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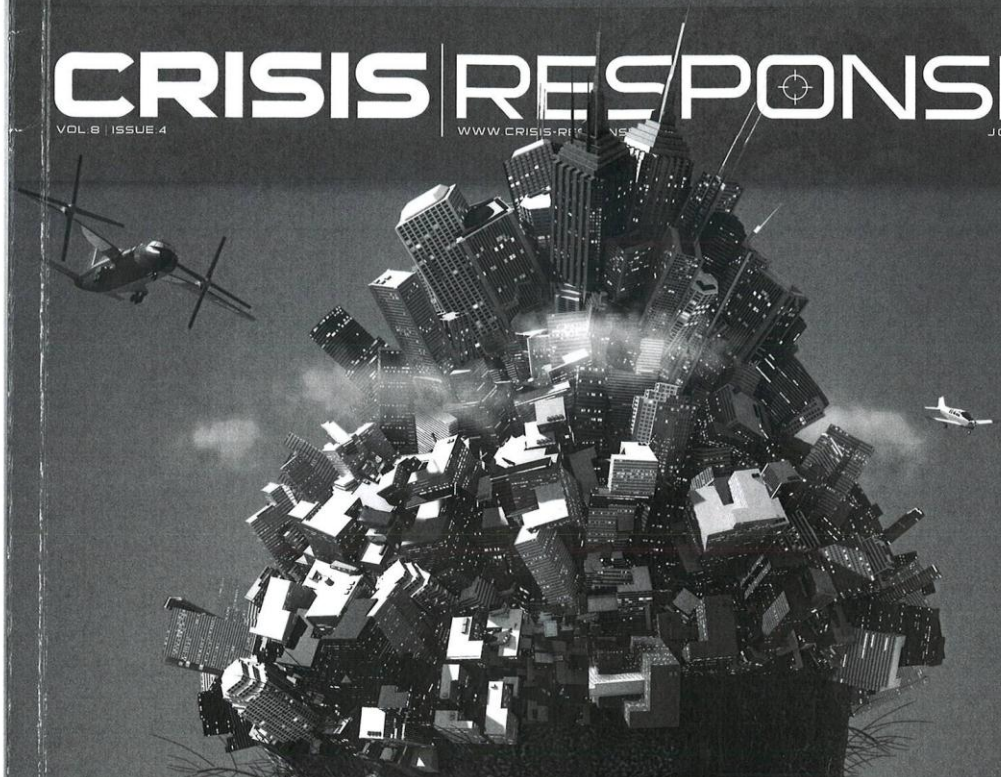

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Ioannis Galatas looks at four selected issues related to CBRN threats in the urban environment, saying that a large part of winning the battle lies in changing human attitudes and modifying current response

MANY COUNTRIES ARE WORKING on organisational modifications and adaptations against new emerging threats involving chemical, biological, radiological and nuclear (CBRNE), but the vast majority are relaxed and continue on a business as usual footing. A combination of ignorance and politics, along with today's excuse of financial turmoil, are to blame.

This article will focus on four selected issues related to CBRN threats in the urban or megapolis (ie a chain of adjacent city areas) environment: Anthropocentric/logical CBRN planning; Hospital CBRN preparedness; CBRN preparedness in hotels and resorts; and CBRN awareness among the public.

When we use the term 'anthropocentric/logical planning', we are referring to a planning process that is, to take from the ancient Greek words: 'man (or human) centred, based on valid reasoning'.

In most cases, when reviewing huge CBRN plans with tens of chapters and hundreds of pages, we sense that both humanity and logic are most definitely absent. The main reason is that most CBRN planners have no personal experience of CBRN operations. Many can only read the papers available and then propose solutions that may be neither applicable nor practical. Most planners have never had to wear personal protective equipment (PPE), nor have been asked to operate under extreme pressure in life-saving operations or simulations.

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In almost all Olympic Games from 2004 in Athens (the first Olympiad after 9/11), one sees television or pictures and videos from exercises and drills where first responders, dressed in space yellow, orange, blue or green Level-A (totally encapsulated) suits enter the site of the CBRN terrorist attack and exit carrying stretchers laden with victims.

Such imagery and footage might make for good defence propaganda but are removed from reality. In real life the operational time window between the moment responders don their Level-A gear and when they must remove the suits is only 20-40 minutes, depending on mission, environmental temperatures, area of operations, etc.

First responders enter the site, have a look around, transmit an initial overall report, search for secondary improvised explosive devices (IEDs), take samples, perform related detection tasks and return to base. They do not administer antidotes, assist suffocating people to the nearest exit, or carry casualties and stretchers. Nor do they remain until the site is declared clear.

The only exception is when they are required to help a fellow responder who has experienced health problems during the operation.

People-centred planning

The second important component is that every plan should be drawn up with the aim of assisting people, a fact which is often overlooked. A plan is no good if it does not address the question: "What would my reaction be if I were to be involved in a real CBRN event downtown?"

