



3rd BIOSAFETY & BIOSECURITY International Conference

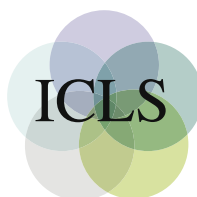
13 - 15 September, 2011 Amman - Jordan



Conference Report

Healthier & More Secure Communities
in the Middle East and North Africa

Organized by:





CONFERENCE REPORT — BBIC-2011

Healthier & More Secure Communities in the Middle East and North Africa

Affordable & Appropriate Biosafety and Biosecurity



3rd **BIOSAFETY
& BIOSECURITY**
International Conference

13 - 15 September, 2011 Amman - Jordan



HRH Prince El Hassan bin Talal
Patron of the Conference



HRH Princess Sumaya bint El Hassan
Host of the Conference



Dr Nisreen Al-Hmoud
BBIC President

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Executive Summary

The Third Biosafety and Biosecurity International Conference, held in Amman 13-15 September 2011 (BBIC-2011), met all of its objectives and has set the stage for an even more productive two years in the lead up to the fourth conference in 2013.

Specifically, participants committed to a plan of action to:

1. Develop human capacity by conducting sub-regional and national training programmes in laboratory biosafety and biosecurity, field epidemiology, disease surveillance, and national preparedness and planning;
2. Establish more national biosafety associations and develop further contacts between these new associations and with established associations within the Middle East and North Africa (MENA) region and globally;
3. Create a web site to facilitate sharing of information on biosafety and biosecurity matters, and to permit virtual meetings to assist in implementing the Framework Document;
4. Further develop efforts to engage policy-makers and regional organizations in the process of improving approaches within MENA to biosafety and biosecurity;
5. Improve fund-raising processes from within and beyond the region, putting them on a multi-year basis to facilitate long-term planning; and
6. Continue to develop regional ownership and direction of the BBIC Process and to hold the Fourth regional conference in 2013 (BBIC-2013).

The BBIC Process continues to grow larger and stronger with focus now being on action rather than discussion. The sense of community so important to advancing the biosafety and biosecurity culture and creating a sense of regional responsibility for these issues continues to develop.

In short, the BBIC Process has never been healthier and has never had better prospects for action to develop safer and healthier communities in the MENA region.



Left to Right: Mr Terence Taylor, Amb Masood Khan, Dr Suleiman Al-Busaidy, Prof Khalid Tamsamani, Prof Anwar Nasim

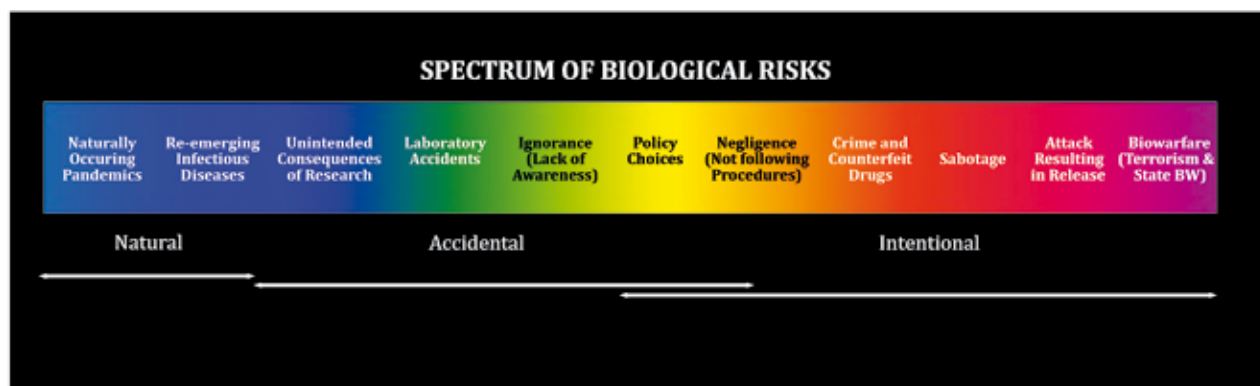
Conference Theme and History

The Third Biosafety and Biosecurity International Conference (BBIC-2011) was held in Amman, Jordan 13-15 September 2011 continuing the BBIC Process. It was the third in a series of biennial conferences to which a Steering Committee and Working Groups report. The theme of the Process is 'Healthier and More Secure Communities in the MENA Region' and the sub-theme of this conference was 'Affordable and Appropriate Biosafety and Biosecurity'.

