

Planning for the unthinkable: psychosocial reaction to Chemical and Biological Warfare (CBW) weapons

From unthinkable to reality

The ongoing efforts by dictators and totalitarian regimes to acquire Weapons of Mass Destruction (WMD), especially Chemical and Biological Warfare (CBW) weapons, has focused worldwide apprehension on their possible use in future conflicts (Alibek & Handelman 1999, McGeorge 1990). An even worse nightmare almost materialised when the Japanese terror group, Aum Shinrikyo, twice used Sarin nerve gas against civilian targets and was found to be experimenting with biological weapons in their laboratories (Aum Shinrikyo 1995). Although the danger of global nuclear war has decreased, the possible use of WMD, without warning against unprotected civilians, has emerged as a realistic threat as the new century begins.

Since the potential impact of CBW weapons on unprotected populations can be devastating, their footprints obscure and their cost low, these appear to be attractive future weapons of choice for terrorists bent on causing mayhem (Betts 1998, Simon 1997). BW weapons in particular are of grave concern. They are the easiest and cheapest to produce and deliver, the hardest to detect and trace, and the most complex to mitigate against (Steinbruner 1997-8). Once introduced, the potential capacity of biological agents to reproduce and adapt upon release could, at least theoretically, spread their effect far beyond the initial target site (Fischer 1999). A 1993 study revealed the awesome dimensions of BW weapons: a single plane spraying 100 kilograms of anthrax spores over Washington, DC could, under suitable conditions, kill between one and three million people (US Congress, Office of Technical Assessment, 1993).

These concerns have already generated papers, documents and training manuals, some of which are cited here, looking at the problem from many perspectives. Planning for this unprecedented threat has become a necessity for those authorities that do not want to be caught unprepared.

Historically, experimentation with CBW began with an eye to development

by Professor Hayim Granot,
Mass Emergencies Project, School of
Social Work, Bar-Ilan University,
Ramat Gan Israel

of battlefield weaponry. Therefore, the implications of non-conventional weaponry for combatants have been given most attention. Their unpredictable nature has thus far curtailed the battlefield usefulness of CBW weapons but this could change in the future. Their potential as terror weapons turned against civilians is a fairly recent development (Christopher, Cieslak, Pavlin & Eitzen 1997). The shortcomings of CBW in combat do not have the same significance when used against civilians. Furthermore, psychosocial impact is a prime goal of terrorism. This aspect of CBW weapons is potentially extensive, but has only been partially explored in published work to date, since not many behavioral and social scientists have the background, resources or inclination to explore these possibilities. This paper addresses the psychosocial impact of CBW weapons on civilian populations and the emergency procedures such assault would necessitate.

Consequence management

Containing the results of CBW weapons depends on the quick identification of the specific agent or agents used. Early and accurate diagnosis, however, is bound to be problematic, since the first symptoms for many of these agents are fairly generalised and could initially elude detection. Furthermore, few doctors in developed countries have experience with the symptoms likely to appear. Simon (1997) points out that, 'since BW agents are invisible, odorless, and tasteless, no one would know that a terrorist attack is under way'. Unless prior intelligence is available, 'an increased number of patients presenting with signs and symptoms caused by the disseminated disease agent is the most likely first indicator that a BW attack has occurred'. Much the same could be said about today's CW weapons.

Although much effort is now being invested in its improvement, the current

stage of development makes laboratory detection of specific chemical or biological agents difficult and time-consuming. Automated monitoring of the environment by sensors, an expensive but hopeful solution, is still far off and will depend on a decision to install and activate such sophisticated equipment at the right time and location. For the present only the simultaneous appearance of numerous cases in fairly advanced stages would indicate the true nature of an unexpected assault.

In crowded urban surroundings, the general differences between the effects of chemical and biological agents could be significant for containment and consequence management. It is possible that these differences might imply differences in psychosocial impact as well.

Theoretical differences

In theory, at least two objective differences between the characteristics of chemical and biological weapons could affect the way we cope with them and their psychosocial impact. Chemical agents, generally speaking, are faster acting than biological agents. The presence of nerve gas, otherwise imperceptible to the senses, is immediately recognisable by its dramatic and deadly effect on those exposed. Nerve agent victims would immediately die or exhibit ill effects. Casualties with lesser degrees of exposure might experience ill effects in minutes or hours.

