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REPORT FROM GENEVA: THE BIOLOGICAL WEAPONS CONVENTION FORTIETH ANNIVERSARY OF THE ENTRY INTO FORCE

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Report from Geneva: The Biological Weapons Convention Fortieth Anniversary of the Entry into Force

By Graham S. Pearson† in association with Nicholas A. Sims•

Introduction

The 40th Anniversary of the entry into force of the Biological and Toxin Weapons Convention (BTWC) took place on 26th March 2015. This event was marked by various statements and by a commemorative event held on Monday 30th March 2015 in the Council Chamber of the Palais des Nations in the United Nations Office at Geneva, Switzerland. The Council Chamber is the location in which the BTWC was negotiated by the Conference of the Committee on Disarmament before it was finalized in 1971 and opened for signature on 10 April 1972.

In this report, we first summarize the various statements made to mark this occasion and then report on the commemorative event held on Monday 30th March 2015.

Statements to mark the 40th Anniversary of the entry into force of the BTWC

Various statements were made to mark the 40th anniversary of the entry into force of the BTWC. Some were made by the United Nations as well as by groups of States Parties, or States Parties to the BTWC. The **Secretary-General of the United Nations** on 26 March 2015 issued the following message in which he said that:

> *Today marks the fortieth anniversary of the entry into force of the Biological Weapons Convention, the first multilateral disarmament treaty to ban an entire category of weapons of mass destruction. Over the past four decades, the Biological Weapons Convention has made an important contribution towards collective efforts to eliminate such threats. Today, the norm against the use and possession of biological weapons remains strong, and no country identifies itself as possessing biological weapons. However, we must remain vigilant. The eighth Review Conference in 2016 is an opportunity to consolidate progress and consider how to adapt this landmark Convention to the challenges posed by advances in science and technology, as well as potential risks posed by terrorists and other non-State actors. I encourage States parties to think creatively about how to build confidence in compliance with the Convention.*

He then went on to take note of the Ebola epidemic in West Africa by saying:

> *The Ebola outbreak in West Africa demonstrates the damage which diseases can*

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inflict, damage which could increase massively were such diseases deliberately misused as weapons. On the other hand, the outbreak also demonstrates the commitment of the international community to respond to such threats, whether natural or deliberate. It also shows the vital role of science in creating better defences. As we witness ever more remarkable breakthroughs in the life sciences, it is incumbent on us to ensure that such advances are used responsibly.

He concluded by saying:

Forty years after its entry into force, the Biological Weapons Convention now has the support of 173 States parties. I call on the 23 Governments that have not yet joined the Convention to do so without delay. In this anniversary year, all countries should reaffirm their unequivocal rejection of the use of disease as a weapon.

The High Representative of the **European Union** for Foreign Affairs and Security Policy and Vice President Federica Mogherini on 26 March 2015 issued the following statement in which she said:

The Convention is a cornerstone of international efforts to prevent biological agents and toxins from ever being developed, produced or otherwise acquired and used as weapons. As such it is a crucial element of our collective security and strongly supported by the European Union as one of the key elements of multilateral disarmament and non-proliferation.

She then went on to stress the importance of universalization:

The universalization of the Convention remains a priority for the EU: its recent ratification by Myanmar and the accession of Mauritania and Andorra are a sign we are on the right path. I call on those remaining States not yet Parties to the Convention to ratify or accede to it as soon as possible. The European Union provides tangible support to the BTWC by engaging politically under the Convention and by allocating financial resources to its Implementation Support Unit for the development of specific projects.

She then recognized the importance of biosafety and biosecurity:

The EU and its Member States are also engaged in supporting improvements in bio-safety and bio-security around the globe. In this regard, as a key part of the international response to the recent Ebola epidemic outbreak in West Africa, the EU and its Member States have mobilized political, financial and scientific resources to help contain, control, treat and ultimately defeat Ebola. The EU's total financial contribution to fight the epidemic is over €1.4 billion.

She concluded by looking ahead to the Eighth Review Conference in 2016:

As we move towards the Eighth Review Conference in 2016, we seek agreement on a substantive agenda of measures to enhance confidence in the Convention, and inject new dynamism into the BTWC process. The EU will spare no effort to make the Eighth Review Conference a success.

The Chairperson of the **African Union Commission**, Dr. Nkosazana Dlamini-Zuma, on 26 March 2015 issued a statement saying that:

> *Today marks the 40th anniversary of the entry into force of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction. The Convention imposes a total ban on the development, production and stockpiling of biological weapons, and calls for the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes.*

She then went on to say that she *emphasizes the contribution of the Convention's national implementation measures to strengthening public health, particularly those relating to training and capacity building, improving bio-safety and bio-security, and enhancing capacities for surveillance and detection of disease outbreaks.* She went on to say that she *stresses that these measures will contribute to the improvement of the response to disease outbreaks.* She then added that, in this regard, she *stresses the importance of enhancing international cooperation, assistance and exchange in biological sciences and technology for peaceful purposes, calling on Member States and international partners to promote capacity building in the fields of training and education, disease surveillance, detection, diagnosis, and containment of communicable diseases. Referring to the recent Ebola virus disease outbreak, she stresses the critical need for such effective cooperation under the Convention, emphasizing that in an increasingly interconnected world, such outbreaks poses a threat not only to health but also to regional economy and security.*

She then added that she *seizes this opportunity to call on Member States that have not yet done so to ratify and accede to the Convention without further delay. She further calls on all Member States to implement the necessary national measures in compliance with its provisions. She stresses the importance of such measures for the strengthening of the effectiveness and authority of the Convention, as well as for the transparency, confidence-building measures and non-proliferation assurances they are meant to provide.* She concluded by reiterating *the Commission's continued commitment*, …, *to support Member States in effectively implementing their obligations pursuant to the Convention and in fully taking advantage of the benefits of the peaceful applications of life sciences and biotechnology.*

Statements were also made by representatives of two of the Depositaries. The **United States** Under Secretary of State for Arms Control and International Security, Rose Gottemoeller, issued a statement on 26 March 2015 in which she said:

> *Forty years ago today, the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, better known as the Biological Weapons Convention (BWC), entered into force. It was the first multilateral treaty to ban an entire category of weapons.*

She then added that:

The BWC continues to be an essential element in the international community's efforts to prohibit and eliminate these weapons, the use of which the treaty declares "would be repugnant to the conscience of mankind." 173 countries have joined the Convention, a significant accomplishment, but still not enough. Universal membership in the treaty would demonstrate humanity's consensus that biological weapons are illegitimate and that all states have a responsibility to prevent anyone from obtaining them.

She then recalled the anthrax attacks in the USA in 2001:

Since the BWC entered into force, the tremendous advances in science and technology that have made it easier to diagnose and treat diseases have also made it easier to develop biological weapons, including by terrorists. The same equipment and technical knowledge used to save lives can also be used to weaponize pathogens. This is not just a theoretical concern. We experienced this horror in 2001 when anthrax was sent in letters to Members of Congress and others, killing six Americans. The threat continues today, as the technology to develop biological weapons is widespread and disguising such efforts is surprisingly easy.

before noting that:

Fortunately, the BWC requires States Parties to take measures not only to prohibit these weapons, but to implement this prohibition in their laws, regulations, policies and practices. This makes the Convention vital to the effort to stop the development of biological weapons by both state and non-state groups.

The BWC also facilitates preparedness for disease outbreaks, regardless of the cause. Of course, much of the critical infrastructure, technology and research needed to prepare for and respond to a biological attack are also necessary for the prevention of and response to natural outbreaks of disease. In fact, the recent Ebola outbreak is providing insights on how to prepare not only for both future naturally occurring health crises, but also for possible biological attacks. That is why the work of the BWC is and will continue to be so closely tied to global efforts to prepare for any type of public health emergency. Should the UN Security Council identify a biological weapons attack, the Treaty also obligates its Parties to provide assistance.

The Ministry of Foreign Affairs of the **Russian Federation** issued a short statement on 6 April 2015 in which it stated that:

The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BTWC), which opened for signing in 1972, was the first international treaty banning an entire class of weapons of mass destruction. Its entry into force on March 26, 1975, was a significant step forward in multilateral disarmament.

Today, the Convention remains the central legally binding document banning biological weapons. Being committed to the strengthening of the BTWC and

supporting better compliance with its provisions, Russia is prepared to interact on this basis with all interested nations.

The commemorative event held on Monday 30th March 2015

The Chairman of the 2015 Meeting of Experts and Meeting of States Parties, Ambassador Mazlan Muhammad, wrote to the Permanent Representatives in Geneva of the States Parties, Signatories and States not Party to the BTWC on 12 March 2015 saying:

> *26 March 2015 sees the 40th anniversary of the entry into force of the Biological Weapons Convention (BWC). The BWC was the first international treaty to effectively prohibit an entire class of weapons of mass destruction. In order to mark this important occasion, in my capacity as Chairman of the 2015 BWC meetings, I would like to invite you to attend a commemorative event that will take place in Geneva from 11:00 to 13:00 on Monday 30 March 2015.*
>
> *The event, which is being organized by the BWC Implementation Support Unit (ISU) with the assistance of my office and the Depositary Governments of the BWC, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America, will take place in the Council Chamber of the Palais des Nations. This venue has historical significance as it is the room in which the BWC was negotiated by the Conference of the Committee on Disarmament before being finalized in 1971. Refreshments and lunch will be provided and a programme will be posted shortly on the BWC website at www.unog.ch/bwc/bwc40*

His letter went on to add that:

> *I would also like to take this opportunity to inform you of a seminar and reception after the commemoration that is being organized from 14.00 to 17.00 on 30 March, with the support of the United Kingdom, by the Centre on Conflict, Development and Peacebuilding (CCDP) of the Graduate Institute for International and Development Studies, the Geneva Centre for Security Policy (GCSP) and the United Nations Institute for Disarmament Research (UNIDIR). Invitations and further details will be circulated by the organizers.*

An identical letter of the same date was sent to NGOs and others.

It was evident that the commemorative event to mark the 40th anniversary of the entry into force of the BTWC would consist of a formal session in the morning followed by lunch and then an interactive afternoon session with discussion in the afternoon followed by a reception.

The date of 30 March was chosen because it was the first day on which the Council Chamber was available, after the spring session of the Conference on Disarmament had ended. On the actual anniversary, 26 March, it was still required for the Conference on Disarmament. It was decided that because the negotiation of the Convention had taken

place in the Council Chamber it was worth waiting a few days for it to become free. A small collection of historic documents and photographs tracing the negotiation, ratification and entry into force of the Convention was assembled by the ISU and displayed on 30 March outside the Council Chamber, parts of this display having earlier been posted on a special 40th Anniversary page of the www.unog.ch/bwc/bwc40 website.

Formal morning session

The programme for the formal session of the 40th commemorative event, which was subsequently posted at www.unog.ch/bwc/bwc40, was as follows:

10.30 Coffee

11.00 Opening

11.05 Welcome remarks by Michael Møller, Acting Director-General, United Nations Office at Geneva

11.10 Video Message by Angela Kane, High Representative for Disarmament Affairs

11.15 Welcoming remarks by Ambassador Mazlan Muhammad of Malaysia, Chairman of the 2015 BWC Meeting of States Parties

11.25 Remarks by the Depositary Governments

- Mr Mikhail Ulyanov, Director, Department for Non-Proliferation and Arms Control, Ministry of Foreign Affairs of the Russian Federation
- Dr John R. Walker, Head, Arms Control and Disarmament Research Unit, Foreign and Commonwealth Office, United Kingdom of Great Britain and Northern Ireland
- Ambassador Robert Wood, Permanent Representative to the Conference on Disarmament, United States of America

11.55 Remarks by Ambassador Masood Khan, Director-General of the Institute for Strategic Studies Islamabad, Pakistan and President of the Sixth BWC Review Conference (2006)

12.15 Remarks by Dr Caitriona McLeish, Senior Fellow, University of Sussex

12.30 Lunch

The Chairman of the commemorative event was Ambassador Mazlan Muhammad of Malaysia, Chairman of the 2015 BWC Meeting of States Parties who opened the

proceedings by giving thanks to the Depositary Governments of the BWC – the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America – and the Implementation Support Unit for arranging this event, and also to the United Kingdom for providing financial support. He then added that:

> *This morning's event is intended to have a mainly historical and commemorative focus. There will also be an academic seminar this afternoon starting at 14:00 which has been arranged by the Geneva Centre for Security Policy, the Centre on Conflict, Development and Peacebuilding and the United Nations Institute for Disarmament Research. I encourage you all to attend until the reception in the evening.*

It was evident that the morning session was a formal commemorative event and the afternoon event an interactive session.

