PLATINUM 10 Minutes

Thilo Schuppler explains how, and how far, the military could respond to a CBRN incident in Germany

All photos ©OWR

Left & Below: Pictures are taken at a CBRN exercise in preparation for a high-visibility event.

Left: The Mass Personnel and Casualty Decontamination System PDU-120/15 are made by OWR GmbH.

In CBRNe emergency preparedness and response planning the German approach goes under the generic term of "special situations." Government authorities have developed comprehensive concepts for high-visibility events and the Bundeswehr has significantly increased its capability for personnel and casualty decontamination. Our specialized defence industry offers a wide range of equipment, from portable decontamination kits to comprehensive deployable systems

The extraordinary effect on society caused even by a singular incident – witnessed by the Salisbury poisonings – forces us to increase our preparedness even if the probability is low. In all civil major incidents different organizations have to work together to minimize the impact.

In terrorist and other attacks cooperation, communication and leadership between the armed units (police, SWAT, military) and non-armed units (fire brigades, paramedical services, civil authorities) – is essential to manage the situation. Germany also has the special challenge of federalism, which complicates responsibilities and response.

Surveillance, detection, analysis

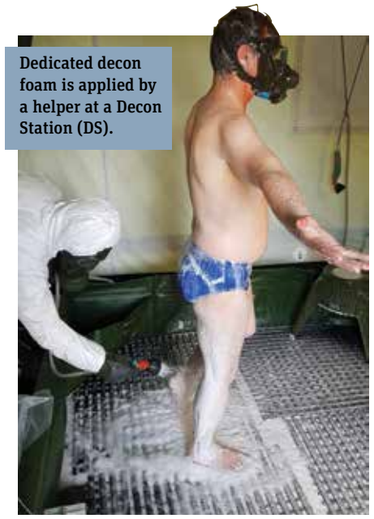
First, establishing the incident is CBRNe with a risk and safety assessment is vital to minimize victim numbers. As detection of conventional explosives and narcotics is the usual focus, in which police and security staff has more experience, CBRNe material may be overlooked.

Second, to keep victim numbers low, ➤

Above: This multinational exercise of the Bundeswehr CBRN Command was conducted in 2018.

Left: This new equipment is in service with the Bundeswehr Medical Service: Casualty Decontamination System supplied by OWR GmbH.

Right: The alldecontMED skin decontamination spray can be used at EDPs.



Dedicated decon foam is applied by a helper at a Decon Station (DS).

well-prepared and equipped action forces are needed as, sadly, first responders are often the first victims. First-priority action is to bring civilians and casualties out from the danger (hot) zone. Depending on the situation armed police forces or CBRN-protected forces of the fire brigade do this job. Emergency medical services personnel are often not trained or equipped with PPE to act in a hot zone and this may be further complicated by an ongoing combat operation.

Emergency decontamination

Emergency decontamination places (EDPs) between the incident area and assembly points for civilians reduces the effects of CBRN agents – and hence, increases survival rates. The EDPs must be installed rapidly to reduce these effects. Dedicated CBRN-protected personnel should stop a potentially contaminated crowd spreading out and ending up in local hospital emergency rooms. When this happens the situation is out of control.

Portable decon foam device for the decontamination of personnel and casualties.

- Removal of outerwear removes most contamination. Protection with activated-carbon layer respirators, prompt decontamination by rinsing with water, soap or bleach can be done using the usual firefighting equipment, applying parallel treatment to as many casualties as possible. Antidotes, oxygen or dedicated decon agents would be administered immediately.
- Stopping serious bleeding from gunshot and shrapnel wounds and hypothermia requires different skills to common injury emergency treatment. Most civil paramedics in Germany had (luckily) no experience with such military-type injuries but since the Bataclan attack in Paris in November 2015 these skills have been enhanced.
- Casualties have to be differentiated between those actually affected and those who 'feel affected' – known as the 'worried well' – to estimate the real number of victims for further treatment. Terrorists could also be hidden among the casualties.
- In a mass casualty incident (MCI), especially a CBRN-MCI, emergency intensive care for individual victims cannot be sustained. Here, the algorithms of combat or disaster medicine kick in: triage is applied to save as many lives as possible – but often not all – with available resources. In trauma surgery it is called the crucial Golden Hour: in CBRN we talk about the 'Platinum-10 Minutes.'

