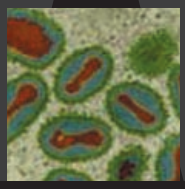
Biotechnology, Weapons and Humanity

BWH



An informal meeting of government and independent experts

Montreux, Switzerland / 23-24 September 2002

Summary Report

ICRC

CONTENTS

Summaries of the presentations given at the Montreux Meeting may be accessed on the ICRC website: www.icrc.org

APPEAL

of the International Committee of the Red Cross

on *Biotechnology, Weapons and Humanity*

Summary

Alarmed by the potential hostile uses of biotechnology, the International Committee of the Red Cross (ICRC) appeals to:

⇨ *all political and military authorities to strengthen their commitment to the international humanitarian law norms which prohibit the hostile uses of biological agents and to work together to subject potentially dangerous biotechnology to effective controls.*

⇨ *the scientific and medical communities, industry and civil society in general to ensure that potentially dangerous biological knowledge and agents be subject to effective controls.*

(Full text follows on pages 4-5)

Background

The "age of biotechnology", like the industrial revolution and the "information age", promises great benefits to humanity. Yet if biotechnology is put to hostile uses, including to spread terror, the human species faces great dangers.

The International Committee of the Red Cross (ICRC), in keeping with its mandate to protect and assist victims of armed conflict, is particularly alarmed by the potential hostile uses of biological agents.

Potential benefits of advances in biological sciences and technologies are impressive. These include cures for diseases, new vaccines and increases in food production, including in impoverished regions of the world.

Yet the warnings of what can go wrong are profoundly disturbing. The ICRC believes these merit reflection at every level of society. Testimony from governments, UN agencies, scientific circles, medical associations and industry provides a long list of existing and emerging capacities for misuse. These include:

- Deliberate spread of existing diseases such as typhoid, anthrax and smallpox to cause death, disease and fear in a population.
- Alteration of existing disease agents rendering them more virulent, as already occurred unintentionally in research on the "mousepox" virus.
- Creation of viruses from synthetic materials, as occurred this year using a recipe from the Internet and gene sequences from a mail order supplier.
- Possible future development of ethnically or racially specific biological agents.
- Creation of novel biological warfare agents for use in conjunction with corresponding vaccines for one's own troops or population. This could increase the attractiveness of biological weapons.
- New methods to covertly spread naturally occurring biological agents to alter physiological or psychological processes of target populations such as consciousness, behaviour and fertility, in some cases over a period of years.
- Production of biological agents that could attack agricultural or industrial infrastructure. Even unintended release of such agents could have uncontrollable and unknown effects on the natural environment.
- Creation of biological agents that could affect the makeup of human genes, pursuing people through generations and adversely affecting human evolution itself.

The life processes at the core of human existence must never be manipulated for hostile ends. In the past, scientific advances have all too often been misused. It is essential that humanity acts together now to prevent the abuse of biotechnology.

The ICRC calls on all concerned to assume their responsibilities in this field, before it is too late. We must reaffirm the ancient taboo against the use in war of "plague and poison", passed down for generations in diverse cultures. From the ancient Greeks and Romans, to the Manu Law of War in India, to rules on the conduct of war drawn from the Koran by the Saracens, the use of poison and poison weapons has been forbidden. This ban was codified in the 1863 Lieber Code during the US Civil War and, internationally, in the 1899 Hague Declaration and the Regulations annexed to the 1907 Hague Convention IV.

In February 1918, the ICRC launched an impassioned appeal, describing warfare by poison as "a barbaric invention which science is bringing to perfection..." and protesting "with all the force at [its] command against such warfare, which can only be called criminal." This appeal is still valid today.

Responding in part to the ICRC's appeal, States adopted the 1925 Geneva Protocol, reaffirming the general ban on the use of poison gas and extending it to cover bacteriological weapons. This norm is now part of customary international law - binding on all parties to all armed conflicts.

The 1972 Biological Weapons Convention significantly reinforced this prohibition by outlawing the development, production, stockpiling, acquisition, retention and transfer of biological weapons. As regards new advances in biotechnology and possible terrorist threats, this Convention covers all biological agents which "have no justification for prophylactic, protective or other peaceful purposes" and includes the means to deliver such agents. (Article 1, 1972 Biological Weapons Convention). The ICRC deeply regrets that lengthy negotiations to strengthen this Convention through a compliance-monitoring regime did not come to fruition as expected in November 2001. This underlines the urgent need for a renewed commitment by all States to ensure effective control of biological agents.

The responsibility to prevent hostile uses of biotechnology lies with each State. But it extends beyond governments to all persons, especially to military, scientific and medical professionals and those in the biotechnology and pharmaceutical industries.

Full text

Alarmed by the potential hostile uses of biotechnology, **the International Committee of**

APPEAL

of the International Committee of the Red Cross

on *Biotechnology, Weapons and Humanity*

the Red Cross (ICRC) appeals to:

⇨ all political and military authorities to strengthen their commitment to the international humanitarian law norms which prohibit the hostile uses of biological agents, and to work together to subject potentially dangerous biotechnology to effective controls.

⇨ the scientific and medical communities, industry and civil society in general to ensure that potentially dangerous biological knowledge and agents be subject to effective controls.

The ICRC appeals in particular:

TO ALL POLITICAL AND MILITARY AUTHORITIES

- To become parties to the 1925 Geneva Protocol and the 1972 Biological Weapons Convention, if they have not already done so, to encourage States which are not parties to become parties, and to lift reservations on use to the 1925 Geneva Protocol,
- To resume with determination efforts to ensure faithful implementation of these treaties and develop appropriate mechanisms to maintain their relevance in the face of scientific developments,
- To adopt stringent national legislation, where it does not yet exist, for implementation of the 1925 Geneva Protocol and the 1972 Biological Weapons Convention, and to enact effective controls on biological agents with potential for abuse,
- To ensure that any person who commits acts prohibited by the above instruments is prosecuted,
- To undertake actions to ensure that the legal norms prohibiting biological warfare are known and respected by members of armed forces,
- To encourage the development of effective codes of conduct by scientific and medical associations and by industry to govern activities and biological agents with potential for abuse, and
- To enhance international cooperation, including through the development of greater international capacity to monitor and respond to outbreaks of infectious disease.

TO THE SCIENTIFIC AND MEDICAL COMMUNITIES AND TO THE BIOTECHNOLOGY AND PHARMACEUTICAL INDUSTRIES

- To scrutinise all research with potentially dangerous consequences and to ensure it is submitted to rigorous and independent peer review,
- To adopt professional and industrial codes of conduct aimed at preventing the abuse of biological agents,
- To ensure effective regulation of research programs, facilities and biological agents which may lend themselves to misuse, and supervision of individuals with access to sensitive technologies, and
- To support enhanced national and international programs to prevent and respond to the spread of infectious disease.

The ICRC calls on all those addressed here to assume their responsibilities as members of a species whose future may be gravely threatened by abuse of biological knowledge. The ICRC appeals to you to make your contribution to the age-old effort to protect humanity from disease. We urge you to consider the threshold at which we all stand and to remember our common humanity.

The ICRC urges States to adopt at a high political level an international Declaration on "Biotechnology, Weapons and Humanity" containing a renewed commitment to existing norms and specific commitments to future preventive action.

Geneva, September 2002

International Committee of the Red Cross
Meeting of Government and Independent Experts

Biotechnology, Weapons and Humanity
An examination of risks, rules and responsibilities

23-24 September 2002,
Hotel Eurotel Riviera
Montreux, Switzerland

PROGRAMME

Monday 23rd September

0930-1030 Session 1 - **OPENING SESSION**

Welcome
Dr François Bugnion, Director for International Law and Cooperation within the Movement, ICRC

Appeal on "Biotechnology, Weapons and Humanity"
Dr Jakob Kellenberger, President, ICRC

Keynote address: Genomics: Concepts, Technology and Ethics
Dr Albert Jacquard, University of Paris, France

1030-1100 *Coffee break*

1100-1300 Session 2 - **ANCIENT NORMS: NEW THREATS**
Chair: Dr François Bugnion, ICRC

Germs, warfare and the human impulse to keep them apart
Dr Julian Perry Robinson, University of Sussex, Brighton, UK, Co-director, Harvard-Sussex Program on CBW Armament and Arms Limitation

Biotechnology and the potential for abuse
Prof. Malcolm Dando, Department of Peace Studies, University of Bradford, UK

Neurosciences, medicine and future weapons
Dr Tamas Bartfai, The Scripps Research Institute, La Jolla, California, USA

1300-1400 *Lunch*

1415-1500 KEYNOTE ADDRESS

A military perspective on biotechnology, weapons and humanity
Maj. Gen. (Ret'd) Dipankar Banerjee, Institute for Peace and Conflict Studies, New Delhi, India

Monday 23rd September (cont.)

