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BBI
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The Powered Respirator Protective Suit from Respirex™ provides one hour* operational duration for CBRN responders, with an additional fifteen minutes for decontamination.

- Protection against biological hazards, chemical warfare agents, radioactive particulates and a broad range of chemicals
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Welcome to this edition of the Military Systems & Technology newsletter.

As an established web portal for the International Defence & Aerospace Industry, we strive to provide a comprehensive and detailed listing of Military Equipment Suppliers, Products and Services. This newsletter is designed to keep you up-to-date with latest news and events within the Defence Industry's Governing Bodies, Organisations and Companies.

CONTENTS

SUPPLIER PROFILES

CBRNUK™
GREAT BRITISH INNOVATION

STRENGTHENING A NATION'S CBRN DEFENCE, SECURITY AND RESILIENCE CAPABILITIES

The UK chemical, biological, radiological and nuclear (CBRN) defence industry has a worldwide reputation for excellence. CBRN-UK is the national supplier organisation representing UK CBRN industry's capability to government, emergency responders, the military and Critical National Infrastructure operators.

CBRN defence, security and resilience capabilities are defined as all the equipment, technology, procedures and training required to ensure protection, contamination avoidance, operational readiness and effectiveness of Armed Forces as well as of civil defence forces who are responsible for ensuring security of civil population and critical infrastructure in the event of a CBRN attack or accidental release of CBRN substances.

The CBRN Risk

Although the risk of state-on-state use of CBRN weapons has receded in recent years the threat of CBRN terrorism is evolving and, with it, the risk of incidents intended to maximize the number of victims on a global scale. Terrorist groups such as Daesh and Al-Qa'ida aspire to acquire and employ CBRN materials. It is assessed that they are most likely seeking low-level CBR agents, such as ricin, botulinum toxin, radiological dispersal devices, and toxic industrial chemicals like cyanide and chlorine as low cost alternatives. As technology proliferates chemical and biological weapons are becoming more sophisticated.

By Chris Abbott
Chairman CBRN-UK, Managing Director, Watership Associates Ltd. and CEO of ImiTec Ltd.

In addition, industrial accidents such as the Bhopal gas tragedy in India in 1984, the mishandling of dangerous radiological material such as the accidental sale of a disused radiotherapy head containing a Cobalt-60 in Bangkok Thailand in 2000 show the damage that can be caused by either malicious actors or the misuse of CBRN materials. Such incidents also highlight security and safety vulnerabilities surrounding CBRN materials and the sites at which they are stored and used.

Drivers of Growth

Governments around the world, particularly those of developed countries, are investing in protecting their citizens from terrorist attacks, including those that could involve CBRN materials. Governments' efforts to avoid or at least mitigate the effects of CBRN incidents are likely to underpin continuing sales growth in the CBRN sector. It is expected that there will be a continuing demand for high-quality protective equipment designed for use by CBRN specialists, as well as more advanced training programmes and other systems necessary for effectively securing CBRN materials as well as detecting and responding incidents or accidents involving CBRN materials. The threat of terrorism is likely to remain for many years, meaning that spending on related products and services is set to continue. If the US or another major developed country suffers a CBRN attack, business opportunities in the CBRN sector market are anticipated to multiply dramatically. This effect has been observed previously, for example in the aviation security market following attempts to bring down passenger aircraft using explosives.

Economic Conditions Putting Pressure on Budgets.

Harsh economic conditions worldwide mean that budgets for CBRN sector programmes have come under increasing pressure, as have other areas of public spending. While governments around the world are struggling to make cuts wherever possible, a perception of a low risk of suffering an attack has tended to make CBRN sector funding a low priority. In certain circumstances this could lead to scaling back or even the cancellation of spending plans. On the other hand it could open up the market place to low cost innovative solutions. In addition, some countries have only relatively underdeveloped strategies for responding to potential CBRN attacks. The procurement of necessary equipment, whether by civilian fire-fighters or specialist military units, depends on responsibilities being properly defined so that funding requests can be justified. Furthermore there is an increasing recognition by some Governments that they have a legal duty to provide some form of protection for the general public although exactly what form this may take is as yet not fully defined.

CBRN-UK

Supported by ADS, the UK's national defence, security and resilience trade organisation, CBRN-UK is uniquely positioned to provide impartial advice to the market regarding current capabilities and areas of innovation. It aims to be the one place Governments can turn to when they need advice and knowledge and aims to provide impartial advice for all CBRN needs.

CBRN-UK comprises over 50 organisations that provide world-class capabilities in all aspects of CBRN. The group represents the full spectrum of suppliers, from large multi-nationals to SME's and academic start-ups. The capabilities offered by CBRN-UK members, either collectively or individually, include:

- **Detection, Identification and Monitoring of CBRN substances – aimed at establishing the release or presence of a CBRN hazard;**
- **Integrated Information Management process and services that provide exploitable CBRN information;**
- **Protection – individual personal and collective physical protection equipment designed to provide protection against direct contact with, and contamination by CBRN substances;**
- **Hazard Management – individual personal decontamination equipment and equipment for decontaminating equipment and infrastructure;**
- **Medical Counter-measures – to diminish the susceptibility of personnel to the lethal and damaging effects of CBRN hazards and to treat any injuries arising from exposure to such hazards;**
- **Training and simulation solutions to prepare individuals and organisations to respond to a CBRN event; and**
- **Expert CBRN Consultancy advice.**

CBRN-UK members deliver capabilities that will reduce the likelihood of a CBRN attack and that will, in the event of a threat, provide the means for an effective response that minimises risk to individuals, the environment and infrastructure.

‘DECADE OF GROWTH’ AHEAD FOR GLOBAL CBRN DEFENCE MARKET

Global revenues for CBRN defence equipment and services will reach $11.275 billion in 2016 and will grow steadily until 2026, according to recent research[1] into market trends, progress and revenues published by UK-based Visiongain.

In an online summary of its report, the researcher predicts growth both in established CBRN defence markets and in developing countries. The company’s analysis predicts that South Korea, amid simmering regional tensions, will continue to achieve high revenue growth to 2026. Increasing investment too from emerging countries like India and rising demand for detection and protection systems and technologies will contribute to the overall expected sales growth.

“Geopolitical tensions and terrorist threats worldwide, coupled with development in CBRN defence technology will continue to influence the market,” says the researcher. The full report discusses the issues and events affecting the CBRN defence market, with qualitative analyses of chemical weapons and terrorism, bioterrorism and the Ebola virus, worldwide modernisation programmes and persistent high barriers to entry.

CBRN-UK, the UK CBRN defence industry's special interest group, also cites terrorism as a significant threat. Its website states: "Contemporary terrorist organisations continue to aspire to use CBRN weapons and changing technology, and the theft and smuggling of CBRN and explosive materials make this aspiration increasingly more realistic."

Group members' CBRN activities include arms control, preventing supply, deterrence, elimination, disablement and protection. Its members generally focus on protection in the defence, security and resilience sectors and supply capabilities that mitigate or neutralise the use or threatened use of a CBRN weapon or device by state or non-state actors.

One such member is Tyne & Wear-based Chemviron Carbon Cloth Division, which manufactures activated carbon cloth for CBRN protective clothing, first responder masks, escape masks and CBRN filtration. More recently, the product - just 1g has an adsorbent surface half the size of a soccer pitch - has been developed as wipes for decontaminating sensitive equipment such as weapons systems optics and electronics in the event of chemical contamination.

