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# Social and Psychological Consequences of Chemical, Biological and Radiological Terrorism

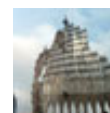
## NATO-Russia Advanced Research Workshop

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### About...



Combating  
Terrorism in the  
Security  
through Science  
programme

### Preliminary notes

*prepared by Simon Wessely,*



The organising committee.  
Professor Simon Wessely (UK) and  
Professor Valery Krasnov (Russia) (center)

When President Putin met with NATO Secretary General Lord Robertson in October 2001 it was agreed that one area of co-operation between NATO and Russia was studying the effects of terrorism, with the intention of mitigating them.

In response to this call, a joint Workshop was organised at short notice, bringing together international experts from Russia, the NATO countries and other relevant nations to discuss the social and psychological implications of the new terrorism. The workshop was held at NATO

Headquarters between the 25 and 27th March 2002, and generated interest, activity, enthusiasm and no shortage of questions that need to be addressed.

As an indicator of the seriousness of the topic, and also the importance placed by both the NATO nations and Russia on the subject, and on their desire to work together on this issue, there were many indicators of the high level of importance placed by senior officials on this cooperation. The workshop was opened by the NATO Assistant Secretary General for Scientific and Environmental Affairs, was the guest of his Excellency the Russian Ambassador at a formal reception, and was closed by the NATO Deputy Secretary General.

The workshop was organised and co-chaired by Professor Valery Krasnov (Moscow) and Professor Simon Wessely (London) and was divided into several themes.

### Case Studies of Relevant Episodes

On the first day the theme was what can be learned from previous episodes of Chemical, Biological and Radiological (CBR) terrorism, and also from non terrorist incidents. The radiation disaster at Goiania (Brazil) was discussed by Dr Brian Dadd of the International Atomic Energy, whilst the long term consequences of the Chernobyl disaster were addressed by Dr Nadezhda

Tarabrina (Russia) and Professor Lars Weisath (Norway). The dread in which the public view radiation threats was repeatedly emphasised. Although in the Brazil incident control over the exposure was achieved rapidly, the impact on the local population was immense, with enormous numbers arriving for medical checks and screening. The clear-up took many months, with a significant cost and impact. Social and psychological pressures added to the cost. The impact was so great that the international radiation sign has now been added to the State flag, demonstrating that a radiological disaster can lead to permanent changes in the way in which the inhabitants view themselves. The impact of the Chernobyl disaster is too well known to bear repetition, but evidence heard by the workshop once again confirmed that its long-term health impact relates primarily to its social and psychological consequences. Again, people's views of themselves in the affected areas have changed dramatically and irreversibly, to the extent that Chernobyl is now blamed for all the ills and problems of the regions, even those unlikely to be associated with the disaster itself. The Workshop also heard some candid admissions of the failure of communication between the authorities and the people, and that these had resulted in an increase of the impact of the disaster.

One nation that has lived for many years under the threat of CBR is Israel. Professor Avi Bleich (Tel Aviv), ably assisted by Professor Arik Shalev (Jerusalem) described this, focusing on the particular case of the Israeli response to the SCUD missile attacks during the 1991 Gulf War. Detailed and compelling statistics were produced. First, it was clear that the side effects of some of the counter measures taken should never be underestimated. Despite much preparation of the population, there were still more deaths from misuse of the gas masks than from the direct attacks of the missiles themselves. Second, psychological casualties more than outnumbered the physical casualties, and planning needed to take this into account if emergency services were not to be overwhelmed. Efficient triage was necessary. Third, habituation to the attacks came very quickly, and the surge of psychological casualties soon subsided. Fourth, any population based civilian planning needs to be repeated on a regular basis.

The 1991 Gulf War also had long term effects on members of the Armed Forces of the Coalition nations that participated. Professor Simon Wessely (London) described a programme of research into the health of the UK Armed Forces. The key lessons were that the fear of exposure to CBW weapons was a major factor in the subsequent health of individuals, but this interacted with unexpected side effects of the measures taken to protect the Armed Forces against these weapons. A third strand were the problems in the political responses to the emergence of symptoms amongst veterans, and the media handling of the issues. Professor Wessely concluded that unexplained medical symptoms must be anticipated after any future CBW threat, and may not be preventable, but that current management to minimise their impact remained fragmented. Dr Craig Hyams (Washington, DC) showed how the long term impacts of any CBR episode may prove more problematic than the short-term. The maintenance of trust between those affected and those in authority was a fundamental goal, a theme that was echoed throughout the workshop.