1500-1600 Session 3 **- REINFORCING THE LEGAL NORMS**
Chair: Mr Peter Herby, Mines-Arms Unit, Legal Division, ICRC

Universalising the Biological Weapons Convention
Mr Alfredo Labbé, Minister Counsellor, Permanent Mission of Chile to the Conference on Disarmament, Geneva

A convention on international criminalisation
Prof. Matthew Meselson, Department of Molecular and Cellular Biology Harvard University, USA
Co-director, Harvard-Sussex Program on CBW Armament and Arms Limitation

1600-1630 *Coffee break*

1630-1800 Session 3 - **REINFORCING THE LEGAL NORMS** (cont.)

Plenary discussion
Chair: Mr Peter Herby, Mines-Arms Unit, Legal Division, ICRC

National implementing legislation for the 1925 Geneva Protocol and the 1972 Biological Weapons Convention
Introduction: Ms Anna Segall, Advisory Service on IHL, Legal Division, ICRC

Withdrawal of reservations to the 1925 Geneva Protocol
Introduction: Mr Robert Young, Mines-Arms Unit, Legal Division, ICRC

1900 *Dinner*

Tuesday 24th September

900-1030 Session 4 - **THE ROLE OF SCIENTISTS AND MEDICAL PROFESSIONALS**
Chair: Dr Robin Coupland, Mines-Arms Unit, Legal Division, ICRC

Disease surveillance and assistance
Dr Ottorino Cosivi, Department of Communicable Disease, Surveillance and Response, World Health Organization (WHO), Geneva

Science compromised: Lessons learned from South Africa's chemical and biological warfare program
Mr Mafole Mokalobe, Researcher, Centre for Conflict Resolution, Pretoria, South Africa

Codes of conduct for biomedical researchers
Dr Vivienne Nathanson, Director of Professional Activities, British Medical Association, London, UK

1030-1100 *Coffee*

Tuesday 24th September (cont.)

1100-1200 Session 4 - **THE ROLE OF SCIENTISTS AND MEDICAL PROFESSIONALS** (cont.)
Chair: Dr Robin Coupland, Mines-Arms Unit, Legal Division, ICRC

Panel discussion: Towards national and global co-operation on scientific responsibility

1200-1300 CLOSING SESSION

Chair: Dr François Bugnion, ICRC

A potential role for a high-level political declaration on "Biotechnology, Weapons and Humanity"?
Mr Peter Herby, Mines-Arms Unit, Legal Division, ICRC

Discussion

Concluding remarks by the Chair

1300-1400 *Lunch*

Summary of Presentations and Discussions

Opening Session

Welcome and Introduction by the Chair
***Dr François Bugnion**, Director for International Law and Cooperation within the Movement, International Committee of the Red Cross*

Dr Bugnion opened the meeting and welcomed the participants. He provided some historical background and context for the ICRC's initiative on Biotechnology, Weapons and Humanity. He reminded participants that in 1918, following the increasing use of poisonous gases on the battlefield, the ICRC had launched an impassioned appeal to the belligerents describing warfare by poison as "a barbaric invention..." and protesting "with all the force at [its] command against such warfare". At that time this appeal had a strong influence on States which, responding in part to the ICRC's appeal and subsequent démarches, adopted the 1925 Geneva Protocol which bans the use of poison gas and of bacteriological methods of warfare.

Dr Bugnion further referred to the last two paragraphs of the preamble to the 1972 Biological Weapons Convention which state that States Parties to that Convention are "...determined, for the sake of all mankind, to exclude completely the possibility of bacteriological (biological) agents and toxins being used as weapons" and "convinced that such use would be repugnant to the conscience of mankind and that no effort should be spared to minimize this risk". By their moral tone and fundamental messages of humanity, these paragraphs underline the continuing abhorrence of poisoning and deliberate spread of disease.

Dr Bugnion explained the ICRC's concerns at the failure of States to reach agreement on a final declaration in the 5th Review Conference of the 1972 Biological Weapons Convention which was suspended in December 2001. This impasse threatens to undermine the fundamental legal and moral norms which have been so strongly affirmed for generations in diverse cultures and reaffirmed by States in 1925. Further, today's rapid advances in the field of biological sciences and biotechnology promise great progress for humanity. However, if this new knowledge is misused and put to hostile uses, humanity as a whole faces great dangers.

It is based on these concerns that the ICRC is undertaking its initiative on "Biotechnology, Weapons and Humanity". The meeting for government and independent experts in Montreux is intended to consider and to develop a common understanding on a wide range of issues related to the initiative, in particular the international humanitarian law prohibitions of biological weapons. It will also address strategies for universalisation of existing norms, national implementing legislation, international criminalisation of prohibited acts, disease surveillance, medical assistance and codes of conduct for science and industry.

The Chair invited the President of the ICRC to present the ICRC Appeal on Biotechnology, Weapons and Humanity.

Appeal on "Biotechnology, Weapons and Humanity"
***Dr Jakob Kellenberger**, President, International Committee of the Red Cross*

Before presenting the Appeal of the ICRC on "Biotechnology, Weapons and Humanity", Dr Kellenberger informed participants that the entire text of the Appeal was being sent that day to all governments through their Permanent Missions in Geneva (and for those without missions in Geneva via their missions in New York.) He also announced that the Appeal was being made public later in the week.

Dr Kellenberger reviewed the key elements of the Appeal, emphasizing that these arose from

are never put to hostile uses. Dr Kellenberger noted that the various elements of the Appeal are directed not only at governments but also at other audiences, including the scientific and medical communities and the biotechnology and pharmaceutical industries, all of whom have important roles.

The essential elements of the Appeal on Biotechnology, Weapons and Humanity were presented by the President of the ICRC. The full text was distributed to participants in English, French and Spanish. The Appeal is available at www.icrc.org in these languages as well as in Russian and Arabic.

Keynote address: Genomics; Concepts, Technology and Ethics
***Dr Albert Jacquard**, University of Paris, France*

In his keynote address Dr Jacquard adopted a humanistic approach to the new concepts and understanding of human life which have arisen since the discovery of the DNA by Crick and Watson. This apparently ordinary discovery of a chemical structure has had an important impact on how humans see themselves. The separation between living subjects and non-living objects has become much more blurred. The mystery of life was simplified and summarized in seemingly banal chemical processes. Dr Jacquard suggested that human beings, accustomed to seeing themselves as having been sent to mold and control the earth, had suddenly become cousins to droplets of water or even to rocks. The "human wonder" came down to earth!

According to Dr Jacquard, the revolution brought by the understanding of DNA can be compared to the discovery of $E = mc^2$ which led to the atomic bomb. History shows us again and again that each time there is a revolutionary discovery in the field of scientific knowledge humans are tempted to act. Today, 40 years after Crick and Watson, we are already acting in the fields of cloning, genetic engineering, genetically modified organisms, etc. Dr Jacquard cautioned, however, that we should understand that what is happening in these fields has similar implications for humankind as the discovery of atomic energy.

Dr Jacquard suggested that today we know that the existence of nuclear weapons is not simply about creating a more efficient Verdun, but much more about facilitating suicide for humanity. With regard to biotechnology we also have to ask ourselves the ultimate question: what is the biotech research for, what is its final aim? This question must be kept in mind in assessing advances in biotechnology.

According to Dr Jacquard, human beings are extraordinary not because of their chemical or biological structures or the detailed understanding thereof, but because we are capable of saying "I" and capable of interacting and constructing relationships among ourselves. Consideration of these aspects gives less importance to technology and leads to the realization that technological developments and new knowledge have to be put "au service" of the human collectivity in order to improve our relationships and not to the benefit of any particular human beings.

Dr Jacquard concluded that some new technological advances may have to be rejected for the greater benefit of all humanity.

Session 2 - Ancient Norms: New Threats

Germs, warfare and the human impulse to keep them apart
***Prof. Julian Perry Robinson,** University of Sussex, UK*

Prof. Perry Robinson began by stating that disease and war have always gone together - only recently have wartime combat deaths exceeded those caused during war by disease. Nonetheless, the *deliberate spread* of disease in warfare has been quite a rare occurrence in history. One needs to ask why.

According to Prof. Perry Robinson, the argument that technical constraints have prevented poisoning and deliberate spread of disease warfare is not convincing. The prohibitions in the Manu law of war in ancient India, dating from 500 BC, those of the Saracens a millennium later and the widespread approbation of the use of arsenic smoke in the siege of Belgrade in 1456 may be instructive. In his view, it seems that chemical and, in particular, biological warfare has been inhibited to a great extent by societal constraints - by a "taboo" on the use of such weapons.

New technical developments may weaken such constraints. Preserving this norm in the face of new scientific developments will be a major challenge. An arms control approach alone can meet only part of that challenge but is currently faltering. Prof. Perry Robinson concluded that building upon and strengthening the international humanitarian law norms relevant to biological warfare may be our only hope.