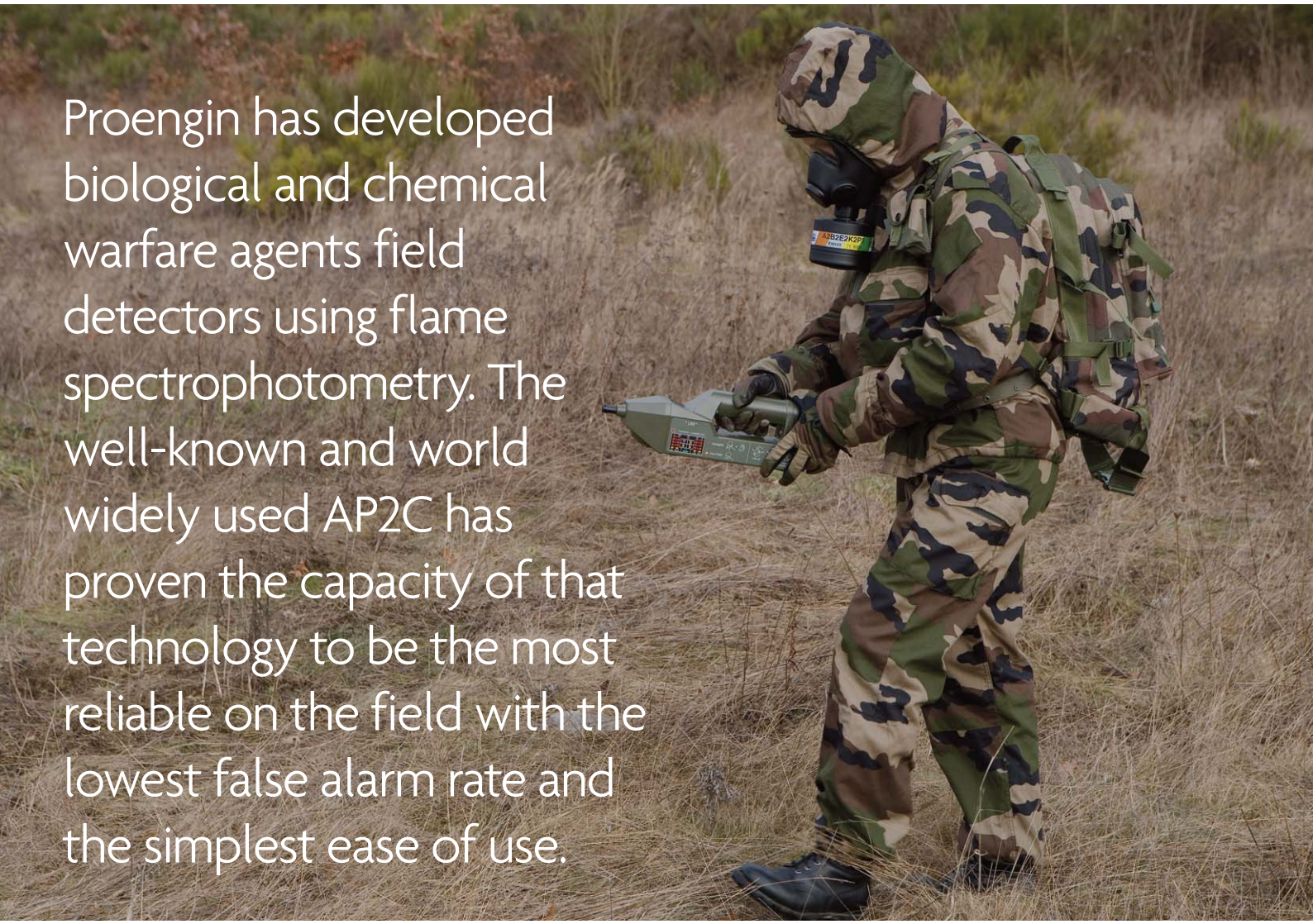
CBRN-UK has observed a trend towards client governments requiring capabilities that are not traditionally classified as CBRN protection, which, for example, may include CBRN security products and services and bio-safety capabilities.

Alessandra Giovanzanti, Visiongain's defence analyst and the author of CBRN defence report, sums up the global state of play: "The use of chemical weapons by the Assad regime in Syria as well as by Daesh in the Levant, incidents in nuclear plants such as the Fukushima disaster of 2011, the Ebola crisis, and the phenomenon of antibiotic resistant bacteria and viruses, all have drawn renewed attention upon the importance of CBRN defence for the protection of military and first responders in the field, as well as first line of protection for critical infrastructures and the civilian population." This renewed focus on CBRN capabilities looks set to translate into continuing sector innovation, heightened preparedness by and among national governments and attendant revenue growth for providers in the years ahead.

[1] *Visiongain Ltd.: CBRN Defence Market Report 2016-2026: Analysis of Top Companies & Forecasts of Chemical, Biological, Radiological & Nuclear Detection, Protection, Decontamination, Simulation & Training Equipment.*

PROENGIN
Chemical and biological detection systems

PROENGIN
CHEMICAL & BIOLOGICAL DETECTION SYSTEMS



Proengin has developed biological and chemical warfare agents field detectors using flame spectrophotometry. The well-known and world widely used AP2C has proven the capacity of that technology to be the most reliable on the field with the lowest false alarm rate and the simplest ease of use.

CHEMICAL DETECTION

The New Extended Range Field Handheld Chemical Detector AP4C

New developments such as the AP4C have extended the capacity of that technology to include chemical warfare agents and toxic industrial material in a simultaneous mode. There is no limitation in number of gas detected by the AP4C. All nerve agents, all blister agents and all blood agents can be detected by AP4C within the requirements of response time and sensitivity of NATO recommendations.

The AP4C has extended the range of chemicals that can be detected by Proengin chemical detectors. All dangerous compounds containing Sulfur, Phosphorous, Arsenic and/or HNO chemical bond can be detected in a simultaneous way. Of course, as for the AP2C, the AP4C has the capacity to work in very severe environmental conditions (explosive areas) and the measurements are unaffected by high humidity levels or by the presence of other organic chemical compounds such as paint.

The AP4C technology allows the simultaneous detection of an unlimited number of gas and the identification of the chemical elements that constitute these chemicals. It is therefore possible to detect impure agents or chemicals manufactured by terrorists that would not fit into traditional libraries of other detectors.

Moreover AP4C will detect without upgrade new agents that will be developed in the future, as well as still not precisely known agents like Novichok agents (or Non Traditional agents).
The response time is among the shortest on the market, but what makes the AP4C unique is the recovery time after a positive detection.
The AP4C is therefore the chemical detector that has the highest level of availability of the field.

Grateful to its remarkable performances, AP4C has been derived on other detectors, dedicated to the following uses:

- **use on reconnaissance vehicles and battle tanks**
- **use aboard naval ships**
- **use for critical buildings and areas protection**

AP4C-V For use on Reconnaissance Vehicles and Battle Tanks

Based on the same detection technology and the same internal design, air entrance has been designed to face high wind: AP4C-V is able to take in representative sample of the outside air, even with a direct cumulated wind and speed of 100 km/h. Data are shown on easy to understand control box or directly on the control computer of the vehicle.

Sensitivity, short time to answer, low false alarm rate and short recovery time are the same as for AP4C, making AP4C-V the perfect detector for all kinds of reconnaissance missions and battle field exploration.

AP4C-F For use Aboard Naval Ships

At sea, ANEP-57 recommendations stipulate the availability of both fixed and mobile means of chemical detection. As AP4C is the perfect mobile chemical detector for contamination control, the use of AP4C-F provides the naval ships with reliable and efficient chemical detection. This ruggedized detector shows the same detection performances as the AP4C, with 2 supplementary features. It produces its consumable gas by electrolysis, thus lightening daily maintenance, and more than an alarm, is able to trigger the ventilation of the vessels, thus protecting the citadel from the chemical danger. The AP4C-F is able to be operated on open deck, with the same performances.

AP4C-F For Critical Buildings and Areas Protection

National palaces, courts and parliaments are more and more equipped with fixed chemical detectors. AP4C-F, being able to be operated on naval citadels, is of course able to provide the same detection and protection on terra firma, for this kind of critical buildings.

BIOLOGICAL DETECTION

The MAB, A New Generation of Biological Field Detector

MAB has the unique capacity of detecting and categorizing biological particles with a proven extremely low false alarm rate and the unique capacity to discriminate dangerous or suspicious biological particles such as Anthrax spores from natural background.

The very liable MAB has been designed to be mounted on track vehicles. It is insensitive to diesel exhausts.

As all Proengin products and thanks to the flame spectrophotometry technology, MAB is running in very severe outside conditions, shows the lowest false alarm rates (negative and positive) and requires reduced maintenance. It shows such a high level of availability.