The so called Gulf War Syndrome demonstrated that the issues with which we are concerned may take many years to develop, and many more to alleviate, but Professor Ben Nemery (Belgium) showed that events can also develop in hours. In his review of the Coca Cola incident in Belgium, now seen as principally an episode of mass psychogenic illness, and the psychological responses to the use of possible chemical agents in Tbilisi, Georgia, during the Soviet era, he showed that psychogenic transmission of illness was indeed a

factor, but that management of such episodes were impeded by the lack of an acceptable linguistic term which both acknowledged the psychological origin of symptoms, without denying its seriousness and reality. He proposed the term Catastrophic Reaction Syndrome as an acceptable term

Professor Stephen Palmer (Cardiff) discussed the problems posed by chemical pollution and leakages. By comparing and contrasting those incidents in which there had been no long term impact with those in which long term social and psychological impacts persist, he demonstrated the importance of community participation in determining responses, and how this was not the same as scientific or epidemiological responses, echoing Raymond Neutra's classic descriptions of epidemiology "for and with a distrustful community". He delineated the learning processes that medical and political agencies go through with each new episode.



Fighting Chemical and Biological Weapons

Two seminal CBW attacks were discussed in much detail. Professor Nozumu Asukai (Japan) discussed the infamous Sarin attack on the Tokyo subway. New information from his work showed first the need for a planned response from the emergency services, since without that rescue workers soon turned into victims themselves, and second, that long term symptoms have indeed emerged after the attack. A question that has yet to be answered is if these are the psychological responses, as some evidence indicates, but the possibility of long term central nervous system involvement cannot be discounted.

It is perhaps too early to appreciate the full story and impact of the US anthrax attacks, but Lt Col Ross Pastel (Fort Detrick) made a valiant effort. He showed how medical responses improved rapidly, and that early detection appeared to save lives. He also showed how confused and uncertain political responses added to confusion and uncertainty. The need for credible scientific communication was emphasised, but the difficulties also, since it became clear during the attack that the medical understanding of anthrax transmission needed to be revised.

Many speakers alluded to the various physical, social and psychological mechanisms that might underly the emergence of long term symptoms after CBR episodes. Dr Omar Van der Bergh (Belgium) described some elegant experiments showing how classic Pavlovian conditioning could result in the amplification of symptoms after toxic exposures. This was particularly relevant to the development of so-called "chemical sensitivity" which has been observed after many "toxic" exposures.

### **Psychological And Social Perspectives On Reactions To CBR**

A challenging overall view of these individual episodes was provided from the sociological perspective by Professor Thomas Glass (Baltimore). Professor Glass drew attention to what became an developing theme – the resilience of people. He reminded the workshop that during the World Trade Centre attack of September 11th, the evacuation of the Twin Towers was not accompanied by the panic that one might have predicted. He drew attention to the role of social networks, and individual resilience. Although panic in its classic sense has occurred after disasters, these examples were outnumbered by instances in which bystanders provided the primary rescue services. Community involvement was needed prior to a disaster in terms of planning, and was

inevitable after a disaster. Professor Glass urged authorities and planners to make the public allies in the process, and to harness their resources.

Professor Havennar (Utrecht) provided a counter balancing psychological understanding bringing together the collective experience of such disasters. He demonstrated clearly how man made, technological disasters were associated with greater long-term disruption and psychological sequelae than natural disasters, even if the physical destruction of the latter might outweigh the former. The continuing uncertain nature of a CBW threat was central to understanding these greater consequences, as was the often "invisible" nature of the threat,

Several speakers were concerned with the overall impact of mass terrorism. Dr Mark Schuster (RAND, USA) described a nationally representative survey carried out in the USA after Sept 11th. There was no doubting that this episode had engaged the American public like nothing before. A substantial minority of the public reported significant distressing symptoms in the aftermath. A variety of coping methods had been used by the public. Professor Valery Mansurov (Moscow) described a similar survey carried out in Russia. Whilst anger and outrage at the attack was a common feature of both surveys, and fear of future attacks was also a common finding (as indeed has been the case world wide) there was also substantial differences in the popular understanding of the reasons for the terrorism between the two countries. The Workshop concluded that Sept 11th had indeed had a profound psychological impact world wide. Dr Jennifer Lerner (Pittsburgh) showed that a substantial minority of the US population now expected to be a victim of CBR terrorism in the future, an alarming finding which only added to the importance of the issues that were the subject of this workshop.