He then introduced **Michael Møller, Acting Director-General, United Nations Office at Geneva** who in his welcoming remarks said that *It is a great pleasure to be here with you to mark the 40th anniversary of the entry into force of the Biological Weapons Convention - our first multilateral treaty to ban an entire category of weapons of mass destruction.* He gave warm thanks to Ambassador Muhammad –the Chair of the 2015 BWC Meeting of States Parties – for organizing this event together with the Implementation Support Unit. He then went on to say that:

> *… Geneva and the collective struggle against biological warfare are closely connected. It was here in Geneva in 1925 that States agreed the Geneva Protocol, prohibiting the use in war of both chemical and biological weapons. So, it is really a double anniversary year - celebrating 90 years since the Geneva Protocol and the first 40 years of the BWC - which together highlight the long-standing and deep-rooted tradition for disarmament efforts here in Geneva. And as we are also marking this year the 70th anniversary of the United Nations as an Organization, we are reminded of the central place of disarmament in our mission to build a better world.*

He then pointed out that:

> *The BWC is a cornerstone in our effort to ensure that public health is not endangered through the deliberate use of germs and disease as weapons – what has sometimes been referred to as "public health in reverse". While technology can present challenges to a regime like the BWC, it also provides us with defence against biological weapons. And as a disarmament measure, the Convention is an integral part of broader efforts to ensure that we can all live in freedom from fear and in peace.*
>
> *As we look ahead to what some have called the "century of biology", we will need to build upon the norm embodied in the BWC – a norm that has already been accepted by 173 States Parties – to ensure that the incredible advances in science and technology are applied responsibly. We can only achieve this by*

working in partnership, drawing on the expertise and engagement of all stakeholders. It is my firm conviction that it is through partnerships that we will advance disarmament most effectively - not just in the area of biological weapons but also more broadly. And it is therefore a particular pleasure to welcome today colleagues from science, academia and civil society, and the many students here. We will rely on your commitment in the years ahead to strengthen disarmament norms and to ensure that they are respected by all.

and concluded by saying *I wish the BWC continued success in future, with the support of all Member States and all partners.*

A video message by **Angela Kane, High Representative for Disarmament Affairs,** was then presented in which she said**:**

It is my pleasure to send this message to you, the States party to the Biological Weapons Convention on this historic occasion – the 40th anniversary of that ground-breaking treaty.

It is widely known that the BWC was the first international treaty to effectively prohibit an entire class of weapons of mass destruction. Yet the BWC's other major achievement is equally important – the creation of an ironclad norm against the possession and use of biological weapons, and the abhorrence associated with the very idea of using disease as a weapon.

She then went on to add that:

This norm is a testament to the importance of the BWC and the role its States parties and, more recently, the BWC Implementation Support Unit have played in strengthening both the treaty and norm over the course of the last four decades.

Of course, it is a norm that requires constant cultivation and would be made even more robust through universal membership and implementation of the treaty. After 40 years, there can be no justification for any State remaining outside the Convention.

In today's increasingly complex geopolitical environment, the challenges posed by biological threats are not dissipating. If anything, they are becoming more complex. Remarkable biotechnological breakthroughs are occurring in parallel with proliferation concerns, such as the interest in biological weapons shown by some terrorist or insurgent groups.

The human consequences of the outbreak of any one of today's deadly and highly contagious diseases highlight the devastation diseases can wreak. The nightmare scenario in which such a disease is deliberately released as a weapon must be avoided at all costs.

She concluded by saying that:

These emerging challenges and opportunities highlight the importance of the BWC in the 21st Century. The 40th anniversary, as well as next year's Review Conference, provides a valuable opportunity for you, the States parties, to ensure the BWC remains the effective bulwark against the spread or use of biological weapons it has been since it entered into force in 1975.

Ambassador Mazlan Muhammad of Malaysia, Chairman of the 2015 BWC Meeting of States Parties, then spoke saying that

As we have already heard, the BWC is an important treaty within the international architecture against weapons of mass destruction and it represents a strong norm against the weaponization of disease. The strength of the abhorrence that we as humans feel towards the use of disease as a weapon is clear in the Preamble to the Convention where such use is described as "repugnant to the conscience of mankind". Today, 173 States have registered their support for this norm by becoming parties to the BWC, and several others are very close to doing so.

However, we cannot rest on our laurels. The negotiation and entry into force of the BWC were key moments in its life, but like any international agreement, the BWC needs "tending". Over the years, attention to the BWC has waxed and waned but without such attention there is a danger that a treaty could lose its relevance and its connection with relevant developments in the wider world.

He then went on to say that:

That is why the intersessional process is important. It helps to maintain the Convention's relevance and makes sure that its States Parties tend to the BWC's implementation. It is therefore good to be having this event now in March, when the BWC is not normally in people's minds here in Geneva. While many of you are now turning your attention to the NPT Review Conference which will take place soon in New York, it is very encouraging to see you here today to spend time considering the past, present and future of the BWC. "Tending" this treaty should be an ongoing activity, not something confined to only two weeks of the year.

Over the past three years we have had good discussions about the standing agenda items – assistance and cooperation, national implementation and science and technology – and the biennial items – the CBMs and Article VII. Over these years, we have been able to reach new common understandings as reflected in the reports of the Meetings of States Parties. It is now important for us to focus on the effective action part of the mandate given to us by the Seventh Review Conference. Hopefully, the discussions today will assist us in this regard as we look forward to this year's Meeting of Experts in August and Meeting of States Parties in December.

and concluded by adding that:

As we all know, the BWC has three Depositary Governments to whom Article XIV of the Convention gave special responsibilities as regards to the functioning of

the treaty and particularly regarding the membership of the BWC. It is gratifying that the BWC today has 173 states parties with the very recent accession by Andorra.

The representatives of the three Depositary Governments then spoke. **Mr Mikhail Ulyanov,** Director, Department for Non-Proliferation and Arms Control, **Ministry of Foreign Affairs of the Russian Federation** spoke first saying that:

Forty years ago the BWC became the first international treaty to ban an entire category of weapons of mass destruction. In 1975, it was a major step forward for the whole mankind. Today, the Convention serves as an important element in the legal framework of WMD disarmament.

That being so, from the very start the BWC has been beset by numerous shortcomings seriously weakening the effectiveness of its regime. The most obvious one is the absence of measures for "strict and effective international control" over compliance in its provisions. In that respect the BWC differs radically from the Non-Proliferation Treaty and the Chemical Weapons Convention which both are equipped with functional systems for compliance monitoring. It is highly unlikely that any of the latter would have materialised without a verification mechanism but, surprisingly, for the BWC such absence is not only being tolerated but almost perpetuated. Against such background the threat posed by biological weapons remains real and even grows as science and technologies develop rather fast.

He then went on to note that further attempts to strengthen the Convention have experienced serious difficulties by saying that:

While the weakness of the original text of the BWC may be explained by the conditions prevailing at the moment on the international arena, further efforts to strengthen the Convention have also experienced serious difficulties. I would like to remind you that at the Second Review Conference in 1986 the Soviet Union proposed to develop a compliance control mechanism for the BWC and to launch international negotiations to that end. It became possible to begin that only in 1995. Those negotiations were preceded by the work of the Group of Governmental Experts (VEREX) which concluded by consensus in 1993 that verification measures would "contribute to strengthening the effectiveness and improve the implementation of the Convention". Such measures were supposed to enhance confidence in compliance with and credibility of BWC.

In 1994, the BWC Special Conference agreed by consensus on the mandate to be pursued by a negotiating organ that it established, the Ad Hoc Group open to all States Parties. The objective of the Ad Hoc Group was to consider appropriate measures and proposals on strengthening of the Convention to be included in a legally binding instrument (also known as "the Protocol") to be submitted for the consideration of States Parties. The negotiations in the Ad Hoc Group in 1995-2001 witnessed steady and significant progress. However, in 2001 when work on

the Protocol was entering the final stage with a view to submitting a legally binding instrument for consideration of the Fifth Review Conference, the entire process was completely derailed because of the change in political climate. "A failed revolution", as some call it, became a real setback for the efforts of all States Parties to make the BWC deliver on its promise to "exclude completely the possibility of biological agents being used as weapons". Such demoralising failure continues to accompany us to this day preventing serious multilateral endeavours in the BWC to reduce the threat posed by biological weapons.

He then went on to say that under these circumstances, the Russian Federation as a Depositary Government feels that it has a special responsibility to look after the well being of the Convention saying that:

In the absence of the BWC implementing agency that would take care of the Convention's well-being, Russia as a Depositary feels a special responsibility in that regard. We also remain concerned about biological weapons and the threat of their actual use. Therefore, last year we launched two BWC-related initiatives.

The first one was a survey of States Parties seeking their views on a resumption of negotiations based on the 1994 mandate on a legally binding instrument, if not all BWC States Parties were to become Parties to such an instrument. We received replies from 41 States Parties (one additional State Party made its position known to us in connection with our questionnaire). The majority of respondents gave an affirmative answer. The result of the survey was assessed by us as encouraging in a sense that the majority favoured resumption of negotiations. However, a very considerable number of States Parties from one regional group made it clear that since there was currently no consensus on verification in the BWC there would be no support from them to negotiate what they called "the Verification Protocol".

The statement then went on to outline the second BWC-related initiative that Russia had taken:

Taking into account the results of that survey we made an attempt to find a way out of the deadlock that we have been experiencing since 2001. The mandate of 1994 was examined with an open mind with a view to trying to salvage its elements that:

a) create added value for the BWC States Parties in terms of the Convention's object and purpose;

b) are feasible to pursue in this political situation.

Therefore, verification measures (inspections of dual-use facilities) were ruled out. A proposal was developed for a mechanism to investigate alleged use (to be activated by the affected State only) and specific provisions for assistance and protection in case of actual use taking place. Other elements such as promotion of international co-operation for peaceful purposes, national implementation,

confidence building measures and permanent advisory organ for monitoring science and technology developments were added to the package. Such package to be shaped as a legally binding instrument would have established an Organisation for the Prohibition of Biological Weapons open to all BWC States Parties who find merit in their participation.

We made an initial presentation of the above ideas on 5 August 2014 on the margins of the BWC meeting of experts. The intent was to float a concept and see whether there was interest among States Parties for pursuing such an approach with a view to reaching specific understandings at the Eighth Review Conference in late 2016 and resuming negotiations thereafter. At this stage our assessment is that the proposed concept is feasible and may be developed further together with the interested States Parties. The main challenge is to overcome inertia and a perception of failure prevailing in the BWC environment since 2001, "Yes, we can" should be the motto in our collective endeavour to strengthen the Convention and reduce the threat of biological weapons.

Dr. John Walker, Head of the Arms Control and Disarmament Research Unit, of the United Kingdom Foreign and Commonwealth Office then spoke thanking the ISU and the fellow Depositaries of the Russian Federation and the United States for making the arrangements for the commemorative event and saying that:

it is fitting too that we are meeting in the Council Chamber where the CD's predecessor bodies, first the Eighteen Nation Disarmament Committee and then the Conference of the Committee on Disarmament convened during the original negotiations that led to the adoption of the text of the Convention. Although we were unable to meet on the exact anniversary, we are close enough to that day in 1975 when that first significant step on the road to chemical and biological weapons disarmament was taken by the international community. The United Kingdom has always had a keen interest in this Convention – we were its founders and for 40 years we have been at the forefront of efforts to ensure its effectiveness and continued relevance in an ever changing world.

After noting that on a personal level, he had been part of these efforts for thirty years, he went on to say that:

The 1960s were watershed years in the history of multilateral arms control and disarmament. Until that point in time grandiose plans and proposals for general and complete disarmament had come to naught, foundering on the rocks of Cold War suspicion and distrust. Following the Cuban Missile Crisis in 1962, East and West realised that urgent measures were required to constrain and roll back the nuclear arms race and to enhance international security and stability.

