



## **Bruker Detection**

### **CBRNE Capability Overview**

- The Gold Standard in CBRNE Detection Solutions

# Choose Innovation – Choose Bruker

Bruker is recognised as the leading authority on detection and identification technologies that mitigate the threat from toxic agents and harmful materials. These threats can encompass chemical weapons, toxic chemicals, biological agents, radioactive materials and improvised explosives, all of which can devastate lives, threaten infrastructure and destroy property.

Bruker develops, manufactures and supplies technologies worldwide for a diverse number of clients that include most of the world's Militaries, Emergency Responder teams, Police Forces and numerous civilian clients that include security firms and safety teams.

We also supply many of our technologies to government departments, commercial enterprises and multi-national corporations who need to protect their employees and their clients from the threat from terrorism or from the accidental release of toxic materials.

Bruker is strongly committed to meeting its customers' needs by continuing to revolutionise the design, manufacture and distribution of detection tools based on our core technologies; by providing cost-effective solutions that are regarded as the 'Gold Standard' by threat mitigation experts.



# Welcome to Bruker Detection



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Dear Reader,

Welcome to Bruker Detection!

Bruker has been serving the needs of the CBRN community for 35 years. We relocated our headquarters from Bremen in 2005, and now our current operation in Leipzig, Germany, is established as the World Headquarters of our Detection Division.

Since our formation in 1980, our product line has grown significantly. The detection of chemical warfare agents and toxic chemicals remains the mainstay of our capability, and the ensuing years have seen extensive innovations and developments of new technologies to enhance our capabilities. In addition to being acknowledged as the global supplier of "Gold Standard" detection systems, we are also the world leader in installed detection systems that help our users to protect Critical National Infrastructure. Our most recent developments include a new portable isotope identifier and two new explosives trace detection systems, the latter designed to help counter the increasing threat from improvised explosives devices.

This new brochure has been produced to enable our users and potential clients to understand the breadth of our solutions-based capabilities. These range from the supply of a single detector system through to innovative turnkey solutions - for all the markets we serve. Bruker can help you to achieve your threat mitigation goals by supplying your individual detector requirements, or we can take responsibility for the whole project and deliver a complete, finished solution that incorporates your total requirements.

We hope you find our Capability Overview both useful and informative, and we look forward to engaging with you on your next project.

Once more, welcome to Bruker Detection and our "Total Capability in CBRNE Detection Solutions".

A handwritten signature in black ink, appearing to read "Sebastian Meyer-Plath".

Sebastian Meyer-Plath  
President, Bruker Detection Division  
Managing Director  
Bruker Daltonik GmbH

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BIC Code: DEUTDEHBXXX

USt-Ident.-Nr. DE 114 404 287  
Steuer-Nr. 60-108-00275  
Handelsregister Bremen, HRB 8150  
Sitz der Gesellschaft: Bremen



Bruker solutions help secure your Critical Infrastructure.



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# Critical Infrastructure Protection Solutions

There can be little doubt that protecting Critical National Infrastructure from threats from cyberspace has the highest priority. Yet, increasingly, there is recognition of a significant threat arising from either a deliberate or an accidental release of toxic substances near critical facilities. Events of this type threaten the well-being of the occupants, and can render sections of the infrastructure unusable and dysfunctional.

The Bruker Detection response to help mitigate this threat engages at many levels and our solutions capabilities are established on the provision of a wide selection of competences. These range from hand-held detection and identification systems for toxic chemicals, through devices that detect and identify radiation and its sources, to permanent installations that interact with Site Security Systems. Together, these combined detection/security systems provide advance warning, alarms and remedial actions - especially with regard to the control of air handlers, ventilation systems and safe haven shelters.

For Critical Infrastructure Protection, our solutions-based approach allows us to consider all your requirements. We can provide all the necessary technologies that balance safety and security without hindering the free passage of goods and people. Meeting your requirements, our approach can range from the supply of a single detector through to innovative turnkey solutions that interact with site, building or national security teams. Further, our capability extends to mobile solutions that can be deployed to maintain the integrity of your facility's critical perimeter and fence-line.

For more information on our Critical Infrastructure Protection Solutions, please request our detailed information package.



**ECAC**

Ask about our  
ECAC Tested  
Technology



The Bruker RoadRunner is used as an explosives 'sniffer'.

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# Trace Explosives and Narcotics Detection Solutions

## EXPLOSIVES TRACE DETECTION



The use of Explosives Trace Detection (ETD) is mandated in airports and customs facilities that serve the freight industry. In these environments, mitigating the threat from Improvised Explosive Devices (IED), or smuggled explosives, requires instruments with the highest sensitivity, that are both highly reliable and extremely easy to use. Bruker Detection offers precisely this feature set.