The purpose of the BBIC Process is to promote the development of biosafety and biosecurity strategies in the Middle East and North Africa¹. The need for such strategies arises from the extraordinary and rapid advances being made in biotechnology. While these advances have brought enormous benefits to medicine, public health, nutrition, agriculture and industry, they also pose a real risk to public safety and security through the possibilities of accidents, sabotage or their misuse.

Furthermore, in addition to biological risks caused by human intervention, communities and the environment continue to face natural biological risks such as the threat of pandemics of new and re-emerging infectious diseases.

These risks are best understood as a spectrum²:



In order for the full humanitarian and economic benefits of biotechnological advances to be realized, it is essential that these risks are properly identified, understood and mitigated through effective risk management in the form of comprehensive biosafety and biosecurity strategies, supported with a full complement of legislative, regulatory, human and physical infrastructure.

The conference built on the work of the First Biosafety and Biosecurity International Conference, held in Abu Dhabi 12-14 November 2007 (BBIC-2007), the work of a 'Core Group' which met in Abu Dhabi in May 2008, and the Second Biosafety and Biosecurity International Conference, held in Casablanca 2-4 April 2009 (BBIC-2009).

¹ For the purposes of this process, MENA includes the following countries: Afghanistan, Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen.

² From the European Molecular Biology Organisation's Science and Society Series, Special Issue, 2006, Terence Taylor.

The first conference examined the range of potential biological threats to which the region is exposed and addressed, in broad terms, how these might be mitigated through comprehensive biosafety and biosecurity strategies.

The Core Group met in Abu Dhabi, financed by the Environment Agency of Abu Dhabi, in May 2008 to examine further the issue of how to develop and implement these strategies and produced a Framework Document entitled 'Developing Biosafety and Biosecurity Strategies for the MENA Region'. This document (version as amended by BBIC-2009 at Appendix 7), prepared in English as the official version, was translated into and printed in Arabic and French versions prior to the second conference (held in Casablanca in April 2009) so that all regional participants could read it in their preferred language. The Framework Document formed the basis of much of the discussion of BBIC-2009.

At BBIC-2009, the participants agreed, *inter alia*, to:

1. Adopt the Framework Document "Developing National and Regional Biosafety and Biosecurity Strategies in the Middle East and North Africa" as the road map for the region's efforts to develop such strategies. Certain improvements and additions were made to this document, which was updated and circulated to participants;
2. Create a Steering Committee to meet regularly and to shepherd the process of building national and regional biosafety and biosecurity strategies. The composition of the Steering Committee was agreed, a representative of the Moroccan Ministry of Education, Higher Education, Training and Scientific Research named as Chairman until 30 April 2010. Thereafter, the Chairmanship will pass to a representative of the Hashemite Kingdom of Jordan for the following two years. It was agreed that the Chairmanship of the Steering Committee should lie with the organizer of the BBIC for the year before and the year after the conference it hosts;
3. Create four working groups of experts in appropriate fields to address technical issues relating to the creation of these strategies. These working groups will address, respectively:
 - a. Human Capital Development;
 - b. Institutional, Physical and Legal Infrastructure;
 - c. National and Regional Prevention and Preparedness; and
 - d. Policy-Making;
4. Create a committee to assess the feasibility of establishing Regional Training Centres in Abu Dhabi, Jordan and Morocco with a common curriculum for training policy-makers, institution directors and safety trainers in issues of biosafety and biosecurity;
5. Create a regional biosafety association with the mandate of enhancing the knowledge and understanding of biological safety issues throughout the region, spreading best practices amongst its members, encouraging dialogue and discussion of developing biosafety and biosecurity issues, influencing and supporting emerging legislation and standards in the areas of biological safety, biosecurity, biotechnology, transport and associated activities, and acting as a focal point for the consolidation of views on these issues.

The Steering Committee held its first meeting in Petra, Jordan in July 2009 where it agreed its mandate, work schedule and rules of procedure, and discussed the schedule of meetings and mandates of the working groups. The Steering Committee has since held meetings in Abu Dhabi in May 2010 and in Beirut in December 2010. A list of members of the Steering Committee is at Appendix 5.