BW victims might not experience symptoms for hours, days or maybe even weeks, ultimately falling ill anywhere, even far from the area attacked. By then, after incubating unnoticed in their systems, it might be too late to prevent the full virulence of the disease. It may even be difficult to determine exactly when and where the assault took place. As already indicated, response agencies may not become aware of deliberate exposure for some time, if ever (Simon 1997).

Secondly, persons exposed to chemical attacks themselves constitute a hazard to those who must cope with casualties. It would be necessary to restrict the movements of victims after attack to prevent the spread of poisonous residue

to others. This requires first responders and emergency medical personnel to exercise extreme caution in the rescue and care of victims. Elaborate decontamination and screening procedures will inevitably slow the process and be detrimental to the condition of the casualties. The precautions are also likely to produce profound emotional reactions in both rescuers and victims.

Some authorities suggest that to forestall accidental epidemics during preparation, the weaponised biological agents most likely to be used would probably not cause contagion. If this were true, their victims would not pose a hazard to responders. Unfortunately, terrorists are not particularly distinguished by their caution. They are unlikely to consider such factors.

Considering the overall problems of detecting the existence of a terror attack and determining what specific agent was employed, the distinction between chemical and biological threats does not seem to be of great practical significance to first responders. In both situations, their physical management involves unprecedented hardships. Although decontamination procedures would vary with the specific agent, responders would have to exercise similar caution in any event. The psychosocial effects of both types of terror weapon are also likely to make their management extremely difficult for all involved.

Responder precautions

Rushing to the rescue is no longer advisable. First responders can never be sure about the nature of the hazards they face when called to an incident, particularly a terror incident. Terror assaults, even with explosives, may involve a deliberate attempt to injure responders and hamper rescue efforts. Emergency agencies are beginning to plan for greater caution in their on-site response. Adding the difficulty in ascertaining the identity of the agent involved in CBW, this means emergency responders must prepare for all eventualities.

Response personnel are being trained to relate to all incidents as though they threaten responders, until proven otherwise. In sophisticated consequence management training, awareness of the CBW threat evokes similar cautions in all cases. In the US, for example, all incidents are considered potential *B-NICE* (Biological; Nuclear; Incendiary; Chemical; or Explosive) events, necessitating similar precautions to reduce *TRACEM* (Thermal, Radiological, Asphyxiation, Chemical, Etiological [disease carrying], and

Mechanical) risks to responders (Emergency response to terror 1997).

Any possible terror incident must be approached with exceeding caution. Thus response personnel are being taught to minimise their exposure time, keep their distance, make use of shielding and decontaminate victims and themselves as soon as feasible. While these are certainly justified precautions in light of the growing hazards, they have profound implications for the tradition of speed and unconstrained nature of rescue operations.

Psychosocial impact

Few papers consider the psychological and social implications of the use of these weapons on civilians. It is possible that they are so overwhelming that they repel most qualified researchers. In any event, these implications are likely to be substantial, both for the exposed population and for their rescuers and certainly warrant greater attention.

Impact on rescuers

Rushing into a disaster area and working long hours in a desperate rescue effort is the tradition of Search and Rescue (SAR) teams around the world. Working under CBW circumstances requires protective gear (masks, self-contained breathing apparatus and NBC suits) that is cumbersome, and isolating. Both verbal and non-verbal communication between rescuers and victims and among rescuers themselves is likely to be disrupted, compounding physical hardships with emotional difficulties. Brooks, Ebner, Xenakis and Balson (1983) reported considerable psychological and behavioral difficulty among participants just from donning protective gear in experimental chemical warfare training exercises. In the best of circumstances, some individuals will find such conditions unbearable for even the shortest period of time. In warm weather, wearing protective gear quickly becomes oppressive to everyone. As a result, work periods would have to be drastically reduced. Under these conditions rescuers are capable of working only minutes, not hours.

Changing public reaction

A further change likely to take place is the reaction of the public to emergencies. One of the little discussed, but widespread characteristics of the immediate response phase to sudden emergencies and disasters, is a tendency toward mutual aid and cooperation among the victims and even members of the general public (Drabek 1986). Because response agencies are so

focused on their own vital activities, they often overlook the importance of these efforts in saving lives in the immediate aftermath of disaster. Even though official rescue remained in the limelight, media coverage of the catastrophic August 1999 earthquakes in Turkey, Greece and Taiwan revealed the extent of these efforts. It is not unusual for spontaneous responses to account for the majority of those saved in sudden emergencies.