Bruker ETD products also offer simplified operation using a novel traffic light system. A green icon indicates no explosives detected, whereas a red warning symbol confirms the detection of a suspicious substance, which is then automatically identified by name.

## NARCOTICS/TRACE NARCOTICS DETECTION

There is always a high probability that illegal narcotics/drugs may be trafficked in places where people congregate, such as at sports events, concerts and nightclubs. Similar situations exist in customs centres, prisons and remand centres, where there is a potential for narcotics smuggling. The technology that Bruker has developed for trace explosives detection also detects and identifies traces of illicit narcotics/drugs - and on the same instruments. Our sensitive drug detection systems are easy and simple to use, and our users benefit from the same novel traffic light user interface as our trace explosives detectors.

For more information on our Trace Explosives and Narcotics Detection Solutions, please request our detailed information package.



The Bruker E2M is used to analyse an unknown liquid.

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## Emergency Responder Solutions



Although it has become somewhat clichéd, the atrocities of 9/11 changed the way in which emergency services now respond to incidents. The presence of miscellaneous powders or seemingly innocuous liquids found at the site of an emergency must be noted and their composition understood. Emergency Responders (or First Responders) are now tasked with gathering scientific information at a scene, so that their responses can be tailored to the determined threat level.

Bruker offers the E<sup>2</sup>M, Enhanced Environmental Mobile Mass Spectrometer, as its flagship product for the detection and identification of in excess of 200,000 organic substances. The ability to analyses these substances in any medium, including air, water, and on the ground (including soil), makes mobile mass spectrometry the first technique of choice for many Emergency Responders.

By using the Bruker RAPIDplus Stand off Detector, Emergency Responders can determine the nature of toxic gas threats from the security of their rapid response vehicles. Standoff detection plays a significant role in the identification of threats arising from the deliberate or accidental release of toxic chemicals because measurements can be made at distances measured in kilometres, and specifically from a safe vantage point.



The Bruker RAID-M 100 is used to protect during a deployment by detecting CWA.

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## Military Detection Solutions



Bruker Detection offers a fully comprehensive range of CBRN detection solutions that have been designed for use in a military context.

All our users benefit from our provision of highly reliable and highly sensitive measurement technologies, each designed to support specific mission types, and each designed to meet the user's need for simplicity of deployment and ease of use. Build quality is to the highest level and all Bruker equipment is designed, built and tested to robust Military Standards (MIL-STD) as appropriate.

Battlefield deployment forms a major element of our design considerations. The requirement for consumables and for general maintenance have been minimised significantly. In all products, consumables can be changed at the operator level and it is not necessary to send equipment back to the factory for these simple tasks. Many of our products do not require calibration, but where this is needed, it is completed by routines within the instrument, thus removing the need for special tools and facilities.

Our portable detection solutions have been designed to meet varied mission requirements and include body-worn and hand-held detection systems for CWA, TIC, nuclear / radiological detection. In addition to alarming on detection, all our chemical detection technologies identify the threat, and quantify the detected substances, whereas our nuclear identification system specifies the isotope within a matter of seconds.

For more information on our Military Detection Solutions, please request our detailed information package.



The Bruker MM2 is used to test soil for the presence of CWA.

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# Military Detection Solutions



## CHEMICAL DETECTION

More than 25 years ago, Bruker changed “the rules of engagement” for chemical detection in the battlefield with the introduction of the MM1. For the first time numerous chemical threats could be identified from the relative security of a mobile platform.

The current Bruker MM2 is the worthy successor to the original MM1 and continues to present the preferred leading-edge solution to the requirement for robust, reliable and easy-to-use technology that provides the most advanced capability. Expanded libraries now permit the MM2 to detect and identify in excess of 200,000 unique chemical compounds in the full range of media that may be encountered in battlefield conditions, such as in air, in water, in soil and on surfaces. Integration has been a significant area of development and a number of specific accessories have been developed in order to take full advantage of the simplicity and ease-of-use of this powerful mobile technology.

Developments in standoff technology have resulted in the release of the new Bruker RAPIDplus. This standoff system allows the identification of toxic chemical clouds at distances up to several kilometres, while operators are kept out of harm’s way.

## BIOLOGICAL DETECTION

In the field of biological detection, we offer a unique detection/identification capability consisting of three state-of-the-art techniques; a biological trigger combined with an aerosol sample collector, a ultrasensitive on-site detection platform for bacteria, viruses and toxins as well as a highly reliable MALDI-TOF MS-based microorganism identification system.

For more information on our Military Detection Solutions, please request our detailed information package.



The Bruker RAPIDplus standoff detector, mounted to the roof of a reconnaissance vehicle.

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## Mobile Detection Solutions

Whenever military or first responder personnel need to deploy into a toxic environment, speed of response and personal safety is paramount. To mitigate these situations, solutions have been developed and refined to provide secure mobile detection platforms.

