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Editorial

With the upgradation of H1N1 (Swine Flu) outbreak to the level of a pandemic, health preparedness measures have received renewed focus across the world.

In the cover story, Dr. Reshmi Kazi outlines the H1N1 outbreak and highlights the mitigation efforts that were in place. The invited article highlights the need for health preparedness measures in the wake of a bioterrorist attack, particularly from the EU's point of view. Col. Athavale in his article points out various measures that India should undertake to respond to a terrorist attack that uses Weapons of Mass Destruction (WMD).

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

As per our reader's feedback, we wish to publish issues in the future that focus on a subject of particular concern.

Contributions and feedbacks are welcome and can be addressed to: **editorcbw@gmail.com**

EU Approach to Bio-terrorism

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Bio-terrorism has emerged in recent years as a key challenge for European security. The Health Security Committee (HSC) is responsible for coordinating health preparedness systems and emergency response plans and raising the alert in the event of a health-related incident of EU concern. The approach to biological risks suggested by the EC in the Green Paper is an "all-hazards approach".

Bio-terrorism has emerged in recent years as a key challenge for European security. To respond to this threat, the European Union (EU) has engaged in the endeavour of preventing and protecting from possible bioterrorist attacks, fostering preparedness in its Member States through a comprehensive approach.

The nature of the bioterrorist threat for Europe is peculiar. In fact, a biological attack could likely affect several Member States of the EU simultaneously and have considerable economic and social impact. Therefore, the coordination of Member States' responses to deal with the occurrence of a biological accident emerges as vital.

The first concrete action to protect the Union from the menace of bio-terrorism was the establishment of the Health Security Committee (HSC) in November 2001. The mandate of the HSC is to ensure coordination and exchange of information among Member States in the case of the release of biological or other agents which may threaten public health. The HSC is responsible for coordinating health preparedness systems and emergency response plans and raising the alert in the event of a health-related incident of EU concern.

By means of a series of Communications (i.e. Communication 2003/320 in June 2003, Communication 2004/701 in October 2004 and Communication 2005/605 in November 2005) the European Commission (EC) has developed its strategy to enhance intra-community cooperation against the bioterrorist threat in various respects. Although such communications are not legally binding, they outline the key policy tendencies of the EU and put forward guidelines for Member States' action. Firstly, with regard to the protection of public health, the EC requests that national health authorities implement measures (e.g. effective surveillance systems, systems for prompt notifications of information) in Member States to create the capabilities for rapid detection and identification of deliberate releases of biological agents. Since the EU is a border-free area, rapid notification and

exchange of information in the event of biological threats are crucial components of an effective response. Accordingly, the creation of a Community programme of cooperation on preparedness and response to biological and chemical agent attacks (BICHAT programme) has been essential together with the establishment of a relevant rapid alert system ("RAS-BICHAT") for notifications of incidents involving the deliberate release of biological and chemical agents.

Similarly, with a view to enhancing preparedness and consequence management capabilities for civil protection, the EC has introduced the Monitoring and Information Centre (MIC), a special unit that receives requests for assistance from the countries hit by a disaster and forwards them to all Member States. Also, a number of specific community rapid alert systems (operating as information exchange networks) for a swift response to emergency situations have been established (e.g. ECURIE system for radiological emergency, EWRS for communicable diseases).

However, the turning point of the EU fight against bio-terrorism was the Green Paper on Bio-preparedness of July 11, 2007. Through this instrument the EC launched a comprehensive discussion with all relevant stakeholders (public health authorities, law enforcers, bio-industry, academia) on possible legislative measures to enhance preparedness and response capabilities to biological threats. It is to highlight that the Green Paper does not consist of legal binding provisions. Nonetheless, its principles may eventually be translated into future EU legislation.

The approach to biological risks suggested by the EC in the Green Paper is an "all-hazards approach". This means to enhance preparedness and response capabilities to biological threats regardless of the origin of the risk (which could be the naturally occurring release of biological agents or the malicious use of dual-use expertise and technology for criminal intents). The aim is to set up a European strategy for a *generic preparedness* to cope with all crisis situations.

Since a large number of specific measures on bio-safety and civil protection have already been emplaced at either the European and the Member State level, the EC emphasizes that the priority is not to adopt new legislation. Rather, it is crucial to adapt existing tools to enable them to efficiently respond to deliberate biological attacks. Therefore, tools such as peer evaluations, awareness raising campaigns and supportive financial programmes should be developed first.

The Green Paper highlights the need of a close collaboration with the private sector. Accordingly, sharing information and best practices with private actors (for example, pharmaceutical industry, food industries, SMEs) should be promoted. In the view of the EC, the European biotechnology industry and the bio-research community have to become part of the European solution to the problems posed by biological risks.

The EC also underlines the necessity of developing a European analytical capacity for a multi-sector response to the bioterrorist threat bringing together expertise from different fields involved (scientific research, law enforcement, military, health, environmental authorities, etc.). Equally, the security of facilities housing collections of pathogens should be enhanced. To this aim, Member States should identify a set of obligatory common minimum-security standards for bio-laboratories and the pharmaceutical industry.

Since the EU seeks to promote scientific progress while assuring safety and security, the research on dangerous pathogens should be rendered secure without obstructing scientific bio-research. Therefore, the Green Paper recommends the adoption of bio-security and bio-safety guidelines to enable public health authorities and law enforcers to monitor bio-research and the dissemination of pathogens for scientific use and verify their compliance with security standards. With the same view, a common European professional code of conduct for researchers is envisaged to raise awareness on possible misuse of bio-research for criminal intents.

Another key component of the EU bio-preparedness is the improvement of European surveillance capacities. Since the EU is a single common market where capitals, goods and persons enjoy cross-border free circulation, the freedom of movement shall be ensured as well as security and health protection at the same time. Hence, Member States are required to adopt a series of measures aiming at improving public health surveillance, early warning and detection capabilities.

Finally, with regard to the development of response and recovery capabilities in the response to emergency situations, the EC proposes that Member States increase intra-community cooperation to develop capabilities to identify and detect bioterrorist attacks and improve multi-sector interoperability between authorities involved.

In conclusion, while there remain certain issues of concern in the EU approach to bioterrorism (such as the practical implementation of minimal security standards and the potential to misuse material and/or knowledge on bio-research), the Green Paper has given new impetus to the discussion within and between Member States on a collective action to reduce biological risks. In fact, it is crucial for an trans-national community such as the EU to tackle the bioterrorist threat with a coordinated approach bringing together national efforts with the European dimension in mind and develop the effectiveness of a common cross-border response to biological risks.

Swine Flu: A Potential Pandemic

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Swine Flu is an acute febrile respiratory disease which infects pigs. It is known to be transmitted primarily pig-to-pig. It contains genetic mix of strains of the virus that affect humans, birds and swine. The effect of swine flu has been mild in most of the affected countries except for Mexico. The economic impact of the swine flu can be colossal. The concerns surrounding the outbreak of swine flu merit international health regulations.

A global hysteria has surfaced with the outbreak of Swine Flu in Mexico, the United States (US), Canada, Spain and Britain. In Geneva, the World Health Organisation (WHO) has announced that the swine flu virus can no longer be contained.[1] WHO declared that the virus has the potential to turn into a pandemic and raised its alert level to four, two steps short of a full pandemic.[2] It has urged for increased surveillance worldwide.

Initially the Mexican authorities had confirmed that swine flu is responsible for 20 deaths out of 152 deaths from flu in the country.[3] There have been 20 confirmed cases of swine flu in the US and 6 in Canada.[4] During the initial outbreak, the American and Canadian cases were reported to have been milder and have not proved to be fatal as in Mexico. There have been 2 deaths in the US and one in Canada due to swine flu. The worst affected country has been Mexico where there has been 1,626 confirmed cases resulting in 45 deaths. The US has declared a public health emergency for swine flu.

Swine Flu is an acute febrile respiratory disease which infects pigs. The etiology of swine flu is a type A Influenza virus that has high morbidity and low mortality. Swine flu is known to be transmitted primarily pig-to-pig. However, the latest outbreak shows that H1N1 can spread from person to person through coughing; sneezing and people can pick up the virus through their hands. The clinical symptoms of swine flu in humans is similar to that of seasonal flu - fever, cough, sore throat, body aches, chills and fatigue but may cause more severe vomiting and diarrhea. WHO has confirmed that the latest version of H1N1 virus is a new strain that has the ability to pass from person to person and could possibly trigger a global pandemic.

The outbreak of swine flu in some of the human cases is a new version of the H1N1 strain of influenza type A. It contains genetic mix of strains of the virus that affect humans, birds and swine. What makes it particularly dangerous is that this hitherto unidentified virus strain defies any traditional treatment. Another

challenge that is posed by this new strain is its ability to rapidly swap genetic components with each other and forming a new strain that defies identification. This makes it difficult for medical authorities to target the virus with the required drug. Further the Centers for Disease Control and Prevention has confirmed that the new swine flu virus is a highly unusual genetic mix of bird, flu and human viruses and health officials worry that it could continue to mutate and return in a more virulent form for next winter's flu season.[5] Such warnings foretell the re-emergence of probably a more virulent form of flu.

The effect of swine flu has been mild in most of the affected countries except for Mexico. Though this may indicate that the alert level has not increased to that of a pandemic yet it raises some worrisome questions. Is there any unusual geographical factor that is catapulting the mortality rate in Mexico? Is the virus circulating in Mexico different and hence more dangerous than that which is evident in the rest of the affected areas? It is normal that people will die of flu during the flu season but what makes healthy adults die of flu, similar to what happened in Mexico? Only laboratory tests can provide satisfactory answers to these important questions.

One important factor that needs to be pondered upon is what is the source of this recent outbreak of swine flu? How could have swine flu developed, and what can now be done to protect the global population from future outbreaks? It is a fact that this is not the first time a triple hybrid human/bird/pig flu virus has been detected. The first was found in a North Carolina industrial pig farm in 1998, and within a year it had spread across the US.[6] Dr Michael Greger, director of Public Health and Animal Agriculture at the Humane Society of the US has highlighted how some experts blamed the emergence of the original 1998 virus on intensive farming practices in the US, where pigs and poultry are raised in extremely cramped conditions, in adjacent sheds – and tended to by the same staff.[7] Damp and cramped conditions are ideal for a series of mutations to occur resulting in a highly pathogenic form. Within crowded chicken factory farms, the mild virus can evolve rapidly towards more dangerous and highly transmissible forms, capable of jumping species and spreading back into wild birds, which are defenceless against the new strain.[8] The North Carolina case shows the number of pig farms as reducing, with more and more animals being confined into fewer and fewer farms. Since the primary route of swine flu transmission is thought to be the same as human flu, the increased potential for the spread of disease in such conditions is clear.[9] In Mexico the role of increasing intensive farming as been perceived to be a probable reason for the outbreak of swine flu pandemic in the country.

The economic impact of the swine flu can be colossal. For a country, where tourism is a significant attraction, canceling trips is worrisome. It is particularly difficult for the Mexican economy as projected by the International Monetary Fund it would shrink by almost 4 percent this year, as a result of the global financial crisis. Reports further indicate that the spread of swine flu has plummeted world stocks after seven weeks of gains. The increasing concerns of the spread of swine flu have also reduced the value of the euro and the oil. The threat of a possible pandemic is likely to weaken global trade and hit the economy hard. As the virus spreads, it seems inevitable that the economic impact will be felt beyond international borders.

There has to be a worldwide effort to mitigate the effects of this potentially dangerous virus. Aggressive actions have to be taken worldwide to minimize the impact of swine flu on people's health. India has responded to the gravity of the situation by putting on alert all international airports and ports for identifying infected persons. Directions have been issued to track and monitor people who have arrived in India from the affected countries. The National Institute of Communicable Diseases and Indian Council of Medical Research are working on preliminary containment measures if the virus springs up in Asian countries.[10] Efforts are also in place by affected countries to stockpile common drugs like Tamiflu and Relenza as a precaution against a possible pandemic. US scientists are believed to be developing a new

vaccine, but it may take some time to perfect it, and manufacture enough supplies to meet a huge demand. It would be also prudent for the Indian Government to seriously consider the practices of intensive farming. It is also important that the authorities conduct immediate and urgent inquiry, into the dynamics that might exist between the development and spread of animal-based epidemics which can be lethal to humans.

The concerns surrounding the outbreak of swine flu merit international health regulations. However, people should avoid panicking and respond to the directions of heath authorities. It is also important that the global health-monitoring system remains sensitive and responsive to any potential disaster.

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Terror Forecast : RNBC Terrorism?

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Early detection of and response to RNBC terrorism are crucial. Prevention entails legislations and actions by the nation to prevent proliferation of WMD, foresee terror actions by sound intelligence synergized action by law enforcement agencies. India is yet not fully prepared to respond to a terrorist attack that uses WMD. The Government of India / NDMA needs to lay down a clear cut yet flexible response policy for WMD Disasters. Concurrent and automated response by agencies at all levels is the need. It is proposed to have a WMD & Terrorism Cell at the SDMAs to deal with such disasters. The NDMRCs should also stock items needed for WMD disaster response and relief. A concerted and coordinated effort by the NDMA and SDMAs needs to be put to generate and increase awareness about WMD terrorism threats and disasters.

Terror is not new to India. Modern man is living in a violent world and undeniably, societal threshold of violence is rising. As a result, 'People' are already inoculated against increasing dosage levels of violence. The need to spill more blood and launch more spectacular attacks to capture headlines is becoming a compulsion because of heightened security against traditional terrorist acts. Consequently, the post modern terrorist is technology-driven and is exploiting the openness of information and availability of cheap technology. Recent trends suggest that terrorists are graduating to 'ultra violence' – from controlled and surgical acts of terrorism to killing 'en masse'. The media, of course, is lapping it up and adding to the hype.

Terror Awakening

November 26 has gone down in history as a black letter day. The largest ever terror strikes, so meticulously planned and executed were unleashed on Mumbai in particular and India as a nation. The event has brought a paradigm change in the common man's outlook to combating terror. The September 11 attacks, the anthrax letter scares in the US, the Litvenko radiation poisoning and the rising use of technology by the terrorists, have focused world attention on the possibility of terrorism involving Radiological, Nuclear, Biological or Chemical (RNBC) weapons, commonly called Weapons of Mass Destruction (WMD). It is learnt that the FBI, presently, is tracking several groups within the United States that have acquired, or show an inclination to use, Weapons of Mass Destruction (WMD). So are quite a few nations across the globe, with increasing references to its origins in Pakistan.

