HOW SIMULATION CAN ENHANCE BATTLEFIELD TRAINING

This paper discusses advances in CBRN training technology for the military.

By Tim Otter, Lutra Associates Limited.

CBRN response training is critical. There is no point having even the best CBRN response equipment without proper training.

The military must fully understand how CBRN detectors work to make the most of them and come up with the right concepts of operation. A core aspect of this is to concentrate on training people in the use of equipment. The best way to do this is to use detector simulators and software that will help military staff to understand the environment that they are going to be operating in by training in a simulated scenario.

The advent of good detection systems has radically changed the approach to what the military used to call 'survive to operate'. Before detectors existed, there was no option but to adopt a 'First World War' policy, which was to simply put on a respirator on and live within it until a demonstrably clean area could be reached where the respirator could be taken off. There was great difficulty encouraging soldiers to take their respirators off because they were so frightened - and there still is - but if soldiers trust the detectors then they can take their respirators off and only put them on when it is absolutely necessary. This has an impact of huge dimensions in terms of operational capability. If you put a team in respirators, whether they be an infantry squad or a servicing team on an aircraft, the very fact that they have difficulty seeing and communicating means that they are reduced to about one tenth of their operational effectiveness.

Trials that measure the performances of those people in full protective equipment with those who are out of it have shown not only a major reduction in operating capability but also a significant reduction in operating time. Military staff in full protective equipment can very quickly end up in hospital from heat injury rather than chemical, biological or radiological injury. It is therefore important to get people out of their respirators as early as possible and give them the confidence to trust that the detection equipment they are using will tell them when it is safe to take their respirators off. The only way to build this trust is to train them properly with detector simulators so that they actually understand how not just the equipment but the vapour, the dust, the droplets – whatever the potential threat may be – behaves.

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There are three ways of doing this:

- One is to show the trainees a model of this happening on screen;
- Another is to train with either a real or a simulant agent – which is difficult to manage when, as all too often occurs, the planned exercise is interrupted because the direction of the wind has changed.
- A far better option is to run a hands-on, real-time exercise using electronic detector simulators and software, which allows the instructor to exercise complete control over a virtual agent.

Training with electronic detector simulators and software also has an environmental benefit. The best real simulant for most chemical warfare agents is Deep Heat, which – in the volumes required - is not particularly good for the environment. With Deep Heat, instructors must carefully manage how they run the exercise and how they clear up afterwards but such issues can be dispensed with by using electronic detector simulators.

Better training also improves the perception of the impact of real agent. There is a tendency within the military to relegate the importance of the CBRN threat because it cannot be seen or touched, and because of the complications of integrating the issue in training it is

considered as an 'interference' in a conventional military exercise. However, when commanders experience the CBRN threat for real they are absolutely devastated by the impact it has on their speed of operation. With adequate training systems in place, using electronic detector simulators that are set off by virtual agents that cannot be seen, touched or tasted, it is possible to demonstrate the impact that chemicals agents will have on a large scale.

For too long the military has not properly addressed this issue because we have not seen chemical, biological or radiological warfare issues demonstrated on a large scale but Syria has shown that you do not need hugely sophisticated systems to make chemical weapons effective. The easier it is to use chemical weapons, the greater in the increase in the 'probability of use', and when multiplied against the 'scale of impact', which we know is devastating, the risk starts to run high.
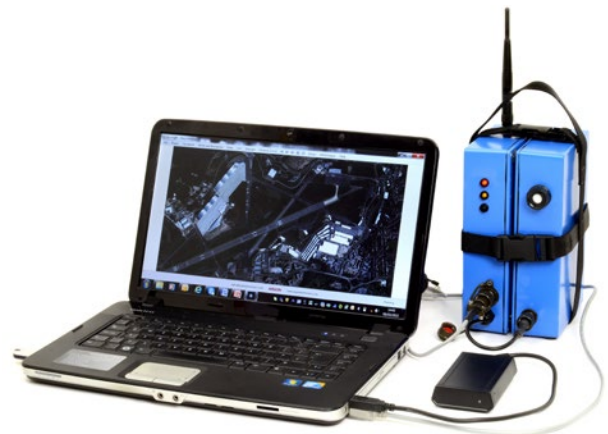
The military dream is what is called 'manoeuvrist warfare' - armoured divisions crashing through the enemy positions – but the reality is attritional warfare, as evidenced by Syria and, 100 years ago, the First World War – both of which have seen the significant use of chemical weapons. It has been speculated[1] that in Syria, many improvised, local chemical weapons have been deployed – while in the First World War the most effective way of killing the enemy was not an artillery barrage but a gas attack.

Increasingly, the modern infrastructure into which the military must move is littered with what are called

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hazardous materials – HazMat – and the dangers are wide-ranging. For example, when a commander leads his force into a location near a scrapyard he needs to know if abandoned military equipment – such as battlefield damaged radioactive density measuring equipment - will put his soldiers at risk of being irradiated. Similarly, when troops move through a factory in a modern battlefield situation, they need to know that it is not producing semi-conductors containing arsenicals, or that a burning building is not producing carbon monoxide.

Issues such as this were a big issue in Bosnia, where the Bosnian Serbs quite deliberately caused collateral damage using chemical agents. For example, when they sat at the top of a hill, they did not fire artillery shells, they merely put chlorine bottles on trailers, took the brakes off and let them run down the hill, with an explosive charged taped to the side, and the same kinds of attack have been observed in Iraq. Incidents such as this are not considered as war crimes or in contravention of the chemical weapons convention but they are real dangers that have occurred, and will occur again, to challenge military forces.

To be prepared for such incidents, to maximise operational effectiveness and to give confidence to the military staff who are increasingly moving within such hazardous locations, we must increase the provision and frequency of training using electronic simulators and software throughout the military and prepare our forces as best we can for the modern battlefield.

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For more information about Lutra Associates, please visit their website - www.lutra-associates.com

[1] http://www.telegraph.co.uk/news/worldnews/middleeast/syria/9950036/Syria-chemical-weapons-finger-pointed-at-jihadists.html

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