Deploying detection technology integrated with a vehicle platform offers a number of clear advantages. These include the capability to deploy transportable detection devices, such as standoff detection. This form of detection gives advanced warning of potential threats as it can detect toxic gas clouds at distances measured in kilometres. Mobile solutions also permit the platform to deploy several types of detection instruments simultaneously as they can be integrated with, and powered from, the vehicle.

Operators that are protected from the external environment by means of collective protection (ColPro) filter technologies, rely on Bruker to monitor the ColPro filtration and to alarm in the event of filter failure. If filter breakthrough takes place, our detection and identification systems provide sufficient time for the operators to don protective gear.

In the field of mobile detection systems, Bruker offers the full range of equipment for installation to various vehicle platforms and offers a capability to develop, design and to integrate detection systems into that vehicle. Bruker is experienced as a prime contractor and can supply, support and deliver complete mobile platform solutions that meet the user's requirements precisely.

For more information on our Mobile Detection Solutions, please request our detailed information package.



Bruker offers the SNCDS for submarine CWA/ Nuclear detection applications.

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# Maritime Detection Solutions

## Ship-based Systems

The nature of a CBRN event does not allow for time-consuming decision-making processes, so to maintain the full operational capability of a vessel during a CBRN attack, the external environment must always be monitored.

A typical ship installation starts with a standoff detector for chemical warfare agents (CWA). These detect CWA/TIC at distances measured in kilometres and provide an invaluable early warning. Gamma radiation detectors are mounted externally to the hull, and chemical detectors are deployed on the vessel. Bruker installed chemical detectors are typically used to protect the occupants of the citadel. They monitor the atmosphere surrounding the vessel, and switch automatically to monitor the citadel air when an external detection event occurs. If the citadel breathing air purification is overwhelmed, these detectors provide a warning of failure so that personal protective equipment can be donned. Bruker hand-held and body-worn chemical detectors can be deployed as circumstances dictate, especially during post-event remediation and for profiling exercises.

## Submarine-based Systems

The Bruker Submarine Nuclear and Chemical Detection System (SNCDS) is a stationary system for the detection of nuclear radiation and chemical agents and is specifically designed for the demanding environment of submarine installations. It comprises two largely independent subsystems; a Bruker nuclear warning system with two gamma radiation probes, one mounted inside and one mounted outside the hull, and a chemical agent warning system based on the Bruker RAID-U2plus chemical detector. The chemical agent warning system operates through a snorkel system that has been extensively proven on multiple submarine installations.

For more information on our Maritime Detection Solutions, please request our detailed information package.





Your contract. On-time and within budget.



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## Total Capability in CBRNE Detection

Bruker Detection designs, develops and manufactures a wide range of detection technologies, recognised worldwide as the Gold Standard in detection instruments. Now, responding to customer requirements that have developed over the last decade, our approach has been enhanced through the provision of a solutions-based 'Total Capability' approach.

We help you to achieve your threat mitigation goals in a number of ways. Our scope of supply ranges from the supply of individual detectors, through to supplying innovative, solution-based packages, which integrate with third-party components. Our current solutions capability is built on the exclusive knowledge accumulated during the last 30 years of serving the CBRN community. Today, Bruker Detection can take the overall responsibility for your whole project, delivering a finished solution that fulfils your requirements.

Our Project Management team works with you to determine the best solutions to your challenges, advising on additional sensor systems, sensor networks, data collection and data fusion, and hazard warning and reporting software. Where required, we support you to formulate Standard Operational Procedures (SOP), including recommendations for evacuation and medical support.

All aspects of our capability are focused to help you maximise the return on your investment in your project, and our experienced staff work with you closely and ensure we deliver your contract on-time and within budget.

For learn more about our Total Solutions Capability, please contact us at the email address below.

# Global Resources – Local Focus



Bruker has support centres of technical expertise in every major area of the world providing sales, applications and engineering support for our complete product range. With more than 6,000 employees at 90 locations worldwide you can be confident that the support team fronts a uniquely integrated global resource. Research and development specialists, applications professionals and highly trained engineers in every field are dedicated to your investment in our equipment.

## Superior Detector Performance

For highly sensitive detection, identification and quantification of chemical, biological, explosive and radiation threats. Superior performance and high reliability comes as standard.

## Applications Support

Systems are configured to meet your needs and result from our detailed evaluation of your requirements.

## Standards & Compliance

All our systems are manufactured in ISO9001 compliant factories; so you can be assured of superior quality and performance.

## Software & Data Systems

Designed to industry standards on the Microsoft® platform, our software can be integrated with your security management software.

## Training

User Training and User-Level Maintenance is part of our standard Scope of Supply. Our goal is simple; to minimise your cost of ownership.

## Low Maintenance

All our systems are designed for extended maintenance periods and reduce the through-life-costs of your investment.



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