It is no longer a matter of **if** - but rather **when** - a WMD will be used in anger against the masses of India. Preparing the nation to address this threat is a formidable challenge, but the consequences of being unprepared could be devastating. With emerging infectious diseases, early detection and control of RNBC attacks depends on a strong and flexible public health system at the local, state, and central government levels.

Emerging Threat

Nuclear, Biological and Chemical (NBC) weapons are commonly bracketed as Weapons of Mass Destruction (WMD). Recently, the term Radiological weapons or 'Dirty Bombs' has been added to the group of WMD. The chance of a significant WMD incident triggered by Terrorists occurring in India is heightened by several factors, including :-

(a) Inexpensive availability of chemical/ biological (C/B) agents and their precursors and easily obtainable production processes.
(b) Portability of small amounts of C/B agents especially useful for clandestine purposes.
(c) Capability of inflicting mass casualties based on limited ability to quickly identify and/or contain the effects of such substances.
(d) Increased WMD stockpiles, with the potential for theft or acquisition of the weapons by terrorists groups.
(e) Potential for large-scale public impact due to increased media coverage of the use of WMD and high level psychological and panic reactions.

We are witnessing significant change in the psyche of the ultra terrorist; in that he does not attach too much of importance to the traditional 'means to ends' concept of political violence. "The ability to please God by killing his enemies 'en mass; with WMD" may be an end in itself, - a perfect justification for mass killings or ethnic cleansing. Nine years into the new millennium, India must take note of the changing nature of terrorism. An open society like ours is particularly vulnerable to WMD terrorism. Information on RNBC weapons is readily available on the Internet and in many 'how-to' books. There is increasing evidence of illegal trafficking in nuclear materials. In addition, countries hostile to India are known to posses WMD capabilities, and are known to support terrorist groups.

How to Respond

India is not yet ready to address systematically the consequences of a "Conventional" Terrorist incident, leave alone a WMD event. Detection capabilities are limited, integrated analytical and planning efforts are proclaimed but not fully understood, and the domestic use of military forces needs to be purposefully re-examined. Of great concern is that there still is limited understanding of how all the moving parts of a response to such an attack would function in relation to the requirement and to one another (particularly for a RNBC scenario). The Administrative inertia and initial confusion amongst security agencies seen recently at Mumbai is a living example.

Early detection of and response to RNBC terrorism are crucial. Without special preparation at the local and state levels, a large-scale attack with variola virus, aerosolized anthrax spores, a nerve gas, or a food borne biological or chemical agent could overwhelm the local and perhaps national public health infrastructure. Large numbers of patients, including both infected persons and the "worried well," would seek medical attention, with a corresponding need for medical supplies, diagnostic tests, and hospital beds.

Key Focus Areas. Crisis Prevention and Consequence management should be based on the following four focus areas, with each area integrating training and research:

(a) Preparedness and Prevention.
(b) Detection and Surveillance.
(c) Response.
(d) Mitigation.

Preparedness and Prevention

Prevention entails legislations and actions by the nation to prevent proliferation of WMD, foresee terror actions by sound intelligence synergized action by law enforcement agencies. At the International level we have the UN resolutions for Anti Terrorism (Resolution 1373 (2001), Against use, proliferation and production of WMD (UN Resolution No 1540

of April 28, 2004 and UN Resolution No 1673 of April 27, 2006), The CWC, Bio Weapons and Toxin Convention, the NPT, CTBT and the recent PSI. India has passed the WMD Act of 2005 and the Disaster Management Act of 2005. Unfortunately what is lacking is a credible Anti Terrorism Act. India has experimented with the POTA and TADA, both of which have since been done away with.

Preparedness means adequately preparing our intelligence, anti terror forces and the public to deal with RNBC terrorism and at the same time prepare for the aftermath in terms of detection, diagnosis, and mitigation of illness and injury caused. This is a complex process that involves numerous partners and activities. There is a need to prepare and develop coordinated preparedness plans and response protocols. In addition, we should encourage and support applied research to develop innovative tools and strategies to prevent or mitigate illness and injury caused by WMD terrorism.

Detection and Surveillance

Crisis prevention relies on real time detection of a crisis and negating it. It depends on the National Intelligence and Police forces to do so. Coordinated and synergized actions with support from International agencies is the order of the day. Early detection is also essential for ensuring a prompt response to a RNBC attack, including the provision of prophylactic medicines, chemical antidotes, or vaccines. As part of this effort, National, state and local health agencies will need to form partnerships with front-line medical personnel in hospital emergency departments, hospital care facilities, poison control centers, and other offices to enhance detection and reporting of unexplained injuries and illnesses as part of routine surveillance mechanisms for WMD terrorism.

Response

Response to an incident, especially a RNBC incident, consists of two aspects. First, the Armed or special force response to the incident to contain and neutralize the threat and catch / destroy the perpetuators. Second, the relief or rehab response to prevent spread of damage and minimize casualties. A comprehensive public health response to a WMD terrorist event involves epidemiologic investigation, medical treatment and prophylaxis for affected persons, and the initiation of disease prevention or environmental decontamination measures. Departments of Intelligence, Police, Traffic and Transport management, public services like sanitation, water and electricity will all need to coordinate efforts for successful consequence management of such disasters. Not just *Mohallas*, but entire cities or districts may have to be isolated/quarantined to prevent spread of contagion.

Mitigation

Indian preparedness to mitigate the public health consequences of WMD terrorism depends on the coordinated activities of well-trained health-care and public health personnel throughout the country who have access to up-to-the minute emergency information. Use of latest technology for disaster relief, antidotes, drugs and shelters are the need of the hour. Effective communication with the public through the news media will also be essential to limit terrorists' ability to induce public panic and disrupt daily life.

Indian Anti Terrorism Apparatus

India's anti terror mechanism is controlled by the Internal Security cell at Ministry of Home Affairs. It attempts to coordinate the actions of the various intelligence agencies and police, Para Military forces and the NSG. The State police forces are not under their jurisdiction. Further, the NSG has been entrusted with VVIP security in addition to its anti terror tasks and this has unfortunately been the main reason for its poor management. Turf battles and overwhelming bureaucratic (read IAS) control over various CPOs has led to blame game and one up man ship. The success of the NSG and Army/Navy special forces in the recent Mumbai Attacks should be purely attributed to the courage and commitment of the teams at lower levels. A thorough and realistic appraisal

towards re-equipping, revamping, increasing the scope and strength and better logistics of these forces is imperative.

Indian Mechanism for Disaster Management

India has faced Terrorism related disasters for a long time now. While the government has put in place a very comprehensive and detailed structure for combating disasters, it is primarily organized to deal with natural disasters. The essential responsibility of disaster management lies with the State Government where the disaster has occurred. At the Central level, the National Crisis Management Committee oversees all disaster-related efforts. The Government has also set up the National Disaster Management Authority (NDMA) for drawing up and monitoring the implementation of disaster management plans, ensuring measures by various wings of Government for prevention of and mitigating the effects of disasters and for undertaking a holistic, co-ordination and prompt response to any disaster situation. While it has begun work on NBC disasters, it has no portfolio to deal with terrorist attacks.

The State governments are autonomous in organising relief operations in the event of disaster and in the long-term preparedness/ rehabilitation measures. There is a State Crisis Management Group (SCMG). It also establishes an Emergency Operation Centre as soon as a disaster situation develops. Besides having all updated information on forecasting and warning of disaster, the Centre would also be the contact point for the various concerned agencies. At the District level, the DC is the focal point for directing, supervising and monitoring relief measures for disaster and for preparation of District level plans. Here too, some states have dedicated Anti Terror Squads but these are not synergized in terms of op concepts and equipping with those at National level.

Govt Initiatives for Combating WMD Disasters

Apparently, some thought seems to have been given by the Indian Goovernment to disaster management aspects relating to WMD threats. It has instituted a number of measures to deal with RNBC disasters. Salient ones are :-

(a) Devised three standard operating procedures (SOPs) to deal with terrorist attacks involving use of RNBC Weapons. These SOPs provide for preparedness by the concerned Administrations in terms of identification of potential targets, formation and training of specialist response teams, training of fire service and state police personnel etc.

(b) Earmarked eight battalions of the Police (CRPF, CISF, BSF and ITBP) as the National Disaster Response Force. Four out of these have been trained and equipped specifically for RNBC disaster/terrorist strikes.

(c) The Government has, with the help of Bhabha Atomic Research Centre (BARC), recently set up 18 Radiation Emergency Response Centres in different parts of the country to deal with any nuclear and radiation emergencies.

What Needs To Be Done

No nation can claim that it is adequately prepared for a WMD attack. While some nations have seemingly advanced systems, technologies and policies in place to prevent or combat WMD incidents, most are not even at the rudimentary stage of preparedness. In spite of all the aforementioned initiatives, India is poorly prepared to respond to any terrorist attack that uses WMDs. It is assumed that a national policy addressing the threat of WMD terrorism is in place (WMD Act 2005), that it is being implemented at the level of the National Security Council (NSC) by a small staff, and

that this high-level group's efforts are making progress in coordinating national resources (NDMA) to meet WMD terrorism challenges. However, much remains to be done. Some recommendations are enumerated below.

National Strategy on Crisis and Consequence Management

While much has been written about prevention and preparedness in the aftermath of the Mumbai tragedy, it is equally vital to have detailed plans to respond to such acts and deal with the consequences in order to minimize loss of life. Such important guidelines should be contained in a National Counter Terrorism Plan (NCTP) that outlines responsibilities, authorities and the mechanisms to prevent such incidents, or if they occur manage acts of terrorism and their consequences. This plan should be updated and reviewed periodically to keep pace with the changing dynamics of terrorism.

It is recommended that an accelerated and intensified national program, integrated and synergised across the entire nation and managed by the NSC, which will address comprehensively the threat of WMD Terrorism be put in place. The most significant crisis response/ consequence management issue is the absolute necessity for unity of effort at the tactical (first responders), operational (state and district), and strategic (the National, Central or Federal) levels of response. The areas of improvement or change would essentially be as follows :-

(a) Crisis Management.
- (i) Credible Comprehensive National Structure.
- (ii) Nodal Agencies.
- (iii) Effective Domestic Legislation and Laws.
- (iv) Synergised Intelligence, Surveillance and Early Warning.
- (v) Strengthening the NSG.
- (vi) Accountability to avoid Blame game

(b) Consequence Management.
- (i) Response Policy and Training.
- (ii) Concurrent Response Mechanism.
- (iii) WMD Wing for the NDMA.
- (iv) Empowering the NDRF.
- (v) Coordination of Health and Relief measures.
- (vi) Logistics and Equipment.
- (vii) Graded Awareness Programmes.
- (viii) Media management.

Crisis Management

The Key to disaster preparedness is to have a two part plan, the NCTP, in which the first part pertains to crisis management, i.e. prior to the terrorist incident. This is mainly a function of prevention and initiative and should perforce come from the Centre. The second part is the consequence management, i.e. what happens after the event is over.

Credible Comprehensive National Structure

Thorough planning, sound Intelligence and early warning are the key. Therefore, the start point for national preparedness against the possible use of WMD by terrorists should be a thorough analysis of threats to critical infrastructure, computer systems and networks, particularly relating to telecommunications, energy supply, electricity, financial operations and critical emergency response systems. The **National Security Council (NSC)** does meet for National emergencies arising out of external threats and internal turmoil. However, due to a lack of coordination amongst various contributory agencies, the effort falls short of expectations. There is thus a need to revamp the structure of the NSC. The NSC should have the following bodies to give a wholesome attention to National Security:-

(a) **Strategic Policy Group** - Coordinate Wartime actions and National Emergencies.
(b) **National Intelligence Agency** - Coordinate Intelligence from various agencies.
(c) **National Security Advisory Board**

- Advise the NSC on Security matters.

(d) **National Internal Security Agency** - Coordinate Internal Security issues.

(e) **NDMA** - Coordinate Disaster Management including Manmade Disasters (Terrorism).

National Intelligence Agency (NIA): The present organisation of the NSC caters for the first three bodies. However some changes are needed. The NSC needs to address two issues viz. a centralised Intelligence mechanism and a central agency governing all Central Police Organisations (CPOs). The Joint Intelligence Committee (JIC) of the NSC needs to be upgraded to handle all intelligence issues at National level (both Internal and External). It is proposed that the JIC be converted into the **National Intelligence Agency (NIA)** to coordinate the efforts, inputs and analysis from the DIA (Defence Intelligence Agency), IB, RAW and various Police intelligence departments. The NIA will be the sole input agency for intelligence matters to the Strategic Advisory Group (War time, National emergencies and Strategic Issues) and the NIA (Internal security issues). Without a central agency coordinating and analysing intelligence in real time conditions, no worthwhile Hazard Prediction or Crisis Management will be achieved.

National Internal Security Agency (NISA): Currently, the matter of Internal Security is not being coordinated by the NSC and is dealt by the Ministry of Home Affairs. As Internal Security problems have had the so called "Foreign Hand" for nearly three decades now, it is imperative that the matter be dealt at National level by a central body like the NSC. In this context, we need to consider setting up under the aegis of the NSC, a **National Internal Security Agency (NISA)** (aka Directorate of Homeland Security). The NISA will be the umbrella organisation to dovetail efforts of all police and Para Military organisations in the country. NISA should be staffed by a mix of experts from the Armed Forces, CPOs, PMF and Civil Government experts on security matters. The Directorate should also have on its advisory panel experts from various fields, scientists and members from other Government departments and private industry. The Directorate should also be responsible for suggesting a proposed policy for defence of infrastructure, counter measures, changes in domestic legislation, if required and R & D efforts.

The NISA ought to carryout the following essential functions:-

(a) Focused long and mid term threat assessment including terrorist related threat assessment.

(b) Implementation of government policy and monitoring of counter measures.