Biotechnology and the Potential for Abuse
***Prof. Malcolm Dando**, Bradford University, Department of Peace Studies, UK*

Prof. Dando recalled that one of the major "revolutions" in the medical field had been the advances in bacteriology in the late nineteenth century. He explained that the knowledge obtained in this field was soon put to hostile use - in anti-animal biological warfare during the First World War and in offensive biological weapons programs of a number of major powers during the middle part of the 20th century. Prof. Dando recalled that these military programs fed off the leading edge of science.

Today the "tailoring" of classical warfare agents such as anthrax through genetic engineering to increase resistance to antibiotics appears likely. Furthermore, the merging of chemistry and biology in the "genomics/proteomics revolution" significantly expands the potential threat spectrum. Prof. Dando noted that these threats have been well recognized by States in Review Conferences of the Biological Weapons Convention. He cautioned that unless States are ready to take serious action to address these threats, then we will increasingly see modern biology applied in major ways to terrorism and warfare. Prof. Dando concluded that all manner of life processes would then be at risk.

Neurosciences, medicine and future weapons
***Prof. Tamas Bartfai**, Scripps Research Institute, La Jola, California, USA*

Prof. Bartfai examined the implications of rapidly expanding knowledge in molecular neurobiology, and the risks that arise from the fact that, because of its huge therapeutic potential, this research is being pursued in so many academic and industrial sites. As an example he reported that in the US alone some 200,000 prospective new neurological drugs are discarded each year (i.e., before they complete the regulatory approval process). Yet the knowledge of how to make them and often the drugs themselves "remain on the shelf". He stated that although adequate control of any effort to weaponise results of this research may be difficult, it is not impossible.
According to Prof. Bartfai, this situation is significantly different from that of previous decades when research into weapons agents was carried out at a few large centrally controlled sites in the world and thus in principle could more easily be checked. It is also important to note that as the ability to produce weapons directed against the nervous system shifts to smaller actors, the agenda may significantly change from winning wars to spreading terror. This would place less emphasis on large scale programmes and, at the same time, detection of smaller programmes would be difficult.

Prof. Bartfai highlighted the fact that the central and peripheral nervous systems represent a key target for biological weapons. However, research aimed at developing drugs to treat the neurodegenerative disease known as Alzheimer's, which costs the US economy an estimated $100 billion per year, uses the same knowledge. According to Prof. Bartfai, it is there-

fore out of the question that such research can be stopped. Ways must be found to manage research and to address industry responsibilities.

Discussion

The presentations stimulated considerable interest and comment. Participants noted, on the one hand, that all of the hostile uses of new biotechnologies are already prohibited by the Biological Weapons Convention but, on the other, that among scientists and industry these rules are little known. This highlights the need for pertinent education within the scientific community. In the context of nuclear weapons such education is far easier as the industry is more centralized. One participant suggested that consideration should be given to an oath for scientists and of notices to researchers concerning the illegality of hostile applications of their research.

One participant asked what had prompted governments to give up biological weapons. This participant suggested that perhaps the low cost and minimal technological challenges of producing classical agents had produced a relative advantage for developing countries in relation to developed countries. If so, could the recent reticence to reinforce these norms on the part of some developed countries reflect a renewed interest in gaining an advantage through advanced biotechnologies?

Another participant pointed out the unity of and overlap between the Chemical and Biological Weapons Conventions, as is recognized in the preamble of the CWC. There is an effective control regime and oversight organization for the CWC but not for the BWC. In retrospect, one might ask, was it a mistake to separate these two regimes? It was also questioned whether States or industry are able to meet the challenges described.

Prof. Perry Robinson commented that he was not convinced that biological weapons had been renounced to prevent the achievement of a relative advantage by poorer countries. Rather, he thought this was due to their social abhorrence and the difficulty of employing such weapons to military advantage. He also opined that the Biological Weapons Convention has been effective to date in significantly reducing the risks. The challenges it faces are more in the future. He agreed that it had not been good to divide chemical and biological weapons controls from their "foundations" - which are in the long standing norms against the hostile use of "poison". The weakening of this foundation could result in fragmentation and a reconvergence is needed. This might be achieved through a refocusing on the norms of international humanitarian law which apply equally to both biological and chemical weapons.

Prof. Bartfai clarified that the 200,000 prospective new drugs discarded annually were *only* those for neurological and psychiatric purposes. Perhaps six times more are discarded by the pharmaceutical industry as a whole. The development and production of new drugs takes many years. Prof. Bartfai commented that, as compared to nuclear and chemical industries, the "waste" from biotechnology companies is managed less well.

Prof. Dando emphasised that we are at the beginning of a real revolution in the biotechnology field which will affect most aspects of our lives. An extensive system of regulation and monitoring is essential but will not be enough on its own. Prof. Dando concluded that without complementary methods of inhibiting individual scientists and practitioners, prevention of hostile uses of these new technologies will be impossible.

Session 3 - Reinforcing Legal Norms

Universalising the Biological Weapons Convention

Mr Alfredo Labbé, *Minister Counsellor, Permanent Mission of Chile to the Conference on Disarmament, Geneva, Switzerland*

Mr Labbé spoke about the current status of the 1925 Geneva Protocol and the Biological Weapons Convention (BWC) and steps which may be taken to universalise the instruments. He began by highlighting that the Protocol and the BWC are widely ratified treaties, having 133 and 144 States Parties respectively. Another 18 States have signed but not yet ratified the BWC. In addition, 21 States Parties have maintained reservations to the Convention.

Mr Labbé stressed that any campaign to universalise the legal norms prohibiting biological weapons must pursue three objectives: first, accession by every State to the 1925 Geneva Protocol; second, accession by every State to the BWC; and third, the withdrawal of reservations to both instruments.

He explained that an important element of universalisation is "vertical universalisation." This means achieving true awareness of the norms and rules of the 1925 Protocol and BWC at all levels of society. It would also include: first, full national implementation of the legal obligations in the BWC and the political obligations in the Final Declarations of its Review Conferences; and second, internalization of the BWC standards by civil society, in particular professional associations.

A final point stressed by Mr Labbé was that States Parties could do more to increase their activities in the area of universalisation. He noted that Latin American countries have worked effectively at a regional level to universalise the norms on biological and chemical weapons and to establish a nuclear weapons free zone. He encouraged a similar approach for other parts of the world. He highlighted that there was an important role to play for the depositaries of both instruments, namely France, as depositary for the Geneva Protocol, and Russia, the United Kingdom and the United States as the depositaries for the BWC. He suggested that these States might consider putting forward a resolution to the UN Security Council urging the ratification of or adherence to both instruments by all UN Member States what have not yet done so.

A convention on international criminalization

Prof. Matthew Meselson, *Department of Molecular and Cellular Biology, Harvard University, USA*

Prof. Meselson presented the work of the Harvard-Sussex Program on Chemical and Biological Weapons (CBW) Armament and Arms Limitation to criminalise the development, production, acquisition, retention, transfer and use of chemical and biological weapons. With the assistance of experts in disarmament, international law and other related areas, the Project has developed a draft convention which would commit States to adopting consistent and coherent national laws to prosecute anyone knowingly engage in any of these activities - wherever such activities might have occurred.

Prof. Meselson explained that the purpose of this project is to remedy perceived weaknesses in the Chemical and Biological Weapons Conventions. He explained that while the two Conventions establish strong norms with regard to prohibited activities, they do not require States Parties to establish jurisdiction over violations committed outside their borders by foreign nationals. He also noted that very few States have enacted the legislation required by the two Conventions to prohibit violations committed on their territory or by their nationals beyond their borders.

The draft convention prepared by the Harvard-Sussex Program would help fill these gaps. It would require States to: first, establish criminal jurisdiction applicable to all persons on its territory regardless of the nationality of the offender or the place where the crime was committed; second, investigate possible violations alleged to have been committed anywhere by a person present in its territory; and third, prosecute or extradite alleged offenders if satisfied that the facts so warranted.

Discussion

Following these presentations, discussion focussed on promoting adherence to the 1925 Geneva Protocol and the BWC, the role of the draft convention prepared by the Harvard-Sussex Program, and the customary law status of the BWC's prohibitions.

In response to a question as to whether or not it was necessary to adhere to both the 1925 Protocol and the BWC, Mr Labbé stated that the two instruments are complementary and should be adhered to by all States. He stressed that while the norms of the 1925 Protocol may be considered to be customary international law and that the prohibition on the use of biological weapons has been affirmed by BWC Review Conferences, there is a value in each State concretely and unambiguously expressing commitment to the full set of norms governing biological weapons. This would ensure clarity in the application of the law.