A Partial Nuclear Test Ban Treaty was the first result of this sea change in the summer of 1963, although efforts had been underway since 1958 on securing a Comprehensive Nuclear Test Ban Treaty. The next priority was to seek what was originally known as a non-dissemination treaty, and between 1965 and 1968

negotiations led to the opening for signature of the Nuclear Non-Proliferation Treaty on 1 July of 1968. It was against this background that we find the specific origins of the Biological Weapons Convention; British officials in the Foreign Office were tasked to identify the next concrete arms control measure that could be pursued by the United Kingdom following conclusion of an NPT. An internal review came up with three options, one of which was to do something on CBW; the other two concerned the CTBT and Peaceful Nuclear Explosions. The UK then went on to present a Working Paper here in Geneva in August 1968 setting out the arguments for a new initiative that should deal exclusively with the problem of BW; chemical weapons were deemed too difficult to tackle for a range of reasons at that time and should be left for later attention. In the following year a draft Convention prohibiting the production, development and use of BW was tabled in July by the then Minister of State at the Foreign Office, Fred Mulley.

However, in 1969 the USSR and its Warsaw Pact allies and states from the Non-Aligned Movement were not yet ready to abandon the idea of a single agreement dealing with both CW and BW. There were concerns too that dealing with BW separately and the express prohibition on use would undermine the 1925 Geneva Protocol. It was not until March 1971 that the USSR came to the view that a separate BW ban was worth supporting, so over the period March to September the final decisive round of negotiations took place. In this process three critical elements were lost from the original UK draft – express prohibitions on offensive research and BW use; and a procedure for investigations into alleged use. The consequences of these decisions were to reverberate down the years of the Convention in force. States Parties sought at the first Review Conference in 1980 to strengthen the Convention's basic compliance procedures and have continued to do so ever since.

He then went on to take stock of where the Convention is today saying that:

Since 1975 the Biological and Toxin Weapons Convention has had in many respects a troubled existence as it has tried to grapple with its compliance aspects – we have been through seven Review Conferences, meetings of verification experts, a Special Conference, an Ad Hoc Group and three intersessional work programmes. There have been significant compliance problems too over the years with offensive programmes coming to light. Finding consensus on the best way of making the Convention more effective has proved and continues to prove elusive. We are approaching the Eighth Review Conference and many of the issues that have been at the heart of the challenge facing BW disarmament since 1975 remain the same for today's generation of diplomats and experts:

- *Coping with scientific and technological change and the associated dual-use problem;*
- *How to strengthen the Convention's compliance mechanisms where the verification conundrum remains as unforgiving as ever;*
- *Achieving the proper balance between security and cooperation;*

- *Ensuring national implementation;*
- *Achieving universality and,*
- *The comparatively low priority that BW disarmament attracts in policy making.*

Despite these challenges the Convention remains fundamental to international efforts to combat the misuse of the life sciences for hostile purposes – public health in reverse as it was once famously put. It is in everyone's interest that the Convention remains effective and that its prohibitions continue to be upheld and that its proper place in combating infectious disease is recognised. Possession of biological weapons is illegal under international law and the BTWC is the keystone in the global architecture erected to counter the threat of BW; any use of BW would not only be illegal too, but repugnant to the conscience of mankind and no effort should be spared to minimise this risk as the words of the Convention's preamble have it. We must all keep this very pertinent objective to the fore in our future national and collective efforts to sustain the Convention in the coming years as we enter another decade of its existence. Our aim must now be to ensure that the Convention remains relevant and even more effective in its 50th year.

Ambassador Robert A. Wood, the United States Special Representative for Biological and Toxin Weapons Convention (BWC) Issues then spoke saying that:

40 years after its entry into force, the Biological Weapons Convention continues to be an essential element in the international community's efforts to prohibit and eliminate such weapons, the use of which the Convention's preamble so aptly states "would be repugnant to the conscience of mankind." While not yet universal, the BWC is the centerpiece of a global norm that possession and use of these weapons are unacceptable.

He then added that:

During these four decades, we have witnessed astounding innovations in the life sciences that represent remarkable progress. Such advances contribute to a brighter future for all people around the world and reflect both the tremendous possibilities and great success of international cooperation in this field. At the same time, with these advances technology has become more easily accessible, putting the biological weapons within reach of a much wider array of individuals and groups. President Obama has acknowledged that "we are more susceptible to bioterrorism than ever" but pledged that, "as we take action to counter these threats, we will work together to advance our own health security and provide for the improved condition of all humanity." The world has changed; the nature of the biological weapons threat has changed; and our approach to the Biological Weapons Convention needs to keep pace.

Then looking ahead to the next 40 years, he said:

Allow me to address some of the main challenges to the BWC as we look toward its next 40 years. The primary objective of the United States in the BWC is to work with other States Parties to strengthen the Convention as an instrument for combatting bioweapons proliferation and terrorism. We will continue to emphasize the importance of effective national implementation of the BWC and of transparency regarding implementation as a means of assuring other States Parties about compliance with the Convention. And we will continue to be active in providing practical assistance to other States Parties that contributes to implementation and transparency.

The scientific advances and spread of technology I mentioned earlier offer incredible benefits, but they also pose thorny questions for those who seek to ensure that biological weapons will never again be used. How do we ensure that the life sciences are used for solely peaceful purposes, while still promoting their broad access to those benefits and further advancement in these fields? We know some of the answers: effective export controls, strong biosafety and biosecurity, active outreach and awareness-raising. But these are challenging issues and require ongoing attention.

He then went on to address the dual-use issue saying:

Recently, the United States and the international community have begun to grapple with a specific dual-use challenge: what we have come to call "dual use research of concern." This is legitimate life science research that can be reasonably anticipated to provide knowledge, information, products, or technologies that could be directly misapplied to pose a significant threat with broad potential consequences to public health and safety, agricultural crops and other plants, animals, the environment, materiel, or national security. We must work to preserve the benefits of life science research, while taking steps to minimize the risk of misuse of the products of such research by monitoring and mitigating such risks throughout the research process.

The issue of responding to outbreaks of disease was then addressed:

In addition to banning biological weapons, BWC Article VII commits States Parties to provide assistance to any other State Party if the UN Security Council decides "that such Party has been exposed to danger as a result of violation of the Convention." Since it can be difficult and time consuming to determine whether biological weapons have been used, much of what needs to be done to fulfill this provision for assistance is also necessary to prepare for and respond to outbreaks of disease that occur naturally. This, in turn, means that the work of the BWC is closely tied to global efforts to prepare for any type of public health emergency. As the international community considers the lessons of the Ebola outbreak in West Africa for how to prepare for future health crises, now is a good time to examine and discuss what this experience of a naturally occurring epidemic might teach us about fulfilling the assistance commitments under Article VII in case a bioweapon were to be used anywhere in the world.

The United States has made addressing infectious disease threats a high priority. In 2014, we joined with 28 other nations to launch the Global Health Security Agenda (GHSA), an international effort to accelerate progress toward a world safe and secure from infectious disease threats. GHSA partners include over 40 nations, international organizations like the World Health Organization (WHO) and Interpol, nongovernmental partners, and private stakeholders. The Agenda seeks to elevate efforts to:

- *Reduce the likelihood of outbreaks;*
- *Detect outbreaks early to save lives; and*
- *Respond to outbreaks effectively using the full range of multisectoral resources*

GHSA is a multi-sectoral initiative to strengthen our collective ability to prevent, detect and respond to disease outbreaks–whether natural, accidental, or intentional. This is an effort distinct from that of the BWC, but one that supports key aims of the Convention: the capabilities GHSA seeks to advance will make individual countries and the international community safer from the threat of biological weapons. GHSA is also a very real example of the international cooperation BWC States Parties are committed to under Article X – a mechanism to identify needs, mobilize resources, and coordinate capacity-building efforts, guided by established international norms such as the International Health Regulations.

He concluded by emphasizing the importance of universality:

The fact that 173 States have joined the Convention is an extraordinary endorsement of the BWC's principles, but we seek a Convention in which all are Parties. Universal membership in the Convention would reflect a truly global consensus that biological weapons are illegitimate and that all states have a responsibility to prevent anyone from obtaining them. Let us strive to reach that lofty objective well before the next 40 years of the BWC have passed.

and looking ahead to the future:

For the last forty years, the BWC has been essential in establishing a strong international norm against biological weapons. We must aim to make it stronger still in the years and decades ahead. Dealing with universal adherence, dual-use capabilities, increased transparency, developments in science and technology, and our collective assistance obligations will not be easy, but it is undeniably necessary. The BWC lays the foundation of our collective efforts to protect against the weaponization of biological agents, and it is critical for all countries to take practical steps to strengthen the most important tool we have in this effort.

This concluded the statements made by the representatives of the three co-Depositary Governments.

The Chairman then invited Ambassador Masood Khan, Director-General of the Institute for Strategic Studies Islamabad, Pakistan who had been the President of the Sixth BWC Review Conference in 2006 to speak. He began by thanking Ambassador Mazlan Muhammad, Chairman of the Meetings of Experts and of States Parties, and Mr. Daniel Feakes, Head of the Implementation Support Unit, for inviting him to participate in the commemorative event. He then went on to say that:

> *Today, we commemorate a historic watershed in human history. We can all be proud of the contribution of the Biological Weapons Convention in over 40 years to make the world a safer place, and to the cause of multilateralism and disarmament.*
>
> *We are all committed that the life sciences will be used only for benign purposes, and that we will continue to fight present and future threats of their destructive use, biological warfare and bioterrorism.*
>
> *The Convention has been remarkably successful in its mission of eliminating an entire class of weapons of mass destruction. It is a simple treaty and it has some shortcomings. But, over the decades, it has built a robust norm against the repugnant notion of using disease as a means of warfare. Although membership of the BWC is not yet universal, no state claims today that biological weapons are a legitimate means of national defense.*

He then added that

> *This is in marked contrast to the situation in the 1950s and the 1960s.*
>
> *This is a testimony to the often-underestimated power and influence of multilateralism and international law.*
>
> *It would not be an exaggeration to say that the BWC is the most successful WMD non-proliferation and disarmament regime.*

However, he observed that:

> *While celebrating this success, we must bear in mind two points.*
>
> *First, the success of the BWC does not derive from simply getting states to sign and ratify it. The regime is much more than a few pages of the text.*
>
> *Second, if we want to build upon the success of the BWC, we have to meet some important challenges ahead.*
>
> *It was realized very early in the history of the BWC that the treaty in itself would not be sufficient to erect barriers against biological weapons. The lack of verification provisions, coupled with suspicions of cheating and concerns about the implications of scientific and technological advances, led States Parties to*

begin discussing how the convention might be strengthened – a debate which continues to this day.

This debate is fundamental to the success of the treaty that we are celebrating today. The community of BWC States Parties – with all its differences – is the very lifeblood of the treaty. It has collectively evolved norms and mechanisms that ensure that the advances in the life sciences, biology and biotechnology are used only for the benefit of humanity.

Ambassador Khan then recalled his own involvement with the BWC saying that:

My own engagement with this community began when I presided over the Sixth Review Conference in 2006. It was a particularly difficult time: feelings were still raw after the collapse of the protocol negotiations and the stark divisions of the Fifth Review Conference held in 2001. And yet, the BWC community was already demonstrating its resilience and resolve. The first inter-sessional process had revealed that, for all their differences, States Parties were committed to making the convention work; and finding pragmatic ways to do it.

When I started preparations in December 2005, member states were still in a deep quagmire of acrimony and divisions. Recriminations and stand-offs cast their dark shadow on the BWC negotiations.

In 2006, working together we turned that around. With sheer determination and a sense of purpose we set the convention back on course and made the review conference a success.

We found creative ways to accommodate or steer around the serious divisions among States Parties, and agreed on innovative and practical outcomes. We created an environment for engagement and results.

The establishment of the Implementation Support Unit was a major step forward for the BWC, one that has made a difference in improving effectiveness of the treaty, at a very modest financial cost.

I want to place on record the outstanding work done by Mr. Richard Lennane, the first head of the ISU, to make the BWC a successful regime by giving it strong professional and institutional support.

