

Care for the community

There is nothing like planning a conference for getting to know a country's capability. From years at various exercises, conferences and exhibitions I thought I knew where the main players in Dutch CBRN defence were – MoD, TNO, NFI, Fire, etc. My ignorance of the scale of VROM was a shocking oversight. Many governments throughout the world have an environment department. Some (like the EPA in the US) even take CBRN seriously, but for most the environment department is the one that comes along after the incident and shakes its head at the mess and says, "Now what the hell are we supposed to do about this?!"

It is very different in the Netherlands. For a start there is a proliferation of entities that have a role – RIVM, EPAn, EAM, BOTmi, LCI, LLN-ta – and then there is the range of roles such as sampling, analysis, international crisis assistance, etc. Chris Dijkens, Head of the Crisis Management Department within the VROM-Inspectorate, explained. "Our departments responsibility for crisis management deals with a wide variety of incidents," he said. "First, with the environment in its broadest context – where we have political responsibility. Nuclear emergency preparedness and planning, as well as the emergency management, are all part of our department's role. The minister is also responsible for drinkingwater in the Netherlands, although the monitoring and the operational part is given to producers of drinkingwater. Then there is the quality of housing, governmental buildings and the environment around it; which is also VROM's responsibility. Within this area we deal with chemical, biological, radiological threats

Our response organisation is available 24/7, 365-days-per-year. We have mobile units available [the Environmental Incident Service (EIS), operated by the National Institute for Public Health and the Environment (RIVM), on behalf of VROM] for sampling and doing analysis on the spot. "They have measuring equipment on board, and when there is a request from the fire brigade, or another body who wants assistance, they can request it from the Department of Crisis Management – this units are well equipped, have good instruments and extremely good experience. . With the result we can advise the relevant authority .

For radiological and nuclear emissions we have another organisation [the Radiological Research Laboratory, operated by the National Institute for Public Health and the Environment (RIVM)] which specialises in on-site measurement of emissions; they are also available 24/7/365.

"Next to that we have the national monitoring system for airborne radiological dispersal. We have 153 measurement points in the Netherlands that are monitoring 24/7, and we are connected to other European systems.

For international operations we have the Environmental Assessment Module (EAM), which has received the Green Star Award from the UN.

And then we have the laboratory network terror attacks [LLN-ta]. An important development is our mobile lab capability, and that will be launched soon. It is a unique mobile lab facility, with a capability for biological and chemical screening, as well as analysis when needed. Then there is the virtual environmental assessment team [Bot-Mi] managed by VROM, a network of ten

scientific institutes, with support from six related industrial groups, and that virtual network is available for giving independent expert-advice based on requests which we answer with consolidated advice. In that network we facilitate chemists, toxicologists, medical doctors, modelling and risk specialists, water quality experts, etc – the best of Netherlands expertise in one network."

As this list might suggest there are a lot of specialised groups there, ranging from frontline specialists to back-office reachback. How do they all integrate together? Is it like the US system, where the nature of the event (environmental, terrorist or criminal) determines the lead agency, meaning the VROM might take control over environmental or nuclear disasters, or is it always subordinate to the first responders? Chris Dijkens explained. "Should there be a CBRN-incident in the commune [*commune is used in the same way that region or state might be* – Ed] organising disaster response is a core task of the police, fire, and medical services. Preparation and response is lead by communal authorities like the Mayor, who is responsible for public order and safety of the inhabitants," he said. "The firebrigade can when appropriate- call us for advice This advice is usually taken but they decide how to use that advice – that is down to the Mayor or Chief of Fire, etc. So, we don't have an obligation for the first response; we become active when they come to us If it is a major incident across many communes, then we have a co-ordinating Mayor; above that we have the Commissioner of the Queen, who has specific tasks. When it comes to a national level – if there is a flooding, etc – then the Minister of the Interior is in charge in terms of co-ordination. We deliver on request, except when our minister is responsible, like for drinking water or nuclear power plants. In that case the Mayor is in charge on the spot, but supervised by our Minister. When it comes to advice on countermeasures, etc, we will provide a team for advice and assistance."

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MCBL

As Chris Dijkens suggested, one of the biggest developments is the new Mobile Chemical and Biological Laboratory (MCBL) that RIVM is going to be using. These are going to be the crown jewels in VROM's CBR response – whether to a natural or terrorist event. Dr Sander Banus, Scientific Advisor to RIVM, explained. “The role of the MCBL is to combine the chemical and biological disciplines into one lab that will guarantee a safe environment for the quick and adequate analysis of chemical and biological agents,” he said. “Currently we already have that capability, but all suspected C and B agents have to be taken to the front office of the Dutch Lab Response Network for Terror Attacks, (LLN-TA), and the front office is located in the centre of Holland on RIVM grounds. With the mobile unit, we can despatch it to the scene for quick on-site analysis.”

