

CBW *Magazine*

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INSTITUTE FOR DEFENCE STUDIES AND ANALYSES

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Three months after the launch of the first issue, which received a very encouraging response from its readers, we now present the second issue. We are grateful to our readers for their overwhelming response to the inaugural issue of *CBW Magazine*.

Given the changing nature of security scenario, where the traditional and non-traditional threats are getting increasingly blurred, defensive measures are a major concern. This issue attempts to address the management of defensive measures during a chemical and biological weapons disaster. Some of the themes that are covered include the application of such measures, development of structures to handle the post-attack scenario in respect of a potential biological or chemical weapons attack and guidelines for the scientific and civilian community.

This issue also features other regular sections like country profile, news on chemical and biological issues and book review.

Keeping in view our readers' feedback we propose to devote future issues to specific themes.

Contributions and feedback are welcome and may be addressed to: editorcbw@gmail.com

Invited Articles

Building a BTWC Education Module for Life Scientists

Malcolm Dando

The author is Director, Bradford Disarmament Research Center, University of Bradford, UK.

The design of the online module on “The Dual-Use Dilemma in Biological Research” life scientists would constitute an introductory case study and five major elements. The problem of hostile misuse, The web of prevention, Regulation, Evaluation and assessment, Resources.

In December 2006 the States Parties to the Biological and Toxin Weapons Convention (BTWC), in the *Final Document* of their Sixth Five-Year Review Conference, agreed, in regard to Article IV on National Implementation, that:¹

“The Conference urges the inclusion in medical, scientific and military educational materials and programmes of information on the Convention and the 1925 Geneva Protocol. The Conference urges States Parties to promote the development of training and educational programmes for those granted access to biological agents and toxins relevant to the Convention and for those with the knowledge or capacity to modify such agents and toxins, in order to raise awareness of the risks, as well as the obligations of States Parties under the Convention.”

Unfortunately, despite similar sentiments being present in the *Final Documents* of the 1986, 1991 and 1996 Review Conferences, Australia noted at the 2005 Meeting on Codes of Conduct that:²

“Amongst the Australian scientific community, there is a low level of awareness of the risk of misuse of the biological sciences to assist in the development of biological or chemical weapons...” and that lack of awareness is widespread, as we have discovered in some 90 interactive seminars with life scientists in 13 different countries³.

As the revolution in the life sciences progresses and the potential impact of the hostile misuse of benignly-intended work grows there is an increasingly widespread perception of the need for educational materials to be developed in order to raise the awareness of life scientists. A two-day seminar in South Africa in late 2007 addressed this issue and the methodology used may be of interest to others focusing on the same problem.

The South African Institute for Security Studies (ISS) was interested in examining the possibility of developing an educational module for life scientists and arranged for some 16 participants to discuss how this might be done in a *Bio-Educational Module Workshop*. The South African participants were from a wide range of backgrounds including academia and industry and the overseas participants had been previously involved in developing educational material for life scientists.

Brian Rappert presented a review of the work he and I

had carried out in our interactive seminars and raised some of the issues that we had confronted in developing the seminars:⁴

- What should education entail by way of subject matter?
- Who needs to be educated?
- Who is the educator?
- What is the purpose of education?

He pointed out that the seminars had focused on the dual-use issue, had been for university staff and students and life scientists in public institutes, that the purpose had been to encourage deliberation and testing of assumptions and that both participants and presenters of the seminar had been involved in a learning process.

Megan Davidon then gave a review of the experiences researchers at the South East Regional Center of Excellence for Biosecurity (SERCEB) in the United States had in developing, using and evaluating an online module on “The Dual-Use Dilemma in Biological Research”.⁵ Amongst the lessons learnt Megan highlighted the need for a wide range of expert reviewers of the module as it was developed and the great insight that could be gained from asking users of the module to provide an evaluation of their experience. What was particularly interesting was the careful use of case studies relevant to practising life scientists in order to convey the information required. The international context of the workshop was additionally filled out with a review of the WHO’s work on Life Science Research and Global Health Security.⁶

Many different kinds of educational module could clearly be developed for various audiences and in different ways. So against this background of reviewing previous and ongoing work the ISS participants began to outline what they had in mind for their

particular module. The participants in the workshop took care to examine these objectives in some detail and to not move on too quickly to the question of the content of the proposed module. This proved to be a useful approach and clarified some of the difficult questions that any module developer will have to confront.

There are many ways in which this discussion could be summarised, but it was clear that ISS was looking for a broad-based educational module. I summarised its objectives for myself as follows:

- “i) To inform life scientists of the dangers of the hostile misuse of their benignly-intended work; and
- ii) To enable life scientists to better take part in preventing the hostile misuse of their benignly-intended work.”

It was also clear that ISS had in mind an internet-based, but simply constructed, core module that could be widely and easily used (appreciating, however, that at a later stage specialist additions might be required for some groups such as biosafety officers). They also wanted some kind of assessment, perhaps multiple choice, at the end of the module so that people could show that they had taken it.

Having cleared the ground in regard to objectives and general design the workshop turned its attention at the end of the first day to what major sections there should be in the module. What became apparent in this discussion, and more so as details were debated on the second day, was the consensus that a case study approach which focused on issues clearly relevant to practising scientists would be the best.

So without fixing on precisely what the case study (or studies) should be it was decided that an introduction to the module might usefully be constructed to raise particular

issues that could be followed through in the rest of the module. The SERCEB module on the dual-use dilemma makes imaginative use of a case study of a scientist who unexpectedly finds a major journal expressing concerns about her work on the grounds of biosecurity, and it was felt that something similar might be constructed to bring out the broader issues envisaged for this module.

It was not possible in a two-day workshop to agree exactly on nomenclature and so I will use mine here. However, there was agreement on what major sections were required to raise awareness. These were:

- the problem of hostile misuse of the life sciences;
- the web of integrated policies that could prevent hostile misuse;
- the dual-use dilemma;
- the country's regulatory system;
- evaluation and assessment; and
- resources

Whilst some participants thought that, ideally, people taking the module might be able to take these sections in any order, it was eventually concluded that it was best if they were taken sequentially by everyone.

Having progressed that far on the first day, the second day of the workshop began with a personal review of the main points of the first day by one participant and then discussion turned to what might go into each section of the module. Again it should be emphasised that different people stressed different aspects and used different terminology on occasion. However, I thought there was considerable agreement and noted the following possible elements to succeed the introductory case study.

A. *The problem of hostile misuse*

- Biological warfare to 1945
- Biological warfare from 1945 to the present
- Future biological warfare?

The Fink Report of the US National Academies.

The Lemon report of the US National Academies.

B. *The web of prevention*

- The idea of a web based on the international norm but including other elements
- The 1925 Geneva Protocol and the Biological and Toxin Weapons Convention
- The Chemical Weapons Convention
- The BTWC Intersessional Meetings

National implementation

Codes of conduct and awareness raising

C. *The dual-use issue*

- The difficulty of defining dual-use
- Examples

Mousepox

Polio virus

1918 Spanish influenza

- Responses

Oversight systems such as NSABB in the USA
Proposals by synthetic biologists

- Ethical issues

The Nixdorff/Bender system
Medical ethics

D. Regulation

- Legislation to implement the CWC and BTWC
- Export controls
- Security and oversight of pathogens
- Enhancement of disease monitoring and response capabilities.

E. Evaluation and assessment

- Summary of main points of the module
- Frequently asked questions/ answers
- Assessment
- Open-ended evaluation by person taking the module

F. Resources

- A selection of key studies was envisaged

A recurring theme of the discussion was that this material should not be presented in a dry and boring manner. It has to be relevant to the practising scientist. It appeared possible to me that with care the initial case study might be revisited as each section of the module was encountered. Thus if the case study introduction had a scientist encountering a problem in his work the first section:

(A) would allow the reason for the problem to be elaborated, the second

(B) to suggest that there was an international awareness and effort to deal with the issue, the third

(C) to go into the detail and the fourth

(D) to explain the specific legal regulation in that particular country. It might also be possible in the fifth summary section

(E) to indicate various ways in which the initial problem could be resolved. However, a different approach might be to use different case studies at various points in the module

What then can be said about the utility of this international collaborative approach to dealing with the problem of awareness raising? I think it is fair to say that all participants were surprised at the amount of productive work that was done in the workshop. I felt that with a few more experimental modules undergoing test we might perhaps have an idea of 'best practice' developing.

Nevertheless, the workshop was only a starting point. Moving to writing the script of the modules, checking it with experts, turning it into a useable IT system and pilot testing will take some time. Yet here again there are groups with experience of doing just this from whom we can learn and borrow. Altogether then a good prelude for participants in 2008 when the BTWC meetings will, in part, deal with:⁷

"Oversight, education, awareness raising, and adoption and/or development of codes of conduct with the aim of preventing misuse in the context of advances in bio-science and biotechnology research with the potential of use for purposes prohibited by the Convention".

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Disaster Management: The WMD Dimension

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Disaster management measures pertaining to WMDs and, more particularly, biological weapons have been influenced by the change in perception regarding bioweapon attack after 9/11. As a response to disaster, several organisational arrangements in India are in place. The problem in respect of disaster management in India is that little concerted effort is being made, and no political pressure is being exerted for the implementation of the national policy.

Some Preliminary Observations

Armed forces across the world are closely involved in handling natural calamities, which is accepted as part of their non-military duties, and are no less important for the nation as defending the frontiers against external aggression and maintaining internal security. Indeed, 'aid-to-civil' functions were recognised as integral to the duties of the Indian armed forces during colonial rule, and this tradition has continued after Independence. These "aid-to-civil" functions of the Indian armed forces have four dimensions; they include the maintenance of law and order, manning essential services, handling natural calamities and performing select developmental tasks. Clearly, the training, specialised equipment and discipline under stress of the armed forces is being drawn upon here. The operating thesis, however, is that the civil administration will preferentially use its own assets to handle these situations in the first instance, and the armed forces will only be called in as a last resort. In practice, however, the civil administration has often shirked its own responsibilities, and called in the armed forces at the first available opportunity. This has eroded the credibility of the civil administration, especially in regard to the maintenance of law and order, while the armed forces feel they are basically providing an alibi for inaction. Why does this happen? Does the civil administration lack the confidence or resources or training or past experience to handle such duties? A combination of all these circumstances is obtaining, plus a cavalier attitude to handling these situations, since the armed forces are available.

Disasters, obviously, can be natural, but also manmade. Natural disasters include floods,

earthquakes, cyclones, famines and disease; manmade disasters would encapsulate major industrial accidents and the accidental or deliberate use of weapons of mass destruction (WMDs). This distinction between natural and manmade disasters is not rigid. Reckless deforestation, for instance, accelerates soil erosion and floods; similarly, global warming caused by the excessive use of fossil fuels hastens climate change, and is leading to increased water requirements but dwindling supplies. It is difficult to classify these disasters, present and impending, as being natural or manmade. Famines are traditionally believed to be natural disasters. But, the Bengal famine in 1943, leading to an estimated death of some four million people, was manmade, since food supplies were available, but could not be transported, as river boats were destroyed by the British to deny them to the advancing Japanese troops. It is not possible within the space of this paper to discuss all the aspects of disaster management. It is proposed to focus attention on disaster management pertaining to WMDs and, more particularly, biological weapons.