BIOLOGICAL AND CHEMICAL DETECTION TOGETHER

AP4C-FB For Critical Buildings and Areas Protection

Government premises, courts and parliaments are also more and more equipped with fixed chemical and biological detectors. AP4C-FB combines both chemical detection as for the AP4C-F, and biological alarm as for the MAB. This detector may be associated with a radiological probe, featuring the all in one full CBRN detector.

AP4C-VB

PROENGIN has recently launched AP4C-VB, the first low-side chemical and biological alarm system for mobile platform.

A GAME CHANGER FOR CBRN DECONTAMINATION FROM

SCOTT SAFETY

A new portable airborne and surface decontamination solution from Scott Safety is achieving a military first – decontamination of chemical, biological and radiological vapours, liquids and particles simultaneously in as little as five minutes.

A manufacturer of respiratory protection for the UK MoD, Scott Safety has been at the forefront of CBRN defence and civil protection for over 80 years.

The Light Decontamination System (LDS) can decontaminate environments as large as 500m³. At only 22 kg, LDS is the lightest portable decontamination system in its class, enabling instant decontamination of equipment, personnel, infrastructure and terrain.

"LDS will revolutionise the armed forces" says Dr David Crouch, Global Product Manager for Military & Civil Defence at Scott Safety. "It's lightweight, portable yet extremely powerful. In independent validation trials, the system decontaminated anthrax by 99.9999999 percent from a 100m³ space, in less than five minutes."

The LDS utilises new Scott Safety atomisation technology to create a fine mist to ensure even and consistent coverage and haptic dry surfaces. Rapidly projecting these droplets in the form of a dense and turbulent mist that reaches all airborne and surface threats simultaneously the system is capable of delivering CBRN decontaminants to all non-line of sight surfaces. This process drastically reduces both the chemical footprint and time required for effective decontamination. Unlike many traditional decontamination systems that utilise liquids, this new process forces powders to behave like a gas, ensuring that sensitive and electronic equipment is not damaged.

Environmentally friendly and cost-efficient, LDS typically requires only five percent of decontaminant compared to traditional systems due to the gas-like behaviour of the small droplet mist. Easily directed and controlled with a lance, the system achieves a projection distance of up to 30 metres and is compatible with a range of chemistries.

For chemical and biological decontamination, the LDS is chemically agnostic so can use a diverse range of decontaminants including delivery of Alkoxides, Hydrogen Peroxide, Hypochlorous Acid, Peracetic Acid esters, Chlorine Dioxide, Sodium Hypochlorite and Potassium Peroxymonosulfate. Radiological and nuclear decontamination includes delivery of trippable coatings, fixatives and other sequestering liquids.

Compatible with a range of facemasks, including the General Service Respirator (GSR) developed for the UK MoD, the LDS can be used in a wide range of hazard management situations. e.g. critical and iconic infrastructure, airport buildings, hospitals, portable isolation units, underground facilities, buildings and rooms in general, containers, storage facilities, aircraft and ships holds, vehicles and so on.

Flexible and scalable, Scott Safety's decontamination solution can be adapted for large scale infrastructure whereby longer duration or wider area capability of up to 2000m³ is required. The Remote Decontamination System (RDS) operates using a remotely operated 360° collapsible tripod to provide increased levels of decontamination efficacy and performance. The solution is highly portable and is suitable for internal and external decontamination of larger military equipment including armoured vehicles, aircraft and other transport systems.

For further information, please visit **www.scottsafety.com/emea**.

ARGON™ | World leaders in CBRN/ HazMat training systems

CHEMICAL, BIOLOGICAL, RADIOLOGICAL NUCLEAR (CBRN) HIGH-FIDELITY TRAINING SIMULATORS & HAZMAT TRAINING EXERCISES

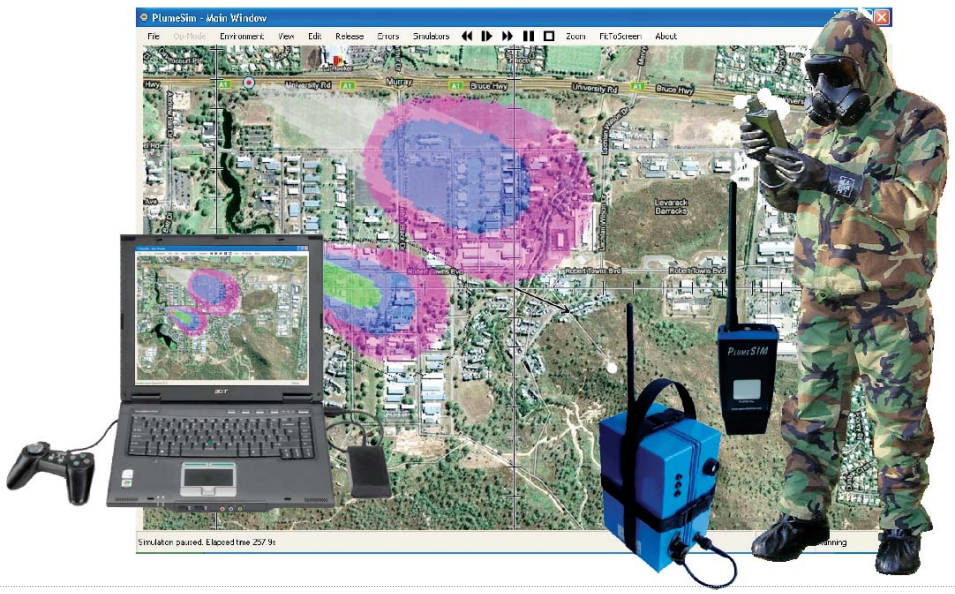
Argon Electronics provides high-fidelity training simulators to enable safe, cost-effective chemical, biological, radiological nuclear (CBRN) and HazMat training exercises to take place both in open areas and internally at sensitive facilities.

Simulators to Enhance CBRN Training

Argon's advanced CBRN simulation platform enables you to create multiple simulated hazards over time within the same exercise, enabling students to practice how to use a number of different simulated detector technologies.

A modular design concept enables you to start with a basic simulation system and progress to our world renowned PlumeSIM instrumented wide-area and table-top CBRN training systems. This simple but effective approach enables you to ensure your students enjoy what we at Argon call 'real experience training' (RET).

In use by many Military, First Responder, and Nuclear emergency response teams, training facilities, specialist groups and industrial organisations worldwide, our CBRN training systems are making a real difference to response planning and preparedness.



Chemical Warfare - HazMat Training Simulators

Argon is proud of its relationship with many of the world's leading detector manufacturers. We have developed simulators for the JCAD, LCD3.2e, LCD3.3, AP2C, AP4C, RAIDM-100, Hapsite and ChemPro 100 and many other detectors.

The simulation technology employed enables your students to experience the difference between the use of different detector technologies such as ion mobility spectrometry, flame photometry and gas chromatography mass spectrometry (GC/MS).

These easy-to-use simulators do not require any consumables (with the exception of batteries), preventative maintenance or regular calibration, assuring you a low ongoing cost of ownership. You can set up most scenarios within 15 minutes and implement chemical warfare agent (CWA) / HazMat exercises in virtually any environment.

Argon simulators enable you to replicate persistency, wind direction, full and partial decontamination and certain simulated detector faults, in addition to depletion of simulated consumables such as hydrogen cylinder or sieve packs.

Electronic simulation sources mean you avoid the need to use chemical simulants and the challenges associated with health, safety and site remediation cost. You can also quickly set up exercises in sensitive locations without causing concern.

The simulators provide you with powerful student monitoring facilities so that you can ensure any potentially costly user errors form part of your after action review and student improvement process, without the risk of costly damage and subsequent lack of availability of your actual detectors.

Radiological Training Simulators

Argon has alpha, beta and gamma simulators for many of the commonly used radiological detection instruments. Our simulation sources can be used to provide indications on gamma survey simulators, dosimeter simulators and also spectrometer simulators.

Our product range includes simulators for the AN/VDR-2, AN/PDR-77, RDS100, RDS200, FH40G, EPD-Mk2 and many more.