In addition, meetings of the Regional Training Centre ad hoc Committee were held in Amman, Jordan in July 2009 and in Atlanta, Georgia USA in February 2010. Members of the committee also visited biosafety and

biosecurity training facilities in Emory University and University of Texas Medical Branch, and met with officials from the US Centers for Disease Prevention and Control to discuss the design of training facilities and curricula. The committee presented its report to the Steering Committee at the latter's May 2010 meeting in Abu Dhabi.

A full chronology of BBIC Process meetings is at Appendix 6.



Opening Session of the 2nd Biosafety and Biosecurity International Conference, Casablanca, Morocco, 2009



Mr Terence Taylor (right) presenting the BBIC President's Gavel to Prof Khalid Tamsamani (Left) and Dr Nisreen Al-Hmoud (Center)

The Conference

The BBIC-2011 conference was opened by Dr Nisreen al-Hmoud in her capacity as President of the BBIC Process. Her Royal Highness Princess Sumaya bint El Hassan then welcomed the participants to the Conference, reiterated the importance of the BBIC Process, and introduced the patron of BBIC-2011 His Royal Highness Prince El Hassan bin Talal. His Royal Highness delivered an important and wide-ranging speech on the need to protect and promote human dignity and security and on the role of civic society in achieving this by helping to break down barriers to cooperation. The opening session also heard speeches from Mr. Terence Taylor, President of the International Council for the Life Sciences, Dr Ghazi Yehia on behalf of the Director-General of the World Organisation for Animal Health (OIE), His Excellency Mark Gwozdecky, Ambassador of Canada to Jordan and Iraq, and Lady Olga Maitland, President of the Defence and Security Forum.

The conference then proceeded in eight sessions:

**Session 1: Progress Reports;
Session 2: Human Capacity Building;
Session 3: Physical Infrastructure;
Session 4: Policy and Legal Issues;
Session 5: Environmental Issues;
Session 6: National Preparedness and Planning;
Session 7: Leadership in Biosafety; and
Session 8: Synthetic Biology.**

In addition, participants split into two groups on the final day to conduct a table top exercise on how to respond to different scenarios of misconduct in laboratories and misuse of equipment and microorganisms. The conference Agenda is at Appendix 2.

Upon conclusion of their work, the rapporteurs drafted a conference communiqué, which was reported back to the conference's Closing Session. This communiqué was adopted by acclamation. The full text is at Appendix 1.

His Royal Highness Prince El Hassan bin Talal honored the conference with a second address to close the proceedings. He praised the work of the participants and urged them to implement the actions recommended in the course of the conference. He ended by stating that biosafety and biosecurity were very high priorities for the region and that he would do what he could to support the BBIC Process

The conference was attended by 130 participants from 23 countries and several international organizations (UN, WHO, OIE, BTWC, and AOAD³).

Despite the political upheavals in the region, 15 of the 21 countries of the MENA region were represented. It was encouraging to find much stronger participation than previous regional conferences from some coun

³ Arab Organization for Agricultural Development

tries such as Algeria, Egypt, Pakistan, and Sudan; as well as participation by some for the first time (Afghanistan). A full list of participants is at Appendix 8.



From left to right: Dr Ahlam Ibrahim, HRH Prince El Hassan bin Talal, Prof Mohammed Ibrahim, Dr Zuhair Zahid, Mr Muthana Majid, Mrs Wafaa Hassan

The Conference was preceded by a one-day training course on the basics of biosafety and biosecurity given by Ms Heather Sheeley, Biosafety Programme Lead at the UK's Health Protection Agency. This course was attended by 21 scientists and laboratorians from five different establishments in Jordan, representing universities, government laboratories and the private sector, and one university in Pakistan. The agenda for the training course is at Appendix 3.

In addition, the Steering Committee met the day before the Conference in order to agree on the immediate objectives to be achieved at the Conference, and again immediately after the close of the Conference to chart the way ahead. At this latter session, the Committee invited several observers to make presentations on their organizations and to discuss ways of cooperating with the BBIC Process. In this context, the Committee heard presentations from Canada's Global Partnership Program, the International Federation of Biosafety Associations, a representative from Algeria who is part of the Middle East Weapons of Mass Destruction Free Zone Task Force, the Egyptian Biosafety Association and the African Biological Safety Association.