An Explanation

The debate in India has equated WMDs with nuclear weapons, which is unfortunate, since the acronym includes biological and chemical weapons, but also radiological weapons – the so-called ‘dirty bomb.’ There is little doubt that the use of nuclear weapons can inflict incalculable destruction, instantaneously due to heat, blast and immediate radiation effects. More horrendous is the still uncharted territory of secondary radiation within weeks and tertiary radiation that could last for years after the nuclear incident. The most horrific aspect of nuclear weapons is the largely unknown effects of their use that might be at least of equal importance to their known effects. For instance, the breakdown of civil society might lead people to try and survive in near-

anarchical conditions. Public health and municipal systems would break down, especially if the first responders become the victims of the nuclear attack, and take weeks to restore. All these possibilities, supplemented by studies made and simulation exercises conducted, have privileged nuclear disasters over those that might occur due to the use of chemical, biological and radiological weapons.

These perceptions began to change after 9/11. There is a growing realisation that radiological weapons could become the real WMD threat since radioactive materials are widely dispersed over research laboratories, hospitals, industrial enterprises and so on, quite apart from their generation by atomic power plants. The Bhopal gas tragedy offers a good example of what might happen after a chemical weapons attack. The use of biological or radiological weapons in a WMD mode has not occurred yet, but there is little doubt that they could be used by terrorist organisations. In fact the “Doctrine for Sub Conventional Operations” issue by MOD’s Integrated Defence Headquarters recognises that: “Advances in biotechnology, molecular biology and genetic engineering and the availability of such technology in the public domain would be used with malicious intent to cause widespread panic and breakdown of public health systems.” The Doctrine includes biological agents and technologies within asymmetric warfare. A recent National Intelligence Estimate in the United States has assessed that terrorists have an interest in these unconventional weapons, and specifically that, “the interest they [al Qaeda] have shown in weapons of mass destruction is real and needs to be taken seriously.”

How probable is a WMD disaster? And, what are its parameters? Three scenarios are possible: an attack could be launched by states or non-state actors (terrorists) or by

a state equipping a non-state actor-as possible in South Asia. Are these scenarios unrealistic? By general consent it is believed that state actors are unlikely to use WMDs due to its political and strategic implications. There is less assurance, however, that states falling in the genre of 'states of concern' or 'failing states' might use non-state actors to launch a WMD attack against their adversaries. But, there is little to suggest that non-state actors would eschew WMDs in the knowledge that they are too amorphous to be counter-attacked. In that sense, non-state actors cannot be deterred, since they have no territory or valuable asset to defend that could be placed at risk.

It is further arguable that there is little reason why a terrorist organisation should choose the extraordinarily difficult route of acquiring and using a WMD to gain its objectives when they could employ the traditional tools of terrorism viz. bombs, landmines, improvised explosive devices, vehicles and, increasingly now, suicide bombers. There are reports that Osama bin Laden believes the acquisition of weapons of mass destruction is a "religious duty", and has been threatening to use such weapons. Documents retrieved from al-Qaeda facilities in Afghanistan contained information on CBRN [chemical, biological, radiological, nuclear] materials. George Tenet, former Director of the CIA, writes in his memoirs that, "I am convinced that this is where Osama bin Laden and his operatives desperately want to go...They understand that bombings by cars, trucks, trains and planes will get them some headlines, to be sure. But if they manage to set off a mushroom cloud, they will make history."

The problem I have with this logic arises from technical considerations, which is the difficulty a terrorist organisation would have to "set off a mushroom cloud." The only way

it could acquire a nuclear weapon is to steal one, or manufacture one after acquiring weapons-grade fissile material. These are no easy tasks given the tight security surrounding facilities storing nuclear weapons and/or weapons-grade fissile materials. But, there are serious further difficulties in establishing the facilities and acquiring the "shape technology" to manufacture a nuclear device. Strategic opinion has veered to suggesting that a terrorist group intent on using WMDs is unlikely to undertake these onerous exercises, but, instead, acquire radioactive materials, and disperse with conventional explosives to cause damage and spread panic. The same is true about terrorists using chemical and biological weapons. They cannot use them as weapons of /mass destruction/, but only to target limited and/or isolated targets like a populated locality, ships, or military bases as weapons of /mass disruption. Some consternation was recently caused when Ayman al Zawahiri, second-in-command to Osama bin Laden, identified India, along with the United States and Israel, as future targets identified by the al Qaeda. The Government of India, as reported in the press, is taking this threat seriously and heightening its preventive measures, although it needs recollecting that Osama bin Laden had identified India as being his chief enemy as far back as 1999. A new danger arises from religious terrorists like the Lashkar-e-Toiba and the Hizbul Mujahideen, who believe that sacrificing oneself to a higher cause through violence is a way to fulfill spiritual, emotional and financial needs. Suicide bombings thus offer posthumous fame and rewards in the afterlife. Inspired by such mystical and divine motives, or driven by blind hatred, such individuals are beyond the pale of rational discourse and cannot be deterred.

Organisational Arrangements in India

Following the international decade of natural disaster reduction, it was realised by India that disaster response is insufficient, because it only provides temporary relief at high and recurring costs. Prevention, mitigation, preparedness and relief were preferable to disaster response and management. Indeed, prevention and mitigation add to integrated disaster management by providing lasting improvements to safety.

The Government of India has adopted mitigation and prevention as essential policy to promote development strategy. The Tenth Five Year Plan document has a detailed chapter on Disaster Management, emphasising the reality that development is not sustainable without mitigation being incorporated into the developmental process. Each State is exhorted to prepare a scheme for disaster mitigation in line with the approach outlined in the Plan. In other words, mitigation is being institutionalised within developmental planning.

The Government of India's detailed approach to disaster management, which includes WMD-related emergencies, finds mention in the Annual Reports of the Ministry of Home Affairs (MHA). Currently, planning and coordination is undertaken in its Disaster Management Cell, which has evolved out of the Civil Defence Organisation established by MHA before Independence. It replicated the organisation in UK, and was designed to save life, minimise damage to property, but also to maintain industrial production during war. The border conflict with China in 1962 and the Indo-Pak war in 1965 necessitated fresh thinking on this policy, for which legislation was passed in 1968. Several more Civil Defence Organisations were established, but only in areas assessed to be vulnerable to enemy

attack. They were raised primarily on a voluntary basis with a small paid core staff that would be augmented during emergencies. A three-tier administrative set-up was envisaged at the local/ town, State and National level. Apart from imparting training and demonstrations, these Civil Defence Organisations were employed for relief and rescue work during natural calamities like floods, earthquakes, cyclones and drought.

The portfolio of "Disaster Management" was transferred in 2002 from the Ministry of Agriculture that was mainly concerned with providing drought relief, to the Ministry of Home Affairs. This change is significant, in that "The focus is now on prevention, mitigation and preparedness to ensure that in the event of a calamity striking, casualties are kept to the minimum and post-calamity response is professional and better organised. For this purpose, a strategic roadmap has been framed." The mechanisms and capabilities of the Disaster Management Cell have been reviewed to deal with different disasters, including WMDs. The policy orientation has changed from "management of damage against conventional weapons to also include threat perceptions against (sic) Nuclear weapons, Biological and Chemical warfare and Environmental disasters."

A National Civil Defence College was established to conduct courses in both civil defence and disaster management. Over the years it has become the premier institution for training administrators, civil defence personnel, training of trainers, and conducting courses on disaster management, including "Nuclear/Biological/Chemical emergencies, Incident Command System, first Responder for Biological emergencies and Training of Trainers (TOTs) on Radiological emergencies." The college is the nodal training institute in India for WMD-related emergencies, and has evolved a first

responder training programme for biological incidents since 2005 to train paramilitary forces to handle biological terrorist incidents.

The Public Health Ministry and the National Institute of Communicable Diseases (NICD) are naturally involved, and are primarily concerned with the outbreak of epidemics that occur due to either natural or suspicious causes. These bodies coordinate their activities closely with the World Health Organisation and the Centre for Disease Control in the United States. This approach towards ascertaining the etiology of the disease before prescribing the line of treatment lays stress on coordinating local, regional, national and international efforts to discover any suspicious outbreak of disease; it may ultimately be tracked to natural causes, but could also indicate a bio-attack. Expeditious reporting of incidents, accurate plotting, and assessing this information at various levels in the public health system is of the essence to deal with either natural or suspicious outbreaks of disease.

A National Disaster Management Force with some 8,000 paramilitary personnel would be set up as part of the National Disaster Management Authority (NDMA) to formulate plans and policies for disaster management. It is headed by the Prime Minister, and has a former army chief as its vice chairperson, emphasising the role of the armed forces in the management of natural and manmade disasters. Disaster management organisations in the districts are headed by the district magistrate. Disaster Management Committees are also being constituted at village/urban local body/ward levels comprising elected representatives, civil society members and Government functionaries. The key points being addressed under this programme are the need to ensure sustainability of the programme; development of training modules, manuals and codes; focusing

attention on awareness generation campaigns; institutionalisation of disaster management committees and disaster management teams; disaster management plans and mock-drills; and establishing techno-legal regimes. However, greater realisation must dawn on the need to mitigate the impact of natural and manmade disasters by including them within development planning and poverty alleviation programs. For creating greater awareness about disaster management this subject has been introduced into the social science courses of the Central board of Secondary Education (CBSE). Other school boards are to follow.

The Ministry of Home Affairs (MHA) and its Disaster Management Cell remain the nodal agency to deal with bioattacks by States and non-State actors. Eight battalions of the Central Police Forces (two each from the CISF, ITBP, BSF and CRPF) have been earmarked for being trained and deployed as specialist response teams. Of them, half are also being trained for responding to WMD (including biological) emergencies. An entire response strategy has been drawn up with a manual on Standard Operating Procedures (SOPs) for responding to a bioterrorist attack. These SOPs lay down the sequence of actions to be taken by different agencies in the event of a BW attack. A Crisis Management Group is envisaged that would be established under the MHA, with its membership drawn from the concerned Ministries. It would be advised by a Technical Advisory Committee. A Central Control Room would be set up to coordinate the actions required. The National Institute of Communicable Diseases (NICD) would be the nodal agency for carrying out epidemiological investigations and formulating strategies to deal with deliberately induced outbreaks.

Overall Approach

India's precise concerns with 'strengthening and broadening national and international institutional efforts' to deal with the BW threat can be gauged from the working papers presented by it and interventions made to the second (2004) meeting of experts, called by the parties to the Biological Weapons Convention for strengthening its provisions.

India suggested special attention being devoted to:

- (a) Ensure that national disease surveillance systems cover the whole of the country.
- (b) Animal disease surveillance and control; help from international laboratories and vaccine banks; and dissemination of technology.
- (c) Enhance bilateral and international collaboration for disease surveillance and response to address cross-border disease events.
- (d) Animal disease surveillance and control; national campaign on emergency diseases.
- (e) Animal disease surveillance and control; harmonisation of test methodologies; enactment of statutes and the provision of directives.
- (f) Continue efforts to strengthen laboratory capabilities.
- (g) Develop additional capabilities to ensure early detection and response to epidemic emergencies.
- (h) Develop additional national response capabilities.
- (i) Surveillance is the key to early detection of disease outbreaks and for rapid and effective response.

Two underlying aspects of the Indian viewpoint become clear from the above recital viz. its emphasis on surveillance to ensure early detection and response, and the concern with animal disease in the light of India's dependence on its agricultural economy, providing some 25-30 % of its Gross Domestic Product. They would frame the administrative and legislative steps taken by India to dissuade, deny and detect inappropriate biological weapon activity in the country, which includes measures like regulating research into dangerous pathogens, multi-layered inspection arrangements, tightening export controls, and evolving an ethical code to guide scientific work.

