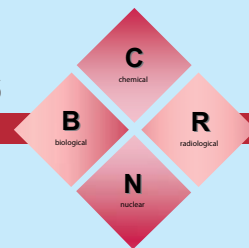




# 1<sup>st</sup> International Symposium on Development of CBRN Defence Capabilities

2010: A National Approach in a Multinational Environment



## Conference Magazine



November 30<sup>th</sup> - December 1<sup>st</sup>, 2010

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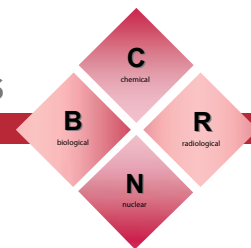
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### **Imprint**

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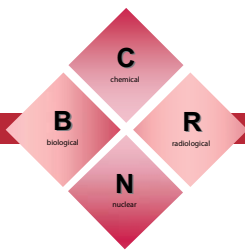
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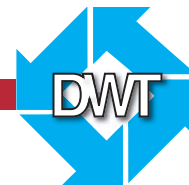
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# 1<sup>st</sup> International Symposium on Development of CBRN Defence Capabilities

2010: A National Approach in a Multinational Environment

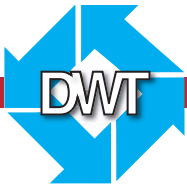


Ladies and Gentlemen,

the mission of CBRN Defence is to cope with any potential evolving CBRN threat. This threat can put at risk military forces, governmental and non-governmental organizations as well as the civilian population throughout a specific theater of operation and beyond. Therefore homeland security could be affected as well. A comprehensive strategy that provides solutions to counter this threat by synchronizing political, economical and military efforts fosters the mutual development of the necessary civilian and military capabilities. CBRN Defence related science and technology play also an invaluable role as they provide the technical solutions required to increase the effectiveness of CBRN Defence capabilities.

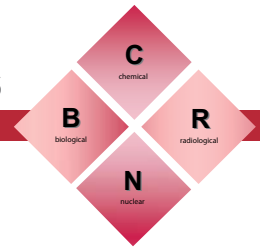
The objective of this first „International Symposium on Development of CBRN Defence Capabilities“ is to contribute to capability development by presenting in a comprehensive manner operational aspects of military and civil defence against CBRN threats in a multinational environment, various national approaches as well as the latest achievements in science and technology. This symposium provides a platform for mutual information and expert-level discussion of the international CBRN community. I hope it will result in a substantial amount of valuable take away for all the numerous participants.

*Brigadier General Winfried Zimmer  
Director „Fü S IV“, Federal Ministry of Defence*



# 1<sup>st</sup> International Symposium on Development of CBRN Defence Capabilities

2010: A National Approach in a Multinational Environment



Distinguished Guests,

it is my pleasure to welcome you here in Berlin on the occasion of the 1<sup>st</sup> International Symposium on Development of CBRN-Defence Capabilities. We are glad and proud to have CBRN-Experts from all over the world attending this Symposium. Delegations from more than 50 nations have come to the Berlin Congress Centre.

This not only underlines the importance of this topic as such, but it also clearly demonstrates the increased awareness of civil and military institutions regarding CBRN-Defence.

To be prepared for CBRN-Defence is a multinational challenge with high complexity, requiring a thorough understanding of potential risks and answers to ensure security and stability in all circumstances. On the civilian side, metropolitan areas and especially the capitals of our countries are in the cross line of international terror groups but would suffer as well from any more „traditional“-carried attacks. Our political leaderships, our population, critical infrastructures or individual prominent buildings, are other highly sensitive areas, not to forget the psychological effects of any threat, disaster or attack. As well from the military perspective, also bearing in mind any proliferation of such devices, defence capabilities against chemical, biological, radiological, nuclear and explosive weapons have become more and more important.

With this Symposium, we foster a platform for information and discussion on a broad range of related subjects in combination with an exhibition of latest technologies. I invite you to use the possibility to exchange views on current and future capability requirements, new conceptual responses and potential industrial solutions.

I am grateful to everyone for your interest and your participation, wherever you have come from. My special thanks for their support go to the Ministry of Defence, the Ministry of the Interior, the Federal Office of Civil Protection and Disaster Assistance, the Bundeswehr Joint Support Command and the German Army Association, last but not least to our speakers, sponsors and exhibitors. Have a successful meeting and a pleasant time in Berlin!

*General (ret.) Rainer Schuwirth  
Chairman of the GE Association for Defence Technology*





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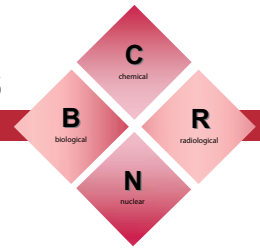
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# 1<sup>st</sup> International Symposium on Development of CBRN Defence Capabilities

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Ladies and gentlemen,

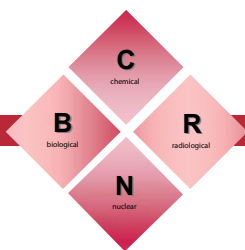
I welcome you to the *1<sup>st</sup> International Symposium on CBRN-Defence Capabilities – A national Approach in a Multinational Environment* on behalf of the *German Association for Defence Technology – Centre for Studies and Conferences* to this multinational event at Berlin. Your presence at this conference, and you have come from all over the world, shows that you share our concerns regarding the dangers we are confronted with. Be it asymmetric warfare, terrorist's actions or environmental disasters.

Setting up this conference had the aim to focus more closely on the operational approach in developing and applying CBRN-Defence Capabilities than on the scientific approach. Since the line between both is very thin there are also contributions being more scientific but waiting for actual realization.

We have asked multinational organizations, national authorities, research institutes and industry for their contributions and are convinced to have set up a two days program that enables us to make just this small but important step forward in the joint effort against the looming threats.

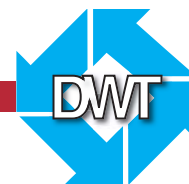
*Wolf Rauchalles*  
*Managing Director*

The 2<sup>nd</sup> International Symposium on  
**Developement of CBRN-Defence Capabilities**  
is forseen for November 2012 at Berlin; keep informed on:  
[www.cbrn-symposium.com](http://www.cbrn-symposium.com)



# 1<sup>st</sup> International Symposium on Development of CBRN Defence Capabilities

2010: A National Approach in a Multinational Environment



## The Main Programme

**Tuesday, November 30<sup>th</sup>**

07:00	Check In Counter opens
08:15	Opening of the Exhibition
08:45	<b>Welcome Notes and Opening Ceremony of the Symposium</b> General (ret.) Rainer Schuwirth, Chairman of the German Association for Defence Technology
09:00	<b>Brigadier General Winfried Zimmer</b> , Director "Fü S IV", Federal Ministry of Defence, Bonn
09:30	<b>Opening Key-Note</b> Brigadier General Winfried Zimmer, Director "Fü S IV", Federal Ministry of Defence
09:30	<b>Decisions of the NATO Summit in Lisbon and Their Significance for WMD Non-Proliferation and CBRN-Defence</b> Ambassador Jacek Bylica, Head, WMD Non-Proliferation Centre NATO
10:00	<b>Future-oriented Solutions for Effective CBRN Defence for Armed Forces and Civil Defence</b> Dr.-Ing. Hagen R. Gehringer, CEO, Kärcher Futuretech
10:30	<b>The Importance of Strategy for Countering Weapons of Mass Destruction</b> Rebecca Hersman, Deputy Assistant Secretary of Defense for Countering WMD, DoD, USA
11:00	Coffee Break / Exhibition / Press Conference
11:30	<b>EDA's Contribution to Bio Defence</b> Major General Jukka Juusti, Armaments Director, European Defence Agency
12:00	<b>Modern Developments in NBC-Defence Systems</b> Peter S.H. Georgi, Board Member, RMMV and Dr. Bernhard Halstrup, Head of Competence Center NBC Defence Systems
12:30	Luncheon / Buffet
14:00	<b>PANEL SESSIONS 1 - 5 and 11</b>
15:45	Coffee Break / Exhibition
16:15	<b>CBRN-Defence – the European Civilian Approach</b> Dr. Irmtraud Taufer, Armaments Counsellor, Permanent Representation of the Federal Republic of Germany to the European Union
16:45	<b>NATO's Role and Means in Civil Defence against CBRN-Threats</b> Ambassador Maurits Jochems, NATO Crisis Emergency Planning Committee
17:15	<b>A National Response on CBRN Threats</b> Dr. Marc Cadisch, Director SPIEZ LABORATORY, DDPS and Vice President KomABC
17:45	<b>Security Research in CBRN-Defence</b> Tjen Khoem Liem, DG Enterprise, European Commission
18:15	<b>Reception / Dinner Buffet / Music</b> by the Ragtime-Quintet of the chamber orchestra of Prussia
21:15	End of first day

## Speakers 2010

Rebecca Hersman Deputy Assistant Secretary of Defense for Countering WMD, DoD, USA	Jacek Bylica Head of Centre for Weapons of Mass Destruction (WMDC), NATO	Maurits Jochems Head of Senior Civil Emergency Planning Committee, NATO
MajGen Jukka Juusti Armaments Director European Defence Agency (EDA)	Tjen Khoem Liem Deputy Director General of DG Enterprise, European Commission	Dr. Margareta Sudhof Deputy Head of Unit Crisis Management, Federal Ministry of the Interior
Albrecht Broemme President of GE Federal Agency for Technical Relief (THW)	Dr.-Ing Hagen R. Gehringer Managing Director of Kärcher Futuretech	Dr. Stefano Miorotti CBRN General Manager of Cristanini
Brigadier General Winfried Zimmer Director Fü S IV, German Ministry of Defence	Peter Georgi Board Member, Rheinmetall MAN Military Vehicles	Dr. Irmtraud Taufer Armaments Counsellor German Representation to the European Union
Brigadier General Jean-Francois Parlanti CBRN Executive Committee, EMA	Colonel Prof. Dr. Lothar Zöller Head of Bundeswehr Institute for Microbiology	Bruce Barnett ThermoFischer Scientific

**Wednesday, December 01<sup>st</sup>**

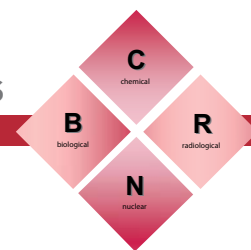
07:30	Opening of the Exhibition
08:00	<b>Opening Key-Note</b> Dr. Margareta Sudhof, Deputy Head of Directorate-General Crisis Management, Ministry of the Interior
08:30	<b>CBRN-Operation: a Horrible or Controllable Scenario for Operational Forces?</b> Albrecht Broemme, President, Federal Agency for Technical Relief (THW)
09:00	Coffee Break / Exhibition
09:15	<b>Panel Sessions 6 - 10</b>
11:00	Coffee Break / Exhibition
11:30	<b>Medical Biodefense: Challenges and Solutions</b> Colonel Prof. Dr. Lothar Zöller, Head of Bundeswehr Institute for Microbiology
12:00	<b>Modernizing CBRN-Defence Capabilities</b> Colonel (GS) Dieter Jaksik, MoD, Bonn
12:30	<b>SX 34 System for the Decontamination of Sensitive Equipments</b> Dr. Stefano Miorotti, CBRN Area General Manager, Cristanini S.p.A.
13:00	Luncheon
14:45	<b>Advances in Handheld, Field-Based Chemical Identification</b> Bruce Barnett, Thermo Fisher Scientific
15:15	<b>CBRN Defence – The Austrian Approach</b> Lt.Colonel Franz Gaugl, Chief CIMIC Section & NBC Expert, MOD
15:45	<b>Perspective &amp; Objective of the French CBRN Defence</b> Brigadier General Jean-Francois Parlanti CBRN Executive Committee, EMA
16:15	<b>Transformation: From Homeland Defence to Operational Capabilities</b> Major Gal Gilboa, Head of Unconventional Weapon (WMD) Section, Home Front Command
16:45	<b>Closing Remarks</b> Major General (ret.) Wolfgang Döring German Association for Defence Technology
17:00	End of Conference





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## The Panel Programme

### Panel 1

#### Detection of Biological Threats

- Chairman:** LTC Hans-Jürgen Jacob, Joint Support Command, Cologne
- Speakers:** **Automatic Immunomagnetic Separation and Detection of Viruses – Identifying Adenovirus via Sandwich ELISA and PCR Amplification of the Hexon Gene**  
Dr. Alois Friedberger, EADS Innovation Works
- A Rapid Deployable Bio Lab – Microbiological High-Tech Diagnostics for Operations Abroad**  
LTC Dr. Roman Wölfel,  
Microbiological Institute of the German Armed Forces
- The BiGRUDI project: Development of mobile Diagnostic Platforms for rapid Detection of Biothreat Agents**  
Heinz Ellerbrok, Robert Koch Institut, Centre for Biological Safety, Berlin, Coordinator BiGRUDI project
- An Integrated Approach to Detection and Identification of Aerosolized Biological Agents**  
Ken Klein, Product Manager, Smiths Detection
- Rapid on-site-detection of Biowarfare Agents with Lateral Flow Assays (LFA)**  
Dr. Sybille Pagel-Wieder, miprolab GmbH

### Panel 4

#### 21<sup>st</sup> Century CBRN-Reconnaissance-Requirements of Future Missions

- Chairman:** Peter S.H. Georgi, Board Member RMMV and Dr. Bernhard Halstrup  
Head of Competence Center NBC Defence Systems
- Speakers:** **CBRN System Integration Challenge – Benefits to the Mission**  
Dr. Stulgies, Head of Unit Research, Rheinmetall
- Mrs Heidi Laug**, Senior Engineer and **Major Rognerud** both Norwegian Defence Logistics Organization (DLO)
- Colonel Wolfgang Klos**  
Commander NBC Defence School, German Armed Forces
- Colonel Christophe Baumberger**  
Chief Doctrine Operations and Deputy Commander NBC Competence Center, Swiss Army

### Panel 2

#### Lab on the chip

Miniaturising of Equipment for Detection and Identification

- Chairman:** Dr. Christophe Pannetier, DGA CBRN Defence, Paris
- Speakers:** **Automated DNA-Preparation System for Bacteria out of a Millilitre Liquid Sample**  
Rainer Gransee, Mainz Institute for Microtechnology
- Electrical Bio-Chips – A new Dimension in Biological Warfare**  
Thomas Elßner  
Bruker Daltonik GmbH
- Advances in Handheld, Field-Based C-Identification**  
Servantech
- Chip-Based Detection of Viruses**  
Oberregierungsrätin Dr. Birgit Hülseweh,  
Bundeswehr Research Institute for Protective Technologies and NBC Protection (WIS)
- Design and Assessment of CBRN Identification Systems**  
Roberta Collino, THALES

### Panel 5

#### Protection

Strategies, Research and Solutions

- Chairman:** Dr. Stephan J. Lee, Chief Scientist (ST),  
Office of the Director, U.S. Army Research Office
- Speakers:** **Comprehensive Air Treatment – a decisive requirement for future Collective Protection Systems (COLPRO)**  
Jehuda Fehlauer, Beth-El Industries Ltd.
- Integration of the Individual CB Protection into the Clothing System of the Soldier**  
Hans-Jörg Wickert, Blücher GmbH
- The Analytical Task Force – An Element of a Modern Civil Protection System**  
Dr. Roman Trebbe, Head of the Analytical Task Force,  
Federal Office of Civil Protection and Disaster Assistance (BBK)
- Availability of Medical Countermeasures**  
Mark L. Johnson, Emergent BioSolutions
- Protecting People and Critical Infrastructure in a Multi-Organizational Approach to Hazard Response**  
Karin Potje-Kamloth, Mainz Institute for Microtechnology

### Panel 3

#### Decontamination

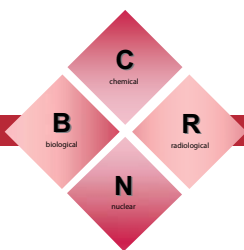
The way ahead: Nano Technology/Enzymatic/Modern Technologies

- Chairman:** Dr. Alexander Grabowski,  
Bundeswehr Research Institute for Protective Technologies and NBC Protection (WIS)
- Speakers:** **Development of Enzyme Systems to Combat Chemical and Biological Threat Agents**  
Christopher Barnett,  
Director Scientific Applications, Genencor
- Patient and Casualty Decontamination System Mobile Tent Based Decontamination System for Walking and Stretcher Patients**  
Thilo Schuppler, OWR GmbH
- Sporicidal Efficiency of Disinfectants on the Surfaces of Personal Protective Equipment – a Model for the Validation**  
Karin Lemmer, Robert-Koch-Institute
- Decontamination Systems**  
Dr. Stefano Miorotti,  
CBRN Area General Manager Cristanini S.p.A.
- CBRN DECONTAMINATION – Industry Considerations**  
Laura Cochrane, RSDecon
- Skin Decontaminants for Emergency Management and Military Operations**  
LTC Dr. Martin Weber, Pharmacist and Food Chemist  
Medical Service of the GE Armed Forces

### Panel 11

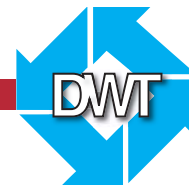
#### Countering Large Scale Disasters

- Chairman:** Beate Coellen, Head of the Presidential Office and Head of Project Group FIFA World Cup 2010, Federal Office of Civil Protection and Disaster Assistance (BBK)
- Speakers:** **The International Committee of the Red Cross: Towards an Operational Response to NRBC-Events**  
Robin Coupland, Advisor, NRBC Operational Response  
International Committee of the Red Cross, Genf
- High Level Chemical detection equipment for security at public events**  
Nuno Miguel da Silva Ferreira  
Airsense Analytics GmbH
- Olympic & Major Event Security:- The Evolving Response in Countering the CBRN Threat**  
Alphus Hinds  
Smiths Detection
- Bioagent detected, Now What?**  
Dr. Andreas Hartmann,  
Emergent BioSolutions
- NATO Crisis Response**  
LTC Andreas Kayser  
SHAPE CPP WMD Directorate, NATO
- Austrian Civil Protection System**  
Lt.Colonel Franz Gaugl  
Chief CIMIC Section & NBC Expert, MOD Austria



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## The Panel Programme

### Panel 6

#### Network Centric Warfare and CBRN Defence

Computer assisted CBRN Defence? Contributions by industry

Chairman: **LTC Georg Gnan**, Joint Support Command, Cologne

Speakers: **Integrated Network Solutions for CBRN Detection**  
**Richard D. Read** and **David Ence**, Lockheed Martin

**Design and assessment of the CBRN defense systems based on simulation**  
**Stefane Morel**, THALES

**Consequence Management/Analysis – Modelling, Simulation and Software**  
**Norbert Kopp**,  
TMS technisch-mathematische studien-gesellschaft mbH

**NEXSENSE-C – A fast und robust solution for detection and classification of hazardous chemicals and warfare agents**  
**Stuart Duncan**,  
SELEX Systems Integration GmbH

**Operational prediction of hazardous atmospheric dispersion with HEARTS**  
**Marcus Herold**, AGeoBw

### Panel 9

#### Detection of Radiological and Nuclear Threats

Chairman: **Colonel Klaus-Werner Schiff**  
German NBC Defence and Self-Protection School

Speakers: **The GE central Support Unit for Nuclear Defence**  
**Elmar Lillpopp**, Federal Criminal Police Office

**Preventing Terrorists Acts by Early Detection of illicit RN-Material on Site**  
**Dr. Wolfgang Rosenstock**, Fraunhofer INT

**Biosensors for Standoff-Detection of Explosives and CBRN-Threats: Options and Challenges**  
**Dr. Martin Wehner**, Fraunhofer ILT

**LLR-Detection, Mobile and Stationary**  
**Dr. Jürgen Böttcher**,  
Sales & Marketing Manager Military Technics, Thermo Fisher

### Panel 7

#### Robotics in CBRN(E) Defence

Chairman: **Frank E. Schneider**, Fraunhofer FKIE

Speakers: **Robot Based Laser-Drilling Technologies in Conjunction with Chemical Sensors**  
**Prof. Dr. Peter Kaul**,  
University Bonn-Rhein-Sieg

**Telemax – Effective Teleoperated Sensing and Sampling**  
**Dr. Andreas Ciossek**,  
Telerob GmbH

**An Experimental CBRN(E) Recon Robot**  
**Frank E. Schneider**,  
Fraunhofer FKIE

**Automation of Sample Drawing with Robot Based System for Investigation of CBRN- Disasters**  
**Dr.-Ing. Olena Kuzmicheva**,  
Friedrich-Wilhelm-Bessel-Institute Research Society

### Panel 10

#### Stand-Off Detection

Chairman: **Dr. Peer Rechenbach**, State Department of Disaster Response Management and Civil Protection, Ministry of the Interior and Sport of Hamburg

Speakers: **Expanding EGIS III Detection Capabilities through Differential Ion Mobility Spectrometry**  
**Joe Dorion**,  
Thermo Fisher Scientific

**Stand-Off Detection of C-Agents – Parameters of Chemical Imaging and Application**  
**Wolf Münchmeyer**,  
CEO, Airsense Analytics

**Chemical Agent Detection and Identification with a Hyperspectral Imaging Infrared Sensor**  
**Philippe Lagueux**, Telops Inc, Canada

**Agenda 2020 for an European Certification System for CBRNE Sensor Systems and Devices – the Concept for a Roadmap**  
**Dr. Jörg Beckmann**,  
Federal Institute for Materials Research and Testing (BAM)

### Panel 8

#### State-of-the-Art in Decontamination

Forward-looking Decontamination Systems in Serial Production

Chairman: **Prof. Dr.-Ing. Bernd Niemeyer**,  
Chair of Process Engineering, Helmut-Schmidt-University

Introduction: **Dr.-Ing. Hagen R. Gehringer**,  
Managing Director, Kärcher Futuretech

Speakers: **Current Aspects of CBRN Decontamination**  
**Hans-Joachim Töpfer**, Product Manager NBC Protection Systems, Kärcher Futuretech

**Specific Technological Solutions for Decontamination of Sensitive Equipment**  
**Markus Kostron**, Manager R&D Maintenance and NBC Protection Systems, Kärcher Futuretech

**CBRN Decontamination: The Philosophy of the German Armed Forces**  
**LTC Hans-Jürgen Bauer**  
German NBC Defence and Self-Protection School

**Test and Evaluation of Modern BC-decontaminants: Methods and Challenges**  
**Martien Broekhuijsen**  
Managing Director Marble ChemBio Consulting

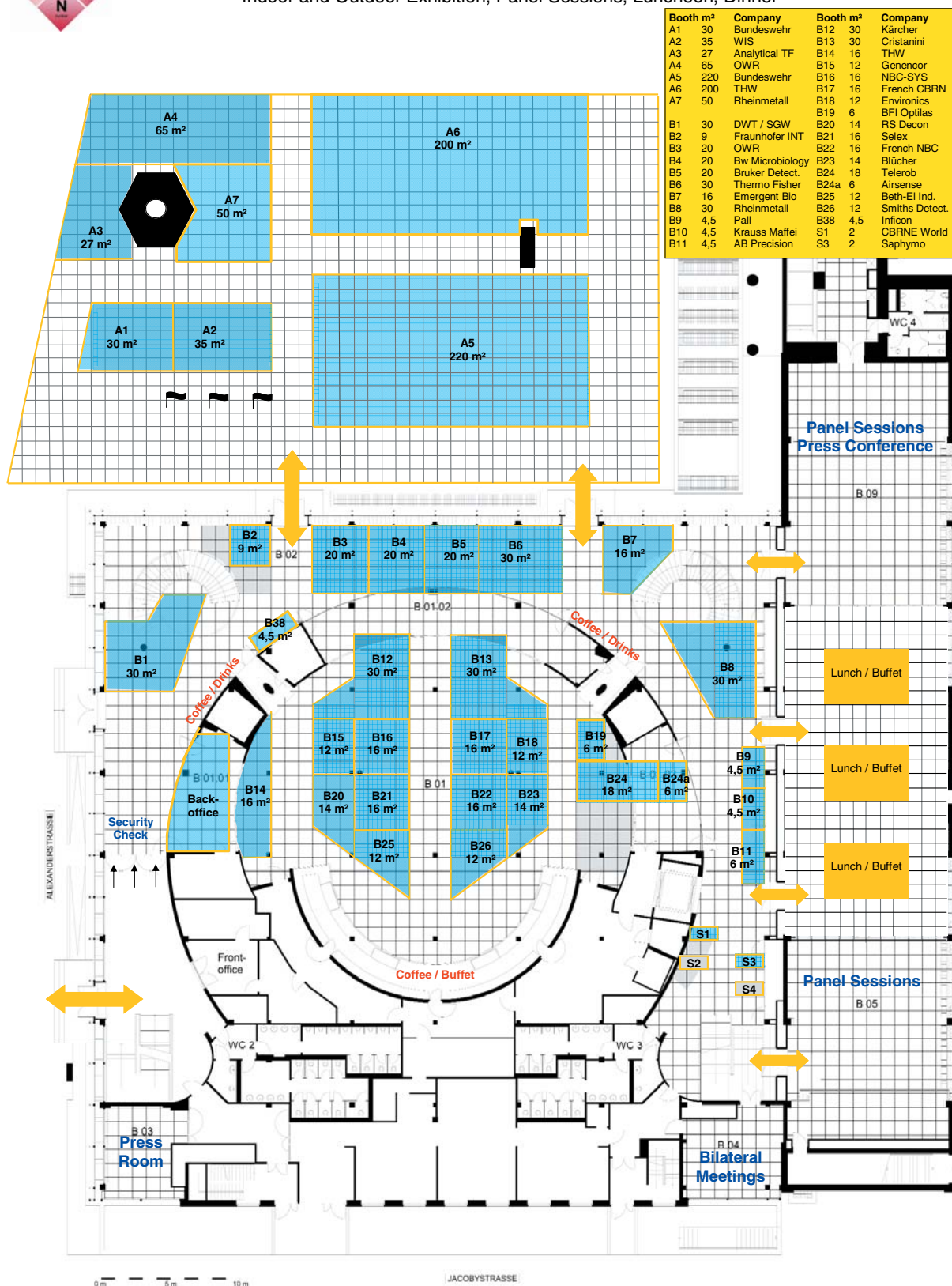
**Purification of CBRN Contaminated Water**  
**Dr.-Ing. Patrick Marcus**  
Product Manager Water Purification, Kärcher Futuretech

## Floor Plan, Level B

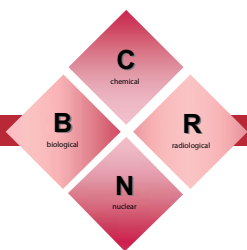


### Level B

Indoor and Outdoor Exhibition, Panel Sessions, Luncheon, Dinner

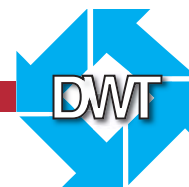






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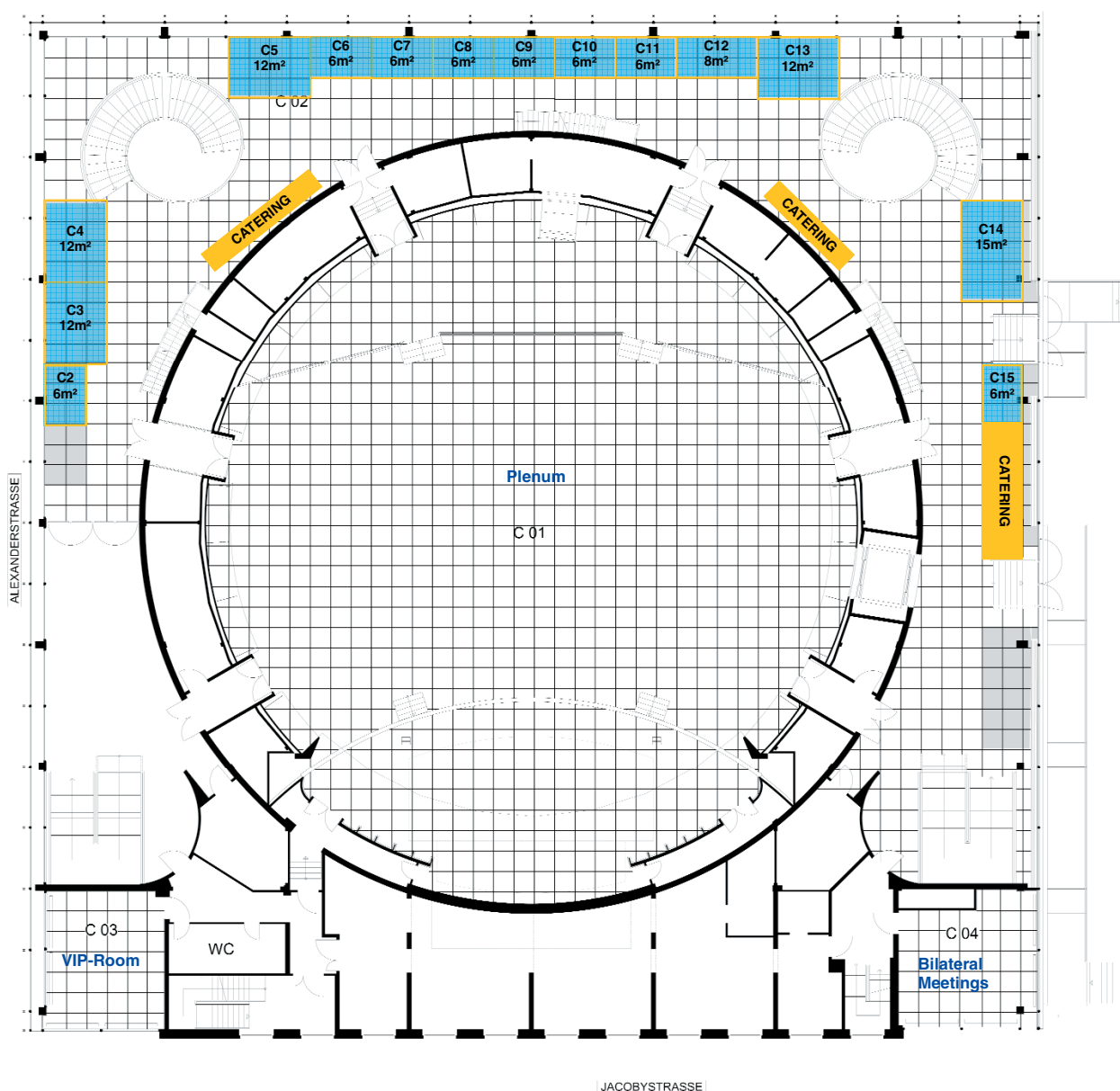
## Floor Plan, Level C



### Level C

Indoor Exhibition, Plenum, Panel Session

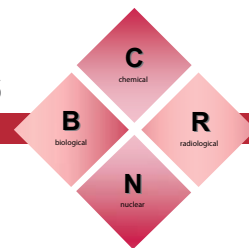
Booth m <sup>2</sup>	Company
C2 6	Carl Cranz Gesellschaft
C3 12	DeviceLock Europe, Kainoa, CBMSS
C4 12	3M
C5 12	ICx Technologies
C6 6	Meridian Medical Technologies
C7 6	Rex Gummitechnik
C8 6	Mönch Publishing Group
C9 6	Mittler & Sohn Publishing
C10 6	Lachen Helfen e.V.
C11 6	Argon Electronics
C12 8	Strategie und Technik
C13 12	AirBoss Defence
C14 15	Bw ABC-Abwehr und-Warndienst
C15 6	Miprolab





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## The Exhibitors

### 3M – The Spirit of Innovation

Constantly we develop new and innovative products that guarantee safety and security. Practical and resourceful solutions contribute to the success of our customers. We spend about 6% of our revenue on research and development. At 3M Germany about 5000 employees use their know-how and about 40 technology-platforms to help making your life more convenient.

#### Strong Brands

Strong brands reflect the inventiveness and quality of our achievements: Scotch®, Post-it®, Scotchgard™, Thinsulate™, Scotch-Brite™, Filtrete™, Command™ und Vikuiti™ are trademarks of 3M.

### Always at your Service

Reliability, usability, operating comfort and cost-effectiveness – these are requirements that material components of army and police need to fulfil to a great extent. Our portfolio of hearing protection and communication solutions as well as respiratory and eye protection is specially designed for the tough circumstances in the field. Our Peltor™ communication solutions provide the soldier with an ideal hearing protection and at the same time enable frictionless communication and acoustic perception of ambient noise.

Furthermore we produce a variety of special films for window safety and graphical solutions. 3M Safety and Security

Films provide fragment retention by holding glass together during smash, combat or acts of terrorism. 3M Sun Control Films reduce energy and protect your interior from destructive ultraviolet rays that cause fading. Both can be applied to buildings as well as cars.

### What can we do for you?

3M Germany – Government Markets – Behörden und Bundeswehr  
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E-mail: Behoerden@mmm.com,  
[www.3M-Behoerden.de](http://www.3M-Behoerden.de)



## Combined Ventilation, NBC- and Air Conditioning Systems for Vehicles, Tents, Containers Bomb- and Mobile Shelters



NATO-Supplier-No.  
SH785



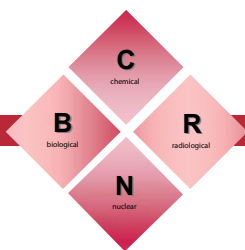
Certified Quality  
Assurance Program  
according to AQAP-2110

Beth-El is a major supplier for combined ventilation & NBC filtration systems as well as combined air conditioning, ventilation & NBC filtration systems, air cleaners for engine air, fuel pumps and other sub-systems. Beth El's systems are utilized around the world and are in service with more than 60 armies.



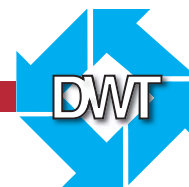
## Mobile Isolation Systems





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## AB Precision

AB Precision (Poole) Ltd is an established UK engineering company providing product solutions to military, police and government agencies worldwide. Specialist Products include:

- Robotic Vehicles Cyclops & Guardian – platforms for video and audio surveillance & payloads such as sensors, disruptors & tools.
- Defusing Devices – including rotary defuser and de-armers with various projectiles.
- Abrasive Water Cutting System (AWCS) – For cutting various shapes into different surfaces and materials.
- Specialist Tools – Non-Magnetic Tool Kits, Mine Prodders and Crimp Tools.
- Disruptors – A whole range of different types including lightweight titanium and one shot disposable.

AB Precision (Poole) Ltd  
1 Fleets Lane, Poole, Dorset  
BH15 3BZ, United Kingdom  
Tel.: +44 (0)1202 665000  
Fax: +44 (0)1202 441666  
Mail: eod@abp-eod.com  
[www.abp-eod.com](http://www.abp-eod.com)

## Airboss Defense

AirBoss-Defense is world renowned for the manufacture and supply of CBRN (Chemical, Biological, Radiological, Nuclear) Personal Protective Equipment (PPE). AirBoss-Defense also manufactures Fire Fighting and Extreme Cold Weather (ECW) footwear, multi-purpose safety boots and a wide range of industrial extruded and moulded rubber engineered products for the defense market. As a division of AirBoss of America Corp, AirBoss-Defense has access to all manufacturing, developmental and testing capabilities of this group of businesses. With its office in Acton Vale, Quebec, Canada; AirBoss-Defense has access to a broad range of manufacturing facilities located across North America. The Quebec facility is specialised in hand assembly of rubber footwear. The Ontario plant is the single largest mixing facility in North America and has high tech injection moulding equipment. The most recently opened manufacturing location is in North Carolina and is one of the most advanced mixing facilities in the world. This North Carolina facility is

bookmarked for possible expansion of our defense operations.