The threat posed by CBW will in all likelihood inhibit, if not eliminate, such voluntary rescue attempts. While reducing exposure, this would substantially increase the burdens of official emergency responders at the very time they themselves are being forced to act with greater caution. Furthermore, if inadequate resources are available for the numbers injured, competition for care could eliminate all co-operation.

Medical system strain

Prevention and prophylaxis, common public health activities, are essentially inapplicable in an unexpected CBW terror assault. All that remains for the medical system is to care for the casualties in the wake of the incident. This includes diagnosis, management, and triage of casualties, while preventing the spread of the agent and protecting themselves from exposure to the same risks.

The sudden death and illness of large numbers of victims and the possible need to contain ill-effects among others who do not at once exhibit symptoms, while exercising extreme caution, would challenge, if not overwhelm, the medical resources of even the best prepared society. The toll that might be extracted from medical service personnel working long hours against hopeless odds under severely threatening conditions is uncertain. Over and above the necessity to cope with the large-scale health emergency, the ensuing psychosocial problems could easily prove unmanageable.

Emotional and social impact on victim management

The potential emotional and social implications of civilian victim management requirements in CBW assaults are most complex. Being unprecedented, however, even the experts on human response to extreme situations are uncertain about this impact.

Exposure to World War I tactical use of gas, mostly chlorine and mustard gas, had a well-documented physical and psychological impact on soldiers, immediately and in the long-term. Large numbers of ex-servicemen suffered the chronic after-

effects for years following the end of hostilities. No follow-up of the Egyptian victims of more recent Mustard gas use in the Yemen was ever conducted. Few cases of exposure to the more sophisticated nerve agents have been studied and the emotional impact of the infamous Iraqi use of nerve gas against their Kurdish population or against Iranian troops was impossible to investigate.

Fullerton and Ursano (1990) surveyed the few documented accidental or experimental instances involving nerve agents. Judging from these few incidents, large numbers of individuals are likely to experience psychosomatic symptoms difficult to distinguish from actual contamination because of their similarity to the early stages after exposure. In the Japanese incidents, these were many times the numbers of actual victims (Aum Shinrikyo 1995).

Large-scale emergency medical procedures must include management of the numerous pseudo-victims (Holloway et. al. 1997). To reduce pressure on medical facilities, these must quickly be sorted out from those really exposed. The use of placebos has been suggested as part of any Psych-Ops program aimed at this phenomenon. If not properly managed, emotional victims could return to choke the medical care system when they find that initial medical attention did not relieve their symptoms.

The impalpable nature of chemical and biological agents intensifies their frightening emotional impact. Logistic problems, such as inadequate detoxification resources or lack of antitoxins, could further intensify reactions. Appropriate measures must be taken before anyone exposed to these agents can be released into the community. Decontamination of those exposed to a chemical assault involves the showering of victims and careful disposal of their clothing (Rosenbaum 1993). The dehumanising nature of these countermeasures will likely intensify the emotional hardship for many survivors as will restricting the mobility of victims after attack. The oppressive nature of decontamination is bound to contribute to heightened anxiety.

Extrapolating from non-CBW incidents, some authorities believe that fear may be so intense in CBW attack, that widespread hysteria and panic could cause exposed and even unexposed populations to become unruly or unmanageable. The Psych-Ops dimension of the problem would seem to be all but overwhelming.

Fullerton & Ursano (1990) summarized the few studies available at the start of the

decade on response to CBW. They primarily address the military implications of findings from incidents involving the accidental and experimental exposure to organophosphates, not biological agents. Their conclusions are still worth quoting here:

1. Working around nerve agents does not necessarily produce panic.
2. If a group exposure occurs, angry responses to command can be anticipated.
3. Behavioral and psychological responses to nerve agents can be of a subtle nature, including disturbances in memory, impaired concentration, irritability, and confusion.
4. Exposure to nerve agents can lead to the appearance of subtle problem-solving crutches.
5. Exposure to nerve agents has long-term effects, documented up to one year.
6. Because behavioral and psychological effects persist for a varying length of time (two weeks to one year) when to return individuals to their units after exposure to nerve agents is unclear.
7. Multiple exposures increase the risk of symptomology.
8. Further data is needed on dosages that produce significant cognitive and affective disturbances when given as chronic low-dose exposures.
9. The use of alcohol is of substantial concern in the CB environment.
10. Group contagion of behavior will appear and can adversely affect functioning in the CB warfare environment.
11. Complaints similar to the symptoms of contamination can be anticipated from those who think they have been exposed even when contamination has not occurred.
12. Over-dedication to the mission may make it difficult for an individual or supervisor to accurately assess the physical limitations of an individual.
13. Overall, the CB warfare combat environment itself seems to contribute 5% to 20% to casualty rates.