Surveillance for detecting bioterrorist attacks is an intrinsic part of the overall national arrangements established for this purpose, which is linked to Rapid Reaction Teams located in identified districts within the country. Hospitals for treating bioterrorism cases are to be designated, as also laboratories to identify the biological agents used for enabling physicians to devise appropriate treatment regimes. Managing the after-effects of a bioattack requires a coordinated response by several agencies, suggesting the need for regular meetings, resource sharing and information exchanges between them. All these measures established and under contemplation cater for an ideal situation with no problems besides the bioattack attack supervening.

As a matter of practical experience, such ideal situations rarely, if ever, exist. Nor are they likely to obtain in future. For example, the first responders might be disabled at the very beginning. In a bioweapons attack a surge effect would obtain since the need for medicines, vaccines and hospital facilities would be immediate, and become too huge and overwhelm the local responders. There are other contingencies that may arise like the affected population fleeing the area under

attack in panic, carrying the infection further into the country or across countries. Any attempt to quarantine them could become a serious law and order problem. The experience with the Surat plague epidemic; tsunami in the Bay of Bengal; and past experience with earthquakes in India and elsewhere should warn us against expecting ideal conditions obtaining to deal with the bioweapons attack, or that carefully devised plans shall work as anticipated. Still, there is an obvious advantage in undertaking contingency planning before the crisis and in conducting mock drills to hone up skills among the various responders.

Problems, Suggestions and Conclusions

Against the above backdrop let us examine the problems in respect of disaster management in India with special reference to biological agents, the suggestions made for mitigating them, and the conclusions, if any, that can be drawn.

(A) **Guiding Policy:** A national policy is in place for disaster management. But there is little concerted effort being made, and no political pressure being exerted for its implementation. Augmenting communications, constructing roads and highways for the rapid evacuation of the affected population and transportation of relief materials; networked ambulance services with global positioning system, including air ambulance services, radio communications; and co-ordination amongst governmental agencies is required, but little is known about achievements made to date. Lack of action on these, among other relevant issues, results in a society unprepared for either natural or manmade calamities, including chemical and biological incidents. Undoubtedly, most disasters are unplanned or unanticipated. But there is no reason why disaster response should not be planned and rehearsed by the State.

(B) **Public Health:** Much the same could be said about the public health service. The need to associate health care personnel with disaster management efforts at all levels of planning and execution is obvious. Further, efficient arrangements need being established for surveillance of disease, coordination between authorities at different levels from the village to *tahsil* to district to state and national level, as also between government and private health facilities and practitioners. This would enable the State to purposefully handle both natural and induced disease, since there is little difference in the response required to deal with both these contingencies. Currently, a situation obtains where a natural or manmade biological incident may go unrecognised and spread unchecked due to lack of awareness of this event until it reaches pandemic proportions. This emphasises the need for a more purposive surveillance system, but also ensuring a two-way flow of information and instructions from the national level to the periphery, and between government and non-government health providers at all levels. Establishing a national management information system to allow the swift reporting and flow of information about disease is imperative.

(C) **Health Infrastructure Upgradation:** Hospital preparedness is critical to deal with a pandemic. Capacity building and improvement of hospitals and public health facilities in the country is essential; so is the need for augmenting the health infrastructure and training of health personnel to deal with emergencies and mass casualties. This becomes important since there is a current anxiety that pandemic influenza like the 'Asian flu' that decimated some 50 million people in the last century could be the next big killer disease. A mutant form of bird flu could set off this pandemic. Hence, there is a great need to upgrade and improve the public health system.

(D) Recognising Biowarfare Diseases:

This leads to the need for acknowledging another problem, which is the recognition of diseases associated with biowarfare like anthrax, smallpox, plague and botulism. Take the case of smallpox. It has been eliminated in nature and a whole new generation of doctors, nurses and paramedical personnel have never seen or handled any case of smallpox. How will they recognise a smallpox case and deal with it, especially since the first responders need being trained to operate while wearing breathing masks and protective gear? These problems get infinitely more complex in the case of surveillance programs designed to monitor agriculture and livestock? This highlights the need for introducing greater knowledge of biowarfare diseases in curricula for doctors, nurses and paramedical personnel.

(E) The Awareness Dilemma: This brings us to a difficult area of planning and conjecture, which is creating greater awareness of BW hazards that could save lives in an emergency. But, seeking to create awareness of these dangers, the elements of risk, and the need for detecting a possible attack, while not creating panic, is a delicate operation. It would become counter-productive if heightening awareness about esoteric diseases in the population leads to neurotics being produced. However, awareness generation regarding disaster mitigation is unavoidable. The community is the first responder and must be made the nodal centre for disaster management. A middle path can be sought by raising the knowledge of biological weapons in medical institutions and among public health officials, while disseminating greater information about the prophylactic and curative measures available in the general population.

(F) Surveillance Issues: The link between disease surveillance and disaster

management is evident, though it may be technically difficult to determine if an outbreak is natural or intentional. It also takes time to get to the molecular level of pathogens to make this determination, and this process can be vitiated if pathogen samples are contaminated. Besides, isolating the cause of an outbreak of disease is a complex exercise, requiring several validations in central laboratories. Weak public health systems and mechanisms for collaboration between public health officials and national security officials need radical improvement to improve surveillance standards. But the best way to protect against biological weapons from a disaster management perspective is strengthening the public health system at all levels.

(G) Quarantines: Another question of vital importance for dealing with a natural or induced bio-incident is how long it would take the Government to decide on quarantining a potentially infected population. Standard operating procedures for quarantines after a natural or induced outbreak of disease must be laid down.

(H) Simulation/Modeling Exercises: Emergency response exercises to test the capabilities of first responders are an area to which the government must devote attention. For instance, to gauge what ensues in the event of a BW attack? How would local, regional, and national political leaders interface with each another? How would stockpile supplies—water, medicine, vaccines, and so on—be transported from stockpiles to affected areas? There are obvious advantages in simulating a biological weapon attack to understand where the system is weak and could fail.

Modeling exercises are also possible to chart the course of disease through an infected population, but also the impact of remedial measures. A word of caution is appropriate here. There are obvious limitations to such

exercises, since they cannot take into account complex realities like the infected population fleeing to other parts of the world, or the possibility of infected livestock roaming around and spreading disease. After evolving a comprehensive biological threat assessment and conducting such exercises, India should also decide what vaccines and medicines it needs to stockpile and in what quantities.

(J) Biosafety and Biosecurity Issues: A particular danger that is growing in the United States relates to research having expanded on dangerous pathogens to devise new biodefence measures for protecting the armed forces and general population against older diseases, but also newer emerging diseases like pandemic flu. Much of this work has to be conducted in high biosafety level laboratories since an escape of these pathogens into the general population could lead to disastrous consequences. This problem would affect India since its burgeoning pharmaceutical and biotechnological industries are currently establishing several more high biosafety level (BSL-3 and BSL-4) laboratories all over the country. Some control and regulation over the numbers of high biosafety level laboratories, and the technical ability of the organisations concerned must be exercised.

(K) Training Customs Officials: By way of pro-active measures, India needs to redouble its efforts to detect and intercept efforts to smuggle biological agents into the country that could be used for malicious purposes. It should also upgrade its efforts to prevent such materials from being taken out of the country. What are the arrangements in place for this purpose? Customs officials confess to having little knowledge or the wherewithal to detect the entry of such contraband into India. The need for training customs officials in recognising bioagents is essential so that they might

intercept their passage by ships and airplanes.

Awareness and Preparedness is the Key to Survival

Col. Ram V Athavale

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Consequence management of WMD Disasters would require the successful, excellent inter and intra agency cooperation and fool proof communication. Citizens on their part must be prepared for a WMD terrorist incident.

Modern man is living in a violent world and under an undeniable threshold of rising societal violence. As a result, people are already preparing against various forms of violence. On the terrorist's side, more spectacular or significantly different attacks would be necessary to receive greater attention. The need to kill people is fuelled by the desire to capture bigger headlines. This need is also a compulsion because of heightened security against traditional terrorist acts. Consequently, the postmodern terrorist is going to be technology-driven and would exploit the easy flow of information and availability of cheap technology to graduate to higher levels of violence. Recent incidents like the aircraft attacks on the twin towers of World Trade Centre and Pentagon on September 11, 2001; the 1993 and 2006 Bombay Blasts; the Jammu and Kashmir Assembly bombing and the attack at Glasgow airport suggest that terrorists are graduating to 'ultra violence'. That is from controlled and surgical acts of terrorism to killing 'en masse'.

The nerve gas attack by the Japanese cult group, Aum Shinrikyo, on March 20, 1995 had set precedence and encouraged other terrorist groups to follow suit. We have already seen the Anthrax letter cases in US and Europe. Radiation poisoning of the Russian spy Litvinenko with Polonium in the UK and fanatics blowing up trucks laden with Chlorine gas in Iraq. These acts are evidence of terrorists graduating to Weapons of Mass Destruction (WMD) as their choice of weapon. On their part Nations across the world are urgently preparing to prevent or manage such WMD terrorism incidents. It is no longer a matter of **if** - but rather **when** - a WMD will be used in anger against the masses of India. Recent threats of cyanide poisoning of Mumbai water supply are such indicators.

This article highlights likely actions by the

Administration and those required to be taken by the common man in the event of a WMD terrorist incident.

Chemical Weapons

Chemical weapons are the simplest and cheapest of the category of WMD. A terrorist could produce a chemical weapon from materials available with the local pharmacy, simply sabotage an existing chemical plant or contaminate a water resource. The resulting toxic cloud or water will enter into populated areas and public places like Shopping Malls, Railway Stations and Airports causing fear and panic among the civilian population and thus achieve a major terrorist objective. Such places frequently have (private) security guards and their education and training does not equip them with necessary skills to combat chemical/biological terrorism.

Chemical warfare agents are either Persistent or Non Persistent type. Non-persistent agents are designed to dissipate or degrade readily after they come in contact with wind, water, sunshine, and other natural elements. Most non-persistent agents can be cleaned with soap and water. Persistent agents, however, have an “oily base” and are designed to remain in place and deny access to personnel in the area where they are used.

Biological Weapons

Viral epidemics are common in India however, Germ Warfare or deliberate release of deadly viruses or toxins is difficult to detect. During the first few vital hours of recognition of such a situation, many emergency agencies would be suffering from an “information vacuum.” With few exceptions, they would not have immediate access to medicines, supplies, protective clothing, equipment. In addition immediate contact with the necessary experts to

successfully resolve the situation would not be possible. The expert help that local agencies need would come from Biological Research Laboratories, or a new specially trained team of CRPF called the Disaster Response Force (DRF). Decontamination of most biological agents can be done with a diluted solution of common household bleach (sodium hypochlorite). However medical aid would have to be sought on priority.

Actions by the Civil Administration

Consequence management of WMD Disasters is an administrative problem. Efforts of the Police, Civil Defence, Public Health Department, Para Military Forces, NGOs and Media would contribute towards Consequence Management. In case of an outbreak, large numbers of patients, both infected persons and the “worried well,” would seek medical attention, thus overwhelming the public health infrastructure. In anticipation of the reaction of the public at large, the Administration will have to refine response mechanisms. Standard Operating Procedures (SOPs) ought to be practiced on regular basis with involvement of all concerned agencies including the public. To make the procedure successful, excellent inter and intra agency cooperation and fool proof communication is imperative.