What is expected to happen following a real CBRN event in a megapolis environment? Approximately 20 per cent of people involved will remain in place because they are dead or severely injured and/or contaminated. The remaining 80 per cent will attempt to flee in all possible directions and, if unharmed, most will aim for their homes. If they are experiencing health problems they will end up at the nearest medical facility (hospital/clinic).

Another important number is the '1:5 ratio' between contaminated and the worried-well, which can lead to the collapse of medical systems within a short time period.

These percentages reflect normal human responses to a catastrophic event. At the same time, they represent the three pillars of every response plan: People will not wait on site for state response; they will transfer contamination to other places; and will overwhelm medical facilities. State response will arrive late – mainly owing to traffic congestion and initial status of surprise – and will deal with operations which, other than cordoning the area, could be carried out later on.

Based on the above, it is strongly advisable to modify the way we respond to such instances.

First, set up road blocks manned by first responders who can perform mass decontamination in a 500 to 1,000 metre perimeter around the incident site so nobody will be able to 'escape' without having received contamination status clearance.

Nearby hospitals should be reinforced with relevant first responders who will help deploy their resources (if available) or carry out other necessary tasks outside of the hospitals.

During the 2004 Olympic Games in Athens, I (unsuccessfully) proposed the 'Rule of 16'. This is based on the fact that there are four main and four secondary wind directions (ie eight in total). We conduct operations during day and night, equalling two. So for every possible target, we could have 16 volumes of operational directives that will address all the issues related to a chaotic response during the 'Golden Hour' after the incident. These issues include, among others: Traffic redirection; deployment areas; decontamination zones; first aid; triage; sampling transportation; and incident command post location.

There are many details to be taken care of and factors that must be taken into account (ie air turbulence caused by urban canyons). But, when these have been addressed, what remains are regular updates and physical inspection of surrounding areas.

Planning in an anthropocentric and logical way will lead to innovative and practical solutions that are most likely to work in a real crisis situation – ie traffic congestion can be beaten by using modified four-wheel bikes carrying two CBRN responders with their equipment, driving in the free space between traffic lanes jammed with cars (a modification of the practical approach currently employed by Magen David Adom – the emergency medical services in Israel).

Hospital CBRN preparedness is one of the two weaknesses of all CBRN plans. Often, during major events there is one (or more) dedicated 'CBRN hospital' responsible for

CBRN planning in the urban environment

handling mass casualties. But the Tokyo sarin experience showed that all hospitals and clinics in the Tokyo metropolitan area accepted sarin victims who arrived there by their own means (85 per cent) and not via state ambulances.

Of course one or two hospitals in the closest proximity to the incident area will be highly preferred and might be overwhelmed, but all hospitals and clinics could be involved. Are these facilities prepared to deal with such a possibility?

Below are some key features that will define preparedness status:

- Is there a hard fence surrounding the hospital? Modern hospitals prefer to have a green environment instead of fences and barriers. But if there is no fence how to control the possible large number of incoming contaminated people?
- Is there provision for fortification of main and secondary entrances and ground windows of hospital? Glass can be broken easily and there's always a side door that will be left unlocked permitting entrance to the hospital.
- Are security personnel able, trained and equipped to confront incoming and potentially contaminated victims seeking assistance?
- Are accident and emergency department personnel trained and equipped in a proper way to respond outside hospital's premises? Do they have 24/7 response teams to be deployed if needed? Are they fit to work in PPE? Are their equipment and protocols compatible with those of other response units?
- Is there a dedicated decontamination area or a mobile decontamination system that can be deployed if needed? What about response time? Is there collaboration with local Fire Service to deploy water curtains until a hospital's decontamination unit is ready to operate? Is there provision for the decontamination of sensitive equipment?
- Is a CBRN response plan available? Are all parties involved aware of their responsibilities and duties? What about contaminated waste management?
- Is there a surge capacity building plan? Is there operational co-operation between neighbouring hospitals? What about joint exercises or co-exercising with other first responders? Are national and/or international exercises performed? Have night drills been undertaken?
- Is there adequate provision for the management of the deceased?
- Is there provision for protecting sensitive data?

If you answer yes to all the above, ▶

then there is a good chance to be able to respond in a proper and safe way.

Finally, of equal importance with equipment and structures, is the attitude of the medical community that will be asked to perform under extremely difficult and potentially life-threatening conditions.

Authorities must take into account that this would require a lot of hard work, sweat and dedication on top of daily duties, routine and responsibilities. They must invest in human factors, in other words, their medical personnel. Of course, even if such investment and consideration are lacking, it is most likely that personnel will perform admirably and do their utmost in such difficult scenarios, but it is pure common sense not to suffer further casualties if these can be avoided. Financial considerations are no excuse for putting intolerable pressure or demands upon first responders and medical personnel, but all too often this does occur.

The knowledge base must be strengthened and this can be done by incorporating CBRNE Terror Medicine to curricula as standard. Proper knowledge of the effects of CBRN agents on humans will strengthen the diagnostic capabilities of tomorrow's front-line health professionals.