Several participants noted that their governments have been actively working on promoting universal adherence to these treaties through their embassies in the capitals of non-party States. It was also mentioned that the UN General Assembly has passed numerous resolutions encouraging all States to adhere to these instruments.

A participant commented that history has shown that weapons of mass destruction are eliminated only after the settlement of political and security issues in a particular region. In his view, promoting adherence to the norms of the BWC is difficult until such issues are addressed. Another participant noted that the process of discussing arms control can be part of a larger process to create peace and diminish tensions. He stressed that one does not have to wait for the final peace to act.

Replying to a question on what the draft convention proposed by the Harvard-Sussex Program would add to existing law, Prof. Meselson opined that it would fill undesirable gaps in the current jurisdiction of most States. Given the fact that there are few States which have promulgated the legislation required by the CWC and BWC and that the legislation which does exist often does not apply to violations committed outside a State's territory by non-nationals, the draft convention would strengthen the international regime. In his view, such an extension would help ensure that those who commit violations of the BWC (and CWC) will find it difficult to escape prosecution.

In response to a series of questions on the impact of the draft convention on existing efforts on chemical and biological weapons, Prof. Meselson expressed his view that it would not undermine the Rome Statute of the International Criminal Court (ICC). He explained that the ICC Statute covers only the *use* of chemical weapons and not the other activities prohibited by the BWC or the CWC and which would be proscribed by the draft convention. In addition, the ICC Statute does not expressly refer to biological weapons. Thus, in his view the proposed new Convention would supplement the scope and objectives of the ICC.

Prof. Meselson also stated that the draft would not infringe on the work of the OPCW. The Organisation has been consulted on the project and its feedback has been positive. He also noted that the draft convention would apply to States as well as non-State actors. He acknowledged that one limitation was the difficulty of prosecuting a sitting Head of State which may have used or approved the use of chemical or biological weapons. He pointed out, however, that this is also true for the violation of other provisions of international law.

A participant asked if the rules of the BWC are now a part of customary international law. Mr Herby responded that the ICRC has conducted a study on the customary status of many of the rules of international humanitarian law. The study has examined State practice as well as the declarations of States and concludes that the norms of the 1925 Protocol have attained customary status. The study, has not, however, undertaken an examination of the practice and declarations made in relation to the BWC. Thus, the ICRC would not be able to provide comments on its status in the absence of a similar evaluation.

The question was raised whether the ICRC would report on States' fulfilment of the various points in the Appeal. Mr Herby indicated that the ICRC hoped to be much more active in relation to biological weapons. Through its Advisory Service on International Humanitarian Law, ICRC work will focus on promoting universalisation of the BWC and of the 1925 Geneva Pro-

tocol, supporting the development of national legislation to suppress violations of the BWC and encouraging the withdrawal of reservations.

Withdrawal of Reservations to the 1925 Geneva Protocol
***Mr Robert Young**, Legal Adviser, Mines-Arms Unit, Legal Division, ICRC*

Mr Young gave a presentation on the developments relating to the withdrawal of reservations to the 1925 Geneva Protocol. He noted that when the Protocol was adopted in 1925 a number of States made declarations that the instrument would cease to be binding against an enemy State which used biological weapons in a conflict against them. In short, many States claimed a right of retaliatory use.

Mr Young went on to say that in recent years Review Conferences of the BWC have stressed the importance of removing such reservations. The Final Declaration of the 1991 Conference expressly recognised that use under any circumstances is effectively prohibited by the BWC. In 1996, the Final Declaration stated unambiguously that reservations on retaliation through the use of objects prohibited by the BWC are totally incompatible with obligations undertaken by BWC States Parties.

He further observed that State practice in this regard has been encouraging. Since 1990 some fifteen States have withdrawn their reservations to the 1925 Protocol. He noted, however, that some ten to twenty States still have reservations in place. In closing, he stressed that removing such reservations would be a practical and much needed step forward to strengthen the legal rule prohibiting the use of biological weapons.

National Implementing Legislation for the 1925 Geneva Protocol and the 1972 BWC
***Ms Anna Segall**, Legal Adviser, Advisory Service on International Humanitarian Law, Legal Division, ICRC*

Ms Segall reminded participants that Article IV of the BWC requires States Parties to take any necessary measures, in accordance with their constitutional processes, to prohibit and prevent development, production, stockpiling, acquisition or retention of biological weapons and delivery systems. Although this does not explicitly require States Parties to enact criminal legislation to punish violations of the Convention, States will need to review their criminal law to ensure that prohibited conduct can be punished in the national courts. It is recommended that national laws extend also to transfer and use of biological weapons and delivery systems.

A number of common law States have adopted, or are in the process of adopting, legislation to give effect to the Biological Weapons Convention. This is usually specific "stand-alone" legislation. The conduct prohibited varies to some extent. The Australian Act, for example, makes it an offence to develop, produce, stockpile or otherwise acquire or retain. The UK legislation is more extensive, making it an offence also to transfer or make arrangements to transfer. The draft legislation being prepared in Canada is more extensive still, creating an offence of use.

The approach in civil law States varies. A few have adopted "stand-alone" legislation. The more usual approach, however, is to include provisions in the Criminal Code. These may be specific (referring to biological weapons and delivery systems) or general (referring to weapons or conduct prohibited by international treaties binding on the State).

In conclusion, Ms Segall proposed that in drafting legislation to give effect to the prohibitions in the Biological Weapons Convention States consider also the extraterritorial application of

the legislation. States should bear in mind that the Article IV obligation to prevent and prohibit applies within the territory of the State, or elsewhere under its jurisdiction or under its control.

Discussion

As an introduction to the discussion, several participants noted that their Governments had withdrawn or were currently considering the withdrawal of reservations made to the 1925 Geneva Protocol. One noted that his Government had created a working group on the implementation of the BWC and had enacted export bans. Another participant highlighted that her Government had amended its national legislation to go beyond the BWC to include "dual use" items.

A participant commented that, in addition to the prevention and suppression of prohibited acts, the BWC also included provisions on assistance and cooperation which need to be implemented. He questioned whether these obligations were included in the laws of States Parties. In response Ms Segall noted that it was very unusual to include provisions on assistance and cooperation in national legislation. Such responsibilities would likely be dealt with on other administrative measures or bilateral agreements.

A participant also asked how terrorist acts were to be prosecuted in light of the fact that the 1925 Protocol and the BWC did not apply to such situations. Ms Segall replied that the prohibitions contained in Article 4 of the BWC apply in all circumstances, including acts of terrorism and the events leading up to their actual use. In addition, there was a wide affirmation of a ban on the use of biological weapons in all circumstances which is found in the Declarations of the BWC Review Conferences and State practice. This provided an international legal basis for States to criminalise acts involving biological weapons which might be related to terrorism. The importance of States having the appropriate national legislation in place to allow prosecutions to go forward was underlined.

Session 4 - The Role of Scientists and Medical Professionals

The session considered means of minimising the risk of poisoning and deliberate disease by activities not directly associated with international law. An appropriate citation was "The problem of advanced biological weapons is sufficiently serious that the scientific community, in conjunction with law enforcement, national security, and other communities, needs to consider seriously whether new mechanisms governing scientific exploration could lessen the probability of their development."[11] The session began by the Chair emphasising that an attack by a biological weapon would present itself as an outbreak of disease. This requires competence in disease surveillance and assistance to those affected.

The Disease Outbreak and Surveillance and Assistance Programme of the World Health Organisation

Dr Ottorino Cosivi, *Department of Communicable Disease, Surveillance and Response, World Health Organization, Geneva, Switzerland*

Dr Ottorino Cosivi outlined the WHO's co-ordinating role for the investigation of and response to any unusual or dangerous outbreak of disease wherever it might occur. The response to an outbreak comprises four activities: *information gathering* from the web or from other organisations; *verification* of the outbreak; co-ordinating an appropriate *response*; and *follow-up.* As an example, Dr Cosivi described the many practical difficulties of managing an outbreak of ebola in an African country.

WHO also helps governments to prepare for disease outbreak, in part by providing laboratory support. He stressed first, that this would apply whether the outbreak was natural or the result of the use of a biological weapon, and second, that the WHO would not be in a position to determine who was responsible for such an outbreak if it was deliberately caused. WHO has a list of eleven (11) agents likely to be used as biological weapons but the main focus was on anthrax and smallpox. The WHO's weekly epidemiological report is the means by which outbreak information is made available.

Science compromised: Lessons learned from South Africa's chemical and biological warfare program

Mr Mafole Mokalobe, *Centre for Conflict Resolution, University of Cape Town, South Africa*

Mr Mokalobe gave a detailed commentary on "Project Coast", a chemical and biological weapons research programme undertaken by the South African *apartheid* government during the 1980s. He outlined the political climate in the country at the time and the principal motivations of the people working in the project. The political climate among the ruling minority was one of fear of other neighbouring countries that had previously achieved independence or ended white minority rule. In South Africa in the 1980s the feeling was that the country was "under siege."