AirBoss-Defense uses cutting edge technologies to provide the best possible, operationally effective, solutions for footwear, hand wear and respiratory protection. Dedicated to innovation, AirBoss-Defense has demonstrated its ability to grow annually, making it a world leader providing armed forces and first responders „The Ultimate Protection“.

[www.airbossdefense.com](http://www.airbossdefense.com)

## AIRSENSE Analytics

AIRSENSE Analytics was founded on April 15 1996 by Dipl.-Ing. Wolf Münchmeyer and Dr.-Ing. Andreas Walte. This innovative company has its registered place of business in Schwerin – the capital of Mecklenburg Vorpommern region.

Airsense centers its activity on the development and manufacturing of high qualified instrumentation for the fields of processing, environmental techniques, as well as for analytical services for the air analytics.

Airsense has been succeeding in placing its especial products in the international market. Today Airsense is one of the worldwide recognized manufacturers of sensor array technologies and its associated services.

Mobile & Robust Measuring Techniques able to deliver reliable results in the shortest time, this is our know-how!

[www.airsense.com](http://www.airsense.com)

## Argon Electronics

Argon Electronics is the international market leader in the design and manufacture of simulation systems for safe and cost effective training in the use of chemical and radiological detectors. Visit us on stand #C.11 to learn more about enhancing your CBRN response capability.

Hand-Held Chemical Agent Monitor and Personal Alarm Simulators.

- AP2C-SIM™
- AP4C-SIM™
- CAMSIM™
- ChemPro100-SIM™
- LCD-SIM™/JCAD-SIM™
- RAID-M-SIM™
- S4PE-SIM

Chemical Detector and Identifier Simulators.

- ACADASIM™
- GID-3-SIM™
- GID-M-SIM™
- HAPSIM-P™

Radiological Detection Simulation.

The Argon RADSIM™ range includes simulators for radiation dosimeters, contamination, survey & radiac meters, and spectrometers.

PlumeSIM™ Wide Area Simulation for Instrumented CBR Training.

The PlumeSIM system comprises hardware and software components that permit the creation and broadcast of virtual chemical and radiological releases to activate Argon simulation instruments deployed with personnel for external field exercise and table top classroom wide area training. PlumeSIM also records trainee movement and instrument use for After Action Review. NASCAP™ Networked Remote Reporting and Alarm Activation Management for CBRN Detectors.

A man portable, ready-to-go, rapid deployment system enabling the augmented use of stand-alone point detectors. Multiple radio outstations/repeater units communicate with a single, flexible architecture base station, for safe and efficient monitoring of detector status and enhanced threat reporting.

For further information on Argon simulation systems or to request a FREE copy of Argon Electronics' CBRN Training Equipment Guide, please visit stand #C.11 or contact us at:

[www.argonelectronics.com](http://www.argonelectronics.com)

## Bertin Technologies

Bertin Technologies, subsidiary of French CNIM Group, is one of the leading experts in the field of advanced technology, for services (expertise, study, consulting), designing and manufacturing of innovative products.

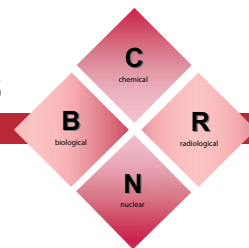
Its multi-sectorial experience, multidisciplinary expertise, organisation for projects and ongoing self financed technological investment policy, enable Bertin Group to guarantee its customers (public sector, large industrial as well as small and medium companies) innovative and competitive solutions. Bertin





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Group is a partner for large armament programs in France and abroad, for instance, in the field of CBNRE (detection and identification of biological and chemical agents), as well as optronic surveillance and training simulation. Bertin Technologies designs and markets equipment used for detection and identification of chemical and biological threats.

For more than 15 years, Bertin has been working alongside CBRN experts, in order to provide state of the art solutions for operational duty on CBRN detection. Moreover, Bertin Technologies is a member of the French CBRN consortium.

[www.bertin.fr](http://www.bertin.fr)

## Beth El Industries

Kibbutz Beth-El (Kibbutz Bethel or in Hebrew – Kibbutz Beit-El) was founded by a group of Germans and other Europeans in the 1960's in Israel from a desire to live a simple communal lifestyle of equality, leaning on principles of modesty and harmony, and living according to the Bible. The kibbutz structure operates under Israeli law pertaining to kibbutzim of which there are over 250 operating in Israel today. Kibbutz Beth-El, in 1977, established the company Beth-El Zikhron Yaaqov Industries Ltd., to help meet the security needs of both European and Israeli populations and after the 1990 Gulf War, the company grew exponentially, eventually creating a variety of daughter companies and productlines.

Beth-el Industries (B E Industries or BEInd.) corporate headquarters are located in a beautiful valley opposite a local winery in Zikhron Yaaqov and Beth-El Industries has also developed a variety of affiliate companies that manufacture a wide range of products in locations throughout Israel. Beth-El Industries has approximately 25,000 square meters of facilities and over 500 highly valued employees, both residing within the kibbutz and from local populations from the surrounding communities. Beth-El Industries has a broad base of operations and performs every stage of design and production in-house that include: design, engineering, development, metal processing, plastic injection, aluminum

die casting, precision machining, filtration and separation technologies, electronics, programming, assembly, and testing. B.E. Industries' NBC / CBRN (Nuclear, Biological, and Chemical) filtration/protection systems, and the production of other products, for use in hospitals, schools, government buildings, military applications, emergency vehicles, and shelters, are but a few of Beth-El Industries' range of operations. [www.beind.com](http://www.beind.com)

## BFI Optilas

Employing over 320 staff in 14 countries, we offer a unique capability for our franchised partners to access the widest possible European customer base for their products and services.

More than 250 of our technically trained and product focused staff are directly involved in the promotion and selling of our franchised partners' products.

[www.bfioptilas.com](http://www.bfioptilas.com)

## Blücher

BLÜCHER is the world market leader in the development and production of adsorptive compound fabrics for Individual Protection from chemical and biological warfare agents.

BLÜCHER's revolutionary developments in this critical field have also spurred similar developments by the Company in the fields of Collective Protection, and other high-performance filtration and adsorption applications. BLÜCHER is first and foremost a technology company, devoted to developing and producing practical solutions to serious threats.

More than 42 different countries' armed forces, law enforcement and emergency response organizations, and multinational inspection teams rely on BLÜCHER's unique protective technology – SARA-TOGA®. BLÜCHER's Collective Protection solutions are used to protect some of the most well-known public buildings in the world.

[www.bluecher.com](http://www.bluecher.com)

## Bruker

Bruker Daltonics, an operating company of Bruker Corporation (NASDAQ: BRKR), is a leading developer

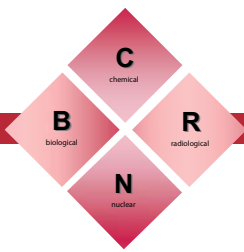
and provider of innovative life science tools based on mass spectrometry. We design, manufacture and market a broad array of products intended to meet the rapidly growing needs of a diverse customer base, including pharmaceutical, biotechnology, proteomics and molecular diagnostics companies, academic institutions and government agencies. Bruker Daltonics has diverse technology platforms that integrate MALDI-TOF, MALDI-TOF/TOF, (Q-q-) FTMS, ESI-Ion Trap, ESI-TOF, ESI-Q-q-TOF and UHR-TOF mass spectrometry systems with automated sample processing systems and productivity-enhancing software for life science applications. We are also a worldwide leader in supplying systems for substance detection and pathogen detection in security, defense and anti-terrorism. Field-hardened systems make use of advanced mass and ion mobility spectrometry as well as Fourier Transform infrared spectroscopy technologies.

Headquartered in the US, with major facilities in Germany (Bremen and Leipzig) and the US (Billerica, MA), as well as worldwide sales & service centers, the Bruker Daltonics corporation currently employs about 700 people.

[www.bdal.com](http://www.bdal.com)

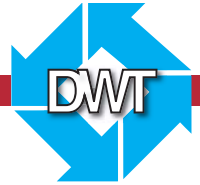
## Bundeswehr Institute for Microbiology

Als wissenschaftliches Kompetenzzentrum der Bundeswehr berät das Institut die Führung in allen Fragen des Medizinischen B-Schutzes (= Schutz vor Krankheitsverursachern durch biologische Kampfstoffe) und gewährleistet damit die unmittelbare Urteils- und Handlungsfähigkeit auf diesem Gebiet. Das Institut führt neben der Medizinischen B-Schutz- Ausbildung Studien und angewandte Forschung zur Epidemiologie, Pathogenese, Erkennung, Vorbeugung und Behandlung von durch B-Kampfstoffe und vergleichbare Biostoffe verursachten (B-) Gesundheitsstörungen durch. Dazu werden Expertentlabore für die Spezialdiagnostik potenzieller B-Gesundheitsstörungen (z.B. Tularämie, Pest, Orthopocken, Anthrax), für die einsatzorientierte Aufklärung ungewöhnlicher Krankheits- und Todesfälle sowie zur medizinischen Veri-



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fizierung mutmaßlicher B-Kampfstoffeinsätze bereit gehalten. Das Institut kooperiert mit wissenschaftlichen Partnern im In- und Ausland und wirkt in nationalen und internationalen Fachgremien mit.

Aufgaben- und Forschungsfelder:

- Bakteriologie und Toxikologie
- Virologie und Rickettsiologie
- Infektionsepidemiologie und -immunologie
- B-Risikoanalyse und Begutachtung
- Medizinische B-Spezialdiagnostik
- Medizinische B-Aufklärung und -Verifikation

[www.sanitaetsdienst-bundeswehr.de](http://www.sanitaetsdienst-bundeswehr.de)

## Carl Cranz Gesellschaft

Knowledge is the decisive resource of a successful industrial nation particularly if, like Germany, it is not specially blessed with conventional natural resources. But this resource, once as permanent as gold or diamonds, is becoming increasingly a perishable material. We are witnessing today an enormous flood of information which is depreciating the value of existing knowledge at an ever faster pace. This development is most obvious in the engineering sciences. Transformation into a scientific society is only possible by transformation into a learning society. The most valuable contribution which schools can make is to prepare pupils for life-long learning. Institutions of higher education cannot avoid concentrating on imparting fundamental knowledge and skills in the individual disciplines and at the same time laying the foundation for interdisciplinary cooperation.

Post-academic training as the constant imparting of specialised up-to-date knowledge will be of decisive importance in the future. Institutions will thus be required to structure and didactically process volumes of unordered information. Carl-Cranz-Gesellschaft is just such an institution providing post-academic training. It has been imparting practical up-to-date practical knowledge for four decades to specialists and executives from the fields of engineering sciences in compact courses at university level.

[www.ccg-ev.de](http://www.ccg-ev.de)

## CBMSS GmbH

The company CB Marketing & Sales Services was founded in Burscheid, NRW, Germany on July 1, 2005 and became a GmbH on January 2007. The core business of the CB Marketing & Sales Services GmbH is business development and support of sales activities for small and medium enterprises (SMEs).

A particular strength is the business especially in the range of national and international defense. This includes also support for NATO business, professional project management and consulting for exhibitions and fairs.

On the 1st CBRN Symposium we present products of our business partners DeviceLock and Ironkey/Kainoa.

CB MARKETING &  
SALES SERVICES GMBH  
Dabringhausener Str. 18  
51399 Burscheid  
Fon 0 2174 499743  
Fax 02174 499739  
Mobil 0171 1794505  
[www.cbmss.de](http://www.cbmss.de)

## CBRNe World Magazine

CBRNe World CBRNe MAGAZINE published quarterly by Falcon Communications Ltd serves the information needs of professionals around the world charged with planning for or responding to a chemical, biological, radiological, nuclear or explosives (CBRNe) threat or incident.

Spanning the divide of operational and scientific, it brings together opinion formers from the world of civil response, military leaders, academia, government agencies, research labs and industry. Combining the already merging fields of CBRN and explosives together in one magazine, editorial content is a combination of qualitative and researched news, interviews, articles, surveys and regular columns.

[www.cbrneworld.com](http://www.cbrneworld.com)

## Cristanini

CRISTANINI S.p.A. Company was established in 1972 and has a very long experience worldwide in the field of high pressure water technologies – with a very strong presence around the world

– and offers a complete range of equipment of civilian, industrial, military and civil protection use.

CRISTANINI's unparalleled experience and know-how is the result of years dedicated to research, applied engineering, equipment and accessories production in order to propose innovative solutions in the CBRN decontamination field. CRISTANINI S.p.A. close customer relations and wide range of experience have allowed the development of an extensive line of products designed to satisfy a myriad of customer needs and often to settle up important problems before unsolved.

The R&D program is conducted in co-operation with the most famous University Institutes, including the Department of Chemical Engineering Processes of the University of Padova, Italy and Military Labs around the world. The state-of-the-art R&D is validated by 25 patents This is the result of a creative work and an integrated approach, searching for new solutions to highly complex scientific, technological and engineering problems. Official importers and representatives authorized in 73 different countries all over the world.  
[www.cristanini.it](http://www.cristanini.it)

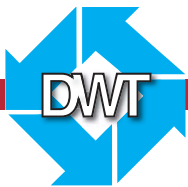
## Device Lock

DeviceLock, Inc. (formerly SmartLine Inc) was established in 1996 to provide effective and economical network management solutions to small, medium and large-scale business.

Early on, we made it our mission to design software that is robust and reliable when it comes to enforcing network policy, while being easy and intuitive for system administrators to use. Furthermore, we made it our job to deliver solutions that are well-integrated and cost-effective.

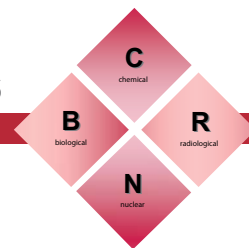
Based on this formula, we've introduced and developed category-leading products like DeviceLock® for enforcing security policy related to personal devices. DeviceLock, Inc. is a worldwide leader in endpoint device control security. Our DeviceLock® product is currently installed on more than 4 million computers in more than 58 000 organizations around the world.

Currently, DeviceLock, Inc. solutions



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target Windows systems and users. Our award-winning products are effective on large networks as well as individual workstations.

DeviceLock's many customers include the major technology system integration consulting firms, some of the largest US and international banks, telecommunications conglomerates, and many government networks and educational institutions.

DeviceLock, Inc. is a member of the Microsoft Independent Software Vendor Program (MSDN ISV), the Intel® Software Partner Program, the Fujitsu Siemens Computers Global Alliance, the Sun Developer Connection Program (SDC), and the Citrix Developer Network.

DeviceLock's membership in the SanDisk® Enterprise Solutions Technology Alliance ensures our DeviceLock products' full compatibility with SanDisk's Cruzer® Enterprise USB drive.

[www.deviceclock.com](http://www.deviceclock.com)

## Emergent BioSolutions

Emergent BioSolutions Inc. is a profitable, multinational biopharmaceutical company dedicated to one simple mission – to protect life. The company focuses on the development, manufacture and commercialization of biologic products, consisting of vaccines and therapeutics that assist the body's immune system to prevent or treat disease. Emergent's marketed product, BioThrax® (Anthrax Vaccine Adsorbed), is the only vaccine licensed by the U.S. Food and Drug Administration for the prevention of anthrax ([www.biothrax.com](http://www.biothrax.com)). BioThrax is not authorized for use outside of the United States and India. In addition to BioThrax, the company has multiple clinical and preclinical product candidates in development that are designed as medical countermeasures for use against biological agents that are potential weapons of bioterrorism and bio-warfare. To view the company's product portfolio please visit [www.emergentbiosolutions.com](http://www.emergentbiosolutions.com). The company currently employs approximately 650 people with offices in the United States, the United Kingdom, Germany and Singapore.

[www.emergentbiosolutions.com](http://www.emergentbiosolutions.com)

## Environics Oy / Innovative Solutions for Security

Environics Oy provides complete CBRN security solutions, from early warning to consequence management.

The company's detectors and systems are being used to monitor the safety and security of people, the environment and property by both civil and military agencies worldwide. Envionics also provides CBRN cleaning and decontamination products for crisis and consequence management, and solutions for both fixed and mobile CBRN Laboratory systems. From a single portable chemical detector to a complete nationwide CBRN monitoring system, Envionics provides a flexible and effective solution for enhancing preparedness and the ability to respond to CBRN threats.

Envionics is an experienced and solid company with more than 20 years of experience. The development of technology for detection instruments dates back to the early 1980s when R&D began within the Finnish Defence forces.

Envionics works globally and has branch offices in China and the Middle East. To strengthen its markets in North and South America, Envionics USA was founded in 2001. In total, the company has manufactured and delivered over 12,000 CWA detectors and hundreds of integrated CBRN monitoring systems to over 40 countries.

Envionics solutions for CBRN security are designed to have a long operational life with minimal maintenance, thus making the cost of ownership extremely low and greatly simplifying the logistics needed to keep the detectors fully operational at all times.

[www.envionics.fi](http://www.envionics.fi)

## Fraunhofer FKIE

The Fraunhofer Institute for Technological Trend Analysis INT creates, and continually updates, a comprehensive overview of the general research and technology landscape and of the entire spectrum of technological development, national and international. Our clients are bodies from state and industry. We consolidate the general overview with our own specialized analyses and forecasts in selected technologies. With the support of our highly-versatile, state-of-

the-art measurement infrastructure, the Institute also carries out theoretical work and experiments on electromagnetic and nuclear effects.

[www.int.fraunhofer.de](http://www.int.fraunhofer.de)

## French CBRN Consortium

For over twenty years, the French NBC Defence Consortium has gathered together the main French companies in the NRBCE field in order to offer their French and foreign customers the best solutions in terms of defence.

The evolution of the threat (military attack, terrorism or Industrial accident), the evolution of the nature of the aggression (nuclear, radiological, biological or chemical) and the respect of the environment are the group's constant preoccupation, which harnesses new expertise over time to offer tailored solutions.

Thus, today, the French Consortium is in position to respond to the French strategy of continuity between external defence and internal security, as well as environmental constraints, by providing products and services whose applications are increasingly two fold.

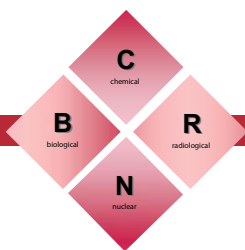
Our customers are the Armed Forces, fire brigades, security services, police forces, industrialists, as well as doctors, hospital staff, emergency services personnel and urban communities.

Members are: BERTIN TECHNOLOGIES, CASSIDIAN, CEA (Commissariat à l'Énergie Atomique), ECA, LABORATOIRES SERB, LOSBERGER RDS, MIRION TECHNOLOGIES (MGPI) SA, NBC-SYS, PAUL BOYÉ TECHNOLOGIES, PCA (Pharmacie Centrale des Armées), PICA Groupe Veolia, PROENGINE, SARP INDUSTRIES Groupe Veolia, SODERN Groupe EADS, SPERIAN PROTECTION DÉFENSE, THALES Defense & Security, TRAMICO, UTILIS.

Main products are:

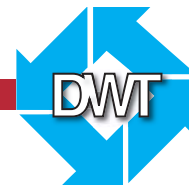
- Detection, alarm, identification and control
- Individual protection
- Collective protection
- Decontamination
- Medical treatment
- Wastes and effluents treatment





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## Genencor

Genencor®, a division of Danisco A/S, is a world leading enzyme supplier and a pioneer in enzyme innovation and metabolic pathway engineering.

Genencor improves processes and product performance, and creates new products for a spectrum of industries. The sectors we serve range from biofuels and laundry detergents to animal nutrition and food.

Genencor was founded in 1982, and today is part of the Danisco A/S global group, with a sales and distribution network that spans more than 40 countries. Worldwide, the division employs about 1500 people, a dedicated team of world-class experts driving Genencor to become the growth engine in industrial biotech.

In collaboration with customers, technology leaders, governments, and other stakeholders, Genencor develops and manufactures competitive, biobased solutions. Our innovations create value throughout the supply chain, from raw material to finished product, while improving industries' sustainability profiles.

Genencor was founded in 1982, and today is part of the large Danisco A/S global group, with a manufacturing, sales, and distribution network that spans more than 40 countries. The division's dedicated workforce of world-class experts drive Genencor to become the growth engine in industrial biotechnology.

Genencor's Research & Development focuses on gene discovery and functional genomics, molecular evolution and design, metabolic pathway engineering, and biomaterial production. The division's core competencies include manufacturing and delivering enzymes on a large-scale and applying an innovative toolbox to optimize customer applications.

Genencor continues to launch many breakthrough innovations, from new polymer platforms to biochemicals and advanced biofuels solutions.

For more information visit  
[www.genencor.com](http://www.genencor.com)

## ICx Technologies

ICx Technologies is a leader in the development and integration of advanced sensor technologies for homeland security, force protection and commercial applications. Our proprietary sensors detect and identify chemical, biological, radiological, nuclear and explosive threats, and deliver superior awareness and actionable intelligence for wide-area surveillance, intrusion detection and facility security. We then leverage our unparalleled technical expertise and government funding to address other emerging challenges of our time ranging from a cleaner environment, alternative energy to life science.

[www.icxt.com](http://www.icxt.com)

## INFICON

INFICON is a leading provider of innovative instrumentation, critical sensor technologies, and advanced process control software that enhance the productivity and quality of sophisticated vacuum processes in highly specialized markets. These analysis, measurement and control products are essential for gas leak detection in air conditioning/refrigeration/automotive manufacturing. They are vital to original equipment manufacturers (OEMs) and end-users in the complex fabrication of semiconductors and thin film coatings for flat panel displays, solar cells, magnetic and optical storage media, scientific and consumer optics, and architectural glass coatings. Other industrial users of our vacuum technology include the life sciences, research, aerospace, food packaging, heat treating, sterilization, and laser cutting. We also leverage our expertise in vacuum technology to provide unique, toxic chemical analysis products for emergency response, security, and environmental monitoring.

INFICON has world-class manufacturing facilities in the United States and Europe and subsidiaries in China, France, Germany, Japan, Korea, Liechtenstein, Singapore, Switzerland, Taiwan, the United Kingdom and the United States.

[www.inficon.com](http://www.inficon.com)

## Ironkey

IronKey, Inc., founded in 2005, is the global leader in providing secure managed portable storage, authentication, and trusted virtual computing. Its best-of-breed product portfolio meets the highest security, performance, and privacy standards of the most demanding Fortune 500, enterprise, government, and military customers.

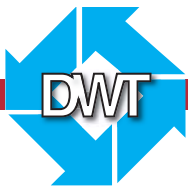
As part of a complete security solution, IronKey managed multifunction security devices meet the unique needs of mobile workers worldwide. Its award-winning solutions range from IronKey Basic, the world's most secure USB flash drive, to IronKey Enterprise Virtual Desktop, a complete solution for carrying a secure computer operating system in your pocket. Powered by IronKey Enterprise Management software, IronKey network-aware devices can be managed remotely by an organization's IT staff. Over 1,000 customers in 75 countries trust IronKey solutions to protect their invaluable data and networks. Through its innovative, extensible Trusted Virtual Computing platform, enterprises and government agencies can now realize the cost-effective benefits of virtualization without compromising security. IronKey devices are designed and assembled in the United States according to rigorous security and quality standards. All IronKey products are FIPS 140-2 Level 3 validated and meet the stringent security requirements of the U.S. Federal Government Cryptographic Module Validation Program.

IronKey is a privately-held company headquartered in Los Altos, California.  
[www.ironkey.com](http://www.ironkey.com)

## Kainoa

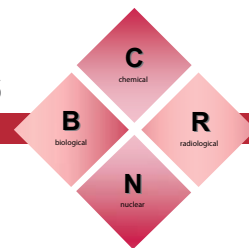
In 2008, KAINOA Deutschland GmbH was established in southern Germany as a daughter company of the Swiss KAINOA Enterprises GmbH to expedite delivery time and enhance customer support to reseller channels in Germany and Austria.

The company is a value driven organisation committed to providing efficient and cost effective product distribution with professional service and technical support. We are passionate about the unparalleled security offered in the Iron-



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Key products and their ability to meet corporate, government and military requirements.

[www.kainoa.de](http://www.kainoa.de)

## Kärcher Futuretech

Kärcher Futuretech GmbH in Winnenden near Stuttgart was spun off in 2005 and became an independent subsidiary of Alfred Kärcher GmbH & Co. KG. As a worldwide well-known specialist for protection and supply systems, it is currently active in the business areas of material maintenance systems, NBC protection systems, NBC protective clothing, field camp systems, water purification systems, and mobile catering systems.

The systems are intended for supporting and safeguarding the life of personnel and people involved in disaster situations, accidents, development aid measures, operations of the police and military forces, in order to ensure their fitness for rescue actions, their stamina and their survival.

With its highly mobile customised state-of-the-art solutions, Kärcher Futuretech rates itself among the highest performers in the world in the area of peace-keeping and relief after disasters. Innovative state-of-the-art systems and a complete product range make Kärcher Futuretech the world market leader in „Professional systems for peacekeepers“. Prompt and effective decontamination of persons, tanks and other vehicles, air and watercraft, personal weapons, clothing and equipment as well as sensitive material ensure the ability of the concerned troop, civilian population, police, frontier guard, etc. to survive. According to the specific needs, Kärcher Futuretech offers customer-designed solutions on trailer or in container.

The TEP 90, a highly mobile containerised compact decontamination system, represents the state-of-the-art in this specific area with its most modern decontamination technologies and agents. The vehicle is equipped with a hydraulic crane to make the system ready for operation in short time without using external lifting equipment.

[www.kaercher-futuretech.com](http://www.kaercher-futuretech.com)

## Krauss-Maffei Wegmann

Krauss-Maffei Wegmann GmbH & Co. KG leads the European market for armoured wheeled and tracked vehicles. At locations in Germany, Greece, the Netherlands and the USA, some 3400 employees manufacture and support a product portfolio ranging from air-transportable, heavily armoured wheeled vehicles (MUNGO, DINGO, GFF4 and BOXER\*) through reconnaissance, anti-aircraft and artillery systems (FENNEK, GEPARD, LeFLaSys\*, Self-Propelled Howitzer 2000, AGM and DONAR\*) to heavy battle tanks (LEOPARD 1 and 2), armoured personnel carriers (PUMA\*) and bridge-laying systems (LEGUAN). In addition, KMW has wide-ranging system competence in the area of civil and military simulation, as well as in command and information systems and remote-controlled gun-carriages with reconnaissance and observation equipment for day and night missions. The armed forces of more than 30 nations worldwide rely on the operational systems by KMW. \* Joint venture with national and international partners [www.kmweg.de](http://www.kmweg.de)

## Lachen Helfen e.V.

Initiative deutscher Soldaten und Polizisten für Kinder in Kriegs- und Krisengebieten

„Lachen Helfen e.V.“ wurde 1996 durch Soldaten im Einsatz in Kroatien gegründet und ist seit 1998 ein eingetragener, anerkannt gemeinnütziger Verein mit dem hauptsächlichen Ziel, Kinder in ehemaligen Kriegs- und Krisengebieten zu unterstützen. Dies geschieht u.a. durch den Wiederaufbau von Kindergärten, Schulen und Gesundheitszentren. Der Bedarf wird in den Einsatzländern (EUFOR, KFOR und ISAF) durch Soldaten vor Ort erkundet, die Ausführung begleitet und überwacht und damit verhindert, dass Geld- oder Sachspenden in die falschen Hände geraten. Größere Projekte werden vorab mit dem Einsatzführungskommando in Potsdam abgestimmt.

Im Verein sind Mitglieder, sowie ehemalige und aktive Soldaten und Polizisten überwiegend ehrenamtlich tätig. Die Geschicke des Vereins werden von der „Lachen Helfen e.V.“ - Geschäftsstelle in

der Bergischen Kaserne in Düsseldorf aus gelenkt. Das Spendenaufkommen fließt zu ca. 87% in die Projekte ein. Im Frühjahr 2009 wurde die Polizei integriert, eine sinnvolle Kooperation aufgrund der Tatsache, dass sie mit der Bundeswehr häufig im selben Einsatzraum Dienst leistet. Der Bundesminister der Verteidigung, der Generalinspekteur, der Wehrbeauftragte u.v.a. unterstützen „Lachen Helfen e.V.“ bereits aktiv. Ein Großteil des Sponsorings bestreiten Wirtschaft und Industrie. [www.lachen-helfen.de](http://www.lachen-helfen.de)

## Meridian Medical Technologies

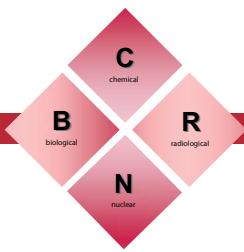
As the world leader in the development and manufacture of auto-injector drug delivery systems for the emergency treatment of individuals, Meridian has served as a critical supplier to more than 30 countries and the US Department of Defence. Today we are building on nearly 50 years of experience to produce the highest quality auto-injector products that deliver antidotes for chemical nerve agents.

[www.meridianmeds.com](http://www.meridianmeds.com)

## miprolab

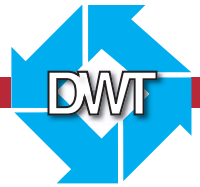
The biotech company miprolab was founded in 2005, and is located in Göttingen (Germany). Our company offers a broad range of services in the development and manufacturing of immunochemical assays (e.g. lateral flow assays) starting from the production and selection of suitable immunoreagents (e.g. antibodies, buffers, conjugates) to the assay validation. Over the years, methods for the purification of a variety of bacterial toxins and the production of antibodies have been developed. These toxins, specific antibodies and anti-sera are supplied according to customer's requirements. The diagnostic section of miprolab offers the detection, isolation and identification of toxins and microbes from a variety of matrices.

In a joint project with the Bundeswehr Research Institute for Protective Technologies and NBC Protection (WIS, Germany) and the Federal Office of Civil Protection (SPIEZ LABORATORY, Switzerland), miprolab GmbH was assigned to develop and produce lateral flow assays (LFA) for the rapid de-



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tection of different toxins, bacteria, and viruses. Current developments of the LFA include the main biological agents of the so called „dirty dozen“, e.g ricin, Staphylococcus Enterotoxin B (SEB), botulinum toxin, Yersinia pestis (plague), Francisella tularensis (tularemia), Bacillus anthracis, and Vaccinia (smallpox).

Contact:  
miprolab – Gesellschaft für  
mikrobiologische Diagnostik mbH  
Marie-Curie-Str. 7, 37079 Göttingen,  
Germany  
Fon: +49(0)551 495668-0,  
Fax: +49(0)551 495668-11,  
E-Mail: [info@miprolab.com](mailto:info@miprolab.com)  
[www.miprolab.com](http://www.miprolab.com)

## Mirion Technologies

For more over 50 years, the products and services of MIRION Technologies have been used in industrial environments and CBRN military applications. MIRION Technologies is a global provider of radiation detection, measurement, analysis and monitoring products and services.

17 of the 28 NATO militaries, numerous international government and supranational agencies use the dosimetry systems from MIRION Technologies - Health Physics Division to detect and monitor levels of exposure. With our innovative telemetry-enabled systems, command centers have the ability to actively delineate and manage event-driven exposure zones.

We offer a full line of hand-held instruments and portal monitors that enable precise exposure analysis and isotope identification. Our experts can help you implement a detailed program with monitoring devices, as well as comprehensive reporting and documentation, specifically tailored to the requirements of your agency.

Our comprehensive range of equipments covers the different requirements necessary to each stage of investigation:

- Early warning,
- Search and confirmation of the alert,
- Measurements,
- Identification of the products detected.

MIRION's strength stems from its five

divisions: Sensing Systems, Imaging Systems, Health Physics, Dosimetry Services and Radiation Monitoring Systems.

Our products and services include: dosimeters; contamination & clearance monitors; detection & identification instruments; radiation monitoring systems; electrical penetrations; instrumentation & control equipment and systems; dosimetry services; imaging systems; and related accessories, software and services.

[www.mirion.com](http://www.mirion.com)

## Mittler & Sohn

The E.S. Mittler & Sohn publishing house, a company of the Tamm Media Group, was founded in 1789, and is Germany's oldest publisher in the segment of military and security-political publications.

The scope of security-political periodicals includes:

- Europäische Sicherheit (German, 12 issues per year)
- European Security and Defence (English, 3 issues per year)
- Marine Forum (German, 10 issues per year)
- Der Mittler - Brief (German, security-political newsletter).
- Europäische Sicherheit has been the leading publication of and for the German and European military communities for more than 58 years. With some 18,000 subscribers the magazine addresses decision makers in politics, industry and the forces, both in the German speaking part of Europe and in international organisations, such as NATO, EU, OSCE, UN.

„Europäische Sicherheit“ is the official publication of several highly reputed associations. Moreover, the magazine serves as the information platform for the Federal German Security Academy and the Bundeswehr's Command and Staff College.

As the only specialist periodical, „Europäische Sicherheit“ is regularly subscribed to by the German Ministry of Defence in response to the information requirements of the ministerial management staff.

- European Security and Defence, the

international sister journal of „Europäische Sicherheit“ is distributed to multi-national organisations (NATO, EU, etc.) as well as the military communities in some 80 countries via the German embassies. The magazine's objective is to describe, explain and interpret German security policy - which extends far beyond conventional defence with military forces - in all complex and sophisticated correlations.

- MarineForum is published on behalf of the German Naval Institute and addresses Germany's entire naval community in politics, defence and industry.
- The book programme of the Tamm Media Group comprises some 50 new titles annually on issues covering security policy, maritime affairs, military history, shipbuilding, technology, law and public administration.

[www.koehler-mittler.de](http://www.koehler-mittler.de)

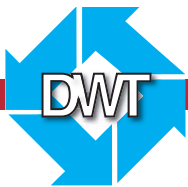
## Mönch Publishing Group Mönch Verlagsgesellschaft mbH

The Mönch Publishing Group is one of the world's largest publishers in the field of international and regional defence periodicals. In addition, Mönch offers a wide range of military reference books. Mönch publications are distributed internationally and reach decision-makers in the defence administration and military procurement agencies. Furthermore, political and industrial leaders and experts throughout the world also rely on the vital information provided by Mönch defence publications, such as:

- WEHRTECHNIK (German), bi-monthly
- MILITARY TECHNOLOGY (English), monthly
- NAVAL FORCES (English), bi-monthly
- RIVISTA ITALIANA DIFESA (Italian), monthly
- TECNOLOGIA MILITAR (Spanish), quarterly
- SAVUNMA VE HAVACILIK (Turkish), quarterly
- AL DEFAIYA (Arabic), bi-monthly

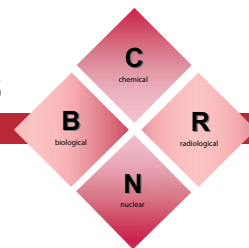
Some of our Top Sellers, such as The Handbuch der Bundeswehr und der Verteidigungsindustrie (German Armed Forces Handbook and Defence Industry





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Directory), which is published continuously for more than 30 years as a standard reference book, offers defence-related data in a unique and unprecedented way and the Weyer's Flottentaschenbuch 2008/2010 (Warships of the World Fleet Handbook) published by Bernard & Graefe, a Department of Mönch Publishing Group, as many other defence related books, have to be mentioned.