The Police (being the usual first responders) and the Para Military forces are well versed with the task of rapidly securing and evacuating the incident site. Only after the type and physical properties of the weapon or agent of mass destruction are identified and downwind hazard area ascertained that an effective perimeter can be established and civilian casualties minimised. Thereafter, neutralisation plans, decontamination of personnel and equipment and emergency treatment can be initiated. An effective

psychological operation to include extensive participation by public information/affairs officers and the media would also be initiated to prevent panic and chaos and negate the advantage to the perpetrators.

In order to reduce the after effects of a WMD incident, Government agencies and health officials are working towards identifying and creating stocks of medical supplies, antidotes, protective gear and equipment needed for WMD incidents.

Citizen Awareness

The attack on the Tokyo subway with Sarin nerve agent in 1995, provides a good example of the consequence of *public ignorance* during WMD attacks. Perhaps human costs would have been reduced and casualties mitigated if some of the people involved had been versed in the symptoms, effects, and employment of nerve agents.

Community awareness programmes, street plays, NGO initiatives can all go a long way in increasing public awareness. Interestingly, a number of firms are manufacturing specialised HAZMAT (Hazardous Material) detectors, IPE (Individual Protective Equipment), Gas Masks and emergency kits for mitigating WMD related risks. These were displayed at the recently held exhibitions on Disaster Management and Fire/Industrial Hazards in Pune and Mumbai.

Actions to be taken by Citizen

It is evident that as concerned citizen of our Nation, we must prepare for a WMD terrorist incident. As citizen, it is our duty to be alert to avoid panic and chaos and provide full support and cooperation to the Administration in their disaster management efforts. A Chemical or Biological attack is the deliberate release of a toxic gas, liquid, solid or virulent agent that can poison

contaminate people and the environment. Given below are some mitigating actions that should be taken before, during and after an incident:-

Before

- Be alert and aware of your surroundings. Report anything suspicious.
- Use caution when you travel. Observe and report unusual activity. Keep your packages with you at all times. Do not accept packages from strangers.
- Do not open mail which looks suspicious (i.e. excessive postage, unknown origin).
- If you live or work in multi-level buildings:
 - Identify the location of fire and emergency exits and review emergency evacuation procedures.
 - Maintain fire extinguishers in working order. Train responsible persons on how to use them.
 - Obtain training in first aid and CPR (cardiopulmonary resuscitation).
 - Assemble and maintain an emergency supply kit for each floor.

During

- Never rush into a suspected terrorist event. You probably will not know what agent has been released. Do not become a victim!
- If you are aware of the agent/weapon used, inform the authorities/responders/other victims immediately.
- Indicators Of A Possible Chemical incident:
 - Unexplained and unusual odours, ranging from fruity/flowery to sharp/pungent.

- Signs and symptoms include convulsions, difficult breathing, loss of consciousness, nausea, vomiting, unexplained water-like Blisters, weals (like bee stings), severe skin and eye irritation and severe coughing.
- Quickly try to define the area which was affected and seek “clean air.” However, if you are exposed to a Chemical agent, do not flee the scene, you may expose others.
- Stay upwind, uphill and upstream from any suspected contaminated areas.
- Remove all clothing and other items in contact with the body. Cut off contaminated clothing to avoid contact with eyes, nose and mouth.
- Decontaminate exposed skin with soap and water. Flush eyes with lots of water.
- Seek immediate medical assistance.
- If there is an explosion/If you are trapped in debris:
 - Remain calm. Take cover under a desk or sturdy table if ceiling tiles, bookshelves, their contents, etc. begins to fall.
 - Heavy smoke and poisonous gases collect near the ceiling first. Stay low to the floor at all times and exit the building as quickly as possible.
 - Use a wet cloth to cover your nose and mouth.
 - Use appropriate fire exits, not elevators.
 - If possible, use a flashlight or whistle to signal rescuers regarding your location.
 - Tap on a pipe or wall so that rescuers can hear where you are. Shout only as a last resort, as it can cause a person to inhale

dangerous amounts of dust and contaminants.

- Remember, some of the victims may actually be suspects.

It may be prudent to “shelter in place” if a WMD incident occurs. “Shelter in place” means staying where you are (such as inside a building or other place of shelter) in order to avoid being contaminated. If a full evacuation is necessary, authorities will notify all regarding locations of safety.

Conclusion

Most nations and the UN have enacted Acts and laws to prevent and combat WMD Terrorism. India is a signatory to these acts and laws. To combat the threat of terrorism, emergency services officials representing all levels of Government are working together to develop and implement effective strategies for deterring, preventing and responding to WMD incidents. The need for immediate and special training and equipment for local Police/Fire/Civil Defence/Public Health personnel needs no emphasis. Bottom-line... if we are to be truly prepared for the threat of a WMD attack, we need to develop and deploy a totally integrated response against terrorists and terrorism. Remember... *Awareness and Preparedness is the Key to Survival.*

Emerging Infectious Diseases

A Security Concern for India

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Outbreak of disease crucially influences the internal security of the state. It is imperative that states like India ensure measures to bolster public health measures. Only strengthened measures will ensure that an outbreak of disease, whether unintended or natural, is handled efficiently.

The process of globalisation has been understood as "time-space" compression¹. Structurally, the boundaries that separate human conditions are now diminishing, enabled by rapid interaction. Philosophically, globalisation has led to the emergence of global human conscience. Recent events have made us realise that just as the entire humanity shares its joy; it is bound in pain, suffering, disease and death. The threat of emerging infectious diseases (EIDs) to a country's internal security is one such product of the globalisation process. However, the framing of this threat, consequences and responses to it have varied across regions, primarily because of the inherent difference in the understanding of the threat.

In a study that applies the 'why' question (based on Bary Buzan's study on the speech-act of security) of securitisation in the Asian context; Peter Chalk points out that in the Asian region, diseases could be securitised only to the extent that diseases could be linked to bio-terrorism. Bio-terrorism is the established frame of reference for states in the Asian region while considering the effects of infectious diseases².

Changing lifestyles, patterns of behaviour and several such complex factors have led to the emergence and spread of disease in India. People in India have been infected with infectious diseases like- SARS, dengue, chickungunya, malaria and bird flu in recent times. Evidently, the origin of SARS was in China and chickungunya, which swept across the country, had its origin in the French Reunion Island.

In a recent finding published in *Nature*, researchers analysed the origins of 335 Emerging Infectious Diseases from 1940-2004. They found that more than half the percentage of EIDs are caused by bacteria and rickettsia and also that areas that lie in

lower latitudes (with relatively low levels of disease reporting) are at a greater risk of new and emerging EIDs³. Kate E. Jones, one of the researchers, expressed to the media that "India risks new epidemics as the human population expands into natural wilderness, coming into contact with a diverse range of wildlife that harbour unusual diseases"⁴.

Outbreak of disease crucially influences the internal security of the state. During the outbreak of plague in Surat in September 1994, the government of India had to mobilise its machinery to contain the outbreak of national hysteria⁵. If the spread of pathogens is uncontrolled, it could- "(1) weaken public confidence in a government's ability to respond; (2) distort productive economic growth; (3) destroy the underlying fabric that holds a given polity together; (4) promote regional tension and mistrust; and (5) strategically challenge the status-quo (if not extant ordering principles) of regional and international systems through the spectre of bio-warfare and bio-terrorism"⁶.

The strategies that have been evolved to combat outbreak of diseases have been limited to two spheres, one of law enforcement/national defense and two in the area of public health⁷. Ensuring domestic security has brought a new player, the public health system in the sphere of national security. Authorities have to deal with an incident of outbreak of disease as a public health problem and not as a security threat due to the following three reasons. First, problems persist while distinguishing between a deliberate and a natural outbreak. Second, while the first indication of a biological weapon attack is a disease outbreak, it may not be initially clear whether it is an attack or just a strange disease. Third, it is not until one collects some data over time that it becomes clear which occurrences are unusual and of deliberate origin. Thus, most preventive measures are

part of an overall posture to protect people from naturally occurring diseases. Therefore, it is imperative that states like India ensure measures to bolster public health measures. Only strengthened measures will ensure that an outbreak of disease, whether unintended or natural, is handled efficiently.

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Russia's chemical weapons programme

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Russia's declared stockpile of tens of thousands of tons of chemical weapons are stored in seven sites across the country. According to Chemical Weapons Convention, Russia has to fulfill the major task of destroying its huge stockpile by 2012. To help Russia to eliminate its stockpiles of chemical weapons under the CWC many other countries have also come forward with their financial assistance. At present Russia doesn't have any intention to retain parts of its chemical arsenal for the military purpose, hence, if any delay occurs in the chemical weapons destruction process beyond 2012 will be mainly due to serious technical, environmental, financial and political reasons.

After the disintegration of the Soviet Union, the Russian Federation became the home of the former Soviet stockpile of chemical weapons consisting of (declared) stockpile of nearly 40,000 metric tons (mt.) of chemical nerve, blister and choking agents. Russia's declared stockpile of tens of thousands of tons of chemical weapons are stored in seven sites across the country. These are mainly in Kambarka, Gorny, Kizner, Maradykovsky, Leonidovka, Shchuche and Pochep. Out of these seven main locations, five locations, like Shchuchye, Kizner, Pochep, Leonidovka and Maradykovsky nerve agents are stored. The Shchuchye facility also stores Phosgene. The other sites, like Kambarka and Gorny mainly stores blister agents. The chemical weapons stored at each of these sites are controlled by the branch of military services. For example the Pochep, Leonidovka and Maradykovsky are the Air Force-controlled installations and contain mainly air-delivered weapons. The storage locations in Kizner and Shchuchye are under the command of the Russian ground forces and contain primarily rocket and tube artillery warheads/projectiles. The Chemical and Biological Forces controls Gorny and Kambarka site, which mainly stores blister agents in bulk containers.¹ The program to destroy Russian Federation's chemical weapons stockpile is facing many difficulties as stockpiles are very large and are stored in multiple locations as well as are comprised of a considerable variety of munitions and agent types and monition-agent combinations.²

According to Chemical Weapons Convention, Russia has to fulfill the major task of destroying its huge stockpile by 2012. For implementing this chemical demilitarisation programme, Russia is facing many political, economical, environmental as well as social challenges.