On the day following the Conference, a Workshop on Biosafety Associations was held. It was attended by representatives from 14 MENA countries - Afghanistan, Algeria, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Morocco, Pakistan, Palestine, Sudan, the UAE and Yemen. The Workshop addressed the purpose of Biosafety Associations and the factors that contribute to the success and sustainability of such associations. It heard about the experiences of establishing and growing the International Federation of Biosafety Associations, the American Biological Safety Association, the European Biosafety Association, the African Biological Safety Association and national associations in Morocco and Egypt. Unfortunate family and weather events meant the last minute cancellation of planned participation from the associations of Mexico and Pakistan.

The Workshop ended with a business plan writing exercise. Participants split up into three sub-regional groups to write a business plan for setting up their own biosafety associations.

Particular attention was paid to how national associations in the MENA region could create value for their members and hence become self-sustaining through generating their own revenue streams. Thus special attention was paid to training, professional development and credentialing. The groups then reported back to the Workshop on their plans.

The Agenda for the Workshop is at Appendix 4.

Participants in the conference expressed continued enthusiasm for the BBIC Process and for moving into more action-oriented activities. In particular, participants appreciated the table top biosecurity exercise and the workshop as providing practical examples for how to give effect to the principles of biosafety and biosecurity.



HRH Princess Sumaya bint El Hassan (Left), HRH Prince El Hassan bin Talal (Center), Mr Terence Taylor (Right) along with other participants during the Opening Session of BBIC-2011, Amman, Jordan.

Progress Reports

Reports to the conference indicated that substantial but uneven progress has been made in biosafety and biosecurity in the MENA region since BBIC-2009 in Casablanca.

The session on Progress Reports started with a Keynote Speech from His Excellency Masood Khan, the Ambassador of Pakistan to the People's Republic of China. Ambassador Khan attended the First BBIC in Abu Dhabi in November 2007 in his then capacity as the Chairman of the Biological Weapons Convention intersessional meetings and so was well-placed to give an independent assessment of the BBIC Process' progress. He praised the considerable progress that had been made in just four years, opening new avenues of dialogue on biotechnology, the life sciences, health and security. He noted that the Process was a collective effort, sharing expertise and experience and learning from each other how to manage biological risk most effectively, using limited resources most efficiently. He stated that the BBIC Process demonstrates that the enthusiasm and expertise exists within the MENA region to deliver strategies and results with only modest investment of new resources, leading to capacity building, fostering responsibility, raising awareness, building partnerships and improving disease surveillance and emergency preparedness. In short, he said, the BBIC Process had enabled countries of the region to take forward biosafety and biosecurity issues in a practicable and sustainable manner. It provided a shining example to other regions of how the health and security communities can work synergistically in a shared and open space to address what was a global challenge.

The Conference then heard reports of major progress at the national level as follows.

Oman reported on the implementation of the joint WHO/EU biosafety and biosecurity project conducted in conjunction with the Ministry of Health. This project was aimed at building the necessary policy and legal infrastructure to implement comprehensive biosafety and biosecurity and recommended the approach be used as a model for other countries in the region.

Morocco reported on their establishment of a national biosafety association, surveys conducted on current capabilities, gaps analysis and an action plan to address identified shortcomings. In particular, Morocco reported on the development of a national biosafety and biosecurity curriculum to be taught in universities and on the publication of a laboratory biosafety and biosecurity handbook.

Pakistan reported on its continued development of national biosafety curricula for undergraduate, graduate and masters levels, its biosafety associations and its project to promote the responsible conduct of science in all disciplines.

Jordan reported on its development of training curricula for biosafety and biosecurity, the number of training courses conducted and its plans for a regional training centre.

The Conference also heard of progress in specific areas, such as food, water, animal and plant safety and security, implementation of the International Health Regulations, and the establishment of regional and national disease surveillance networks for infectious, foodborne and animal diseases.

Presentations and speeches made to the conference are posted on the BBIC web site at www.bbic-2011.org.