[www.monch.com](http://www.monch.com)

## NBC-Sys

*CBRN protection systems for defense forces and population*

From design to production to customer support, NBC-Sys covers numerous technologies against Nuclear, Radiological, Biological or Chemical (CBRN) hazards.

Its product range includes chemical and biological detection, air treatment for personal protection (gas masks, filter cartridges,...etc.) or group use (climate control and filtration system, incorporated in vehicles or buildings), as well as decontamination (aircraft, vehicles, sensing equipment and persons).

*Military and civilian applications*

Composed mostly of technicians, engineers and managers, NBC-Sys relies on the know-how underlying its creativity, project management and customer service.

Our skills are in chemicals, biology, thermics, aeramics, plastics processing, electronics (hard and soft), mechanics, measurement, testing and ergonomics. In order to better meet our customers' expectations (both military and civilian), NBC-Sys is implementing a proactive future-focused policy by allocating some 20% of its turnover to R&D activities.

Our engineers work in close collaboration on advanced research with private, public and university laboratories (CEA, DGA...etc).

NBC-Sys products can be seen the world over, in particular in Europe, Asia and the Middle East.

Contacts:

NBC-Sys

8 rue Bonnevalle

F - 42 408 Saint-Chamond Cedex

Tel : +33 (0)4 77 19 19 21

Fax : +33 (0)4 77 19 19 29

Mail : [sales@nbc-sys.com](mailto:sales@nbc-sys.com)

[www.nbc-sys.com](http://www.nbc-sys.com)

## OWR

Founded in 1947, OWR has been supplying since 1956 NBC equipment to military and civil defence forces worldwide.

As pioneers in the field of NBC decontamination, OWR has supplied many unique product solutions which have set the standards for NBC Decontamination around the world.

OWR supplies:

- NBC detection equipment
- NBC protection equipment
- NBC decontamination equipment
- Custom made solutions for NBC defense
- Consultancy services for NBC defense
- R&D department and 32.000 m<sup>2</sup> working area.
- Is represented in 64 countries worldwide and has partnerships with many international companies in the field of NBC defense.
- Special NBC protection, detection and decontamination packages.
- Standardized and customized solutions.
- Patents in the field of NBC defense.
- Provides after sales services and training.
- Spare parts supply guarantee for at least 10 years.

[www.owr.de](http://www.owr.de)

## Pall Corporation

Pall Aerospace, a division of Pall Europe Ltd, designs and manufactures filtration and separation products for a wide range of military & civil applications including air intakes, fuel, hydraulics, lubrication and CBRN. Our advanced engine air protection systems are used on military vehicles world-wide whilst the latest integrated membrane (IMS) water purification/desalination systems are used to provide clean, potable drinking water from any source.

Pall Aerospace has developed a number of leading edge CBRN filtration technologies, such as man-mounted filters for use with the Typhoon respirator and an ECS COLPRO filter for the ASTOR

aircraft. Pall has also developed a 'fit & forget' regenerable pressure swing absorption (PSA) based filtration system that has been approved by UK & US authorities, proven to provide broadband protection from all known chemical agents and hazards. Originally developed for helicopters, this technology has now been adopted for the latest UK military vehicle programme in conjunction with Pall's environmental control system partners.

- Regenerative CBRN filter systems
  - COLPRO for vehicles, warships, shelters
  - CBRN Water Purification
  - Aircrew CBRN protection
- [aerospace@pall.com](mailto:aerospace@pall.com)  
[www.pall.com](http://www.pall.com)

## Paul Boyé

Best known for its long and dedicated history of supporting the war fighter with the best equipment and technology available, Paul Boyé Technologies has achieved distinction and worldwide recognition as an innovator, designer and mass production manufacturer, specialized in high-tech Personal Protective Equipment (PPE)

Paul Boyé Technologies can rely on a powerful internal organization including a R&D department, with specialized engineers in

- Chemistry,
- Biology,
- Ballistics,
- Ergonomics and
- Textiles.

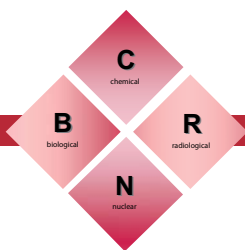
Together with its multidisciplinary experts, military doctrine advisors and its CBRN training team, Paul Boyé offers not only a Global Response to counter weapons of mass destruction and toxic industrial material risks but has also achieved to position itself as a Worldwide Future Soldier project partner, covering all aspects of Force Protection.

[www.paulboye.fr](http://www.paulboye.fr)

## Proengin

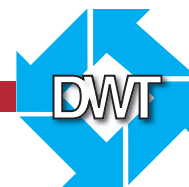
*PROENGIN Biological and Chemical Detection Systems*

Proengin has developed biological and chemical warfare agents (CWA) field detectors using flame spectrometry.



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## *Chemical detection*

AP4C is a hand held chemical detector able to detect all CWA and many TICs, precursors, derivatives or unknown (Novichok), with main advantages: continuous measurement, fast clear down and easiness of use.

Range of products, with same detection performances and fitted characteristics (autonomy, data networking):

- AP4C-V, aboard wheeled and tracked reconnaissance vehicles,
- AP4C-F, on critical buildings and ships.

## *Biological detection*

The biological detector MAB has the unique capacity of detecting and categorizing biological particles with a proven extremely low false alarm rate. It is designed to trigger sampling and analysing devices.

## *Chemical and biological detection*

AP4C-FB offers both chemical detection and biological warning within the same instrument (24/7).

[www.proengin.com](http://www.proengin.com)

## **Rex Gummitechniken**

Rex-Gummitechniken is a medium-sized, state-of-the-art business with about 20 employees, located at Pfungsttadt, near Darmstadt, Germany.

The focus of our manufacturing and sales activities is in the area of chemical protection and producing dipped articles for technical use.

Chemical-resistant butyl or butyl-vitric gloves are manufactured in our state-of-the-art production facilities using the dipping process.

To ensure 100% product quality, we perform complete inhouse checks in accordance with the standards applicable at any time. New products are developed in our own development unit, where we also realize special customer requests. Our customers include the workplace safety trade, the chemical industry, fire brigades, disaster protection and the armed forces world-wide. We offer expert and accurate advice when it comes to protecting your hands.

[www.rex-gummitechniken.de](http://www.rex-gummitechniken.de)

## **Rheinmetall Defence**

The Defence arm of Germany's Rheinmetall Group stands out prominently

among the world's top suppliers of defence technology and security equipment. Its 9,300-strong staff generate annual sales of €1.9 billion.

As Europe's leading supplier of technology for ground forces, Rheinmetall Defence offers a wide array of platforms and components available as stand-alone or networked system solutions. Rheinmetall Defence stands for longstanding experience and pioneering innovation in the world of armoured vehicles, weapons and ammunition, air defence and electronics – a commitment to excellence which also extends to its naval and air force applications and public security products. The company's unsurpassed capacity to integrate individual components into system solutions is what makes Rheinmetall Defence such a powerful partner of the world's armed forces and security agencies.

[www.rheinmetall.com](http://www.rheinmetall.com)

## **RSDecon**

RSDecon is a brand of products manufactured for the Healthcare Protective Products Division (HPPD) of Bracco Diagnostics Inc. HPPD develops and markets products designed to protect the human body from external threats. The products are distinguished by rigorous scientific testing and field deployment by military and first responder organizations worldwide. HPPD, the sole manufacturer and marketer of RSDL, strives to improve people's lives by advancing the frontiers of medical knowledge and using that information to improve its existing products and bring new protective products to the marketplace.

[www.rsdecon.com](http://www.rsdecon.com)

## **SAPHYMO**

SAPHYMO represents more than thirty years of experience, research and expertise in the field of state-of-the-art electronics and computer technologies, serving both safety and the environment. We offer a complete range of modern and reliable products as well as the collaboration of dynamic, highly-skilled and motivated personnel.

With its four sectors of activity, namely Radioactivity Measurement, Telematics, Environment/Safety and Services, SA-

PHYMO offers innovative solutions for Industry and Research.

SAPHYMO's various production sites allow it to ensure optimum reactivity in responding to your expectations.

The NOVELEC (Meylan, France) and GENITRON (Frankfurt, Germany) companies have strengthened the enterprise, and expanded its range of products, particularly in the fields of atmospheric monitoring networks and data transmission by radio relay.

[www.saphymo.com](http://www.saphymo.com)

## **Selex Systems Integration**

The company's headquarters, primary manufacturing and training facilities are located in Overland Park, Kansas. Additionally, SELEX Systems Integration operates sales, service and support facilities in 30 locations worldwide. SELEX Systemi Integrati Inc. is fully owned subsidiary of SELEX Systems Integration S.p.A. of Italy.

SELEX SYSTEMS INTEGRATION  
QUALITY POLICY

It is the policy of SELEX Systems Integration Inc. to provide our customers worldwide with the highest quality products and services that meet or exceed their requirements. Through our ISO 9001 Quality System, we will utilize our employee and customer inputs to continually improve our products and services as we strive to maintain TOTAL CUSTOMER SATISFACTION.

[www.selex-si-us.com](http://www.selex-si-us.com)

## **Smiths Detection**

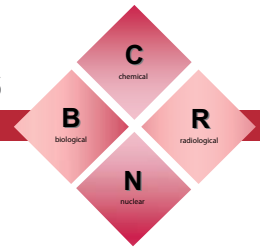
Smiths Detection is a global leader in the provision of threat detection and screening technologies for Military, Transportation, Homeland Security and Resilience applications.

We apply multiple technologies to achieve fast results and to identify a range of threats: Biological Agents – Chemical Agents & TICs – Explosives – Narcotics – Weapons and illegal items. Our technologies are also applied for special applications such as contraband detection, forensic work, meteorological measuring and video network monitoring. We provide fully integrated systems including bio detection and identification, protective shelters, meteorological measurement, mobile secu-



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city checkpoints and for chem/bio applications.

Smiths Detection takes science out of the laboratory and puts it in the hands of security professionals. Our products and systems are designed for the real world and are based on a deep understanding of the real operational environment faced by military and security professionals. We are increasingly taking individual products and integrating them to form complete security solutions customised to individual requirements.

Our customer communities include the military, first responders, transportation authorities, customs officials and those responsible for protecting our critical national infrastructure. The company is truly global with Research and Development in six countries and systems deployed from Alaska to New Zealand. We work closely with national govern-

ments, academia and leading institutions to respond to changing security threats, together developing innovative threat detection and security solutions and accelerating the development of technology to anticipate future needs.  
[www.smithsdetection.com](http://www.smithsdetection.com)

## Federal Agency for Technical Relief / Technisches Hilfswerk

Die Struktur des THW ist weltweit einmalig: Organisatorisch gehört das THW als Bundesanstalt zum Geschäftsbereich des Bundesministers des Innern. Jedoch sind nur ein Prozent der Mitarbeiter hauptamtlich für die Behörde tätig. 99 Prozent der THW-Angehörigen arbeiten ehrenamtlich im THW. In 668 Ortsverbänden engagieren sich bundesweit mehr als 80.000 Helferinnen und Helfer in ihrer Freizeit, um Menschen in Not kompetent und engagiert Hilfe zu leisten.

Das Technische Hilfswerk passt bereits seit sechs Jahrzehnten seine Strukturen flexibel den sich ändernden Gefahrenlagen an. Modernes Einsatzgerät und gut ausgebildete Spezialisten sind Grundlage der hohen Effizienz - in Deutschland und in der ganzen Welt.  
[www.thw.de](http://www.thw.de)

## Telerob

To develop machines, equipment and systems that protect or replace human beings in situations where their presence would be either impossible or place them at great risk.

This is the motto, motivation and mission of telerob Gesellschaft für Fernhandhabungstechnik mbH. Whether it's one of our master-slave manipulators being used to dismantle a nuclear facility or an EOD robot being used to disarm a dangerous explosive device, protecting people and their surroundings is always

## TELEROB's answer to the dirty bomb threat: The TEL600 NBC vehicle



### Detectors and sensors integrated in the TEL600 NBC vehicle:

- Biological detector BioSeeq
- Biological detector Bio Agent Test
- Chemical detector HazMat ID
- Chemical detector E2M
- Chemical detector RAPID
- Chemical detector RAID-S2
- Radiation detector SVG-2
- Toxic and virus test kit Abi CAP
- Weather sensor IRDAM 6056H
- Explosive detector MMTD



### Detectors and sensors operated by the NBC robot:

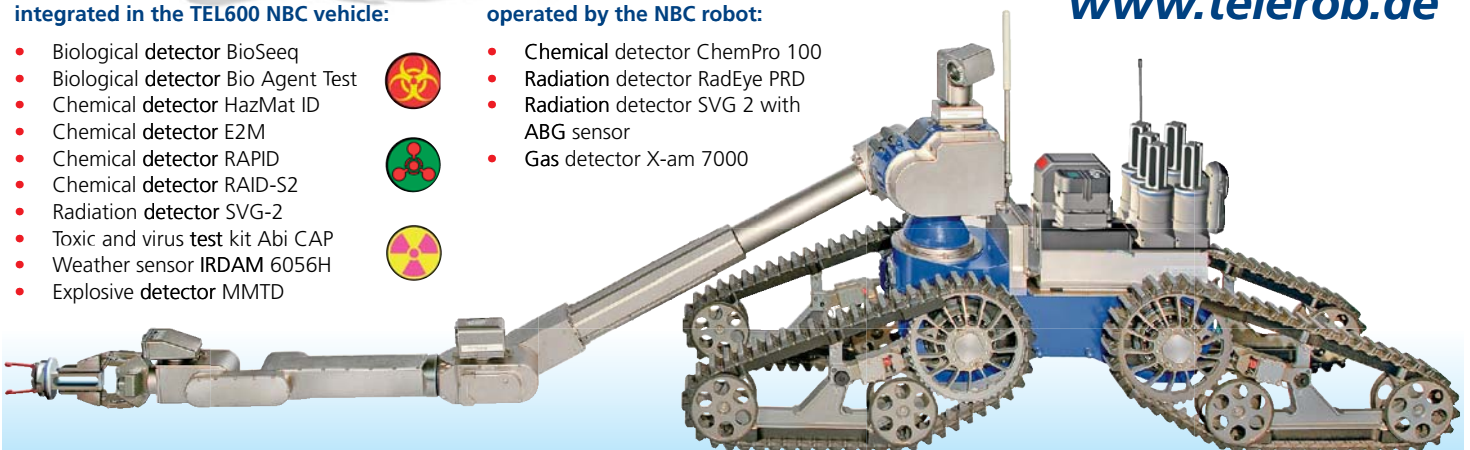
- Chemical detector ChemPro 100
- Radiation detector RadEye PRD
- Radiation detector SVG 2 with ABG sensor
- Gas detector X-am 7000

One of the biggest challenges when protecting critical infrastructure is to deal with a potential threat from a "dirty bomb". TEL600 NBC systems make use of this military capability for the first time in a civilian service vehicle.

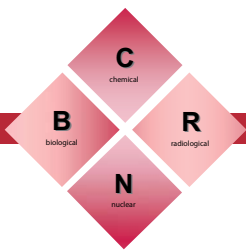
Unique to the world is that our TEL600 NBC vehicles can take the samples by using an NBC robot that operates completely independently from the interior of the NBC vehicle.

The NBC robot is a universal mobile sensor platform that can be equipped with a broad palette of sensors to detect and investigate radioactive, chemical, biological, explosive or toxic substances.

[www.telerob.de](http://www.telerob.de)

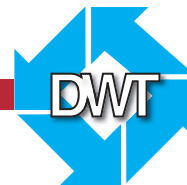






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our paramount concern anytime one of our products is deployed.

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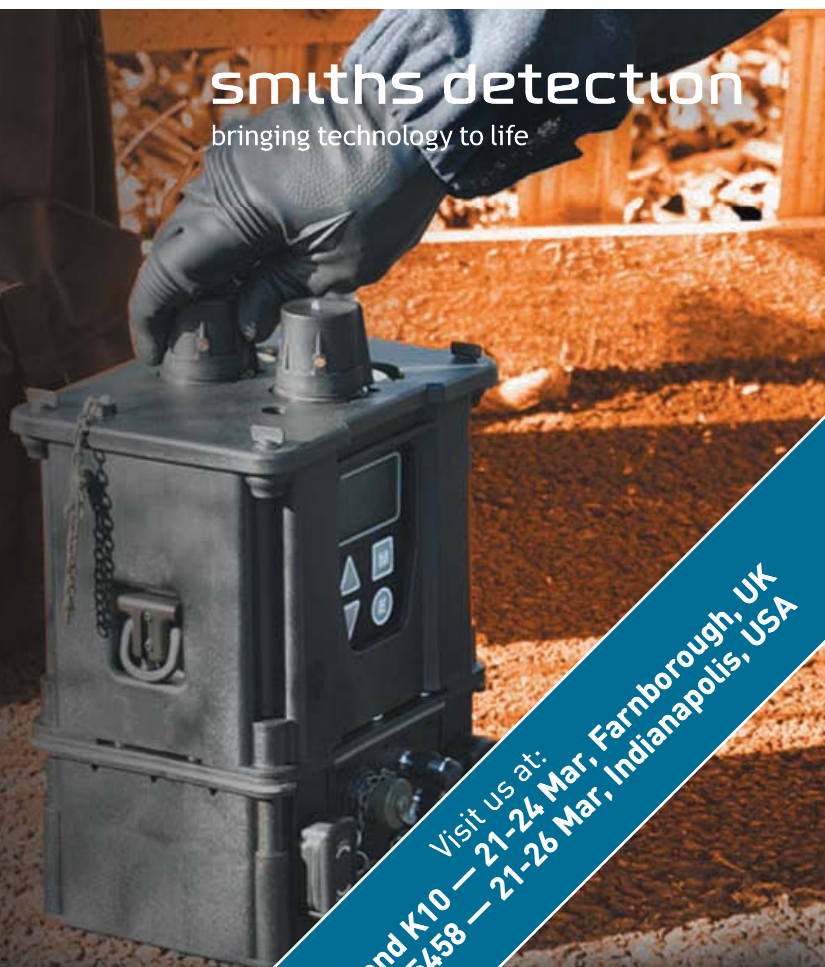
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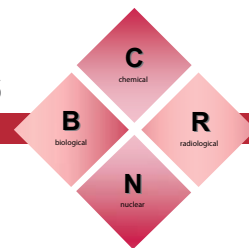


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## Speakers



Lieutenant-Colonel **Hans-Jürgen Bauer**, born in 1953 in Landstuhl/Palatinate, is section chief in the Force Development Division of the NBC Defence and Self-Protection School located in Sonthofen, Germany. He is married, has two children and lives in Sonthofen.

He joined the Bundeswehr in 1973, served as maintenance officer, had command and staff assignments and worked with the medical service on medical CBRN protection, including the build-up of a task force, before he entered the armaments sector. He bears co-responsibility for the further development of systems / equipment used by the Bundeswehr in CBRN defence, ranging from CBRN protective masks to highly complex manned or unmanned decontamination and reconnaissance systems.



Oberst **Christophe Baumberger** Chef Doktrin-Einsatz und stellvertretender Kommandant Kompetenzzentrum ABC der Armee

- Geboren 25.04.1959, Nationalität Schweiz
- Verheiratet und 2 Kinder, eine Tochter 18 Jahre, ein Sohn 21 Jahre
- Seit 01.10.1996 Berufsoffizier im Bereich ABC
- Seit 01.01.2007 in der heutigen Funktion



**Dr. Jörg Beckmann** studied Physics at the Technical University in Leuna Merseburg. He earned the Ph.D. at the University of

Dresden. Mr. Beckmann joined the Federal Institute of Material Research and

Testing (BAM) in Berlin and applied in 2003 for a position of scientific assistant the Division of Radiological Methods. He has been working on different programs and is responsible for managing research projects related to Industrial Digital Radiology and Security issues. He focused also his interests in the application of electromagnetic microwaves and THz- Time Domain Spectroscopy for security applications and non-destructive materials testing.



**Martien Broekhuijsen** studied Molecular Sciences at Wageningen University. His master study consisted of Chemistry and Bio-

logy. He has worked for 10 years in genetic modification of bacteria and fungi, followed by 18 years in CBRN Defence and Security at TNO in The Netherlands. He has been a biosafety officer at TNO, including responsibility for the dangerous pathogens collection. In mid 2010 he started his own company: Marble ChemBio Consulting B.V.



Since May 2006, **Albrecht Broemme** is President of the Federal Agency for Technical Relief (THW). Previously, he headed for 14 years the Berlin

Fire Department. Besides having the chair of the „Association of the Director of Fire Services,“ which he held from 1998 2006, he was seven years from 1999 on, Vice President of the German Fire Association.

In his capacity as President of the THW, Broemme takes care of the development of relations between the THW to governmental and non-institutions at the national and international levels. He is convinced that a network has to be created long before it needs to be established and maintained and not only in the event of a disaster.

Broemme studied at the Technical University of Darmstadt electrical engineering. He knows the THW from personal experience. As school boy and as a student he volunteered after the basic training in a communication group, later in the communication centre of the administration. As an instructor he has taught many volunteers in the operation of radios in southern Hesse.

A partnership and effective cooperation between the THW and the fire service is very important to him. He is pleased with the fruitful cooperation in many places for the benefit of the people and is committed to improving cooperation where necessary.

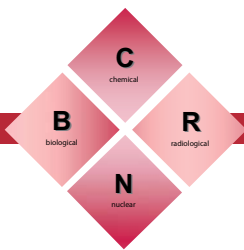


Amb. **Jacek Bylica** is the Head of Weapons of Mass Destruction Non-Proliferation Centre (WMDC) at NATO since 2008. Prior to joining NATO's International Staff, he was Poland's Ambassador to Vienna-based international organisations, including the IAEA and OSCE from 2004 to 2008. For almost two decades in the Polish Foreign Service, Mr.J.Bylica divided his professional activities between Asia and international security affairs, with postings to Embassy in Beijing and a number of senior positions in the MFA in Warsaw. He studied in Warsaw, Moscow, Beijing and Boston and holds two MA degrees: in International Relations, and in Law and Diplomacy.



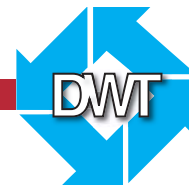
**Dr. Marc Cadisch** (geb. 1962), Leiter LABOR SPIEZ, absolvierte nach seiner Schulzeit in Thun an der Universität Bern ein Pharmaziestudium. An der ETH Zürich schloss er sein Studium mit einer Dissertation in Organischer Chemie ab. Anschliessend arbeitete er in verschiedenen Funktionen in der Privatindustrie. Parallel dazu





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bildete er sich an der Universität St. Gallen weiter aus und schloss im Januar 2003 das Nachdiplomstudium in Unternehmensführung als „Executive MBA HSG“ erfolgreich ab. 2002 trat er als designierter neuer Leiter ins LABOR SPIEZ ein. Seit 1. April 2003 amtiert er als Leiter LABOR SPIEZ; seit 2008 ist er zudem Vizepräsident der Eidg. Kommission für ABC-Schutz.



**Laura Cochrane** currently works as the Technical Program Director at Bracco Diagnostics in the Health Care Protection Division, managing

RSDL and related decontamination projects. Laura received here degree in Chemical and Materials engineering from the Royal Military College of Canada, and after service in the Air Force, spent several years working in Chemistry for the Oil and Gas sector. She later transferred her knowledge base on surface chemistry and applications to the CBRNE market place whereby she has spent the last 11 years in Engineering and Research projects with Military, First Responder and Government Projects. Her previous positions involved research and product developments on Surface Decontamination for Chemical, Biological and Radiological Threats and Remediation.



**Beate Coellen**, Jahrgang 1955, 1974-1980 Studium der Diplom-Sozialwissenschaften; 1981-1991 Dozentin an der Katastrophen-

schutzschule des Bundes; 1991-2002 Ministerium des Innern des Landes Brandenburg, Referatsleiterin für Brand- und Katastrophenschutz, Zivile Verteidigung, Militärangelegenheiten und Konversion; von April 2002 bis 2008 Lehrbereichsleiterin Nationales und internationales Krisenmanagement an der Akademie für Krisenmanagement, Notfallplanung und Zivilschutz (AKNZ) des Bundesamtes für Bevölke-

rungsschutz und Katastrophenhilfe (BBK), von 2004-2007 Leiterin der AG WM 2006 des BBK, seit 2007 Leiterin der AG WM 2010 des BBK und in diesem Zusammenhang Beratung Südafrikas bei der Vorbereitung der WM 2010, seit 2008 Leiterin des Präsidialbüros des BBK; zahlreiche Veröffentlichungen im Bereich Katastrophenpsychologie und zum Krisenmanagement insbesondere zu Großveranstaltungen

**Dr. Roberta Collino** is leading the CBRN R&T department of Thales Security Solutions & Services. After having graduated from Pierre et Marie Curie University in Paris, she joined the DGA CBRN Defense Research Centre, formerly called CEB.

She then earned a PhD in Biotechnology. After seven years within Thermo company as European application specialist, she joined Thales as CBRN bid manager in 2002. She then managed various CBRN programs for France and European countries.



**Robin Coupland** is a medical adviser in the International Committee of the Red Cross (ICRC). He joined the ICRC in 1987 and worked as a

field surgeon in Thailand, Cambodia, Pakistan, Afghanistan, Yemen, Angola, Somalia, Kenya and Sudan. He has developed a health-oriented approach to a variety of issues relating to the design and use of weapons.

A graduate of the Cambridge University School of Clinical Medicine, UK, he trained as a surgeon at the Norfolk and Norwich Hospital and University College Hospital, London. He became a Fellow of the Royal College of Surgeons in 1985. He is the holder of a Graduate Diploma in International Law from the University of Melbourne in Australia. As part of his current position he has focused on the effects of weapons both conventional and non-conventional. He has developed a public health model of armed violence and its effects as a tool for policy-making, reporting and communication. His current work has two

tracks: first, the feasibility of an ICRC operational response in the event of use of nuclear, radiological, biological or chemical weapons; second, improving security of health care in armed conflicts. He has published medical textbooks about care of wounded people and many articles relating to the surgical management of war wounds, the effects of weapons and armed violence.



**Nuno Miguel da Silva Ferreira**, seit 05/2008: Aisense Analytics GmbH – Marketing and Sales Coordinator für Südeuropa und BE-NE-LUX;

04/2007 – 28/03/2008: Frankreich – Projektleiter bei Sartech SA (Kunststoffverarbeitung für Automobilindustrie); 02/2006 - 02/2007: Portugal – Managementassistent für den Internationalen Markt bei Gramaq, Lda (Werkzeugbau); 03/2004 - 01/2006: Portugal – Projektassistent bei Socem E. D. (Werkzeugbau); 10/2002 - 02/2003: Deutschland – Dozent im Portugal-Zentrum, Universität Trier; 10/2001 - 01/2002: Portugal – studentischer Mitarbeiter bei Plani-molde (Werkzeugbau); Hochschulausbildung: 10/1997 - 02/2002: Portugal – Escola Superior de Tecnologia e Gestão, Leiria Fachrichtung: Übersetzung, Schwerpunkt Dolmetscher Schwerpunkt: Englisch, Französisch und Deutsch Sprache 02/02 Abschluss als Übersetzer / Dolmetscher; 10/2002 - 08/2003: Deutschland – Universität Trier Deutsch als Fremdsprache – Folgekurs und Mittelstufe Schwerpunkt: Grammatik und Syntax, Wissenschaftliches Schreiben, Wortschatz und Idiomatik; Schulbildung: 10/1991 - 07/1997: Portugal – Escola Sec. Eng. Acácio Calazans Duarte, Marinha Grande Allgemeine Hochschulreife 07/97



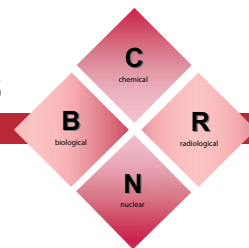
**Stuart Duncan** received his honours degree in Applied Physics from University of Dundee in 1981, then an MSc in Applied Optics from Impe-





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rial College in 1982.

- He has worked on military EO systems over the past 28 years and has a breadth of knowledge in technologies covering equipment in air, land and sea sectors. He began his career at Pilkington PE Ltd in North Wales (1982 – 1987) as a Development Engineer. He spent the late eighties working on the development of the TIALD targeting pod in the role of senior optical engineer at Ferranti in Edinburgh. In 1991, he took responsibility for running the Optical Engineering group in GEC Marconi and played a major part in the development of the DIRCM infrared countermeasures system. He then went on to run the EO Systems Engineering Group responsible for over 80 Professional Engineers. Following this he took on a Technical Strategy role as Chief Technical Officer within the Electro Optics sector.
- Currently, as Head of Capability - EO & Chem / Bio Sensing, he is responsible for the product strategy in this sector within SELEX Galileo, Radar & Advanced targeting line of business including the planning and coordination of the PV budget. This covers the Targeting, Situational Awareness, Laser, IR Countermeasures and Chem / Bio Sensing side of the business.



**Dr. Thomas Elssner** got the Ph.D. in Biochemistry at the University of Leipzig. During the time at the university he got an excellent

expertise in protein chemistry and microbiology. He is author of several patents and numerous scientific publications in that area.

In 2002 he joined Bruker Daltonik GmbH. At the beginning of his time with Bruker he was project manager in the R&D group at the Bioanalytics Department of Bruker Daltonics and developed mass spectrometry based clinical research solutions, especially systems for biomarker detection, animal fur identification and microorganism identification.

In 2009 Dr. Elssner changed to the application department of Bruker Detection, where he was responsible for development and integration of new products for detection of biological warfare agents as well as the applicative support at the customer-site. Since 2010 he is the Head of the Application department at Bruker Detection.



**Jehudah Fehlaue**, June 2006-current: Head of Sales & Marketing and Business Development, Beth-El Zikhron Yaaqov

Industries Ltd. Responsible for the worldwide sales & marketing and business development of the military product lines of the company.

Beth-El is selling to more than 60 armies worldwide and is partner to nearly all big defense contractors.

June 2000-June 2006: Area Export Manager, European Division, Beth-El Zikhron Yaaqov Industries Ltd.

Has been responsible for the sales and marketing and business development to Europe and India, and to build up for Beth-El these markets. Jehudah grew up in Germany and moved to Israel in 1994, when he started to work in the field of NBC-protection.

Since then, he is advisor to many militaries on the field of CBRN-protection and has accumulated enormous experience in this field, given his daily involvement with many armies and authorities. He has been managing large turn-key projects and many multinational programs.



**Alois Friedberger** gained his PhD in physics at the University of Kassel on his work about porous silicon and its application to MEMS (Micro

Electro-Mechanical Systems). At Siemens, Munich, he worked in the field of microelectronics (CMOS) and surface-micromachining. He gained considerable experience in the area of micro

technologies, microsystems and surface micromachining when working for 15 months at the Berkeley Sensor & Actuator Center (BSAC) at the University of California at Berkeley in the group of Prof. Richard S. Muller. His research focused on optical devices based on polysilicon surface-micromachining. After returning to Germany, Alois was doing research on thermal microsensors at the Daimler Research & Technology Center in Munich. Afterwards, he was a project manager in the Microsystems & Electronics Department at EADS. He is currently research team leader at EADS Innovation Works, the corporate research center of EADS, with main responsibilities in the field of sensors and sensor systems for aeronautical applications and harsh environment. A major activity is in the development of detection systems for chemical and biological hazards. Alois has approx. 50 journal and conference contributions and approx. 35 patents and filed patents.



**Dr. Hagen R. Gehring** was born on 07.07.1965 in Stetten auf den Fildern (Germany).

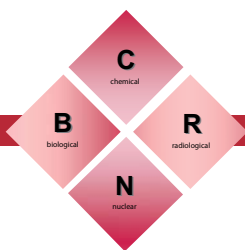
From 1987 until

1993 he studied at the Technical University in Stuttgart with graduate in Mechanical Engineering.

He started at the Fraunhofer Institut for Manufacturing and Automation in Stuttgart in 1993. He worked as a Research Associate and Consultant for Innovation Management, Robotics and Innovation until 1999. At the same time he graduated as a PHD in the field of Robotics.

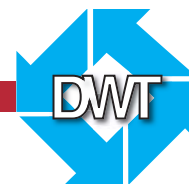
Then he changed to Alfred Kärcher GmbH & Co. KG, where he was responsible for Innovation and Research (1999-2002) and for Corporate Development (2002-2003)

He became a Vice President Corporate Development in 2003. His area of responsibility was Innovation and Technology Management, Organization- and Process Management, Legal Affairs and Patents, Strategies and M&A.



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Since 01.07.2008 he is Managing Director of Kärcher Futuretech GmbH, a subsidiary of Alfred Kärcher GmbH & Co. KG.



**Peter S.H. Georgi** is looking forward to be the Senior Executive for Sales and Marketing in the upcoming merger of Rheinmetall and MAN.

He is currently Executive Director at MAN Nutzfahrzeuge AG and Head of MAN Military Division.

In this function he is responsible for worldwide military sales activities as well as for the marketing and of course for the overall strategy. His present portfolio is 900 Mil US Dollar.

He is a paratrooper and his military rank is LtCol (Res.). He presently has a reserve function at the German Army School heading a section for young officers.

He was CO of a Light Inf. Btn. for 6 years.

In 1999 he was G3 OpS with KFOR1 and participated in various mission parts such as AMF (Ace military Force) in Krete, Norway, Turkey, Spain, UK and USA.

He's lifetime member of 2nd and 3rd Brigade of the 49. US Div. Texas the „Lone Star Division“.

In his previous time he worked 10 years with AEG as Head of treasury and International financing as well as Military Project financing. He also was a Consultant in International Military Activities. He has a 21 old son who served with the paratroopers as well. In his spare time Peter enjoys riding his Road King.



Lieutenant Colonel **Georg Gnan** is sectionchief of CBRN-Defense-Section within the department of CBRN-Defense and Protection

Tasks in the Joint Support Command and Head of the German delegation in the NATO NSA CBRN Working Group since 2006.

Born at March 13, 1955 in Auerbach, Bavaria, Germany, he joined the German Armed Forces as Mountain Soldier in July 1975. Within the infantry branch he ran the first part of his career through leader of mountaineer platoon, leader of mechanized infantry platoon, S-2 officer MechInfBn 352 in MELL-RICHSTADT, XO up to company commander in the MechInfBn 102 in BAYREUTH.

In 1986 he changed the branch from the Infantry to the German NBC-Corps. He served as Company Commander in the NBCCo of the German Armed Forces HQ, as Officer's instructor and as a S 3 staff officer at the German NBC-Defence and Selfprotection School in SONTHOFEN.