(c) Strategy and doctrine development.

(d) Inter agency co-ordination and liaison with defence forces, states, Intelligence agencies operating world over and even in private industry.

(e) Identification of information requirements for infrastructure assurance.

(f) Work in close coordination with the concerned wings or departments of the NDMA for Disaster preparedness and mitigation.

(g) There is a general public apathy about techno-terrorism which must be addressed vigorously. The NISA must generate programmes for public engagement and building up public awareness to include appropriate curriculum into universities and school educational system.

(h) The NISA must also develop mechanisms for Information Warning from various sectors including private industry and its rapid dissemination.

Nodal Agencies: At the outset, we need to identify and nominate the Nodal Agencies for Crisis and Consequence Management. Once these are laid down, prevention and response will get streamlined. While the dividing line between Crisis and Consequence is very hazy, detailed policy articulation will enable streamlined actions in both cases. The two aspects of Crisis and Consequence should be handled by two Nodal Agencies.

The **Nodal Crisis Management Agency** should be **NISA**. The NISA will be responsible to gain intelligence, identify likely threats, analyse targets and carryout vulnerability

studies. It should also utilise its resources to pre-empt the threat and nullify it so as to avoid an incident. Prevention and Early warning are its two main functions. Failing prevention, it should be able to give accurate and real time inputs of the threat and its magnitude. It must deploy its resources to reduce the impact of the incident and take suitable action to identify the perpetrators and nab them. This will enable quick legal action and help prevent future incidents.

The Nodal Consequence Management Agency should be NDMA. This is the agency that, on occurrence of the incident, mitigates its effects and reduces casualties. The NDMA is also responsible for relief and rehabilitation. However, in its present mode, the NDMA is not equipped to deal effectively with complex WMD disasters.

Effective Domestic Legislation and Laws: To facilitate pre-emptive action by law-enforcement agencies, domestic legislation must categorise and control the development, production, stockpiling, transfer, acquisition or possession of all types of chemicals, biological agents and strategic fissionable materials that may be used to manufacture a weapon of mass destruction. The only technological barrier is access to these materials. Fortunately, the Disaster Management Act 2005 and the WMD Act 2005 cover most aspects of the WMD threat. What is lacking is a credible Anti Terrorism Act. India has experimented with the POTA and TADA, both of which have since been done away with. Presently we have only the IPC and other laws for Law and Order. It is imperative that India enacts on priority a comprehensive Anti Terrorist Act complementing the WMD Act 2005. Other acts to grant over riding powers to the NISA and NDMA for Crisis and Consequence Management respectively need to be instituted.

Coordinated Intelligence, Surveillance and Early Warning and Sharing of Information: The role, and flow, of information is critical. It is inherently hampered by the need of crisis responders to keep their information secret and the desire of consequence managers to be transparent. If this does not occur, the inevitable result is the compartmentalization of the crisis response and consequence management efforts. More thought should be given to the "translation" of sensitive and classified information to unclassified and applicable consequence management information.

Real-time detection of WMDs, as in battlefield conditions, will seldom be possible within a democratic society. Any attempt to provide a nationwide civil defence programme, without evidence of an imminent threat, would invite public indifference, misuse of equipment and even ridicule. Terrorists can however reconnoitre targets, monitor movements, infiltrate activists or liaise with dis-satisfied employees. They can choose the timing, mode and place of their attacks, switching or delaying operations if necessary. Only the gathering of accurate and timely intelligence can blunt these advantages. There is a need to understand the aims, motivation and operational structure of the terrorists in question. Surveillance of suspect groups and sources of dual-use technologies by NIA can decrease the risks associated with use of WMD by terrorists. These risks include the acquisition or illicit manufacture and storage of agents, communications with state sponsors and the development and testing of dispersal systems.

The NIA should be above all political manipulations to be able to be responsive and provide accurate and authentic intelligence. In this regard, the Centre and States have a leading role to play by creating appropriate structures and mechanisms.

Strengthening the NSG and CPOs: The NSG was raised in 1985 for Anti Terror and Anti Hijacking duties. Over the years it has been degraded to be VVIP security guards. All elements are located at the National Capital and need to be transported to incident sites. It lacks adequate and dedicated surface, air and marine transportation. Its equipment too needs upgradation to meet state of art international standards. The following is recommended :-

(a) Increase the strength of the NSG and locate one SAG at four widely separated

yet well connected geographical locations in the country. Also create a marine SAG with the Coast Guard and a dedicated Sky Marshal SAG.

(b) Re-equip the force with state of art weapons and equipment, including NBC equipment. Provide helicopters and special assault vehicles to the SAG.

(c) Raise one SAG from State police forces for each state. These State SAGs must be equipped and trained with the NSG.

Another area of concern is the effectiveness of our Police Forces. The need of the hour are sharp, responsive, knowledgeable, well trained Police forces equipped with state of art weapons and policing equipment. The credibility of our police forces is at stake. They are viewed as stooges of the ruling party. India urgently needs to put in effect measures to enhance their social standing and acceptability as guardians of justice. Unless emergent action to correct this is taken, crisis prevention / response will remain a crisis in itself.

Accountability to Avoid Blame Game: Policy for dealing with WMD Disasters must lay down specific areas of actions and responsibilities for each agency concerned. Any overlaps and duplication must be ironed out to avoid confusion and chaos during disasters. The NIA, NISA and NDMA should be above political control and must be coordinated at the highest level. This will ensure full accountability and avoid Political / Intra Agency blame game. Placing all concerned agencies under one control authority will reduce division of loyalty and lead to synergised, effective and coordinated response.

Consequence Management

Response Policy and Training: The Government of India / NDMA needs to lay down a clear cut yet flexible response policy for WMD Disasters. The present system of disaster response being graduated from District upward to National level will not work. Concurrent and automated response by agencies at all levels is the need. These policy guidelines should be published and be known to all responders and agencies down the channel. The NDMA must also issue Standard Operating Procedures, giving out concurrent actions by various agencies and response mechanisms. To ensure that these policies and response actions are at par, standardized training modules should be prepared for training of all concerned agencies.

WMD & Terrorism Division at NDMA: The NDMA has made progress in Chemical disaster management, however, lot needs to be done in the other fields. It is recommended that a WMD and Terrorism Division be established at the NDMA. Intelligence inputs received from the NISA need to be processed at the NDMA for effective Hazard Prediction and Consequence Management. The division will deal with Hazard Prediction and Early Warning, Operational aspects like Identification, Isolation, Quarantine and Decontamination, Medical and Health aspects and the associated Logistics. The NDRF Battalions should be directly under command the NDMA Operations Wing.

NDRF: The raising of the NDRF Battalions from existing CRPF, CISF, BSF and ITBP is a good move towards Disaster Management. The organisations have been structured keeping in mind current disaster requirements but have not been fully tested as yet. Out of the eight battalions, four are trained and equipped for RNBC Disasters. The following is recommended with regard to the NDRF Battalions.

(a) There is a need to have a governing body or Headquarters for managing the NDRF. Present system of dual control of the mother agency and the NDMA shall not work during crisis.

(b) The number of battalions needs to be increased to be able to respond effectively anywhere in the country. The present eight battalions are grossly inadequate to handle the numerous disasters that strike our vast nation. Ideally, the country should be divided into ten operational zones based on size and population. Each zone must have an NDRF Battalion.

(c) The NDRF needs to be equipped to deal with all kinds of disasters. The

NDRF (NBC) must have state of the art detection and hazard prediction instruments and latest decontamination equipment.

(d) The NDRF HQ should have a dedicated air arm for movement of Emergency Response Teams and their equipment in case of emergencies.

WMD & Terrorism Cell at State Disaster Management Authority (SDMA): It is proposed to have a WMD & Terrorism Cell at the SDMAs to deal with such disasters. These cells will take directions from the WMD & Terrorism Division of the NDMA and coordinate issues at the State level. In addition, each state must have at least one battalion of State Reserve Police trained for Disaster Management (SDRF). The SDRF battalion needs to be trained similar to the NDRF. One Company of this battalion should be given RNBC training at par with the NDRF (NBC) Battalions and function as a Dual Tasked Company.

IRB: All India Reserve Battalions (IRB) must be trained for Internal Security duties. These battalions can augment the strength of the NSG and the RAF.

Citizens Emergency Response Teams (CERT): A "CERT" is a group of people that is organized and receives special training for the purpose of enhancing their ability to recognize, respond to, and recover from a major emergency or disaster situation affecting their community. CERT should be organized and trained under the District / Municipal Headquarters having jurisdiction in the area where the CERT will operate.

Coordinated Health and Relief Mechanism: The example of the Mumbai attacks have shown how government machinery was not aware or ignored the private hospitals and clinics. A coordinated plan for health and relief needs to be worked out.

(a) **Centralised Database:** A centralized National data base of all hospitals and health centres needs to be maintained at the NDMA giving patient handling capacity, drugs and medicine stocks and number of Doctors and Paramedics on the panel of a given institution. Similar database must be maintained for qualified first responders and trained volunteers for WMD incidents.

(b) **Surge Capacity Building:** In a WMD incident, casualties will cause a surge beyond the capacity of most clinics and hospitals. India needs more Doctors and Paramedics with a 100 % increase in Hospitals and Clinics. India has less than one hospital bed and one physician for every 2,000 people, as reported by the World Health Organisation. Similar state exists with Medicine and Drug stocks and other Medical equipment. India does not even have a Paramedic training institute !

(c) **Equipment Resource:** The NDMA has established the National Disaster Mitigation Resource Centres (NDMRC) along with each NDRF Battalion. The NDMRCs should also stock items needed for WMD disaster response and relief. In addition, stocks need to be maintained under the aegis of the SDMA. A National Antidote and Drug Management Agency should be established which can maintain stocks of critical drugs and antidotes for use during emergencies.

(d) **Communications and Networking:** The SDMAs need to have Satellite phones and long distance mobile networks to be able to communicate from the incident site to the outside agencies. A National Strategic Communications Grid should be put in place with advanced technology protected equipment to overcome EMP effects of Nuclear Blasts and provide foolproof communications to the Incident Command Authority and all SDMAs from the NSC (NISA and NDMA).

Citizen Awareness

One single factor that can tremendously enhance our preparedness potential is 'awareness level of the common citizen'. The first persons to become aware of an RNBC attack will be the intended targets and victims—not the police or

government officials. The first five minutes to an hour of a WMD Terror attack (The Golden Hour) may prove lethal to first responders and the public. Western nations are becoming increasingly aware of the threat of WMD Terrorism and regular emergency drills and Hazmat training workshops are conducted at Schools, Universities, Private Companies and institutions.

In India, awareness of WMD threats and their mitigating techniques are known only to the handful of experts and Response units like the Armed Forces and the NDRF. With various biological threats having been officially eradicated (e.g. Smallpox), even doctors are not being trained to diagnose and treat these. A concerted and coordinated effort by the NDMA and SDMAs needs to be put to generate and increase awareness about WMD terrorism threats and disasters. Community awareness programmes, street plays, NGO initiatives will all go a long way in increasing public awareness.

Conclusion

India is yet not fully prepared to respond to a terrorist attack that uses WMD. It is reassuring that there is a nascent national policy addressing the threat of WMD terrorism in place, that it is being implemented at the level of the National Security Council (NSC), and that this high-level group's efforts are making progress in coordinating national resources to meet the challenges posted by WMD terrorism. However, much remains to be done.

Preparedness measures such as training of role players including the community, development of advanced response systems, effective communications and above all a well-networked institutional structure involving the government organisations; academic and research institutions, the armed forces and the NGOs would greatly contribute to the overall disaster management of WMD Terrorism Disasters. The government's recent policy changes reflect the changing approach from rescue and relief to preparedness.

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Chemical and Biological Weapons: A Case Study of Pakistan

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Pakistan is not known to possess chemical and biological weapons even though it has the required infrastructure to produce them. Pakistan became a signatory of the Biological and Toxin Weapons Convention (BTWC) in 1972 and later ratified it in 1974. Pakistan has taken steps to show that the BTWC and the Geneva Protocol are important to the peace and security of Pakistan. There is a need to incentivise Pakistan towards constructive uses of such chemical and biological agents.

The Commission on the Prevention of Weapons of Mass Destruction Proliferation published its report in December 2008 which quite clearly states that "Were one to map terrorism and weapons of mass destruction today, all roads would intersect in Pakistan."[1] The end of this decade would see Pakistan and the adjoining region on the western side emerge as the most turgid hub of militancy in the world. The ongoing turbulence is perhaps the worst phase in the 60 years of Pakistan's existence. The Taliban and other non-state actors are at the helm of affairs in parts of the country. The civilian government is weak against an assertive army and unable to take tough decisions to deal with militancy.

In this backdrop and amidst large scale uncertainties, it is interesting and equally vital to take note of Pakistan's chemical and biological weapon profile. Pakistan is not known to possess chemical and biological weapons even though it has the required infrastructure to produce them. There are several bodies associated with conducting advanced research in biotechnology such as National Institute for Biotechnology and Genetic Engineering (NIGBE), Center for Advanced Molecular Biology (CAMB) and the Nuclear Institute for Agriculture and Biology (NIAB). Pakistan has a huge market for pharmaceuticals and approximately 60 % of it relies on imports from countries like United States (US), UK, Germany and France. China is also accounted as a supplier of technology and related equipment to Pakistan.

Pakistan became a signatory of the Biological and Toxin Weapons Convention (BTWC) in 1972 and later ratified it in 1974. The convention debars the member states to produce, develop and stockpile biological and toxic weapons and the government of Pakistan claims to abide by it. Pakistan asserts that it is not inclined to produce biological weapons due to the costs involved and the fact that a nuclear weapon state need not go back to outdated techniques and methods of warfare. Pakistan also puts forth that it intends to follow all the obligations under Article IV of the BTWC. Relatedly, in November 2005, a seminar on Chemical Weapons Convention Implementation was

held in Islamabad. Mr Khurshid M. Kasuri, the then foreign minister of Pakistan reiterated his country's allegiance on fulfilling the goals put forth by the Convention. Director General of OPCW was among the prominent dignitaries present on the occasion.