Fig I

Map showing the Chemical Weapons storage sites in Russia

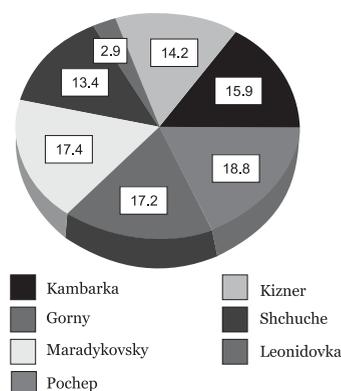


Source: http://www.washingtonpost.com/wpsrv/inatl/longterm/coldwar/maps/russia1_map.htm

Fig II

Chemical Weapons Stored in Russia

% of Stockpile at Each Site

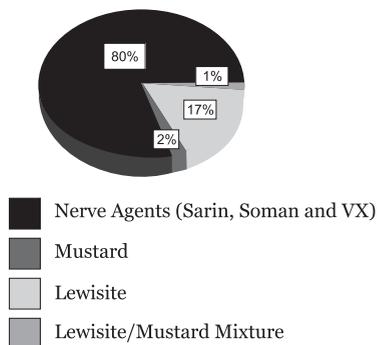


Source: <http://www.fas.org/nuke/guide/russia/cbw/cw.htm>

Fig III

Chemical Agents in the Russian Stockpile

40,000 Metric Tons Total



Source: <http://www.fas.org/nuke/guide/russia/cbw/cw.htm>

Brief History

Chemical weapons in Russia are as old as machine guns in the army of Russia. Inherited from the Czarist army, they continued to serve in Soviet Russia even after 1918. During the Soviet period the work on developing, producing, stockpiling and using chemical weapons was the occupation of an entire sector for organising the army, industry and medicine, that had evolved into a stable and closed military-chemical complex (MCC).³

During World War II, production of all types of chemical agents in Russia increased drastically. Yperite⁴ was produced by 30 plants with a total capacity of 35,000 tons/year and Lewisite⁵ was produced by 13 plants. The industrial production of sarin⁶ started in 1958-1959, in 1967, the production of soman⁷ started and in 1972 industrial production of V-gas⁸ began. In the early 1980's, special storage facilities were built at industrial sites in Volgograd, Novocheboksarsk, Zaporozhye, Pavlodar, Volsk and in number of other cities.⁹

The production of chemical weapons discontinued in Russia in the early 1990's. Russia signed the Chemical Weapons Convention (CWC) on January 13, 1993, entered into force on April 29, 1997 and ratified it on November 5, 1997.¹⁰ The ratification of chemical weapons also made Russia realise that it cannot continue the legacy of Soviet Chemical Weapons development programme. Russia officially stated its commitment to destroy and not to replace its declared Chemical Weapons Stocks in the mid of 1990.¹¹

Disarmament Agenda

Russia committed itself for the destruction of its chemical weapons and to meet these objectives, the major priorities for Russia are to develop the social infrastructure in the

areas surrounding the destruction facilities, to ensure that the destruction process is conducted safely and protect the local environment. Decree No. 305 and the law that was adopted on November 5, 1997, for ratifying the Chemical Weapons Convention, demonstrates, Russian Federation's firm commitment, towards destroying, its stockpile of chemical weapons. Russian government has also allocated separate funds to support the program and designated government officials and agencies for achieving this goal.¹²

Methods Employed

As per Russian Federations Decree No. 305, (introduced on March 21, 1996), Russian chemical weapons destruction program follows the following objectives:

- The stockpile should be destroyed in accordance with the Chemical Weapons Convention.
- There is a need to improve the ecological conditions of the areas surrounding chemical weapons storage and destruction sites.
- Mitigate concerns about those living in close proximity to the storage locations.¹³

International Support

Though Russia has substantially increased its own funding for Chemical Weapons destruction programme, but it has also stressed the importance of foreign assistance to accelerate the implementation of this programme. To help Russia to eliminate its stockpiles of chemical weapons under the CWC many other countries have also come forward with their financial assistance. With the assistance of Germany, EU, Netherlands, Finland and Poland, two chemical weapons destruction facilities have been built as well as the facility at Gorny has destroyed all chemical weapons stored there from 2002-

2005. The facility at Kambarka was built with the assistance of Germany, Netherlands, Switzerland, Sweden, and Finland and became operational by the end of December 2005. With the assistance of US, UK, Italy, Switzerland, Czech Republic, Norway, Netherlands, Sweden, New Zealand, Ireland and Belgium the construction work for the chemical weapons destruction complex at Shchuchye has already started. This facility is scheduled to become operational from 2008. France, after ratification of the bilateral agreement with Russia, on February 14, 2006, has also started funding the chemical weapons destruction process in Russia. Italy has also provided assistance for the construction of the chemical weapons destruction facility at Pochep.¹⁴ Germany has also assisted in the construction of the facility in Leonidovka. UK has provided assistance for the facility at Kizner. Netherlands, UK, Finland and Switzerland have decided to fund public outreach centers in the vicinity of some facilities.¹⁵

Fig.IV

Chemical Weapons destruction complex



Source:http://www.parsons.com/about/press_rm/potm/05-2002/index.html

According to the Canadian government, Canada has contributed 100 million Canadian dollars (C\$) for chemical weapons destruction facility at Kizner.¹⁶ Canada has also contributed more than C\$100 million for the large quantities of chemical weapons

destruction facility at Shchuchye. This amount includes C\$55 million for procuring equipments for the chemical weapons destruction facility, C\$33 million for the construction of railways for transporting the munitions from the storage to destruction site and C\$15 million for supporting the key infrastructure projects. The additional C\$100 million will be used to complete work at Shchuchye and also to support construction of the chemical weapons destruction facility at Kizner. Here the destruction of nearly 5,700 tones of nerve agents (stored in approximately 2 million artillery shells and munitions) will also be undertaken.¹⁷Such contributions will greatly supplement Russia's efforts for chemical disarmament, which will also in a way help in the complete elimination of chemical weapons from the world.

Current Status & Future Scenario

Russia claims that it has already destroyed around 20 per cent of its chemical weapons stockpile by the end of 2007.¹⁸According to the schedule submitted to Organisation for the Prohibition of Chemical Weapons (OPCW), Russia is set to build in 2008 its third destruction plant in the Western Siberian Kurgan Region, which borders Kazakhstan. Further, Moscow expects to eliminate around 45 percent of its chemical weapons stockpile by December 2009 and 100 per cent by April 29, 2012 at the estimated costs of around \$7 billion. A new plant that can safely destroy all chemical arms in Russia is being built in the town of Pochep located in southwest of Moscow.¹⁹

At present Russia doesn't have any intention to retain parts of its chemical arsenal for the military purpose, hence, if any delay occurs in the chemical weapons destruction process beyond 2012 will be mainly due to serious technical, environmental, financial and political reasons. However, a failure to finish the task within the deadline of 2012 might have serious

legal as well as political ramifications for the country. The OPCW inspectors will continue to monitor the storage and destruction facilities in Russia to make sure that the deadline of April 2012 can be met and also to make sure that all the weapons are destroyed in a manner which will fully protect the environment and workers involved in such activity. The OPCW workers will also see that Russia must not use any short-cut neutralisation or incineration techniques that fail to destroy chemical warfare agents in a safe, complete and irreversible manner. Further, OPCW inspectors will also ensure that Russia must continue to comply with the stringent pollution controls and safety precautions including emergency preparedness and evacuation planning and be transparent in its activities including stakeholder's involvement.²⁰

The executive members of the CWC have also decided to send its delegation by early 2008 to all the chemical weapons destruction sites in Russia, as well as to Moscow mainly to seek political assurance from the Kremlin that everything possible will be done by the Russian government to meet the deadline of 2012.²¹ This will also help the council to obtain a clear picture of progress in destruction activities and find out if at all Russia will require extending the deadline. They will also have factual basis in front of them for an eventual decision on how to respond to various difficulties and challenges that Russia is facing to complete this programme.

End Notes

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- 7 Soman is Colorless liquid. Causes general poison in action on the skin in vapor state. Very slowly hydrolyzed by water.
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Chemical and Biological News

ARMS CONTROL

United Nations Secretary - General and OPCW Director - General Agree to Promote Mutually Beneficial Cooperation

The UN Secretary-General Mr. Ban Ki-moon and the Director-General of the Organisation for the Prohibition of Chemical Weapons (OPCW) Mr. Rogelio Pfirter have agreed to strengthen the existing cooperation between their two Organisations in order to promote the international community's goals in the field of international peace and security. During their meeting held in New York on October 18, 2007, Secretary-General Ban Ki-moon referring to the disarmament objectives relating to weapons of mass destruction, characterised OPCW's work as being "the most well-advanced in terms of realising its targets".

The Secretary-General thanked the Director-General for the important contribution that the OPCW provides within its mandate to support the implementation of Security Council resolution 1540 and the 1540 Committee's work. He assured Director-General Pfirter that the OPCW can count on the Secretary-General's support including the promotion of the universality of the Chemical Weapons Convention (CWC), an important pillar in the field of multilateral disarmament. Congratulating the Director-General on the tenth anniversary of the CWC's entry into force, the Secretary-General commended the Technical Secretariat, which under the leadership of the Director-General had made significant strides towards realising the goals of the Convention. The Secretary-General also expressed the hope that OPCW Member States will fulfil their obligations to destroy all chemical weapons stockpiles within the CWC's deadlines.

Director-General Pfirter expressed his gratitude for the United Nations' strong support for the work of the OPCW and reaffirmed his commitment to continuing close cooperation with the UN in complementary and mutual beneficial areas as mentioned by Mr. Ban Ki-moon. He thanked the Secretary-General and his High Representative for Disarmament Affairs, Mr. Sergio Duarte for their support in organising a number of important events that highlighted the work of the OPCW in the context of its 10th anniversary. He welcomed in particular the high priority that the Secretary-General places upon multilateral disarmament. The Director-General expressed his gratitude to the Secretary-General for his offer of further support for promoting the CWC's noble objectives including the goal of making the Convention universally accepted. In this context, countries that are approached to join the Convention can be assured of an inclusive and cooperative spirit, which ensures that every nation is welcome and will receive the support needed to become a member of the OPCW family.

Director-General Pfirter and Secretary-General Ban Ki-moon also discussed further concrete avenues for promoting cooperation between the UN and the OPCW within the framework of their existing relationship agreement.

The Director-General extended a cordial invitation to the Secretary-General to visit the Headquarters of the OPCW.

***http://www.opcw.org/The_Hague,
October 25, 2007***

DISARMAMENT

Tenth Anniversary of the Entry into Force of the Chemical Weapons Convention

The year 2007 marked the tenth anniversary of the entry into force of the Convention. The anniversary was highly symbolic, both as a milestone in itself and as a catalyst for further efforts to consolidate the goals of the first non-discriminatory, multilateral, disarmament and non-proliferation treaty—a unique instrument that offers a credible and effective response to the threat posed by chemical weapons.

*Source: <http://www.opcw.org/>
Tenth Anniversary / Overview*

Central African Republic Designates OPCW National Authority

In compliance with its obligations under the Chemical Weapons Convention (CWC), the Central African Republic has informed the Organisation for the Prohibition of Chemical Weapons (OPCW) that it has designated the Ministry of Foreign Affairs as its National Authority.

A CWC National Authority is crucial in ensuring the effective implementation of the CWC within each State Party's national jurisdiction.

Article VII, paragraph 4 of the Chemical Weapons Convention states: "In order to fulfil its obligations under this Convention, each State Party shall designate or establish a National Authority to serve as the national focal point for effective liaison with the Organisation and other States Parties. Each State Party shall notify the Organisation of its National Authority at the time that this Convention enters into force for it."

The National Authority has the responsibility of implementing the provisions of

the Chemical Weapons Convention (CWC) at the national level. To meet its basic obligations, each State Party must be able to submit all the required declarations, communicate with the OPCW, cooperate with other States Parties, facilitate OPCW inspections, respond to OPCW requests for assistance, protect the confidentiality of classified information, monitor and enforce national compliance and cooperate in the peaceful uses of chemistry. States Parties are also obliged to declare and to eliminate all chemical weapons stockpiles and chemical weapons production facilities. The National Authority plays an indispensable role in all of these activities.

As of January 24, 2008, 176 of the 183 States Parties to the Chemical Weapons Convention have established or designated National Authorities.

