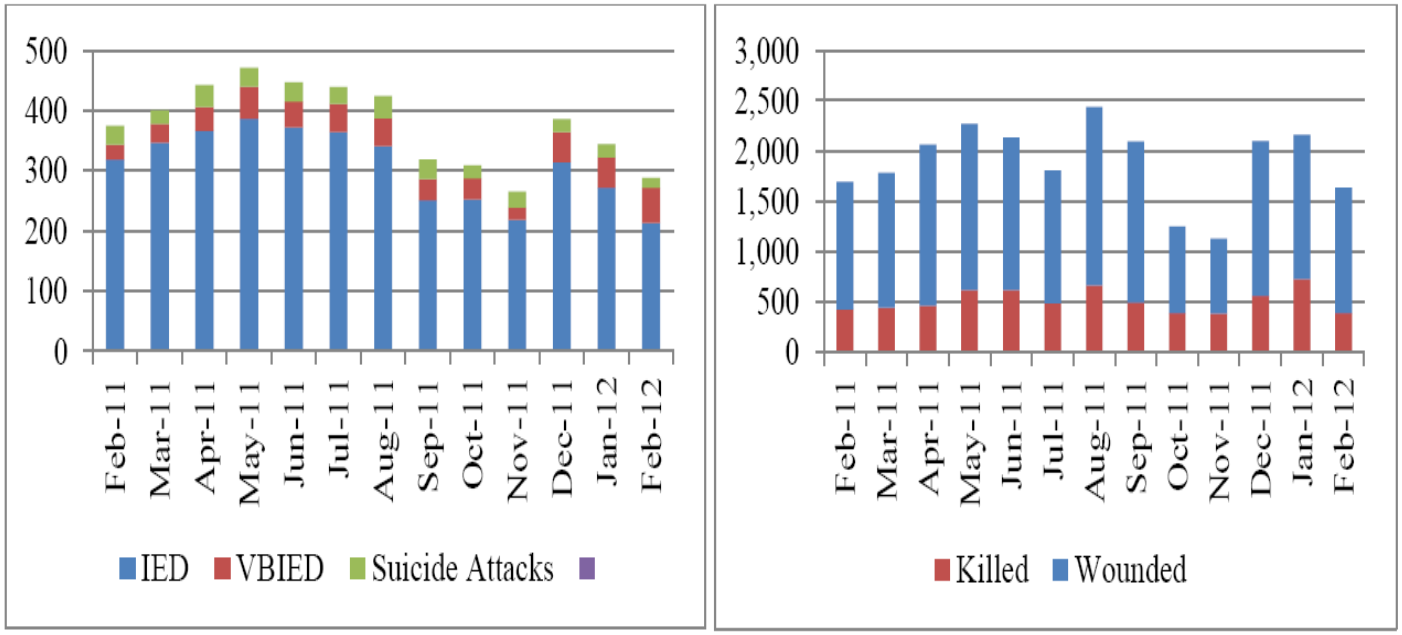
Web: www.kyklotron.com E-mail: info@kyklotron.com Reg.no.IE275416 VAT: 10275416J

Improvised Explosive Devices: A Global Review – January & February 2012

Source: http:// www.cimicweb.org

NATO's Centre of Excellence Defence Against Terrorism (COE-DAT) reported 728 people were killed and 1,434 others injured from 344 reported global IED, vehicle-borne IED (VBIED) or suicide attacks

Figures 1 & 2. IEDs by Type and by Casualty Type, February 2011 – February 2012



during January 2012. A further 389 people were killed and 1,246 were injured in 288 attacks in February 2012. Combined, there were 632 IED incidents in the first two months of the year which killed 1,117 people and injured another 2,680. In comparison, there were 850 non-IED related terrorism incidents globally in January and February 2012 that resulted in 1,201 killed and 929 wounded, according to COE-DAT.

PRESS RELEASE: HZS Offers New Certified Course on EOD/IED

Source: http://www.army-technology.com/contractors/nbc/hotzone-solutions/presshzs-certified-course-eod-ied.html?WT.mc_id=DN_PR

Hotzone Solutions (HZS) recently signed a partnership agreement with **Asymmetric Threat Response** (ATR), a UK-based company.

This partnership will allows us to increase our capabilities in specific areas of our business.

At the moment, HZS is working on new courses to offer to those interested in our industry.

The courses we are working on include introduction to improvised explosive devices (IED), IED threat assessment training, introduction to hazardous device, introduction to unexploded ordnance, introduction to threat analysis, bomb / technician / EOD, IED search training and introduction to vulnerability analysis.

Until death set us apart…

Sergeant Adam Cann was posthumously awarded the Purple Heart.

Möbius: Terrorist Operational Capabilities

Uncovering Terrorist Capabilities

Möbius is a monthly periodical dedicated to technical analysis of physical threats as they appear within the online terrorist arena known as the 'Jihadi Web'; from chat-room discussions during the conceptual phase of attacks, to technical and tactical instructions disseminated by Jihadi media outlets and individual experts, to footage of actual attacks taken by terrorists at the scene.

Key Features

- Gathered from terror networks around the world, uncovering "the latest & greatest" of terrorist capabilities & tactics disseminated worldwide.
- In-depth technical analysis of new technologies, IED recipes and deployment tutorials as they appear deep within the Jihadi Web.
- Tactical assessment & case studies uncovering the modus operandi of actual attacks carried out by terrorists and insurgents.
- Actual terrorist discussions from planning to execution, including associated materials such as schematics, blueprints and videos.
- Information about the intelligence raw-data such as: date, origin, publisher, forum posted, location of attack, responsibility claims and more.
- Conclusions, assessments & lessons learned for combating these evolving threats.

IED construction - Algeria

Inside the Terror Networks

The Jihadi Web reflects current Jihadist operational capabilities with videos and documentation of actual terrorist operations, and drives these attacks with the dissemination of instructional materials and technical discussions. In Jihadi Web-forums, members define targets, brainstorm for operational ideas and learn the ins and outs of manufacturing IEDs, Vehicle Borne IEDs, body worn IEDs, detonators, camouflage, WMDs, poisons, etc. Here, terrorists find respected experts in any field of interest from chemistry to explosives and, perhaps most importantly, the safety of anonymity: a perfect virtual laboratory in which to learn and grow.

Intelligence from Around the World

Möbius investigates the construction, concealment/ camouflage methods, modus operandi, countermeasure awareness and initiation systems applied by terrorists and insurgents whose activities are anchored in the global Jihad Web community which includes tens of thousands of affiliates and participants from around the world. It also provides English translations of technical discussions in Arabic, Farsi, Urdu, Turkish, and additional languages used within the terror networks.

SVBIED initiation system - Afghanistan

Combating Terrorist Threats

Möbius' unique insight combines case-studies of incidents that have already occurred with an analysis of current and evolving capabilities as revealed in Jihadi peer-to-peer platforms, which form the basis of potential future attacks. Terrogence's seasoned explosives, weapons and tactics experts assess potential challenges these capabilities present, and provide conclusions, operational recommendations & counter-measures aimed at assisting the soldiers and counter-terror agencies combating terrorism and insurgency around the world.

Terrogence

Terrogence Ltd.
PO Box 395
Bnei Zion 60910, Israel
Tel: +972-9-7482180
Fax: +972-9-7482179
Email: info@terrogence.com

www.terrogence.com