A variety of contamination simulation technologies and simulation probes / instruments ensures you meet your every training need. Argon has also developed simulation spectrometer probes that operate with the SAM935 and SAM940 spectrometers. Should you have any specific requirement, our extensive and highly capable product development team enjoy a good challenge.

PlumeSIM Wide Area Instrumented CBRN

PlumeSIM has the ability to transform your CBRN / HazMat exercises. This powerful but easy-to use-simulation system and has four modes of operation:

- **Planning: lets you prepare your exercise without the need to use any simulation system infrastructure**
- **Table top mode: allows students to practice their skills in a semi virtual world without leaving the classroom**
- **Field exercise mode: our advanced player is worn by the student to track their movements in real-time while driving the simulators with the CBRN scenario you have created**
- **After action review: you can replay all player movement, threat readings and mistakes made throughout the exercise to discuss how effectively your students carried out their mission and define areas for improvement**

PlumeSIM has won acclaim from many organisations that now use this system at their CBRN training facilities. The flexible simulation architecture means that it can grow with you as your simulation and training needs advance.

BBI™ Detection

BBI DETECTION LAUNCHES THE NEW EXPLOSIVE DETECTION IMASS™

Innovative, rugged and simple to use Explosive Detection System

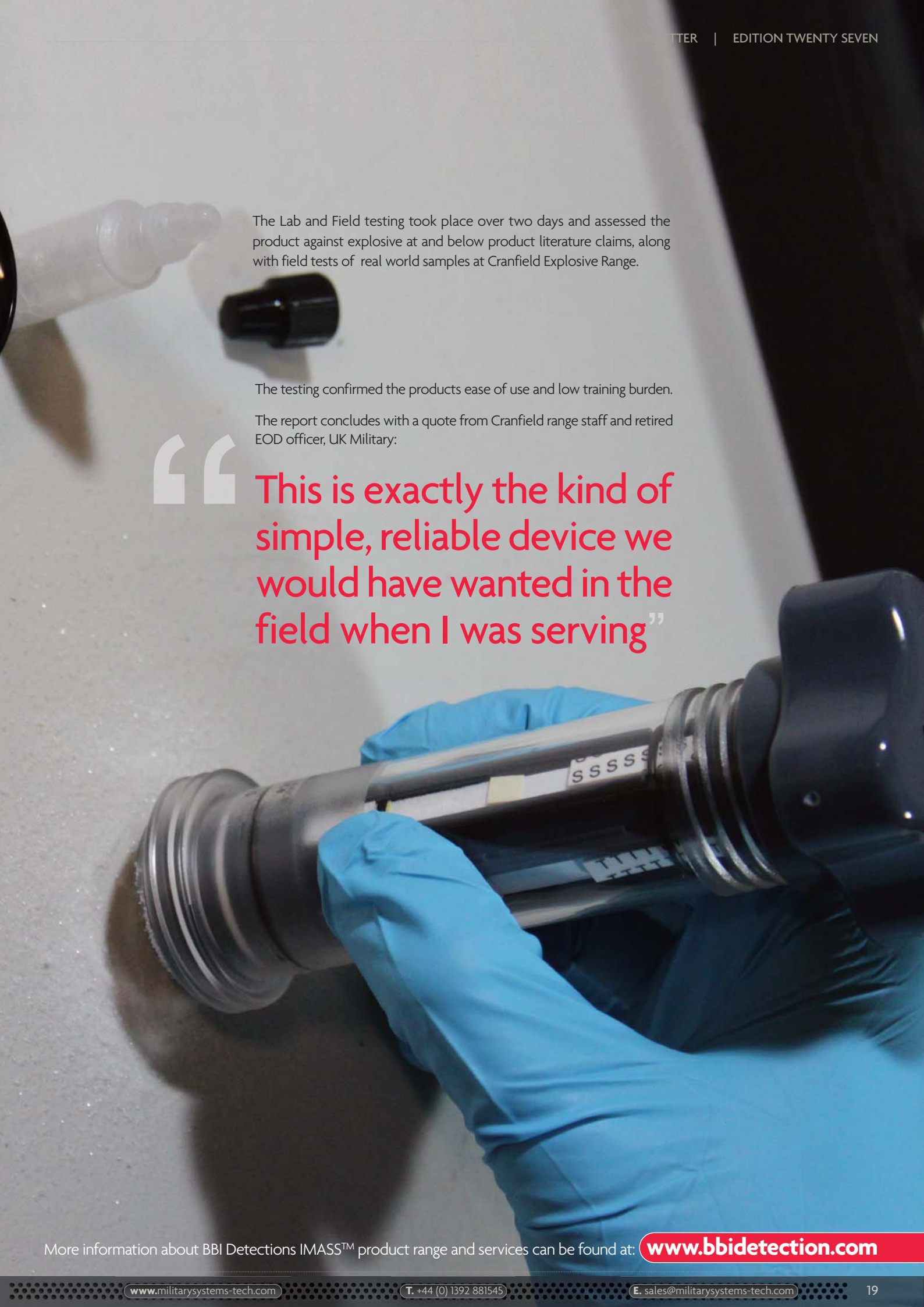
BBI Detection a leader in the development and supply of innovative technologies for rapid sampling and identification announces the formal launch of the new Explosive Detection IMASS™ product.

The Explosive Detection IMASS™ utilises the same easy to use platform as the Biothreat Detection IMASS™ system.

The product is designed for the detection of both Military grade explosives (TNT, RDX, PETN and their derivatives) and Ammonia nitrate based homemade explosive components - Ammonia, nitrate and sugar.

The unique integrated sampling and assay system gives visual results in 3 minutes, has no power requirements and has a very low training burden.

The new Explosive Detection IMASS™ recently completed independent testing carried out by CBRNe World at Hertfordshire University's chemistry laboratory and Cranfield University's explosive range.



The Lab and Field testing took place over two days and assessed the product against explosive at and below product literature claims, along with field tests of real world samples at Cranfield Explosive Range.

The testing confirmed the products ease of use and low training burden.

The report concludes with a quote from Cranfield range staff and retired EOD officer, UK Military:

> "This is exactly the kind of simple, reliable device we would have wanted in the field when I was serving"

More information about BBI Detections IMASS™ product range and services can be found at: **www.bbidetection.com**

NCAGE A5009
CONFORM TO THE QUALITY SYSTEM STANDARD AQAP-2110 and ISO 9001:2008

CRISTANINI CBRN DECONTAMINATION SYSTEMS

1972 since

EBOLA: RESPONDING TO THE CRISIS WITH CRISTANINI SYSTEMS

OFFICIAL TRANSLATION IN ACCORDANCE WITH THE ORIGINAL

The Army decontaminates a plane that had carried a patient with suspected Ebola.

Brazil, 21/10/2014 – The Brazilian Army had to perform a really unusual mission this month. In fact, the 1st Chemical, Biological, Radiological and Nuclear Defence Battalion in Rio de Janeiro had to decontaminate the Learjet plane owned by the Brazilian Air force, which had carried a patient from Guinea in Africa with suspected Ebola infection.

In agreement with the military organisation commander, Lieutenant Colonel Márcio Luis do Nascimento Abreu Pereira, this was the first current operation of this nature with the risk of lethal contamination. He stated "This is the first procedure of this type since 1987, when the radiology incident occurred with Cesio-137 in Goiânia, in the State of Goiás".

The cleaning team for the business jet was formed of seven men from the Land Force led by Lieutenant Douglas Silva Frango. Dressed in their hazard protection clothing, officers and soldiers worked for five hours to enable decontaminating the plane.

"It took an hour and a half just for the control panel. A very trying job both physically and mentally" Lieutenant Colonel Abreu added. The work was all carried out in the yard of the Air Base in Galeão, Rio de Janeiro, where the plane had been isolated.

The products they used

A preliminary study that was performed by the mission team identified the need to decontaminate the Learjet in two phases: inside and outside.

Inside the team used LDV-X, a material the Army recently obtained, which involves a misting system where the product is applied to neutralize the chemical and biological agents. On the plane's control panel SX 34 was used – specifically designed for sensitive equipment.

On the outside the team used the PRNDS 12 Mille to apply BX 40. The ground was also treated with BX 24 that acts as soil protection. All these products are covered by international certification and do not produce any harmful waste for the environment.