Conference Sessions

There were dedicated sessions for each of the four subject matter areas to which the Framework Document gives priority: human capacity building; physical infrastructure, policy and legal issues, and national preparedness and planning. In addition, a new feature was a session dedicated to environmental issues, in recognition of the interconnectedness of human health with animal, plant and environmental health. Also, acknowledging that change does not come without leadership, a session was added to address leadership in biosafety. Finally, in line with a decision to introduce a new life sciences technology at each biennial conference, there was a session on the burgeoning new field of synthetic biology and its implications, which have potential for enormous benefits for human, animal and plant health, but require explicit attention to mitigate the possible safety and security risks.

Another new feature of this conference was that a call was put out ahead of time for regional experts to present papers on subjects of national or regional interest. Four such papers were presented at this conference; one on policy issues, two on environmental issues, and one on synthetic biology.

The session on human capacity building heard speakers from the Fondation Merieux and the Institut Pasteur du Maroc stress the importance of the human element in responding to biological threats and underline the enormity of the challenge in raising human capacity to best practice levels. Both emphasized how the emergence of infectious diseases in developing countries was increasing the need for good biosafety and biosecurity practices and for laboratories with low operations and maintenance costs.



From left to right: Dr Abdul Karim Nasher, Dr Bassam Hayek, Dr Mohammed Hassar, Dr Francois-Xavier Babin



Dr Francois-Xavier Babin



Dr Eltayeb Ali

They also both stressed the role of the individual in taking responsibility for acting ethically, identifying priorities for action to improve biosafety and biosecurity and leading actions to implement plans. Trainers and teachers had a particular responsibility to learn not only the subject matter of biosafety and biosecurity, but to learn how to teach so that alumni changed their behaviors in line with best practice. Both also highlighted the importance of sharing regional experiences and lessons learned, and the value of networks in spreading knowledge thus gained. This message was reinforced by a speaker from Yemen who added that, in addition to building up human capacity, efforts should be made to stem the brain drain from developing countries. Finally, the session heard about the lessons learned from the WHO 2007 report on World Health. Thirty new diseases had emerged over the time span in which only one had been eradicated. The best defense against newly emerging diseases was strong public health and good biosafety and biosecurity practices spearheaded by a well-trained cadre of scientists and health professionals.

The session on physical infrastructure heard about new efforts to design and build low resource laboratories. Laboratories rapidly become very expensive to operate and maintain with each added degree of complexity of design and equipment. In many parts of the world, clean water and electricity are in very short or irregular supply whereas many laboratory designers seemed to assume they were freely available in almost limitless supply. Design of simpler laboratories should focus on using local materials, using natural airflows, and lower power and water usage. This could be achieved by understanding better how contamination can be created (eg. aerosol generation, air flows within the laboratory) and designing physical and behavioral solutions to prevent routes to contamination. The session then heard how Sudan plans to create a national biosafety and biosecurity community to conduct a national survey of physical infrastructure and, from that, to perform a gap analysis and develop a national action plan to implement a biosafety and biosecurity strategy from that baseline.

In the session on policy and legal issues, His Excellency Ambassador Paul van den Ijssel⁴ – the President-Designate of the 7th Review Conference of the Biological Weapons Convention – gave a keynote address on the overlap between the objectives of the Convention and the goals of biosafety and biosecurity.

He highlighted the importance of non-governmental action in biosafety and biosecurity to the achievement of the objectives of the Convention, namely to prevent biology from being used for weapons purposes, and invited participants to become actively engaged in the BWC Review Conference. The conference then heard presentations on national legislation on the registration and regulation of laboratories, on programmes to develop interactions between the life sciences community and law enforcement so as to engender a cooperative relationship in keeping biology safe, and on how governments can better assess biological risks at a national level. After this, a regional paper was presented on biosafety and biosecurity policy issues in Egypt.

The session on national preparedness and planning heard detailed and highly informative presentations on what preparedness and planning means in practice from senior officials in very different settings – in the Palestinian Authority's Public Health Service and in the US Centers for Disease Control and Prevention. Both speakers stressed the need for international cooperation, for robustness of national plans to unexpected shocks to the infrastructure, and for continual training in and revision of the plans in the light of experience. The conference then heard from a high technology corporation that specializes in developing vaccines and prophylaxis for diseases which could be used in warfare.