From april 1998 to the end of 2001 he served as Commander of the NBCBn 805 in PRENZLAU, east of BERLIN and close to the polish border. The NBCBn 805 was part of the 14<sup>th</sup> Tank Division and served also for the Multinational Corps Northeast in SZEZCIN, PL.

Up to april 2006 he lead the combat support department and the CBRNDef-Section as part of that department in the staff of the 10th Tank Division in SIG-MARINGEN.

Since may 2006 Lt Col Gnan is transferred to the Joint Support Command in KÖLN. As sectionchief of CBRNDef-section within the department of NBC-Defense and Protection Tasks he conducts and he is responsible for CBRN-Defense in the German Armed Forces development. That includes concepts and doctrines, personnel, education, material, structures and present task organization in Bundeswehr operations at home and abroad. His office also conducts the German National Area Control Centre within the CBRN-Defense and Protection Cell during National and Territorial Tasks in Germany as it was for example during the FIFA-World-Cup-period in June 2006. His wife's name is Elisabeth. They took residence in WINKELHAID near Nürnberg, Bavaria, in the southern part of Germany.



**Dr. Alexander Grabowski** currently serves as head of one of the operative directorates of WIS. He is responsible for research as well as

for development of equipment in the area of CBRN-decontamination and water purification.

Through his career, Dr. Grabowski held various positions at the Federal Office for Defense Technology and Procurement, the Federal Ministry of Defense, and WIS. Prior to his present post, he served as research scientist and branch leader in several areas of occupational safety and CBRN-protection, especially in chemical detection and decontamination. Dr. Grabowski graduated from Christian-Albrechts-Universität in Kiel. He is a diplomated chemist (closest translation M.Sc, chemistry) and holds a doctorate degree in inorganic chemistry. He also graduated from Senior Course, NATO Defense College.

Dr. Grabowski is married with one child. In his spare time he enjoys sports, reading and travelling.



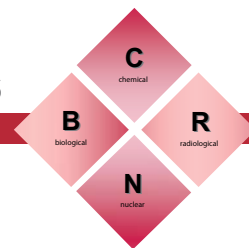
**Rainer Gransee** studied mechanical engineering at the Technical University of Stuttgart and got his degree in 2005. Afterwards, he joined

the „Fluidics and Simulation“ department of the IMM as a scientific coworker, being mainly involved in the development of disposable microfluidic total analysis systems for bio-chemical analyses. These tasks include the design and realisation of polymer based cartridges using rapid prototyping technologies like milling, laser ablation or hot embossing and the complete system integration into automated lab prototypes („sample in answer out“-systems). He was project leader of several publicly funded research projects as well as industrial projects, aiming for the commercialisation of microfluidic technologies. He is group leader of the Fluidics Group since 2009.



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**Mr. Read** currently leads CBRN Business Development for Lockheed Martin Corporation covering US DOD, Homeland Security, and International markets. He joined Lockheed Martin in December 1997 after completing almost 30 years of active duty service with the U.S. Army. While on active duty as a Chemical Corps officer, Rick served in Germany as NBC Officer with 4th Allied Tactical Air Force and also commanded the 84th Chemical Battalion. He has served in a number of Senior Command and Staff positions including Chemical Division Chief in the Pentagon and Deputy Commander of the Chemical Biological Defense Command at Edgewood, Maryland.

Rick holds a BS in Chemical Engineering from the University of Colorado and an MS in Operations Research/Systems Analysis from the Naval Postgraduate School. He is also a graduate of the US Army War College. He will be presenting on behalf of his Lockheed Martin colleagues, Dr. Stephanie Groves and Mr. David Ence, and his presentation is entitled "Integrated Network Solutions for CBRN Detection".



Born in 1962 **Bernhard Christoph Halstrup** studied physics and chemistry at the University of Münster, Germany, where he got his diploma in physics in 1989. He then started working as an assistant at the Institute of Technical Physics at University of Kassel, Germany. His scientific research was focussed on micro sensors for different applications including the detection of environmental and chemical warfare agents. Having received his Ph.D. in 1994 he became project manager for a European wide research project on silicon-based microsystems. After joining Rheinmetall Landsysteme GmbH in 1997 Dr. Hal-

strup was responsible for the development of the German Army's NBC Field Laboratory. In 2000 he took over product responsibility for the mobile military and civilian NBC Reconnaissance Systems of Rheinmetall Landsysteme GmbH. In April 2004 he became head of Product Management Department for NBC Defence Systems. Since May 2010 he is the responsible head of Competence Center NBC Defence Systems within the new company Rheinmetall MAN Military Vehicles GmbH (RMMV).



**Marcus Herold**, 1996-2002: Studium der Meteorologie, Uni Hannover; 2003: Wissenschaftlicher Mitarbeiter an der Yonsei University,

Seoul, Südkorea, 2004-2005: Wissenschaftlicher Mitarbeiter, TU Braunschweig, 2005-2008: Wissenschaftlicher Mitarbeiter, Alfred-Wegener-Institut für Polar- und Meeresforschung, Bremerhaven, seit 2009: Dezernat Beratungsverfahren für Sensorik und Waffensysteme, Amt für Geoinformationswesen der Bundeswehr (AGeoBw).



**Mark Johnson** has a BA degree in Business Management from the University of Maryland and a MBA from Wake Forest University. Although a native of California, he has gained over 16 years of experience in the European pharmaceutical industry. While employed by leading global pharmaceutical companies such as Merck & Co., Eli Lilly, and Astellas, he has managed numerous strategic Sales & Marketing projects. Since joining Emergent BioSolutions in 2007 as Director European Markets, he has been a proactive supporter of policy development (e.g. European Commission's Green paper on CBRN preparedness and its subsequent CBRN Task force). Mark is working to establish procurement relations with EU Member State governments.

hough a native of California, he has gained over 16 years of experience in the European pharmaceutical industry. While employed by leading global pharmaceutical companies such as Merck & Co., Eli Lilly, and Astellas, he has managed numerous strategic Sales & Marketing projects. Since joining Emergent BioSolutions in 2007 as Director European Markets, he has been a proactive supporter of policy development (e.g. European Commission's Green paper on CBRN preparedness and its subsequent CBRN Task force). Mark is working to establish procurement relations with EU Member State governments.



Brigadier General **Jukka Juusti** has long experience in the materiel sector. In his early career he worked in the procurement sector and was responsible for communications equipment. That included the development of the Finnish message terminal system in early 1980.

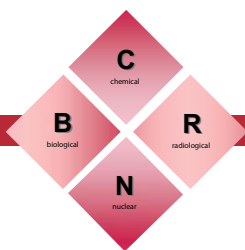
After that he served 3 years as a teacher in the Riihimäki Institute of Technology, but he returned back to the Defence Forces after that short period. Next assignment for Brigadier General Juusti was the Chief of Telecom office in the Defence Staff and after that Chief of Systems Division in the Defence Materiel Establishment.

The task for the systems division was to procure Electronic Systems for the Army. In 1995 Brigadier General Juusti took the command of the Electronics Repair Centre in Riihimäki. That unit is responsible for the Electronics maintenance and logistics for most of the Finnish Defence Forces electronic systems. In 1999 Brigadier General Juusti was nominated as the NADREP (National Armaments Representative) in NATO, WEAG and EU in Brussels. He served in Brussels for 4 years gaining broad knowledge of the international Armaments co-operation in various organisations.

Brigadier General Juusti returned to Finland in 2003 as the Chief Engineer for the Army in the Defence Command. In 2004 the European Union gathered an international task force to establish the European Defence Agency. Brigadier General Juusti was asked to join that EDA Establishment team which consisted of 12 members around Europe. Jukka Juusti was promoted to Brigadier General in 2006 when he took the position of the Chief of Armaments Division (J10) in the Defence Command. Armaments Division is responsible of EDA-activities, armaments co-operation and R&T issues.

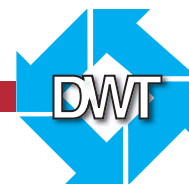
Since January 2008 Brigadier General Juusti is the Director of Armaments in the European Defence Agency in Brussels.





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Brigadier General Juusti was graduated from the Helsinki University of Technology in 1979. He also studied MDA (Master in Defence Administration) in the Cranfield Institute of Technology 1988.

Brigadier General Juusti is married and has two children. He is an active tennis player.



**Prof. Dr. Peter Kaul** was born in 1964 (Germany). He studied from 1985 to 1992 at the University of Braunschweig (TU Braunschweig)

and University of Aachen (RWTH Aachen), where he received his Diploma in Physics in 1992. From 1992 to 1998 he was employee in a microelectronic enterprise (SICAN Group Hannover), where he carried out his PhD work at the University of Gießen, Germany, at the same time. In 1996 he received his PhD (Dr. rer. nat.) from the University of Gießen, Germany. Since 1998 he holds the position of a Professor for Physics, Statistics and Measuring Techniques at the Bonn-Rhine-Sieg University of Applied Sciences (Hochschule Bonn-Rhein-Sieg) in the Department of Applied Natural Sciences, Germany. His current research interests are related to sensor technology (especially gas sensors) and multi-sensor systems as well as analytical methods for trace detection of energetic materials.

In the last years projects in the field of ERC (Explosive Related Compounds) and IED (Improvised Explosive Device) detection – like MoSEV (Mobile sensors for explosive related compounds), LIED (LASER technologies for IED detection), SISA (Fast identification and strategies for ERC detection) und HAMLeT (Hazardous Material Localization & Person Tracking) DAT (Common Shield, Defence against Terrorism) were in the focus of his research activities.

**Andreas Kayser**, born in 1963 in Enenheim, Southwest Germany. Joined the German Armed Forces' Armoured Infantry Corps in 1982. In 1983 LTC Kayser was transferred to the CBRN

Defence Corps. He had assignments as staff officer within a CBRN Defence Bn, Coy Commander of a CBRN Defence Coy and Deputy Regiment Commander of the German CBRN Defence Regiment. Following the national assignments he was transferred to the NATO Joint Force Command NAPLES (ITALY) as CBRN Section Chief. In 2010 he was transferred to SHAPE CPP WMD Directorate. LTC Kayser studied economics at the university of Saarbrücken, is married and has two children.



**Colonel Wolfgang Klos**, born in Elversberg/Saar on 23 July 1951, is Director of the NBC Defence Corps and Commander of the

NBC Defence and Self-Protection School in Sonthofen, Germany. He is married, has two children and lives in Sonthofen/Blaichach. He joined the Bundeswehr in 1970. In the course of his military career, he had several command and staff assignments and was, inter alia, battalion and brigade commander of CBRN defence forces and head of the NBC Defence and Self-Protection School's Force Development Division.

He gained operational experience as commander of the DEU CBRN defence forces with UNOSOM II in Somalia in 1994, as head of the J5 Division of HQ KFOR in 2004 and as commander of the OMLT with ISAF in 2010.



**Norbert Kopp**, Study: mathematics, business economics; until 1990: free consultant, SW-developer; since 1990 employed at tms;

from 2011: Geschäftsführer tms Projects:

- Investigation of Debris effects from ballistic Missile interception
- Consequence Management: effects NBC related events, i.e. Dirty Bomb etc.
- Development of a simulation model for the assessment of hazards of enga-

ged TBMs with conventional and non conventional payload (HEAT)

- Simulation and evaluation of the dispersion and effects of smoke munitions for MLRS
- Model development and evaluation of an area defence weapon
- Probabilistic risk assessment, calculation of hazard areas
- Statistical quality assurance



**Markus Kostron** studied Chemical Engineering at the University of Stuttgart in the time from 1994-1999. He specialized in mechanical

process engineering and microbiological engineering. He finished his studies with the Degree of Dipl.-Ing. in Chemical Engineering.

From 1999 to 2003 he worked in the automotive industry as Project Engineer, responsible for process technology and process plant engineering. As of 2003 he is the Manager of the research and development group for cleaning and CBRN Protection Systems at Kärcher Futuretech GmbH, responsible amongst others for the design and development of well known Kärcher decontamination systems such as the TEP 90, the family of lightweight air-transportable Decontamination Systems for the DSO built for the German Bundeswehr or different other systems for the French, the Swedish and the Belgium Armed Forces. He is inventor of Several Patents in the decontamination technology sector and he is also in charge of decontamination process research and development.



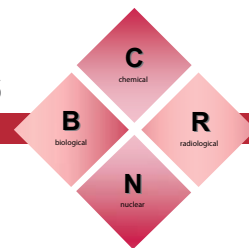
**Olena Kuzmicheva** received a diploma in the field of automation and control in technical systems from Dnepropetrovsk State

University, Dnepropetrovsk, Ukraine, in 1999 and the PhD degree in vision robot control from Institute of Automation of the University of Bremen, Bremen, Germany, in 2010.



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From 2004 till 2008 she was research assistant and a team leader in project „Mobile management component“ financed by German Federal Office of Civil Protection and Disaster Assistance and dealing with a management of reconnaissance of CBRN-disasters by fire brigades. Since 2009, Mrs. Kuzmicheva has been a research assistant at the Friedrich-Wilhelm-Bessel-Institute Research Society, and a leader of the project „Reconnaissance Robot (RecoRob)“. Her research interests include robot control, service robotics, robotics for reconnaissance and disaster management and intuitive robot human interfaces.



**Philippe Lagueux**, PROFESSIONAL EXPERIENCE: 2007 -... Business Development Manager, TELOPS Inc.; August 2000

- 2007; R&D Optical Systems Engineering, Project Manager TELOPS Inc.; May 1999 - August 2000 Product Engineering / Team Leader, JDS Uniphase, Fiber Optic Group, DWDM; Sept. 1998 - May 1999 Research Assistant, Centre Optique, Photonique & Laser, Université Laval; May 1998 - Sept. 1998: Research Assistant, Centre Optique, Photonique & Laser, Université Laval; Sept. 1997- May 1998: Clean-room Technician, Center for Optics, Photonics & Lasers, Université Laval STUDIES: M. SC. Physics, Optics (2003) (Industrial partnership program – CRSNG); Subject: Thulium doped-fiber optic amplifier (up-conversion and s-band applications) Concept & Modeling, Experimental validation Université Laval, Dept. de Génie Physique et Physique; B.Eng.: Physics Engineering (1999); Completed Specializations: Optics and Telecommunications Instrumentation and Electronics Systems Université Laval, Dept. de Génie Physique et Physique.



## Heidi Laug

- Education: Bachelor in Mechanical Engineering and Economy, Master of Management

- Started in the

Norwegian Army Materiel Command as an Engineer in 1995 and became Senior Engineer in 1998

- Head of Engineer and NBC-office 2003 - 2004 (NDLO)
- Project Coordinator 2005 - 2007 (NDLO)
- Project Manager 2008 - (NDLO)



## Dr. Stephen Lee

is currently the Chief Scientist at the U.S. Army Research Office where he helps plan and develop the strategic vision

for the Army's basic research investment in academia and industry. He received a B.S. degree from Millsaps College in Jackson, MS in Chemistry and Biology and a Ph.D. from Emory University in Physical Organic Chemistry. Dr. Lee was also a Chateaubriand Fellow at the Université Louis Pasteur in Strasbourg, France studying origin of life chemistry before working in the Army Research Office.

Dr. Lee is an adjunct faculty member in Chemistry at the University of North Carolina-Chapel Hill where he maintains his research group. The Army Research Office program he works with includes basic research directed towards all scientific needs of the Army but his primary interests are in hazardous materials management including basic research in decontamination, detection, and protection. In this research program he has been awarded the Army's Greatest Invention twice. Dr. Lee's personal research focuses in a few basic research areas including Dynamic Combinatorial Chemistry, catalysis, and DNA supramolecular assemblies. This research program ultimately focuses on technologies that might protect the soldier from hazardous chemicals and biological organisms.



## Dr. rer. nat. Karin Lemmer

studied Biology at the RWTH Aachen Graduated at the Max von Pettenkofer-Institut of the LMU Mün-

chen. Since 2007 working at the Robert Koch-Institut, Berlin, at the Centre for Biological Security 2, which focuses primarily on highly pathogenic bacteria. I especially focus my work on medical microbiology where I got considerable practical and scientific experience with a broad spectrum of microorganisms. Working with prions I tested the efficacy of disinfectants against the pathogen protein in an improved in vitro assay and confirmed the results by in vivo experiments.

Disinfection is a focus of my ongoing studies, too, creating model systems for testing disinfectants useful for decontamination of personal protective equipment suspected to be contaminated by bio hazardous agents and verifying the results in practical trials. In my presentation I will refer to these experiments.



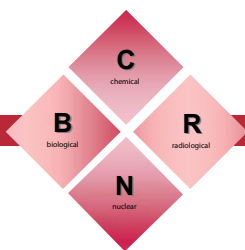
**Tjen Liem** holds a Masters degree in Electronics Engineering from the University of Kent at Canterbury. He worked for 14

years for Honeywell in Germany on Military Aircraft Avionics, Infrared Systems and other Defence programmes. For over 17 years he has been with the European Commission. He was part of the team that built up Aeronautics / Air Transport research at DG RTD. He was among the first people in the team setting-up European Security Research, now with DG Enterprise and Industry.



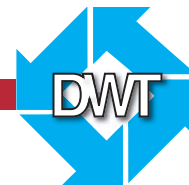
## Elmar Lillpopp

- 50 Jahre, verheiratet, 3 Kinder
- Abitur
- 1979 Ausbildung m.D. Polizei NW
- 1981 Ausbildung g.D. BKA



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- 1984 Verwendungen in den Bereichen Servicedienste, Personenschutz und Staatsschutz
- 1992 Ausbildung h.D.
- 1994 Verwendungen in den Bereichen Personenschutz, Servicedienste, Verhandlungsgruppe, Zeugenschutz, Staatsschutz
- Seit 2004 bzw. 2006 Leiter des Referates zur Bekämpfung der ABC-Kriminalität (operativ) und Leiter der ZUB (Zentrale Unterstützungsgruppe des Bundes für nuklearspezifische Gefahrenabwehr); zugleich Leiter der IDKO (Identifizierungskommission des BKA).



## Dr. Patrick

**Marcus** was born on the 24.01.1976 in Karlsruhe, Germany. After finishing school in Karlsruhe in 1995 (Abitur) he started

studying Chemical Engineering at the University in Karlsruhe (TH). After his Vordiplom he transferred to the University of Applied Sciences in Mannheim in 1999. During his studies he spent one semester at the University of North Carolina, Chapel Hill, USA (Prof. Francis A. DiGiano; 2000) and did his Diplomarbeit at the University of South Australia in Adelaide (Assoc. Prof. Philip Pendleton; 2001-2002). In 2002 he started his studies for a Masters in Chemical Engineering at the University and University of Applied Sciences in Mannheim. In parallel he also started his Doctoral research work at the University of Dresden (Prof. Eckhard Worch). In 2003 he finished his Master Degree and in June 2005 his doctoral work. After his academic education he started working at the Water Technology Center in Karlsruhe. He worked as a consultant engineer for stationary water suppliers and was responsible for a research project regarding the security of the German drinking water supply system against terroristic activities. This project was fully funded by the German „Federal Ministry of Education and Research (BMBF)“ and the German „Gas and Water Association (DVGW)“. In September 2007 he started to work

for Kärcher Futuretech as a product manager in the field of „Water Supply Systems“. In September 2008 he became the group leader of the product management „Water Supply Systems“. In this role he is mainly responsible for the technical consulting of the customers and for the future product strategy in this field of Kärcher Futuretech.



## Dr. Stefano

**Miorotti** is native of Genoa, Italy. He is part of Cristanini Company as CBRN Area General Manager. He is a retired officer of

the Italian Army (OF-3) and in particular he attended the 177th Military Academy Course „Tenacity“. He served to the 7th CBRN Defense Regiment as Chemical Unit Commander where he was RECCE platoon Commander first and then CBRN Coy Commander. He participated with his Unit in Kosovo, in Iraq and in Afghanistan operations. During this campaign he was awarded of the Italian bronze Crux for special DECON mission. He was graduated in economics in the University of Turin in 2002 and in International diplomatic law (WMD oriented) in the University of Trieste in 2004. Moreover he attended a II Level Master in Biological and Chemical Defense in the University of Rome. His CBRN education comes from the military academy and includes courses to the Joint Italian CBRN school, in the NATO School in Oberammergau. He attended the live agent training in Dugway proving ground and the Advanced Counter Terrorism CBRN Course in the Suffield Centre in Canada. His last duty assignment has been as CBRN Officer of the NATO Rapid Deployable Corps in Italy in Milan.

**Dr. Stéphane Morel** is CBRN System Architect at Thales Security Solutions & Services.

After having graduated from the University Pierre et Marie Curie of Paris, he joined the DGA CBRN defense centre, formerly called CEB. He then earned a PhD in Applied Chemistry and Indus-

trial Process Engineering. He joined Thales as CBRN program manager in 2002 and manage a set of CBRN programs for France and European countries. He recently led the project on the design of the future French global CBRN defence system and takes part into the preliminary studies to define European biological defense system requirements (Bio Edep and Twobias).



## Professor Dr.-Ing.

**Bernd Niemeyer**  
PROFESIO-  
NALS: University  
and Research Management (since 1996), Professor at the Helmut-

Schmidt-University/ University of the Federal Armed Forces; Hamburg; chair: Process Engineering with focus on Separation Technologies in combination with Leader of the Research Group at the GKSS Research Center Geesthacht on Molecular Recognition and Separation

Main Fields of Activity

Security: collective as well as personal protection, detection of biological as well as chemical compounds (sensoric), decontamination of biological as well as chemicals agents

Environmental: separation of compounds from off-gas streams, especially odour and toxic compounds, catalytic conversion of odorous and toxic substances

Biotechnology: downstream processing, biotechnological conversion with enzymes

Process Engineering: design of production plants and set-up of technical scale equipment for: security, environmental, biotechnology, chemical process engineering, molecular dynamic modelling and process simulation, process analytical methods

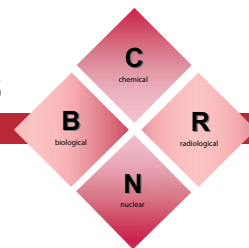
Industry (1991 until 1996): last Industrial Positions: Senior project manager with power of attorney and responsibilities for several plants; Main focuses: thermal as well as chemical waste processing, energy conversion, flue gas treatment, chemical process engineering. EDUCATION: Post-DocChemical and bio process Department of Scientific





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and Industrial; engineering Research, Lower Hutt, New Zealand, 1991; PhD Bio engineering University of Erlangen-Nürnberg, FRG, 1990; Studies: Chemical and process engineering University of Erlangen-Nürnberg, FRG, 1986



**Christophe Pannetier** is currently deputy director of DGA CBRN Defense, in charge of technology. He graduated from the French

Ecole Polytechnique in 1989 and received a PhD in immunology at the Pasteur Institute (Paris, France). After a post-doctoral stay at the NIH (Maryland, USA), he joined DGA CBRN Defense, the CBRN expert centre of the French Ministry of Defense procurement agency, as the head of the laboratory of biological agent identification. He then spent four years with Thales as the chief of the CBRN R&D Department. In the recent years, he has been involved in the BIOEDP preparation phase for the European Defense Agency.



Marié et père de cinq garçons, le général de Brigade **Jean François Parlanti** est né le 21 décembre 1961 à ANTISRABE (MADAGASCAR).

Il intègre l'Ecole spéciale militaire de SAINT-CYR en 1981 (promotion Grande armée) (option sciences), puis choisit les Troupes de marine. Après une année de formation à l'Ecole d'application d'artillerie de DRAGUIGNAN, il rejoint le 41<sup>e</sup> Régiment d'artillerie de marine à LA FERRE. Pendant cette période, il participe au déploiement du XVI<sup>e</sup> mandat de la FINUL, au LIBAN dans le cadre d'une mission logistique. Alpes une première mission de longue durée outremer au 33<sup>e</sup> Régiment Infanterie de marine de FORT- DE- FRANCE en MARTINIQUE de 1987 à 1989, il rejoint, alors capitaine, le 9<sup>e</sup> Régiment artillerie de marine à TREVES en Allemagne où il commande la 3<sup>e</sup> Batterie (155 mm AUF1).

En 1992, il est désigné pour occuper la fonction de Chef de cabinet du général commandant supérieur en NOUVELLE CALEDONIE à NOUMEA pendant deux ans.

A l'issue, il est muté au. Ecoles de COETQUIDAN pour participer à l'encadrement des élèves officiers d'active Saint-cyriens et de réserve au sein des bataillons de l'Ecole spéciale militaire. Il est promu chef de bataillon en 1994.

En 1996, après sa réussite au concours, il part aux ETATS-UNIS pour suivre l'enseignement militaire supérieur américain, d'abord à FORT LEAVENWORTH au KANSAS pendant une année au sein de l'USA Command and General Staff College, puis à NORFOLK, pendant trois mois, au sein de Armed Forces Staff College.

A l'issue de sa scolarité, il rejoint le 1<sup>er</sup> Régiment d'artillerie de marine à LAON, où il occupe la fonction de Chef du Bureau opération instruction de 1997 à 1999. Durant cette période, il rejoint pendant six mois SARAJEVO pour occuper la fonction d'officier traitant au sein du bureau Plans and Policy du HQSFOR (J5) dans le cadre de l'application des accords de DAYTON en BOSNIE HERZEGOVINE. Il est promu lieutenant -colonel en 1998.

En 1999, il retourne à COETQUIDAN pour prendre le commandement d'une promotion d'élèves officier d'active de l'Ecole spéciale militaire de SAINT-CYR (promotion « Du bicentenaire de Saint-Cyr ») pendant trois ans.

De 2002 à 2004, alors colonel, il rejoint PARIS et l'Etat major de l'armée de terre au sein du Bureau planification des ressources humaines où il sert au sein de la cellule « étude générale officie » (statuts, gestion prévisionnelle des compétences, notation ...).

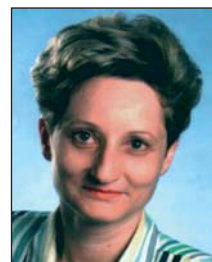
En août 2006, il prend pour deux ans le commandement du Régiment d'infanterie de marine du Pacifique NOUVELLE CALEDONIE.

Au retour de métropole, il est désigné pour occuper la fonction de cadre professeur au Collège interarmées de défense à PARIS pendant une année. D'octobre 2007 À juin 2008, il est auditeur de la 59<sup>e</sup> session de l'Institut des hautes études de la défense nationale italienne (Istituto Alti Studi per la Difesa

(IASD)) à ROME.

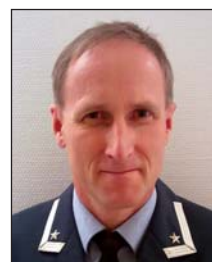
De juillet 2008 à août 2010, il est chargé d'études auprès du Major général des armées, À l'état major des armées à PARIS (spécialement chargé de la participation pleine et entière de la France dans l'OTAN).

Depuis septembre 2010, il dirige la division maîtrise des armements à l'état-major des armées.



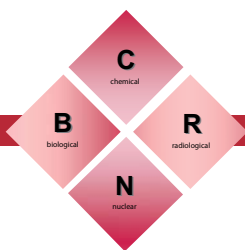
**Dr. Karin Potje-Kamloth** studied chemistry at Ludwigs-Maximilians-Universität in Munich and got her PhD in 1991 and her habilitation in 1999.

From 1984 until 1999 she worked at the institute of physics (Univ. Bundeswehr München) in the field of chemical sensors and organic semiconductors. In 1999 she took a postdoc position at Georgia Institute of Technology, U.S.A., and worked from 2001 until 2005 at the TU Dresden. She joined the Institut für Mikrotechnik Mainz in April 2005. Her work focuses on electrochemical analysis systems, energy harvesting, chemical sensing platforms for microsystems. Since 2008 she is the head of the Surface Group.



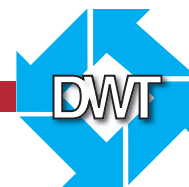
**Major Thorvald Rognerud**  
Education: Officer Candidate School, Norwegian Army Ordnance Corps, 1986-1987  
Royal Norwegian

Air Force Academy, 1990-1992  
Chemical Captain Career Course, US Army 1999-2000  
Bachelor of Management, Norwegian School of Management, 2001-2003  
Norwegian Staff College, module 1, 2003-2004  
Service: Service with troops, Norwegian Army Ordnance Corps, 1987-1988, Platoon Commander, Norwegian Army Ordnance Corps, 1988-1989, Administrative Officer, Rygge Main Air Station, 1992-1996, Instructor, Norwegian NBC School, 1996-2002, Chief Instructor, Norwegian NBC School, 2000



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Evaluation Officer, Norwegian NBC School, 2002-2005, Head of NBC section, Norwegian Defence Logistics Organisation, 2006



**Dr. Wolfgang Rosenstock** is a nuclear physicist by education and earned his Doctor degree (PhD) from the University of Bonn. His current

position is Head of the department „Nuclear and Electromagnetic Effects“ at Fraunhofer-INT (Fraunhofer Institute for Technological Trend Analysis), Euskirchen, Germany and leads the group „Nuclear Security Policy and Detection Techniques“. He has a longstanding experience in theoretical and experimental investigations on physical technical means for non-destructive detection and identification of radioactive as well as nuclear materials by means of passive and active methods on site, especially in a real and difficult environment.

In addition he performed numerous studies on the potential threat and risks by radiological and nuclear terrorism and nuclear proliferation, including means for prevention. He is a member of the Member of Institute of Nuclear Material Management (INMM) and of the of Nonproliferation & Arms Control Division. Since 2003 he is member of ESARDA (European Safeguards Research and Development Association) VTM Working Group (VTM = Verification Technologies and Methodologies). Since 2007 he is the task leader of sub-working group „Threat Analysis“ of the national working group „Radiological Bomb“.



**Colonel Klaus Schiff**

- Born in 1958 in Lahr, Black Forest, Southwest Germany.
- Joined the German Armed Forces' Armoured Corps in 1979 and was commissioned as a 1st Lieutenant in 1982.

- From 1979 to 1984, officer training and a Master's Degree in Education at the German Armed Forces University in Munich.
- In 1986, transfer from the Armoured to the CBRN Defence Corps, followed by assignments as Company Commander, CBRN Staff Officer at various HQ levels and Commanding Officer of a CBRN Battalion from 2001 to 2004.
- First assignment in a multinational environment in 1993 at HQ Allied Mobile Force (Land) in Heidelberg, DEU, followed by an assignment as CBRN Staff Officer at HQ Allied Forces Central Europe in Brunssum, NLD, and a tour of duty at HQ Allied Command Transformation (ACT) in Norfolk, Virginia, USA, from 2004 to 2006.
- Mission assignments included a tour at HQ Stabilization Forces (SFOR) in Sarajevo in 1997 and two temporary appointments to the United Nations Military Staff in New York, USA, in 2002 and 2003, including field missions in the Middle East.
- After two years as Chief of the CBRN Defence Concept Section at the German NBC Defence and Self-Protection School in Sontheim, appointed as Head of the School's Combat Development Division in June 2009.
- Married to Elisabeth, two children, Julia and Nikolas.



**Thilo Schuppler**

was born in Stuttgart, Germany. After high school he joined the German Federal Armed Forces Bundeswehr for 2

years as an officer candidate of the NBC Corps. He was trained as operator and commander of a FUCHS NBC recon vehicle and platoon leader of a decontamination platoon. He finished his duty in 1996 as Lieutenant and joined the army reserve as CBRN officer (OF-1). Thilo Schuppler studied chemistry at the University of Konstanz, Germany. He graduated in organic and bioorganic chemistry and worked as scientist at the

University of Konstanz, ALTANA Pharma, the National University of Singapore and the Nanyang Technological University in Singapore in the field of synthetic organic chemistry and pharmaceutical research.

Beside his studies he served in several positions as CBRN officer e.g. in CIMIC staffs responsible for CBRN homeland defence. In 2004 he was promoted to a captain (OF-2) and became Coy Commander. Since 2009 he is Coy Commander of the ABCAbwKp 955, a special reserve unit to support civil forces in case of a CBRN threat with military capabilities in recon, decontamination and water purification. In 2008 Thilo Schuppler joined OWR as chemist, responsible for the development of different new decontamination agents for high-value equipment and human skin. Since 2009 he is head of the R&D department, responsible for the development of CBRN concepts, technical development and engineering of new solutions, system integration and consulting. His expertise as CBRN officer and scientist leads him in many countries to support in CBRN projects. He is also POC of the scientific and military competence board of OWR which involves experts of different disciplines. The OWR competence board supports when interdisciplinary is necessary to solve complex problems and specific requirements.



**Margaretha Sudhof**

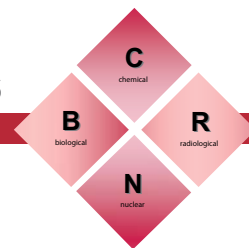
began her career in 1985, teaching law and doing research at the Johann Wolfgang Goethe-University in

Frankfurt. After completing her academic doctorate and her professional qualification she was appointed in 1994 to the Frankfurt Administrative Court. In 1998 she joined the civil service and served first as Division Head of the Hessian State Chancellery until June 1999, then as Division Head of the Federal Chancellery until April 2002. At that point she moved to the Federal Ministry of the Interior, where she was Deputy Director for strategic planning. She re-



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turned to the Federal Chancellery in 2003, now coordinating the entire spectrum of interior and juridical affairs. In 2006, again as an official of the Interior Ministry, she became Representative of the Federal Interest at the Federal Administrative Court in Leipzig. From 2007 to 2009 Dr Sudhof was counselor to the SPD parliamentary caucus on matters of federalism, constitutional law, and European standards and treaties. After having returned to the Interior Ministry she is at present Deputy Director-General for Crisis Management and Civil Protection.



Ministerialrätin **Dr. Irmtraud Tauber** ist seit August 2009 Leiterin des Arbeitsbereichs „Rüstungspolitik“ bei der Ständigen Vertretung der

Bundesrepublik Deutschland bei der Europäischen Union in Brüssel.

Nach Studium der Chemie und Promotion an der Universität Würzburg erfolgte der Eintritt in die Bundeswehr, der sie nach Referendariat und Großer Staatsprüfung im Fachgebiet Waffen- und Munitionskunde bis heute treu geblieben ist.

Nach Fachverwendungen auf Dezernenten-Ebene bei der Wehrtechnischen Dienststelle in Eckernförde und beim Bundesamt für Wehrtechnik und Beschaffung in Koblenz stellte sie sich im Bundesministerium der Verteidigung neben fachlichen Aufgaben im Bereich Rüstungskoooperation mit Israel und Foreign Military Sales in den USA auch den unterschiedlichsten Herausforderungen im Leitungsbereich. Verwendungen im Planungsstab, in der „Weizsäcker Kommission“ zur Neustrukturierung der Bundeswehr und im Büro Staatssekretär Dr. Stützel in Berlin ließen sie tief in die politische Dimension von Sicherheits- und Rüstungspolitik eintauchen, was sie im Rahmen einer folgerichtigen Anschlussverwendung als Wehrtechnischer Attaché bei der Botschaft der Bundesrepublik Deutschland in Paris auch im internationalen Bereich umsetzen konnte.