For the 1st Battalion Commander the operation gave "A feeling of responsibility in carrying out the correct procedures that had been learnt during training, and helped to improve their decontamination techniques". He concluded by saying "The team is proud of this mission".

Photo: Army
Department for Communications
Ministry for Defence
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CRISTANINI CBRN DECONTAMINATION SYSTEMS

The spread of Ebola in West Africa and the emergence of isolated cases in Western and other countries has caused widespread alarm. Cristanini S.p.A has closely followed the emergency, being a supplier of decontamination systems, but not before considering potential equipment solutions.

In the case of Sierra Leone and Liberia US and UK forces are responding to provide greater containment of the crisis at source. Decontamination is sometimes considered the lesser of the pillars of CBRN protection, but you need decontamination to prevent an event becoming a crisis. So, while the company prepared a series of ebola response options, we were pleased to see our systems being employed in Brazil when a suspect case returned from the Republic of Guinea and developed early symptoms of the fever. He was flown to a specialist isolation unit in Rio di Janeiro which allowed testing and specialist care. **Cristanini equipment was employed in the decontamination of the aircraft.**

Two principal equipments were deployed to the airfield: a Rapid Intervention CBRN Trailer and LVD-X; the latter for decontamination of interiors of aircraft, headquarters buildings or the interior of multiple types of infrastructure.

Cristanini's Rapid Intervention Trailer offers a truly multifunctional capability. The system decontaminates personnel, vehicles, equipment, external infrastructure and terrain. Equipped with the Sanijet decontamination machine and its eye-catching Sanijetgun, BX24 universal decontaminant, BX40 decontaminant especially for aircraft exteriors, as well as numerous accessories, it provides rapid intervention in the event of all CBRN emergencies, as well as preventive solutions. Extremely simple to operate, it can deal with a host of different CBRN, toxic industrial and environmental waste management contingencies. It operates with its own integral water supply or water drawn from multiple sources (fire services, hydrants, bowsers, rivers, lakes, the sea). The trailer operates on multi-fuels (diesel, kerosene and JP8), has its own integral generator, is completely autonomous and comes in red, green or sand colour. The company's Light Trailer is also completely autonomous and multi-functional, providing a shower system for personnel as well as a wide array of surface and terrain decontamination options.

LVD-X decontaminates chemical and biological hazards in the air and on the surfaces of critical infrastructure including rooms and aircraft. It dispenses a mist of atomized micro-droplets of chemical and biological decontaminant that is lighter than air, and can also be discharged through a buildings ventilation system. Once deployed it can be operated in an

autonomous mode, cycles being fully automatic, or controlled by a single operator. The machine also offers decontamination of other surfaces using a spray lance and the universal decontaminant BX24. The BX24 is automatically mixed with water and is environmentally friendly. After manual application and a brief waiting period, the now detoxified residue can be rinsed away. Cristanini's SX34 is another item that proved useful for decontamination of sensitive equipment such as the aircraft cockpit. Equally, it can decontaminate any sensitive surface, such as aviation, search and rescue or expensive medical equipment. This portable equipment involves the non-aqueous mechanical removal of chemical, biological or radiological agents to a receptacle where they can be detoxified by BX24 or, if radiological, secured for disposal in accordance with national and international safety regulations.

Finally, the company is unique in supplying a Level 3 autonomous chemical and biological laboratory that is specifically designed for field deployment into harsh environments. It can deliver forensic level results to support strategic decision making, medical counter measures or a criminal enquiry. All these items of equipment follow the Cristanini philosophy of providing universal solutions for multiple scenarios, whether defence or civil protection; useful when you don't know how, when or where the next CBRN crisis is going to reveal itself, whether natural or intentional.

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E sales@fra-angelico.co.uk

For CBRN protective textiles, trust the leaders in the field

Chemviron Carbon is the world's leading manufacturer of superior 100% activated carbon cloth (ACC) - the vital CBRN protective layer in clothing for defence and security personnel worldwide.

Key advantages and applications of Chemviron Carbon ACC include:

- Lightweight and breathable for very low physiological burden
- Very rapid adsorption of a wide range of CBRN molecules
- Suitable for protective clothing, first responder masks and escape masks
- Used in CBRN filtration and decontamination wipes

For further information please contact Chemviron Carbon today

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ChemvironCarbon®

TERRORISM THREAT PROMPTS NEW ORDERS FOR CBRN PROTECTIVE TEXTILE

Heightened terrorism threat levels have recently prompted security forces internationally to place new orders for CBRN protective clothing containing superior activated carbon cloth (ACC), manufactured by Tyne & Wear-based Chemviron Carbon Cloth Division.

The company's cloth division is the world's leading manufacturer of 100 per cent ACC, which was originally developed by the British Ministry of Defence for use in chemical warfare suits.

In the defence sector, Chemviron Carbon's ACC is used where protection from a wide range of chemical, biological or nuclear agents is required, for instance, in protective clothing, filters and decontamination wipes. The product offers the most effective protection on the market today, with low carbon weights lessening the physiological burden on wearers.

The company's ACC can be used in applications including CBRN protective clothing, first responder and escape masks. Further applications include CBRN filtration media, decontamination wipes and medical countermeasures.

High demand from the defence clothing sector, coupled with the company's commitment to provide the world's highest-quality CBRN protective textile, has led Chemviron Carbon Cloth Division to significantly boost capacity. The company has invested in additional equipment in the UK facility to enable the production of up to 1.5m-wide cloth specifically for the sector.

Using the latest filter technology, the textile is lightweight and breathable, offering greater comfort and effectiveness than other materials such as embedded carbon, carbon fixed to support media or membrane technologies. Comprising 100 per cent activated carbon, it is more effective at adsorption compared to carbon-loaded materials which have a lower activated carbon content.

ACC is customisable so that human sweat does not interfere with its performance and provides protection against liquid agent, unlike other forms of carbon cloth. The cloth can also be laminated to other materials to provide a composite which is fire retardant. In addition, it can be used in CBRN protective filters offering protection at faster airflow rates, and when used as CBRN decontamination wipes the cloth offers scratch-free and liquid-free cleaning - ideal for glass and sensitive equipment.

Aside from its CBRN applications, its other defence market uses include medical wound dressings and missile decoy due to the thermal heat properties of the carbon cloth.

ACC works by adsorbing a large volume of organic or inorganic molecules from various gases and liquids and acts as a high purity filter, a method of separation or as a protective layer. It can also be custom-manufactured to comprise a mesoporous structure to adsorb larger molecules if required.

Activated carbons generally have a vast network of pores of varying sizes. With its microporous structure, ACC offers particularly rapid adsorption kinetics and the ability to adsorb to a higher level of purity. Unlike granular activated carbons, is also suitable for use in applications where there is high humidity as its adsorption capacity is less adversely affected by moisture.

Due to its microporous structure, ACC has an extremely large surface area. To put its capabilities into perspective, just 1g has the surface area of over half the size of a soccer pitch. This, combined with the strong electrostatic forces within the cloth, enables the cloth to be highly efficient at adsorbing both liquids and gases.

Further details on activated carbon cloth are available from Chemviron Carbon Cloth Division, telephone **+44 (0)191 584 6962**, visit **www.chemvironcarbon.com**.

THE AVONAIR RANGE

THE ADAPTABLE, MODULAR AND COST-EFFECTIVE CBRN RESPIRATORY SOLUTION FOR MODERN-DAY FORCES

The new AvonAir range is the world's first adaptive powered air system and was in development for 5 years to make sure it delivered on modern-day requirements

At Avon Protection we have a reputation for continuously investing in product development and technology.

The key to getting product development right is our engagement with our end users through customer feedback, special projects, scientific panels, research establishments, industry bodies and our in-house knowledge bank managed by Avon Protection Training and Consultancy, together with our understanding of the threat environment.

Our military pedigree – 62 countries use Avon products and over 2 million users each day use Avon products for respiratory protection - provides in-depth knowledge and insight from the front line.