In the year 2006, Ambassador Masood Khan, Pakistan's permanent representative to the United Nations (UN) presided over the 6th review conference of BTWC in Geneva. Over 150 member states affirmed their commitment on securing the world from catastrophe of biological warfare. Ambassador Masood Khan noted that the conference was a success and a positive step towards larger goals of disarmament and non-proliferation. While addressing the convention, Tehmina Janjua, Deputy Permanent Representative of Pakistan affirmed that Pakistan was sensitive to the concerns of world community especially the western powers on issues like Bio terrorism. She further substantiated her point by saying that Pakistan is as much affected by eruption of life threatening diseases and the impact it would have on its economy and trade.

At the beginning of this decade, Pakistan was crucial to the war on terror as a facilitator for the US. Today even as it is totally engulfed in violent strife dominated by Taliban, the significance of its role in wiping out militancy from the region has not diminished. Apocalyptical groups such as Al Qaeda have built strong roots within its territory and therefore the real issue of concern is that Pakistani state should avoid any such possibility where these groups access the biological and chemical materials or the facilities thereof to produce the same.

Way back in August 1992, India and Pakistan signed a joint declaration to prohibit chemical weapons as a measure to maintain healthy bilateral relations. The agreement was signed between then foreign secretaries of the two states, J N Dixit and Shaharyar M. Khan who solemnly resolved to confine the production of such material or substance purely for "peaceful purposes and economic development of the developing countries." The two countries also pledged to work towards a comprehensive Chemical Weapons Convention (CWC). There was a wide belief in India that Pakistan used chemical weapons against Indian soldiers during the Siachen confrontation in 1987. Against this backdrop, the signing of this agreement was nonetheless considered a welcome move by both sides.

Pakistan participated in the negotiations leading to the CWC. It signed the convention in 1993 and ratified it on October 29, 1997. There was lack of consensus on the domestic front especially from the right wing groups over the ratification of CWC which the government overcame in due course. Shamshad Ahmed, the then Foreign Secretary of Pakistan addressed a press conference in Islamabad and made a declaration that Pakistan has consistently stood for the complete prohibition of and thorough destruction of all chemical weapons and their production facilities." Pakistan is also a member of Organisation for the Prohibition of Chemical Weapon (OPCW) which is a Hague based organisation. It has been a regular member of the Executive Council of this organisation since 1999.

There have been recurring allegations against Pakistan being involved in CW programmes beginning from the 1970's. During the Soviet intervention in Afghanistan in the 1980's, the Soviet forces accused Pakistan of supplying them with arms containing deadly toxic materials. There were reports especially in the Indian media during the late 1990's about Pakistan's indulgence in such prohibited activities-producing agents capable of causing blistering, choking, blood etc. Again in the 1990's, the pro communist government of Afghanistan leveled serious charges on Pakistan of providing Taliban with chemical weapons. In the Indian context, where Pakistan is known to blatantly support militancy in Kashmir, there were apprehensions about possession of chemical weapons amongst the terrorists operating in the valley. India also accused Pakistan of undertaking such nefarious activities on another occasion when cyanide and anesthetic flouthene were seized from insurgents in Punjab. When the war on terror incepted in 2001, there were reports making rounds that senior Pakistani nuclear scientists like Sultan Bashiruddin Mahmood and Chaudhry Abdul Majeed had assisted Al

Qaeda in training them in aerial chemical and biological warfare techniques.

There were news reports in 2002 which indicated presence of such laboratories in the port city of Karachi under the aegis of Lashkar-e-Jhangvi, a known militant group with leanings towards Al Qaeda. Consequently, the OPCW decided to conduct inspections in Pakistan in 2003 and a three member team examined a FFC Jordan fertilizer plant situated in Karachi for the purpose. The UN observed that it was obligatory for the 150 member states of the 1993 Global Chemical Weapons Convention (CWC) to undergo the procedure and fulfill their commitment towards elimination of Weapons Mass Destruction. The Foreign Office in Islamabad termed it as routine activity and that it was part of the larger exercise undertaken across the world. The Director General of the Pakistani Foreign Office asserted that this inspection will benefit his country as it will endorse their credibility as a signatory to the CWC of 1993. The report of the inspection was however not known in the public domain.

In January 2006, Sardar Akhtar Mangal, former chief minister of the province accused the Pakistan army of using chemical weapons in Balochistan, which faces insurgency for years. He called for international intervention and was supported by the Pakistan's Human Rights Commission on this issue. The state however categorically rejected the allegations.

In July 2008, Abu Khabab al-Masri who was allegedly the chemical and biological weapon expert of Al Qaeda was killed in US missile attack near the Pak-Afghan border. This was yet another occasion when Pakistan figured in the realm of chemical and biological weapons. This man of Egyptian origin who was an "explosive expert and poisons trainer working on behalf on Al Qaeda" attracted a reward under the US Government Rewards for Justice Programme.

Pakistan has taken steps to show that the BTWC and the Geneva Protocol are important to the peace and security of Pakistan. Pakistan has been an active member of the BTWC and has a national bio-safety committee to ensure that provisions of the Article IV of BTWC are abided and also have a set of rules for bio-safety. They also claim to have a comprehensive Export Control Law on toxin and biological agents.

Pakistan is increasingly being perceived as a failed state and the security imperatives demand a sense of caution while dealing with this country. The state authorities have time and again denied involvement in clandestine chemical and biological programme but the same could not be assumed about the mushrooming militant outfits that do not have moral ground to refrain from such things. Concerted efforts from the all states could maneuver Pakistan to ensure Bio security/safety within its territory so that its infrastructure and facilities are not vulnerable to the non state actors calling shots in some parts of the country. There is a need to incentivise Pakistan towards constructive uses of such chemical and biological agents. Advancement in the sphere of bio-technology could be of great help to any developing country and similarly to Pakistan. It would help fight diseases and improve lives of million people. Regular exchange of expertise and knowledge among states would benefit their mutual relations and at the same time make them feel responsible enough not to indulge in misuse of such agents in any way.

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BioWeapons Prevention Project

BioWeapons Prevention Project (BWPP), an international non-governmental organisation, is a global civil society activity that aims to strengthen the norm against the weaponization of disease. BWPP was launched on November 11, 2002. With its headquarter located in Geneva, Switzerland, it seeks to increase openness and precision in all matters relating to biological weapons (BW). In order to achieve the objectives of the BWC (prohibition of the development, production and stockpiling of bacteriological (biological) weapons and their elimination), BWPP was launched.

The BWPP tracks governmental and other behaviour that is pertinent to compliance with international treaties and other agreements, especially those that outlaw hostile use of biotechnology. The project works to reduce the threat of bioweapons by monitoring and reporting throughout the world. BWPP supports and is supported by a global network of partners.[1]

Among its activities, the BWPP monitors political, societal, scientific and technological developments with possible implications for the use of disease as a weapon. It also monitors threat reduction efforts undertaken by governments and other entities, including the implementation of the legal and political obligations of States under the BTWC and other relevant international agreements.[2] It also tracks efforts by governments and other entities to reduce the BW threat and aims to be a vital interlocutor with regard to matters relevant to the prevention of the weaponization of disease.[3] BWPP publishes its findings in annual reports, occasional papers and through its web site. The cardinal aim of the BioWeapons Prevention Project is to contribute towards the strengthening of the BTWC through its own independent analysis and that by its member organisations. The threat of biological weapons and bioterrorism is looming large and elimination of such threats is part of such endeavors taken by it.

It aims to create awareness among civil society organisations, the media and the public about the bioweapons threat and how they can contribute through their publication and works in minimizing such threats by making complex issues accessible to the layman.

The BWPP released the First Edition of its BioWeapons Report on December 9, 2004 Meeting of States Parties to the Biological and Toxin Weapons Convention (BTWC) in Geneva, Switzerland. The report highlights the dangers posed by both traditional and potentially new biological weapons, and delineates some of the measures governments can and should take to reduce the impending threat.

The Bioweapons Monitor is one of the leading publications of the BWPP. It is an online searchable database with open-source information on topics related to international accords controlling biological weapons and relevant developments in specific regions and countries. The BioWeapons Report is the more analytical component of the BWPP publications. It is an annual printed book containing contributions from various authors The current Strategic Programme 2004-06 is a concerted effort to generate an agenda to monitor and strengthen the norms against the use of disease as a weapon for and beyond the 2006 Review Conference of the Biological and Toxin Weapon Convention. BWPP aims to fill this gap by monitoring implementation of the legal and political obligations never to develop, produce or use biological weapons. Since April 2006 the BWPP has been involved in the technical implementation of the Joint Action in support of the BTWC, which was adopted by the Council of the European Union in February 2006. The activities involve the organisation of 5 regional seminars to promote the universalization of the convention and assist with national implementation legislation of States Parties to the Convention.[4]

BWPP has contributed significantly in spreading awareness regarding the threat of BW and is incessantly working in the same direction to curb the impending threat of the same.

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ARMS CONTROL

Iraq Joins the Chemical Weapons Convention

The government of Iraq has deposited its instrument of accession to the Chemical Weapons Convention (CWC) with the Secretary General of the United Nations and within 30 days, on February 12, 2009 became the 186th State Party to the Convention

"Iraq's accession draws us closer to the Convention's goal of the universal ban on chemical weapons, and we call upon those nine States that have not yet adhered to the Convention to do so without delay," Ambassador Pfirter said.

All States Parties declare to the OPCW the extent of specific activities which could pose a risk to the object and purpose of the Convention. These activities are then subject to international verification and monitoring by the OPCW Secretariat, primarily through inspections, to ensure non-proliferation. States Parties also agree to abide by a verification regime for certain toxic chemicals and their precursors in order to ensure that such chemicals are only used for purposes not prohibited.

Iraq will now be eligible to benefit from the OPCW's international cooperation and assistance programmes, which provide support in drafting and enacting the legislation necessary to implement the Convention at the national level. This legislation enables States Parties to detect, prosecute and punish any breach of the chemical weapons ban committed on their territory or by their nationals anywhere in the world.

http://www.opcw.org/news/news/article/iraq-joins-the-chemical-weapons-convention/

G8 cash not enough for arms disposal, says Russia

Russia said on January 28, that it might have to slow down destruction of its huge Soviet-era stocks of chemical and other weapons of mass destruction because its G8 partners were not providing enough funds to carry out the work.

The Group of Eight industrialized nations clinched a $20 billion deal in 2002 to help Russia get rid of chemical, nuclear and other weapons of mass destruction and stop them falling into the wrong hands.

The program, dubbed "the G8 Global Partnership," aims to help destroy chemical weapons, dismantle aging reactors aboard decommissioned nuclear-powered submarines and dispose of fissile materials.

"The problem is, while Russia meets its obligations in full, the rest of the G8 nations which made this commitment up to now have met these obligations by 40-45 percent," said Andrei Bokarev, a senior finance ministry official and one of Russia's G8 point men.

"Taking into account the current situation shaping up amid the global crisis, naturally there appear big doubts that these funds will be made available in the volume needed," he said.

"In this case we will be forced to either slow down the earlier announced tempo of processing chemical and other types of weapons, or we will start looking for additional funds in Russia in order to offset a lack of funds from our G8 partners."

Russia's then President Vladimir Putin, who is now a powerful prime minister, said after reaching the 2002 deal Russia had no security problems and denied that weapons of mass destruction could pass into the hands of militant groups or "rogue states" like Iran, Iraq or North Korea.

But Moscow admitted at the time that there was an ecological threat from remaining Soviet-era stocks of chemical weapons and nuclear waste.

http://www.reuters.om/article/GCA-Russia/idUSTRE50R5NE20090128

Indian Cabinet nod to MoU with Sweden on healthcare

The government approved signing a pact with Sweden for bilateral cooperation in the field of healthcare and public health. The Memorandum of Understanding for cooperation in healthcare and public health is a result of discussions Health Minister Anbumani Ramadoss had with Swedish ministers during various meetings spread over during 2008.

A meeting of the Union Cabinet, chaired by External Affairs Minister Pranab Mukherjee, gave its nod to the Health Ministry's proposal to sign the MoU with Sweden, Home Minister P Chidambaram told reporters here. The pact is expected to be signed during the visit of Swedish Secretary of State.

The Cabinet also approved four amendments to the Chemical Weapons Convention Act and a Bill to carry out the changes will be introduced in Parliament session. "The amendments are required to bring the Act in line with the Chemical Weapons Convention," Chidambaram said.

http://www.hindu.com/thehindu/holnus/002200902111676.htm

Discrepancies Found in U.S. Nerve Agent Storage, Destruction Numbers

Figures for the storage of lethal nerve agents at bases around the United States do not match accountings for disposal of the material, creating a small chance that some might be lost.

A U.S. Army Audit Agency report indicates that officials believe the material was eliminated rather than missing.

While it generally lauded the bases' accounting, the report said the figures for storage of nerve agent in bulk containers did not line up with destruction figures.

"They did not have effective procedures in place to ensure amounts destroyed were accurately recorded in the (electronic recording) system. Consequently, CMA didn't have complete assurance that amounts recorded in the system were accurate," the report said.

The redacted version of the report did not indicate all the specific storage depots at which problems were found, but the Deseret Chemical Depot in Utah was among that group.

The depots should develop databases for recording disposal figures and quickly addressing any accounting problems, auditors said. The Chemical Materials Agency said it accepted the auditors' findings and would make the recommended fixes unless they necessitated amendments to international agreements.

The Chemical Weapons Convention requires destruction of the full U.S. chemical arsenal by April 2012. Pentagon officials have acknowledged that the United States will miss the deadline by several years.

http://www.globalsecuritynewswire.org/gsn/nw_20090209_8393.php

India destroys its chemical weapons stockpile

India has informed the United Nations that it has destroyed its stockpile of chemical weapons in compliance with the international Chemical Weapons Convention. With this India has become third country after South Korea and Albania to do so.

The government notified the Organisation for the Prohibition of Chemical Weapons (OPCW) on March 26 of the fulfilment of its obligations to 'completely destroy' its declared chemical weapons stockpile.

'The OPCW inspectors finalised all necessary on-site activities to allow termination of systematic verification of destruction, and ceased their physical presence at the facility as of the end of March 2009,' Michael Luhan, OPCW's head of Media and Public Affairs,

told IANS in an e-mail from The Hague in The Netherlands, where the regulator is based.