Zwei Verwendungen als Referatsleiterin

in der Rüstungsabteilung des BMVg im Zuständigkeitsbereich Heereswaffen und -munition sowie in Rüstungsbeziehungen zu Staaten in Afrika, Mittel- und Südamerika, im Nahen Osten und Süd- und Ostasien einschließlich der damit verbundenen Ausstattungshilfe führten sie wieder nach Bonn zurück.

Seit letztem Jahr vertritt sie rüstungspolitische Interessen der Bundesrepublik Deutschland im Rahmen des Aufgabengebietes der Ständigen Vertretung bei der EU mit Schwerpunkt Europäische Verteidigungsagentur (EDA).



**Hans-Joachim Töpfer** has worked for more than 46 years in the NBC defence. He made his studies at the Officer's School, Löbau, (1964-

1967) and at the Military University for Chemical Protection, Moscow/USSR (1972 – 1977). Degree: Dipl.-Ing., Ing. Chem.

He has been a NBC defence staff officer and NBC Defence Commander of the Frontier Forces of the GDR (1982 – 1990; last rank: Colonel). Since 20 years as Product Manager NBC Protection Systems (Kärcher Futuretech GmbH; Winnenden) he was responsible for the development of the well known Kärcher decontamination systems (TEP 90, DECOCONTAIN 3000 GDS, etc.) as well as for the new Kärcher family of decontaminants. He is author of many publications on special questions in different areas of NBC defence.



Wissenschaftlicher Oberrat **Dr. rer. nat. Roman Trebbe**, Diplom-Chemiker Referent im Referat „Technischer CBRN-Schutz“ im

Bundesamt für Bevölkerungsschutz und Katastrophenhilfe. Dort u. a. verantwortlich für die konzeptionelle Planung der Bundesausstattung im CBRN-Schutz mit dem Schwerpunkt Chemie. Leiter des Projekts „Analytische Task Force“.

Jahrgang 1970; 1990-1996 Studium der Chemie an der Rheinischen Friedrich-Wilhelms-Universität Bonn. Abschluss des Studiums mit der Diplom-Arbeit über Phosphororganische Verbindungen im Arbeitskreis Prof. Niecke. 1996-1999: Dissertation über metallorganische Verbindungen des Nickels und des Palladiums am Max-Planck-Institut für Kohlenforschung, Mülheim a. d. Ruhr bei Prof. Pörschke; 2000-2005: Tätigkeit in der chemischen Industrie, Schwerpunkt F&E Wasch- und Reinigungsmittel; seit 2005 Referent im Referat „Technischer CBRN-Schutz beim Bundesamt für Bevölkerungsschutz und Katastrophenhilfe in Bonn

- Ehrenamtlicher ABC-Fachberater bei der Feuerwehr Bonn.
- Mitglied im OPCW „Network of Experts“
- Lehrbeauftragter der Universität Bonn für den Masterstudiengang „Katastrophenvorsorge & Katastrophenmanagement“

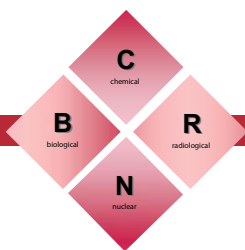


**Dr. rer. nat. Martin Weber** Oberfeldapotheker und staatl. gepr. Lebensmittelchemiker, Fachapotheker für Toxikologie und Ökologie,

Studium der Pharmazie in Freiburg i.Br. und Lebensmittelchemie in Frankfurt/M. Promotion an der Universität Kiel zum Thema: „Zur Problematik der Entgiftung sowie der Nachweisverfahren von Methylthiophosphonsäure-O-alkyl-S-(2-N,N-dialkylaminoethyl) estern (sog. V-Stoffen)“

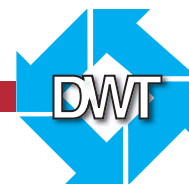
- Mitglied der Prüfungskommission des Landes Niedersachsen für die Fachapotheker für Toxikologie und Ökologie
- Mehrfach im Einsatz in Bosnien-Herzegowina, Kosovo und Afghanistan als Leiter des Containerlabors „Lebensmittelchemie“
- z.Zt. Leiter der Laborgruppe Chemie der Gifte/ Kampfstoffanalytik am Zentralen Institut des Sanitätsdienstes der Bundeswehr München, Außenstelle Munster





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**Dr. Martin Wehner** is heading the work group for „Biotechnology and Laser Therapies“ at Fraunhofer-Institute for Laser Technology

in Aachen. After he received an university degree in Physics and Engineering from Technical University Darmstadt in 1985, he joined the Fraunhofer Institute for Laser Technology, Aachen, working on laser patterning and machining of polymers. In 1990 he finished his doctoral thesis on machining of materials with excimer lasers. Then he was responsible for projects on manufacturing of medical devices, biomedical applications of laser radiation, and laser processes for fabrication of printed circuit boards. Presently, he is heading the work group for „Biotechnology and Laser Therapies“. Main activities comprise biotechnical projects on laser-induced protein transfer, modification of polymer scaffolds for tissue engineering, cell manipulation, laser tissue interaction, thermal laser therapies and laser sensing of biosensors. He has more than 20 years experience in performing industrial research projects.



**Hans-Jörg Wickert**

Secondary Education: until June 1977 - Domgymnasium Rabanus-Maurus School in Fulda, Graduation:

Abitur (A-levels) Tertiary Education and Professional Qualifications: 1978 - 1982: Degree in education at the University of the German Military (Bundeswehr) in Hamburg, Graduation: Diploma in Education, Degree dissertation: HRM regarding organisational development; 1990: Degree for Troop Officer and training for Staff Officer at the German Military (Bundeswehr); 1990 - 1992: 33rd general staff training at the German Military Academy (Bundeswehr)



**Dr. Roman Wölfel**

was born in 1974 and joined the German Air Force Medical Service as a medical officer candidate in 1993. He

studied medicine at the Universities of Marburg and Giessen and completed a doctoral thesis at the University Institute of Normal and Pathological Physiology in Marburg. Dr. Wölfel then served as a medical officer in several military assignments. In 2003 he joined the Bundeswehr Institute of Microbiology in Munich for further specialisation in bio-defence research. As part of this, he worked from 2005 until 2006 at the BSL-4 labs at the Bernhard-Nocht Institute in Hamburg and obtained the Diploma in Tropical Medicine and Hygiene. In 2007 Dr. Wölfel finished his specialisation in Microbiology, Virology and Epidemiology of Infectious Diseases. Parallel to his medical career Dr. Wölfel studied Law at the University of Hamburg and completed a post-graduate specialisation in project management. 2005 he obtained a diploma in Quality Management and in 2006 the European Organization for Quality (EOQ) Quality Systems Manager certificate. In 2008 Dr. Wölfel assumed the position as head of the Department for Medical Biological Reconnaissance & Verification at the Bundeswehr Institute of Microbiology. Since then he developed a deployable microbiological lab platform for diagnostics in limited resource settings and various assays for the detection of bacterial and viral biowarfare agents.



**Brigadier Winfried Zimmer**, born on 29 December 1954 in Duisburg, Germany, married. 1 July 1974: Entry into the German

Armed Forces as a temporary-career volunteer. 1974 - 1976: Officer training, 1976 - 1980: Academic studies at the Bundeswehr University in Munich, degree in education. Until 1986: Platoon commander, S2 officer and company

commander with light infantry battalion 531 in Ahlen/Westphalia; 1986 - 1988: General staff officers' training at the Bundeswehr Command and Staff College in Hamburg; 1988 - 1990: Staff officer with deputy chief of staff, Armed Forces Staff II at the Federal Ministry of Defence in Bonn; 1990 - 1992: Assistant chief of staff G4 with 1st Airborne Division in Bruchsal; 1992 - 1993: General staff officers' training at the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, USA; 1993-1995: G4 with the German Component and Division Chief Exercises-G4 V. (US) Corps in Frankfurt/Heidelberg; 1995 - 1997: Commander of paratroop battalion 314 in Oldenburg; 1997 - 1999: G3 and chief of section II 1 3, army materiel division, Army Support Command in Koblenz; 1999 - 2001: Chief of division I, Army Materiel Office in Bad Neuenahr; 2001 - 2006: Branch chief, Joint Support Service Staff II 4/Armed Forces Staff IV 5 at the Federal Ministry of Defence in Bonn; 2006 - 2010: Commander of logistic brigade 1 (response forces) in Delmenhorst. Since June 2010: Deputy Chief of Staff, Armed Forces Staff, Division Fü S IV (as indicated above). Interests: Hunting, golfing, history of art.



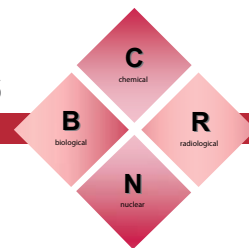
**Colonel (MC) Lothar Zöller**, MD, Professional education and training: Lothar Zöller attended the Medical School of

Heidelberg University from 1975 to 1981 and obtained his License to practice Medicine in 1981. This was followed by a two-year Residency position at the Bundeswehr Central Hospital in Koblenz (Germany). In 1982 he earned his doctor's degree from Heidelberg University. From 1983 to 1984, he served as a Medical Officer in the 3rd Army Corps in Koblenz. After accomplishing the Postgraduate Training Program in Medical Microbiology at the Central Institute of the Bundeswehr Medical Service in Koblenz, which he attended in the period from 1984 to



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1986, he pursued advanced training in Internal Medicine with a focus on Infectious Disease Medicine at the Bundeswehr Central Hospital, also located in Koblenz. This was followed by a Fellowship in Medical Microbiology at the Institute of Hygiene of Heidelberg University, which he held from 1987 to 1991. Still in 1991, he passed the Board Exam qualifying him as a Specialist in Microbiology, Virology und Infectious Disease Epidemiology. In 1992, he obtained his Habilitation in Medical Microbiology from the University of Heidelberg and was promoted to the rank of a Lieutenant Colonel. From 1991 to 2007, Prof. Dr. Zöller served as a Head of the Department of Microbiology and Head of the Department of Medicine at the Central Institute of the Bundeswehr Medical Service in Koblenz. In 2007, he assumed his current position as Head of the Bundeswehr Institute of Microbiology located in Munich and was promoted to the rank of a Colonel.

Activities in the scientific community, honors, awards: 1995: Paul Schürmann Award of the German Society for Military Medicine and Pharmacy; 2000: Appointment as Adjunct Professor at the University of Heidelberg; 1994: Member of the Advisory Board for Laboratory Medicine and Microbiology, German MoD; 1996: Member of the Editorial Board of the journal „Clinical Laboratory“; 1989-2007: Member of the DIN standardization board NAMed E9 „Serodiagnosis of Infectious Diseases“; 2007: Member of the NATO BIO-MEDAC (Biological Medical Advisory Committee); 2009: President of the international Medical Biodefense Conference 2009

#### Research Fields

Major research fields of Dr. Zöller and the Bundeswehr Institute of Microbiology:

- Development of molecular diagnostic assays and field-applicable rapid assays for special pathogens (CDC category A-C biological agents); Dr. Zöller was the first to develop diagnostic assays for hantavirus infections on the basis of recombinant nucleocapsid proteins. He also worked on *Borrelia burgdorferi* and *Candida* spp.

- Molecular typing of bacteria and viruses with special focuses on *Yersinia pestis*, *Bacillus anthracis*, *Brucella* spp., *Francisella tularensis* and Orthopoxviruses, as well as the establishment of databases for bioforensic outbreak investigations
  - Molecular epidemiology of bacteria and viruses, e.g. *Francisella tularensis*, TBE virus, Hantaviruses, *Rickettsia* spp.
  - Immunological and functional host/pathogen interaction of *Coxiella burnetii* and *Francisella tularensis*
- The Bundeswehr Institute of Microbiology is a member of the Munich Center for Infectious Disease Medicine. It has been appointed National Consultant Laboratory for Tularemia since 2000 and National Consultant Laboratory for *Brucella* since 2009.



Dr. rer. nat **Sibylle Pagel-Wieder**

Product Research & Development Manager, miprolab GmbH. Since the foundation of miprolab in 2005,

Dr. Sibylle Pagel-Wieder is being responsible for the research, development and production of test systems for the detection of biological warfare agents like toxins, bacteria and viruses. Before joining the R & D department of miprolab, she served as a research scientist at the Institute for Applied Biotechnology in the Tropics at the University of Göttingen being the project leader of several research projects including a validation study of commercially available rapid tests for the detection of biowarfare agents. These projects were funded by e.g. the German Federal Office of Defense Technology and Procurement (BWB), and the Science & Technology Center of armasuisse (W+T/armasuisse, Switzerland). Dr. Sibylle Pagel-Wieder graduated from the University of Hannover (Germany) with a PhD in Geosciences'. The main focus of her PhD study was placed on the description of chemical interactions between macromolecules and solid surfaces, and on the developing a new method for the quantification of the reactive sites of solid particles.

**Alphus Hinds** is a leading authority in the application of risk techniques for security and public safety, terrorist profiling and the assessment of security risks for major sporting events and mass transportation systems.

Alphus has taken lead roles in assessing, reviewing and managing security and public safety risk, including mass casualty terrorist threats and emergency planning for major events; such as the Atlanta 1994, Sydney 2000, Athens 2004 and Beijing 2008 Olympic Games. Mr. Hinds also was appointed Head of Risk Management for the Doha Asian Games Organising Committee (DAGOC) 2006, the second largest multi sporting event in the world.

Alphus is a United Nations associate expert advisor, on security during major event; administered by the United Nations Interregional Crime and Justice Research Institute (UNICRI). In this capacity he has participated in several high level delegation UN missions, in support of Major Events. Inclusive of the Beijing Security Bureau/ Chinese Government's security planning for the Beijing 2008 Olympic Games. Mr. Hinds regularly provides high level briefings to Government, the intelligence community and fortune 500 companies.

Mr. Hinds is a regular contributor to the media. He is a retained writer/contributor to Jane's Intelligence Review and Jane's Terrorism Insurgency Centre (JTIC). Alphus was interviewed for and expert advisor to the National Geographic acclaimed three part terrorism documentary series entitled 'Reign of Terror.' He recently was interviewed for and acted as the specialist terrorist advisor to the Discovery Channel's documentary dramatization of the attack on the USS Col, to be released world wide later this year.

Alphus has undertaken further academic study at Masters Degree level, at the prestigious Centre for Study of Terrorism and Political Violence, St Andrews University, Scotland. ♦



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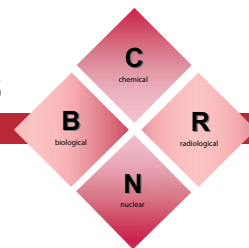
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For external use only. Contact with eyes and mucous membranes should be avoided. In emergency conditions, RSDL does not require immediate removal from skin, but should be rinsed as soon as it is safe to do so. An ingredient of RSDL may be absorbed. Studies with RSDL left on the skin for 24 hours showed minimal adverse effects. Avoid prolonged contact with skin.

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## Abstracts

### Future-oriented Solutions for Effective CBRN Defence for Armed Forces and Civil Defence

**Dr.-Ing. Hagen R. Gehringer, CEO**

*Kaercher Futuretech GmbH, P.O. Box 140, D-71349 Winnenden (Germany), [hagen.gehringer@de.kaercher.com](mailto:hagen.gehringer@de.kaercher.com)*

#### Abstract

Kärcher Futuretech is a worldwide leader in CBRN protection for both military and civilian applications. The company offers future-oriented and innovative CBRN protection systems and clothing, complete field camps as well as water purification solutions for peacekeeping and disaster relief operations. Therefore, Kärcher Futuretech products facilitate prompt and effective decontamination of people, vehicles, aircrafts, ships, personal weapons, clothing and equipment as well as sensitive material. The current and future conditions of international missions of the NATO armed forces require highly effective and coordinated pieces of military equipment which are completely adapted to each other. The health protection and guarantee of survival for all the deployed soldiers under all mission conditions are incontrovertible criteria for the development and introduction of new military systems. This especially applies to the respective CBRN defence equipment needed to meet the current and future CBRN threat. Chemical, biological or radioactive decontamination still presents a big challenge and a very complex task for the concerned troops. It has to be carried out as quickly and effectively as possible and requires a high degree of professionalism with respect to organisation, effective equipment, specialised personnel and training.

With the delivery of all 73 TEP 90 decontamination systems in November 2010 the Federal German Armed Forces have filled an important skills gap in the area of CBRN defence. With the

TEP 90, the German Armed Forces features the most modern and efficient system of this class currently available with outstanding, worldwide leading technology. The container-based TEP 90 decon system has a consequent modular structure, and consists of decontamination modules which can be used independently and include all components necessary for carrying out thorough, mission-optimised decontamination close to the contaminated troop. The TEP 90 uses state-of-the-art decontamination technologies and decontamination agents. With the new family of CBRN decontaminants highly effective agents are available for carrying out the rapid and effective CBRN decontamination. Beside the high decontamination effect, they stand out due to a good material compatibility and biological degradability.

The state-of-the-art Kärcher decontamination technologies and agents used in the TEP 90 also form the basis for the conceptual design of many other decontamination systems, especially light air-transportable systems for use by special forces in rapid operations. With regard to technology and mission concept, they are as unique as the TEP 90 on a worldwide scale, and also stand out due to their distinct flexibility and large range of applications.

The forward-looking TEP 90 and light decontamination systems delivered to the Federal German Armed Forces by Kärcher Futuretech GmbH will set the standard in the area of CBRN decontamination until well into the late twenties of the 21st century. ♦

### CBRN Tactical Decontamination/Detoxication OPS and SX34 System for CBR Decon of sensitive Equipment

**Dr. Stefano Miorotti**

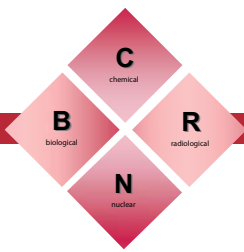
*CRISTANINI S.p.A. Via Porton, 15 37010 Rivoli V.se (VR) Italy*

#### Abstract

As former Commander of CBRN specialized unit I have been confronted to different combat conditions like deployment in mountains cities, open field, caves etc. I have been regularly confronted to unexpected situations where I had to adapt the theory into practical rapid reactions. These special situations require to have very flexible means to fulfill the mission. These are the situations in which you can test capabilities, flexibility and limits of the equipment in service. My experience in the decontamination process makes me aware of, that a lot of false detection can

lead to an overload in decontamination of units. Multispectral decontaminants are not always available and it is evident that the decontamination process must not damage the equipment to be decontaminated or be unfriendly to the environment.

Due to the limitation to the available manpower it is necessary to have a system easy to use and requiring minimum personnel. The system itself must be flexible and allow interoperability between different decontaminants (solid and liquid). Moreover the integration between small scale and large scale systems must be possible as force multiplier concept. The logistic support must



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be limited to the minimum in terms of consumables and maintenance. Moreover the system must be multipurpose in order to offer different capabilities just adding accessories.

In Afghanistan it is important to have a Decon/Detox system capable of working in altitude and able to use improvised water sources. The system must be easy deployable and be able to deliver electrical power. Decontamination of sensitive equipment was a shortfall: radio, detectors, night goggles, jammers etc.. Traditional methods would cause irreparable damage. The old fashioned traditional way was using solvent or other systems based on heating /vacuuming processes in dedicated shelter. This approach not only made the operation complicated and logistically unsuccessful, but was also a serious attempt to the material itself. CRISTANINI SPA, from 1972, devoted all its efforts to find out better ways to solve the problem of decontamination in a easy a simple way. ◆

#### REFERENCES:

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Rep.- Decontamination efficiency of the SX34 Decontaminant  
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- NBC JOINT LOGISTIC TECHNICAL CENTRE, ITA  
ARMED FORCES, Civitavecchia Rome, *Experimental re-  
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(UP 1178)
- CEB – CENTRE D'ETUDES DU BOUCHET – FRANCE-  
*Evaluation du systeme de decontamination SX 34* (UP 1222)
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mination of sensitive material.* (UP 1215)
- ITALIAN RESEARCH CENTREA AND STUSIES Jun.  
2010, *Cristanini SX 34 Decontamination System for sensitive  
equipment and its effectiveness in Radiological contamination-  
RN Lab Test 1<sup>st</sup> Draft Result dated 14 June 2010* (UP 1257)

<sup>1</sup> UP this acronym refers to CRISTANINI internal database.  
Complete tests report are available on request.

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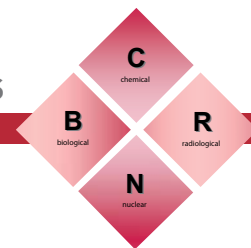
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## Modern Developments in NBC Defence Systems

**Dr. Bernhard C. Halstrup<sup>1</sup>, Peter S.H. Georgi<sup>2</sup>**

<sup>1</sup> Rheinmetall Landsysteme GmbH, Henschelplatz 1, 34127 Kassel, Germany

<sup>2</sup> Rheinmetall MAN Military Vehicles GmbH, Dachauer Straße 655, 80995 Munich, Germany

### Abstract

As of today both military as well as civilian first responders are facing new and ever increasing challenges. Asymmetric threats show up at places never expected before. This is especially true with the threat associated with CBRN-attacks but also valid for other types of and agents and different ways of release. To cope with such new threats new ways of reaction are mandatory. The solutions applied and products required for detection, identification, warning and counter-measures have to be flexible, fast and deployable all over the world.

The company Rheinmetall MAN Military Vehicles GmbH (RMMV) was established to better deal with the challenge of rapidly changing operational requirements and to provide innovative products tailored to the various needs of customers worldwide. Based on their respective experience both Rheinmetall Defence and MAN can make valuable contributions to such new products:

- outstanding analytical performance (Identification/Detection) based on more than twenty years of continuous research and development in this area
- full integration of suite equipment, offering military ruggedness, ergonomic set-up as well customized “easy-to-use” operational software
- various logistic as well as tactical carrier vehicles of all weight classes and protection levels
- world-wide contractor logistic support to assist the customers in all missions.

The presentation will especially focus on the synergy effects provided by the combination of the expertise of both MAN and Rheinmetall Defence. By choosing the “best from both worlds” the new company is determined to provide customers worldwide with most modern products needed to tackle their future challenges. ◆

## CBRN-Defence – the European Civilian Approach

**Dr. Irmtraud Taufer, Armaments Counselor**

*Permanent Representation of the Federal Republic of Germany to the European Union*

### Abstract

The CBRN threat spectrum is wide and includes in addition to possible terrorist attacks and natural disasters, accidents and pandemics. It is not only a matter of civil security preparedness at home, also the area of Common Security and Defense Policy is concerned. We can only meet the threat effectively, when prevention is part of our strategy. To make the best use of our resources, we must pool our efforts in a coordinating European framework.

An example of such coordination is the European Framework Cooperation between the European Commission, the European Defence Agency (EDA) and the European Space Agency (ESA).

It was set up last year to replace the hitherto practice of informal coordination on a case by case basis between the Commission's Framework Programme and the Defence.

Research within the EDA, through a systematic approach. An important aspect of this cooperation is that same content topics will not be processed and promoted twice. Tax payers money can only be spent once. The Fact that much of the technology in the field of security research can be used for both civilian and military applications underlines the need for this cooperation. As a result the Member States of the EDA are going to launch next year a Joint Investment Program on CBRN coordinated with the 2010 calls of the current Framework Programme. ◆

## A national response to CBRN threats

**Dr. Marc Cadisch, Director SPIEZ LABORATORY**

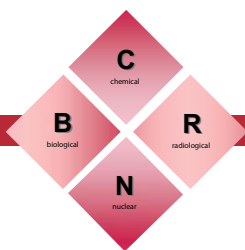
*The Swiss Institute for NBC-Protection, 3700 Spiez-Switzerland, marc.cadisch@babs.admin.ch*

### Abstract

Managing a coordinated and efficient response to possible CBRN threats poses a surprisingly similar set of challenges both to Switzerland and the European Union: Both are highly fragmented political entities with strong regional authorities, unevenly distributed resources, similar institutional structures and a relatively weak centre. The Swiss way of dealing with questions

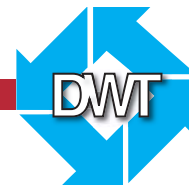
of horizontal and vertical coordination or with the management of limited resources cannot be adopted wholesale to the European level. However, certain measures taken in Switzerland over the past few years – such as working with a specific set of threat-scenarios to assess the needs of first-responders – might be useful as a comparative reference for future CBRN-planning on a transnational level. ◆





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## CBRN – A Nightmare for Forces ?

**Albrecht Broemme, Dipl.-Ing.** President of the Federal Agency for Technical Relief (THW)

*Provinzialstraße 93, 53127 Bonn, Poststelle@thw.de*

### Abstract

ABC-Intervention! A doomsday scenario for the personnel or a well controllable situation?

The longtime chief of the Berlin Fire Department and current president of the Federal Agency for Technical Relief, will point out in his presentation the range of interventions in the nuclear area (traffic accident with weak contaminated work clothes to

the nuclear power plant accident), in the biological field (bird flu to biological weapons) and in the chemical field (dangerous goods accident to poison gas exposure) and present on the basis of the capabilities of the intervention forces their control options. The goal is the unbiased approach to the „Sensitive term ABC“ the assessment of risks and the highlighting of the capabilities of civilian forces in the denial of risks. ♦

## Medical Biodefense – Challenges and Solutions

**Professor Dr. Lothar Zöller, Colonel**

*Bundeswehr Institute of Microbiology, Neuherbergstr. 11, D-80936 München, Germany Lothar.Zoeller@Bundeswehr.org*

### Abstract

The deliberate release of a biothreat agent would most probably become apparent as a cluster of cases with unusual symptoms, resembling a natural infectious disease outbreak caused by the same agent. Therefore, the importance of specific medical countermeasures can be well exemplified by looking at natural outbreak situations like the plague epidemics that occurred in Surat, India, in 1994 or in Madagascar in 2006. To stop the outbreak is the primary goal of medical countermeasures. Early identification of the causative agent is crucial and requires the availability of rapid field-deployable diagnostic assays as well as a range of state-of-the-art confirmatory assays. Early diagnosis enables the implementation of early antimicrobial treatment of patients and contacts and will help to avoid panic. The surveillance of endemic infectious diseases may provide an early indication of the potential natural source of the outbreak. Bioforensic analysis will help to discriminate natural from deliberate outbreaks.

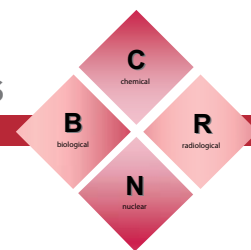
Current lists of potential biothreat agents contain a large number of viruses, bacteria and toxins. The biothreat risk, which is a function of the extent of potential damage and the probability of an event, is estimated to be greatest for *B. anthracis*, *Y. pestis*, botulinum toxin and ricin. But besides the classical biothreat agents, there are a number of new threats, which may arise from natural agents like Nipah virus or Ngari virus, which is a new reassortant bunyavirus causing hemorrhagic fever. The genetic modification of mousepox virus by insertion of the interleukin-4 gene has shown the principal possibility to shut down host immune response during infection, rendering the recombinant virus a lethal agent. Furthermore, in vitro synthesis of live organisms is a real possibility today and has been demonstrated for even highly complex microorganisms like mycoplasma.

A challenge in the field of diagnostics of biothreat agents is the lack of commercially available assays, which requires establishment of adequate inhouse assays. In Germany, such assays must be validated in accordance with the provisions of the German Medical Devices Act („Medizinproduktegesetz“) and used under a quality management system which meets the requirements of

the Guidelines of the German Federal Medical Society („Richtlinien der Bundesärztekammer“). The Bundeswehr Institute of Microbiology has set up a broad range of diagnostic assays fulfilling these criteria. The need for field-deployable diagnostic tools has been met by the establishment of a mobile modular system comprised of assays and devices for targeted sampling of specimens and rapid on-site diagnosis. Finally, there is a principal need for non-selective molecular diagnostics that would allow to screen specimens for the presence of any organism in a single diagnostic approach by employing broad-spectrum primers. A promising solution to this challenge has been developed by IBIS Biosciences and is now marketed by ABBOTT under the trade name PLEXID®. This technology uses broad-spectrum primers binding at conserved sites of the genome and amplifying the variable sequences lying in between. The amplicons are then measured by means of ESI mass spectrometry, which allows to determine their exact base composition in terms of the quantities of each nucleic acid residue and to identify the organism by means of a database containing published sequence information. Primers are chosen to cover the whole range of known bacteria, viruses and fungi.

The term bioforensics actually means taking molecular fingerprints of biothreat agents by means of sophisticated molecular typing techniques, enabling to identify and trace back a particular strain by means of a typing database. Such an approach may elucidate the source of an outbreak as has been shown in the Amerithrax case. However, huge international efforts are necessary to create such databases on the basis of standardized typing methods that can be utilized by all laboratories in a biodefense laboratory network. Twelve European countries are engaged in a current EDA category A project aiming at the establishment of such a standardized database.

New developments in the field of antimicrobial treatment and vaccination are, amongst others, a new recombinant monoclonal antibody against *B. anthracis* PA that has been included in the U.S. Strategic National Stockpile, as well as other recombinant monoclonal antibody and new recombinant anthrax vaccine



candidates. ST-246 should be mentioned as a novel small molecular weight compound that has proved efficacious as an anti-poxvirus drug in non-human primate trials for symptomatic and asymptomatic infections. Phase III clinical trials are currently

underway. This new compound is promising since it can prevent smallpox even if applied in the late phase of incubation time when vaccination alone would come too late. ◆

## CBRN tactical actical Decontamination/Detoxication OPS and SX34 System for CBR decon of sensitive Equipment

**Dr. Stefano Miorotti**

*CRISTANINI S.p.A. Via Porton, 15 37010 Rivoli V.se (VR) Italy, cristanini@cristanini.it*

As former Commander of CBRN specialized unit I have been confronted to different combat conditions like deployment in mountains cities, open field, caves etc. ... I have been regularly confronted to unexpected situations where I had to adapt the theory into practical rapid reactions. This special situation require to have very flexible means to fulfill the mission. These are the situation in which you can test capabilities, flexibility and limits of the equipment in service.

My experience in decontamination process make me aware that a lot of false detection can conduct to an overload in decontamination of units. Multispectral decontaminant are not always available and it is an evidence that the decontamination process must not damage the equipment to be decontaminated or be unfriendly to the environment.

Due to the limitation to the available manpower it is necessary to have a system easy to use and requiring minimum personnel. The system itself must be flexible and allow interoperability between different decontaminants (solid and liquid). Moreover the integration between small scale and large scale systems must be possible as force multiplier concept. The logistic support must be limited to the minimum in terms of consumables and maintenance. Moreover the system must be multipurpose in order to offer different capabilities just adding accessories.

In Afghanistan it is important to have a Decon/Detox system capable of working in altitude and able to use improvised water sources.

The system must be easy deployable and be able to deliver electrical power.

Decontamination of sensitive equipment was a shortfall: radio, detectors, night goggles, jammers etc..

Traditional method would cause irreparable damage.

The old fashioned traditional way was using solvent or other sys-

tems based on heating /vacuuming processes in dedicated shelter.

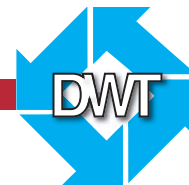
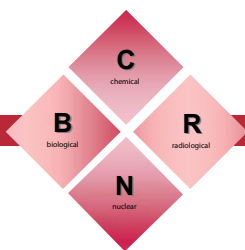
This approach not only made the operation complicated and logistically unsuccessful, but was also a serious attempt to the material itself.

CRISTANINI SPA, from 1972, devoted all its efforts to find out better ways to solve the problem of decontamination in a easy a simple way. ◆

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<sup>1</sup> UP this acronym refers to CRISTANINI internal database. Complete tests report are available on request.



## Advances in Handheld, Field-Based Chemical Identification

**Bruce Barnett**, Product Specialist and EMEA Sales

*Thermo Scientific Portable Optical Analysis (Formerly Ahura Scientific), 46 Jonspin Road, Wilmington, MA 01887, USA,*

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### Abstract

Advances in portable instrumentation are significantly altering the tactics and procedures used for chemical identification in the field. Rather than removing a sample from the hazard zone, responders can now rely on handheld instruments for rapid identification directly on-scene, saving time and increasing responder safety. Proven technologies like Raman and FTIR are gaining inroads as instruments meeting the ruggedness, analysis speed and true portability requirements are being deployed in theater across the world.

Raman spectroscopy is well-suited for field identification of liquids and powders encountered in weapons caches or clandestine laboratories. Raman enables responders to quickly identify potentially dangerous unknown substances through sealed con-

tainers, including commercial and homemade explosives and their precursors, CWAs, and toxic industrial chemicals. FTIR spectroscopy, another proven analytical technique, has become more viable in the field due to greater ease of use, faster response time and truly handheld instruments. New technology minimizes sample preparation while advanced chemometrics eliminate user interpretation for consistent, accurate ID results. This session will discuss the use of handheld instruments for field-based identification of chemical threats. Analytical performance will be presented along with case studies and user scenarios.

Keywords: Chemical Identification, Chemical warfare agents (CWA), Raman, FTIR, Handheld

## Current developments and objectives on CBRN Defence on the French Armed Forces' CBRN Defence

**Brigadier General Parlanti**, Chairman of the French Joint CBRN Executive Committee

*État-Major des Armées, Paris*

### Abstract

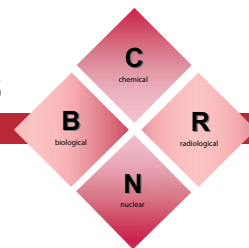
The 2008 French White Paper on National Security and Defence has described the threats and risks France could have to face in the mid-term future. Placed high among them, the threat of a terrorist attack against the French National Territory using CBRN materials has drawn a specific attention given its possible consequences. With respect to the Armed Forces' commitment to the National Defence and Security, the 2008 White Paper identified four generic operational scenarios including the protection of the National territory and the French people. In this particular case, the military forces could have to reinforce the Civilian Security assets when the National territory and its population are attacked or suffer from a natural, environmental or industrial disaster.

Against this background, the missions assigned to the military CBRN units have evolved beyond their traditional scope, na-

mely the protection of the military forces, to encompass the contribution to the protection of civilians primarily on the National territory but also abroad. Consequently, the Military CBRN Defence Units have now to be prepared to participate to Interagency CBRN Consequence Management operations alongside with the Civilian Emergency Units.

In order to allow the Joint Chief of Staff to address these two different operational situations, the military CBRN Defence is progressively managed in more joint way and the CBRN capabilities constitute now a joint pool of highly specialized units trained to carry out a wide range of missions in a broader environment. In parallel, the current equipments will be progressively replaced in the framework of a streamlined capacity policy aimed to set up a fully integrated Joint CBRN Defence system by 2020 the first block of which will be the Biological Detection System known as DETECBIO.