*Source: <http://www.opcw.org/>
The Hague, January 25, 2008*

Toxic Chemicals Training Course Held in the Republic of Serbia

The Ministry of Defence of the Republic of Serbia, in cooperation with the Organisation for the Prohibition of Chemical Weapons (OPCW), held a second training course on how to conduct toxic entries from December 3 to 4, 2007 at the Nuclear, Biological and Chemical Defence Training Centre (NBCDTC) in Kruševac. The training course, which was attended by 33 inspectors, lasted for two weeks.

This course is part of the offer made by the Government of the Republic of Serbia in support of the mandatory training that OPCW inspectors receive in detection, in decontamination procedures, and in the use of protective equipment, all of which are crucial when dealing with toxic chemical agents. The training was jointly conducted by experienced officials of the NBCD centre and staff members of the OPCW Inspectorate.

A total of 75 inspectors have been trained in 2007 at the NBCD Center in Kruševac. By offering to hold these training courses, the Republic of Serbia has continually demonstrated its strong commitment to the Chemical Weapons Convention and to helping the OPCW inspectors acquire the skills they need to fulfill their tasks under the stringent verification regime of the Convention.

*Source: <http://www.opcw.org/>
The Hague, January 16, 2008*

Republic of the Congo Ratifies the Chemical Weapons Convention

The Republic of the Congo will soon become the 183rd State Party to the Chemical Weapons Convention (CWC). The country deposited its instrument of ratification with the Secretary General of the United Nations on December 4, 2007, and the Convention will enter into force for this State on January 3, 2008.

As an OPCW Member State, the Republic of the Congo will benefit from OPCW's international cooperation-and-assistance programmes, which aim to enhance each State Party's national capacity to implement the Convention and to engage in the peaceful uses of chemistry.

The Republic of the Congo's ratification takes the Convention a step closer to its gaining universal acceptance.

The OPCW Director-General, Ambassador Rogelio Pfirter, has welcomed ratification by the Republic of the Congo as a contribution both to strengthening the norms established by the Convention and to advancing the cause of international peace and security. Director General Pfirter also called on the remaining twelve States that have not yet joined the CWC to do so as a matter of urgency.

To ensure a complete, global ban on chemical weapons, the OPCW has initiated an action plan to encourage every State to join the Convention. Since the action plan was

adopted in October 2003, 28 States have become OPCW Member States.

The Chemical Weapons Convention entered into force on April 29, 1997, and its implementing agency, the OPCW, works towards achieving four principal objectives: to eliminate chemical weapons, to prevent their proliferation and re-emergence, to provide assistance and protection upon any State Party's request in the event of the use, or threat of use, of chemical weapons, and to promote international cooperation in the peaceful use of chemistry. Adherence to the Convention contributes to global peace and security, and its universal and effective implementation provides concrete benefits for all Member States.

*Source: <http://www.opcw.org/>
The Hague, December 14, 2007*

Albania – First Country to Destroy All of Its Chemical Weapons

On July 11, 2007, the global chemical weapons watchdog agency, the Organisation for the Prohibition of Chemical Weapons (OPCW), confirmed the destruction of the entire chemical weapons stockpile in Albania.

Albania is the first nation completely and verifiably to destroy all of its chemical weapons by eliminating in total 16,678 kilograms of chemical warfare agent. The Albanian stockpile included mustard, lewisite, mustard/lewisite mixture, Adamsite, and chloroacetophenone agents. This disarmament campaign was conducted to fulfil Albania's obligations under the multilateral disarmament treaty, the Chemical Weapons Convention (CWC). Any State that possesses chemical weapons and is party to the CWC is obligated to destroy these weapons. Destruction is verified on-site by the OPCW's inspectors.

In commending Albania's achievement, the OPCW Director-General, Ambassador

Rogelio Pfirter, welcomed Albania's completion of this campaign, which had required them to overcome considerable technical challenges associated with chemical disarmament. He also extended his appreciation to OPCW Member States Greece, Italy, Switzerland and the United States for the support they had provided in Albania's destruction effort.

Since the CWC entered into force ten years ago on April 29, 1997, 182 nations have joined this independent, multilateral disarmament agency to abolish chemical weapons.

In total, six OPCW Member States have declared and secured over 71,000 metric tonnes of deadly chemical warfare agents. By the end of June 2007, over 33% of that total has been destroyed under international monitoring. Over 94% of the chemical weapons production facilities are already certified as destroyed or converted for approved peaceful purposes. As foreseen by the CWC, all chemical weapons stockpiles are to be destroyed by 2012.

*Source: <http://www.opcw.org/>
The Hague, July 12, 2007*

NATIONAL AND INTERNATIONAL DEVELOPMENTS

Environment department Defra failed to contain the first foot-and-mouth outbreak this summer despite declaring the nation virus-free, a study says.

The first outbreak in August was traced to the Pirbright lab site in Surrey.

A second outbreak - 11 miles (17km) away in September - was thought to have been caused by separate contamination.

But the Institute of Animal Health research

concluded the two outbreaks came from the same source, suggesting the first was not fully eradicated.

Transmission sequence

Its scientists studied the genetic fingerprints of the virus recovered from the different infected premises in the 2007 outbreak.

After analysing the evidence they have been able to determine the probable sequence of transmission between infected premises.

An independent expert peer review process has accepted the study's conclusions that the second phase of the outbreak originated from the first phase and was not from a separate release.

It suggests that the Department for Environment, Food and Rural Affairs (Defra) failed to identify premises that had continued to be infected throughout August.

Defra, however, says it was not a failure on their part, "This infected premises was located outside of the original 10km surveillance zone and therefore could not have been picked up by the extensive surveillance and sampling we carried out according to internationally recognised standards."

The second outbreak in September came as a surprise and embarrassment to the government.

It had taken credit for successfully containing the virus leak from the Pirbright site in Surrey, which houses both the IAH's Pirbright Laboratory and the vaccine company Merial.

But according to the IAH investigation, the virus was somehow transported 17km from the first infected premises in Normandy to another farm in the Virginia Water area.

Conflict of interest

This raises the possibility that Defra

supervised disinfection of the original Pirbright premises and disposal of infected animals, but did not eradicate the virus.

The research was made public by the scientists to refute newspaper claims that there was a second breach in biosecurity at the site.

The IAH scientists' decision to publish their findings came as the government announced Defra was to be stripped of its role as regulator for laboratories which handle animal viruses.

The decision was triggered after a review found there was a conflict of interest in Defra being both a major recipient of research carried out at Pirbright, and the site's regulator.

Source: <http://news.bbc.co.uk/1/hi/sci/tech/7143260.stm>. *Foot-and-mouth 'wasn't contained'* By Pallab Ghosh, Science Correspondent, BBC News

The government in India's north-eastern state of Mizoram has decided to increase wages and food grain supplies to villagers hit by a plague of rats.

The state's heavy flowering bamboo crops attract hordes of rats, a phenomenon known locally as Mautam.

Not only do the rats thrive on the bamboo flowers, they also then go on to destroy the farmers' crops.

The Mizoram council of ministers has doubled daily wage rates so that villagers can cope with food shortages.

Wanton destruction

"We have also decided to increase the weekly allotment of rice to the villagers so that they have enough to eat," Mizoram Home Minister Tony Tawnluia said after a meeting of the council.

Every adult villager is now getting 2kg of rice per week - with minors receiving half that amount.

"We have ordered the district officials to immediately increase the wage rates and food grain supply," Mr Tawnluia said.

Mizoram has been reeling under an acute shortage of food grain because of the wanton destruction of crops by rodents.

The rat population has multiplied several times because of the abundance of food created by the flowering of bamboo crops.

The food crisis has been made worse by the massive destruction caused by unprecedented monsoon downpours this year, which damaged hundreds of homes, roads, fish ponds and paddy fields.

The state government has declared Mizoram a "disaster area", and has asked the central government for extra cash to mitigate the suffering of the people.

Most Mizo farmers have not sowed rice or corn this year, fearful that the rats would eat all their crops.

'Damage control'

Plant Protection Officer James Lalsiamliana says that Mautam struck the Mizo Hills in 1910-11 and again in 1958-59. He says that it is now back with a vengeance.

"It will affect more than 30% of Mizoram's land area and much of the area where crops are grown," he said.

"It cannot be stopped, we can only do damage control."

A report by India's forest and environment ministry predicts that at least 5,100 sq km of Mizoram's forest area (out of a total of 6,446 sq km of forest) will be affected by the Mautam in 2007.

More than half of Mizoram's population of nearly 900,000 people are farmers.

The Mizoram agriculture department anticipates a crop shortfall of at least 75% in 2007-2008 because of farmers not planting.

Desperate to control the rising rat population, the state government announced a reward of one rupee for every rat killed.

During 2006 alone more than 200,000 rats were killed. The killing continues but the rats keep coming in hordes.

Mr Lalsiamliana told the BBC 1.2 m rats have been killed in Mizoram since 1 October and the government is now paying two rupees for each rat-tail.

It was in October 2005 that the initial heavy flowering of the bamboo was first noticed at Chawngtlai bamboo forest in the southern district of Champhai.

It then spread rapidly in 2006 and the situation is now worsening.

*Source: http://news.bbc.co.uk/2/hi/south_asia/7141067.stm. **Plague of rats hits Indian state** By Subir Bhaumik, BBC News, Calcutta*

Saddam Hussein 'pretended to have weapons of mass destruction' Jan 27, 2008.

Saddam Hussein "pretended to possess weapons of mass destruction" to prevent a possible Iranian attack but never thought that America would invade Iraq and overthrow him.

The deposed Iraqi dictator, who was executed in 2006, revealed these to FBI's special agent George Piro who interrogated him after his capture in 2003.

"For him, it was critical that he was seen as still the strong, defiant Saddam. He thought that (faking having the weapons) would prevent the Iranians from re-invading Iraq," Piro told '60 Minutes'.

However, the FBI special agent claimed that Saddam was keen to start the production of weapons of mass destruction in Iraq. "Saddam still had the engineers. The folks he needed to reconstitute his programme are still there.

"He wanted to pursue all of WMD... to reconstitute his entire WMD programme. This included chemical, biological and nuclear weapons," Piro told the popular American current affairs TV programme.

Claiming the deposed dictator told him that he did not expect the United States to invade Iraq, Piro said, "He told me he initially miscalculated, President Bush's intentions.

"He thought the United States would retaliate with the same type of attack as we did in 1998... a four-day aerial attack. He survived that one and he was willing to accept that type of attack."

It took nine months to finally capture Saddam and he bragged that he changed his routine and security to elude capture. "What he wanted to really illustrate is how he was able to outsmart us.

"He told me he changed... the way he travelled. He got rid of his normal vehicles. He got rid of the protective detail that he travelled with, really just to change his signature," Piro told the channel.

Source: http://timesofindia.indiatimes.com/World/The_United_States/Saddam_Hussein_pretended_to_have_weapons_of_mass_destruction_articleshow_2735329.cms

Paul Wolfowitz, named the Chairman of a panel that will advise the State Department on Arms Control

Paul Wolfowitz, the former World Bank president and former deputy secretary of defence who was instrumental in the US decision to invade Iraq in 2003, has been

named chairman of a panel that advises the State Department on arms-control issues.

Wolfowitz, now a visiting scholar at the American Enterprise Institute in Washington, will head Secretary of State Condoleezza Rice's International Security Advisory Board, the State Department said yesterday in a statement.

"The ISAB provides the Department of State with a source of independent insight, advice, and innovation on all aspects of arms control, disarmament, nonproliferation, political-military issues, and international security and related aspects of public diplomacy," the State Department said.