Given this collective mentality, those scientists and doctors working on offensive weapons in Project Coast found their motivation in a sense of patriotism and misplaced professional ambitions. They were also attracted by considerable salaries. As Mr Mokalobe explained, good professional and ethical practices were subjugated by other justifications for developing chemical or biological weapons. The management of the programme was, fortunately, so inefficient that few development programmes reached production stage.

Mr Mokalobe was of the opinion that prior education about ethical and legal responsibilities of scientists and international scientific exchange might have averted initiation of the pro-

---

[1]1. Epstein GL. *Controlling Biological Warfare Threats: Resolving Potential Tensions among the Research Community, Industry, and the National Security Community.* Critical Reviews in

gramme. He concluded with a citation of a worker in Project Coast who appeared before South Africa's Truth and Reconciliation Commission: "What happened in South Africa should not have happened. We are fortunate that those in charge of the South African chemical and biological warfare programme were interested in enriching themselves. If this was not the case, probably the worst would have happened. The same thing should not happen again."

Codes of conduct for biomedical researchers
Dr Vivienne Nathanson, *Director of Professional Activities, British Medical Association, London, UK*

Dr Nathanson described the history of voluntary professional codes of conduct within the medical profession from the Hippocratic Oath to the World Medical Association's Declaration of Helsinki. She was of the opinion that voluntary codes of conduct can be effective but careful consideration needs to be given to who "owns" such codes, who writes them, who uses them and who is affected by them. All stakeholders need to be in consensus. Dr Nathanson emphasised that in writing a code of conduct, it is important to define the principles first and then write the details. An explanatory note to accompany and elaborate the code was also valuable. She was also of the opinion that biomedical researchers were becoming more tolerant of legal frameworks.

Dr Nathanson underscored the fact that voluntary codes of conduct may not always work but the chances of their being accepted and effective are greatly increased if set in a background of education. Hence, in the context of the concerns under discussion at the Montreux meeting, students working in the domains of medicine, molecular biology, chemistry and genetic engineering, for instance, should be made aware of international treaties in their education. Dr Nathanson concluded by drawing attention to the Declaration on biological weapons expected to be adopted at the upcoming general assembly of the World Medical Association.

Discussion

The plenary discussion began by the Chair asking a series of broad questions, such as:

- Are there areas of research or types of experiment that are so dangerous, or so explicitly connected to offensive biological weapons activity, that they should require advance approval before being undertaken?
- Are there individuals that should not be permitted to conduct certain categories of research, or that should not be given access to dangerous pathogens?
- Are there areas of research or types of experiment that pose such sensitivity regarding potential bioweapons application that they merit extraordinary obligations for transparency and openness?
- Should there be restrictions on publication or other dissemination of certain types of contentious research?
- What obligations do members of the research community have to identify, call attention to, or clarify activities of others that may appear suspicious?

Two participants expressed the view that the most important element of addressing the concerns of the Montreux meeting was controlling or eliminating government based offensive biological weapons programmes or "offensively orientated" biological defence programmes. In their view, this argues strongly for an international legal regime for declarations, routine inspections and challenge inspections together with criminalisation of development, production and transfer of chemical or biological weapons. One of these participants felt that codes of conduct may help to reduce only the lesser risks associated with, for example, inadvertent dangerous findings or theft of dangerous materials. Other participants felt that codes of conduct and education were nevertheless important complements, which may come to bear on a

Participants acknowledged that there were a range of measures that could be fed into codes of conduct for people working in the scientific community. Some could be subject to legislation; some could be applied on a voluntary basis within professional bodies. Many such measures have precedents within biomedical research or in relation to the production and transfer of substances such as alcohol or opiate drugs. A list of some possible measures suggested by the chair and participants are included in **annex D**.

Closing Session

Presentation of the ICRC proposal for a high-level political declaration by States
Mr Peter Herby, *Coordinator, Mines-Arms Unit, Legal Division, ICRC*

Mr Herby introduced the ICRC's proposal for a high-level political declaration by States on Biotechnology, Weapons and Humanity. He noted that the proposal for such a Declaration was the final action called for in the ICRC's Appeal on Biotechnology, Weapons and Humanity.

Mr Herby provided the background and rationale for such a Declaration. The purpose of such a high-level (ministerial or above) Declaration is to mobilise political awareness of the risks inherent in ongoing developments in the biosciences, to reaffirm the ethical and legal underpinnings of the biological disarmament regimes and to commit States to a range of preventative actions which complement and, in some cases go beyond, what has been considered in the BWC context. Such a Declaration could also play a role in raising awareness of scientists and industry of their responsibilities in this field.

A Declaration would need to be carefully prepared in a consultative process involving senior officials of governments. The ICRC might suggest three alternatives concerning the forum in which a Declaration could be adopted: (1) a high level segment of a future BWC meeting, (2) a high level meeting hosted by a specific State, or (3) a high-level segment of the 2003 International Conference of the Red Cross and Red Crescent. Precedents for such high-level political declarations which have had important effects are: the 1989 Declaration of the Paris Conference on the reaffirmation of the 1925 Geneva Protocol and various declarations of the Conference on Security and Cooperation in Europe in the 1970's and 1980's - including those on military confidence-building measures. Mr Herby then briefly reviewed the document entitled "Draft elements for a possible Declaration by States on Biotechnology, Weapons and Humanity" (see annex C). He emphasised that the draft Declaration presented was intended simply to be a starting point for discussion with States.

Discussion

A large number of participants commended the ICRC for organising the Montreux meeting and for launching the BWH initiative and the Appeal. Virtually all of the interventions made in respect of the proposed Declaration were positive, stating that the draft Declaration warranted further consideration. Many participants indicated that the proposal should be looked at in detail after the conclusion of the BWC Review Conference in November and in light of the outcome of that meeting.

One participant noted that the draft Declaration contained a number of national measures but did not contain any reference to multilateral efforts or measures, and wondered if this was a gap in the draft. This same participant suggested that the list of measures included in the draft seemed to replicate to a large degree the "alternative package" proposed by the US following the impasse which arose in 2001 in the BWC Review Conference. What was lacking was some mention of co-operative measures to ensure compliance.

Another participant suggested that the Declaration might be improved by adding some reference to "what we fear", that is, to the "Risks" which had been discussed through the Montreux meeting, and to how the hostile uses of biotechnology could come about. This would help people to understand the gravity of the situation which is unfolding. Several participants suggested that the draft Declaration should include some reference to the international co-operation and assistance measures called for under the BWC and in Review Conferences. Similarly, a number of participants suggested that the draft Declaration should include some language on "multilateral" measures and on "compliance" or "full implementation" and in particular the commitment of States to these. In response to previous comments a participant noted that a Declaration of this sort is intended to make a political statement, and that

be no agreement. If the BWC Review Conference has a "meagre outcome", then the Declaration called for by ICRC could be a good start for 2003.

A number of interventions included questions on the process envisaged by the ICRC for the negotiation and adoption of a Declaration, and the timing and venue of a meeting on the Declaration. Would it be an ICRC declaration that States would sign on to, or would it be a Declaration by States? Several speakers raised questions about the relationship between a possible Declaration by States and the BWC Review Conference process. Some felt that a number of elements would best be addressed in the latter. Others believed that the two could be complementary.

One participant felt that the language in the draft Declaration read rather like a First Committee resolution and suggested that some more accessible language would improve its impact. This was echoed by other participants.

Finally, one participant emphasised that although the proposed Declaration was meant to be a political statement it should be seen primarily as a humanitarian statement. The same participant queried how the adoption of such a Declaration might change ICRC activities in the field, not in terms of assistance but in other areas, such as dissemination of IHL to armed forces.

Mr Herby responded on behalf of the ICRC to the many comments and questions. He noted first that the ICRC has proposed the idea of a Declaration, but it is for States to take it forward and make it their own if they so choose. He emphasised that the draft Declaration is not the ICRC's "wish list" (which is contained in our Appeal). Rather, it is a series of elements which governments might be able to consider publicly supporting - the ICRC has tried to look for areas where there could be consensus. The Declaration is intended to provide a political impulse.

Mr Herby clarified that the ICRC did not propose that the Declaration be considered at the upcoming BWC Review Conference. Clearly, some elements in it are relevant to the work of the Review Conference. The proposed Declaration is intended to reinforce the BWC process, and to take the debate to a higher political level. As some speakers have recognised, there is a need to go beyond the BWC and engage more actors - such as the scientific and medical communities and industry - which do not follow the BWC processes. He agreed with the suggestions that the language of the draft Declaration could be reworded to make it more accessible and less like a UN First Committee Resolution.

The Chair, Dr Bugnion, noted that international humanitarian law and in particular the protection of victims of armed conflict will be on the agenda at the Red Cross/Red Crescent conference in December 2003, and thus the Declaration could perhaps be considered there.