This is a “silver-gold” standard lab, with a BSL3 capability which allows it to do confirmatory analysis on all the samples that are brought to it. The Netherlands already have a radiological lab (RIVM), of which more later, so the MCBL focuses mainly on the C and B agents, and can be dispatched together with the mobile RN-laboratories. The unit is expeditionary, it comes equipped with everything the equipment needs in the field, but the same cannot be said for the operators. “We always operate at the request of local authorities, but also with them,” said Dr Banus. “So when a large-scale incident happens, the police and fire services will already be on scene with their complete campsite of first aid and support; therefore we don't have our own amenities – toilets, etc – but will depend on local supplies. Though technically speaking we are self-supporting as we bring our own generator, communications, etc.”

The laboratory has been designed to be “future proof”, so while it has current state-of-the-art equipment – GCMS, XRF, IR, PCR, etc – it has also been designed with enough space for future devices to be plugged in. The lab is pressurised – completely negatively to keep the samples in – it is thus not intended to go into the hot zone;

indeed, it is likely that there are only some circumstances – such as a confirmed attacks – where the lab will deploy. “When we are despatched to the scene, there is already an incident going on in which specific samples are present,” said Dr Banus. “Most of the time it won't be important that the lab gets close to the hot zone; in the Netherlands the highest frequency of CBRN threats are white powder incidents and it won't be useful to bring the mountain to Mohammed. We'll bring the package to the LLN-ta front office and we can analyse it in the stationary MCBL. Where we will really add value is for large-scale incidents where we expect multiple samples; the police usually brings the sample to the RIVM facility, but in a large-scale incident – such as when a contaminated area has to be mapped – then it will be of advantage to bring the lab to the scene.”

This methodology pays off for VROM/RIVM, in that it keeps the lab in constant use and there is therefore less need for training, familiarisation and scheduling – and it also keeps it at a high state of readiness. “We have the Environmental Incident Service (EIS) which has 13 different disciplines, and there are always 13 people on 24/7 duty,” said Dr Banus. “For the MCBL we always have several discipline groups ready: there are always two technicians for chemical and two for biological analysis, with other specialists on a 24/7 readiness. The lab can be dispatched within one hour after an alert. In the Netherlands we have a stable frequency of incidents – there are usually a couple per month, and these samples are analysed in the stationary MCBL.

All the technicians know the capability of the MCBL, and next to that we have our specific training for the the EIS. We employ people who are the best in their field and work in the same atmosphere they would in the RIVM facility. So it is not necessary to dispatch the whole MCBL to a G8 summit [so they can get experience of deployed operations]; we would prefer to contain the availability of the despatch within one hour.”

It would also seem that there is

duplication between the RIVM and the National Forensics Institute - both have mobile labs - and send teams into the hot zone to take samples. Dr Banus suggested there was little overlap as the requirements were different. “We are both in the Dutch Lab Response Network, and have extensive contact and small-scale symposia to inform each other on our work,” he said. “Their focus is on forensic analysis while the focus of the MCBL is on public safety. The RIVM CBRN sampling teams, for instance train together with the NFI sampling teams because it is likely that when there is a large-scale incident we will operate together in the field.”

Radiological labs

The Netherlands, like many other nations, sat up and took radiological incidents seriously after Chernobyl, and have had a radiological response dating back to that incident. Recently, however, it has been upgraded to allow them to also respond to the radiological terrorism mission. “We already have a capability, but we are extending it to be more capable, especially in cities, for a dirty bomb scenario,” said Dr Henk Reinen, Deputy Head of the Radiation Research Laboratory (RRL) of the RIVM. “Previously we had a capability to go on-site and do sampling – air, soil, and water – and we could do gamma spec and alpha and beta. What we are extending is the ability to assess a contaminated area more quickly than in the past, as we are not able to drive and do measurements, so it would take a long time to do a contaminated area and this is something that we want to improve.”

The new vehicles are a combination of laboratory and reconnaissance vehicle, able to identify isotopes and, in collaboration with the back-office at the RRL, to map out – as well as predict and model – the area of contamination. The vehicle itself is unlikely to enter the hot zone per se, but as it is going to be skirting the periphery of the area there is a good chance it will get dirty. The team itself is also highly trained, and educated radiological experts will go into the hot zone with the fire brigade to take samples and assess the hot zone while the lab waits outside. One of the

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recent developments has been the increase in the plume modelling and the assessment capability, as Dr Reinen explained. "We developed the system with the Canadian company ISR," he said. "They have a system which allows us to connect our monitors onto a system that can send data online to a computer in the Institute that can see where the teams are, what they measure, what time, co-ordinates, etc. While they are driving we can see where they are and what they are doing, as well as what the measurements and levels of radioactivity are." An important aspect of the software is the training-module by which realistic scenarios can be practiced by the measurement teams in the hot-zone and simultaneously by the back-office at the RRL on RIVM grounds.