Wolfowitz was among the senior US officials who warned of Iraq's alleged weapons of mass destruction capabilities, a key justification for invading Iraq and toppling the late dictator Saddam Hussein.

"Disarming Iraq of its chemical and biological weapons and dismantling its nuclear weapons program is a crucial part of winning the war on terror," Wolfowitz told the Council on Foreign Relations in New York in January 2003, two months before the US-led invasion of Iraq.

A United Nations report in September 2004 found that Iraq possessed no weapons of mass destruction at the time of the invasion.

A US-appointed fact-finding commission reached the same conclusion in March 2005.

Joseph Cirincione, a senior fellow and director for nuclear policy at the Center for American Progress, a Washington-based policy research group, criticized Wolfowitz's appointment.

"The advice given by Paul Wolfowitz over the past six years ranks among the worst provided by any defence official in history," Cirincione said. "I have no idea why anyone would want more."

Veronique Rodman, a spokeswoman for the

American Enterprise Institute, said she had no comment on Wolfowitz's appointment.

Wolfowitz, 64, resigned from the World Bank presidency in May, less than halfway through his five-year term, amid criticism over his securing a pay raise for his companion.

Source: http://www.boston.com/news/nation/washington/articles/2008/01/25/wolfowitz_appointed_chairman_of_arms_control_advisory_panel/Wolfowitz_appointed_chairman_of_arms-control_advisory_panel *Security board offers insight to State Department* By Janine Zacharia, *Bloomberg News / January 25, 2008*

Russia Accuses World Powers of WMD Espionage

"Western and Asian spy agencies" have attempted to uncover Russian technologies for producing weapons of mass destruction at a facility in Siberia, Russia's FSB security service said in a statement released Friday.

The espionage attempts targeted "enterprises specialising in nuclear energy, biology and nanotechnology work" at Novosibirsk, a research center located about 1,740 miles east of Moscow, Agence France-Presse reported.

Several foreign nationals including a Chinese citizen have been deported for their involvement in the spying efforts, local FSB Sergei Savchenkov said according to RIA Novosti.

Source: http://www.nti.org/d_newswire/issues_2008_1_28.html#4A5E7594

Subregional Workshop on Assistance and Protection against Chemical Weapons Held in Malaysia

A subregional workshop on assistance and protection against chemical weapons for the Member States of the Organisation for the

Prohibition of Chemical Weapons (OPCW) in Southeast Asia was held in Kuala Lumpur, Malaysia, from December 3 to 5, 2007. This workshop was jointly organised by the Government of Malaysia and the OPCW. Seventy-five representatives from the following 10 States Parties participated: Brunei Darussalam, India, Indonesia, Laos, Malaysia, Palau, Philippines, South Korea, Thailand, and Viet Nam.

The aim of this workshop was to provide information to managers and planners who are involved in the protection of their civilian populations against chemical weapons, or who would be responsible for the provision of emergency assistance under Article X of the Chemical Weapons Convention. During this meeting, participants discussed a subregional plan for assistance and protection in the event of an emergency caused by the use of chemical weapons. In addition, during the workshop, an exhibition was held on assistance and protection against chemical weapons.

In his keynote address, the Foreign Minister of Malaysia, H.E. Mr Y.B Dato' Seri Syed Hamid Albar, thanked the OPCW for organising such a fruitful meeting, and extended an offer for future cooperation to achieve sustainable results in the area of assistance and protection under Article X. Foreign Minister Syed Hamid Albar also inaugurated the exhibition to commemorate the tenth anniversary of the entry into force of the Convention.

In his opening statement, OPCW Deputy Director-General Mr John Freeman expressed his sincere appreciation to the Government of Malaysia for hosting this event, and drew attention to the opportunity it provided for the development of closer cooperation, and for Southeast Asian States Parties to more closely coordinate their actions in order to respond to any abuse of chemistry. He further noted the importance

of regional cooperation amongst States Parties for the effective implementation of the CWC.

A wide range of issues were discussed in regard to Article X, including an overview of the databank on assistance and protection, bilateral agreements, the OPCW's experience in national and regional capacity-building projects, and emergency medical response to chemical incidents. National presentations were made by delegations on the status of their readiness to respond to any incident. Participants further indicated their requirements for assistance, and shared experiences on the measures they had taken in relation to national implementation of Article X.

*Source: <http://www.opcw.org/>
The Hague, January 07, 2008*

NATO becomes the latest and first military agency to sign up for Global Public Health Intelligence Network

NATO recently became the latest agency, and the first military one, to sign up for the Global Public Health Intelligence Network, an international initiative that monitors media and other open-source material 24/7 for signs of emerging pandemics and other public health disasters.

The network, based in Ottawa and known by its initials GPHIN, is an "early-warning system using media to detect public health events," GPHIN Senior Surveillance Officer Richard Lemay told United Press International in a recent interview.

Lemay said NATO was "piloting the GPHIN system to see whether it can fulfill some of their public health surveillance needs," adding the network was open to membership from all sorts of agencies and organisations. "If we have a request (to join), we will assess whether it fits the GPHIN mandate," he said.

If NATO decides to sign on, it will become

the latest GPHIN subscriber, joining public health agencies from several European and North American countries and global actors like the World Health Organisation and the U.N. Food and Agriculture Organisation.

GPHIN analysts monitor broadcast media and the Internet 24 hours a day, collating and translating material in seven languages: Arabic, Chinese, English, French, Persian, Russian and Spanish. Other languages will be added as the system grows, according to the network's Web site

GPHIN has "a broad scope," said Lemay, tracking topics including outbreaks of infectious diseases in human and animals; incidents of food and water contamination; bioterrorism and accidental releases of chemical, biological and radioactive materials; and natural disasters.

According to the network's Web site, it also monitors "issues related to the safety of products, drugs and medical devices."

GPHIN analysts assess the significance of reports, for example of a new outbreak of avian flu, and enter them into a secure online database. Depending on the significance of the report and the preference of subscribers, automatic alerts can also be sent out via e-mail.

Lemay said that, by monitoring non-official sources of information like news broadcast, Web sites and blogs, GPHIN was able to provide much more timely information than government agencies generally provided.

"In some cases," he said, "the head start was as much as six months." As an example, he said that the first reports about possible H5N1 bird flu infections in Iran appeared in Persian language media in September 2005, but despite discussions with international experts later that year, it was not until February 2006 that Iranian officials confirmed the outbreak.

Ann-Marie Kimball, a professor at the University of Washington in Seattle who specialises in public health and the monitoring and control of emerging diseases, said GPHIN had been "a pioneer" in using technology in this way. "They have a long history," she said.

Over time, the network had been able to improve both the sensitivity and the specificity of its information-gathering techniques, she said, adding there had been a large number of recent advances in the kind of filtering and searching technology that such systems employed.

Subscription fees vary depending on factors such as the type of organisation—governmental, non-governmental, academic etc. — the number of users at the organisation, and how much customisation the subscriber requires. Rates can run up to a quarter of a million Canadian dollars annually, though non-profits can pay as little as Canadian \$30,000 a year.

GPHIN is run by the Public Health Agency of Canada, the nation's nerve-center for expertise and research in public health. It was originally developed as an English-language-only service in 1998 by Canadian health officials. In November 2004 — with financial support from the Washington-based anti-proliferation non-profit the Nuclear Threat Initiative — version two was brought online with an expanded language capacity and other additional capabilities.

The network is managed by Health Canada's Centre for Emergency Preparedness and Response, created in July 2000 to serve as a central coordinating point for public health security.

Source: http://www.terradaily.com/reports/Analysis_NATO_begins_pandemic_monitoring_999.html
Analysis: *NATO begins pandemic monitoring* by Shaun Waterman, *Washington (UPI) Jan 30, 2007*

Sensor Deprivation By Steven Chillrud, Greg O'mullan and Wade McGillis

At the suggestion of the federal Department of Homeland Security, New York City Council members have drafted legislation requiring anyone who has or uses a detector that measures chemical, biological or radioactive agents to get a license from the Police Department.

The purpose of the bill is to reduce unwarranted anxiety and damage from false alarms of terrorist attacks. Proponents say police officers need to know where detectors are and make sure they're reliable. But the bill, which appears to be the first of its kind in the country and a model for other cities, could stifle the collection of environmental information vital to the public good.

The problem is that the bill as written would cover all "environmental sensors," and in the extreme interpretation even laboratory analyses, used by students, teachers, researchers, activists, unions and many other groups. Their work has far more to do with ecology, education, public health and worker safety than with terrorism. These sensors allow them to measure things like greenhouse gases in order to document air pollution.

There are many examples of non-governmental groups collecting important environmental data based on laboratory analyses. Indeed, the original identification of PCB contamination of the Hudson River did not come from the government but from a study by Sports Illustrated magazine that included data on striped bass collected from the river by a private citizen, Robert H. Boyle.

When a steam pipe exploded in Midtown Manhattan last year, scientists were able to quickly allay fears that asbestos was in the air. In the wake of 9/11, private groups using both hand-held particle sensors and samples that were analyzed in laboratories enabled

us to better understand the health risks of the disaster. Future environmental and public health research will rely increasingly on sensors that immediately measure contaminant levels.

The hassle of getting a license that the police could deny or delay on any grounds — or simply not have time to process — could hamper or stop the flow of environmental data. It certainly wouldn't be a wise use of our tax dollars to have them spent on issuing permits for monitors that have nothing to do with identifying terrorist activities.

Reducing false alarms may be a worthy purpose, but pushing through this legislation without clearly defining standards and policies doesn't make sense. For example, the bill defines a biological agent as any microorganism or product of a microorganism that can cause "death, disease or other biological malfunction in a living organism, deterioration or poisoning of food or water, or deleterious alteration of the environment." Such biological agents flood into local waters when rain storms make sewers overflow. So, conceivably, a high school class wanting to measure the presence of fecal matter in river water would need a license. These definitions are simply too broad to be useful.

This bill relies upon judicious enforcement to counterbalance the all-encompassing language. Even though we believe that the current city administration would use the law rationally, once such a vaguely worded statute is passed, it opens the door for abuse. If it passes here, Homeland Security will probably use it as a model for other cities.

Since September 11, 2001, the nation has looked to New York City on security issues. We must set the example. Restriction of environmental information is rarely in the public's interest. The ability of scientists and citizens to gather data quickly and efficiently should be fostered, not suppressed.

The City Council should seek more public input and take its time in refining this legislation. It should expand the definition of detectors into different classes and make it clear that the legislation is applicable only to the class of real-time detectors that measure biological, chemical and radiological agents that would pose a danger to the public from terrorist activities or weapons of mass destruction. All other types of detectors should be exempted.

Indeed, one could consider not having any permits at all, even for those designed to detect terrorist attacks. And instead the legislation should focus on reporting procedures that would keep false alarms from snowballing into panic. That, after all, is what proponents say the purpose is.

Source: <http://www.nytimes.com/2008/01/30/opinion300mullan.html>

Nonproliferation Experts Identify 10 Most Significant Proliferation-related Events and Trends of 2007 James Martin Center for Nonproliferation Studies Monterey Institute of International Studies

An Affiliate of Middlebury College Wednesday January 9, 2008 Iraqi insurgents use chlorine as improvised chemical weapon 2007 began with a series of attacks in Iraq that combined truck bombs with chlorine gas. Chlorine does not disseminate readily with explosives, but as the insurgents became more proficient, the casualties and the panic among Iraqi citizens rose. A serial attack on March 16 killed 8 and injured more than 350 with chlorine. Although the attacks subsided as Iraq increased security over chlorine stocks and the vehicles transporting it, they caused concern about more widespread terrorist use of commercially available chemicals, and the possible use of such chemicals in terrorist attacks in other countries.