'In addition, our inspectors confirmed the completion of destruction of the former chemical weapons production facility, which had been temporarily converted for chemical weapons destruction purposes,' he added.

After denying the possession of chemical weapons for years, India in June 1997 declared a stockpile of 1,044 tonnes of sulphur mustard. At that time, less than two percent of the chemical was filled into artillery shells and the remainder was stored in bulk containers.

India's declaration came after the entry into force of the Chemical Weapons Convention (CWC) that created the OPCW. On Jan 14, 1993 India become an original signatory to the CWC.

Applauding India's compliance to the international convention the OPCW Director-General Rogelio Pfirter said during the opening of the 56th Session of the OPCW on April 21: 'A key result achieved (in the area of chemical disarmament) during the last three months is... the fulfilment by India of its obligations to completely destroy its declared chemical weapons stockpile. On 26 March 2009, India notified the Technical Secretariat accordingly.'

'I wish to sincerely, warmly, and emphatically congratulate India on this laudable achievement, which is the result of a consistent and unwavering commitment shown by India since entry into force of the Convention. This attainment further strengthens the Convention as an effective instrument for promoting the objectives of peace and security,' Pfirter said.

The Chemical Weapons Convention divides toxic chemicals and precursors that could be used as chemical weapons or that could be used in the manufacture of chemical weapons into three categories.

Category one comprises chemicals that have been used as weapons in the past and/or have very few or no peaceful uses, and thus pose the most direct threat to the convention.

Category two chemicals are primarily precursors to category one chemicals, and most have some industrial uses.

Chemicals in the third category are produced in large quantities commercially but in some cases were used as chemical warfare agents and can also serve as precursors to category one or two chemicals.

Giving details of the elimination process, CBW Magazine published by Indian defence ministry funded think tank Institute of Defence Studies and Analyses, said that by 1999, India destroyed one percent of its stockpile to meet the CWC's phase one requirements.

Phase two of the convention required the destruction of 20 percent of the stockpile by April 2002. By November 2003, India had destroyed 45 percent of its declared category, one stockpile six months ahead of schedule.

And in January 2008 the government declared it had destroyed over 75 percent of its chemical weapons stockpile and reiterated its commitment to eliminate the balance by 2009.

http://in.news.yahoo com/43/20090514 /812 /tnl-india-destroys-its-chemical-weapons.html

NATIONAL AND INTERNATIONAL DEVELOPMENTS

Panel experts say bio terrorism imminent

On January 28, 2009 the NYU School of Law hosted a panel discussion about weapons of mass destruction and the future of terrorism.

The event, which featured members of the Commission on the Prevention of WMD Proliferation and Terrorism, showcased the commission's newest report on the challenges posed by all forms of WMD — chemical, biological, radiological and nuclear — and its

recommendations for the new administration's responsive action.

Among the report's most startling declarations is the prediction that at least one nuclear weapon will be detonated in the next five years. The panel members also asserted that the threat of nuclear and biological warfare to the United States is on the rise rather than decline.

Commission members including Frances Townsend, former assistant to formal President Bush for Homeland Security and Counterterrorism, Michael Sheehan, former Deputy Commissioner for Counterterrorism at the NYPD, and Robin Cleveland, former counselor to the president of the World Bank, were present at the event.

In opening the discussion, Cleveland said a biological terror attack is much more likely than a nuclear war.

"For terrorists, biological weapons are much more easy to obtain due to the lax security of scientific laboratories and more importantly, the psychological effects of bioterrorism," she said.

Townsend believes the American government can be more effective in controlling the world's supply of WMDs if "the diffusion of accountability that currently exists in our government's bureaucracy be abolished."

http://www.nyunews.com/news/university/panel_experts_say_bio_terrorism_imminent-1.1316720

Al Qaeda threatens to attack India for the first time

The Al Qaeda for the first time has directly trained its guns on India, warning of a Mumbai-style attack if there is a strike on Pakistan. The support for Pakistan from the global jihad syndicate is not expected as Islamabad has been indulgent towards the efforts to make Quetta and the so-called Federally Administered Tribal Areas the incubating ground of a reorganised and protected Al Qaeda.

Using its usual style of communication, the Al Qaeda shot off the warning to India through a video that was received by the BBC in London. "India should know that it will have to pay a heavy price if it attacks Pakistan," said Mustafa Abu Al-Yazid, who is reportedly the Al Qaeda's military commander in Afghanistan and is ranked behind No. 2 Ayman al-Zawahiri. What is also being noted here is that Pakistan had claimed that Al Yazid was killed in fighting last August Bajaur tribal region in Pakistan.

In the 20-minute video, the Al Qaeda commander, speaking in Arabic, spews venom against India and its armed forces.

"The Mujahideen will sunder your armies into the ground, like they did to the Russians in Afghanistan. They will target your economic centres and raze them to the ground." The terrorists further criticised the ban on the Jamaat Ud Dawa, which was imposed after the Mumbai attacks.

Experts believe that it is this connection that has proved dangerous for India with the most recent example being the Mumbai terror attacks.

Al Qaeda in the video also targets Pakistani President Asif Ali Zardari asking the people in Pakistan to rise up and overthrow the government, according to the BBC.

The Al Qaeda commander in the video is suspected to have been involved in a number of terror attacks. According to reports, he last surfaced in August 2008 to confirm the death of Al Qaeda chemical-weapons expert Midhat Mursi al-Sayid Umar.

http://economictimes.indiatimes.com/News/PoliticsNation/Al_Qaeda_threatens_to_attack_India_for_the_first_time/articleshow/4109243.cms

Al Qaeda's bio-war experiment - one that went wrong

An al Qaeda affiliate in Algeria closed a base earlier this month after an experiment with unconventional weapons went awry, a senior U.S. intelligence official said.

The official, who spoke on the condition he not be named because of the sensitive nature of the issue, said he could not confirm press reports that the accident killed at least 40 al Qaeda operatives, but he said the mishap led the militant group to shut down a base in the mountains of Tizi Ouzou province in eastern Algeria. He said authorities in the first week of January intercepted an urgent communication between the leadership of al Qaeda in the Land of the Maghreb (AQIM) and al Qaeda's leadership in the tribal region of Pakistan on the border with Afghanistan. The communication suggested that an area sealed to prevent leakage of a biological or chemical substance had been breached, according to the official. "We don't know if this is biological or chemical," the official said.

AQIM, according to U.S. intelligence estimates, maintains about a dozen bases in Algeria, where the group has waged a terrorist campaign against government forces and civilians. In 2006, the group claimed responsibility for an attack on foreign contractors. In 2007, the group said it bombed U.N. headquarters in Algiers, an attack that killed 41 people. Al Qaeda is believed by U.S. and Western experts to have been pursuing biological weapons since at least the late 1990s. A 2005 report on unconventional weapons drafted by a commission led by former Sen. Charles Robb, Virginia Democrat, and federal appeals court Judge Laurence Silberman concluded that al Qaeda's biological weapons program "was extensive, well organized and operated two years before the September 11" terror attacks in the U.S. Another report from the Commission on the Prevention of Weapons of Mass Destruction Proliferation, released in December, warned that "terrorists are more likely to be able to obtain and use a biological weapon than a nuclear weapon." British authorities in January 2003 arrested seven men they accused of producing a poison from castor beans known as ricin. British officials said one of the suspects had visited an al Qaeda training camp. In the investigation into the case, British authorities found an undated al Qaeda manual on assassinations with a recipe for making the poison. The late leader of al Qaeda in Iraq, Abu Musab Zarqawi, was suspected of developing ricin in northern Iraq. Then-Secretary of State Colin L. Powell referred to the poison in his presentation to the U.N. Security Council in February 2003 that sought to lay the groundwork for the U.S. invasion of Iraq. Roger Cressey, a former senior counterterrorism official at the National Security Council under Presidents Bill Clinton and George W. Bush, told The Washington Times that al Qaeda has had an interest in acquiring a poisons capability since the late 1990s. "This is something that al Qaeda still aspires to do, and the infrastructure to develop it does not have to be that sophisticated," he said. Mr. Cressey added that he also is concerned about al Qaeda in the Land of the Maghreb, which refers to the North African countries of Algeria, Morocco and Tunisia. "Al Qaeda in the Maghreb is probably the most operationally capable affiliate in the organisation right now," he said.

www.blogrunner.com/snapshot/D/3/7/al_qaeda_bungles_arms_experiment/ - 31k

NSG women terror alert

National Security Guard chief J.K. Dutt warned that al Qaeda could use women suicide bombers and biological weapons against India.

Mustafa Abu al-Yazid, an al Qaeda leader believed to be dead, threatened in a video made public on 10 February that India could expect more Mumbai-style strikes if it attacked Pakistan.

India sees the Mumbai attacks as a convergence of al Qaeda, Taliban and the Lashkar-e-Toiba.

Dutt told a seminar that al Qaeda's reported training of 80 women suicide bombers should raise the question if any of them could be sent to India. Later, the director-general linked this to the need for a bigger role for women in security agencies.

Sources said the Intelligence Bureau and Research and Analysis Wing had been alerted on these potential threats alongside warnings about possible use of biological weapons.

"The Mumbai attack was an audacious attempt by the Taliban-al Qaeda-LeT combine to shape policies of three sovereign nation states that include the oldest democracy and the largest democracy," Dutt said.

The NSG chief said it was evident after the 9/11 attacks in the US that at least one group would stop at nothing. "This thought process has been reinforced with the terror attack in Mumbai on November 26, 2008," he said.

Dutt also expressed concern about the threat from biological weapons, last known to be used in 1995 in Japan when over 10 people were killed in a Sarin gas attack in a subway by a domestic terrorist group.

http://www.telegraphindia.com/1090212/jsp/nation/story_10521767.jsp

Senior UN Counter-terrorism Official Visits the OPCW

Mr Mike Smith, Executive Director of the United Nations Counter-Terrorism Committee Executive Directorate (CTED), visited the OPCW on February 5, 2009 for meetings with the OPCW Director-General, Ambassador Rogelio Pfirter, and other senior OPCW officials.

CTED was created to support the UN Counter-Terrorism Committee in its assessment, monitoring and promotion of Member States' implementation of resolution 1373 (2001). In that role it reviews the reports submitted by States, dialogues with them on aspects of implementation, and in some cases carries out field visits to assess how the counter-terrorism measures are working on the ground.

On September 5, 2008, the UN General Assembly reaffirmed the UN Global Counter-Terrorism Strategy adopted in 2006, which "encourages the International Atomic Energy Agency and the OPCW to continue their efforts, within their respective mandates, to help States to build capacity to prevent terrorists from accessing nuclear, chemical, or radiological materials, to ensure security at related facilities, and to respond effectively in the event of an attack using such materials."

http://www.opcw.org/news/news/article/senior-un-counter-terrorism-official-visits-the-opcw/

Al-Qaeda cell killed by Black Death 'was developing biological weapons'

The group of 40 terrorists were reported to have been killed by the plague at a training camp in Algeria earlier in the month of June.

It was initially believed that they could have caught the disease through fleas on rats attracted by poor living conditions in their forest hideout.

But there are now claims the cell was developing the disease as a weapon to use against western cities.

Experts said that the group was developing chemical and biological weapons.

Dr Igor Khrupinov, a biological weapons expert at Georgia University, told The Sun: "Al-Qaeda is known to experiment with biological weapons. And this group has direct communication with other cells around the world.

"Contagious diseases, like ebola and anthrax, occur in northern Africa. It makes sense that people are trying to use them against Western governments."

Dr Khrupinov, who was once a weapons adviser to the Soviet president Mikhail Gorbachev, added: "Instead of using bombs, people with infectious diseases could be walking through cities."

It was reported last year that up to 100 potential terrorists had attempted to become postgraduate students in Britain in an attempt to use laboratories.

Ian Kearns, from the Institute for Public Policy Research, told the newspaper: "The biological weapons threat is not going away. We're not ready for it."

http://www.telegraph.co.uk/news/worldnews/africaandindianocean/algeria/4294664/Al-Qaeda-cell-killed-by-Black-Death-was-developing-biological-weapons.html

Iran accuses Israel of using chemical weapons in Gaza

Iran is seeking for United Nations' serious action over Israel's use of chemical weapons in Gaza, the semi-official Fars news agency reported.

Foreign Minister Manouchehr Mottaki made the accusation against Israel in a letter to UN Chief Ban Ki-moon, urging for a "serious and effective action" over Israel's use of chemical weapons in Gaza, according to the report.

"In recent attacks by the Zionist regime's troops on Gaza, the regime's army has several times used banned weapons, including dangerous, toxic materials causing painful deaths, incapacitation or physical inabilities," Mottaki was quoted as saying in the letter.

He also called the use of the chemical weapons as the "examples of war crimes."

Earlier Iran's Ministry of Defense and Armed Forces Logistics also issued a statement to denounce the Israeli use of chemical weapons in Gaza, saying that "the Zionist regime" had fired "white phosphorus into Gaza."

After about three weeks of an unprecedented military air and ground offensive of Israel on Gaza since December 27, where around 1, 240 Palestinians killed and more than 5, 200 others wounded.

http://news.xinhuanet.com/english/2009-01/18/content_10678977.htm

Allegations of Israel's use of chemical weapons not yet proved: UN

UN will not make premature statements, but will await the international organisations' final report on Israel's use of chemical weapons during the hostilities in Gaza, said a spokesperson for UN Secretary-General Ban Ki-moon Brenden Varma.

"Until any determination of possible crimes is made, it is premature to talk about UN follow-up action [on Israel]," Varma wrote Trend News via e-mail.

The Israeli Defense Ministry confirmed the allegations of the illegal use of banned white phosphorus during the three-week offensive in Gaza against Hamas, but has not yet presented exact data. Defense Minister Ehud Barak said it had launched investigation into the numerous allegations of human rights and media organisations on the use of chemical weapons against the civilian population.

The UN has not spoken out on Israel's use of phosphoric weapons, as is awaiting the final reply of the UN Human Rights Council, which has its own independent mandate and is probing allegations against the Israel Defense Forces, Varma said.