The radiological team is looking forward to an increased cooperation with the Dutch military and fire brigades in these operations (See *CBRNe World* Spring 2008), since radiological survey and assessment is a traditional military role. "What we need from the military is their support," said Henk Reinen. "We will be able to assess the situation more quickly and can engage better – though we have had problems in the past with communication between the military and fire brigade who had their own systems and terminology." The radiological team is also training with, and preparing for operations with, the MCBL to ensure that, should there be a multi-agent release, they can work together and synchronise their response.

Environment Abroad

One of the other driving forces behind the Netherlands CBR response is the Environmental Assessment Module (EAM). This module is prepared to go on missions under the aegis of the UN, "The EAM is sent to other countries; concept of the EAM is based on the Environmental Incident Service," said Dr Marcel Mennen, Project Manager of the EAM. "We, however, are more compact as we have to send it to areas where a disaster has happened, so we have to take a lot of stuff with us and be

as compact as possible – so all our equipment is contained in two four wheel drive cars."

The team currently doesn't have a CBRN terrorist mission, however; they are not part of the first or second responder mission, as they are more part of the traditional Environment Ministry response – contamination assessment of soil and water – albeit abroad. The team's two vehicles are split into the detection/sampling vehicle and the analysis vehicle. The first vehicle also contains support equipment and some provisions for the team, which is, however, dependent on either the host nation or the UN for food and water (though they do have initial supplies) for the week they are estimated to be needed. The analysis vehicle is one stage below the MCBL, but one stage above a traditional NBC recce vehicle, as Marcel Mennen explained. "We have sampling equipment – probes with absorption media, bags and canisters for air samples, etc – detection and analysis equipment, air mainly with GCMS and XRF and FTIR for solid and liquid samples. We have some detection equipment for concentrations of common gases in air, like ammonia, chlorine, etc, and we have a Photoionization Detector (PID) to screen the air for hydrocarbons. We also have equipment to take water and soil sediment if they are polluted. We can't do everything, but we can screen for heavy metals, organic compounds, etc." The EAM is also a relatively new capability, with a handful of operations under their belt. Dr Mennen reckoned that, based on an assessment of typical UN operations, they would be called out an average of twice a year for specific incidents. "Indonesia was our first operation with a mud disaster where some volatile compounds were emitted – like hydrogen sulphide – and the mud was expected to contain some hazardous substances," he said. "We sent out a team of three people with some of the equipment that is now in the vehicles, as we didn't have the lab then, and we took air samples and some from the mud and these were analysed by Indonesian labs with our analytical specialists giving advice on the analysis

– as the equipment was not very new."

The EAM is mainly a chemical analysis capability, although it does have limited radiological detection capability for personal safety, but it is the hot house for the development of VROM/RIVM specialists. Many of the teams that will be part of the MCBL or the laboratory network will be on an EAM team, and are likely to be deployed. While Indonesian conditions, or mud slides, are not expected in the Netherlands, there is no doubt that operations like these help keep the team sharp and motivated. Currently the growth plan is for more of the same, as Dr Mennen explained. "At the moment we have no plans to expand the capability," he said. "We already have the MCBL in development for the Netherlands, and for international missions we need to have some operational experience before we expand or adapt it to new things. While we have radiological sensors I cannot see that being an area for us, as the international community for radiological disasters is different; they have their own international organisation for such things, such as the IAEA, and they would be in charge for a large nuclear disaster."

The Netherlands does a good job of deploying experts at the sharp end of the incident, and the teams which VROM is responsible for are a good example of that. The MCBL won't revolutionise CBRN response – it is not a first responder tool – but it will shorten the chain of custody and quicken response and analysis time, which will have a major impact on biological countermeasures and prophylaxis. The EAM in its turn keeps motivation and skills high, and all of this flows back into the various laboratory networks allowing for a more informed reach-back capability. The MCBL will be on display at *CBRNe Convergence* in October, and the teams will also be displaying their skills at the exercise on the third day – which will undoubtedly prove that, just because you don't have a high profile on the CBRN conference circuit, doesn't mean you don't have something special to contribute!

Book Now. CBRNe Convergence, 28th-30th October 2009, World Forum, The Hague, Netherlands. More details on www.cbrneworld.com