Source: <http://cns.miis.edu/>

NTI's Global Health and Security Program Receives Major Grant from Google Foundation

The Google Foundation today announced a \$2.5 million grant to NTI's Global Health and Security Initiative (GHSI) to greatly enhance its work to rapidly detect, identify and respond to infectious disease outbreaks in Southeast Asia. This funding will strengthen GHSI's global public health agenda, which includes efforts already underway in Southeast Asia and the Middle East. The Global Health and Security Initiative, which develops and implements the biological programs of the Nuclear Threat Initiative (NTI), is working around the world to prevent, detect and respond to biological threats.

"Google.org is deploying their resources, innovative technologies and outstanding personnel to combating emerging threats and making the world a better and safer place," said former Senator Sam Nunn, co-chairman of NTI. "We view the fight against infectious disease as a security imperative as well as a health imperative. Whether a disease is naturally occurring or intentionally caused, the essential elements of an effective response are to detect the outbreak, diagnose the disease and take the right measures to treat it and contain it immediately. This exciting partnership with Google will advance our work in building laboratory and epidemiologic capacity in Southeast Asia and can lead by example to enhance global efforts to combat infectious disease in other key regions of the world."

The initial focus of the work in Southeast Asia will be in countries that are already members of the Mekong Basin Disease Surveillance network (MBDS) — Cambodia, China, Laos, Myanmar, Thailand and Vietnam. NTI's Global Health and Security Initiative, in partnership with the Rockefeller Foundation, has been working with these

countries to sponsor national and regional exercises that test their capabilities to respond to a possible human influenza pandemic, among other activities.

With this grant from Google, GHSI will continue to help the regional partners improve laboratory diagnostics capabilities and increase the training of personnel. In addition, GHSI will support the strengthening of a management system to enable these countries to work together as a regional network to reduce the burden of infectious disease for their populations. The grant will also enable GHSI to work with a wider range of partners in the region, including the new Google-sponsored non-profit organisation, Innovative.

Support to Emergencies, Diseases and Disasters (INSTEDD).

“This enhancement of capabilities is very much in the global interest to provide for the early detection and warning of possible worldwide pandemics of infectious disease, such as highly pathogenic influenza,” said Terence Taylor, Director of GHSI.

Middle East Consortium for Infectious Disease Surveillance (MECIDS)

As part of these efforts, GHSI will apply lessons from its work elsewhere in the world, in particular the Middle East, where GHSI is supporting the groundbreaking Middle East Consortium for Infectious Disease Surveillance (MECIDS). In one of the most challenging political and security environments in the world, top public health officials from Israel, Jordan and the Palestinian Authority have been working together side-by-side, on a daily basis, developing regional strategies and capabilities to detect, control and respond to infectious disease threats since 2004.

With financial support from the Bill and Melinda Gates Foundation and operating with partners, including the World Bank, the RAND Corporation and IBM, GHSI has been providing financial resources and expertise in support of this network, with hopes of expanding MECIDS to include other Middle East countries.

In an effort to increase the reach of its activities, GHSI also works closely with the International Council for the Life Sciences (ICLS), which promotes biosafety and biosecurity standards and training in the Middle East and North Africa. ICLS was launched in December 2005 with the support of NTI.

Building Global Regional Networks

GHSI hopes to help build a regional network to combat infectious disease in South Asia as well. It has begun working with experts in India and Pakistan and plans to reach out to experts in additional South Asian countries. Contacts have also been made with public health networks in Africa and Latin America with a view toward establishing stronger links between the regional networks to share experience and best practices. “We believe this effort can help increase the overall global capability for rapid detection and identification of infectious diseases,” said Mr. Taylor.

Source: <http://www.nti.org/>

RECENT DEVELOPMENTS IN SCIENCE AND TECHNOLOGY

Nonproliferation Experts Identify 10 Most Significant Proliferation-related Events and Trends of 2007

Advances in life sciences threaten effectiveness of bioweapons nonproliferation regime.

In June 2007, a research group at the J. Craig Venter Institute in Rockville, Maryland, announced that it had synthesized the world's first artificial bacterial genome, a long strand of DNA containing all the instructions needed for a bacterium to survive and reproduce in the laboratory. Sometime in 2008, the Venter group plans to insert the artificial genome into a living bacterium, where it is expected to start directing the biochemical machinery of the cell. Such advances in synthetic biology and other life sciences disciplines simultaneously offer great promise for discoveries that will benefit mankind and for abuse that could result in new and more devastating germ weapons. Although scientists and security specialists have advocated buttressing the Biological Weapons Convention (BWC) with additional tools, such as oversight of dual-use research of concern in the life sciences, the intersessional process between the 2006 and 2011 BWC review conferences is authorized only to discuss—not to negotiate or take action on—measures to strengthen the regime, leaving it increasingly behind the pace of scientific advances.

Source: <http://cns.miis.edu>

RECENT PUBLICATIONS IN THE FIELD

Incapacitating Biochemical Weapons, co-edited by Alan Pearson, Marie Chevrier and Mark Wheelis, Lexington Books, 2008.

Kellman, Barry, “Bioviolence Preventing Biological Terror and Crime”. Cambridge University Press, New York, 2007.

SEMINARS

On January 8, 2008 Institute for Peace and Conflict Studies (IPCS) and the Washington DC-based Center for Strategic and International Studies (CSIS) addressed the issue of “Governance for Biological Threat Reduction: A Comprehensive, International, Interdisciplinary Approach” in a workshop organised at IDSA, New Delhi. Gerald Epstein and David Heyman from CSIS presented an approach to dealing with biological risks of both manmade and natural origin, and a wide-ranging discussion ensued among workshop participants from a diverse range of disciplines and professional communities.

During the Conference, it was noted that the threat from biological weapons is tangible, although the historical record does not provide much precedent. The key challenge is the need to address catastrophic terrorism. Biotechnology is not only a potential source of this problem; it is also be part of the solution to help in managing this problem. The weaponisation process is very difficult for biological weapons, and some claimed that the state of the art technology for bio-weapons will only be available with states. Others, however, noted that states – and in particular, the national security agencies of states – do not in general have the level of expertise in biological science and biotechnology that can be found in academia, industry, or civilian parts of government. Nevertheless, given how hard it would be to deny states or other sophisticated actors the capability to create biological weapons, the main counter to a bioattack would be public health – an area that needs to be augmented.

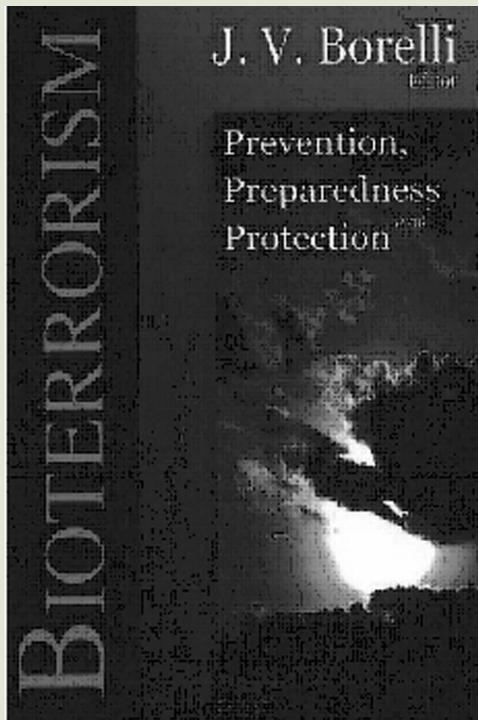
Compiled by: Ajey Lele, Dr. Monalisa Joshi and Gunjan Singh.

Book Review

Bioterrorism – Prevention, Preparedness and Protection: (2007), Edited By J.V. Borelli, Nova Science Publishers Inc

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This book deals with the essential three P's of Bioterrorism - Prevention, Preparedness and Protection. Various scholars in this field have contributed to this 2007 publication. It is a collection of eight essays which presents an analysis of the United States Public Health System and its preparedness in a situation of bioterrorism.

Essentially this work offers detailed information on Bioterrorism, Legislation to Improve Public Health Preparedness and Response Capacity. It primarily looks into the Legislation related to Public Health in the United States of America. It highlights the current and the proposed legislation. The benchmark is set as the Anthrax attack in the Post 9/11 scenario.

The section “*Bioterrorism: The Centers for Disease Control and Prevention’s Role in Public Health Protection*” (Janet Heinrich), discusses the United States Center for Disease Control’s preparedness and research activities on bioterrorism and the remaining gaps that could hamper the response to bioterrorist events. The argument is that though the response to a bioterrorist attack is almost same as the response under any kind of terrorist attack there are a few specific actions that set the two apart. The unique responses are health surveillance, epidemiologic investigation, laboratory identification of biological agents and the distribution of antibiotics to a large segment of the population to prevent the spread of an infectious disease. The argument is extended to the section “*Bioterrorism: Public Health Preparedness*” -(Robin J. Srrongin and C. Stephen Redhead). The authors conclude that mending the gaps in the current public health fabric of the United States will require significant long-term commitments from the federal government, including investments and improvement in laboratory capacity,

regional planning, workforce training, epidemiology and surveillance systems, information systems, and communication systems and media relations.

Since the book is written in the post Anthrax attack, the section, "*Developing and Validating Diagnostic assays for Biodefense*" states that the process of development and validation of an assay to be used as a screen for biothreat presents unique challenges. It stresses that the legislation which is functional in the United States does not address the spread of diseases through a bioterrorist attack. The information presented in the book can help researchers reach the goal of an appropriately and fully characterised validated assay.

One of the most novel aspects in this book is that it deals with the utility of the emerging technologies like Nanotechnology as a protective tool against chemical and biological warfare agents." As it is perceived that the future wars or terrorist attacks may include invisible hazards such as a variety of deadly and poisonous invisible/unknown chemicals. The usage of such newer technologies can help in combating chemical and biological threats.

The book has highlighted a number of aspects related to the biological warfare and has also provided a variety of technical information. It is a well researched and analyzed work. But though the book manages to cover a wide range of issues related to the current debate around bioterrorism the primary drawback for an international audience would be that the main focus is the Public Health System in the United States. As a result, it will have a restricted global acceptance. As the basis of analyses is the United States Public Health System the views expressed have mostly the Western perception of these things.

However, still the information provided in

the book could help the developing countries to some extent in formulating their respective legal and public health structures.

The book fails in bringing out the concerns of the developing countries with respect to Bioterrorism. There is complete absence of any comparative analysis except with Brazil. Thus it appears that there is no common experience that the US shares with the other countries in the world when it comes to bioterrorism.

After 12 years of the Anthrax attack in the United States it has been seen that there is no repetition of any similar attack in the United States or elsewhere. The major instruments of terror and destruction, even after attempted biological warfare, have been the conventional ones. The most important controversy surrounding the anthrax attacks in the United States is that its origin is still unknown and there is a noddle of suspicion that points towards the United States labs and scientists.

Though the book is based on one of the most debated issues of the security arena, the focused concentration on the United States has restricted the understanding of the subject to a specific country and a specific situation.

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