Dr Assad Ramlawi



Eng Abeer Sirawan

This speaker stressed the importance of national stockpiles in protecting against both natural and warfare-related outbreaks of disease, and the critical role that the private sector can play as a partner with governments in addressing the technical challenges posed by infectious diseases.

⁴ Ambassador and Permanent Representative of the Kingdom of the Netherlands to the Conference on Disarmament, Geneva.

The session on environmental issues opened with a message from His Excellency Hussein Hajj Hassan, the Minister of Agriculture for Lebanon, delivered by a representative from his ministry. Along with a message of strong support for the work of the BBIC Process and the importance of animal, plant and environmental issues to biosafety and biosecurity, this message contained an offer to host BBIC-2013 in Beirut.

The session then heard details of the UAE's national survey of environmental impacts on health and the development of a national strategy to address these. It also heard a presentation from the founder of PestNet on how that global network of experts on plant pests works and the value of global expert networks in addressing cutting edge scientific issues. Finally, it heard two regional papers from Jordan on water and environmental biosafety and biosecurity.



From left to right: Dr Jacqueline MacDonald, Dr Ahmed Bashir, Eng Abeer Sirawan, Dr Grahame Jackson



Participants work together to build a network during the Leadership in Biosafety Session, BBIC-2011.

The session on leadership in biosafety heard from an impressive panel of international experts from the Elizabeth R Griffin Research Foundation, the International Federation of Biosafety Associations, the African Biological Safety Association, Pakistan's Inter-Agency Task Force on the Biological Weapons Convention, and the University of Texas Medical Branch. The scene for this session had been set the evening before by a powerful and moving address given by Ms Caryl Griffin (Elizabeth R Griffin Research Foundation) highlighting the tragic effects that can result from a lack of training, procedures and oversight in biosafety. The session speakers stressed the importance of leadership by qualified individuals and the substantial impact that can be achieved through the development of national, and where appropriate, regional biosafety associations. The importance of such associations reaching across academic, government and private sectors was stressed.

The highlight of the session on synthetic biology was a fascinating overview of the field, its promise and some of the potential risks that may arise from it, from one of the world's leading experts in the field, Dr Andrew Hessel of Singularity University. Dr Hessel added a further presentation on behalf of Dr Robert Carlson on the importance of the potential future contribution of synthetic biology to food, energy and materials. Next, it heard of the ICLS/IASB's efforts to develop and implement a code of conduct for those working in the field of synthetic biology, to help ensure that the technology is not misused for weapons purposes. The session ended with a regional paper presentation about developments in synthetic biology in Pakistan.

A further new feature at this conference was a biosecurity table top exercise. The purpose of the table top exercise was to engage participants in a developing biosecurity scenario to elicit how they would react and whom they would contact upon learning details of a biological incident. The scenarios centered around use and removal of laboratory resources for unauthorized purposes. The exercise generated lively discussions about what would or should happen in the described scenarios at each stage as more information became known. There was a very positive response to the inclusion of the exercises, and many requests to include similar exercises in future conferences.

Finally, the conference also featured a poster session, with some 12 posters covering a wide variety of biosafety and biosecurity human, animal, plant and environmental topics.

Conference Outcomes

As a result of this conference, it has been agreed to:

- Continue with the implementation of the Framework Document 'Regional and National Biosafety and Biosecurity Strategies for the Middle East and North Africa (MENA)' adopted at Casablanca in 2009, as the road map for the region's efforts to develop such strategies under the guidance of the BBIC Steering Committee;
- Develop the plan of action for working groups of experts in appropriate fields to address technical issues relating to the creation of these strategies;
- Develop, where practicable, national and sub-regional activities to implement the Framework Document, in particular for biosafety and biosecurity leadership training and building human capacity for infectious disease surveillance;
- Continue efforts to establish Regional Biosafety and Biosecurity Training Centres in the MENA region;
- Take specific steps to build capacity to meet the legally binding requirements of IHR (2005) with regard to infectious disease surveillance;
- Continue work to create, expand and sustain national biosafety associations in the MENA region and coordination and cooperation between them severally and with the International Federation of Biosafety Associations (IFBA); and
- Hold a Fourth Biosafety and Biosecurity International Conference in 2013.