Using innovative techniques like the utilisation of modern manufacturing techniques allows us more design freedom. We research and test new materials through Artis, our in-house research facility, and we have a dedicated filter laboratory in Cadillac, Michigan, where our continuous research and investment ensures our end users have total confidence in the quality, reliability and durability of our equipment and benefit from the latest protection technology. We work to meet the demands of CE approval for our European customers, NIOSH & NFPA for North America and National approvals for other countries.

We monitor, understand and identify global CBRN threats and trends and use this insight to inform our customers, assist in the development of current and future protection capabilities and provide specialist training and advisory capability to our end users.

This customer and threat environment-focussed approach has allowed us to be first-to-market with a range of products including the FM53 mask – the first modular mask to allow wearers to match respiratory protection to their mission specific requirements and rapidly select between negative pressure, powered air and positive pressure.

The need for CBRN protection in hot climates such as the Middle East has resulted in significantly increased heat burden on the end user and in response Avon has explored cooling technologies, higher flow hydration devices and reduced the weight of our products.

Our focus on delivering a total solution goes well beyond the wearer.

Supporting field operations overseas provides a challenge for any logistics or maintenance team.

Our research has found that increasing the modularity of CBRN respiratory products not only benefits the end user but also greatly reduces through-life cost and logistics and maintenance team workloads when in service. Creating respiratory solutions where protection levels can be easily upgraded or downgraded to meet the potential threat provides an optimum approach for the budgets that are continuously under pressure - products that can be upgraded annually and enhanced with performance modules allow for users to better plan procurement cycles and the increase capability of their teams over time.

The new AvonAir range

The new AvonAir range is the world's first adaptive powered air system and was in development for 5 years to make sure it delivered on modern-day requirements:

- The higher levels of comfort, reduced weight and lower breathing resistance allow the wearer to operate for longer, and be more effective in hot climates
- Interoperable – we have focussed on maximizing compatibility with existing masks, filters and global standards such as the widely adopted STANAG filter connection to ensure the new products complement already-fielded equipment including weapon sights, helmets and CBRN protective suits
- Modularity – we have designed the products with the ability for users and support teams to build configurations that meet the exact operational threat quickly and easily. Protection can be upgraded by simply connecting modules together without special tools
- The products are simple to use, simple to maintain and require minimum training to deploy

FM54 AIR PURIFYING RESPIRATOR

The AvonAir range centres on the new FM54 Air Purifying Respirator. Developed in conjunction with the US Government, the FM54 mask is built off the proven FM53 platform and meets the needs of the modern day specialist operator.

The new mask offers maximum protection from CBRN threats, riot control agents and emerging toxic industrial hazards and is flame hardened to protect the wearer against flash over scenarios which may happen in a situation such as a drug lab explosion.

Improved passive and amplified speech performance allows better communication and the new hydration system affords the wearer greater hydration and comfort.

We also decreased the number of common parts that need to be maintained by the end user rather than a specialist technician, improving cost of ownership.

The new **Avon EZAIR+** is the common power source across the whole AvonAir range. As the newest generation of CBRN single filter airflow system, it works with the FM54 mask to give greater comfort to the wearer.

The unit is much smaller and quieter than traditional PAPR units and can be body mounted using belt or MOLLE attachments. The S-shape hose overcomes legacy issues with PAPR hose systems - it is lighter, more flexible, crush resistant and fully integrated with the wearer. Delivering 70% lower cost of ownership over traditional powered air devices, the EZAir+ has benefits such as the ability to use commercial 'off the shelf' (or COTS) batteries inside the hot swap battery pack.

The **MPPAPR** leverages Avon's existing and new masks platforms and provides low cost of ownership and reduced training need through the use of COTS and rechargeable battery options and utilizing the same components as the EZAir+.

Innovations include the use of the same material as we use for our masks, making the system flexible - it bends, will not crack or tear and is very comfortable to wear. And the ability to wear the system in three positions including a new back mount position which allows the wearer to use their existing utility belt for weapons, hand cuffs and other critical tools is something that isn't usually possible with belt mounted PAPRs. It also distributes the weight of the product more comfortably and evenly for prolonged wear.

Several years ago, Avon Protection revolutionized CBRN respiratory protection through the launch of the FM53 mask with the ST53 SCBA with STPAPR. The continued user drive towards Combination Unit Respirators (CURs) has continued, and now we have launched the **CSPAPR**.

As with the MPPAPR, the CSPAPR has been developed in partnership with the US Government over the last five years. At the heart of the system is a patented combination hose that upgrades the MPPAPR to the CSPAPR. The combination hose allows the user to connect their PAPR and ST53 SCBA together through standardized connections and is built using the same dual wall, crush proof construction as S-Shape universal hose.

A multifunction mask connection recognises the need for rapid kitting and the quick release mask connection allows the user to simply connect or remove the hose from the mask. The rotary dial selector now controls all modes of protection – APR, PAPR, SCBA or APR/PAPR - seamlessly through one simple rotary interface.

Through feedback from our user communities we have recognized the risk of using CUR systems in unknown environments. Traditional CUR systems leave the PAPR filters exposed to the challenge when in SCBA mode. So we have created auto filter covers which pneumatically engage and seal the filter when the user selects SCBA mode. The indicator informs others that the filter is sealed. When the PAPR mode is selected the filter covers automatically open. This upgrade can be fitted to the CSPAPR and delivers the highest level of protection in extreme environments.

To deliver end-to-end solutions around our products our **training and consultancy team** can ensure that best practise is cascaded across your organisation through the development of standard operating procedures, the delivery of user instructor and maintainer training and continued support through reach back, test exercises and refresher training.

And recognising the current challenge of constrained resources against an increasing CBRN threat profile we now offer a range of ownership options from the more traditional outright procurement and ownership, to short term capability rental to meet a specific demand such as a high profile sporting event, right through to a fully managed lease service delivering the latest equipment, training, reach back, consumables and servicing to the customer. Our flexible ownership solutions empower our customers to select the most appropriate ownership package for their needs, spreading the cost of ownership over a number of years or surging CBRN protection capability in response to a forthcoming major event.

AVON MPPAPR™

MULTI-POSITION POWERED AIR PURIFYING RESPIRATOR

The Avon MPPAPR is the latest generation CBRN PAPR to provide wearers with significantly less user burden, increased cooling effect and integrated hydration option. The first flexible-bodied, modular PAPR is designed to be easily integrated with a wide range of protective equipment.

- **S-Shape Crush proof hose technology**
- **Multiple hot-swap battery options**
- **Remote mask power switch option**
- **Intelligent constant flow control**

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WHY POWERED AIR IS A HOT TOPIC

Powered Respirator Suits have been used in the warm zone of CBRN incidents for many years, but more and more organisations are considering their use in the hot zone - this article looks at the reasons why.

Powered-air suits offer a broad range of benefits over the alternative options; most notably their ability to be used for long periods without the discomfort and physical burden associated with gas-tight suits and SCBA or a typical type 3 suit and facemask. There are some clear limitations however and we should probably be clear on these from the outset; Firstly, CBRN Filters can only be used once the hazard has been detected, identified and checked against the filters performance criteria. Secondly, powered air equipment cannot be used in low oxygen environments (less than 19.5% oxygen). Of course the above limitations also apply to the use of a facemask with CBRN filters.

The CBRN filters used with powered respirator suits are designed to provide protection against combination organic vapours, inorganic and acid gases & ammonia and particulates. They also provide additional protection against a range of military agents.

Once we are clear on the limitations of powered air, we can assess the benefits to see why it still has such an important place in the modern CBRN responders arsenal.

A powered air suit draws in air from the outside environment (typically at a minimum of 150 litres per minute), through the CBRN filters and delivers the filtered air into the hood to provide breathing air to the wearer. As this air is drawn in to the suit the pressure within the suit increases which causes excess air to be forced through exhalation valves, which are normally located at the lower back, or the knees. This flow of air from the hood space through the suit to the exhalation valves has a cooling effect, reducing humidity levels in the suit which in turn increases the effectiveness of the bodies own cooling (sweat) mechanism.

For comparison, with SCBA the typical airflow is only 40 litres per min and the exhalation vales in a gas-tight suit tend to be positioned at the back of the head, so the flow of air is much lower and there is practically no flow of air flow over the wearers body, so the cooling effect is negligible.