## Automatic Immunomagnetic Separation and Detection of Viruses – Identifying Adenovirus via Sandwich ELISA and PCR Amplification of the Hexon Gene

**Alois Friedberger, Christoph Heller, Andreas Helwig, Beatrice Geisberger und Ulrich Reidt**  
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### Abstract

The automated detection of viruses is a scientific challenge. A number of sensitive detection methods are known (e.g. PCR, ELISA, FISH etc.) but a major problem is the enrichment and separation of the viruses from environmental background. We present a fully automated capturing and separation system combined with one of the sensitive detection techniques. We developed a method for separation and detection of adenovirus (AdV) with antibody coated paramagnetic beads. After capturing, viruses were either detected by PCR or by sandwich ELISA. Detection assays were developed and implemented in a laboratory prototype for automated processing. We succeeded in enriching automatically AdV by immunomagnetic separation and detected

the species by sandwich ELISA and PCR amplification of a part of the hexon gene which encodes for a capsid protein of the virus. With AdV as a model organism we could show that such a fully automated detection system is an alternative to time-consuming conventional detection methods for viruses where cell culturing steps must be connected. The system can be regarded as a major step towards an automated stand-alone analyser for environmental virus monitoring. Capturing and enrichment of viruses and other analytes can be advantageous for protection in different defence and civil applications such as military camps or critical infrastructure. In addition the automated detection system could also work with other possible sample matrices for example in food defence or in health diagnostics. ♦

## A rapid deployable bio lab – Microbiological high-tech diagnostics for operations abroad

**Roman Wölfel, Ilona Mossbrugger, Eva Felder**  
*Dept. for Medical Bio Reconnaissance & Verification, Bundeswehr Institute of Microbiology, Munich, Germany*

### Abstract

The Bundeswehr Institute of Microbiology has developed laboratory equipment capable of rapid deployment to operations abroad. It allows reliable detection of biological warfare agents as

well as diagnosis of other dangerous diseases, even in low-resource environment. The equipment offers the possibility to investigate infectious diseases outbreaks in humans and animals using state-of-the art microbiological techniques. ♦

## An Integrated Approach to Detection and Identification of Aerosolized Biological Agents

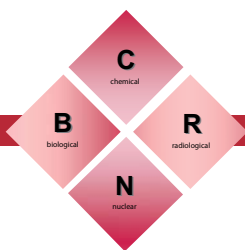
**Ken Klein**  
*Smiths Detection, 459 Park Avenue, Bushey, Watford, Herts, WD23 2BW, Great Britain*

### Abstract

Amidst growing global terrorist threats, aerosolized releases of biological agents are a real possibility that we need to be prepared for. nimized and appropriate medical care can be provided. Of particular concern are large high profile public gatherings and well known locations.

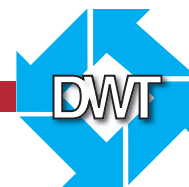
The SmartBio™ Sensor (SBS) is well suited to provide near-real-time detection of bio-aerosol releases as well as classification of the agent as being more like bio-toxin, bacterial spore, virus or vegetative bacteria. The system can be deployed in indoor or

outdoor settings and operated by battery or mains power. o a specific location. Data from a wide area array of SBS systems can be monitored remotely via Ethernet or wireless communication to a central command and control station, so that results from a series of SBS units can be monitored over time and space. While SBS functions as a Bio-detector, it also has proven effective at collecting microbes on specially coated sensor coupons that are part of the detection system. SBS detects bio-aerosol releases using two specially coated sensor coupons that are about the size of a bank card. Following a Bio-Alarm, the microbes



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2010: A National Approach in a Multinational Environment



that have adhered to the sensor coupon can be subsequently eluted from one of these coupons with a simple aqueous solution using a disposable pipette. solution can then be analyzed on the Bio-Seeq™ PLUS Biological Agent Identifier using a series of LATE PCR (Linear After the Exponential Polymerase Chain Reaction) assays that are highly sensitive and selective to the micro-

bes that cause Anthrax, Plague, Tularemia and Smallpox. Similarly, bio-toxins can be identified from this aqueous elution using the Prime Alert Toxin Screen which identifies Ricin, Botulinum and SEB (Staphylococcal Enterotoxin B). These systems are now commercially available and we will provide illustrations of how they are being deployed in the field. ◆

## Rapid on site detection of biowarfare agents with lateral flow assays

**Dr. Sibylle Pagel-Wieder<sup>1</sup>**, PD Dr. Frank Gessler<sup>1</sup>, Dr. Bärbel Niederwöhrmeier<sup>2</sup>,  
Dr. Hans Jürgen Marschall<sup>2</sup>, Dr. Birgit Hülseweh<sup>2</sup>, Dr. Heiko Russmann<sup>2</sup>,  
Marc André Avondet<sup>3</sup>, Dr. Nadia Schürch<sup>3</sup>, Dr. Olivier Engler<sup>3</sup>, Dr. Brigitte Dorner<sup>4</sup>

<sup>1</sup> *miprolab GmbH, Göttingen, Germany*

<sup>2</sup> *Bundeswehr Research Institute for Protective Technologies and NBC Protection (WIS), Munster, Germany*

<sup>3</sup> *Spiez Laboratory, Spiez, Switzerland*

<sup>4</sup> *Robert Koch Institute, ZBS3, Berlin, Germany*

### Abstract

With regard to the potential use of biological threat agents for bioterroristic purposes, rapid field methods, which can be used by minimally trained personnel, are required for efficient on-site detection. Immunochromatographic lateral flow assays (LFA) represent a field method fulfilling these needs. In a joint project with the Bundeswehr Research Institute for Protective Technologies and NBC Protection (WIS, Germany), the Science & Technology center of armasuisse (W+T/armasuisse, Switzerland), and the Federal Office of Civil Protection (Spiez Laboratory, Switzerland), miprolab GmbH was assigned to develop and produce lateral flow assays (LFA) for the rapid detection of toxins, bacteria, and viruses. Current LFA-developments include the main biological warfare agents of the so called „dirty dozen“, e.g. ricin, Staphylococcus enterotoxin B (SEB), Botulinum neurotoxin, Yersinia pestis (plague), Francisella tularensis (tularemia), Bacillus anthracis (anthrax), and Vaccinia virus (smallpox). Reagents

and antibodies were kindly provided by WIS, Spiez Laboratory, and Robert Koch-Institute (RKI). In general, test procedure starts by collecting and preparing the suspicious sample with a special sampling device provided with the LFA kit. The prepared sample has to be applied onto the sample port of the LFA and after exactly 20 minutes the read-out is done either with the naked eye or with a portable reader. This reader allows a semi-quantification of the test signals, a data back-up, and moreover, an impartial measurement. After assay development and in-house validation, LFA for the detection of the three toxins and plague were validated at WIS and Spiez Laboratory. The validation study includes both the determination of the detection limits and the recovery rate of the target in spiked environmental samples. To conclude, due to its simple application the LFA described here represents a method to be used by untrained personnel for the rapid detection and identification of biological threats in the field. ◆

## Automated DNA-Preparation System for Bacteria out of a Milliliter Liquid Sample

**Rainer Gransee<sup>1</sup>**, Tina Röser<sup>1</sup>, Klaus Stefan Drese<sup>1</sup>, Dominik Düchs<sup>1</sup>, Claudia Disqué<sup>2</sup>, Gudrun Zoll<sup>3</sup>, Stefan Köhne<sup>3</sup>, and Marion Ritz-Lehnert<sup>1</sup>

<sup>1</sup> *Institut für Mikrotechnik Mainz GmbH, Carl-Zeiss-Straße 18-20, 55129 Mainz, Germany gransee@imm-mainz.de*

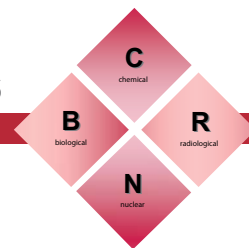
<sup>2</sup> *Molzylm GmbH Co.KG, Mary-Astell-Strasse 10, 28359 Bremen Germany*

<sup>3</sup> *Wehrwissenschaftliches Institut für Schutztechnologien, Humboldtstraße, 29633 Munster, Germany*

### Abstract

Preventing bacterial contaminations is a significant challenge in applications across a variety of industries, e.g. in food processing, the life sciences or biohazard detection. Here we present a fully automated lab-on-a-chip system wherein a disposable microfluidic chip moulded by polymeric injection is inserted into an operating device. Liquid samples, here obtained from an air

sampler, can be processed to extract and lyse bacteria, and subsequently to purify their DNA using a silica matrix. After the washing and elution steps, the DNA solution is dispensed into a reaction vessel for further analysis in a conventional laboratory polymerase chain reaction (PCR) device. We demonstrate the workability and efficiency of our approach with results from a 9 ml liquid sample spiked with E. coli. ◆



## Electrical biochips –

## A new dimension in detection of biological warfare agents

**Thomas Elßner**

*Bruker Daltonik GmbH, Permoserstrasse 15, 04318 Leipzig, Germany*

### Abstract

Worldwide there is an evident danger for the use of biological hazardous agents as weapons of mass destruction. The potential spectrum of bioterrorism ranges from hoaxes to classic biological warfare agents like the „dirty dozen“, which can produce mass casualties. High molecular-weight bacterial protein toxins such as botulinum neurotoxins or staphylococcal enterotoxins and highly toxic plant lectins like ricin are considered as potential biological warfare agents. The applicability of these toxins for small-scale terrorist attacks is based on their availability, ease of preparation, high toxicity and the lack of medical countermeasures.

Generally, toxin detection can be carried out by immunological, mass spectrometric and functional assays. The detection on

electrical protein array chips we presenting here is based on an enzyme-linked sandwich immunoassay, which includes capturing and detection of toxins by specific antibodies. Captured toxins are detected via measuring the electrical current generated by redox recycling of an enzymatically released substance. Simultaneous detection of five different bacterial and plant toxins (Botulinum toxin A, B and E as well as staphylococcal enterotoxin B and ricin) on one chip could be successfully demonstrated with excellent sensitivities. Furthermore identification of toxins spiked into diverse complex drinking matrices like milk, apple juice, red wine, coke, tea could be shown. In addition, ricin obtained from seeds of several varieties of *Ricinus communis* was detectable using the same chip. ◆

## Advances in Handheld, Field-Based Chemical Identification

**Speaker to be named**

*ServanTech GmbH & Co. KG, Dieselstr. 18, 61191 Rosbach, Germany*

### Abstract

Advances in portable instrumentation are significantly altering the tactics and procedures used for chemical identification in the field. Rather than removing a sample from the hazard zone, responders can now rely on handheld instruments for rapid identification directly on-scene, saving time and increasing responder safety. Proven technologies like Raman and FTIR are gaining inroads as instruments meeting the ruggedness, analysis speed and true portability requirements are being deployed in theater across the world.

Raman spectroscopy is well-suited for field identification of liquids and powders encountered in weapons caches or clandestine

laboratories. Raman enables responders to quickly identify potentially dangerous unknown substances through sealed containers, including commercial and homemade explosives and their precursors, CWAs, and toxic industrial chemicals. FTIR spectroscopy, another proven analytical technique, has become more viable in the field due to greater ease of use, faster response time and truly handheld instruments. New technology minimizes sample preparation while advanced chemometrics eliminate user interpretation for consistent, accurate ID results. This session will discuss the use of handheld instruments for field-based identification of chemical threats. Analytical performance will be presented along with case studies and user scenarios. ◆

## Design and Assessment of CBRN Identification Systems

**Roberta Collino, Y. Gaubert, S. Keller**

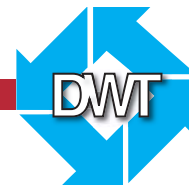
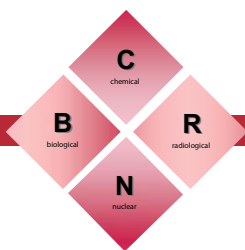
*Thales Security Solutions & Services, 20-22, rue Grange Dame Rose, 78140 Vélizy, France, roberta.collino@thalesgroup.com*

### Abstract

The emergence of asymmetric warfare has heightened the need to improve performance, basic functions (detection, identification...) and to optimise CBRN security network deployment and data management to mitigate risks for forces in the field. Thales is building on its operational analysis capabilities to further enhance the performance, mobility and usability of future CBRN solutions and is therefore developing a new generation of

miniaturised equipment, as the biological compact laboratory. Expert systems are under development to provide context-sensitive support to operators and guide them through recommended procedures and protocols. The presentation will focus on ongoing developments for biological agents identification. New concepts of compact systems allowing automated process from sample collection to analysis result will be highlighted. ◆





## Sporicidal efficiency of disinfectants on the surfaces of personal protective equipment – a model for the validation

Karin Lemmer<sup>1</sup>, Anja Roder<sup>1</sup>, Roland Grunow<sup>1</sup>, Martin Mielke<sup>2</sup>, Ingeborg Schwebke<sup>2</sup>, Georg Pauli<sup>1</sup>, Herbert Nattermann<sup>1</sup>

<sup>1</sup> Center for Biological Safety

<sup>2</sup> Applied Infection Control and Hospital Hygiene, Robert Koch-Institut, Berlin, Germany

### Abstract

The decontamination of personal protective equipment (PPE) used under worst-case conditions and suspected to be contaminated with biologically hazardous agents must be highly effective and safe. In the present study we developed and evaluated model test systems for validating the effectiveness of disinfectants on the surfaces of PPE. Due to previously reported advantages as well as sporicidal activity in vitro peracetic acid (PAA) was in focus of our study.

The development of the model test system started with spores of *Bacillus subtilis* as a surrogate for *B. anthracis*. The spores were spotted onto suitable carriers (e. g. 2.5x2.2 cm) prepared from PPE surface materials and were fixed by air-drying. Three different models were used which differed in the following aspects concerning the use of the disinfectant: In model 1 the carrier was completely submerged in PAA, in model 2 the contaminated area of the carrier was covered with 100 or 50 µl of PAA without any mechanical action, and in model 3 a volume of 10 µl of the disinfectant was mechanically applied to the contaminated area as a thin layer. Detergents were added to reduce the surface tension.

The effectiveness of PAA against spores of *B. subtilis* could be

confirmed in any of the tested models. Under these conditions, 1.0 % PAA reduced the viability of the spores by a factor of about 6 log<sub>10</sub> within 2 to 3 min of exposure which was the maximal reduction that could be measured in the test. When *B. anthracis* was used under the conditions of model 2 and 3, it was shown that the spores of this agent had a higher tolerance to PAA. 2.0 % PAA completely prevent the recovery of viable bacteria from spores within 2 to 3 min. In order to develop a safer but nevertheless valid test model, i.e. to avoid the use of *B. anthracis*, spores of *B. thuringiensis* were extensively tested especially under the conditions described for model 3 and using 2.0 % PAA in combination with different detergents. A high spore reduction (from 5 to 6 log<sub>10</sub> steps) could be observed within 3 to 5 min of PAA exposure.

Finally, the experience gained with the model carrier assays has been transferred to trials under more realistic conditions. The practical tests confirmed the efficacy of PAA when used in a concentration of 2.0 % for 3 min, i.e. parameters obtained in the model carrier assay. We propose to use the developed model systems as a tool for screening and evaluating disinfectants for their sporicidal efficiency for the decontamination of the surfaces of PPE before final validation under field conditions. ♦

## Patient and Casualty Decontamination Systems: Mobile Tent Based Decontamination System for Walking and Stretcher Patients

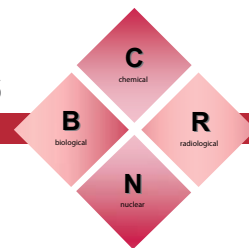
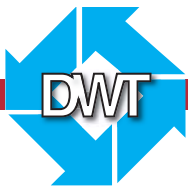
Thilo Schuppler, N. Dienst, G. Hemmer

OWR GmbH, Oberschefflenzerstrasse 9, 74834 Elztal-Rittersbach, Germany, [thilo.schuppler@owrgroup.com](mailto:thilo.schuppler@owrgroup.com)

### Abstract

Changes in Priority – Compared with battlefield mission support scenarios of yesterday, today's goals put significantly more importance on the protection of personnel after a CBRN attack than on restoring the mission readiness of equipment. Aside from classic military missions, armed forces must provide support for CBRN threats from terrorists or release of dangerous materials by natural disasters. Greater flexibility is required to cooperate with civil forces in a broad spectrum of scenarios focusing on saving people. Personnel decontamination, mobility and fast operational readiness are important criteria combined with a high throughput of people and flexible mission setup. Exercises have shown that strict separation of walking and stretcher patients is unpractical and the situation of an individual soldier or civilian can change within seconds. Tents are the backbone of the concept of personal decontamination and a new line of inflatable tents has been developed which provides signifi-

cantly more options and room in the space intensive task of casualty decontamination. The interior can be modified by the operators to achieve multiple tasks and react to complex missions. It is even possible to replace showers with an isolation unit. To increase the throughput of non-walking casualties, a sophisticated stretcher conveyer system has been developed to provide a stable and safe working area which allows personnel to thoroughly perform decontamination in the minimum of time. GD-6 is a highly effective water-free decontaminant for pre-cleaning of operatives wearing personal protection equipment. Sprayed onto boots or suits, GD-6 destroys CWAs within minutes. AlldecontMED is a decontamination solution for the effective detoxification and cleaning of the skin and even procedures for wound cleaning have been developed. Realistic training is essential and TOXsim is a non-toxic solution used for simulating skin, clothes and equipment contamination by CWA. Displacement or residues can easily be detected by UV light. ♦



## Requirements for skin decontaminants in emergency management and military operations

**Dr. Martin Weber, Lt. Colonel**

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### Abstract

Many toxic chemicals and chemical warfare agents can penetrate the skin or can produce toxic effects in the skin. These effects are distinctly different from the effects induced by other routes of exposure. Especially low-molecular-weight substances with a log P value from 1 to 3 play an important role in this context. These substances must be rapidly removed after contact. Skin decontaminants that are used for this purpose must be classified as medicinal products.

Decontamination products must be available as items of personal equipment and in large quantities at decontamination stations operated by CBRN defense units and civilian emergency

management services.

Skin detoxification can be achieved by the physical removal of toxicants and additional chemical degradation. Chemical agents can be degraded hydrolytically, oxidatively or enzymatically. In-vitro studies on pig skin that was exposed to thickened and non-thickened sulfur mustard, lewisite, VX and cyclosarin showed that solvents that can dissolve both hydrophilic and lipophilic toxicants are suitable for use against a large number of toxicants. Additional chemical degradation considerably improves the effects of decontaminants and prevents the spread of contamination. Oxidative degradation is the only method that is not selectively effective. ◆

## Modern Developments in NBC Defence Systems

**Peter S.H. Georgi, Member of the Board**

*Rheinmetall MAN Military Vehicles GmbH*

**Dr. Bernhard C. Halstrup, Head of Competence Center**

*NBC Defence Systems, Rheinmetall Land Systems GmbH*

### Abstract

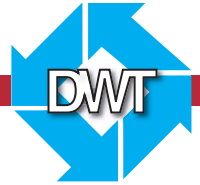
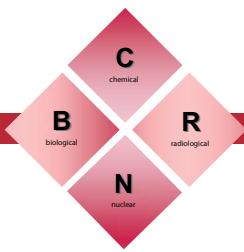
As of today both military as well as civilian first responders are facing new and ever increasing challenges. Asymmetric threats show up at places never expected before. This is especially true with the threat associated with CBRN-attacks but also valid for other types of agents and different ways of release.

To cope with such new threats new ways of reaction are mandatory. The solutions applied and products required for detection, identification, warning and counter-measures have to be flexible, fast and deployable all over the world.

The company Rheinmetall MAN Military Vehicles GmbH (RMMV) was established to better deal with the challenge of rapidly changing operational requirements and to provide innovative products tailored to the various needs of customers worldwide. Based on their respective experience both Rheinmetall Defence and MAN can make valuable contributions to such new products:

- outstanding analytical performance (Identification/ Detection) based on more than twenty years of continuous research and development in this area
- full integration of suite equipment, offering military ruggedness, ergonomic set-up as well customized "easy-to-use" operational software
- various logistic as well as tactical carrier vehicles of all weight classes and protection levels
- world-wide contractor logistic support to assist the customers in all missions.

The presentation will especially focus on the synergy effects provided by the combination of the expertise of both MAN and Rheinmetall Defence. By choosing the „best from both worlds“ the new company is determined to provide customers worldwide with most modern products needed to tackle their future challenges. ◆



## CBRN System Integration Challenge – Benefits to the Mission

**Wolfgang Klos, Colonel, Commander NBC Defence School**  
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### Abstract

Detection and identification of CBRN warfare agents and hazardous CBRN substances are playing an ever greater role in CBRN protection. It is getting ever more important to have suitable measuring techniques in order to rapidly obtain information about released substances. In addition, the need for measuring systems which allow the detection of highly toxic substances or warfare agents at the lowest possible concentration in the air and issue a warning has grown immensely. There is also an intense desire for smaller, hand-held but still efficient technical solutions which require few personnel, put robotics technology to use, if possible, and are best suited for selective employment in acute incident-induced situation, even in urban terrain.

For the German armed forces, international conflict prevention and conflict management operations will be the most likely operations in the foreseeable future. Therefore, in addition to the classic CBRN hazard potential, the CBRN reconnaissance forces have to reckon with natural and industrial CBRN hazards in the area of operations. Furthermore, camps and field facilities of the

own forces have to be protected against CBRN warfare agents and hazardous CBRN substances, CBRN monitoring from within convoys is needed for movements in the theatre of operations, and the CBRN threats posed by improvised explosive devices, namely CBR-IEDs and alternative release methods for hazardous CBRN substances, have to be coped with.

If you look at the different scientific areas, you will realize that in the field of CBRN reconnaissance technology there is a shared desire for a holistic approach offering an increased stand-off capability, high reliability in detection and alerting, and rapidity in identification.

If you look at the training requirements and judge by the sophistication of the measuring systems, you will realize that qualified scientific or laboratory-level training is necessary. An interdisciplinary qualification will not be possible since it would require an unmanageably broad spectrum of capabilities. Only the employment of modular forces which are tailored to the mission will lead to the desired results. In addition, we should strive for the „sharing“ between allies. ◆

## Comprehensive Air Treatment – a decisive requirement for future Collective Protection Systems (COLPRO)

**Jehudah Fehlauer**

*Beth-El Zikhron Ya'akov Industries Ltd., P.O. Box 166, 30951 Zikhron Yaaqov, Israel, [j.fehlauer@eu.beind.com](mailto:j.fehlauer@eu.beind.com)*

### Abstract

We take this opportunity to describe the ethos and aims of the House of Beth-El, and the development and production of filtration systems for civilian and military customers which are a consequence of them. These systems are based on an entirely new conceptual approach and are therefore not directly comparable to conventional systems. As a result of this development, the company has become the main supplier to almost all NATO armies in just 3 years.

The starting point at Beth-El is always consideration of the many and diverse threats to the air which soldiers breathe while deployed on global operations. The aim is to protect them, and to provide a single source of 'clean' air.

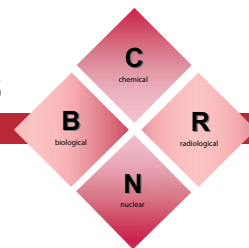
The most important diverse threats to the air are asymmetric terrorist attacks with unconventional means, industrial chemicals released intentionally or unintentionally, the influence of extreme weather conditions with high concentrations of dust and fine-dust and hazardous fecal bacterial germs which are found in the air in many operational theatres.

Mindful of this, Beth El has developed systems which offer successful solutions for modern armed forces with „complete protection“ that:

- Start with legal requirements (i.e. Protection from carbon monoxide in the work place).
- Consider the local weather conditions (temperature, humidity, dust, fine dust, germs)
- Also consider industrial pollution (Release Other Than Attack/ROTA, Toxic Industrial Chemicals/TIC)
- Account for the possibility of terrorism/enemy attacks on the air (dirty bombs, poisoning in the air, use of biological and chemical warfare agents).

Today, the company delivers combined ventilation-, air-conditioned-, CO-, NBC protection systems for „around the clock, 24/7“ operation in any climate zone. Thus military customers have a single-source supplier for worldwide operations, of the permanent and preventative protection of breathing air. No matter what type of air is outside, there is a definite requirement for user air quality inside. ◆





## Integration of individual CBRN protection into the clothing system of the soldier

**Hans-Jörg Wickert**

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### Abstract

Protection, carrying loads, weight, mission capability and operability, logistics, integration of components – all major points and challenges which have to be considered when generating a comprehensive personal protective equipment system. Can chemical protection be integrated into normal combat clothing systems, should it be integrated and if so, how?

Coming from the side of CBRN protection: When one thinks about chemical protective clothing, most people think heavy, thick overgarments – uncomfortable and hot to wear. Traditionally, CBRN protection consisted of overgarments, worn over the standard Battle Dress Uniform – adding up to 3 kilos of extra weight for the wearer to carry around with him. Ponchos were used to protect against the spill of massive amounts of CWAs. Is this situation overcome? Scenarios, threat and challenges:

have they really changed since the end of the Cold War, or are we still caught in old doctrines?

From the experience with Soldier Modernization Programs (SMP) there are more attractive components: ballistic protection including stab and shrapnel protection, C4I, navigation and load bearing systems. At the same time there are a lot of unsolved problems including energy supply, weight, interfaces and system integration to name just a couple. A major human factor is creating an acceptable balance of physical mobility for the wearer, without compromising on protection.

The presentation will focus on outlining current and foreseeable trends and developments in CBRN protection to be integrated into SMPs. Coming from different national approaches, a variety of options will be made more transparent. ♦

## The Analytical Task Force – An Element of a modern Civil Protection System

**Dr. Roman Trebbe**, Head of the Analytical Task Force

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### Abstract

One resource of Civil Protection judged as necessary is a special unit, which is capable of delivering fast analytical results in case of chemical incidents.

A research project, funded by the Federal Office of Civil Protection and Disaster Assistance (BBK) and carried out by the Technical University of Hamburg-Harburg (TUHH) and the Hamburg fire brigade was published in 2001. It set the theoretical bases for the establishment of a special CBRN reaction team, capable of performing field analytic.

In 2003 subsequently, the BBK started a pilot project to transfer the theoretical bases into an applicable concept. A working

group consisting of high-level emergency response personnel with high expertise in coping with CBRN situations as well as CBRN-specialists of the BBK was tasked to prepare the practical conversion of the bases and the definition of equipment and a deployment concept.

As a result of the working group's efforts since 2010 now seven ATF centres are in full operational service, thus covering the whole Federal Territory of Germany. The ATF centres are provided with state-of-the-art analytical equipment for chemical analysis in the field. Within two to three hours after receiving a call for assistance the ATF centres are able to reach all locations in an operating range of approx. 200 km. ♦

## Availability of Medical Countermeasures

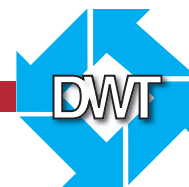
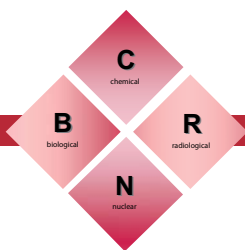
**Mark L. Johnson**

*Emergent BioSolutions, Walter-Gropius-Straße 17, 80807 München, [johnsonm@ebsi.com](mailto:johnsonm@ebsi.com)*

### Abstract

Biological weapon release brings with it an extreme timing challenge in that casualties can result in a matter of days or even hours. Medical Countermeasures (MCMs), if not used in a pre-

ventative manner, such as through vaccination, must be stockpiled in order to ensure a readily available resource to be used in the post-attack medical response. Recognizing that every nation has its own legal regime for researching and developing MCMs,



approving their use, procuring them for government stockpiles, detecting disease, authorizing the use of those stockpiles, transporting the MCMs to points of delivery, dispensing the MCMs to potential victims, and dealing with the consequences of those

medical interventions, the time to develop and execute a comprehensive preparedness and response plan is well in advance of an actual biological incident. The time is now! ◆

## Protecting People and Critical Infrastructure in a Multi-Organizational Approach to Hazard Response

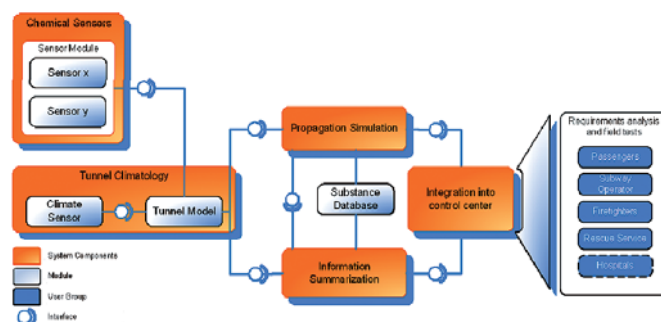
*Karin Potje-Kamloth, Knut Welzel, Marion Ritzi and Klaus Stefan Drese  
Institut für Mikrotechnik Mainz GmbH, Germany*

### Abstract

Subways are a potential target for terrorist attacks. For this reason, the release of harmful chemical substances in subway trains was chosen as test case for the OrGaMIR project. The project goal is to expedite evacuations and other rescue operations. The "OrGaMIR system" is based on an innovative approach to provide an information delivery tool, which in case of emergency will direct passengers to uncontaminated exits using methods like loudspeaker announcements or optical signals. Further, climatic aspects of tunnel architectures are examined and how any shortcomings can be eliminated by new safety features, thus guiding the remodelling of existing as well as the construction of new subway stations.

The sub-project being worked on at IMM seeks to develop, and integrate into a forecasting system, a modular analysis platform that will detect CBRNE substances by convoluting measured data from various sensors into an easily handled, concise set of information that can be used to visualize the propagation of hazardous materials inside subway and train stations. The modular platform can accommodate and read out up to six gas sensors

that will detect hydrolysis products resulting from the release of one or more hazardous substances with a certain probability and compare them with their stored Acute Exposure Guidelines Levels (AEGL) value. The universal applicability of this concept provides new insights into optimal designs of interfaces between micro- and information systems, or between multiple micro systems. ◆



*Fig.1: Scheme of the information workflow for CBRNE detection at subway stations*

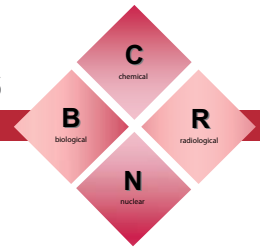
## Integrated Network Solutions for CBRN Detection

*Richard D. Read  
Lockheed Martin MS2, 9500 Godwin Drive, Manassas, VA 20110*

### Abstract

Lockheed Martin's AbleSentry™ networked array system of sensors provides early warning of the presence of radiological, chemical and biological agents over a medium-to-large grid area. The AbleSentry™ system consists of two main elements: 1) Remote Sensor Units (RSU) which are positioned as sentinels and 2) a Base Station where an operator can monitor, control and manage the entire sensor network. The RSU's open architecture design integrates the „best-of breed“ CBRN sensors into a single autonomous package. The RSU currently contains an IonMobility Spectrometry sensor capable of detecting chemical warfare agents and toxic industrial chemicals, a gamma radiation detector, and air particle counter and Laser Induced Fluorescence (LIF) sensors used to detect biological particles in the respirable size range. An integrated RSU collector facilitates confirmatory

analysis of a biological agent release. The Base Station is a ruggedized mobile computing platform that provides a graphical user interface of the geolocation of the RSUs on a military grid reference system. Data from all the RSUs is collected and analyzed at the Base Station which provides easily coded alerts for visual and audio notification of CBRN events. The system employs advanced proven software algorithms that utilize networking and data processing from multiple RSUs to determine local and network alarms, minimizing the potential of false positives and allowing adequate time for implementation of defensive measures. Lockheed Martin's AbleSentry™ system provides proven CBRN detection capability in an autonomous, small, lightweight, easy-to-operate package that can provide CBRN early warning capability for both the battlefield and infrastructure protection. ◆



## Design and assessment of the CBRN defense systems based on simulation

**Stephane Morel, Yves Gaubert**

*THALES SECURITY SOLUTIONS & SERVICES, 20-22, rue Grange Dame Rose, 78140 Vélizy-Villacoublay, France,*

*stephane.morel@thalesgroup.com*

### Abstract

CBRN protection systems are nowadays more often defined in their globality, considering the interaction between each component of the system. Thus, the detection capability is defined taking into account the impact on other capabilities such as identification, hazard management, countermeasures,...

This concept of Overall CBRN system can be declined in both civilian and military area, and cascaded at all levels, from operation theater in a multinational environment, to civilian sites protection (airport, rail station, mall...)

This global approach makes the definition of CBRN system architecture more and more complex, as well as its assessment. That is the reason why new tools have been developed, such as simulation. This tool helps the architects to better define the protection system, and the clients to better define their needs. The simulation is mainly used in:

- Clarifying the client needs,
- Defining the system (ie. number of sensors),
- Identifying the operational context (incl. CBRN threats),
- Assessing the architecture and/or comparing with other alternatives according to specific criteria defined with the client (ie. time of alert, casualties, costs, level of false alarms...).

Various simulation tools are available according to:

- Client profile (military or civilian)
- Type of threats (R, B or C, indoor, urban, open field)
- Level of output requirements (high-level operational requirements or primary items requirements)
- Specific needs (ie. human behavior or units behavior according to military doctrine)

In order to take into account this new environment and respond to the variety of requirements, Thales has developed a set of tools and softwares:

- The Battlelab : simulation lab to set up a genuine collaborative and interactive approach with the end-user, whose objective is often the rapid solving of an issue. This requires to move out of a conventional logic – need/technical solution – and leads towards a CD&E-type (Concept Development & Experimentation) and a continuous improvement approach (IDEA: Identification, Design, Experimentation, and Assessment)
- A portable and interactive toolset for the development and optimization of operational scenarios and solutions for defense and civil domains (MOBITIC, Sword...)
- Tools for the definition of CBRN protection systems for civilian sensitive sites (MATS).

## Consequence Analysis/Management: Modelling, Simulation and Software

**Norbert Kopp**

*tms – technisch-mathematische studien-gesellschaft mbh; n.kopp@tms-bonn.de*

### Abstract

The subject of the lecture is the consequence analysis and the consequence management of CBRN (Chemical, Biological, Radiological and Nuclear) events. It is about the spread of pollutants or agents.

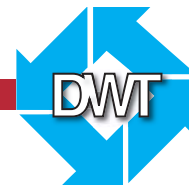
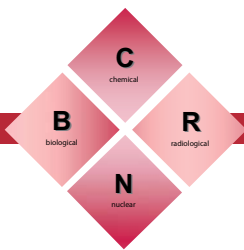
Consequence analysis in this context means the calculations and analysis of the spread of pollutants or chemical warfare agents such as the may be released in accidents, acts of terrorism or in the form of military ordnance.

Consequence management is the manner in which such an event is handled. This will include the warning of the population and – in the military context – the warning of affected

troops. Also the formats in which messages are composed and transmitted belong to it. Within NATO, the so-called ATP 45 (Allied Tactical Publication 45) is the regulation that prescribes the consequence-management in relation to CBRN events for the military.

An example of software from this area is NEWS (NBC Evaluation and Warning System). NEWS is a software system can simulate the propagation of both complex situations, and warning and hazard areas in accordance with the standard NATO ATP-45 charge. NBC NEWS will be the reporting and analysis of the Bundeswehr.