Closing Remarks by the Chair
Dr François Bugnion, *Director for International Law and Cooperation within the Movement, International Committee of the Red Cross*

The Chairman began his concluding remarks by recalling the title of the ICRC's initiative: Biotechnology, Weapons and Humanity: An Examination of Risks, Rules and Responsibilities. He also noted that the Montreux meeting is the first step of the ICRC's initiative in this area.

Concerning the risks associated with advances in biotechnology, these were considered in the course of the Montreux meeting but were recognised in many other fora, including the Fourth Review Conference of the BWC in 1996. Since then, the risks have increased dramatically. The risks are not just for groups or nations, but for humanity as a whole.

As to the rules, Dr Bugnion observed that the legal norms which prohibit poisoning and the deliberate spread of disease are well recognised but are today under threat. A number of

ways by which these legal rules can be reinforced or better implemented were identified in the presentations, panel discussions and interventions. These include:

- universal participation to treaties;
- national implementing legislation, and
- withdrawal of reservations to the 1925 Geneva Protocol on use of poisonous gases and of bacteriological method of warfare.

These and other practical measures to realise legal compliance may not be new but are increasingly urgent. Dr Bugnion suggested that participants have been reminded of the need to ensure that the international legal rules are adequate and effective.

Concerning the third theme - responsibilities - Dr Bugnion believes that it is in this area that the Montreux meeting has been most useful. Various measures to reduce the risks of poisoning and deliberate disease being used in warfare have been identified - the ICRC's Appeal touches on them. In addition to the three mentioned above under the rules, one can add firm measures to ensure compliance with and monitoring of the BWC.

The Chair emphasised that the responsibilities which have been discussed rest not only with governments but with the scientific and medical communities, industry and civil society as a whole. The responsibilities outside the framework of multilateral disarmament negotiations must be taken up whatever the outcome of the resumed BWC Review Conference later this year.

Dr Bugnion noted that there is much to be done - ensuring an effective treaty regime, implementing appropriate national measures, and pursuing other means such as the development of scientific and industrial codes of conduct. These are all necessary. Why? First, because we are talking about risks to all humanity, and second because advances in biotechnology and the associated risks of their abuse are faster than the multilateral lawmaking processes can address alone.

In short, collective efforts must be undertaken to ensure that the fundamental legal rules, reflected in the 1925 Geneva Protocol and the 1972 BWC, are reinforced in the face of ongoing scientific developments. The Chair noted that the ICRC hopes that States will give serious consideration to the proposal for a high-level political Declaration by States, thus affirming their commitment to an absolute prohibition in all circumstances on the use of biological weapons.

In concluding, the Chair emphasised that the ICRC looks forward to further dialogue on Biotechnology, Weapons and Humanity with participants and an ever-widening circle out from Montreux.

ANNEX A

Background of speakers and chairpersons

Major-General (Ret'd) Dipankar Banerjee is the Executive Director of the Regional Centre for Strategic Studies, a South Asian think tank located at Colombo. He has held various operational and planning assignments as a combat officer of the Indian Army followed by research on national and international security issues as Deputy Director of the Institute for Defence and Analyses in New Delhi. On October 2002-2003 he will be a Senior Fellow at the United States Institute for Peace in Washington, DC.

Prof. Tamas Bartfai is the Director of the Harold L. Dorris Neurological Research Center at the Scripps Research Institute in La Jolla, California and of Medicinal Chemistry at the Karolinska Institute, in Stockholm. He was formerly Chairman of the Department of Neurochemistry and Neurotoxicology at Stockholm University in Sweden and Head of Central Nervous System Research, at Hoffmann-La Roche in Switzerland.

He is member of Academia Europa, an honorary member of the Hungarian Academy of Sciences and has won many awards and prizes throughout his career including, the Ellison Senior Neuroscientist Award (2000) and the Eriksson Prize of The Royal Swedish Academy of Sciences (1992, shared with Håkan Persson). He has acted as a consultant to Governments, industry and international and non-international organisations.

Dr François Bugnion, Doctor of Political Science (Public International Law), became the Director for International Law and Cooperation within the Movement of the International Committee of the Red Cross in 2000. He joined the ICRC in 1970 and served as a delegate in Israel and the occupied territories (1970-1972), Bangladesh (1973-1974), Turkey and Cyprus (1974), Chad (1978), Vietnam and Cambodia (1979). From 1989 to 1996, he was Deputy Director for Principles and Law. From 1996 to 1998 General Delegate for Eastern Europe and Central Asia and from 1998 to 1999, Diplomatic Adviser of the Directorate. He published twenty-five articles or books on international humanitarian law or Red Cross history, in particular : *Le Comité international de la Croix-Rouge et la protection des victimes de la guerre* (*The International Committee of the Red Cross and the Protection of War Victims),* ICRC, Geneva, 1994.

Dr Ottorino Cosivi, Project Leader, Department of Communicable Disease, Surveillance and Response, World Health Organisation, Geneva

Dr Robin Coupland is the adviser on armed violence and the effects of weapons for the International Committee of the Red Cross. He joined the ICRC in 1987 and worked as a field surgeon in Thailand, Cambodia, Pakistan, Afghanistan, Yemen, Angola, Somalia, Kenya and Sudan. He has developed a health-oriented approach to a variety of issues relating to the design and use of weapons. A graduate of the Cambridge University School of Clinical Medicine, UK, he trained as a surgeon at the Norfolk and Norwich Hospital and University College Hospital, London. He became a Fellow of the Royal College of Surgeons in 1985. He has recently taken a year's sabbatical leave from the ICRC to study for a Graduate Diploma in International Law at the University of Melbourne in Australia.

As part of his current position he has focused on the effects of conventional and anti-personnel weapons. He has paid particular attention to the effects of anti-personnel mines and, by using the Red Cross wound classification, fragment injuries and the disruption of bullets. He has developed and published an analytical framework of armed violence as a tool for reporting and communication.

Prof. Malcolm Dando is Professor of International Security in the Department of Peace Studies at Bradford University, UK. Prof. Dando trained originally as a biologist and after a period in Operational Research joined the Department of Peace Studies in 1979. In Bradford

then, since 1991, increasingly on biological arms control. Prof. Dando is currently spending half of the year as the International Institute for Strategic Studies Senior Fellow at the Center for Global Security Research in Lawrence Livermore National Laboratory in California. His recent publications include The New Biological Weapons (Lynne Rienner, 2001) and Preventing Biological Warfare (Palgrave, 2002).

Mr Peter Herby is Coordinator of the Mines-Arms Unit in the Legal Division of the International Committee of the Red Cross. His primary responsibilities involve the use and prohibition of weapons under international humanitarian and the relationship between humanitarian and disarmament law. In this capacity he was a member of the ICRC delegation to all landmine negotiations from 1994-97, both in the context of the 1980 Convention on Certain Conventional Weapons and of the "Ottawa process".

He has written and spoken extensively on issues such as landmines, blinding laser weapons and the basic norms of humanitarian law applicable to the use of arms. He formerly directed the disarmament and arms control program of the Quaker United Nations Office in Geneva (1983-93), specialising in chemical and biological arms control and European and Middle East security issues. He holds Masters degrees in International Relations from the University of Cambridge (UK, 1992) and in Peace and Conflicts Studies from the Universit y of Bradford (UK, 1979).

Dr Jakob Kellenberger, born in Heiden, Switzerland in 1944, finished studies of literature and linguistics with a PhD degree at the University of Zurich. He joined the Swiss Diplomatic Service in 1974. As State Secretary for Foreign Affairs from 1992-1999 he also was Chief negotiator/coordinator for the bilateral negotiations between Switzerland and the European Union which lasted from 1994 to 1998. On 1 January 2000 he became President of the International Committee of the Red Cross.

Minister Counsellor Alfredo Labbé is the Deputy Permanent Representative of Chile to the United Nations and the international organisations in Geneva. He is also Deputy Permanent Representative to the Conference on Disarmament. Minister Labbé has held various posts with the Ministry of Foreign Affairs of Chile and lead his country's delegations in many bilateral and multilateral discussions and negotiations. He is a specialist in issues related to Disarmament, International Security, neighbouring relations (with focus on boundary questions) and cultural affairs. He has won several appointments and awards including the Diplomatic Merit Medal of Chile (1994).

Prof. Matthew Meselson is the Thomas Dudley Cabot Professor of the Natural Sciences at Harvard University. He is recognised as one of the foremost experts in the field of biological weapons and has published extensively on this subject. His work was instrumental in leading the US Government to support the negotiation of the Biological Weapons Convention and the destruction of US biological weapon stocks. Prof. Meselson was a leading commentator on reports of biological weapons use in Indochina in the 1970s and led international scientific efforts to investigate the release of anthrax from a previously secret biological weapons program at Sverdelovsk in the Soviet Union. Prof. Meselson is the Co-director of the Harvard Sussex Program on CBW Armament and Arms Limitation and a member of the chemical and biological weapons working group of the Pugwash Movement.