Modern battery technologies allow suits to achieve long working durations; up to 3.5 hours is common for single use lithium batteries (which have the advantage of a long shelf life at full charge) or 8 hours for rechargeable batteries. The limiting factor may be the capacity of the filters, although changing the filters is a quick process, it would need to be done away from the contaminated area.

These longer durations wouldn't be possible if the suits presented a significant physiological burden, but their use at numerous incidents has demonstrated that this isn't the case. Powered respirator suits are typically 10-12kg lighter than an SCBA set worn with a gas-tight suit made from the similar materials and using the same boots, gloves etc. When combined with the benefits of the cooling air flow through the suit and the increased user comfort that arises from not having to wear an SCBA harness or facemask, you end up with a suit that allows the wearer to work in relative comfort for extended periods.

The lack of an SCBA harness & cylinder also improves the wearers freedom of movement and allows the wearer to operate in more confined spaces if needed. Removing the need for a facemask also removes the need for face fit testing and provides greater reassurance for casualties who can see the face of the responder. It also allows the suit to be worn by people with glasses or beards. The additional space around the wearers face also enables rehydration (drinking) systems to be used.

Spot the difference

A typical powered air CBRN suit (Respirex PRPS), versus a gas-tight suit (Respirex GTL)

Communication between responders is improved; being able to see each others faces allows people to pick up on non verbal communication cues (expressions, lip movement etc.), the transmission of speech from suit to suit is improved and the hood allows the use of earpieces or other radio equipment.

For some people the broad field of vision and the lack of a facemask also reduce feelings of claustrophobia. The lack of SCBA simplifies the donning and doffing process also reduces operator training requirements.

Decontamination is no more complex than with Gas-Tight suits or suits with a facemask & filter. The powered respirator is normally contained within the protective envelope of the suit (depending on the suit design chosen), so it can easily be reused. Only the filter and battery (if it isn't rechargeable) are disposed of, making the system cost effective when compared to gas-tight equivalents.

For details of the Respirex GTL and other products, visit **www.respirexinternational.com**

The Islamic State Chemical Weapon Threat in Iraq

By Clive Hollick of Worldwide Counter Threat Solutions (WCTS)

Introduction

Worldwide Counter Threat Solutions (formerly Allen Vanguard Counter-Threat Solutions) have been monitoring terrorist activity with an emphasis on improvised weapons since the year 2000. This has also included the terrorist use of improvised chemical weapons.

That the Islamic State (IS) are using chemical weapons (both mustard and chlorine gas) in Iraq has been scientifically proven but what is of current concern is their seemingly increasing use which appears to be matched by higher levels of Coalition counter activity against the chemical weapon infrastructure.

Islamic State Expertise

Terrorist chemical weapons are nothing new in Iraq with the predecessors to IS, Al Qaeda in Iraq, launching a number of chlorine gas attacks using VBIEDs (car bombs) over the period 2006 – 2007. However, in late 2015, a report for the European Parliament claimed IS had recruited experts with chemistry, physics and computer science degrees to develop weapons of mass destruction. As a counter to this increasing threat U.S. and Iraqi special forces captured, 'Dawood Al Bakaar' suspected head of the IS chemical warfare unit in Tal Afar, Ninawa province during February 2016. 'Al Bakaar' has formerly worked for Saddam Hussein developing chemical and biological weapons.

From the chemical agent perspective IS have so far successfully deployed:

Mustard Gas: this is a heavier than air, persistent blister agent, which forms a yellow-brown gas cloud with an odour resembling mustard plants.

Chlorine Gas: this is a heavier than air, non persistent choking agent that forms a yellow-green gas cloud.

Coalition sources however, consider the mustard agent produced as 'low-grade'. Its first noted use by IS was in Syria in August 2015. Chlorine appears to have been first used by the group in Iraq in October 2014.

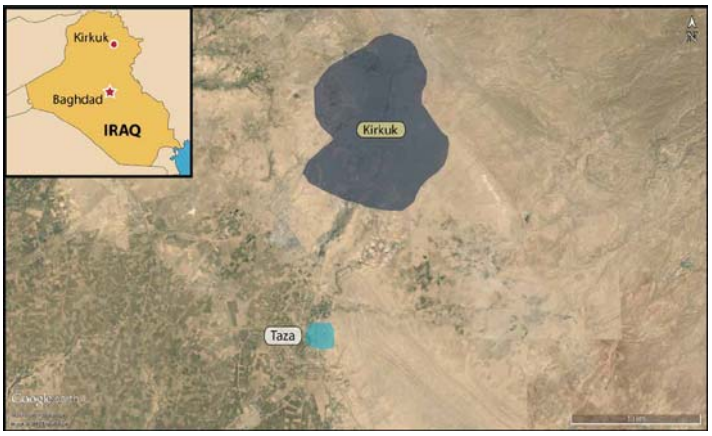
The Organization for the Prohibition of Chemical Weapons (OPCW) claimed that either IS can manufacture their own chemical weapons or they had come across an undeclared stockpile left over from the previous Saddam Hussein regime. However, according to the CIA director, John Brennan, IS has the ability to manufacture small amounts of chlorine and mustard gas.

An image (right) from Taza dated 09 March 2016. The improvised rocket may have been used to deliver a chemical agent though none of those holding it are wearing any form of protective equipment. (Twitter)

In general the delivery methods used by IS are crude and appear to fail to deliver the concentrations required to inflict fatalities on a notable scale. It is not just the delivery technology that dictates a successful attack as dissemination is highly dependent on atmospheric conditions. Thus, weather observations and forecasting are essential to optimize weapon delivery.

IS weapon chemical systems rely on explosive dissemination. They consist of a mortar bomb or rocket that contains a chemical agent and possibly a central "burster" charge that when activated, the agent is expelled laterally. However, this system has its failings as a percentage of the agent is lost by incineration in the initial explosion and by being forced onto the ground.

Recent Chemical Weapon Attack in Iraq



IS carried out two indirect fire attacks targeting the Kurdish town of Taza in Kirkuk province over the period of 09 and 12 March 2016. In both attacks there were reports of injuries consistent with the use of a blistering agent such as mustard gas. While IS has previously utilised chemical weapons in mortar attacks against both security forces and civilians in Iraq, the number of reported casualties from the recent attacks, at least one child killed and, it is claimed, up to 600 people injured, suggests an increased capability and/or intensity.

The indirect fire attacks against Taza, in which more than 40 rockets were reportedly launched over the period, represent a possible increase in the capability of IS to manufacture, deploy and deliver an effective mustard gas bombardment. It is unclear whether all of the rockets contained the blistering agent, however the number of casualties reported suggests a degree of dispersion. The use of rockets, as opposed to mortars, would enable IS to attack targets with a salvo effect potentially over a short duration of seconds increasing the chance of both surprise and concentration of the agent. However, reporting does not confirm this occurred at Taza.

An image (above) of blisters allegedly inflicted upon a Kurdish person in Taza after a rocket attack (Twitter)

Islamic State Capability

As a comparison to the attack on Taza, the first alleged use of the chemical agent sarin (GB) in a rocket attack, was conducted by pro-Assad forces in the Ghouta district of Damascus, Syria in August 2013. This single attack killed at least 350 people. IS has so far been unable to get even close to replicating the lethality of such weapons though the terror spread and media interest is frequently out of all proportion to the number killed.

It is perhaps because of the very limited casualty results of their chemical weapon programme, despite them targeting predominately Kurdish fighters and civilians who usually have little or no protection from such weapons, that they fail to issue any claims of responsibility for such attacks.

However, the fact that the U.S. were prepared to risk sending in special forces to capture 'Al Bakaar' to gather intelligence rather than kill him in an air strike is a clear indicator that the latest threat from IS is taken very seriously. Post his capture the U.S. have claimed to have "disrupted and degraded" IS's ability to produce chemical weapons by launching multiple airstrikes in Iraq based on information provided by 'Al Bakaar'. But this activity is likely to merely delay productivity and development rather than prevent it.