Arab media reported at least 200 phosphorous bombs were dropped on the Gaza Strip during the Operation Cast Lead. BBC quoted Palestinian medics as saying that 1,300 Palestinians were killed and 5,500 wounded as a result of the offensive.

The total damage is assessed at 1.5 billion dollars.

http://news.trend.az/index.shtml?show=news&newsid=1406055&lang=en

RECENT DEVELOPMENTS IN SCIENCE AND TECHNOLOGY

Combat on the cutting edge: Military plans to sink big bucks into high-tech gear for the battlefield

Canada's soldiers of tomorrow could have assault rifles that are lighter, share pictures and come with a central power source to charge high-tech sighting, magnification, laser aimers and grenade launchers.

And new uniforms could include tourniquet bandages and anti-microbial drugs, as well

as built-in protection from chemical and biological weapons in sensitive areas where soldiers sweat.

These are some of the concepts Ottawa is spending a fortune on to make Canadian soldiers more lethal.

It issued a tender worth about $4.75 million for what the military calls human factors engineering support. The three-year contract is meant to usher several high-tech projects worth well over $1 billion from the lab to the battlefield.

"Canadian soldier modernization efforts to date have resulted in dramatic improvements in the areas of soldier survivability, mobility and sustainability," says the tender. "Further efforts are now underway to achieve significant improvements in soldier lethality."

The work is meant to apply knowledge of soldiers' abilities and limitations to the design of weapons and other gear, said Maj. Linda Bossi, an ergonomics expert at Defence Research and Development Canada.

"If you don't do this, it may work in the lab, but it won't work in the mud," Maj. Bossi said in an interview.

"So we're not just talking about better spear-chuckers or better bullet-chuckers. We're talking about network-integrated systems that are sensors and weapons."

There is one potential drawback to adding too much gear to a soldier's kit, said Terry Liston, the military's former chief of planning and operations.

"There's always a concern because the infantryman has so much stuff to carry," said Mr. Liston, a retired major-general. "It's a trade-off. If you're going to have more soldier protection, for example, you're going to severely restrict his mobility on foot."

He cautioned that better-equipped soldiers, dubbed "force-multipliers," don't trump large numbers of boots on the ground.

Making it easier for soldiers to kill people doesn't sit well with Steven Staples of the Rideau Institute, a left-leaning Ottawa think-tank.

"Any notion of the Canadian Forces, it seems to me, of excelling in excellence in peacekeeping is being replaced in an excellence in being able to kill people. This is really worrisome."

http://thechronicleherald.ca/Front/1106088.html

Is pollution driving antibiotic resistance?

Infections caused by superbugs - such as Methicillin-resistant *Staphylococcus aureus* known as MRSA. The media often blame over-prescription of antibiotics and poor hygiene standards, but these are just two of the reasons why bacteria now resist many antibiotics.

We have been investigating antibiotic resistance genes in bacteria living in soils, and how pollution may influence the way resistance evolves.

Bacteria have existed on Earth for at least three billion years. In this time they have evolved complex strategies to adapt to different habitats and compete with other bacteria for every available niche. One strategy involves attacking rivals with chemical weapons - which we call antibiotics. Logically, any bacterium attacking a competitor needs to protect itself and its species from its own antibiotics.

Antibiotics and other chemicals that could drive antibiotic resistance enter rivers and soils in many ways.

One strategy involves attacking rivals with chemical weapons - antibiotics.

Horizontal gene transfer has the power to drive the spread of resistance genes when bacteria are faced with antibiotics, disinfectants or other pollutants in waste from towns, cities and agriculture.

Antibiotics and other chemicals that could drive antibiotic resistance enter rivers and soils

in many ways. Industry uses larges volumes of detergents and disinfectants - including quaternary ammonium compounds (QACs) - know together as biocides. Nearly all domestic cleaning products and shampoos also contain QACs. They wash out in large volumes with the waste water from factories and homes. QAC resistance genes are significant because they are often located with antibiotic resistance genes on the same piece of DNA, so exposure to one will co-select for the other.

Using molecular techniques to analyse bacteria in soils, we compared the number of integrons and genetic diversity of resistance genes in polluted samples with those from control agricultural soils. Polluted samples had a significantly higher number of integrons. We also found new genes - similar to known antibiotic resistance genes - were more numerous in polluted samples than in unpolluted control soils.

It appears that certain methods of waste disposal such as sludge and slurry application introduce genetic elements known to carry antibiotic resistance genes into agricultural soil. Further research is needed to study survival of bacteria carrying these elements in soil contaminated with waste, and the risk of transmission to people through meat and vegetables in the same way as food poisoning bacteria such as *E. coli* and *Salmonellae*.

The number of bacteria on Earth has been estimated by scientists from the University of Georgia as five million trillion trillion - if each bacterium were a penny, the stack would reach a trillion light years. Because this huge number of bacteria can freely exchange genes that have evolved over billions of years it is not too surprising that new genes giving resistance to clinical antibiotics appear soon after an antibiotic is introduced. But what is surprising is that it is not just antibiotics driving resistance - pollutants and waste disposal practices may also be contributing to this process.

http://planetearth.nerc.ac.uk/features/story.aspx?id=207

Quality of life in chemical warfare survivors with ophthalmologic injuries: the first results form Iran Chemical Warfare Victims Health Assessment Study

Iraq used chemical weapons extensively against the Iranians during the Iran-Iraq war (1980-1988). The aim of this study was to assess the health related quality of life (HRQOL) in people who had ophthalmologic complications due to the sulfur mustard gas exposure during the war.

Methods: The Veterans and Martyrs Affair Foundation (VMAF) database indicated that there were 196 patients with severe ophthalmologic complications due to chemical weapons exposure.

Of these, those who gave consent (n = 147) entered into the study. Quality of life was measured using the 36-item Short Form Health Survey (SF-36) and scores were compared to those of the general public.

In addition logistic regression analysis was performed to indicate variables that contribute to physical and mental health related quality of life.

Results: The mean age of the patients was 44.8 (SD = 8.7) ranging from 21 to 75 years. About one-third of the cases (n= 50) reported exposure to chemical weapons more than once.

The mean exposure duration to sulfur mustard gas was 21.6 years (SD = 1.2). The lowest scores on the SF-36 subscales were found to be: the role physical and the general health.

Quality of life in chemical warfare victims who had ophthalmologic problems was significantly lower than the general public ($P<0.001$). The results obtained from logistic regression analysis indicated that those who did not participate in sport activities suffer from a poorer physical health (OR = 2.93, 95% CI = 1.36 to 6.30, P = 0.006).

The analysis also showed that poor mental health was associated with longer time since exposure (OR = 1.58, 95% CI = 1.04 to 2.39, P = 0.03) and lower education (OR = 3.03, 95% CI = 1.21 to 7.56, P = 0.01).

Conclusion: The study findings suggest that chemical warfare victims with ophthalmologic complications suffer from poor health related quality of life. It seems that the need for provision of health and support for this population is urgent.

In addition, further research is necessary to measure health related quality of life in victims with different types of disabilities in order to support and enhance quality of life among this population.

http://7thspace.com/headlines/302213/quality_of_life_in_chemical_warfare_survivors_with_ophthalmologic_injuries_the_first_results_form_iran_chemical_warfare_victims_health_assessment_study.html

Oregon Firm Prepares Smallpox Drug

Oregon biopharmaceutical firm Siga Technologies hopes next year to receive federal approval to distribute a new smallpox antiviral treatment, the *Oregonian* reported.

The company began work on the drug prior to 2001 and received an infusion of federal funding in the wake of the September 11 attacks. It has now received $100 million worth of contracts from Washington.

Should the company's product, ST-246, receive authorization from the Food and Drug Administration, it would primarily be supplied to the military or placed in the Strategic National Stockpile. Hospitals or other sizable private firms might also have access to the drug.

Siga indicated this week that it would compete for a U.S. Health and Human Services Department contract to provide between 1.7 million and 12 million doses of smallpox antiviral medication.

Meanwhile, the Indian government has signed off on marketing and sales plans there of the BioThrax anthrax vaccine produced by Maryland-based Emergent BioSolutions, the company announced.

"The government of India has been explicit in expressing its commitment to protect its population from the continuing threat of bioterrorism. We are certainly pleased that BioThrax will be a valuable countermeasure available to the government of India to achieve that goal," Emergent chief Fuad El-Hibri said in a release.

http://www.globalseuritynewswire.org/gsn/nw_20090212_1299.php

University Develops Medical "Surge" Calculator for WMD Strikes

Researchers at Johns Hopkins University in Baltimore have developed a free programme to help public health organisations anticipate the "surge" of patients they would face after a chemical, biological or radiological attack, the school announced.

The Web-based program, dubbed Electronic Mass Casualty and Planning Scenarios, accounts for factors such as wind conditions, germ incubation periods and health care resources to determine the potential impact on hospitals of terrorist attacks and other major disasters.

"Biological, chemical, radiological or explosive attacks can bring hospitals and local health agencies to their knees, quickly overwhelming their ability to care for mass casualties," Johns Hopkins University emergency medicine head Gabor Kelen said in a statement. "Our software lets users put their own information into the modeling software, customize it to their needs, and predict what they will need to handle a surge in casualties".

Plant diseases threaten woodland

Some of the finest gardens and woodlands in Britain are under threat from two closely related and aggressive fungus-like plant diseases.

Environment minister Jane Kennedy said they were attacking "pristine" locations and could potentially damage the landscape and the tourism industry.

The government has allocated £25m in a bid to eradicate the diseases which are spreading across the country.

They are *Phytophthora kernoviae* and *Phytophthora ramorum*.

Rhododendrons, a carrier of both diseases, are likely to be removed in woodland to combat the problem.

The flowering shrubs, popular as an ornamental species in many gardens, also grow wild in wooded areas and an area of the New Forest has already been cordoned off to allow rhododendrons to be cut down and burned.

Phytophthora kernoviae, first found in the south-west of England in 2003, reached Scotland five years later. It attacks and kills many trees and shrubs, including the oak and beech trees which make up so much of Britain's woodlands.

Devastated

The Department of Environment, Food and Rural Affairs says 69 sites in England and Wales are currently affected, with Cornwall the worst-hit region.

Phytophthora ramorum, first identified in 1995, has devastated woodland on the west coast of the United States where it has been responsible for the syndrome known as sudden oak death.

Few control mechanisms exist for the disease, so the importance of early detection - and proper disposal of the infected plant material - is key.

The government is to earmark some of the money for new research and development, and there will be a campaign to make landowners aware of the threat.

http://news.bbc.co.uk/2/hi/uk_news/7920199.stm

Afghanistan: Schools Targeted by Chemical Weapons

Summary

Three attacks that took place over the course of a two-week period in an area just north of Kabul, Afghanistan, involved poisonous chemical gas. The attacks targeted several girls' schools in the area and have sent nearly 200 students, faculty and police officers to the hospital for reactions to the chemical ranging from itchy eyes to loss of consciousness. It appears that local forces opposing female education — most likely linked to the Taliban — are experimenting with a new weapon, but its ineffectiveness may limit its further use.

Analysis

A chemical attack that took place May 12 at the Aftab Bachi girls' school in Mahmud Raqi, Kapisa province in Afghanistan sent 98 students, teachers and other employees to the hospital after they complained of headaches, vomiting, shivering and watery eyes. Several of the girls lost consciousness, although 60 of those admitted to the hospital have already been released, and the rest are recovering and are expected to be released later today.

The incident follows two similar incidents that occurred in two different girls' schools in Charikar, Parwan province, located approximately 11 miles from Mahmud Raqi. On April 26, around 40 students, teachers and a police officer went to the hospital after experiencing symptoms that included headaches and dizziness. An eyewitness reported that an unidentified man threw a bottle into the school compound shortly before the symptoms were observed. On May 11, approximately 60 girls went to the hospital after suffering from headaches, dizziness and stinging

eyes, with several girls losing consciousness. In the May 11 incident, the girls described smelling something sweet "like flowers" and seeing a gaseous cloud shortly before the onset of symptoms. The nature of all three attacks points to the use of a chemical gas. All of the victims were released shortly after each incident, and none showed signs of life-threatening symptoms.

The Taliban have frequently targeted schools for attacks; 92 people were killed in 292 separate school attacks in 2008, and several girls were blinded when a group of men threw acid in their faces in Kandahar. Girls' schools are contentious in Afghanistan because forces that are more conservative have denounced such schools; the Taliban banned them during their rule from 1996 to 2001.

Because all three apparent chemical attacks targeted girls' schools and occurred in approximately the same area within a 16-day period, it is possible that the same group — or even one person — is behind these attacks. The similarity in symptoms exhibited in each incident suggests that the attacker is using the same chemical agent in each attack. While details on the delivery of the agent are unclear, the facts evident thus far — that the first attack appeared to have been delivered when a man threw a bottle into a courtyard, and that in the second attack the girls complained of strange odors — imply that the agent is some sort of improvised chemical weapon.

The specific type of chemical is unknown and will remain a mystery until tests on blood samples taken from the victims are complete. Al Qaeda is known to have experimented with weaponized chemicals, such as when the group's Iraqi franchise carried out a series of chlorine truck bombings in 2007 that failed to inflict more damage than a traditional attack. Al Qaeda also has been known to experiment with cyanide. Such chemical weapons can be lethal if administered in sufficient concentrations, but the fact that most of the victims were exposed outdoors may have prevented concentrated exposure.

This brings up one of the key weaknesses of chemical and biological weapons. While such weapons are highly lethal in favorable conditions, deploying them in the real world has serious limitations. Many different variables that can alter exposure to the material, such as wind patterns, temperature and crowd density, typically make exposure less lethal. As STRATFOR has pointed out before, while improvised chemical weapons are not technically difficult to make, their drawbacks make them less attractive than the more battle-proven automatic weapons and explosives commonly used in most Taliban attacks. However, such weapons remain alluring due to excessive media attention associated with chemical and biological weapons. Because of this, some jihadists have maintained a fixation on chemical weapons because they mistakenly believe them to be superweapons capable of functioning as weapons of mass destruction.