Mr Mafole Mokalobe is a researcher with the Centre for Conflict Resolution in Cape Town, South Africa. His areas of expertise include security, demobilisation, disarmament, mediation in civil-wars and conflict resolution. He is a co-manager of the Centre's Project on Mediation in African Civil Wars. Mr Mokalobe has presented and published numerous papers in his areas of research. He is also a member the Centre for Conflict Resolution's "Track Two" journal editorial board.

Dr Vivienne Nathanson is the Director of Professional Activities for the British Medical As-

Dr Nathanson is Chair of the BMA Steering Group on Human Rights, the UK Council member of the International Rehabilitation Council for the Care of Victims of Torture and a members of the Central Ethical Surveillance Group of Unilever PLC.

Prof. Julian Perry Robinson is a Professorial Fellow of Science & Technology Policy Research at the University of Sussex, England and the Co-Director of the of the Harvard Sussex Program. Since 1967 he has published some 400 papers and monographs on chemical/biological-warfare armament and arms limitation including *Effects of Weapons on Ecosystems* (1979), *Chemical Warfare Arms Control* (1984), *NATO Chemical Weapons Policy and Posture* (1986), and *The Problem of Chemical-Weapon Proliferation in the 1990s* (1991). He also authored much of the 6-volume SIPRI study *The Problem of Chemical and Biological Warfare* (1971-76). Along with Matthew Meselson of Harvard University, he is co-editor of the *CBW Conventions Bulletin*, one of the few journals in the field of chemical and biological weapons. Prof. Robinson is currently coordinating two international studies: *Public Health Response to Biological and Chemical Weapons: WHO Guidance* (for the World Health Organization), and. a prospective study of relationships between science and bioterrorism (for an element of the European Commission. Prof. Robinson has served as an advisor or consultant to a variety of governmental and nongovernmental organisations, including the World Health Organization, the International Committee of the Red Cross, and the UK National Authority for the Chemical Weapons Convention.

Ms Anna Segall is currently working as Legal Adviser, ICRC Advisory Service on IHL, responsible for promoting ratification and implementation of IHL in common law States. She has also worked in the ICRC's Division for Policy and Cooperation within the Movement, working on preparation of the 27th International Conference, National Society statutes and recognition questions, and policy issues. From 1994 to 1996, Ms Segall was Manager of the Australian Red Cross IHL Programme.

Ms Segall has worked previously for five years in Melbourne, Australia, practicing law in a major firm, for two years in Milan, Italy, as a teacher and translator, and for two years in Canberra, Australia, as legal and policy adviser with the Australian government. Recent publications include "Punishing Violations of International Humanitarian Law at the National Level: A Guide for Common Law States" (ICRC, 2001, 200 pages) and "Economic Sanctions: Legal and Policy Constraints" (IRRC, 1999, pp 763-784).

Mr Robert M. Young is a Legal Adviser in the Mines-Arms Unit in the ICRC's Legal Division, working on the ICRC's Biotechnology, Weapons and Humanity initiative. He previously worked in Canada's foreign ministry on international law matters, especially IHL, representing Canada at meetings at the UN, NATO and on international treaties. He advised the Canadian Red Cross on the development of a national IHL programme and worked for the ICRC as Delegate in Ethiopia.

Mr Young has been a member of the Law Society of Upper Canada (Ontario, Canada) since 1995. He practiced law in a major firm in Ottawa, worked at the Commission of Inquiry into the Deployment of Canadian Forces to Somalia and at the Department of Justice (Canada). He is co-author of On the Front Line: Uprising in Enclavia, an IHL training simulation activity published by the Canadian Red Cross, and (with Maria Molina) of "IHL and Peace Operations: Sharing Canada's lessons learned from Somalia", YIHL, Vol. 1 (1998) 362.

ANNEX B

List of participants

Government experts

- **Argentina**
  Mr Marcelo Valle Fonrouge, Counsellor, Permanent Mission, Geneva
- **Australia**
  Mr Peter Truswell, Third Secretary, Permanent Mission, Geneva
  Mr Robert Mathews, Principal Research Scientist at the Defence Science and Technology Organisation, Melbourne
- **Austria**
  Mr Alexander Kmentt, Counsellor, Permanent Mission, Geneva
- **Belgium**
  Mr Damien Angelet, Deputy Permanent Representative, Permanent Mission to the Conference on Disarmament Geneva
- **Brazil**
  Ms Celina Assumpção do Valle Perreira, Ambassador and Permanent Representative, Permanent Mission, Geneva
  Mr Frederico S. Duque Estrada Meyer, Counsellor, Permanent Mission, Geneva
- **Canada**
  Ms Ann Pollack, Counsellor, Permanent Mission, Geneva
- **Chile**
  Mr Alfredo Labbé, Minister Counsellor and Permanent Representative, Permanent Mission, Geneva
- **China**
  Mrs Yang Yi, Attachée, Permanent Mission of China, Geneva
  Mr Zhi Gang Fu, First Secretary, Permanent Mission of China, Geneva
- **Cuba**
  Mr Oscar León, Second Secretary, Permanent Mission, Geneva
- **Egypt**
  Mr Sameh Aboul-Enein, Counsellor, Permanent Mission to the Conference on Disarmament, Geneva
- **Finland**
  Mr Harri Mäki-Reinikka, Councellor, Permanent Mission to the Conference on Disarmament, Geneva
- **France**
  Mrs Françoise Anglade, Biological Affairs, Ministry of Defence, Armées
  Mr Yann Hwang, First Secretary in charge of Biological Weapons, Permanent Mission to the Conference on Disarmament, Geneva
- **Holy See**
  Rev. Antoine Abi Ghanem, Attaché, Permanent Mission, Geneva
- **Hungary**
  Dr András Tóth, Ambassador, Ministry of Foreign Affairs, Budapest
- **India**
  Mr T.P. Seetharam, Minister Disarmament, Permanent Mission, Geneva
- **Indonesia**
  Mr Indra Gunawan, Head of Section, Directorate for non-UN IGOs and INGOS, Ministry of Foreign Affairs, Jakarta
  Mr Lasro Simbolon, First Secretary, Permanent Mission, Geneva
- **Iran**
  Dr Ali Akbar Mohammadi, Director, Department of Environmental Damage Assesment, Tehran
- **Italy**
  Mr Angelo Persiani, Deputy Permanent Representative, Permanent Mission to the Conference on Disarmament, Geneva

- **Israel**
  Mr Joshua Zarka, Counsellor, Permanent Mission, Geneva
- **Japan**
  Mr Taijiro Kimura, First Secretary, Permanent Mission to the Conference on Disarmament, Geneva
- **Jordan**
  Mr Hussein Al Soud, Senior Officer International Analyst, Jordan Armed Forces, Amman
- **Netherlands**
  Mr Marcel Halma, Second Secretary, Permanent Mission to the Conference on Disarmament, Geneva
- **New Zealand**
  Ms Hine-Wai Loose, Second Secretary, Permanent Mission, Geneva
- **Norway**
  Mr Knut Langeland, Counsellor, Permanent Mission, Geneva
  Mr Per Ivar Lied, Embassy Secretary, Permanent Mission, Geneva
- **Pakistan**
  Mr Abdul Basit, Counsellor, Pemanent Mission, Geneva
- **Peru**
  Mr Gustavo Laurie Escandon, Counsellor, Permanent Mission, Geneva
- **Poland**
  Mr Adam Wilczynski, Counsellor, Permanent Mission, Geneva
- **Russian Federation**
  Mr Roman Zholus, Third Secretary, Permanent Mission, Geneva
- **Slovakia**
  Mr Milan Gigánik, First Secretary, Permanent Mission, Geneva
- **Spain**
  Mr Carlos Miranda, Ambassador, Permanent Mission to the Conference on Disarmament, Geneva
- **South Africa**
  Mr Bennie Lombard, Counsellor, Permanent Mission, Geneva
- **Switzerland**
  Mr Christian Faessler, Ambassador, Permanent Mission, Geneva
  Mr René Haug, Military Counsellor, Permanent Mission, Geneva
- **United Kingdom**
  Mr Ian Donaldson, Deputy Permanent Representative, Permanent Mission, Geneva
- **United States of America**
  Ms Evelynn Putnam, Executive Secretary, Permanent Mission to the Conference on Disarmament, Geneva
- **Yugoslavia**
  Mr Miloje Cobeljic, Director of Institute of Preventive Medicine, Military Medical Academy, Military Army, Belgrade