## Operational prediction of hazardous atmospheric dispersion with HEARTS

**Marcus Herold**

*Amt für Geoinformationswesen der Bundeswehr, Mercator-Kaserne, Frauenberger Straße 250, 53879 Euskirchen*

### Abstract

The atmospheric dispersion modelling system HEARTS (Hazard Estimation after Accidental Release of Toxic Substances) has been developed by BGIO (Bundeswehr Geoinformation Office) to predict short-term atmospheric dispersion of gaseous substances. In its operational mode, it is used by the German

Weather Service (Deutscher Wetterdienst, DWD) to answer requests by fire departments and other civilian organisations involved in CBRN defence. The dispersion forecasts for the next 6 to 12 hours arrive at the customer after not more than 30 minutes. The presentation shows the overall operational workflow and describes some aspects of the HEARTS system itself. ◆

## Robot based laser-drilling technologies in conjunction with chemical sensors

**Prof. Dr. Peter Kaul<sup>1</sup>, R. Makarow<sup>1</sup>, G. Holl<sup>1</sup>, U. Dölsner<sup>2</sup>, P. Peuser<sup>3</sup> and W. Platz<sup>3</sup>**

<sup>1</sup> *Bonn-Rhine-Sieg University of Applied Sciences, von-Liebig-Str. 20, D-53359 Rheinbach, Germany*

<sup>2</sup> *Explotech GmbH, Marbergweg 107, D-51107 Köln, Germany*

<sup>3</sup> *EADS Innovation Works, IW-SI, P. O. Box 800465, D-81663 München, Germany*

### Abstract

Stand-off detection is one of the most challenging tasks for detecting CBNR(E) threats. The problems related become even more complicated if a hazardous material is concealed – as in improvised explosive devices, dirty bombs, or chemical warfare agents used in terroristic attacks- with no direct sight to the CBNR(E) material. Stand-off detection systems operating over a distance of more than 50 m are not available or do not fulfil the demands for sensitivity, selectivity, investigation times, etc. A new approach of a stand-off detection system for hazardous materials is reported in this summary of the presentation. It can

be used if a verification of a suspicious unknown object is needed. A miniaturised Nd:Yag laser oscillator crystal can be mounted on a robotic platform. The laser crystal can be connected via a pumping fibre to the amplifier module and enables drilling holes with very small diameters into an object. This enables multiple paths for the identification or classification of the hidden bulk material, by analysing the ejected material or the volatile products of the laser-induced decomposition or by direct spectroscopic investigation of the material behind the packaging material. ◆

## Telemax – Effective Sensing and Sampling

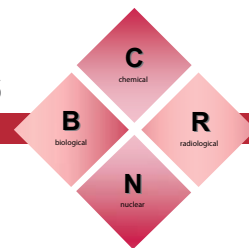
**Dr. Alexander Ciossek**

*Telerob GmbH, Vogelsangstr. 8, 73760 Ostfildern*

### Abstract

It is always the best if nobody is exposed to danger or has to risk his life. In the case of a CBRN incident everybody can be happy to explore the situation remotely with a robot. With the telemax one can even fulfill that task easily, efficiently and reliably. The manipulator can automatically pick up sensors, probe samplers

and tools. By means of the very simple control of the manipulator the measurements with sensors as well as the collection of samples can be obtained very quickly and efficiently. Because the sensors can be brought close to the inspected object the measurements maintain high quality and offer high certainty to recognize an existing threat.



## Automation of Sample Drawing with Robot Based System for Investigation of CBRN Disasters

**Olga Kuzmicheva**

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### Abstract

The investigation of emergency situations caused by natural disasters or major industrial or transport CBRN accidents requires the presence of qualified personnel at the affected area. Drawing samples is a common technique and plays an important role in detection and verification of a probable contamination. It requires multiple re-entering of the contaminated area and herewith exposes the investigation teams to rather high danger. In order

to protect the life of emergency teams and to contribute to the security restoration, an introduction of a semi-autonomous robotic system for safe automated sample drawing seems to be a suitable solution. The proposed paper presents the research project „Reconnaissance Robot (RecoRob)“ of the Friedrich-Wilhelm-Bessel-Institute devoted to development and realization of a semi-autonomous robot based system for investigation of CBRN-disasters and automated sample drawing. ◆

## Current Aspects of CBRN Decontamination

**Hans-Joachim Töpfer**

*Kaercher Futuretech GmbH, P.O. Box 140, D-71349 Winnenden (Germany), [hans-joachim.toepfer@de.kaercher.com](mailto:hans-joachim.toepfer@de.kaercher.com)*

### Abstract

Contaminated equipment can, in combination with the extreme physical and psychological stress, reduce the combat strength of the concerned troops considerably in the case of a CBRN situation. Regarding the CBRN threat, which is more and more difficult to assess yet still present, the quick elimination of CBRN contamination will be of remarkably high importance. In this context, some essential aspects of this subject will be analysed and presented from a practical point of view.

The aim of thorough CBRN decontamination is above all to render further actions possible without wearing personal CBRN protection equipment. Therefore the decontaminated material shall not present a source of danger which surmounts the acceptable residual risk.

The likelihood that military personnel and systems will be exposed to CBRN contaminants has increased. Military success depends on the effective use of electronic or other sensitive equipment. For this reason, especially the requirements relating to the „decontaminability“, „hardness“ and „compatibility“ of the material to be decontaminated should be scrupulously taken into account.

With regard to clearance decontamination or restoration, the question of how clean material should be in order to be clean enough or how clean it should be to be safe enough takes on a

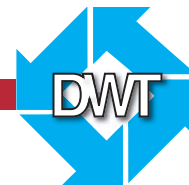
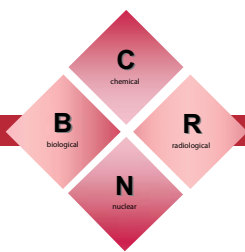
new dimension. This question also involves the criteria for assessing the relevant decontamination effect as the basis for issuing authorised clearance certificates as a pre-requisite for unrestricted further use of the decontaminated material. These aspects will have to be considered and answered by all the armed forces of all concerned nations especially when planning to repatriate defence material from missions abroad.

In this context, the real possibilities and limits of checking and proving the intended decontamination result should also be subject to an appropriate evaluation in real time.

In addition, the effects of decontamination measures on the environment should be considered realistically, especially in view of the fact that the use of CBRN warfare agents represents a major environmental disaster in its own right.

Another aspect concerns decontamination after the release of TICs/TIMs. An uncritical transfer of the criteria and principles for C decontamination to this issue cannot be accepted without further explanation and might have fatal consequences.

Decontamination can only be carried out successfully when considering it in its entirety. Uncritical treatment of individual aspects and relations or inadmissible simplifications, including those regarding differentiated training of soldiers at all levels, will inevitably have fatal consequences. ◆



## Specific Technological Solutions for Decontamination of Sensitive Equipment

**Markus Kostron**

*Kaercher Futuretech GmbH, P.O. Box 140, D-71349 Winnenden (Germany) [markus.kostron@de.kaercher.com](mailto:markus.kostron@de.kaercher.com)*

### Abstract

Different kinds of sensitive equipment can be mission critical. The chemical and biological decontamination of optical and electronic equipment which cannot be treated using aggressive liquid decontamination chemicals can be carried out by special vacuum procedures. This article will contemplate the spectrum of sensitive equipment in regard to the specific requirements and the compatibility with the vacuum decontamination process. The physical and microbiological basics and mechanisms of the

vacuum decontamination technology are described. Technical performance data, special features, capabilities and the easy use of the equipment will be explained. It also will be shown that at process temperatures below 75 °C and within 30 min process time effective biological and chemical decontamination can be ensured according NATO-standards. Passed several tests programmes and implemented in serial systems this specific technology represents a MOTS-Solution for thorough decontamination of sensitive equipment. ◆

## CBRN Decontamination: The Philosophy of the German Armed Forces

**Hans-Jürgen Bauer, Lt. Colonel**

*ABC- und Selbstschuttschule, Bereich Weiterentwicklung, Dezernat 3, Mühlenweg 12, D-87527 Sonthofen – [juergen5bauer@bundeswehr.org](mailto:juergen5bauer@bundeswehr.org)*

### Abstract

In the past five decades, decontamination in the Bundeswehr was geared towards restoring the operational capability of large force contingents. This stemmed from the assumption that the Bundeswehr would have to deal with an opponent threatening the territorial integrity of the Federal Republic of Germany. Today, the armed forces face new challenges, namely terrorism, the proliferation of weapons of mass destruction, „dual use“ and asymmetric warfare. The CBRN defence forces are confronted with a wide spectrum of operational scenarios ranging from crisis prevention to peacekeeping and peace enforcement. As integral part of CBRN defence, decontamination is a bigger challenge than ever and an extremely complex task. It has to be accomplished as quickly and effectively as possible and requires a high degree of professionalism with regard to organisation, effective devices, and specialised personnel and training. New materiel and equipment has to reflect this. In addition, parameters such as protection, environment, resources, mobility and modularity, and the latest developments in science and technology are

to be taken into account.

In many respects, a qualitatively new chapter was opened in decontamination, when the TEP 90 joint service decontamination system was introduced. The listed parameters have been implemented and the innovative, future-oriented system offers a high degree of flexibility and tactical mobility. However, even if, at present, the TEP 90 may well be called the most modern decontamination system worldwide, it is not suited for all missions due to its weight and size.

In view of the new strategic environment, this gives rise to the need for developing efficient light decontamination systems in addition to the existing ones. These mobile systems must be transportable in a cargo helicopter and suited for the rapid operations of airmobile forces.

With reference to the TEP 90, the technical realization of flexible and effective light decontamination systems will be retraced, and their current state of development as well as future perspectives in the field of robotics will be presented. ◆

## Test and Evaluation of BC-decontaminants: Methods and Challenges

**Martien P. Broekhuijsen**

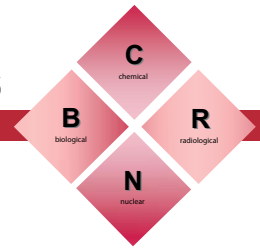
*Marble ChemBio Consulting B.V., Meerkoetlaan 7, 2636 ER Schipluiden, The Netherlands [info@marbleconsulting.nl](mailto:info@marbleconsulting.nl)*

### Abstract

Decontamination is in operational use since many years and many commercial products are available, but many issues remain. One of the main questions is how to test and evaluate decontamination. In the past, several large scale decontamination efforts have taken place. Testing of decontamination has its own

challenges. Several considerations need to be made when designing a test, including type of agent, live or simulant, test setup, scale of test, etc.. Different issues can be described for the use of C or B agents. No widely accepted standard for testing exists, cost for testing can be high, and pragmatic solutions based on ‘best practice’ are needed. ◆





## Purification of CBRN Contaminated Water

**Patrick Marcus, MSc**

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### Abstract

Having high quality refreshing drinking water in a sufficient quantity is one of the main keys for success for peace keeping missions around the globe. Since in most cases it is not known what the raw water quality in theatre will be, it has to be planned for a worst-case scenario. Worst-case in this context means that the raw water is highly microbiological, chemically and even radiological contaminated. As a result of this, the system used for water purification must be able to produce high quality drinking water according to highest standards (US EPA, EU etc.) from natural raw water sources. Even after a CBRN attack the system must be at least capable to produce drinking water according to STANAG 2136. Different water purification systems from Kärcher FUTURETECH have shown in many deployments around the globe, that they are able fulfill the above mentioned criteria. This is also confirmed by independent test results from various organizations (German Armed Forces (Wehrwissenschaftliches Institut für Schutztechnologien – ABC-Schutz (WIS)), TÜV etc.). After the purification process it is even more demanding to secure the high quality of the drinking water during distribution

for personal consumption in field deployment situations. Due to the often very harsh environmental conditions (high temperatures, increased dust load etc.) storage and distribution of high quality drinking water is only possible with an increased technological effort (chlorination, pipe loop system etc.). Therefore Kärcher FUTURETECH offers three different mobile systems for hygienic drinking water filling to secure the high quality of this water even after several weeks of storage under field conditions. These systems lead to a reduced logistical effort and to much more security, since the complete process can be controlled from raw water source till consumption. In a large disaster area and/or hostile environment these advantages are priceless.

As an example the light and air-transportable water purification and drinking water filling system of the German Armed Forces („leTAA“) is presented. This system consists of six palettes which can be transported by the armored light-weight truck „Mungo“ of the German Armed Forces. This system combines the already in the German Armed Forces introduced Waterclean (WTC) 1600 water purification system with the Water Packaging System (WPS) 1600 from Kärcher FUTURETECH. ◆

## Detection of Radiological and Nuclear Threats

**Klaus-Werner Schiff, Colonel**

*ABC- und Selbstschuttschule, Bereich Weiterentwicklung, Leiter, Mühlenweg 12, D-87527 Sonthofen – [klauswernerschiff@bundeswehr.org](mailto:klauswernerschiff@bundeswehr.org)*

### Abstract

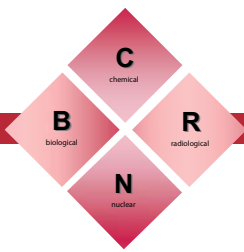
Today, the world is still confronted with a wide variety of radiological and nuclear threats. This topic is as relevant for our nations' homeland defence as it is for the ongoing military operations.

The threats arise from state-owned nuclear weapons and weapon components, from improvised nuclear and radiological devices, and from the numerous sensitive facilities, i.e. the nuclear power plants or laboratories that exist in many countries.

The current military operations are not conducted under an imminent threat posed by nuclear weapons. However, the proliferation of such weapons or more likely weapon components

which might fall into the hands of terrorists could politically or militarily influence any major operation including our homeland defence posture. In addition, recent operations have shown that abandoned sources from various origins can influence military operations in certain aspects like for instance the use of infrastructure, health matters et cetera.

The Panel should therefore not only provide information on certain topics, but should also facilitate an interagency approach in order to allow the civilian and the military side to identify common problem areas, to develop joint knowledge management and to efficiently coordinate measures taken to address problems, and thus to avoid any duplication of effort. ◆



## Zentrale Unterstützungsgruppe des Bundes für gravierende Fälle der nuklearspezifischen Gefahrenabwehr (ZUB)

**Elmar Lillpopp**  
*Federal Crime Office*

### Abstract

BMI und BMU haben in Zusammenarbeit mit den atomrechtlichen Aufsichts- und Strahlenschutzbehörden und den Innenressorts der Länder bereits 1999 ein generelles Konzept zur nuklearspezifischen Gefahrenabwehr erarbeitet. Bestandteil dieses Konzeptes ist u.a. die Einrichtung einer Spezialeinheit auf Bundesebene zur Unterstützung der Länder in nuklearspezifischen Bedrohungslagen. Bei der ZUB handelt es sich um eine amts- und ressortübergreifende Unterstützungseinheit des Bundes, die seit August 2003 einsatzbereit ist. In der ZUB arbeiten Spezialkräfte von Bundeskriminalamt (BKA), Bundespolizei (BPOL) und Bundesamt für Strahlenschutz (BfS) eng zusammen. Die Gesamtleitung der ZUB (einschließlich der ZUB-Geschäftsstelle) obliegt dem BKA.

Für einen Einsatz der ZUB kommen vor allem folgende Szenarien in Betracht:

- Abhandenkommen / Diebstahl radioaktiver Stoffe, durch die gravierende Gefahren verursacht werden können

- Verwendung radioaktiver Stoffe als Tatmittel, insbesondere durch
  - Androhung der Verwendung radioaktiver Stoffe im Rahmen von Erpressungslagen
  - Androhung terroristischer Anschläge mit radioaktiven Stoffen, z.B. mittels unkonventioneller Sprengsätze mit radioaktiver Beiladung („dirty bomb“)
  - Anschläge mit radioaktiven Stoffen, insbesondere Tatortarbeit an kontaminierten Tatorten.

Ziel der ZUB ist es, alle multidisziplinären Fachkenntnisse und Erfahrungen sowie personelle und materielle Ressourcen für die Bewältigung schwerwiegender Fälle der nuklearspezifischen Gefahrenabwehr zusammenzufassen. Polizeiliche Einsatzkräfte des BKA und der BPol wirken daher eng mit Wissenschaftlern des BfS zusammen. Im Ergebnis werden Maßnahmen der polizeilichen Gefahrenabwehr mit den erforderlichen Maßnahmen des Strahlenschutzes verknüpft. ♦

## Preventing terrorists acts by early detection of illicit RN material on-site

**Dr. Wolfgang Rosenstock**  
*Fraunhofer-INT, P.O. Box 1491, 53864 Euskirchen; Germany, wolfgang.rosenstock@int.fraunhofer.de*

### Abstract

To prevent the misuse of nuclear or radioactive material for malicious acts sensitive and reliable detection systems are mandatory. In addition to fixed monitors installed at border crossings, at the gateways of nuclear and industrial facilities or at the entrance of a military camp mobile or handheld systems are needed to detect the dangerous material on-site as early as possible with high reliability excluding false alarms caused by natural radioactivity (like in potash fertilizer) or by patients which have undergone a nuclear medical therapy respectively examination. We investigated highly sensitive passive detection systems for gamma and neutron radiation. In a static situation an overview of the situation is gained by scanning of buildings or objects with a gamma camera. Here gamma intensity is converted into

colors and then superimposed on the optical picture in order to get a visual overview. Terrorist attacks using nuclear material may have far reaching consequences compared to an attack with pure Gamma-sources. Nuclear material can be detected by neutron emissions from spontaneous fission as well as by the neutrons produced by (alpha,n) reactions in surrounding material. Therefore we operate a sensitive neutron detection system, fitted into a suitcase. With a special analysis procedure it is possible to categorize the substance in fissionable and non-fissionable material. In addition, the system can discover the existence of shielding material located around the source material. The presence of shielding material gives important information for the evaluation of the possible risk and appropriate protection measures. ♦

## Biosensors for standoff-detection of explosives and CBRN threats: Options and challenges

Dr. Martin Wehner<sup>1</sup>, R. Poprawe<sup>1</sup>, S. Schillberg<sup>2</sup>, C. Kühn<sup>2</sup>, N. Raven<sup>2</sup> and K. Hund-Rinke<sup>3</sup>

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<sup>2</sup> Fraunhofer-Institute for Molecular Biology and Applied Ecology, Forckenbeckstr. 6, 52074 Aachen, Germany

<sup>3</sup> Fraunhofer-Institute for Molecular Biology and Applied Ecology, Auf dem Aberg 1, 57392 Schmallenberg-Grafschaft, Germany

### Abstract

A bacterial biosensor containing a TNT-specific promoter driving the expression of a red fluorescent protein was constructed and tested. Upon contact with TNT or its derivatives the biosensors starts production and amplifies the chemical signal by producing a large number of fluorescent proteins (see figure 1). We have demonstrated that our biosensors detect TNT and ADNT in soil samples and express fluorescence after one day incubation period. The detection limit for induced fluorescence response was estimated to a ADNT concentration of 10 mg/L in solution.

When the fluorescent proteins are excited by a laser scanner the detection from remote and area mapping becomes feasible. Thereby the short-ranging chemical contact signal can be transformed into a long-ranging optical signal. For the excitation and detection of fluorescent signals from the biosensor a simple laser scanner can be used. Signal calibration with dye solutions of known concentrations revealed a production rate in excess of 105 fluorophores per cell for artificially activated biosensors (see figure 2). For the deployment of biosensors in the field sensor beads are proposed which could be prepared easily from alginate. Due to that large number of fluorescent proteins bacterial colonies on agar-plates and sensor beads were detected at daylight at a distance of 10 m using a laser scanner with a numerical aperture of NA ~ 0.6 mrad. At night, a LIDAR large aperture system was capable to detect sensor beads in 300 m distance. The achieved results demonstrate the suitability of biosensors for

standoff-detection. From other groups radiation sensitive biosensors have been proposed using DNA damage sensitive promoters which show bioluminescence when exposed to gamma-radiation. When the radiation sensitive promoter can be linked to the gene for the expression of fluorescent proteins the high production rate and therefore optical signal strength will be available for detection of radiation sources. Whole cell bacterial biosensors could become powerful tools to detect traces from explosives or short-ranging radiation from nuclear materials.



Figure 1: Biosensor construct for detection of TNT

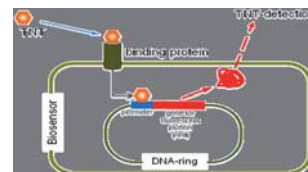


Figure 2: Activated fluorescent bacteria pinpointing dangerous areas.

### Acknowledgements

The feasibility study on TNT was funded by the North-Rhine Westfalia Ministry for Economics with financial assistance by the European Regional Development Fund (ERDF) ◆

## High Level Chemical detection equipment for civil security and catastrophe management

Dr.-Ing. Andreas Walte, Wolf Münchmeyer

Airsense Analytics GmbH, Hagenower Str.73, 19061 Schwerin

### Abstract

New Features in C-Detection Equipment and the procedures providing safety at chemical disasters and public events. The high density of chemical manufacturing places pushed the German government to develop new measures in prevention and counteraction of catastrophic situations. Also the series of public events that took place recently in Europe demanded new strategies and equipment to face the newer threats. New detection equipment has been developed to meet the higher requirements. Among these are handheld chemical detectors of improved sensitivity towards TICs and usability by first respon-

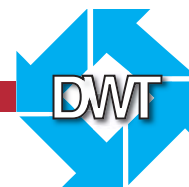
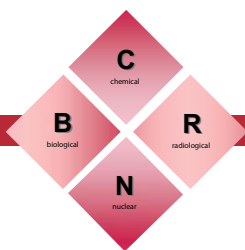
ders. Hybrid Sensor array technology has been introduced giving the ability to detect and analyze a much wider range of chemical compounds especially in the field of Toxic Industrial Compounds.

Stand-Off detection devices with identification capability and a significantly enlarged library with TICs and CWA help to supervise places of chemical accidents and complete stadiums or other areas where public events take place.

Also first steps towards quick identification or at least correct handling of biological samples have been made.

All security forces follow strategies that were developed in order





to achieve high level of safety.

Persons trained and measuring devices are linked using network capabilities and responsible communication and management centers.

The C-Detection technologies are briefly explained with focus to their application. Examples from real accidents and events (G8 summit 2008, FIFA world games) explain the procedures established and practical aspects of the new solutions. ◆

## Chemical Agent Detection and Identification with a Hyperspectral Imaging Infrared Sensor

*Philippe Lagueux, Vincent Farley, Alexandre Vallières, André Villemaire, Martin Chamberland and Jean Giroux  
Telops inc., 100-2600 St-Jean-Baptiste, Québec, Qc, Canada G2E 6J5*

### Abstract

Standoff detection, identification and quantification of chemical agents are fundamental needs in several fields of applications. Additional required sensor characteristics include high sensitivity, low false alarms and high-speed (ideally real-time) operation, all in a compact and robust package. The thermal infrared portion of the electromagnetic spectrum has been utilized to implement such chemical sensors, either with spectrometers (with none or moderate imaging capability) or with imagers (with moderate spectral capability). Only with the recent emergence of high-speed, large format infrared imaging arrays, has it been possible to design chemical sensors offering uncompromising performance in the spectral, spatial, as well as the temporal domain.

Telops has developed an innovative instrument that can not only provide an early warning for chemical agents and toxic chemicals, but also one that provides a „Chemical Map“ in the field of

view. To provide to best field imaging spectroscopy instrument, Telops has developed the FIRST, Field-portable Imaging Radiometric Spectrometer Technology, instrument. This instrument is based on a modular design that includes: a high-performance infrared FPA and data acquisition electronics, onboard data processing electronics, a high-performance Fourier transform modulator, dual integrated radiometric calibration targets and a visible boresight camera. These modules, assembled together in an environmentally robust structure, used in combination with Telops' proven radiometric and spectral calibration algorithms make this instrument a world-class passive standoff detection system for chemical imaging.

This paper presents chemical detection and identification results obtained with the FIRST sensor.

Keywords: hyperspectral imaging, imaging FTS, standoff detection, identification, quantification, chemical imaging, remote sensing, chemical agent, stimulant, surface contaminants. ◆

## Agenda 2020 for a European Certification System for CBRNE Sensor Systems and Devices – the Concept for a Road Map

*Dr. Jörg Beckmann<sup>1</sup>, R. Schmidt<sup>1</sup>, U. Ewert<sup>1</sup>, A. Berndt<sup>2</sup>, F. Streb<sup>3</sup>*

<sup>1</sup> *BAM Federal Institute for Materials Research and Testing, D-12205 Berlin, Germany, joerg.beckmann@bam.de*

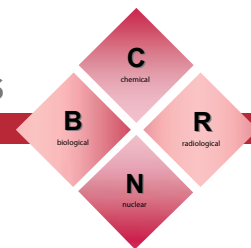
<sup>2</sup> *DIN Deutsches Institut für Normung e. V., D-10787 Berlin, Germany*

<sup>3</sup> *Seibersdorf Labor GmbH, A-2444 Seibersdorf, Austria*

### Abstract

Developments for technologies were initiated by the European Commission to improve future response capabilities and strategies to prevent terrorist attacks, to reduce the vulnerability to terrorism and to minimize the extent of damage from terrorist attacks. CBRN civil protection faces a growing significance in this concept and modern detectors and detection systems play the key role for a future reliable functioning that counters terrorism in Europe. The European Union is supporting the project

CREATIF which is dedicated to provide a communication platform for technology users and decision makers, providers, and testers. First ideas were designed, strategies developed, preconditions and rules were named for a future internationally recognized certification system. A concept for a future European Certification System for CBRNE Sensor Systems and Devices and Processes has been developed, which is described in more detail. ◆



## The International Committee of the Red Cross (ICRC): Towards international assistance to victims of nuclear, radiological, biological or chemical events

**Robin Coupland**

*International Committee of the Red Cross, 19, Avenue de la Paix, 1202 Geneva, Switzerland*

### Abstract

The risk of use or alleged use of nuclear, radiological, biological or chemical (NRBC) weapons by States and other entities generates a variety of possible scenarios and complex questions for how a coordinated international humanitarian assistance might be achieved whilst ensuring the health and security of personnel bringing that assistance. So far, these issues have more often been considered from a military point of view, leaving many humanitarian questions unanswered.

In view of its mandate to assist victims of conflict and other situations of violence, the ICRC could sooner or later be called on to respond to an NRBC event. Its wish to take a proactive approach, building on its experience of previous NRBC events, spurred the ICRC in 2007 to tackle the NRBC issue starting with a risk assessment and an assessment of what capacities exist to mount an effective response to assist the victims of an NRBC event.

In an assessment of the risk of use of NRBC weapons, the ICRC identified and refined 11 risks, each with its own implications for assisting victims and in terms of personnel health and security.<sup>1</sup> A lack of international capacity to assist victims of an NRBC event also became apparent even though many States have developed national capacities that could be deployed rapidly and effectively in response to a domestic NRBC event. Discussions of the deployment of such national capacities at an

international level are still in their early stages.

The ICRC then carried out a feasibility project to examine the operational capacity that the ICRC should maintain, improve or acquire in order to assist victims of an NRBC event. It soon became apparent that the feasibility could not be considered without a reality based approach.<sup>2</sup> In 2009, based on the conclusions of the project, the ICRC decided to go ahead with the creation of a response capacity, including a capacity to assist victims, over a 5-year period (2010–2015). By developing this capacity, the ICRC aims to ensure the health and security of ICRC staff in an NRBC event, while maintaining operational continuity in the affected context(s) and assisting the victims to the extent possible. ♦

<sup>1</sup> Dominique Loyer and Robin Coupland, „Who will assist the victims of use of nuclear, radiological, biological or chemical weapons – and how?“ *International Review of the Red Cross*, Vol. 89 June 2007, p.333, on the ICRC website at: [http://www.icrc.org/Web/Eng/siteeng0.nsf/htmlall/section\\_review\\_2007\\_866?OpenDocument](http://www.icrc.org/Web/Eng/siteeng0.nsf/htmlall/section_review_2007_866?OpenDocument)

<sup>2</sup> Robin Coupland and Dominique Loyer, „International assistance for victims of use of nuclear, radiological, biological and chemical weapons: time for a reality check?“ *International Review of the Red Cross*, Vol. 91, June 2009, p.329, on the ICRC website at: <http://www.icrc.org/web/eng/siteeng0.nsf/html/review-874-p329>

## High Level Chemical detection equipment for the security at public events

**Nuno Ferreira, Wolf Münchmeyer, Dr.-Ing. Andreas Walte**

*Airsense Analytics GmbH*

### Abstract

New Features in C-Detection Equipment and the procedures providing safety for public events.

The high density of chemical manufacturing places pushed the German government to develop new measures in prevention and counteraction of catastrophic situations.

A major focus during instrument development is to provide security on large public events through the preventive use of c-detection equipment providing a high security level.

The series of public events that took place recently in Germany and Europe demanded new strategies and equipment to face the newer threads.

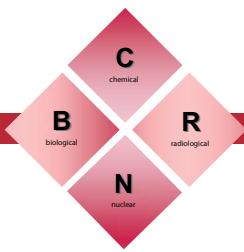
New detection equipment has been developed to meet the hig-

her requirements. Among these are handheld chemical detectors of improved sensitivity towards TICs and usability by first responders. Hybrid Sensor array technology has been introduced giving the ability to detect and analyze a much wider range of chemical compounds especially in the field of Toxic Industrial Compounds.

Stand-Off detection devices with identification capability and a significantly enlarged library with TICs and CWA help to supervise places of chemical accidents and complete stadiums or other areas where public events take place.

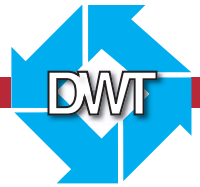
Also first steps towards quick identification or at least correct handling of biological samples have been made.

All security forces follow procedures that were developed in



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order to achieve high level of safety. Persons trained on measuring devices are linked using network connectivity. The C-Detection technologies are briefly explained with focus to

their application. Examples from events (G8 summit 2008, FIFA world games, NATO summit 2009) explain the procedures established and practical aspects of the new solutions. ◆

## Bioagent Detected, Now What?

**Dr. Andreas Hartmann**

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### Abstract

Intentional release of aerosolized B. anthracis spores as a biological weapon remains a major concern. Inside the body, spores germinate into bacteria that multiply and secrete toxins. Initial symptoms of inhalational anthrax (sore throat, mild fever, and cough) are non-specific. Thus, early symptoms often resemble common upper respiratory disease and may be mistaken for the common flu. Moreover, several days may pass till any symptoms appear at all. To counter large scale disasters, such as at a world

sports championship, it is becoming more recognized that the presence of devices to detect bioagents can play an important role in the overall preparedness plan. However, what if something is actually detected? Are there proper medical countermeasures in place and on site that would allow responsible reaction to treat those who have been exposed? Are emergency responders (e.g. police and medical experts) adequately protected in order to respond to a bioterrorist attack? ◆

## Disaster Relief Operations – NRF and beyond

**Andreas Kayser, LTC**

*SHAPE CPP WMD CBRN SO, Avenue de Londres 101, 7010 SHAPE, Belgium*

### Abstract

Disasters sometimes exceed the capacities of national governments and result in the need for international assistance. Speed, relevance, quality and effective transfer of assistance at the phase of emergency response will have a positive impact on the quality of the recovery phase in the long run, as well as its short term advantages. With regard to Consequence Management (CM) and/or Disaster Relief (DR) the overall focus of our mission is to help to mitigate the effects of natural or manmade catastrophes.

In the event of a large scale disaster, military forces will likely react to cooperate with and enable the humanitarian relief from other international bodies and non-governmental organizations or to establish initial lines of communication in theatre. They will mainly focus on assisting the provision of humanitarian relief to the region / population in need. “

The briefing provides an overview about the capabilities within NATO to react on large scale disasters and offers a platform for further discussions about roles and functions of NATO's support to disaster relief operations. ◆

## LLR-Detection mobile and stationary

**Dr. rer. nat. Jürgen Böttcher**

*ThermoFisher Scientific Messtechnik GmbH, Frauenauracher Straße 96, 91056 Erlangen, Germany*

### Abstract

Mobile detection / discovery of hidden radioactive sources or contaminated material needs detectors with very high efficiency. The same is to detect mobile material from stationary detectors. The impact of local dependant natural background on detection values should be prevented. That is realized with the Natural Background Rejection Method (NBR). Fast mobile detection (within one second) with integrated nuclide identification is not realistic because of the poor integral

values in the photo peaks. Mobile detection combined with a GPS-supported mobile map with coloured track visualisation in combination with the NBR method is presently the most powerful system for gamma and neutron detection from helicopters or vehicles.

The same detector features are used in the quasi stationary portal detection system for scanning of personal and vehicles. Both systems have to run automatically with rather no false alarms. Expert knowledge of operating personal is not needed. ◆



## Product and Company Guide

### Beth-El Zikhron Yaaqov Industries Ltd.

#### NBC – Protection and treatment of the air from a single source

*(CBRN) „No matter what type of air is outside, there is a definite requirement for user air quality inside“. We take this opportunity to describe the ethos and aims of the House of Beth-El, and the development and production of filtration systems for civilian and military customers which are a consequence of them.*

Beth-El means „House of God“ and its name reflects its founding by a Christian community who immigrated to Israel from the early 1970's, mostly from the Stuttgart area. Today, the community is made up of more than 1 000 German citizens; and a second generation is now growing up in Israel. Besides Hebrew, the community continues to speak their Mother-tongue „Swabian“.

From the beginning, the company dealt with the development and construction of complex collective protection bomb-shelters for the Israeli Civil Defense Command. It has now installed tens of thousands of systems in the bomb-shelters of private homes, hotels, hospitals, schools, day-care centers, homes for the elderly and many other civilian and military facilities.

These systems have been tested not merely in exercise scenarios, but have also been proven in times of actual crisis. For example, in the Iraqi war of 2003, all the bomb-shelter systems in Israel were activated.

Parallel to bomb-shelter systems, Beth-El has developed systems of collective protection for the Israeli Armed Forces, filtering the air breathed by personnel inside armoured vehicles. Additionally, other systems were provided, cleaning the combustion air of engines from dust and fine-dust.

Although the company has only exported its products since 2001, today it is the world's leading company for collective protection in armoured vehicles. The main reason for this impressive success has been Beth-El's resolve to assess and understand evolving threats in dynamic operational scenarios; and to take this understanding as the foundation for the design of its novel products, products which are technologically sophisti-

cated, yet simple to operate.

These systems are based on an entirely new conceptual approach and are therefore not directly comparable to conventional systems. As a result of this development, the company has become the main supplier to almost all NATO armies in just 3 years.

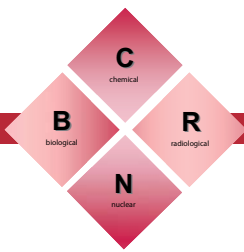
now the norm. Sadly, it should be assumed that terrorist groups have, or will soon have, access to agents of unconventional warfare. The possibility of attacks using such agents is very real. They could come with no warning and would probably be intended to affect the air breathed by soldiers in convoys or mili-



#### Operational Conditions and Threats Facing Modern Armed Forces

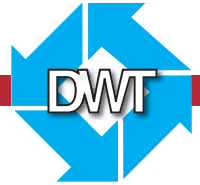
The starting point at Beth-El is always consideration of the many and diverse threats to the air which soldiers breathe while deployed on global operations. The aim is to protect them, and to provide a single source of 'clean' air. Asymmetric terrorist threats to forces deployed on international duties are

tary facilities. The main feature and danger of such threats would be the surprise effect, which would leave insufficient warning time for troops to activate their protection measures. For the affected soldiers, this would be a deadly trap. This highlights a clear need for preventative and permanent protection, similar to the mine/IED protection which is now a characteristic feature of current operations.