Ambassador Khan also expressed his appreciation of the efforts of two other long-serving members of the ISU, Piers Millett and Ngoc Phuong van der Blij as well as those of his predecessor and successor as Presidents of the Fifth and Seventh Review Conferences, Ambassador Tibor Tóth and Ambassador Paul van der Ijssel respectively. He then went on to say that:

We also were successful in creating synergies between the BWC, OPCW, the UN, WHO, FAO, and OIE; and between the BWC member states, industry and academic institutions.

Our motto was 'From adjacency to synergy'. We succeeded in promoting that goal.

The renewed inter-sessional process brought in a wide range of actors from outside the traditional security and arms control communities, and built vital links with public health and scientific organizations, the private sector and civil society.

We also used the shoestring resources of the ISU and the Chair of the BWC meetings to accelerate the pace of ratifications. I am glad that today states parties' number stands at 173. The movement towards universality must continue.

I also congratulate the states parties on the success of the Seventh Review Conference.

Ambassador Khan then addressed his second point:

This brings me to my second point: our struggle is far from over. Indeed, fulfilling the goals of the BWC is a never-ending and ever-evolving challenge. A fundamental shift in the way the BWC has been perceived has taken place over the past 15 years, with the widespread recognition that biological weapons are just one part of a spectrum of biological risks – such as naturally-occurring disease, laboratory accidents, and so on – and that this spectrum of risk must be dealt with in an integrated and coordinated way.

We cannot meet the challenges confronting the BWC regime by standing still and relying on our past successes. Biological science and technology continue to advance at a breathtaking speed. At the same time, the global security situation evolves in unpredictable and alarming ways. Asymmetric warfare, terrorism, violent extremism and twisted ideologies have multiplied security threats in many parts of the world.

The BWC community must respond to these challenges effectively. We should continue to invest in preparedness and response to avert and manage an unforeseen hostile outbreak of disease.

It is a little worrying that within the BWC community, political differences are once again creeping up, and there appears to be a reluctance to work together constructively.

We should reverse this drift. We must generate the political will to resolve divisive issues or – more pragmatically – to work around them in the collective interest of strengthening the convention.

All States Parties agree that the Implementation Support Unit has demonstrated extraordinary performance in the past nine years. As a minuscule secretariat supporting the BWC, the ISU should not remain a poor, inadequately equipped,

relative of the muscular secretariats of the Nuclear Non- Proliferation Treaty and the Chemical Weapons Convention.

It is high time that the ISU is expanded and developed to its full potential.

Similarly, we must overcome reluctance to explore new ideas that might help deal with contentious issues such as compliance, verification and Article X. There is already a long record of States collaborating on a wide range of issues in a collegial and constructive fashion. We should now tackle some of our historical problems with an open mind and renewed entrepreneurial spirit. We are a large and diverse family. But in the end we know where our common interests lie, and we know that the BWC is something we must treasure, respect, defend and promote. Pakistan signed the BWC in 1972 and ratified it in 1974. We oppose development, production or stockpiling of biological weapons and agents. Over the years, Pakistan has worked diligently with other member states to strengthen the BWC regime. We have also advocated the rights of states to access biological and toxin materials and technology for research and peaceful purposes, for medicine and agriculture and industry.

Pakistan is investing in the development of the life sciences and biotechnology. We have a good institutional base, a sound infrastructure, and a pool of scientists to sustain this effort. As we do so, we have enforced stringent biosecurity and biosafety measures and export controls.

Before I conclude, I would quote from a very incisive piece written by David Fidler of the Council on Foreign Relations website. Mr. Fidler calls the BWC as a model for regulating dual use cyber technologies because the treaty attempts to advance scientific progress while preventing its exploitation for hostile purposes. Second, the biological sciences' increasing dependence on information technologies makes cybersecurity a growing risk and, thus, a threat to BWC objectives.

Let us demonstrate that we can counter this emerging threat.

He then concluded by saying:

The international community should remain vigilant and prepared to deal with the threats of bioterrorism, as well as deliberate or accidental releases of pathogens that can affect health, food staples and raw materials; and cause havoc.

Let us move forward with renewed determination and common purpose, to ensure that the goals of this landmark treaty, the Biological Weapons Convention, continue to be realized.

The Chairman then moved on to the final element in the formal session of the commemorative event by inviting **Dr. Caitriona McLeish, Senior Fellow, Harvard Sussex Program, of the University of Sussex** to speak. Dr. McLeish made a presentation entitled *The 40th anniversary of the BWC: Remembering the origins of the*

Convention about the three year project entitled 'Understanding Biological Disarmament: The Historical Context of the Biological Weapons Convention' being carried out by Professor Brian Balmer and Dr Alex Spelling of the Department of Science and Technology Studies in University College London in association with the Science Policy Research Unit of the University of Sussex and the Harvard-Sussex Program.

Dr. Caitriona McLeish began by saying that she wished to recall three elements of the steps leading up to the entry into force of the Convention. She noted the key milestones *en* route to the entry into force of the Convention:

July 10th 1969	UK tables *Convention for the Prohibition of Biological Methods of Warfare*
September 16th 1969	USSR and the socialist group submit an alternative draft convention
November 25th 1969	US President Nixon publicly announces destruction of offensive BW stockpiles (similar announcement on toxins, February 14th 1970)
August 18th 1970	UK tables a revised draft which includes a prohibition on toxins
August 25th 1970	Neutral and Non Aligned countries introduce their '*Joint memorandum'*
March 30th 1971	The USSR and socialist countries table a draft convention on BW
August 5th 1971	The US and USSR table identical, but separate, drafts in the Conference of the Committee on Disarmament
September 28th 1971	Final text for *Biological (and Toxin) Weapons Convention* agreed
April 10th 1972	BWC opens for signature
March 26th 1975	BWC enters into force

She then went on to say that the first element of the BWC's story was that *Achieving the BWC was not inevitable.* She noted that *the UK had proposed its draft Convention on biological weapons only but juxtaposed with this was the more popular idea that a ban should be sought simultaneously for both chemical and biological weapons as illustrated by the September 1969 alternative draft Convention tabled to the UN General Assembly by the Soviet and Socialist Group countries, and the Neutral and Non Aligned countries Joint Memorandum.* She went on to say that *Accepting the separation of biological weapons from chemical weapons and agreeing the final text on September 28th 1971 must have been a bitter pill to swallow for some and we have had ramifications of that*

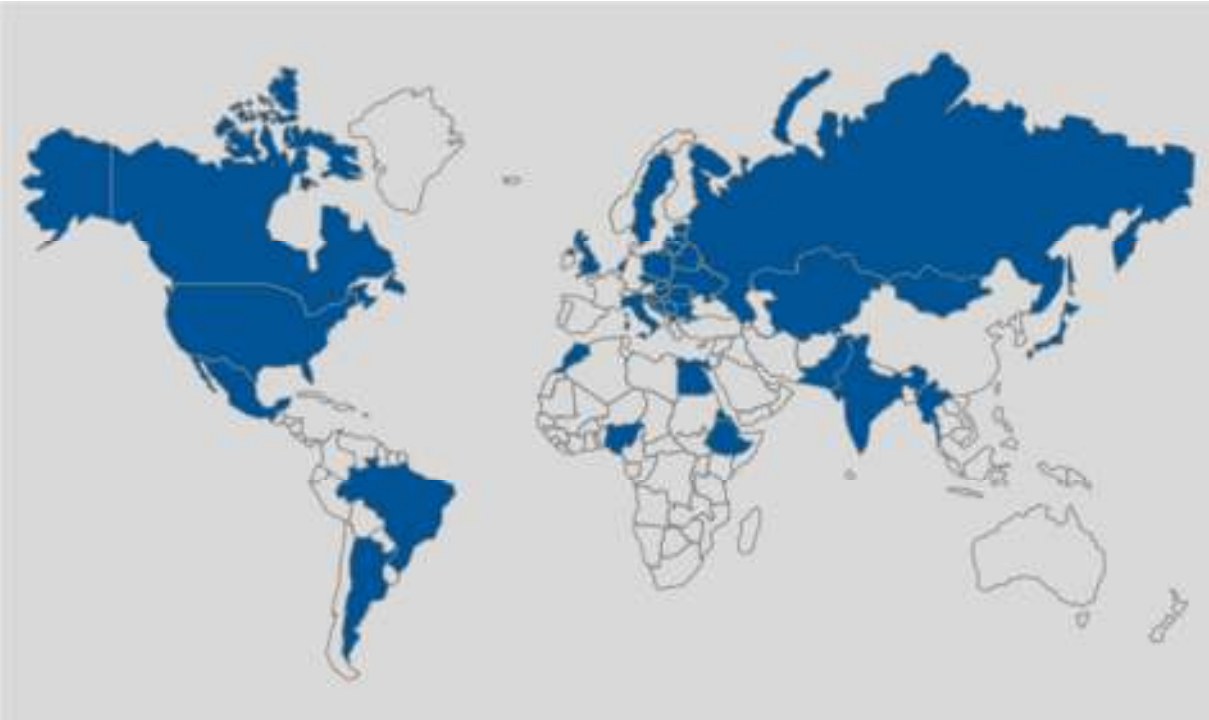
separation decision that have echoed through the decades. Some have been positive echoes, such as the CWC, others not so positive, but had that pill not been swallowed the very idea of the BWC might not have come about.

The second element of the BWC's story to be recalled was that *To get from agreed text to entry into force required 'invisible' work.* Dr McLeish said that *Whether we are talking about the Geneva based discussions or work done in capitals, to get from the text being agreed to entry into force required enormous amounts of work. I have termed this work 'invisible' because it is often overlooked or at least under-acknowledged in history sometimes simply because it is not known about until much later. Between September 1971 and March 1975 most of this invisible work would have been done in capitals. In the UK for example, the country that regarded itself as the creator of the BWC, the amount of work that was required to align the views of different government departments, to bring them on board with the idea of a ban and then to have each of the departments understand their responsibilities was extremely significant. And after all that had been done, one final burst of energy was required to complete the ratification process.*

Dr McLeish then recalled the third element that *The BWC was not a typical treaty.* She noted that: *the negotiation record clearly tells also of the active participation, of one form or another and to one extent or another, by a host of countries. This map, shown with current geographical borders, identifies those countries that are present in the records as having participated in the BWC's negotiation process.*

She added that *every member of the CCD contributed in some way to what became the BWC. The shaping of the treaty was therefore as global as was permitted by the institution from which it was born.*

Figure 1. Map identifying those countries that are present in the records as having participated in the BWC's negotiation process



Dr McLeish then concluded by saying that: *Turning our minds away from the past and towards the next forty years I hope that these three remembrances of the story of how we came to entry into force of the BWC will say something to us all, but I wish them to also speak of the work that needs to be done, and so my final thoughts are these:*

> *First: there was nothing inevitable about the BWC coming into being, and there is no inevitability to the BWC being sustained. It was then, and is now, the product of collective commitments and determined actions in support of biological disarmament.*
>
> *Second: to achieve entry into force, an enormous amount of effort and 'invisible' work was required. To sustain it now that it is in force requires just as much, perhaps even more, of this 'invisible' work to be done both here in Geneva and in capitals.*
>
> *And finally, the BWC was not and is not a typical treaty. Amongst other things the BWC was born from a process of multilateral diplomacy where each member of the negotiating body took part in shaping the end result. Success over the next 40 years will require continued multilateral efforts, but increasingly it will also require new or renewed engagement with non-state actors.*

Copies were also provided of a Briefing Note entitled *Where Did The Biological Weapons Convention Come From? Indicative Timeline and Key Events, 1925-75* which is available at http://www.ucl.ac.uk/sts/staff/balmer/cbw/events/WhereDidBWCComeFrom

This completed the formal session of the morning.