This CBRN response vehicle in service with the South Korean fire service was supplied by OWR GmbH.

Inside the CBRN response vehicle of the South Korean fire service supplied by OWR GmbH.

Dedicated decon stations

Dedicated decontamination stations (DPS) are the second stage for contaminated casualties, including the injured on stretchers. DPS should be ready to operate as they form the 'bottleneck' in the chain of survival and resources must be used carefully. The objective: a dynamic triage.

Incident command has to consider if the DS will be located close to the incident or to the medical facility. Rapid transport of casualties – some still contaminated – and moving already decontaminated casualties each pose big challenges.

Fast treatment is vital to increase survival rates. Any contamination of medical facilities will paralyse them and their high-value emergency physicians and surgeons, so must be avoided in all circumstances. In Syria we have seen the consequences of contaminated victims reaching already beleaguered hospitals.

Hospital response

MCI and CBRN must be implemented in the preparedness and response planning of hospitals. Clinical staff must be trained in how to cooperate with firefighters and civilians helping out in an incident.

In hospitals in Israel the 'concept of coloured lines and vests' means a hospital can switch to 'MCI mode' or 'CBRN mode' within minutes. Important routes are marked with coloured lines that every helper can follow even under stress. Key personnel are marked with standardized coloured vests. This level of preparedness, however, is not possible where there are cuts in health funding and hospital staff.

The application of antidotes must be clearly regulated and indicated for CBRN incidents, and there will not normally be enough physicians to exclusively do this job. Access, stopping places and departure roads must be clearly marked and stewarded, or the hospital entry will be blocked up before the first batch of serious casualties get there.

Logistics for water, decon agents, antidotes and PPE must be in place allowing for a sustainable operation at night and in poor weather. Exterior security is vital – as a hospital could be a secondary soft target.

Military involvement

Preparedness for a vehicle accident involving a chemical release or a terror attack using military devices and tactics should also shift preparedness planning onto a more military mindset. These considerations must be discussed before – not during – an incident.

The Bundeswehr is improving skills to deal with casualties of military injuries as well as CBRN contamination. New equipment is in place and further training of the Bundeswehr CBRN Forces and Medical Service are ongoing. Most civil organizations still have a long way to go in this field but could benefit from the Bundeswehr experience.

Decontaminating response forces

All first responders around the hot zone must be protected. Realize the threat, rescue civilians while protected, call in specialist forces is the basic SOP for German first responders. These organizations also have totally different equipment, training and procedures, and in Germany most fire brigades (which are mainly dealing with hazmat) have in total around one million voluntary firefighters compared to 30,000 professional firefighters, stationed mainly in the cities.

Seven Analytical Task Forces (ATFs) – the highest competence level of preparedness for CBRN incidents – are initiated by the German Federal Office for Civil Protection and Disaster Assistance, part of the Federal Ministry of Interior.

Left: German firefighters perform casualty decontamination.

Right: These two responders are part of a one-million-strong voluntary firefighter force set up to respond to CBRN incidents in Germany.

The Bundeswehr has one of Europe's largest and best-equipped CBRN forces. A CBRN command with two battalions and the CBRN School has at least 2,000 soldiers and professional civil staff. Additionally, every regiment of the Medical Service has a specialized casualty decontamination unit. However, administrative obstacles to deploy military forces in a civil incident in Germany are quite high and the lead time will probably exceed the Golden Hour.

Protected action forces should only move into the hot zone when the DS (decon station) is ready to operate. If not possible, an EDP must be installed as soon as the DS is ready. Unprotected first responders must be decontaminated and treated – most notably, the first unit that reaches the incident site. Sustainability of the DS must be considered in the plan. Regardless of its low probability the high impact and consequences of CBRN MCI require sophisticated preparedness planning, frequent communication between all involved parties, and wide-ranging exercises. It isn't just in Germany that a mass, and often a mess, of organizations are involved in responding to CBRN.

Thilo Schuppler is CTO and Head of R&D at OWR GmbH. A chemist and CBRN staff officer (res.) with more than 20 years' experience in CBRN defence, he is an appointed civil NATO expert and member of the German Society for Disaster Medicine.