Independent Experts

Major-General Dipankar Banerjee, Institute for Peace and Conflict Studies, New Delhi, India
Prof. Tamas Bartfai, Director, The Harold L. Dorris Neurochirurgical Research Center, La Jolla, California, USA
Dr Ottorino Cosivi, Project Leader, Department of Communicable Disease,

Mr Malcom R. Dando, Professor, University of Bradford, United Kingdom
Mme Thérèse Delpech, Directrice chargée de la prospective, Commissariat à l'Energie atomique, Paris
Ms Patricia Frericks, Assistant, Department of Communicable Disease, Surveillance and Response, World Health Organisation, Geneva
Mr Albert Jacquard, Professor, University of Paris, France
Ms Patricia Lewis, Director, UN Institute for Disarmament Research, United Nations, Geneva
Mr Matthew Meselson, Professor, Harvard University, Cambridge, Massachusetts, USA
Mr Mafole Mokalabe, Researcher, University of Cape Town, South Africa
Dr Roque Monteleone Neto, Director, Ministry of Science and Technology, Brasilia
Dr Vivienne Nathanson, Director of Professional Activities, British Medical Association, London
Mr Julian Philip Perry Robinson, Professor, University of Sussex, UK

ICRC

Dr Jakob Kellenberger, President of the ICRC
Mr François Bugnion, Director for International Law and Cooperation within the Movement
Mr Jean-Philippe Lavoyer, Head of Legal Division
Mr Peter Herby, Coordinator, Mines-Arms Unit, Legal Division
Mr Jean-François Berger, Editor, Red Cross, Red Crescent magazine
Dr Robin Coupland, Medical Adviser, Mines-Arms Unit, Legal Division
Mr Kim Gordon-Bates, Senior Editor, Communication Division
Mr Dominique Loye, Technical Adviser, Mines-Arms Unit, Legal Division
Mr Louis Maresca, Legal Adviser, Mines-Arms Unit, Legal Division
Ms Marie-Claude Michon, Legal Researcher, Mines-Arms Unit, Legal Division
Mr André Pasquier, Political Adviser, Direction of International Law and Cooperation
Mr Toni Pfanner, Editor, International Review of the Red Cross
Ms Anna Segall, Legal Adviser, Advisory Service on International Humanitarian Law, Legal Division
Ms Camilla Waszink, National Society and Programme Officer, Mines-Arms Unit, Legal Division
Mr Robert Young, Legal Adviser, Mines-Arms Unit, Legal Division

ANNEX C

Draft elements for a possible *Declaration* by States *on* *Biotechnology, Weapons and Humanity*

The Undersigned States:

Emphasising that the advances made in the domains of biotechnology and genetic engineering carry enormous potential to greatly benefit all of humanity, such as in the fields of medicine and food production,

Gravely concerned that these same advances also pose profound risks, to humans, to their environment and to humanity itself, if they are abused, inadequately controlled, or converted for use in weapons, including to spread terror,

Recalling that the use of poison in warfare has for many centuries been proscribed by diverse cultures, religions and military traditions,

Reaffirming that the development, production, stockpiling, acquisition, retention, transfer and use of weapons which employ biological agents are prohibited by treaty law and customary international law,

Reaffirming their commitment to the 1907 Hague Convention IV, the 1925 Geneva Protocol and the 1972 Biological Weapons Convention as well as the fundamental principles of international humanitarian law reflected in these treaties,

Recalling that some toxic agents are prohibited by both the 1972 Biological Weapons Convention and the 1993 Chemical Weapons Convention,

Recognising the widespread public abhorrence of the development, production, stockpiling, acquisition, retention, transfer and use of biological weapons,

Encouraging all efforts to promote strict and universal compliance with the 1925 Geneva Protocol and the 1972 Biological Weapons Convention,

Recalling States' obligations to conduct reviews, such as those provided for in Article 36 of 1977 Additional Protocol I to the 1949 Geneva Conventions, to determine whether any new weapon being studied, developed, acquired or adopted would be prohibited by international humanitarian law or other rules of international law applicable to them,

Recognising the concerns about potential abuses of genetic research raised in the World Health Organisation's 2002 report on "Genomics and World Health" and its call for international ethical leadership in this field,

[*Recognising also* the concerns about the grave implications of the potential abuse of biological agents for hostile purposes addressed in the World Medical Association's October 2002 Declaration on Biological Weapons,]

Noting with appreciation the solemn Appeal on Biotechnology, Weapons and Humanity issued by the International Committee of the Red Cross in September 2002,

Determined, for the sake of all humanity, to exclude completely the possibility of biological agents and toxins being used as weapons, given their potential to cause untold human suffering on a massive scale, and

Convinced that such use would be repugnant to the conscience of humanity and that no effort should be spared to minimise this risk,

Declare their solemn commitment:

1. To become parties to the 1925 Geneva Protocol and the 1972 Biological Weapons Convention if they have not already done so, to encourage States which are not parties to become parties, and to lift reservations on use to the 1925 Geneva Protocol.

2. To adopt necessary national legislation to investigate and prosecute any individual who develops, produces, stockpiles, acquires, retains, transfers or uses any biological weapon prohibited by the 1925 Geneva Protocol or the 1972 Biological Weapons Convention.

3. To monitor closely all advances in the fields of biotechnology, biochemistry and genetic engineering, mindful of the obligations contained in the 1925 Geneva Protocol and the 1972 Biological Weapons Convention and other relevant norms of international humanitarian law.

4. To strengthen controls on biological agents which could be put to hostile uses and to increase international cooperation in this field.

5. To begin structured dialogue at the national level to ensure that scientists and physicians assume their moral and legal responsibility in keeping with their governments' obligations under the 1925 Geneva Protocol and 1972 Biological Weapons Convention and that scientists and physicians recognise that their responsibility increases in step with advances in biotechnology.

6. To promote scientific, medical and industrial codes of conduct at the national and international levels to ensure that relevant technologies and related information are used exclusively for the benefit of humanity.

7. To ensure that medical and scientific education includes in-depth training in ethical and legal responsibilities.

8. To ensure the strengthening or establishment of comprehensive disease surveillance and assistance mechanisms to detect, analyse and respond to unusual outbreaks of disease and to detect any hostile uses of biological or biochemical agents.

9. To ensure that this Declaration and each State's commitment to it is disseminated and referred to as widely as possible at the national and international levels, including in industry, military, medical, legal, and scientific circles and in scientific curricula of universities, and to civil society in general.

ANNEX D

Possible elements for consideration in the development of scientific codes of conduct

In relation to technical, legal and public health measures:

- Limiting access to dangerous pathogens
- Ensuring safe handling, transport and storage of dangerous pathogens
- Keeping strict records of what materials and equipment are going where
- Licensing of individuals working with dangerous pathogens or technologies
- Limiting access to certain equipment
- Ensuring security of facilities containing dangerous pathogens
- Establishing procedures to follow in the case of suspected theft
- Ensuring public health preparedness including appropriate vaccination policy

In relation to ethical responsibility within the scientific community:

- Establishing a "watchdog" body or scientific panel within each nation's scientific community
- Considering sanctions on scientists who do not abide by codes of conduct
- Assuring professional protection for whistle-blowers
- Ensuring that scientists are aware of their own governments obligations under 1972 Biological Weapons Convention and the 1993 Chemical Weapons Convention
- Informing and influencing companies and governments
- Observing and commenting on government programmes
- Contributing to confidence building measures (e.g. in keeping with Article V of the BWC)
- Being aware of "dual-use" agents, equipment and activities

In relation to contentious research:

- Considering ethical committees for research in the field of biotechnology
- Accepting that funding may be linked to acceptance of codes of conduct
- Subjecting funding sources to similar scrutiny
- Lobbying for transparency of biological defence programmes
- Adopting guidelines for "defensive" research
- Prohibiting "offensively orientated" defensive research

In relation to publication of contentious research:

- Considering restrictions on publication of or limiting access to results of certain scientific research

In relation to education:

- Ensuring treaties about chemical and biological weapons control are covered in scientific educational agenda
- Adopting a "Hippocratic oath" for scientists
- Ensuring that scientists are aware that they cannot be disassociated from the political implications of the results of their work.

The above list of possible measures generates a number of further questions which were not answered in the conference:

- Given that voluntary codes of conduct are ineffective in a moral or political vacuum, how is a morally and politically charged environment going to be created?
- People are always going to be motivated by fear when working in a country governed by an oppressive regime or by financial motivation. How effective are codes of conduct going to be in reality?
- Are codes of conduct required at a national level or international level?
- Do codes apply equally to industry and academic science?
- Are codes of conduct mandatory or voluntary?
- How might such codes be enforced?
- What kind of sanctions would be appropriate?
- How does one manage the tension between transparency of scientific knowledge and opacity for commercial or security reasons?

These questions will need to be taken into account in any future work on codes of conduct within the scientific community.