Interactive afternoon session

The interactive afternoon session was in two parts

14.00 **Making progress in strengthening the BWC**

Chair: Dr Jean Pascal Zanders, Centre on Conflict, Development and Peacebuilding

Speakers:

- Dr Ursula Jenal, Jenal & Partners Biosafety Consulting, *Biorisk Management: Awareness, Responsibility and Codes of Conduct*
- Dr Gary Burns, Independent Consultant, *Development of an ISO Laboratory Biorisk Management Standard - can ISO/AWI 35001 help in supporting the BTWC?*
- • Dr Piers Millett, BioSecure Ltd, *Science, Technology & the BWC: staying relevant for the next 40 years*

15.15 Coffee break

15.45 **Future challenges for strengthening the BWC**

Chair: Mr Jarmo Sareva, Director, United Nations Institute for Disarmament Research

Speakers:

- Mr Nicholas Sims, Emeritus Reader in International Relations, London School of Economics and Political Science, *What Future for Biological Disarmament?*
- Dr Gunnar Jeremias, Research Group for Biological Arms Control, *The future of confidence building in biological arms control*
- • Dr Iris Hunger, Robert Koch Institute, *A new international order for extraordinary public health risks? Norms, actors, modes of interaction*

17.00 – 18.00 **Reception**

The first session began with a presentation by **Dr Ursula Jenal of Jenal & Partners Biosafety Consulting of Rheinpfelden,** Switzerland entitled Biorisk Management: Awareness, Responsibility and Codes of Conduct. Dr Jenal began by recalling that in an article written for the Nonproliferation Review in 2011 she had urged that in *Strengthening Biosafety, Biosecurity and Biorisk Management* it was necessary to:

- *Raise awareness of dual-use issues in the context of promoting biosafety and bioethics;*
- *Develop training programs and organize appropriate knowledge transfer in biosafety and biosecurity;*
- *Establish specific functions and responsibilities with respect to the development of biorisk management in institutions (biosafety professionals);*
- *Recognize standardization and certification against a biorisk management standard as a major driving force of international implementation of biorisk management programs; and*
- *Support biosafety organizations in their role in advocating and assisting with the local development of biosafety and biosecurity practices.*

She then went on to remind everyone that biological agents were present everywhere and that:

Epidemiology	• 16% of deaths are caused by infectious diseases
Environment - plant and animal pests - invasive species	• Global Trade • Global Warming
Biotechnology - research - diagnostics - production	• Advancement of science and technology • Dual use potential
Bioterrorism Biowarfare	• < 1% of death have been caused by terrorist attacks, but huge potential

The three pillars of biorisk management were then set out as being:

- *Dual-use risk and management of biological material*
- *Biosafety (Measures against unintended misuse)*
- *Biosecurity (Measures against intentional misuse misuse)*

with the elements of the system being *Guidelines, regulations, technical standards and codes of conduct* involving *WHO, BTWC, CEN, OECD, FAO, OIE and ISO.*

On International Standards she recalled the following:

- ***Scientific and technical guidance for biorisk management***
  - *WHO biosafety manual and laboratory biosecurity guidance and many other specific technical guidance documents*
- ***Guidance on designing a biorisk management system***
  - *CEN Workshop Agreement CWA15793:2011, Laboratory Biorisk Management*

    - *CEN Workshop Agreement CWA16393:2012, Guidelines for the Implementation of CWA15793:2011*
- ***Guidance on competence training for biorisk management professionals***
    - *CEN Workshop Agreement CWA16335:2008, Biosafety Professional (BSP) Competence*

She went on to note in regard to international standards that:

- *Discrepancies related to the status of biosafety and biosecurity regulation between regions of the world*
- *Strong interest in international standards to counteract regional regulatory uncertainty.*
- *Biorisk management to cover biosafety first with subsequent integration of biosecurity.*
- *Variation between effective programs and very limited programs in academia, the public sectors as well as in smaller private companies.*
- *International companies with harmonized programs*

Dr. Jenal then pointed out that these concerns were shared by Biosafety Associations from around the world and specifically in: Argentina, Afghanistan, Asia Pacific, Australia & New Zealand, Africa, Bangladesh, Brazil, Cameroon, Cote d'Ivoire, Central Asia and Caucasus, Europe, Egypt, Georgia, India, Indonesia, Japan, Kenya, South Korea, Malaysia, Morocco, Mexico, Pakistan, Philippines, Singapore, South Africa, Taiwan, Thailand and the USA.

She then went to outline the scope of synthetic biology and presented a proposal for regulation and a code of conduct put forward in the EASAC European Academies Science Advisory Council, Policy Report 13 (2010):

- ***Biosafety***
    - *GMO regulation adequate as long as SynBio remains an extension of genetic engineering,*
    - *Re-consideration in case of significant advances in modifying the basic chemistry of DNA/RNA,*
    - *Synthetic organism with novel nucleotides (XNA): adopt high safety requirements.*
- ***Biosecurity***
    - *Global code of conduct for DNA sequences screening, customer screening*
    - *International database of DNA sequence and function: act on suspicious requests*
    - *Construct institutional codes of conduct.*
- ***Open information and intellectual property rights***
    - *Examine alternative models for owning and sharing information*

She concluded by emphasizing the need for a continuing dialogue about the dual-use issue between the Science community, the Safety community, the Security community and the Regulator.

The second presentation was then given by **Dr Gary Burns,** an Independent Consultant, who is Convenor of ISO TC 212 WG5, entitled *Development of an ISO Laboratory Biorisk Management Standard - can ISO/AWI 35001 help in supporting the BTWC?* Dr. Burns began by considering the current CEN [European Committee for Standardization] Workshop Agreements (CWAs) on Biorisk Management and pointing out that:

- *CWAs are documents agreed by participating individual experts*
- *Developed by the user community for the user community*
- *Contributors international, not limited to Europe*
- *Published by CEN* [European Committee for Standardization], *does not have the status of a Standard*
- *Has limited lifespan (usually 3 years)*
- *CWA* [CEN Workshop Agreement] *15793 was published in 2008, revised 2011, due to lapse 2014; needs to be replaced by a Standard*
- *CWA* [CEN Workshop Agreement] *16393 published in 2012 – Guidelines for implementing CWA 15793*

He then pointed out that CWA [CEN Workshop Agreement] 15793/16393:

- *Addresses both biosafety and biosecurity – "Biorisk"*
- *Compatible with management system standards such as ISO* [International Organization for Standardization] *9001/ 14001 and OSHAS* [Occupational Health and Safety Management Systems] *18001*
- *Performance-orientated and risk-based*
- *Contains definitions, requirements and guidance*
- *Broad scope – controls to mirror the threat/risk associated with the activity undertaken.*

The Key Beneficiaries and Stakeholders are as follows:

- ***Stakeholders***
  - *Primary*
    - *Research Institutes*
    - *Clinical Laboratories*
    - *Biotech/Pharma Industries*
    - *Universities*
  - *Secondary*
    - *European Commission*
    - *American, European and Asia Pacific Biosafety Association*
    - *Standards organizations*
    - *WHO* [World Health Organization]
    - *Funding agencies*
    - *Regulators*
- ***Beneficiaries***
  - *General public and the environment*

He then gave some examples of the use by WHO [World Health Organization] and also the US Federal Register of the CEN/CWA to demonstrate their utility in international applications.

Dr. Burns then went on to address why an ISO [International Organization for Standardization] Standard is being developed pointing out that:

- *CWA 15793 was due to expire in 2014*
- *ISO consensus process has worldwide recognition and credibility*
- *ISO international standard would ensure continuity and preserve CWA principles.*

He then addressed why this was being taken forward by ISO TC 212 as this was:

- *Best fit, supported by*
  - *CWA stakeholders*
  - *ISO Central Secretariat*
- *Applicable to Healthcare laboratories*
- *Applicable to IVD* [in-vitro diagnostic] *development and facilities*
- *ISO 15190* [Medical laboratories – Requirements for safety] *needs updating – CWA 15793 content would be helpful*
- *Increase in expert & stakeholder contributions*

Dr. Burns then addressed ISO/AWI 35001 Laboratory biorisk management – Requirements noting that:

- *A New Work Item Proposal (NWIP) was drafted in 2014*
- *Voting closed in September – the NWIP was approved by a 17-2 margin with 19 members abstaining. New project ISO/NP 35001 registered in the work programme of ISO/TC 212* [Clinical laboratory testing and in vitro diagnostic test systems]
- *Liaisons established and experts nominated to new planning group (WG 5)* [Laboratory biorisk management] *including members of TC 34 (Food Products) and TC 276 (Biotechnology)*
- *Inaugural meeting* [of WG 5] *held in London 13 – 14 January* [2015]
  - *Reviewed draft Design Specification*
  - *Drafting team appointed*
- *Timeline for Draft International Standard late 2016*

He then outlined how the ISO Working Group functions pointing out that one expert is one voice and that experts function in a personal capacity and contribute to the work on the basis of their own expertise. He then went on to say how to get involved in the work of the ISO:

- *Through your national standards body or liaison organizations*
- *Many regional and international biosafety organizations have already been accepted as liaisons to the ISO WG and have appointed experts to participate in developing the standard.*

Dr. Burns then went on to address whether the ISO WG activity had a role in supporting the BTWC. He recalled that at the 2009 Meeting of the States Parties to the BTWC, the United States Under Secretary of State Ellen Tauscher had said:

> *'The BWC should provide an international forum for advancing the dialogues in pathogen security and laboratory biosafety practices and for promoting legislation, guidelines and standards through cooperation and partnership …… We must work here to develop* ***international standards*** *and practices for these important elements that advance our mutual security.'*

He also recalled that, on the initiative of the Belgian delegation, the Final Declaration of the Seventh Review Conference in BWC/CONF.VII/7 in regard to Article IV included the following:

> *13. The Conference notes the value of national implementation measures, as appropriate, in accordance with the constitutional process of each State Party, to:*
>
> > *(a) implement voluntary management standards on biosafety and biosecurity; …*

Dr. Burns concluded by noting that:

> *• ISO Standards are internationally recognized and widely adopted by industry*
>
> *• In the absence of a formal verification protocol could an ISO Biorisk Management Standard have a role in confidence building?*

The third presentation was then given by **Dr Piers Millett, of BioSecure Ltd, Geneva, Switzerland**, entitled Science, Technology & the BWC: *staying relevant for the next 40 years.* In this he noted that the UN Secretary-General in his April 2006 report entitled *Uniting against terrorism* had said that:

> *The approach to fighting the abuse of biotechnology for terrorist purposes will have more in common with measures against cybercrime than with the work to control nuclear proliferation.*

Dr. Millett went on to say that this statement and other similar ones are frequently recalled when meetings are held to address how to deal with the potential that the life sciences or biotechnology might be misused to cause deliberate harm. He went on to add that:

> *More broadly, because of the nature of biotechnology, measures developed to limit the spread of nuclear weapons are not a good fit. Nuclear weapons technology includes many single use items (no one has been able to give me a peaceful use for Uranium enriched beyond about 80%); biotechnology, by contrast, is almost all dual use. Nuclear technology is in the hands of, or very closely regulated by, governments. There are also comparatively few users and they are focused at a limited number of facilities. Biotechnology is in the hands of*

the private sector - and increasingly in the hands of the public directly. It is used by wide variety of actors, in a distributed manner.

He went on to make a further point about the use of control lists – which are a core element of efforts to prevent technology being used as a weapon – by saying that:

By identifying a specific set of items or technologies that pose specific risks of being misused to cause deliberate harm, countries attempt to limit the impact of controls to only those items they believe to pose the greatest risk. Such lists are then used at the international level to control transfers of certain items and at the national level to regulate access to them. In a biological context, they all include lists of biological agents, described by their taxonomic name. They are in use throughout the world (from China to the United States, and Europe to India) and are under development in many other countries (for example, Malaysia reported to the 2014 BWC Meeting of States Parties on its efforts to develop such a list).

Dr. Millett pointed out that:

Taxonomy-based lists cover things that do not need to be covered and miss some of those that need to be. Basing control lists on an agent's name (or taxonomy) is a mismatch to risk. The risk comes from a combination of biological properties. Agents are on these lists because, for example, they produce a toxin, have particularly environmental properties, or the ability to infect certain cell types, etc.. It has long been established that biological function is not a correlate of taxonomy. There are agents that share the same name but do not share functional properties. Equally there are also related species with different names that have functionally identical properties. In 2006, Richard Okinaka et al demonstrated all this for the causative organism for anthrax.

He then went on to add that:

Further, taxonomy-based lists make it difficult to anticipate the changing technology landscape. They tend to be reactive. For example, none of the control lists mentioned in this post cover the potential application of genome editing technology and gene drives recently highlighted as being potentially able to make all mosquitos resistant to the malarial parasite in a single season. This technology was covered in science and technologies reviews under the BWC (for example, the CRISPR/CAS9 technology was discussed by the ISU and Switzerland and Gene drives were covered by Professor Ken Oye in a guest presentation.) In this example, none of the parts used came from a listed pathogen but in theory, the same tools could be used to very rapidly increase the spread of vector borne diseases, massively increasing the impact of a biological attack.