These conclusions have immediate relevancy to rescue forces but their implications may apply to casualties as well. There is much to suggest that those exposed to less than lethal doses are likely to suffer at least temporary physiological damage detrimental to reasoning processes and motor skills.

They appear to be subject to the suggestive behavior of others and could therefore exhibit difficult to manage collective behavior. Just being exposed to the non-conventional environment

seems to affect a substantial minority of those so exposed.

Public response

Few researchers have sought to analyse the likely psychological and social implications of a BW attack, which threatens to overwhelm health facilities and leaves emergency response with very partial solutions at best. Holloway et. al. (1997) in one of the few recent papers to address these issues in detail, predict antisocial behavior.

One must distinguish between personal anxiety and even panic, leading to the prevalence of psychosomatic symptomology and outbursts of aggressive antisocial crowd behavior. Although the possibility of such behavior is anticipated by Fullerton and Ursano (1990), it is only conceivable during efforts to escape or when faced with a shortage of life-saving supplies. This offers scant comfort when restricted movement of exposed populations and overwhelmed medical facilities are contemplated.

Dire speculation

Are unmanageable panic and mass hysteria a foregone conclusion? In the past, there was a tendency to exaggerate antisocial behavior in the wake of disaster (Granot 1993). It was originally believed that to escape danger or acquire the scarce means required for survival, humans become aggressive and irrational, self-centered savages, ready to save themselves at the expense of those around them. Careful rereading of disaster records and the eyewitness reports of survivors show that such behavior has actually tended to be rare.

Social values seem far more ingrained than was formerly believed. Even in catastrophe, many examples of mutual aid and help extended to the weak can be cited. Even escape from burning buildings now seems less likely to produce panic than was formerly thought (Sime 1990). Most instances of panic flight from burning buildings are today believed to be rational attempts to escape immediate danger that went wrong.

Examining the literature on catastrophic emergencies and disasters such as natural disasters, aerial bombing in WWII, Hiroshima, Nagasaki, Chernobyl or Bhopal, one rarely find riots, uncontrolled collective behavior, or other dire immediate crowd reactions among survivors. Media coverage of the catastrophic 1999 earthquake in Turkey made it patently clear that even in the face of desperation, fear, grief, deep resentment and anger at government officials and

building contractors, almost no instances of mob aggression were recorded.

It is unlikely that aggression has been systematically omitted or overlooked in recording these events. The researcher looking for clues regarding what to expect in the wake of CBW weapons can only reach a number of alternative conclusions. It may be that the anticipated anti-social reactions do not materialise or that their impact on the overall picture is minor. They may occur in selected cultures only.

On the other hand, one might hypothesise that CBW weapons have a more severe emotional impact than other threats because of they are unfamiliar, invisible and undetectable to our senses. Additionally, the physiological damage caused by these agents could directly affect judgment and behavior.

No matter how logical it seems that victims denied access to medical care would be hysterical, rebellious or unmanageable, dire predictions regarding the psychological or social impact of these weapons could prove to be wrong. At this point we still seem to be speculating in this regard.

Conclusions

Acquisition of CBW capacity by rogue states and ungovernable terrorists is a justifiable cause for alarm in those circles responsible for the safety and security of civilian populations. These weapons are capable of inflicting heavy losses on unsuspecting civilians.

Since the subject is recent and no massive attack on civilians has ever been monitored, all of the attempts to plan for such a contingency remain speculative. Among the few detailed papers seeking to describe the psychological and social impact of such an attack there is a tendency to expect severe anti-social behavior and a breakdown of public order. There is little evidence from history to support such dire predictions even in the worst case scenarios. We would have to conclude that this hazard differs from other disasters or causes, either in the intensity of the dread it arouses or in causing organic damage likely to affect behavior, to accept such unusual predictions.

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Conference announcement



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For further information contact:

Lyn van Kampen
phone: 02 6266 5317
email: gdin@ema.gov.au

Jonathan Abrahams
phone: 02 6266 5219
email: gdin@ema.gov.au

Patricia Tart (Conference Organiser)
Australian Convention and Travel Services
email: gdin@ausconvservices.com.au