These recent attacks in Afghanistan demonstrated a combination of Taliban tactics (targeting schools) and al Qaeda tactics (using chemical agents). Chemical weapons are not necessarily that difficult to make and use, so it is feasible that Taliban militants have learned how to create such weapons from al Qaeda members, or that they are experimenting with the simple chemical reaction weapons themselves. If a weapon is deemed successful, then STRATFOR would expect its use to spread fairly quickly as other militants in the battlespace adopt the tactic. Because these attacks have not been lethal, it appears that the perpetrators have some more work to do to improve the weapon's lethality, or they might abandon the weapon for the Taliban's more traditional and efficient arsenal of automatic rifles and explosives. STRATFOR will continue to monitor these attacks and work to gather additional information.

http://www.stratfor.com/memberships/137815/analysis/20090512_afghanistan_schools_targeted_chemical_weapons

INFECTIOUS DISEASES

H1N1 flu has killed 23, infected 1,023 in 20 countries

The first wave of the H1N1 outbreak, presently circulating across the world, has

already infected over 1,023 people and killed 26 others in 20 countries.

Some nations, including Mexico, the country where the diseases originated and has caused maximum damage, have now started to believe that the worst is over with the outbreak having peaked between April 23 and 28.

But what most nations and WHO are now most worried about is what they call "the second wave of the H1N1 pandemic".

Behavioral studies conducted on earlier pandemics have shown that it comes in two phases — the first wave usually being mild followed by a more devastating wave, sometime around autumn and winter months.

All four of the well-known pandemics have come in waves. That's what happened during the deadly 1918 Spanish flu outbreak that killed over 50 million people.

Keiji Fukuda, WHO's acting assistant director-general, told a global press conference that TOI was part of, "People imagine that a pandemic spreads everywhere at the same time a simultaneous wave of infections across the world. However, that's not true."

"You will see peaks of activity in some places at some time, valleys and lulls in some other. And probably that is what we will see in this pandemic too," said Dr Fukuda who expressed concern about the infection travelling to the southern hemisphere now, as that part of the world was heading into the winter months, when influenza viruses usually thrive.

"Monitoring and surveillance is, therefore, critical as we will then know how far and wide the virus is spreading," Dr Fukuda said.

A similar warning has also come from the head of the WHO, Dr Margaret Chan. Dr Chan, who on Monday told the UN General Assembly there was no indication that the present outbreak is similar to a pandemic in 1918, however, warned that the swine flu may re-emerge stronger than ever later, even if the current outbreak appears to be declining.

According to her, the apparent decline in mortality rates did not suggest the pandemic was coming to an end.

She said the end of the flu season in the northern hemisphere meant an initial outbreak could be milder, but a second wave would be more lethal, striking with a vengeance.

"I'd rather over-prepare than not prepare," Dr Chan said.

Indian officials say the slowing of the H1N1 virus is due to the response of nations in setting up effective containment measures.

Joint secretary at the health ministry Vineet Chawdhry said, "We are prepared for a second wave but I hope it does not happen. It's not just the issue of logistics. It could become the case of crying wolf another time. There is a possibility that people start thinking our threat perception was exagerated and stall preparations."

Union health secretary Naresh Dayal told TOI, "By the time the next wave comes, hopefully we will have a vaccine."

WHO pandemic diseases spokesman Gregory Hartl said though the current epidemiology in Mexico might show a slowdown, history has to be studied when evaluating the virus's potential to come back.

Hartl said, "In 1918, the Spanish flu showed a surge in the spring and then disappeared in the summer months only to return in the autumn of 1918 with a vengeance. It eventually killed 50 million people. So we cannot lower our guard."

Initial studies conducted by the CDC suggest we are currently dealing with an H1N1 strain that's not as lethal as the virus that was responsible for the Spanish flu.

According to Peter Palese, a microbiologist at Mount Sinai School of Medicine in New York City, "There are certain characteristics, molecular signatures, which this virus lacks. In particular, the 2009 H1N1 lacks an amino acid that appears to increase the number of virus

particles in the lungs and make the disease more deadly."

http://timesofindia.indiatimes.com/India/H1N1-flu-has-killed-23-infected-1023-in-20-countries/articleshow/4483774.cms

India better prepared to tackle swine flu: official

Even as the government claims that India is now better prepared to deal with influenza A(H1N1) outbreak than it was four years ago, three persons are being kept under observation here and two in Kochi.

Reports of swab samples of the three admitted to government hospitals in Delhi are being awaited, while the samples from Kochi are yet to reach the National Institute of Communicable Diseases (NICD) in Delhi and the National Institute of Virology (NIV), Pune, Vineet Chowdhry, Joint Secretary, Ministry of Health and Family Welfare, told journalists.

Earlier, 12 samples tested negative for swine flu, he said, adding no patient was under observation in Hyderabad.

Of the three admitted to the Delhi hospitals, one had volunteered to get himself tested. Two of them had arrived from the United States and the other from Germany. The two in Kochi had visited the U.S., Europe, and came to India via Dubai.

Mr. Chowdhry said screening might be required at road transition points in Uttar Pradesh and Bihar following reports that 84 passengers had entered India via the land route from Nepal. They were now being tracked down. He, however, ruled out sealing of the borders as there was no infection in any of the neighbouring countries. Sealing would only cause inconvenience.

Seaports under watch

Pointing out that seaports were also under observation but no additional medical staff had been deployed there, Mr. Chowdhry said sea travel took longer and it was mainly the crew who arrived at the ports. The Port Health Office was adequate to handle them.

Meanwhile, over 45,000 passengers had been screened at 22 airports. The 2,000 passengers who had arrived from Mexico and Canada in the past two weeks were now being screened. The Integrated Disease Surveillance Programme was being further activated to maintain a regular check on passengers.

As many as 192 doctors and paramedical staff members were on duty round the clock. Rejecting the suggestion that testing be decentralised, Mr. Chowdhry said samples were being sent to the NICD and the NIV for parallel testing. Only when both reports matched would the results be announced.

http://www.hindu.com/2009/05/05/stories/2009050557180100.htm

WHO says 1,003 swine flu cases in 20 countries

WHO officials estimate there are 1,003 cases of swine flu spread through 20 countries, but are not planning to raise the alert level yet, top WHO official Margaret Chan said.

"There are now 1,003 confirmed cases of H1N1 in 20 countries," the World Health Organisation chief told senior UN officials in New York during an audio-conference.

"We don't know how long we have till we move to phase six. Six indicates we are in a pandemic. We are not there yet," she added.

Chan was speaking from Geneva during an informal meeting of the UN General Assembly to evaluate WHO preparations to confront the A(H1N1) virus.

The WHO said there were 985 confirmed cases of swine flu in 20 countries, including 590 cases in Mexico where 25 people have died, and 226 cases in the United States were one toddler has succumbed to the disease.

http://timesofindia.indiatimes.com/World/WHO-says-1003-swine-flu-cases-in-20-countries/articleshow/4483314.cms

Mexico starts China flu airlift

A Mexican plane has arrived in China to collect dozens of Mexicans who have been quarantined because of fears they may be infected with swine flu.

About 70 Mexicans were confined despite just one confirmed case of the virus.

The issue sparked a diplomatic row, with Mexico accusing China of targeting its citizens unfairly, and Beijing saying it was a "purely medical" issue.

Some 26 people have died of the virus in Mexico and more than 1,000 cases have been reported in 20 countries.

But just one fatality has been recorded outside Mexico - a two-year-old Mexican boy who died in the US while on a visit.

In other developments:

- The World Health Organisation says 1,124 people around the world have so far contracted the H1N1 swine flu virus. However, WHO figures often lag behind those announced by national government laboratories.
- Mexico puts the number of infections within its borders at 727, higher than the WHO's figure of 529.
- President Felipe Calderon appears on Mexican TV praising the country's precautions against swine flu. "Thousands of lives have been saved not only in Mexico but in the world," Mr Calderon said.
- In the UK, delivery begins of specially-produced leaflets offering advice on swine flu and advice on how to prevent its spread.
- South Korea reports its second confirmed case of swine flu, the first instance of human-to-human transmission in Asia.

Second row brewing

The row between Mexico and China developed after a 25-year-old man who had flown from Mexico to Shanghai and Hong Kong was diagnosed with swine flu - or H1N1.

Confirmed Cases

Mexico: 101 suspected deaths - 26 confirmed; 727 confirmed cases

US: One death, 286 confirmed cases

Canada: 140 confirmed cases

Spain: 54 confirmed cases

UK: 27 confirmed cases

Hetero Drugs close to receiving orders for its swine flu medicines

Hyderabad-based Hetero Drugs is close to receiving orders from foreign countries for its swine flu medicines worth at least $10 million in the next few days, a top company executive said. The privately held pharma company has the licence from Swiss drug major Roche to develop and sell the generic version of Tamiflu (Oseltamivir).

Following the global outbreak of H1N1 Flu, commonly known as swine flu, governments of several countries are stockpiling Oseltamivir the antiviral drug widely used to combat the disease. The outbreak which originated in Mexico has now spread to 18 countries, including the US, several European countries and some Asian countries.

"We are in final stages of discussions with several countries, including some whom we have supplied flu drugs in the past. We will have a clarity on supply and expect drug orders of at least $8-10 million," Hetero Drugs director (Marketing) Srinivas Reddy told ET.

The company is in discussions to supply drugs to about 40-50 countries which include Argentina, Columbia, Venezuela, Honduras, Thailand, Philippines, Egypt, Saudi Arabia and over 10 countries in Africa. Hetero claims to

have the capacity to supply 40 million capsules of Oseltamivir in two weeks time. But for this, it may have to halt production of some of its other drugs.

"We can sacrifice some other product lines," Mr Reddy said. He added that the company will not face any raw material constraints to churn out the drug as it has agreements with firms who supply the same intermediates to Roche, the global supplier of the drug.

American company Gilead Sciences developed the antiviral drug Oseltamivir and has given the marketing license to Roche, which sells the drug under the brand Tamiflu. In India, Roche has sub-licensed the manufacturing rights to Hetero Drugs.

Other Indian companies such as Ranbaxy, Cipla, Natco and Roche India have all expressed their capabilities to supply lakhs of drugs in a few days notice. They are also in discussions to supply drugs to many countries who want to buy low cost version of Tamiflu.

Roche does not hold a patent for Tamiflu in India. Its patent application was rejected by the India patent office in March 2009 which paved the way for Indian companies to legally manufacture and sell their generic version of the drug.

http://economictimes.indiatimes.com/News/News-By-Industry/Healthcare—Biotech/Pharmaceuticals/Hetero-Drugs-close-to-receiving-orders-for-its-swine-flu-medicines/articleshow/4483001.cms

Swine flu leaves Southern Hemisphere out in cold

The Southern Hemisphere has been mostly spared in the swine flu epidemic. That could change when winter starts in coming weeks with no vaccine in place, leaving half the planet out in the cold.

So far, the most affected nations have been in North America and Europe, which are heading into summer. But flu is spread more easily in the winter, and it's already fall down south. Experts fear public health systems could be overwhelmed — especially if swine flu and regular flu collide in major urban populations.

"You have this risk of an additional virus that could essentially cause two outbreaks at once," Dr. Jon Andrus said at the Pan American Health Organisation's headquarters in Washington.

There's also a chance that the two flus could collide and mutate into a new strain that is more contagious and dangerous.

"We have a concern there might be some sort of reassortment and that's something we'll be paying special attention to," World Health Organisation spokesman Dick Thompson said in Geneva.

Flu spreads more readily during the winter because people congregate indoors as the weather gets colder, increasing the opportunity for the virus to hop from person to person, said Raina MacIntyre, public health director at the University of New South Wales in Australia. Colder temperatures also may make it easier for the virus to infect people.

"The highest peaks of influenza activity occur in winter," MacIntyre said. "For us in the Southern Hemisphere, it's particularly concerning."

And while New Zealand is the only southern nation with confirmed swine flu cases, "it's almost inevitable that it will come to Australia," she said. Health officials in Brazil also say it's a near-certainty swine flu will hit Latin America's largest nation, where there are 25 suspected cases but none confirmed so far.

Humans have only limited natural immunity to the never-before-seen H1N1 swine flu virus, which is a blend of bird, pig and human viruses that jumped from pigs to humans and began spreading easily. The strain has killed relatively few people in its current form compared to traditional flu, which kills about 36,000 people each year in the U.S. and more than 250,000 worldwide.

The timing is particularly challenging for vaccine makers. A vaccine for swine flu is still months from being produced, and will likely be available just as flu season is ending in southern countries.

"The vaccine won't come in time for South America," said Dr. Gonzalo Vecina of Sao Paulo's prominent Hospital Sirio-Libanes.

In addition, many companies may switch to making swine flu vaccine instead of seasonal flu vaccine, potentially jeopardizing the southern countries' regular flu vaccine stocks for next year.

"This is a concern we are working on," Andrus said. "We want to prevent it from being a potential barrier to getting it to the people who need it most."

Even in normal years, vaccine makers don't have the capacity to make enough shots for more than a fraction of the world's population.

Some experts think health officials in Southern Hemisphere countries should be more concerned with seasonal flu than with swine flu.

John Mackenzie, a flu expert at Curtin University in Australia, said countries should focus on regular flu vaccines for high-risk populations, including the elderly and those with chronic illnesses, since swine flu appears relatively mild so far.

But Thompson said WHO is also concerned about a possible "reassortment" — or mixing of regular and swine flu viruses.

"Governments have to step up their actions to protect their populations, especially in the absence of a (swine flu) vaccine," said Thompson. "Latin American countries may have a somewhat stronger surveillance system than in Africa. Africa's going to need some additional support and surveillance."

Brazil announced it was authorizing $67 million in emergency funding to combat swine flu, much of it for public information campaigns on how people can prevent its spread through basic means, like frequent hand-washing.

In Africa, which has yet to confirm a swine flu case, an outbreak during traditional flu season will make diagnosing and treating the two viruses a challenge, said Barry Schoub, director of South Africa's National Institute for Communicable Diseases.

Even in the absence of cases, officials are preparing. Johannesburg's O.R. Tambo International Airport, a regional gateway that handles millions of travelers each year, has plans to get a thermal image detection system running to check passengers for fever. A supply of masks has been provided to that airport and others, as well.