He went on to say that three trends in the development of science and technology will compound difficulties in using taxonomy-based approaches:

Distribution of technology

Many countries around the world are investing heavily in biotechnology. For example, Malaysia reported to the BWC last December that it envisages that by 2020 the bioeconomy "will employ up to 160,000 people, contributing to 5% of the nation's GDP, and is expected to generate RM248 billion in revenue". Biology will be a major manufacturing technology. Its spread around the world is going to be rapid.

Distribution of users

Science is being done in places outside of traditional settings (for example in community labs like Genspace in New York). Some of these spaces have little history of regulatory compliance. Other users are conceptually opposed to government oversight. Some users, such as bioincubators, require streamlined oversight if they are to deliver their raison d'etre. Both types of user are increasingly global, for example with DIYBio labs in Asia, and bioincubators in the UAE.

Distribution of process

Developing the bioeconomy is an international exercise. For example, the development of semi-synthetic artemisinin, as well as other uses of the platform to produce biofuels and fine chemicals illustrates that it is increasingly common that demand in one country results in research in a second, that is scaled up using commercial partners in a third, before being produced in a fourth country.

This led Dr. Millett to conclude that:

it is time for efforts to deal with the potential for biotechnology to be used to make weapons to start moving past taxonomy-based approaches and exploring how to target directly those biological properties that cause the concerns. Whilst taxonomy-based approaches have served us well whilst we have had no real alternative, that will not be the case for long. There is a need for research and development to speed up efforts to make function-based screening a reality. It is one key to being able to unlock the full potential of biology as a manufacturing technology by allowing more flexible, anticipatory and scalable efforts to safeguard the bioeconomy.

In the short time for **discussion** that followed these three presentations, queries were put to Dr. Piers Millett. In reply to a query about the General Purpose Criterion, Dr. Millett said that everyone continues to reaffirm the General Purpose Criterion; the challenge comes in ensuring its effective implementation. In reply to a query about the structure of the relevant industries, and consequently the implications for monitoring science and technology, he said that the relevant industries are largely in the private sector and are much less government-controlled than the nuclear industry. Another query as to whether science and technology review under the BWC should be more structured was given the answer that it should be more structured. A further query related to the value of revisiting a working paper submitted to the Meeting of States Parties in December

2013 (BWC/MSP/2013/WP.10 entitled *Addressing Modern Threats in the Biological Weapons Convention: A food for thought paper* submitted by Australia, Canada, Chile, Colombia, Czech Republic, Finland, Ghana, Lithuania, Netherlands, Nigeria, Republic of Korea and Sweden) and developing the themes in this paper further in the lead up to the Eighth Review Conference. Dr Millett said this would be particularly valuable, especially if it was done in a manner so as to enable progress to be made regardless of the outcome or decisions of the Review Conference.

The second part of the afternoon session was chaired by Mr Jarmo Sareva, Director, United Nations Institute for Disarmament Research. The first presentation in the second part was made by **Mr Nicholas Sims, Emeritus Reader in International Relations, London School of Economics and Political Science,** entitled *What Future for Biological Disarmament?*

Mr. Nicholas Sims began by saying that:

> *In posing the question this way I am making two points. First, the BWC is a disarmament treaty before anything else. It has other functions, certainly, but its disarmament function is primordial. Second, it is not guaranteed a bright future. It could find itself trapped in an acceptance of immobility, an empty ritual exchange of predictable arguments but no forward movement. It risks becoming marginalised as the world moves on. Let us all resolve to make sure that does not happen.*

He then went on to add that:

> *I am conscious of a strong sense of obligation to the people who brought the BWC into being. … We owe it to the pioneers to reinvigorate this disarmament treaty and steer it towards a brighter future. Some of us have been trying to do this for a long time. We used to pursue this goal under the name of clarification, then reinforcement, then strengthening. Whichever word we use, the goal is the same. It is to make the BWC work better, to build on its strengths and remedy its main weakness. I will identify its main weakness in a few minutes, but first let us examine its strengths.*

The strengths of the BWC were identified as follows:

> *The strengths of the BWC lie in its comprehensive scope and its essential logic. The deliberate infliction of disease, whatever the disease, is an affront to humanity which almost all governments have renounced, comprehensively, as even a distant military option. They are saying "We don't have BW but we could be vulnerable to BW attack by other people so we want to be sure that no one else has BW either." That is what I mean by the essential logic. I first heard it expressed in 1969 when the UK initiative which led to the BWC was gathering support. It struck me as good common sense then and it still does now. It required those who at the time still possessed BW stockpiles to renounce and destroy them and everyone else to make their renunciation permanent. What the BWC does is fix*

that renunciation of BW in a lasting treaty relationship of legal equality. In that treaty relationship common sense further requires the parties to reassure one another that they are honouring their obligations; and to find ways of demonstrating that fact. They owe that much to one another as treaty partners. Some would say they owe that to humanity as a whole.

Nicholas Sims then went on to emphasise the comprehensiveness of the Convention by saying:

In 1986 there was some worry lest there were some novel micro-organisms or toxins or bioregulators not covered by the legal scope of the Convention. But this worry was misplaced. Once the comprehensiveness of the BWC's legal scope was reasserted, the concern shifted back – and it remains rightly a concern – to whether there might occur changes in the balance of incentives and disincentives for a State Party to break out of the BWC's treaty constraints or for a non-party to attack. That is one reason why relevant developments in science and technology (S&T) require close and continuous scrutiny. These S&T reviews, like regular assessments of the Convention's health more generally, are made easier by its comprehensive scope and the legal equality of obligations on all its treaty partners.

He then addressed the main weakness saying:

The main weakness of the BWC lies: where? Not so much, now, in its definitional imprecision or lack of universality or even its famous institutional deficit, because all of those are, albeit very slowly, on their way to being alleviated. No, it lies in the area of reassurance. That is the perennial gap at the heart of the BWC. It flows from the failure of the States Parties, building on the text as it stands, to derive a common understanding as to how to reassure one another and demonstrate that their shared commitment to biological disarmament governs what they are doing and what they allow to be done. Without it, doubts and suspicions persist and erode the credibility of the Convention as they stay unresolved.

Some attempts have been made to remedy this weakness. Individual States Parties have come up with concepts of an accountability framework, or peer review, or compliance assessment, or transparency measures, or a compliance framework, or fuller use of Article V. A few of these concepts have developed into joint initiatives. These initiatives are to be commended and they invite emulation. None of them makes an exclusive claim. And none of them on its own bridges the gap. But instead of calling them distractions their critics should come up with better initiatives of their own. At some stage there may be a collective decision on how to integrate these patchwork initiatives into the BWC treaty regime. But first they need to be encouraged and developed, and this can best be done in a conceptual discussion of compliance, what it is and how it can be demonstrated. Such a conceptual discussion of compliance needs to be open-ended, without preconditions. I do urge the States Parties at the Eighth Review Conference next year to revive this proposal and give its implementation high priority and a serious

allocation of resources in shaping the constructive evolution of the BWC.

He pointed out that the Seventh Review Conference in 2011 had failed to adopt several valuable and worthwhile proposals that still remain relevant to the Convention today. saying:

> *This is only one of several proposals which the Seventh Review Conference failed to adopt but are just as relevant now and challenge the Eighth Review Conference to shape a better future for biological disarmament. In this category I would also put the many good ideas for reshaping the CBMs into a set of measures that really do build confidence, a modest expansion of the Implementation Support Unit to match a realistic mandate, an Open-Ended Working Group to improve on the present arrangement for review of developments in S&T, and the restructuring of the whole intersessional process to make it robust and effective. If time allowed I could add more. We all have our wish-lists. But nothing is more important than the effort to find solutions to the problem of reassurance: to develop a common understanding and effective action to remedy this main weakness of the Convention.*

Nicholas Sims then looked back to the entry into force ceremony in 1975 when the UK representative had said: "From today over 40 states are parties to this Convention, and have both renounced this entire class of weapons **and undertaken to prevent their future development by appropriate measures**." [emphasis added]. He then went on to say:

> *That's the point. What are the "appropriate measures" to prevent BW over the next 40 years?*
>
> *There has long been a fruitless argument over whether states or non-state actors present the greater risk. My answer is: no one knows. Surely everything we do to reinforce the BWC must be designed to guard against any BW threat, from whatever source it may come. That is the other side of the comprehensive scope and essential logic that I see as the strengths of the BWC.*
>
> *Only constant vigilance will suffice. And it follows from this that renunciation of BW is only the beginning. The Article IV obligation to prohibit and prevent implies continual reinforcement of the defences against BW. Renunciation and prohibition on their own are not enough. The "appropriate measures" applied in both national and international implementation of the BWC must always be measured against the more stringent criterion of prevention.*

He then went on to provide some examples of what is required to be done, namely:

> *Let me give a few examples. If governments really value the BWC they will be readier to restrict risky gain-of-function (GOF) experiments on dangerous pathogens and to regulate all dual-use research of concern (DURC). GOF and DURC are not banned by the BWC, but the BWC can only retain credibility if there is a parallel regime of research with an emphasis on comprehensive risk analysis*

and the precautionary principle. National implementation and codes of conduct must cover all government programmes so there are no suspicions of rogue agencies or individuals taking an unhealthy interest in BW. Everyone must share their latest knowledge for the S&T reviews crucial to the application of the BWC remaining up to date. And there should be a renewed emphasis on international cooperation for the prevention of disease – the only "peaceful purposes" application of scientific discoveries in biology singled out for mention in Article X – as well as on capacity-building and planning for emergency responses to outbreaks of disease when they occur. Such precautionary approaches should increase the disincentives to BW, which is why they have attracted attention under Article VII, as well as being evidently worth pursuing in their own right.

These are just a few examples. To identify and then apply "appropriate measures" and build them into the practice of every State Party, responding to fresh perceptions of BW threat and S&T developments as they emerge, offers a full agenda for the next 40 years.

Nicholas Sims then concluded by setting out what he considered to be his preferred trajectory for the BWC as a distinct treaty regime over the next 40 years, *assuming its States Parties can overcome the temptation to fall back on what I called an acceptance of immobility, an empty ritual exchange of predictable statements*. This preferred trajectory has three elements:

(1) that the BWC should pursue its own programme for the reinforcement of biological disarmament, by developing "appropriate measures" and applying them;

(2) that it should steer towards a functional, not legal, convergence with the CWC, especially through close cooperation in the conduct of S&T reviews, to the benefit of both as distinct treaty regimes;

(3) that it should finally fit into the wider universe of disarmament treaties so long awaited, when the gaping void in that universe is eventually filled by an NWC to complement the BWC and CWC. From where I stand nuclear weapons are the glaring anomaly in the disarmament enterprise, and nuclear disarmament must be pursued by all governments with reinvigorated commitment.

He added that:

there is much that we unofficial 'friends of the Convention' can do: to know the history and maintain a long-term perspective, to report and analyse the current diplomacy of the BWC meeting by meeting, to feed in ideas and propose acceptable language, to track the textual intricacies of the intersessional process (hard work, I assure you), and always to encourage the States Parties to move the BWC forward. For above all we look to the States Parties to make the BWC work better.

The second presentation in the second part of the afternoon session was made by **Dr Gunnar Jeremias, Research Group for Biological Arms Control, University of Hamburg** entitled *The future of confidence building in biological arms control.*

Dr Gunnar Jeremias said that he was going to outline possible developments in confidence building in the BWC. To do this he would introduce the term confidence and its sources, and would then mainly concentrate on transparency as one of these sources. Finally, he would consider the possible involvement of new actors and mechanisms in confidence building.