On the second day of the workshop we addressed the more general psychological and social issues raised by the various case histories. Professor Krasnov (Moscow) began with a review of the known psychological and social consequences of mass terrorism. Whilst acknowledging that people were resilient, he also reminded us that some were not, and that long term psychiatric illness and personality change could be anticipated in many. Behavioural changes, such as increased substance abuse, were also likely. However, he reflected the theme of the conference by concluding that terrorism was fundamentally an attack on the community rather than individuals. Dr Giovanni (Washington) showed how far reaching the psychological consequences could be, and how large were the areas of uncertainties. Like Professor Krasnov, he emphasised the importance of families, but made the additional point that we cannot be sure what effect the views of families would have on, for example, the willingness of emergency workers to expose themselves to continuing risk exposure after radiological or biological terrorist incidents. Dr Craig Hyams (Washington) pointed to the difficulties that any health care system would face after a CBR episode in avoiding being overwhelmed by demand.

### **Post Disaster Behaviours**

What do people do after a disaster was a theme of several presentations. Professor Jamie Pennebaker (Texas) produced some imaginative data from his work on the responses of normal individuals caught up in unexpected disasters, culminating, as so many other speakers did, with the experience of September 11th. He showed how individual responses followed certain predictable patterns. The initial response was a massive increase in mobile phone traffic, then the coming together in groups, and finally the use of internet for communication and information. However, there was a limit to how much (and

more pertinently how long) people were willing and able to share experiences. He concluded that interventions should be targeted not on the immediate post disaster phase, but perhaps in the following weeks, when those affected still wanted to "tell their stories" but no longer could find a willing audience. Other speakers noted that one consequence of Professor Pennebaker's research was that in a future attack on a subway system, a central feature of modern cities, and a planner's nightmare, then one way of reducing fear and panic, and encouraging co operative behaviours, would be to ensure that mobile systems work in subway systems.

Dr Arnon Rollnick (Israel) drew on the Israeli experience of the "Sealed Room" to remind the workshop of the unharnessed power of the Internet. This would provide, all speakers agreed, an increasingly important way for individuals to communicate. It could also provide access to suitable and relevant information - the opportunities missed by the British government to utilise the Internet to communicate with the farming community during the Foot and Mouth crisis was mentioned in discussion. Dr Rollnick also pointed out the potential of the Internet for delivering self administered anxiety management interventions.

The workshop also was reminded of the importance of other cultural factors in shaping responses to terrorism. Professor Victor Petrenko (Moscow) showed the importance of a factor too often neglected, namely religion and values, in determining responses. The role of religious beliefs in the genesis of terrorism is obviously a topic of intense scrutiny elsewhere, but relevant to this workshop was the problem that different religious communities reacted to the threat of terrorism in different ways. Likewise, communicating with groups with differing values was likely to prove a challenge.

### **Interventions**

Interventions provided a major challenge. It is fair to say that no consensus was reached on this question, which remains a pressing issue for research. There was consensus that certain high risk groups existed, who would be expected to develop acute psychological problems in the aftermath of being exposed to CBR episodes. For example, those with pre existing psychiatric disorders, or those who showed immediate and obvious acute, overwhelming distress. Other options for immediate interventions were also discussed. Professor Sergei Aleksanin discussed the Russian policy on early psychiatric interventions, again emphasising those at high risk. Dr Anne Speckhard (Brussels) talked about another group often overlooked - diplomats or other small groups who find themselves exposed to extreme risks in isolated surrounding as part of their profession. Dr Bernd Wilkomm (Germany) described his experience dealing with the victims of disasters, including those after Sept 11th. However, Professor Robert Ursano (Washington DC) drew attention to the difficulties posed by the evidence we have. The Critical Incident Stress Debriefing (CISD) literature provides no support for the routine use of early interventions such as CISD. Professor Ursano also reminded the Workshop of the need to recall the axiom "first do no harm", whilst other speakers emphasised natural recovery and resilience, and the dangers of professionalisation and intruding on natural networks of coping. Lt Col Cameron Ritchie (Washington DC) discussed the results of the recent Consensus Conference on early interventions held in the aftermath of Sept 11th and involving many of the participants in the current workshop.

### **Communication**

On the third day communication was the big idea. Professor Fischhoff (Pittsburgh) took the workshop through the science of risk communication. He

echoed the practical observations of Professor Palmer on the rather predictable ways in which authorities approached the need for risk communication of scientific issues to exposed populations. Dr Lerner (Pittsburgh) presented the results of some elegant research carried out in the immediate aftermath of September 11th. Her research showed that the perception of risk was strongly influenced by emotional factors, and that people were likely to make judgements on risk influenced by whether or not they were in states of anger or fear. She also provided an empirically based understanding of why there were such marked gender differences in the responding to terrorism threats. Dr Igor Linkov (Harvard and Russia) showed how the modern science of risk analysis, developed in response to communities threatened by real or perceived environmental contamination, could be adapted to the modern CBR threat environment.