Hotels and resorts have always been on the top of the soft targets list. Not only is it likely that these facilities will house large numbers of people at any given time, but perhaps more importantly, they will be of different nationalities, thus representing ideal targets for terrorists that want to deliver a message. Worldwide coverage, mass media attraction, possible shallow security and consequent adverse effects on tourism and local economy are just a few of the immediate consequences.

Despite the relatively long list of hotel terrorist attacks around the globe, some of these enterprises appear to be reluctant to harden their security measures or fortify their infrastructure. Of course hotels and resorts want their guests to stay and have fun, but how can they do that if they are not alive? Further reasons cited are that the establishments are located in 'safe' areas, not ones prone to terrorist attack.

Modern research and technology provide solutions that are quite effective although sometimes they cost a lot. But not only is it difficult to quantify the cost of human life, we must also take into consideration the financial and marketing consequences – both immediate and long-term – for the enterprise itself in case of a real event. Tourists themselves are gradually changing this attitude and large tourist organisations now request information on security measures in hotels and resorts proposed to their clients.

I will list just a few of the many measures that could be implemented. Blast-resistant glass should be installed, at least in the first five floors of the building, so as to avoid injuries from shattered glass. Escape hoods should be provided – both for hotel guests and personnel – these should provide adequate protection against CBRN agents, but also against smoke. With improvisation, fire sprinkler systems could be used for decontamination. Have emergency flood lights (preferably on trailers) for night events and consider a small, specialised pharmaceutical stockpile for the Golden Hour after an incident.

Provide shelter-in-place or shelter-in-a-room facilities for isolated people or groups; these can be deployed in seconds and can hold between 10-30 people. Also, the central hotel TV channel could be used for emergency messages, alerts and information to people in their rooms.

Outdoor central ventilation and heating systems must be secured and the 'dead' space between the road access and a hotel's entrance should be increased and fortified.

Misguided mindset

Checks should be made on people entering the hotel premises (catering, florists, etc) and human screeners, dressed as tourists or guests, deployed around the hotel and nearby streets, as well as inside the hotel itself. Finally, it is important to work closely with response authorities and the local fire service by providing detailed blueprints of hotel infrastructure and facilities.

Yes, these measures cost money, but investment in security could well be recouped in a short period of time, especially if the hotel is located in a vulnerable area, by informed customers choosing to stay in a hotel which has focused on its security.

The second weak link, or to be more accurate, the often-forgotten link, in CBRN response plans is that of population awareness. This can be attributed to a misguided mindset, rooted in the past, which wants to avoid causing panic among the public. But in modern society, people have grown up in a changed environment, they have faced different emergencies, have watched wars in real-time and have experienced terrorist attacks on a previously unimagined scale.

Of course, the invisible element of CBRN threats multiplies the terror provoked by their release. We grew up with visible threats (wildfires, earthquakes, floods, tsunamis), but the possibility of being killed by something invisible, colourless and odourless is horrifying. Even if this is the case, the only gain to be achieved from leaving the populace in ignorance would be that they would die before having had the chance to panic.

A strong incentive for investing in awareness campaigns is the expected transformation of the public from a passive to an active partner. This well-informed partner, via active collaboration with the state response system, would manage to survive a transient or long-lasting incident.

Many methods, both old and new, help to achieve such knowledge distribution. These include: Distributing leaflets describing the threats and their effects on humans to various groups, schools, businesses, organisations, institutions etc; using television, mass media, mobile telephony (SMS), Internet and social media groups (Facebook, Twitter, MySpace, LinkedIn) for disseminating multilingual messages; organising door-to-door campaigns or informative sessions for small groups to answer questions; informing professional groups on threats and countermeasures; educating the populace on home-made countermeasures and how to shelter at home in the event of a chemical/nuclear plant accident; and regular activation of national alarm systems (sirens) and emergency TV/radio channels providing training and response information.

There are many more measures, such as public shelters, safe rooms, modification of building standards and legislation, escape hoods, etc. There are countless solutions available and civil protection has a great opportunity to take advantage of modern technology in order to save lives.

Not all changes require funding. If we manage to change human attitudes towards the unexpected, more than half of the problem would be solved immediately; a combination of technology and improvisation would cover the rest.

Prevention is better than treatment and although it is in our nature to hope for the best, we must equally be prepared for the worst. CRJ

Author

Brigadier General **Ioannis Galatas** *is a retired military physician specialising in allergy and clinical immunology. Since 2001 he has been a CBRN officer and planner who has trained (including live agent training) in a number of countries (including Iran). During the 2004 Athens' Olympic Games, he served as Commandant of the Olympic Hospital CBRN Response Unit – the only hospital-based specialised unit deployed for the Games. He holds a Master's degree on International Terrorism, Organised Crime and Global Security from Coventry University, UK (2010) and he is a PhD candidate since May 2012 (Athens Medical School/Dept of Forensics & Toxicology). His last appointment (as of August 2010), was as Head of the Department of Asymmetric Threats at the Intelligence Analysis Branch, Joint Military Intelligence Division of the Hellenic National Defence General Staff in Athens, Greece. Currently he is the Editor-in-Chief of the online* CBRNE Terrorism Newsletter