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In addition, industrial chemicals released intentionally or unintentionally, create a further threat to soldiers and their material. It is also important to consider the influence of extreme weather conditions, with high concentrations of dust and fine-dust. There is also a threat from the hazardous fecal bacterial germs which are found in the air in many operational theatres. These can se-

struct a filtration system that can operate on a continual basis in vehicles, as well as in stationary and mobile infrastructure over a period of months. This goal has been achieved through various patented technologies, for example, through the development of a cyclone filter with dust- and fine-dust separation capability. This has been developed to such an extent that it prevents the clog-



riously affect the health of soldiers, and can lead to the loss or destruction of expensive and operationally important equipment. There is also the need for commanders to demonstrate a 'duty of care', accounting for national and international health and safety regulations.

## The Solution from Beth-El

Mindful of this, Beth El has developed systems which offer successful solutions for modern armed forces with "complete protection" that:

- Start with legal requirements (i.e. Protection from carbon monoxide in the work place).
- Consider the local weather conditions (temperature, humidity, dust, fine dust, germs)
- Also consider industrial pollution (Release Other Than Attack/ROTA, Toxic Industrial Chemicals/TIC)
- Account for the possibility of terrorism/enemy attacks on the air (dirty bombs, poisoning in the air, use of biological and chemical warfare agents).

The biggest challenge here is to con-

ging of the downstream protection filter, even in the most adverse weather conditions. Filters were commonly said to „age“ due to degradation by humidity. By their special impregnation of the active charcoal, Beth El has virtually eliminated such „ageing“, making its filters suitable for continuous operation.

## The product platform of Beth-El

Today, the company delivers combined ventilation-, air-conditioned-, CO-, NBC protection systems for „around the clock, 24/7“ operation in any climate zone. Thus military customers have a single-source supplier for worldwide operations, of the permanent and preventative protection of breathing air. The product platform includes:

- Combined ventilation- and NBC collective protection for armoured command-, function- and transport vehicles, e.g. For the following vehicles of the German Armed Forces: DINGO 2, YAK, EAGLE IV, MUNGO, BOXER, WISENT, GFF 4 (KMW), ZETROS, ACTROS, UNIMOG.

- Combined ventilation-, air conditioning-, and NBC protection system for the armoured vehicles of more than 30 armies, NATO and worldwide.
- Combined ventilation-, air conditioning-, CO- and NBC protection systems for combat vehicles with weapon stations, for example PIRANHA V.
- NBC collective protection for field camps, command posts, modular and mobile medical facilities, containers und permanent infrastructure, e.g. for the air-supported tent and the standard tent of German Military units.
- The mobile isolation chamber, the IsoArk, can be integrated into medical facilities as a negative pressure system, as was the case with the German Medical Corps in their Congo mission in 2006. It is also possible to integrate the IsoArk without difficulty in positive pressure operation.

## Conclusion

Just barely 10 years ago, the „Swabian-Israeli“ company Beth-El began exporting their NBC protection systems; and since then they have directed their efforts to developing new products, based on rapidly evolving operational requirements and the threats which face armed forces today. Global operations present adverse environmental conditions, and permanent precautions are necessary to ensure the purity of the air breathed by forces deployed in such hostile environments, whether in vehicles or base accommodation.

Beth-El has taken these framework requirements into consideration from the beginning, and has equipped modern armed forces with the respective combined collective protection systems over the years. Today Beth-El systems protect thousands of soldiers of NATO forces amongst other nations, in Afghanistan, the Balkans, Iraq and elsewhere. Beth El systems keep soldiers safe, every day, protecting them from harm, and providing them with the fresh, clean air they need to deliver effective military capability. ♦

*„Sometimes all I need is the air that I breathe ...“ Song of the British rock band „The Hollies“, 1974*



## State of the Art Decontamination

### Overview of Kärcher Futuretech GmbH

*(CBRN) Kärcher Futuretech GmbH in Winnenden near Stuttgart was spun off in the year 2005 to become an independent subsidiary of Alfred Kärcher GmbH & Co. KG. Kärcher – the largest manufacturer in the world of high-pressure cleaning appliances – employs more than 7,100 people and has more than 40 subsidiaries all over the world.*



The forward looking systems developed and produced by Kärcher Futuretech GmbH are used every day by more than 100 armed forces, civil defence and relief organisations, etc. Beside mobile field camp systems, water purification plants and textile NBC protection systems, the company is especially well-known as a worldwide market leader in the area of CBRN decontamination.

### „State of the Art“ in decontamination has a name: TEP 90

With the procurement of 73 TEP 90 decontamination systems in the years 2007 to 2010, the Federal German

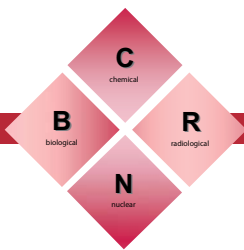
Armed Forces were able to fill an important skills gap in the area of NBC defence and also in protected vehicles (carrier vehicles with protected cabs from IVECO Magirus AG). With the TEP 90, the German Armed Forces features the most modern and efficient system of this class currently available with outstanding, worldwide leading technology.

The container-based TEP 90 decontamination system has a consequent modular structure, and consists of decontamination modules which can be used independently and include all components necessary for carrying out thorough,

mission-optimised decontamination close to the contaminated troop. The TEP 90 ensures the following main functions:

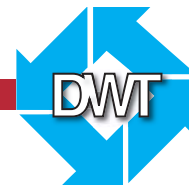
- Decontamination of persons
- Decontamination of personal NBC protective clothing and personal equipment
- Decontamination of sensitive equipment
- Decontamination of large vehicles
- Decontamination of aircraft
- Decontamination of the interiors of vehicles and aircraft
- Decontamination of supply items and packaging receptacles





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- Decontamination of limited road sections, plants and installations (infrastructure)
- Disinfection and vermin control measures

In addition, the decontamination system is able to support auxiliary tasks such as measures in the area of hygiene, fire-fighting and transport of water.

In addition, the TEP 90 decontamination system may also be deployed after missions and before returning to the home country, also in the form of epidemic control/prophylaxis and vermin destruction etc. during 'out of area' operations.

The TEP 90 decontamination system uses state-of-the-art decontamination technologies and decontamination agents. It is designed for unlimited operation in a temperature range of -30 °C to +49 °C in the climatic zones determined according to STANAG 2895. To achieve the wished decontamination result especially under winter conditions,

it is absolutely necessary to use CBRN decontamination agents which are designed specifically for this temperature range (RDS 2000, BDS 2000, GDS 2000).

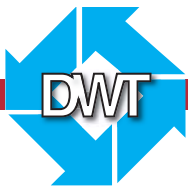
The hydraulic crane system integrated into the carrier vehicle is used to set the individual decontamination modules down at the respective decontamination stations. For the decontamination of large vehicles (tanks, etc.), decontamination module 1 remains on the carrier vehicle. A crane basket is mounted to the crane arm. From this basket, all kinds of vehicles can be decontaminated efficiently even from above. Decontamination module 2 features a highly effective vacuum decontamination device for B and C decontamination of sensitive optical and electronic equipment, etc. Decontamination module 3 is used for the decontamination of persons and, in addition to the shower section, includes a special thermo-electrical energy module, a water tank, an air-conditioning unit

and an inflatable tent for undressing and dressing to ensure a proper decontamination process.

The Decon Shuttle (decontamination module 4) is used independently for the decontamination of the interiors of battle tanks, vehicle cabs, helicopters and transport aeroplanes, etc.

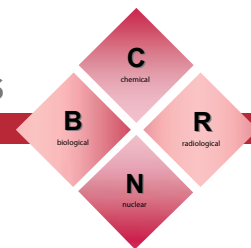
## **The Kärcher family of highly effective CBRN decontamination agents – a future-oriented standard for state-of-the-art decontamination**

The family of highly effective rapid-action agents developed by Kärcher Futu-  
retech GmbH for the removal of radioactive contamination, inactivation of relevant pathogenic micro-organisms and detoxification of highly toxic chemical warfare agents ensures at the same time a sufficient level of storage stability, agent handling safety, good compatibility with the material to be decontaminated, and a minimised impact on the



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environment. This family of products includes the following decontamination agents:

- RDS 2000 (N decontamination agent) – specific combination of an aqueous surfactant system with appropriate complexing agents, oxidants or other auxiliary substances.
- BDS 2000 (B decontaminant system) – based on a special thermally stable peracetic acid; applied in the form of an aqueous foam for the decontamination of surfaces, or in the form of a thermal aerosol for the decontamination of compartment air (interiors). For special decontamination requirements, specific enzymatic decontamination agents will also be available from now on.
- GDS 2000 (non-aqueous C decontamination agent) – for the quick and effective detoxification of all known chemical warfare agents (including thickened chemical warfare agents); manufactured industrially, ready for use; with a storage life of over 10 years.

The new decontamination agents clearly represent the state of the art in the area of CBRN decontamination. They are biologically degradable and suitable for application even under harsh winter conditions.

## Light, air-transportable decontamination systems for special forces

The state-of-the-art Kärcher decontamination technologies and agents used in

the TEP 90 also form the basis for the conceptual design of many other decontamination systems, especially light air-transportable systems for use by special forces in rapid operations.

The light decontamination systems developed for special forces are designed and built for transport by the protected “Mungo” mission vehicle and the respective system trailer, or for air transport by CH 53 helicopters. The systems are currently in the phase of delivery to the Federal German Armed Forces.

With regard to technology and mission concept, they are as unique as the TEP 90 on a worldwide scale, and also stand out due to their distinct flexibility and large range of applications.

The family of light air-transportable decontamination systems for special forces includes the following components:

The Light System for the Decontamination of Persons allows the thorough decontamination of 100 soldiers and their personal equipment within three hours. For this purpose, it features a module for the decontamination of persons and another module for the decontamination of personal equipment.

Correspondingly, the Light System for the Decontamination of Sensitive Equipment allows the thorough decontamination of sensitive equipment. In addition, it comprises a special module for the decontamination of the interiors of vehicles and aircraft.

The Light System for the Decontamination of Material is used for the thorough decontamination of the special forces’

vehicles.

The Light System for the Decontamination of Infrastructures enables the rapid decontamination of crucial infrastructural mission elements such as important road sections, plants, ramps, etc.

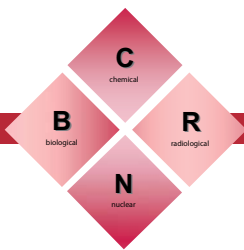
To ensure water supply for the decontamination measures on the basis of the light decontamination systems, special water transport and supply modules or water transport and energy supply modules are available. In addition, sufficient decontamination agents are available on board the modules for carrying out the necessary decontamination tasks.

Furthermore, Kärcher Futuretech GmbH provided EADS with the decontamination component for the demonstration model of the land-based system for the decontamination of wounded persons which is intended for use by the special forces of the German Bundeswehr.

The forward-looking TEP 90 and light decontamination systems delivered to the Federal German Armed Forces by Kärcher Futuretech GmbH will set the standard in the area of CBRN decontamination until well into the late twenties of the 21st century. ♦

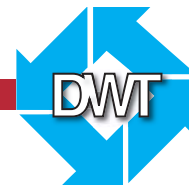
*Kärcher Futuretech GmbH -  
Market Leader in CBRN Decontamination  
Innovative water purification, professional  
competence in mobile field camp systems  
and sought-after supplier of NBC  
protective clothing*





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## Innovative Filter Technology

### Blücher Technologies: A tradition of innovation.

*(CBRN) Blücher GmbH in Erkrath can look back over a history that spans forty years. Still in family hands, this traditional company has retained its very high ethical claim of: Always focusing our activities on protecting life.*

The core business of Blücher GmbH is the development and production of high-efficiency filter technologies. Based on spherical, high-performance adsorbents - in principle similar to activated carbon - pollutants, smells and other unwanted substances are reliably filtered

Blücher's global technological leadership in spherical high-performance adsorbents. These spherical adsorbents are very porous. This structure produces an immensely large internal surface on which the filtered substances can safely be deposited.

is in Blücher hands and is constantly monitored and controlled by its own labs.

This ensures that the high quality standards are always met and that no deviations or inaccuracies can creep into the process. These checks continue right up until the finished product, which is then ultimately inspected and approved by independent, internationally recognised institutes. This self-contained production process makes it possible to develop customised product solutions at any time and to the very highest degree of precision.

Flexibility and versatility as strengths. Blücher filter technologies are used wherever undesirable or even hazardous pollution has to be eliminated.

The range is very varied, from odour adsorption, air and water filtration right through to personal protection against chemical and biological toxins.

### A healthy living and working environment

The architectural blunders of past years still have far-reaching consequences. Contaminated buildings have to be completely remediated or even demolished. But this often proves impossible. The special „Permasorb“ wallpaper provides a fast, affordable and reliable remedy. Pollutants such as PCB or formaldehyde in the walls are firmly and permanently bonded by the highly activated adsorbents. This restores a healthy climate inside rooms.

### Dressed for Freshness

It is often impossible to prevent the formation of odours in clothing and shoes that are worn frequently or used in sports.

Blücher offers a reliable filter system against the development of every type of odour. Around 500,000 adsorbents have been invisibly integrated into a single pair of shoes, for example. All odours are securely and reliably bonded on their

out of gases and fluids and safely bonded. For optimum protection and comfort in all circumstances, whether in action, at work or play.

### High-tech as a principle

Blücher has developed very special and unique production methods that allow product characteristics such as shape, mechanical and adsorptive capacities to be individually customised for optimum performance across a huge range of highly demanding applications. This combination of flexibility and hyper-performance is one of the reasons for

The net result is a truly high-tech system that knows no equal in terms of efficiency, flexibility and above all safety in its protective effect.

A quality management system that lives up to its name.

Successful innovations demand the most modern and efficient production methods. The Blücher-Group manufactures its core components solely in its own state-of-the-art plants in Germany and US. The entire range of the production process starting from raw materials through to intermediate products all the way up to sophisticated system solutions





overall inner surface area, the total size of which roughly corresponds to an area equivalent to two football pitches.

## **Life Protection**

Research, development and innovation have made Blücher a world market leader for CBRN protection. Over 8 million of Blücher's SARATOGA® brand protective suits and systems in over 40 countries speak for themselves. Even the most demanding task forces, including OPCW inspectors who are confronted with CBRN hazards every single day, rely on SARATOGA® from Blücher.

The SARATOGA® systems include not only CBRN but also ballistic protection as well as protection against foul weather, fire and cold. But comfort too is also taken seriously. Integrated ventilation systems for cooling and moisture management with designed-in weight minimisation reduce the physical strain and ensure adequate mobility. What's more, the SARATOGA® protective suits can be put on quickly and easily.

## **A breath of fresh air**

The SARATECH® filter technology brand from Blücher provides clean air in aircraft and also in specialised vehicles that are deployed in environments that are hazardous to health. The applications for SARATECH® odour adsorbers that can be found in supporting roles relating to domestic equipment and air-purifying devices also guarantee a better quality of life. SARATECH® products are even used in demanding industrial production processes that require the cleanest of air environments, such as semiconductor production.

## **Clean water, the elixir of life**

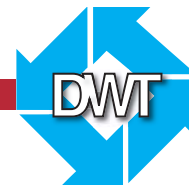
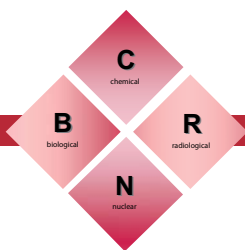
The level of pollution in drinking water from industrial effluents as well as residues from pharmaceuticals and chemicals is rising. This development is accompanied by growing demands on drinking water and industry needs increasingly high-purity water for its production processes. Thanks to their purity, excellent adsorptive properties and mechanical strength, SARATECH® adsorbers are singularly ideally suited for perfect ultrapure water filtration.

## **Tailored problem solving**

As a result of our unique production processes the properties of the adsorbers can be individually adapted and tuned to meet a vast range of specialised requirements, needs and applications. Product characteristics such as the shape, mechanical and adsorptive properties can be individually determined and realised for specially tailored problem solving. ◆

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[www.bluecher.com](http://www.bluecher.com)*





## Detection, Localization, Analysis of Hidden Radioactivity

### Experience in Detection

*(CBRN) Thermo Fisher Scientific has a long experience in detection and measurement of nuclear radioactivity; that has been started with the first steps of nuclear research. The available portfolio of today covers the industrial and medical demands as well as those of radiation protection tasks and military application.*



First responders and military CBRNE groups need special tools. These have to consider the special circumstances of a mission including the environmental conditions, the level of education of the users. The experience proves that laboratory detection systems shouldn't be used on field missions. The three step method is a well established performance for discovery, localization

and analysis of nuclear or radioactive hazards.

The first step is discovery of unnatural radioactivity (gammas). The appropriate tools are mobile highly sensitive detectors with GPS supported movable maps used on a vehicle or helicopter platform. The Mobile Detection System for gammas or neutrons is such a system. Each second the detection results are inserted as coloured tracks in the movable map, the present values and alarms are shown on display. The track-survey on the movable map is the complete on-line control of the running mission. The Natural Background Rejection NBR of the system is sensitive for 6nS/h or less for „artificial“ gamma radiation imbedded is the natural background. This quality enables the detection of radioactive sources or contaminations from a farer distance. The automatically running MDS doesn't need any expert knowledge of the user. The Mobile Portable Monitoring System MPMS is the pendant of the MDS for quasi stationary detection at gates or de-contamination places for sensitive

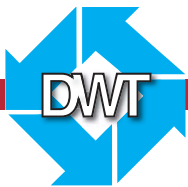
gamma detection. Also the MPMS uses the NBR method for quantitative „artificial“ gamma detection down to little nS/h range. Audible and visual alarms at the detection units and wireless data and alarm transmission to a remote control station enable an automatic and reliable control at field camps and other sensitive locations.



In case that the MDS or MPMS have discovered contaminated areas or material or radioactive sources the hand-held devices like the SVG2 eventually in connection with the hand-held NBR gamma probe will be used for more detailed localization and the ABG probe or Contamination probe of the SVG2 will exclude or confirm a possible alpha- or beta-contamination.

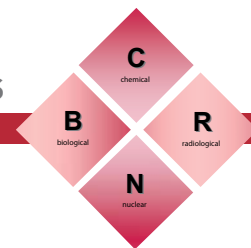
The third step is finally the identification of the nuclide with the help of an IdentIFINDER. Samples of contaminated material will be taken for the later analysis in a stationary laboratory. In case of suspicion that explosive material will be packed in a radioactive discovery case wipe test and analysis will be performed with the EGIS Defender. The EGIS Defender is a portable detection and analysis devise using the differential ion mobility spectroscopy method for sensitive quantitative identification of all types of explosive chemicals including the peroxide explosives.





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## Facing up to the future

### NBC reconnaissance system expertise from a single source

*(CBRN) The potential use of nuclear, biological or chemical agents by state or non-state actors poses a significant threat to civilians and soldiers alike. Whether on the home front or in remote areas of operation, confronting the NBC threat requires highly effective detection capabilities.*

For over 25 years, Rheinmetall Defence has been the world's leading supplier of highly mobile, well-protected NBC reconnaissance systems mounted on military and civilian platforms. More than thirty user nations now count on Rheinmetall's proven competence in this critical field.

#### A multi-stage concept for military NBC reconnaissance

The company's entire range of NBC reconnaissance systems is oriented to the European Union's three-stage NBC detection, identification and monitoring concept.

The first stage of the concept encompasses a basic NBC detection capability using compact, portable detection device capable of generating an initial, non-specific NBC threat warning. Any soldier can use one of these devices.

The second stage requires the deployment of trained NBC specialists who, when equipped with highly mobile systems like Rheinmetall's Fuchs/Fox NBC armoured reconnaissance vehicle or the Bio-Yak (the biological warfare version of the Yak), are able to deliver substantially more specific results concerning the current NBC threat situation. Moreover, they are able to probe large surface areas, reliably identifying radiological, chemical or biological hazards.

The final stage involves in-depth laboratory analysis (e.g. in a Rheinmetall field laboratory) so as to produce a detailed picture of the potential threat posed by weaponized NBC agents or comparable substances.

The Fuchs/Fox NBC armoured reconnaissance vehicle and the Bio-Spüpfuchs, its biological warfare variant. Besides the German Bundeswehr, the armed forces of the United States, the Netherlands, the United Kingdom, Norway, Saudi Arabia and the United Arab Emirates all rely on the NBC reconnaissance version of the tried-and-tested Fuchs/Fox armoured transport

vehicle for large-surface military NBC reconnaissance support. Worldwide, over 80% of all currently fielded armoured NBC reconnaissance systems come from Rheinmetall.

Every variant of Rheinmetall's armoured NBC reconnaissance vehicle is able to detect nuclear and chemical agents both in the atmosphere and on the ground, quickly and reliably. Thanks to its superb off-road mobility, the system can operate even in extremely difficult terrain. Furthermore, it offers excellent protection against landmines, IEDs and small arms fire. The best-protected variant to date, the Fuchs/Fox NBC 1A8, is currently being produced on behalf of the Norwegian armed forces, and is the subject of a project study for the Bundeswehr. Introduced in the UAE at the end of 2009, the Fuchs/Fox 2 NBC-RS – featuring an improved engine, axles, silhouette and payload capacity – further underscores the company's commitment to widening its lead in the global market for armoured NBC reconnaissance systems.

The Bio-Spüpfuchs makes it possible for the first time to detect the presence of weaponized biological agents and similar hazardous substances on the battlefield. Integrated, hermetically sealed analysis chambers in the vehicle interior („glove boxes“) collect air samples, enabling the crew to carry out genetic and immunological test procedures on site.

#### The Bio-Yak mobile biological reconnaissance system

Rheinmetall's Bio-Yak offers a distinctly different approach to mobile, large-area detection and identification of biological agents and contaminants in the air, on the ground and in the water.

The Bio-Yak consists of a chassis with an armoured driver's cab and interchangeable multi-mission build-on modules. The latter meet the requirements for spacious interior volume and multiple use variants. With a level of protection

against small arms fire, IEDs and landmines unrivalled in its weight class, the Bio-Yak sets a new standard for battlefield survivability.

Matching the performance spectrum of the Bio-Spüpfuchs, the Bio-Yak expands Rheinmetall's globally unique family of mobile biological warfare reconnaissance systems.

#### Mobile NBC field laboratory

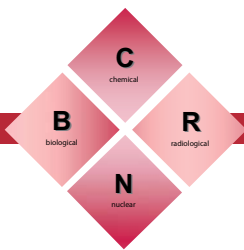
Rheinmetall Defence has recently supplied the armed forces of Sweden and Switzerland with the company's latest generation of independently developed NBC field laboratories. These fully equipped, state-of-the-art facilities are capable of identifying and verifying weaponized nuclear, chemical and biological agents and other hazardous materials. In terms of equipment and capabilities, these mobile laboratories are comparable to conventional, fixed-installation scientific laboratories, and can be configured to match customer requirements.

Depending on the mission profile, the equipment can be integrated into an armoured container, providing laboratory personnel with substantial protection against battlefield threats. The use of standard containers enables fast deployment worldwide, whether by truck, ship, rail or air.

The field laboratory consists of three distinct units: a radiation and hazardous materials measurement section; a biology unit; and a chemistry unit. The radiation and hazardous materials measurement section identifies and quantifies all types of harmful radiation, including alpha, beta, and gamma radiation as well as neutrons, uranium and plutonium and a whole host of other hazards.

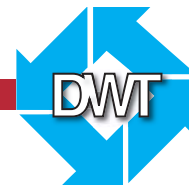
The biology unit is tasked with identifying biological warfare agents and other similar substances. To aid them in their task, lab personnel can employ a wide variety of state-of-the-art procedures, including enzyme-linked immunosorbent





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assay (ELISA); polymerase chain reaction (PCR), gas chromatography/mass spectrometry (GC/MS), or high-performance liquid chromatography. In order to prevent the release of infectious materials into the environment, the biology section of the field laboratory operates under negative pressure. Among other things, it is able to establish the presence

of bacteria, bacterial spores (e.g. anthrax), viruses and toxins. Besides the identification of chemical warfare agents, the field laboratory's chemistry section is used for conducting in-depth chemical-analytical investigations. These encompass a full range of environmental protection tasks and hazardous materials measurements, which can be

employed to ensure adherence to legal norms relating to water quality, etc., including monitoring and documentation. Among other things, the chemistry section can detect the presence of chemical warfare agents, organic pollutants, heavy metal contamination and toxic industrial chemicals (TIC). ♦



protected by **emergent**  
biosolutions™

Emergent BioSolutions Inc. is a profitable, multinational biopharmaceutical company dedicated to one simple mission — **to protect life.**

The company focuses on the development, manufacture and commercialization of biologic products, consisting of vaccines and therapeutics that assist the body's immune system to prevent or treat disease. Emergent's marketed product, BioThrax® (Anthrax Vaccine Adsorbed), is the only vaccine licensed by the U.S. Food and Drug Administration for the prevention of anthrax ([www.biothrax.com](http://www.biothrax.com)). BioThrax is not authorized for use outside of the United States and India.

In addition to BioThrax, the company has multiple clinical and preclinical product candidates in development that are designed as medical countermeasures for use against biological agents that are potential weapons of bioterrorism and biowarfare. To view the company's product portfolio please visit [www.emergentbiosolutions.com](http://www.emergentbiosolutions.com).

The company currently employs approximately 600 people with offices in the United States, the United Kingdom, Germany and Singapore.

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## CONTACT US

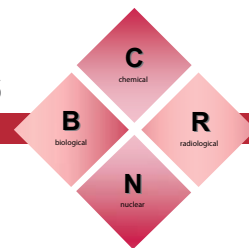
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## International Biological Preparedness

### The development and stockpiling of medical countermeasures

*(CBRN) Bioterrorism has been referred to as the ideal terrorist weapon. It is difficult to predict, relatively simple to execute, challenging to prepare for, and likely to produce mass casualties. For the unsuspecting, target jurisdiction, a large-scale biological attack will strain all preparedness sectors and capacities. The fact that the damage is intentionally caused will add unparalleled dimensions of panic and disruption. The preparedness and response system in the affected region will have to function at maximum efficiency to mitigate loss of life, and to maintain order within the citizenry.*



In parts of the world such as the United States, where a preparedness and response plan to combat bioterrorism has been developed, a sophisticated set of necessary resources have been identified, developed, procured, and, where appropriate, stockpiled. Much like more traditional defense assets, such as military aircraft and warships, medical countermeasures (MCMs) involve a substantial investment in an asset that will hopefully never be used. Nevertheless, intelligent government policy points to the fact that MCMs should constitute a major component of any nation's defense arsenal. MCMs represent the best known opportunity to afford preventative protection against biological attack and may be necessary as a part of the post-exposure medical response. Biological weapon release brings with it an extreme timing challenge in that casualties can result in a matter of days or even hours. MCMs, if not used in a preventative manner, such as through vaccination, must be stockpiled in order to

ensure a readily available resource to be used in the post-attack medical response. Recognizing that every nation has its own legal regime for researching and developing MCMs, approving their use, procuring them for government stockpiles, detecting disease, authorizing the use of those stockpiles, transporting the MCMs to points of delivery, dispensing the MCMs to potential victims, and dealing with the consequences of those medical interventions, the time to develop and execute a comprehensive preparedness and response plan is well in advance of an actual biological incident. The time is now!

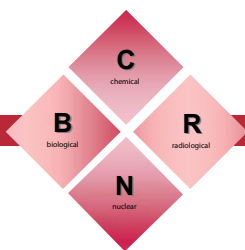
### An Update on The Anthrax Vaccine (Anthrax Vaccine Adsorbed)

Intentional release of aerosolized B. anthracis spores as a biological weapon remains a major concern. Inside the body, spores germinate into bacteria that multiply and secrete toxins. Initial symptoms of inhalational anthrax (sore throat, mild fever, and cough) are non-specific. A toxemic stage develops abruptly, with findings such as fever, acute respiratory distress, hypoxemia, and shock. The fatality rate may be 45-90%. Pharmacologic countermeasures are generally directed against either the germinated bacteria or against the toxins. Such countermeasures may be utilized 1) prior to B. anthracis exposure, 2) after exposure, but prior to disease development or, 3) for the treatment of active anthrax disease. Each scenario requires a unique approach. The pharmacologic agents most often used include antibiotics, vaccines, and anti-toxins. Anthrax vaccines have been used extensively to protect persons prior to exposure to B. anthracis spores. Anthrax Vaccine Adsorbed (AVA), produced by Emergent Biodefense Operations Lan-

sing Inc., is the only FDA-licensed anthrax vaccine for the pre-exposure protection of individuals at high risk of anthrax exposure. AVA works by stimulating the immune system to produce antibodies against the toxins secreted by the anthrax bacteria. Antibiotics are effective against the germinated form of B. anthracis, and may be used to prevent anthrax in individuals exposed to B. anthracis spores. Antibiotics are not effective against anthrax toxins or dormant spores, and since inhaled spores may persist in the lungs for prolonged periods of time prior to germination, anthrax vaccines may be used with antibiotics for post-exposure prophylaxis (PEP). In addition, antibiotics may not be effective against B. anthracis strains engineered to be resistant to these agents. Anthrax Vaccine Adsorbed is not currently licensed for post-exposure use. The vaccine was used under IND for PEP following the 2001 anthrax letter attacks in the United States. Recently, the FDA has approved significant enhancements to the label, including dosage reduction, intramuscular injection, as well as a 4 year shelf life. The vaccine plays a central role in B. anthracis effective bio-preparedness programs and standards.

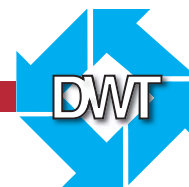
### About Emergent BioSolutions Inc.

Emergent BioSolutions Inc. is a global biopharmaceutical company focused on the development, manufacture and commercialization of vaccines and antibody therapies that assist the body's immune system to prevent or treat disease. Emergent's marketed and investigational products target infectious diseases, oncology, and autoimmune disorders. Additional information about the company may be found at: [www.emergentbiosolutions.com](http://www.emergentbiosolutions.com)



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## About Lachen Helfen e.V.

### The early days

(CBRN) In 1996 a group of German soldiers, moved by their personal experiences with traumatized and wounded children in war zones, founded an initiative called „LACHEN HELFEN“ (roughly translated „help to laugh again“). Confronted with the living conditions of people in Bosnia and Croatia, the German soldiers stationed there initiated an aid programme which was soon to be followed by further initiatives.



Donations Account: Lachen helfen e.V., Sparkasse Essen BLZ: 360 501 05, Konto: 431 0900

### Soldiers and police work hand in hand

The long and close co-operation between the German army and police deployed abroad encouraged police officers to work for LACHEN HELFEN, which eventually led to the inclusion of the police in our organisation. The first joint project was the participation in funding the Mario-Keller-School, erected in memory of the Karlsruhe policeman killed in an ambush near Kabul.

### Objectives of the charity

The charity founded in September 1998 provides humanitarian aid mainly in areas which are not covered by the major aid organisations. LACHEN HELFEN's primary objective is the quick and effective support of children and their families in regions affected by war, where the German Bundeswehr is deployed. The aid is always directed at all groups, irrespective of their ethnic and religious background. The money donated to LACHEN HELFEN is used to finance the construction of schools, as we consider the education of children to be the best investment in their future. Health care also plays an important role. LACHEN HELFEN finances mobile health centres for children and pregnant women in rural areas of Afghanistan.

### How does LACHEN HELFEN use the donations?

A large number of volunteers guarantees that the administration costs are kept to an absolute minimum. After consultations with the army command the aid is distributed by the soldiers and police officers stationed in the respective areas. In this way the donations are always carefully and precisely directed – without any unnecessary bureaucracy – to the affected areas.

### The fruit of LACHEN HELFEN's work

Roderich Thien, grammar school teacher and Lieutenant Colonel of the Reserve, the current chairman of the charity, gives a positive account of the work so far: „Without exaggerating we can say that LACHEN HELFEN actively supports our armed forces in their peace missions in humanitarian fields. The charity has established itself as a caring partner whose initiative also enhances the reputation of our soldiers and police, and with it their safety in areas of conflict.“

### How can you support LACHEN HELFEN?

Any form of support is welcome: passing on information about our work, organising charity events, collecting do-

nations at private functions (birthdays, weddings, anniversaries), and many others. Please contact our office so that we can help coordinate your plans. As we are recognized charity you will, of course, receive a tax for any donation you make.

### You would like to work for us?

The charity relies on dedicated members and invites you to take an active part. We will gladly tell you how you as a volunteer can be a part of our team or take on responsibility as a member.

### LACHEN HELFEN e.V. – at a glance

1. In regions of war and other crises children in need are supported directly by soldiers and police officers stationed there.
2. The local knowledge of soldiers and police guarantees a realistic assessment of the requirements in every single case.
3. Financial aid is provided directly by the soldiers and police deployed in the affected areas.
4. The soldiers and police ensure a lasting effect of the aid projects.

Visit us on our website:

[www.lachen-helfen.de](http://www.lachen-helfen.de)

Here you will find a lot of interesting information on our projects and on our organisation in general. Or contact us for further information by email:

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# CRISTANINI CBRN

## DECONTAMINATION SYSTEMS

### LIGHT EXPEDITIONARY CBRN RAPID DECON/DETOX TRAILER for SPECIAL OPERATIONS **L.E.D.T.**

FD 400



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



#### RAPID DEPLOYABILITY

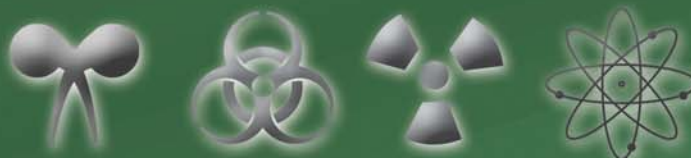
#### MISSION: DECON & DETOX OF

- Personnel
- Vehicles
- Equipment

#### ADDITIONAL CAPABILITIES:

- Sensitive Equipment
- Terrain
- Sanitization and degassing

We have been doing for years things others have yet to do  
***MOVE FORWARD WITH US!***



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## OPERATIONALLY PROVEN, WORLDWIDE

An internationally leading maker of high-mobility NBC reconnaissance systems for military and civil defence users, Rheinmetall Defence has supplied Germany, its allies and other like-minded nations with a wide array of state-of-the-art NBC detection technology for over 25 years. These include mobile NBC laboratories such as those used by the armed forces of Sweden and Switzerland; highly specialized systems like the armoured NBC reconnaissance vehicle Fox, some 300 of which are now in service worldwide; as well as platform-independent systems. Moreover, from conception to system integration, we take full account of the individual requirements of our customers. For more information, please visit [www.rheinmetall-defence.com](http://www.rheinmetall-defence.com)

Rheinmetall MAN Military Vehicles GmbH · Henschelplatz 1 · 34127 Kassel · Germany