Authorities need to know more about risk communication, but those who in practice communicate risk are the media. A panel discussion chaired by Mark Laity, ex BBC defence correspondent and now NATO Deputy Director of Communications discussed the issues involved, concluding that it could not be assumed that media actions would be aimed at reducing public disquiet, nor increasing confidence, and occasionally the reverse could be expected. Nik Gowing (BBC, London) showed how the speed of response was crucial, and ever increasing. After a CBN incident the news agenda would be determined within the first hour, and accurate information would be required from the authorities within that time frame. He also drew attention to the numerous other media players, few of whom would now be expected to maintain the same ethical and professional standards as the more established news organisations. Modern media technologies also allowed for much faster transfer of images, and much easier distortion of images, practices that would be used by those with powerful, and sometimes hostile agendas. However, Mr Gowing also showed that governments' themselves had been guilty of clear image distortion, even if such practices backfired.

### **Rumours and Myths**

The need for fast but accurate information, no matter how difficult the task, was emphasised by Professor Frank Furedi (Kent, UK), who discussed the little addressed topic of rumours, myths and hoaxes. It is clear that in our post modern, high communication age, rumours are dispersed around the globe within hours of terrorist outrages, as exemplified by September 11th. Professor Furedi concluded that many of these rumours were relatively harmless, and served some social cohesive role. People did not want only to know what happened, the purpose of media communication, but to give events some meaning. It is the latter that is served by the creation of rumours and myths. However, some rumours and myths are more corrosive and damaging. Rumours and myths provided a link between the three sessions of the Workshop. Effective, accurate and timely communication from government is the best antidote to the spread of socially damaging rumours, emphasising the need for early and measured risk communication. If this does not happen, or trust and confidence is endangered by other means, then the scene is set for the propagation of misinformation. Misinformation and mistrust are the soil from which spring many of the difficult, complex and chronic medically unexplained syndromes, such as Gulf War Syndrome, which are one long term debilitating outcome that we can expect from CBR episodes.

### **Scenarios**

The workshop included a realistic threat scenario organised by a team from DSTL (London). The results of this simulation will be posted separately.

## Overviews

The workshop concluded with two broad perspectives. Professor Vassily Yastrebov (Moscow) took us through the historical background to terrorism, and the fundamental challenges it poses to our societies. He outlined ways of taking a population based approach, with the aim of increasing resilience, a central theme of the workshop. Professor Yastrebov took the view that most shared in our complex, fragmented and unstable world future attacks by terrorists groups were near certain, and the probability that these would include CBR weapons was high. Security measures could reduce this risk, but never eliminate it. Hence education and planning were central to reducing the impact on the population. Professor Showalter (Princeton, USA) concluded the workshop by looking at the way in which terrorism has become part of our culture. She drew attention to the little studied role of popular literature in defining our responses not Tolstoy, but Tom Clancy. Like Hollywood, these reflected our views, but also shaped them. For her, as for so many others, Sept 11th had been a turning point. She described the many ways in which Americans were coming to terms with this change, pointing out that the extraordinary wave of displaying the American flag was not, as some far away observers interpreted it, a signal of increased bellicosity, but a demonstration of a need for reassurance. It took a literary critic to remind an audience of many psychologists and psychiatrists the importance of the "comfort blanket". However, again echoing a repeated theme, Professor Showalter was concerned that the post Sept 11th unity and support seen in the American communities at home and abroad, might not be maintained, and there was another cultural theme or script, that of mistrust, suspicion and "cover up" which might supervene, and for which there were many historical precedents.

## Cross National Perspectives

It was heartening to see the many points of agreement between all the national groups that participated in the conference. All delegates from Russia and the NATO nations agreed on the crucial importance of monitoring, providing early timely and accurate information, offering assistance to those most distressed, involving families at an early opportunity, and the need to learn from others.

On the other hand, it was also clear that major differences exist between societies in their anticipated reactions to CBR, and the expectations of governments in dealing with these reactions. It was clear that there is no single solution to these issues that would be applicable across NATO nations and/or Russia. National factors will also have strong impacts on policy. For example, in the United Kingdom long experience of IRA terrorism has failed to bring about significant social change, and may have increased population resilience. On the other hand, the BSE crisis has reduced public confidence in expert scientific opinion, which may not be reflected in other countries. Twenty years of Civil Defence planning and rehearsal means that the Israeli population now have a greater level of information and preparedness than most others. The very different recent history of Russia, and the differing expectations of individual and state, mean that a greater reliance is needed on pre defined emergency planning. Numerous examples of differences in approach and expectation across all the participant nations were observed, emphasising the need to learn from, but not slavishly imitate, each others experiences.