He started by saying that:

> *Confidence is a term that is used widely whether in regard to private arrangements, and then in wider society and economic contexts – such as contracts – as well as in the field of international relations. The main function of international agreements is, in addition to addressing particular problems, the fostering of mutual trust in compliance with treaty obligations. Obviously there is a central role for information, but it will not be possible to access all relevant information, nor is the judgment of such information – the decision whether it is sufficient to build confidence – a scientific exercise. This is particularly evident when many parties have different understandings of compliance. Accordingly confidence can hardly be easily measured, but will be perceived as gradually changing when trust in compliant behaviour grows or decreases.*
>
> *Seeking a view about confidence in the BWC regime basically would need to assess confidence in each member state. On a general level it can be stated that whenever there is an arrangement, a contract or an international treaty there was obviously a ground level of confidence when it was agreed. In addition, the stakeholders will have seen the need for a mutual system to enhance confidence in compliance.*
>
> *Confidence is, however, not only fostered by knowledge enabling assessments to be made about implementation of the* ***prohibitive*** *obligations, but also by factors that have no direct link with the technical requirements of arms control. Among these factors are the perception that the parties are being subject to a just treatment and the perception that those parties with the greatest BW-relevant capacities are really committed to the treaty obligations.*

He then went on to add that:

> *If the success of a treaty is an indicator for the level of confidence, we might have a satisfactory level of confidence in the BWC. There were offensive BW programmes before the BWC came into force; and we have also seen offensive programmes after the BWC came into force, among them a very large one. But today we have not for the last 25 years seen a BW programme. …*
>
> *That BW programmes have seldom been developed after the entry into force of the BWC might be a result of the limited military value of BW (we still don't know much about the scenarios in which the Soviet bio weapons could have been used). Today there are reasons to believe that there are no offensive programmes*

anywhere in the world. It is certainly important to know about military defence programmes, but it is also true that few states have the means or the interest to run offensive programmes. Hence, biological arms control is today, as far as we know, preventive arms control. However, the view that there are no BW programmes today is based on the analysis of such information that is available to us.

Assuming the absence of prohibited military activities, confidence building in regard to the BWC does tend to concentrate on civil academic or commercial activities with dual-use potential and the identification of increasing misuse potentials leading to questions about applications and actors (this touches the debate about dual-use research of concern (DURC) that others have touched upon in more detail earlier today). This widespread dual-use potential and the involvement of many civil facilities is a particular characteristic of the BWC, which is probably more distinctive here than in any other arms control field. At least for a number of years, if not back to the early 1970s, the potential for misuse of civil technology and civil research is in the focus, even if the buzzwords biosafety and biosecurity popped up only in the recent years. The trend today that technology diffusion is increasingly from civil innovation systems to the military sphere has been known in the bio field for many years.

Besides the fast development of the basic technology, its methods and scientific capabilities, the spread of life science capacities to ever more states is a major change since the early 1970s. Back then only relatively few states in northern America, Western and Eastern Europe and in the USSR had relevant capacities in biotechnology. Today biotechnology with its imminent and widely spread dual-use potential is a global multi-billion dollar business, still growing fast in many places – and still undeveloped in many others. This spread might be cause for concern from an arms control perspective – however, its amalgamation with economic interests cannot be ignored

Back in the 1970s, with a much smaller geographical spread of biotechnology and with the bloc confrontation of the Cold War, one of the obligations of the BWC was possibly less central than it appears today: the obligation for technical cooperation under Article X. However, there cannot be confidence between states unless there is a shared perception of a just treatment of all members as partners with equal chances in the indigenous development of one of the most important industries of our time. For the development of confidence on this provision, information again plays a central role, even though the questions raised in this context differ from those concerning Articles I and III. But in this area as well, transparency is quintessential in helping to base the debate on empirical data. The fact that there are problems with transparency in the BWC on different aspects is not a secret. Given that transparency is the main source for confidence (in regard to both the prohibitive and obligatory provisions of the treaty) the need to build confidence is mainly concerned with the question of how to enhance transparency.

Dr. Jeremias then went on to address the types and sources of transparency.

Types of transparency can be determined by its different ranges, namely whether

greater or smaller groups of actors have access to the information in a transparency system. Starting with the greatest possible access, ***public transparency*** *reaches the public as a whole, while in* ***inter-state transparency systems*** *only the parties to a treaty are provided with information. The CBM mechanism is an example of such a system (although some states make their CBMs transparent for the public sphere). I don't want to talk much today about CBMs. We all know that the number of states participating in this mechanism is not satisfactory. I hope, however, that during this talk it will become clear why they should play a central role in the BWC's future. A third type of transparency in addition to public and inter-state transparency, is* ***single-actor transparency*** *in which exclusive access to information is given by typically a state (a single-actor) when a particular activity is being made transparent for (and only for) a single recipient.*

Since transparency is (or should be) a practical exercise, it is useful to concentrate on the different technical means that are applied in the three different transparency systems. I propose to differentiate between national technical means (NTMs), international technical means (ITMs), and public technical means (PTMs).

First, ***NTMs*** *are technical means under the exclusive ownership of single states, hence the gathered information is exclusively with that state. Their use leads to the single actor type of transparency.*

Second, ***ITMs*** *(such as the CBM mechanism in the BWC regime) are those technical means that States Parties allow treaty organisations to use.*

Third, ***PTMs*** *are the technical means that rely on open sources and are to release the gathered information to the public sphere. Their range has grown significantly during recent years. The digital revolution has enabled access to a broad range of information. For example:*

- *Real time epidemiologic information*
- *Information on biotechnological capacities, products, and research projects*
- *Free (including commercial) satellite images – here is also a link to the reconnaissance revolution in the last 20 years*
- *Patent databases*
- *Trade data (dual-use goods and biotech end-products)*
- *Scientific publications (PubMed and other databases)*
- *Digital meta information about companies and research facilities*
- *Exchanges on social media*

And this list can be expanded further

- *And in addition to using this universe of existing data that can be identified and filtered from Big Data, it is also possible that innovative ways to measure environmental data with newly developed technology can contribute to transparency.*

Although the use of these PTMs produces no proof, they will enable actors to ask well based and informed questions.

Three example are given below of questions that arose while working on our current project on the identification of compliance relevant parameters that can be accessed via open sources:

- *Why are the security perimeters of a certain facility with known dual-use character being modernised (information accessed by google.earth images)?*
- *Why do we see certain relevant research activities at institutes that are linked to the military information accessed by PubMed or turn up in google and twitter?*
- *How can the consumption of unusual amounts of biological growth media in a county be explained (information accessed via UN COMTRADE database)?*

Such transparency measures are not verification, but they provide insight into what is actually being done in the state.

Dr. Jeremias then went on to say that:

In an ideal world the information sources mentioned above would be used to the widest possible extent as ITMs to contribute to a verification mechanism. In the BWC, however, we have to realise that ITMs will not be used in this way in the foreseeable future. Since confidence building by enhancing transparency is quintessential for the function of the regime, other actors will have to play the role that in other cases is allocated to International Organisations.

I would like to briefly come back to a more theoretical reasoning of transparency to answer the question as to which actors could or should do so. Transparency can also be described by looking at the direction of the distribution of information: Information can be provided actively by states or biotech stakeholders, ***(active transparency)*** *or information can be extracted out of the (increasingly) electronic/digital universe. This can be called* ***passive transparency****.*

He then spoke about active transparency and passive transparency:

Active transparency

As parties, states would be at the forefront of stakeholders who would be asked to actively provide information to enhance confidence. In the BWC the related mechanism are the CBMs. But also other actors can contribute to active transparency building. For a look into the future it might be helpful to look into the roots of the regime: as far back as 1964 the Pugwash CBW-group had initiated a voluntary inspection mechanism. Participants were commercial and academic facilities from eastern and western European facilities (although only one larger non-western biotech production facility in Yugoslavia was involved). The project was later continued by the then newly founded Stockholm International Peace

Research Institute (SIPRI). The aim of the overall project was to prove that on-site verification is possible without endangering commercial secrets. A lesson that was learned but seems to have been forgotten is that commercial actors can get involved in active transparency building, also on a voluntary basis.

Passive transparency

The passive extraction of relevant information is also not a new idea – whether in other contexts or in the BWC. When the BWC was negotiated in the early 1970s, SIPRI was also innovative in the development of passive transparency tools, and demonstrated the value of Open Source information back then. By the application of innovative investigative tools the SIPRI researchers already showed that even non-governmental actors could gather relevant information. In 1971 the mechanism was meant as proof that these methods could contribute to a verification mechanism then being discussed.

Dr. Jeremias then went on to conclude by saying that:

And indeed, when it came to the question which would be the best confidence building mechanism, the development of a formal verification mechanism based on on-site inspections was for many years seen as the silver bullet – and possibly, it still is. But there is obviously the need to identify alternatives.

In this context it has to be stated that 40 years after SIPRI's engagement, the possibilities to enhance passive transparency by the use of open source information has grown exponentially. Some states may have the capacities to use such information in Open-Source Intelligence (OSINT) procedures, but many others will not be able to do so on a global scale. This is the reason why international organisations are frequently created for information gathering. This is unlikely to happen with the BWC (please surprise me at the Review Conference).

Civil society actors in a best case scenario should be a corrective and/or undertake parallel independent control activities. NGOs could be watchdogs, but not the only actors in the production of transparency. However, there are also cases, as in the landmines and cluster munition regimes, where in the absence of a formal verification system civil society actors do what has been called "Quasi verification" by a number of States Parties. In biological arms control they might also be able (or be enabled) to play a more central role, so long as no information gathering system has been institutionalised.

The current development of capacities in applying PTMs in passive transparency building might be a "technical" environment that fosters new formats and civil society monitoring networks. With the idea that relevant information will contribute to building confidence in a regime regardless of which type of actor gathered it, NGOs could play a greater role in confidence building in biological arms control.

However, this also means that states should do as much as they can to demonstrate their commitment to the treaty provisions. And this means, first of all, better participation in the CBM mechanism. May I add that I don't think that any state would lose anything if its CBM submission is made public.

If every actor – state, private, and civil society – improves confidence by enhancing transparency through the use of the specific means at its disposal and thereby contributes to an open, evidence-based demonstration of compliance, I am optimistic that biological arms control based on the BWC will remain successfully for at least another 40 years.

The third and final presentation in the second part of the afternoon session was made by **Dr Iris Hunger, Robert Koch Institute, Berlin**, entitled *A new international order for extraordinary public health risks? Norms, actors, modes of interaction.*

Dr. Iris Hunger began by saying that:

Health is central to any person's well-being. Everyone realizes this fact in times of illness. And forgets it easily if oneself and one's family and friends are in good health. Yet health is very unequally distributed – globally as well as within societies. For some, it is increasingly a life style issue – health not any longer being about surviving diseases but about increasing the quality of life and healthy life span. Others, however, still die of preventable diseases at an early age and do not have access to adequate health services nor sufficient support during child birth.

She then went on to say that:

But it is not just individual humans' health and happiness that is affected. From an economic perspective, a high disease burden leads to loss of gross domestic product (GDP) at the national level and generally to reduced possibilities to develop individual human lives and society as a whole; it also may lead to social disruption, in particular when people in their reproductive years and economically most productive times are affected. While a number of communicable diseases – HIV/AIDS, tuberculosis, malaria – receive a lot of political attention, other communicable diseases – schistosomiasis, trypanosomiasis, leprosy – which are also causing significant health burdens are still neglected. Non-communicable diseases are even less on the political agenda, even though they are the major source of deaths almost everywhere on earth.

She also pointed out that:

One particularly challenging health threat are severe unusual disease outbreaks. These extraordinary public health events often are unusually large, unusually deadly or unusually difficult to contain and threaten health beyond the local level. Ebola is a case in point. The WHO declared it a public health emergency of international concern in August last year. There are many who believe that such extraordinary public health events will continue to be a major problem due to more frequent human contact, adaptation and change of disease causing agents, breakdown of public health capacities at various levels, change in human demography and behaviour, and economic development and land use patterns.

There are also fears that such disease outbreaks could be the unintended result of certain types of modern life science research, or caused by intentionally releasing pathogens.

Dr. Hunger then went on to say that:

Establishing stronger public health systems will contribute to preventing disease outbreaks and limiting their effects, whether the outbreaks are naturally occurring or are due to malevolent releases of pathogens. Indeed, from a public health perspective, the risk that pathogens will be released intentionally has simply joined a list of existing, but constantly changing, natural threats. While it is true that natural and intentional outbreaks will differ to a certain degree, not least in terms of legal ramifications, it is also true that in significant areas, the differences are likely to be small. These areas include detection (for example, through disease surveillance) and public health response measures that are not disease-specific (such as finding and interviewing patients, finding and eliminating the source, and instituting quarantine and hygiene precautions). After all, a disease outbreak is a disease outbreak, no matter how it starts. Strengthening public health systems globally would improve the health of people around the world, and would have the added benefit of increasing preparedness in the unlikely event of intentionally caused disease outbreaks.