Hospitals have been given guidelines on how to handle suspected cases. South Africa, the richest country in the region, is poised to assist its neighbors should they need help with testing or treatment.

South Africa has stockpiled about 100,000 courses of the antiviral drug Tamiflu, used to treat those infected, and has access to more if needed, Schoub said.

Other countries said they're well-prepared, too. Australia has a stockpile of 8.7 million courses of Tamiflu and Relenza to treat its population of 22 million, MacIntyre said. Brazil says it is well-prepared but has Tamiflu for just 9 million people in a nation of more than 190 million.

Argentina, population 40 million, has 500,000 treatments with another 110,000 on order. Chile, with 16 million, has 300,000 treatments and has asked for 500,000 more. Venezuela has boasted of having plenty of Tamiflu but has not responded to repeated requests to say how much is available for the nation of 26 million.

And in Bolivia, one of the hemisphere's poorest nations, Health Minister Ramiro Tapia announced that the country has only 100 treatments but that WHO has promised an emergency shipment of 12,000. Tourists feared they might not be given Tamiflu if they fall ill, but Tapia said the government would provide it free to anyone in need.

The greatest risk to South American nations are its most vulnerable populations, who live in slums ringing big cities and often have little access to health care.

"You can't talk about at-risk countries, but rather populations at risk, and that's the families of eight people who live together in a single room," said Dr. Mauricio Espinel, an epidemiologist at Ecuador's University of San Francisco.

http://www.google.com/hostednews/ap/article/ALeqM5jV2XVgYGNQGZTfFbcTJV-vv3p6nBQD97VOOJO0

FAO urges countries to closely monitor A/H1N1 in pigs

The Food and Agriculture Organisation (FAO) said that national authorities and farmers should carefully monitor pigs and investigate any possible occurrences of influenza-like symptoms in domestic animals.

The Rome-based agency of the United Nations made the appeal after transmitting of the A/H1N1 virus between pigs and humans has been confirmed in Canada.

"The human-to-animal transmission that occurred in Canada does not come as a surprise as influenza viruses are capable of transmitting from humans to animals," FAO's Chief Veterinary Officer Joseph Domenech said.

"The Canadian event should therefore not be a matter of panic, but it should remind us of the human-animal link in virus transmission on which we definitely need to keep an eye open," he added.

Influenza viruses, whether in humans or among animals, are constantly evolving genetically along with changes in their ability to cause morbidity and mortality in humans or animals. Therefore the current A/H1N1 situation should be carefully monitored as many of the virus characteristics and developments are still unknown, Domenech said.

Surveillance for porcine respiratory disease should be intensified and all cases of porcine respiratory syndrome are recommended to be immediately reported to veterinary authorities, the FAO recommended.

The UN body also suggested governments inform any occurrence of outbreaks of the new A/H1N1 Influenza virus in pigs to international agencies concerned.

Strict bio-security measures including restriction of movements of pigs, goods and people should be applied on all farms or holdings with swine showing signs of clinical respiratory illness until diagnosis of the illness have been made, the FAO said in a press release.

Where A/H1N1 influenza is confirmed, movement restrictions should be in force for seven days after the last animal has recovered, the agency said.

Governments are required to provide full support in improving bio-security measures particularly to small and medium pig farmers, it emphasized.

Persons who work directly with swine should be urged not to go to work if they have any signs of respiratory disease, fever or any influenza-like illness, while animal handlers and veterinarians should wear protective clothing to minimize the risk of being infected, it said.

The FAO also stressed that there is absolutely no need to slaughter animals in view of preventing circulation of the A/H1N1 virus.

The UN organisation said the A/H1N1 virus cannot be transmitted to humans by pork or pork products, which will not be a source of infection under good hygienic standard.

http://news.xinhuanet.com/english/2009-05/05/content_11313697.htm

Egypt garbagemen clash with police over pig cull

Egyptian police fired tear gas at garbage collectors who pelted them with rocks and bottles over fears they had come to seize their pigs as a precaution against a new flu virus.

At least 10 people were injured in the clashes in Manshiet Nasr, a shantytown on Cairo's outskirts where residents burnt trash barriers in the street to keep police at bay. Security sources said up to 15 people were detained.

Three police were also injured in clashes with pig farmers in another area of the capital.

Egypt, already hit hard by bird flu, ordered the slaughter of all Egypt's roughly 300,000 to 400,000 pigs on April 29 as a precaution against the H1N1 swine flu virus, a move the United Nations said was "a real mistake."

Egypt, which has not reported any H1N1 cases, fears another flu virus could spread quickly in a country where most of the roughly 80 million population live in the densely packed Nile Valley, many in crowded slums around Cairo.

One security source said police had gone to the Manshiet Nasr neighbourhood, a mix of concrete and brick apartment blocks and makeshift shanties, to seize pigs belonging to garbage collectors who make their living sorting trash.

But another security source said police were simply surrounding the neighbourhood to prevent residents from moving their animals outside the neighbourhood to hide them from officials seeking to enforce a cull.

"We serve the people and they come and cut off our livelihood. The pigs don't have any disease. The country is diseased. Take samples from the pigs and if they have disease, we would cull them," Manshiet Nasr resident Marzouk Badr Adli said after the clashes, complaining about the cull.

The new virus strain — a mix of swine, avian and human viruses — is being spread by people, not pigs. But culling swine, largely viewed as unclean in Muslim Egypt, could help quell any public panic in the most populous Arab country.

Pigs are mainly raised by the Christian minority, and government officials have complained that some farmers are trying to hide their pigs, making it harder for officials to carry out the cull.

The World Health Organisation has identified 787 H1N1 infections in 17 countries, including in Egypt's neighbour Israel, and said there were 19 confirmed deaths in Mexico.

http://www.reuters.com/article/newsMaps/idUSTRE5421R020090504

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BIOSECURITY

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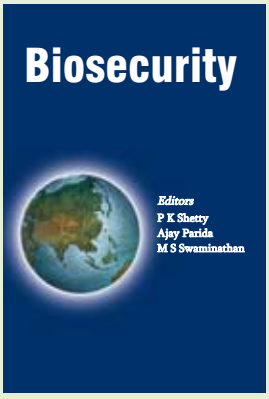
Biosecurity is a holistic concept of unswerving importance to the sustainability of agriculture, food safety and the protection of the environment including biodiversity. It involves all kinds of threats to security from microbes to man, to the entire biological kingdom. 'India's preparedness and capability in the area of biosecurity is a serious concern, particularly after the introduction of the H5N1 strain of avian influenza virus in many parts of the country'. The main focus of the book under review is on agricultural biosecurity (animal and plant biosecurity) albeit it has been titled Biosecurity.



The book, featuring 17 chapters, had evolved after a discussion on Biosecurity in November, 2006. This discussion was jointly organized by National Institute of Advanced Studies (NIAS), Bangalore and M.S. Swaminathan Research Foundation, Chennai (MSSRF). India being one of the most vulnerable countries to the threat of bioterrorism, the discussion was organized for setting up a National Agenda Towards Biosecurity. The main focus of this meeting was on issues related to bio-security, bio-safety, biohazards and bioterrorism and its significance for India. The book covers bio-security in natural resources – land, water and environment, integrated pest management, aquaculture, animal and human health and contains lead papers from distinguished bio-security specialists.

Biosecurity is a holistic concept of unswerving importance to the sustainability of the agriculture, food safety and the protection of the environment including biodiversity. It involves all kinds of threats to security from microbes to man, to the entire biological kingdom. The main focus of the book under review is on agricultural bio-security (animal and plant bio-security) albeit it has been titled Biosecurity.

In the foreword K. Kasturirangan emphasizes that 'India's preparedness and capability in the area of bio-security is a serious concern, particularly after the introduction of the H5N1 strain of avian influenza virus in many parts of the country'. While introducing the book to the readers he further asserts that the book covers various aspects of bio-security including international comparisons and framework in which India's efforts must be set.

The authors have efficaciously made it very clear that 'in today's global trade, even an infestation that is limited in area or in direct damage to crops can devastate the bio-economics of the entire country (via defensive import bans imposed by trade partners) unless a convincingly effective scheme of quarantine, assessment, control and eradication is in place'. The papers included in this volume contains overviews, current systems and procedures of defence, international comparisons and

the international framework in which India's efforts must be set.

The book under review can be organized into four thematic sections. Part I of the book can be broadly classified as *Plant and Animal Biosecurity*. The work of M.S.Swaminathan, R.K.Khetrapal, Kavita Gupta, S.Ayyappan, Renu Swarup and Gopi Ghosh can be included under this section. The first paper discusses and elaborates the recommendations of the Farmers' Commission. The key concerns of the Food and Agriculture Organisation of the United Nations (FAO) has been successfully highlighted in this section. Most of the developed countries such as United States, Norway, New Zealand and Australia have already set up institutions and made necessary legislations to deal with bio-security. On the other hand, India needs a comprehensive bio-security policy to safeguard the income and livelihood of the farm sector and to monitor, warn and build infrastructure to certain possible pandemics. Plant bio-security in India and bio-security in aquaculture have also been covered in this section.

Part II of the book mainly deals with the food and nutrition security of the plants and animals at the backdrop of bio-security and therefore can be named as *Biosecurity for Human and Animal Health*. The works of H.K.Pradhan, V.Prakash and B. Sesikeran can be clubbed under this broad heading. The different risk groups (RG) I–V and bio-safety levels 1–4 have been discussed in this section. RG-I is low individual and community risk; RG-II moderate individual risk and limited community risk; RG-III high individual risk and low community risk; RG-IV high individual risk and high community risk and RG-V is a special category which includes animal and human pathogens not present in the country. Plant and animal viruses have high mutation rates that often alter their host range. Historical perspective of emerging viruses as the greatest challenge to bio-security has been addressed in this section. In order to prevent the entry of exotic insects and new pests, countries and states (e.g. California, USA) have adopted quarantine restrictions on agricultural commodities. Till recently, it was not possible to export Indian mangoes to USA. Even the mangoes produced in Hawaii could not be sent to the US mainland due to the presence of fruit flies endemic in Hawaii. In another thought provoking article the nutrition security dimension has been discussed. In the present scenario, we find a large looming threat in the bio-security of food, public health and nutrition. The greatest challenge that we face today in terms of prevention of food losses, capacity building and contribution of science to society, as well as bringing an evergreen revolution at the village level in the area of nutrition and agri-business security, ultimately to give the consumer a cost-effective product with a focus on employment empowerment has been successfully addressed in this section.

Part III of the book mainly deals with the challenges that India is countenancing in terms of bio-security and the role that it can play in nipping the threat in the bud. Thus it can be broadly termed as *Role and Challenges of Biosecurity*. The works of Panjab Singh, Mohan Kanda, Pavan Kumar Singh, S.M. Virmani, M. Mahadevappa, Arun Sharma, J.S. Samra, P.D. Sharma and T.P. Trivedi has been clubbed under this section. This section mainly deals with 'protection of animals, plants and human health against alien species including pests, pathogens and diseases, and protection of native species, including lower taxa and 'microorganisms, against contamination, hybridization, local eradication or extinction'. S. M. Virmani in crunchy, argot-free language states that the FAO bio-security is aimed to protect: (1) agricultural systems, (2) human health and consumer confidence in agricultural production, and (3) the environment, and promote sustainable production of agricultural commodities. Biosecurity in terms of saving land, water and environmental resources has been dealt by highlighting that in the last few years due to deterioration in the natural resources there has been a rapid slowdown of agriculture growth and stagnation in the crop productivity. All these major changes have been noticed primarily in the Indo-Gangetic Plain. The authors state that 120 mha land in the country is degraded due to increased soil erosion, water-logging, salinity/alkalinity, soil acidity, etc. It has been declared that India would be facing three main challenges in terms of bio-security: a) how to sustain 4% growth

rate in agriculture so that an 8-10% GDP growth is achieved over the foreseeable future; b) how to reverse the process of land (and soil) and water resource degradation; and c) how to stall and minimize the negative impacts of global warming and how to improve environmental quality in the future. An extensive adoption of resource conserving technologies has been recommended.

The last section of the book deals mainly with agro terrorism and biological warfare and can be therefore classified as *Threat of Bioterrorism*. Lt Gen D. Raghunath's paper Biological Warfare and Terrorism and P.K. Shetty's paper Agro-terrorism: Biosecurity Threats and Preparedness fall under this sub heading. WMD includes nuclear, biological and chemical weapons. Biological Weapons require relatively simple technologies and equipment like viruses, bacteria, fungi and insects to damage crops and animals as compared to the chemical and nuclear weapons. Therefore, they are especially attractive to the terrorists. Ricin obtained from castor beans, widely grown in India for its oil, has been used in terror activities. What appears is that bioterrorism can become quite favourite with the existing terrorists outfits keeping in mind its easy access and usage. But the later is used because the impact and the disaster have a show value which is not the case with biological agents. Bombs and explosions give immediate attention to the actions of the terrorists. However, there is a time gap between the action and the damage in the case of bio agents Both papers list several examples of Bioterrorism using different types of disease-causing organisms. For instance – there have been reports stating that an Indian religious group in the US attempted to contaminate the salad bar of a local restaurant with Salmonella in 1984. The motive was to incapacitate the voters in a local election. It is believed that in the early eighties, a Tamil militant group threatened to spread diseases in tea and rubber plantations in Sri Lanka while a disgruntled employee in Texas attempted to contaminate muffins and donuts with Shigella dysentriae cultures.

The book is factually crisp but seems to lose its analytical vehemence. It has highlighted a number of aspects of bio-security, though its main focus is on agricultural bio-security. Albeit the book covers a wide range of issues related to bio-security, the primary glitch for an international audience would be that the book is more Indian specific and caters to the interest of one small section and also there is only one paper which deals with biological weapons. This has limited the understanding of the subject. Overall, the book brings out valuable bio-security perspectives and is a useful addition to the literature on the subject as not much research from Indian perspective has been done on the issue. The book provides us with loads of information and suggestions on the subject which makes it a necessary reference for the scholars as well as the policy makers. The papers are well researched and analyzed. The editors have come up with this informative and comprehensive book at a time when the risk of bioterrorism is paramount.

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