An Assessment of the Threat

Despite the activity of Coalition forces IS will continue to pursue chemical weapons and use both Iraq and Syria as testing grounds to develop this capability from both a technical and tactical standpoint. While currently their efforts have only produced a very limited chemical weapon system IS realise that they require a weapon of mass destruction capability to bring about a global caliphate and will therefore continue to pursue chemical agents as merely one option.

From a western perspective there is a real concern that such technology and capability will continue to be developed by IS and be disseminated outside of the current Middle East conflict zone to be used against western targets to spread terror both at home and abroad.

Worldwide Counter Threat Solutions analysts will continue to monitor any developments.

The mission of **Worldwide Counter Threat Solutions (WCTS)** has always been simple: We protect people and infrastructure from terrorist threats worldwide. Our frontline expertise includes EOD/C-IED missions support, exploitation, forensics and biometrics, explosive safety ammunition management, capacity building, and threat intelligence and analysis.

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WCTS subject matter experts, instructors and advisors are world-renowned for their expertise. These exceptional team members have an extensive background in law enforcement and military operations, which provides them a superior foundation for their work countering some of the world's most lethal threats in adverse and demanding locations.

We work with our customers to design strategies and processes to develop the talent of people and implement equipment and technologies needed to support their national initiatives. Our purpose is to impart our customers with the tools necessary to complete their essential missions and training requirements. We have delivered training in more than 50 countries for military organizations, government agencies, law enforcement and commercial organizations. As a trusted partner, we work together to identify the goals and outcomes needed to achieve your overall success in defeating the threat.

Our company history takes us back to 2000, when we started out as Hazard Management Solutions (HMS), as pioneers in this industry we focused on research, analysis and consulting services for counterterrorism. This is when the first TRITON® Reports were published.

In 2009, we expanded our services to include social media monitoring as we prepared to provide reports to our clients in the build up and during the 2012 London Olympics. In 2011, HMS became Allen Vanguard Counter-Threat Solutions (AVCTS).

Today, our new name, **Worldwide Counter Threat Solutions (WCTS)**, reflects our goal of becoming a global leader in providing comprehensive solutions for counteracting terrorist threats. We help organizations to understand, prepare for and prevent extremist threats worldwide.

To learn more about our services visit our website at www.ww-cts.com,
or contact us at threat.intelligence@wcts-uk.com +44 (0) 1793 786350

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Unlike compressed medical oxygen cylinders, the ROG™ can be exposed to extremes of temperatures, operated in any orientation and has an extensive shelf life.

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Many threats – One solution

Multiple developments in standoff technology have resulted in the release of the new Bruker RAPID*plus*. This stand-off system allows the identification of toxic chemical clouds at distances up to several kilometres, while operators are kept out of harms way.

For land-based integration projects, two standard colours of the RAPID*plus* are available depending on the camouflage requirements. For Maritime applications the grey version of RAPID*plus* features a special exterior and salt-water-resistant seals. With a range that can be measured in kilometres, all known chemical warfare agents (CWA) and many critical Toxic Industrial Chemicals (TIC) can be detected automatically and identified immediately from a library stored on a connected computer. This robust system, built to exacting Military Standards, can be operated as a stand-alone device, for example, being deployed from a vehicle and then operated from a tripod. For full integration, there are versions of the RAPID*plus* that can be mounted permanently on vehicles, ships and helicopters, where it will provide real-time detection and identification even while underway.

At the heart of RAPID*plus* is a passive infrared sensor system based on a Fourier Transform InfraRed (FT-IR) component. If a hazardous chemical cloud enters the field of view and which exhibits even a small temperature difference between the cloud and the background, characteristic IR data can be obtained. These data, known as IR spectra, are transferred via Ethernet to a PC and software compares them with entries in a spectral database (library) to identify the threat.

For more information on our standoff detection solutions please contact us:

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Founded 50 years ago, Bertin Technologies is a worldwide leader company in the development of new technologies and equipment for military and first responders applications.

bertin TECHNOLOGIES

In 2011, Bertin Corp, the US subsidiary based in Rockville MD, was created to provide and develop innovative products for Defense Teams in America.

Prestigious customers across the Defense industry have already trusted in Bertin Technologies' expertise and products, like the CEA, DGA, EADS, Thales, Nexter...

Bertin Technologies is specialized in CBRN systems and IRS equipment.

CBRN Systems – Chemical Detection and Biological Detection

Dedicated to Civil Security and Armed Forces Teams around the world, Bertin Technologies offers a full range of CBRN systems and identification equipment.

Second Sight® MS: Gas Detection System

Second Sight® MS gas detection system enables detection and visualisation of gas clouds up to 5 kilometres in order to detect chemical warfare agents with high sensitivity and efficiency. This provides a real-time warning with a low rate of false positives to quickly react to chemical attack.

For more information please visit Second Sight website!

Contact: cbrn@bertin.fr
Phone: +33 139 306 160

Coriolis® Recon: Biological Air Sampler

Coriolis Recon® is a portable and ruggedized air sampling equipment for biocontamination control quickly deployed in case of the suspiction of biological attack. Dedicated to base surveillance and critical area monitoring (official buildings, mass gathering events), it has been designed to collect large concentrations of aerosols in the breathable range of 0.5 to 10 µm (up to 6 hours of collection with the long time monitoring option).

For more information please visit Coriolis Recon website!

Contact: coriolis@bertin.fr

Phone: +33 139 306 160

Kim®: In Field Biological Analyser

Kim® is a biological warfare agent identification equipment for rapid and efficient toxins, viruses and bacteria detection. Easy-to-use and quickly deployable, the on-site analysis equipment provides soldiers an early warning of biological hazards in case of biological attack or terrorist assault in just a few minutes.

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Intelligence, Recognition and Surveillance Equipment

Bertin Technologies develops UAVs for urban environment surveillance and offers infrared and visible optical sensors for surveillance and critical area protection. The company provides also innovative systems for detection, recognition and pursuit of targets.

Hovereye-Ex: Unmanned Aerial Vehicles (UAV) with Infrared Imaging for Security Applications

HoverEye® EX unmanned aerial vehicles offers vertical take-off and landing for use in tight spaces. The vehicle enables moving target detection and tracking using high-level image processing. It carries a ground station and a visible or IR camera for daytime or nighttime surveillance.

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Vigisight®: Real-time Image Processing Module

Vigisight® automatic image processing module gives detection, recognition and tracking of targets at long distance. With any day or night camera equipped with analog (PAL/NTSC) or digital (IP) video output, it can be used for different security applications: surveillance of camps, harbour surroundings, blue and green borders; Reconnaissance patrol vehicle, UAV or UGV...

For more information please visit Vigisight website!
Contact: vigisight@bertin.fr

Military Systems Development

Bertin Technologies also offers advanced military systems development, services and support. This includes building test beds for a range of equipment and the development of new military technology.

The company also offers pre-implementation studies and modelling services on a consultancy basis for the security, defence and aerospace sectors.

You can also view Bertin Technologies video's on YouTube

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COUNTER

Providing Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE) Solutions to Enhance Your Capabilities

Worldwide Counter Threat Solutions provides the collection and analysis of open source terrorist incidents pertaining to Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE) threats. CBRNE threats are becoming ever more prevalent in modern conflict and civil unrest incidences. Our subject matter experts and instructors are prepared to apply their proven experience in CBRNE to supporting your mission readiness.

OUR CBRNE CAPABILITIES:

- Risk Analysis & Assessment
- Equipment Training
- Containment Mitigation
- Incident Response & Mitigations
- Scenario Based Simulated Practical Exercises
- Strategic Development Planning
- Chemical & Biological Live Agent Training
- Operational Support & Coordination

WORLDWIDE
COUNTER THREAT SOLUTIONS

FOR MORE INFORMATION

RLDWIDE

THREAT SOLUTIONS

UNDERSTAND.PREPARE.PREVENT.

DDITIONAL CAPABILITIES INCLUDE:

RAINING/STRATEGIC PLANNING/EXERCISES

THREAT INTELLIGENCE & OPEN SOURCE

EOD/BCMD/IEDD/C-IED MISSIONS

ADVANCED SEARCH & ASSESSMENT

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