She then added that:

The factors influencing public health are so numerous and so diverse – including social, economic, environmental, religious – that there can be no single international order to regulate it. Instead we need and to a certain degree already have a network of regional and issue-specific sub-orders. In such a network of sub-orders on global public health, the World Health Organization is the logical global coordinator, states need to be central actors, and civil society organisations are indispensable supporting actors. One small part of this network to improve global public health is the Biological Weapons Convention, whose 40th birthday we are celebrating today.

The BWC, fundamentally, is about preventing the most devious form of disease. It embodies a norm that is at least 40 years older than the BWC itself, the norm that human beings should not be subject to disease intentionally caused, should not be subject to biological warfare. This norm has survived the ups and downs of the BWC remarkably well, and we should make sure this continues for many decades to come. For this, it is important to refocus the BWC on what it is designed for: preventing biological warfare. The BWC is not a biosafety treaty, nor is it a development assistance or an education treaty. Equally it is not an anti-terrorism treaty or a disaster assistance treaty or an ethics council. It is a disarmament treaty and we need to enable it to comprehensively fulfil this, its main purpose.

Dr. Hunger went on to say in regard to the BWC that:

Two things are required in my view. First, we need to protect the norm against bioweapons by opposing any type of norm-harming activities. There should be

no talk of using pathogens to kill animals or plants or biological agents to destroy materials in military settings. States should exercise strong self-restraint in biodefence activities, in particular in regard to aerobiology and increasing weapons-suitable characteristics of pathogens such as stability in the environment or ability to evade diagnostics. Great care is also advisable in relation to research on mind-altering substances of biological origin. And we certainly do not want to discuss biological weapons as alternatives to nuclear weapons, as recently suggested in a well-known arms control journal.

Second, we need to come back seriously to the issue of verification. The lack of monitoring and verification measures is a major source of weakness in identifying and deterring bioweapons development efforts. The small number of activities in the life sciences that are prone to direct misuse for weapons development need to come under strong international oversight. What are these activities? Surprisingly, after years and years of discussion there is no agreement yet on the answer to this question. In the nuclear arena, enrichment can be prohibited or at least closely monitored; the same is true of work with e.g. sulphur mustards in the chemical arena. But nothing like this has been agreed upon in the biological area. Everyone understands the "dual-use dilemma" – the reality that certain techniques, data, information, and implicit and explicit knowledge (though they are developed, generated, and disseminated for the benefit of public health) could be misused for bioweapons development. But though governmental and nongovernmental experts have produced dozens of lists of "dangerous" activities or "dangerous" agents, none is generally accepted on an international level as guidance for control efforts. Even less agreed are the control measures themselves; one could think about continuous international on-site presence of observers, regular international project reviews, or international on-site inspections. An urgent task for parties to the Biological Weapons Convention is to develop and update a list of activities that ought to be conducted under international scrutiny. Likewise, it is urgent that parties to the treaty agree on procedures for international oversight of these activities. Such oversight is no unattainable fantasy – as illustrated by the international oversight procedures that have been established for smallpox research.

She concluded by saying that:

In concluding I would like to urge that we all realize the central issue that the BWC stands for: our common wish to prevent the addition of intentionally caused disease on a massive scale to the disease burden that is already upon us, locally and globally.

and wishing *the BWC not just a very happy birthday but many, very many, happy healthy returns.*

The interactive afternoon session continued for a further half-hour with questions to panel members and their answers. In this second **discussion** period questions were put to Dr Iris Hunger and Nicholas Sims**.**

A query about the funding of countermeasures to outbreaks of disease and whether more funding went into non-communicable diseases was answered by Dr Iris Hunger.

She pointed out that most of the infectious diseases that present a security threat are not a normal public health risk in Western countries, and consequently there is little incentive for pharmaceutical companies to invest in such medical countermeasures.

In reply to a query about the widening range of stakeholders in the BWC, Mr Nicholas Sims said that he took a traditional view of the treaty relationship: it is a treaty between States Parties, under which each State Party must perform its obligations, which include the '*prohibit and prevent'* obligation of Article IV. No matter how wide the range of stakeholders becomes, the responsibility still lies on each State Party to perform its obligations. The logic is simple but the implementation is more difficult. Hence the value of entities such as VERTIC (in which he declared his interest as a trustee) and other assistance-providers expertly equipped to help States Parties to develop and apply effective national implementation.

Another query related to how greater political attention could be given to the BWC without undesirable politicisation. Mr Sims agreed that it would be a good thing to have greater political attention given to the BWC if this could be done without politicising it. He recalled how relieved everyone had been at the First Review Conference to be able to get on quietly with constructive work on the BWC in the absence of what was then (in 1980) called '*megaphone diplomacy'*.

Mr Sims was also asked why the logic of "we're all better off without them" had produced a BWC but not an NWC. He recalled what an uphill task it had been through the 1970s and 1980s to steer the world towards a CWC because it had been so difficult to move most people from confidence in chemical deterrence to confidence in chemical disarmament. His hope was that eventually the same logic would come to be accepted with regard to nuclear disarmament too although he recognised that it was an uphill struggle to persuade governments.

Another query related to Mr Sims's criticism of the *'distractions'* argument, referring to those who had called compliance assessment, peer review, etc., 'distractions' instead of emulating them or improving on them. The questioner asked whether he would agree that NGOs and other *'friends of the Convention'* had been too quick to move away from pursuing the goal of a multilaterally-negotiated legally-binding verification protocol. Mr Sims said he did not agree, as he and others were genuinely puzzled by the *'distractions'* argument; they could not see why both proponents and opponents of such a protocol should not be able to pursue less ambitious measures together, as more immediately attainable. Such measures as compliance assessment, peer review, etc., could better be seen as steps on the way towards creating the conditions for negotiating a protocol, by those who favoured one, rather than as '*distractions*'.

A further question asked how measures such as compliance assessment and peer review, etc., could be drawn together to revive the proposed conceptual discussion of compliance. Mr Sims said he had two suggestions. First, to try even harder to get wide-ranging support for this among States Parties in different Groups between now and 2016, emphasising the importance of entering the conceptual discussion without preconditions or presuppositions, and noting that all ideas should be considered. And, second, to recast the discussion in terms of providing **reassurance** between States Parties.

This concluded the afternoon session which was then followed by a reception hosted by the United Kingdom in the Restaurant des Délégués, A Building, 8th Floor, Salon Genève.

Reflections

The morning session had about 100 present and the afternoon about 70 in the Council Chamber. Although the morning session was more formal and the afternoon interactive, as a session involving universities, industry and institutions which was required to be organized separately, the day as a whole successfully brought together a wide variety of stakeholders in the Convention who were all addressing the 40th anniversary of the entry into force of the Convention and how best to move forwards in the years to come. The ISU is to be commended for the effort that they put into gathering information on the ratification and entry into force in 1975 - including photos of US President Gerald Ford signing the instrument of ratification, of the ratification decree signed by Soviet President Nikolai Podgorny, and of UK Minister of State David Ennals, Soviet Ambassador Nikolai Lunkov and US chargé d'affaires Ronald Spiers at the London ceremony - and mounting them on display boards together with the text of the Convention in all six official languages and photos of Ambassadors James Leonard and Alexei Roshchin from when they led the US and Soviet delegations in the 1971 negotiations.

In considering the overall event, it was very helpful to hear the representatives of the three Depositaries set out their current perspectives and aspirations for the Convention which were usefully complemented by the perceptions of the President of the Sixth Review Conference and the insights from careful analysis of how entry into force was achieved. It was also valuable to be made aware of the developments internationally in regard to biosafety and biosecurity and how these are being brought into an international biorisk standard. It was equally important to be made aware of the rapid advances in science and technology and the need to find an effective way in which to address these in regard to the Convention. The need for a consolidated and comprehensive international response to outbreaks of disease, whether natural, accidental or deliberate, was particularly emphasised; as too was the vital necessity, in regard to all activities in the life sciences, for building confidence and providing reassurance to States Parties that these activities are all in full accordance with the obligations of the Convention.

As the Eighth Review Conference is fast approaching it is essential for all stakeholders to make the best use of the available time before then to prepare so as to enable the Review Conference to agree effective decisions to strengthen and improve the implementation of the Convention – and to benefit all who are at risk from outbreaks of disease in humans, animals or plants whether natural, accidental or deliberate.

It is particularly valuable for States Parties to work together to put forward their ideas in Working Papers and other initiatives that are widely sponsored and go beyond the existing Group boundaries. Several Working Papers in the last few years have shown – as might be expected – that many States Parties share common views on how best to move forward and effectively strengthen the implementation of the Convention.

Looking back over the past few years, it is evident that the Standing Agenda Item mechanism has been ineffective for addressing the advances of science and technology and that consideration should be given to establishing an Open-Ended Working Group

on science and technology that is to consider the implications of the advances in science and technology for the Convention and to agree appropriate steps to enhance the effective implementation of the Convention.

More generally, it has become evident that the intersessional process has lost impetus and needs to be significantly improved in order to perform a useful function for the Convention. It has provided limited opportunities for sharing information, but despite being allowed to record "conclusions or results" it has been prevented from realising its potential in that regard. In recent years it has notably failed to generate common understanding or effective action, and its meetings have become unproductive. If it is to be made robust and effective, it must be given a new and stronger mandate by the Eighth Review Conference. The historical origins of the intersessional process are increasingly distant and it ought no longer to be subject to constraints which were politically required in a very different context.

Any future work programme should allow greater flexibility in the handling of agenda items, with an emphasis on taking the Convention forward along lines foreshadowed by the Review Conference but not restricted to merely repeating the text of its final document, something which has hampered Meetings of Experts and of States Parties in recent years. To make this greater flexibility possible the Meeting of States Parties needs to be allowed to take decisions year by year, not least to adapt its work programme in the light of experience. The new mandate also needs to lift the outdated ban on negotiation and make it clear that the Meeting of States Parties has authority to agree substantive conclusions and recommendations year by year on the various agenda items, and not merely to report to the next Review Conference on its proceedings. A robust and effective intersessional process will also require changes in timetabling and resource allocation, with terms of reference that ensure greater differentiation of function between the Meeting of Experts and the Meeting of States Parties and any other task-oriented bodies that may be created such as the proposed Open-Ended Working Group on advances in science and technology. It will also benefit from greater continuity in leadership. But none of these improvements is likely to happen without a new and stronger mandate from the Eighth Review Conference for the next intersessional process.

In looking towards the future, it is important to be aware that a fresh look needs to be taken at the central issue of how best to reassure States Parties that activities are fully consistent with the obligations of the Convention. And in making progress in this respect, States Parties need to be aware that certain words have over the years acquired connotations that make them likely to be misunderstood. A particular example of such a word is "verification" and care also needs to be taken with the word "compliance". Yet another such word is "defence" as it is evident today that many if not all States Parties are engaged in activities to counter outbreaks of disease whether natural, accidental or deliberate and all such activities could be considered as "defence" – it is far better to avoid the word "defence" and instead refer to "activities to counter outbreaks of disease whether natural, accidental or deliberate."

The existing CBM process is a valuable step towards this goal. However, States Parties have not engaged in collective analysis of the resulting submissions and have consequently missed opportunities through collective analysis of gaining a better understanding of what the activities reported on encompass.

And, in addition, it is evident that an ISU consisting of three people is inadequate for an effective Convention in today's and tomorrow's world. It should be recalled that a modest enhancement of the ISU was all set to be agreed at the Seventh Review Conference when this failed because one State Party had failed to consider in advance the modest implications that such an increase would have had for that State's annual payments to the UN for the ISU.

However, looking back at the past forty years and towards the future as was done at the anniversary event in March 2015, it is evident that there is a full agenda ahead and that if the States Parties apply their energies to working through it constructively they can make real progress towards the effective implementation of a strengthened Convention, thereby better protecting all of us from the risks of outbreaks of disease however caused. If they do that, the future is bright.

HSP is an inter-university collaboration for research, communication and training in support of informed public policy towards chemical and biological weapons. The Program links research groups at Harvard University in the United States and the University of Sussex in the United Kingdom. It began formally in 1990, building on two decades of earlier collaboration between its founding co-directors.

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