## Conclusions

Certain themes dominated the Workshop.

- CBR episodes have not so far been sui generis different from previous

man made or technological disasters, which therefore have much to teach us.

- Most people involved in such episodes can be expected to cope. People are more resilient than we give them credit for. Except in certain circumstances, classic panic should not be anticipated.
- Although all those involved in a CBR episode can be expected to show emotional reactions, those who develop longer term psychiatric or psychological consequences will be the minority.
- In a modern technological society people will communicate immediately after any CBR episode. Authorities wishing to disseminate information on counter measures, decontamination, future risk and safe behaviours will need to do so very rapidly indeed.
- People should be encouraged to talk to people after an episode, since this may provide strong social cohesion, and promote co operative behaviours.
- There is still no consensus on the role, if any, of very acute interventions. Classic CISD debriefing can no longer be recommended. The balance between getting people to talk to people, and getting people to talk to professionals, has not been established.
- It may be that the best time for interventions is not in the immediate aftermath of an attack, but in the following weeks, when people have stopped telling their own stories, but some, those perhaps most distressed, still require empathic audiences.
- Authorities must understand the basic principles of risk communication.
- Communication depended upon the public trusting the person conveying the information. There is no consensus on who is the best person to deliver the necessary messages, and a probability that will differ from nation to nation.
- Given the speed required, more work must be done preparing communication messages and strategies for possible CBR scenarios.
- Rumours, myths and legends will develop after any episode. These may serve a social purpose, but if there is a major failure in risk communication, these may in turn form the soil from which post exposure unexplained syndromes develop.
- Monitoring and surveillance of those involved in a CBR episode will be necessary. This will detect the emergence of later medical problems such as cancer or premature death, but also serve as an important public reassurance if no such increases are noted. During an acute episode it will be an imperative to document those affected, and an early priority to establish an appropriate control group.
- Maintaining public confidence is a long, and not just a short, term task. The recent events post Sept 11th have demonstrated that populations are resilience, and may react to assaults with cohesion rather than panic, even if many individuals will experience some psychological distress. Increased communication opportunities, especially those that are initiated by the public themselves, may add further protection against anxiety and distress.



- On the other hand, the nature of modern societies can also amplify the impact of terrorism. The same easy communications provides opportunities for the propagation of myth and rumour. Discrepancies between government statements, and between scientific experts, can be easily exploited. Access to the media of maverick scientific opinions will reduce confidence. Memories of previous accepted misgovernance reduce confidence, and create societies in which rumours of conspiracy and cover up can flourish.
- The role of precaution in determining policy remains controversial. At the workshop views were expressed that only by showing caution and minimising risk would the public feel protected against the consequences of CBW. On the other hand, excessive caution can induce not resilience, but anxiety, perpetuating a cycle of increasing risk aversion and increasing anxiety. There is no consensus yet on how, or indeed if, the precautionary principle should operate after a serious CBR attack.

### Further Work

In the next few weeks there will be further work on defining research questions and priorities and a fuller summary of the conference proceedings will be produced in book form for publication in 2003

Further working groups will be meeting to consider next steps

### Summary

Most societies vulnerable to CBR terrorism now have well developed disaster management plans in place. Whilst no plan will cover all eventualities, and few plans survive "contact with the enemy", it is still expected that rational planning will reduce acute casualties, reduce the possibility of panic, and provide populations with reassurance. Likewise, the repeated demonstrations of popular resilience and coping, and of people making their own solutions, gives grounds for optimism that societies are well equipped to resist the acute effects of mass terror.

On the other hand, the Workshop concluded that in the longer term, there was less reason for optimism. More research is needed on maintaining long term confidence and trust.

The workshop concluded with a strong reaffirmation that the purpose of CBR terrorism is not to take lives or destroy property. These are the mechanisms by which the terrorist seeks to achieve his or her goal, but it is not the goal. The goal is to weaken the sense of cohesion that binds communities together, to reduce its social capital, and to sow distrust, fear and insecurity. Asymmetric terrorism is thus fundamentally a method of waging social and psychological warfare. The Workshop concluded that we need to pay more attention to understanding how these disruptions are instigated, and how they can be better managed.



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