Specific immediate actions include:

- To hold a joint biosafety and biosecurity training session for the Middle East Consortium on Infectious Disease Surveillance in November 2011;
- To hold another meeting on the Responsible Conduct of Science in November 2011 in Pakistan;
- To hold another joint biosafety and biosecurity training session for at least a further four countries in the MENA region in early 2012;
- To hold the next meeting of the BBIC Steering Committee in December 2011;
- To engage governments of the region and regional organizations, such as the Arab League, to gain their support for and commitment to the BBIC Process.

The participants also agreed to send a message to the Biological Weapons Convention Review Conference in Geneva in December 2011 bringing to its attention the contribution that the BBIC Process makes towards biosecurity in the region and the value of the Process in ensuring the promulgation *inter alia* of the values of the Convention to the institutional and personal level of those involved in the life sciences in the MENA region. They also urged other regions to draw on the BBIC Process as a possible model to respond to their respective priorities to enable safer management of biological risks, be they natural, accidental or intentional.

The participants in BBIC-2011 reiterated their strong support for continuing the Biosafety and Biosecurity International Conference Process. Proposals were received to host the next conference in the series in 2013 and these offers will be pursued by the Steering Committee. The Conference appealed to regional and international governments and organizations to provide financial, technical and political support for the BBIC Process.

Press Coverage

Prior to the conference, the organizers prepared a background document on biosafety and biosecurity and a press release about the upcoming conference. This package, along with an invitation to a press conference, was sent to some 40 media organizations (wire, radio, television, and English and Arabic language daily, weekly and monthly newspapers and news magazines). In addition, the organizers engaged the services of two wire services to push out press releases – one based in Jordan to address the Arab media, and the other based in Washington DC to address the international media.

The resultant press conference was attended by 30 news organizations. Presentations to the press were made by Dr Nisreen al-Hmoud, President of the BBIC Process, Mr. Terence Taylor, President of the International Council for the Life Sciences, Mr. Tim Trevan, Executive Director of the International Council for the Life Sciences and Mr Nizar Zahran, Executive Director of Marketing for El Hassan Science City.

The opening session and HRH Prince El Hassan bin Talal's speech were heavily covered by Jordanian and regional Arab television media. In the break immediately thereafter, the organizers gave numerous radio and TV interviews in English and Arabic.

In addition, each day the organizers disseminated a press release summarizing the day's proceedings and on the final day the Conference Communiqué was also distributed to the media.



From left to right: Mr Tim Trevan, Mr Terence Taylor, Dr Nisreen Al-Hmoud, Mr Nizar Zahran

The Way Forward – Future Work

The principal regional development was the approval of a major two-year grant from the Skoll Global Threats Fund (SGTF), which will enable the Steering Committee to hold their meetings regularly and to mandate meetings of the Working Groups. This grant does not, however, cover all the planned BBIC activities and, in any case, requires that matching funds be raised to release the second year's funding.

Key follow up actions are:

1. **Meetings:** Various bids have been received to hold future meetings of the Steering Committee and the 2013 Conference. Formal bids need to be solicited and compared, and the Steering Committee will need to decide locations and dates for these future meetings.
2. **Regional Training Centres:** The first phase in assessing the feasibility of regional biosafety and biosecurity training centres for the MENA region was concluded with the presentation of the ad hoc Committee's report to the Steering Committee. However, for the idea to proceed, specific plans for training centres must now be drawn up. This will require market analysis, strategic planning, preparation of business plans and, thereafter, detailed facility and curricula design.
3. **Web site:** Participants in the Conference and the Steering Committee stressed the need for a means of sharing relevant resources and maintaining contact between sessions of the conference and the working groups. To this end, there was strong support for establishing a web site with private discussion fora and a library of biosafety and biosecurity resources.

The Steering Committee has approved the initial design proposed by the Secretariat (ICLS) of a new web site tailored to the needs of BBIC. Some funds are available for the design of the architecture and initial population with data. The next steps will require a call for bids for the contract to construct the site, and a decision on the location of the personnel responsible for maintaining the site and updating its content.

4. **Biosafety Associations:** Participants in the Workshop on Biosafety Associations expressed strong interest in establishing national biosafety associations. There are immediate prospects of new associations in Jordan, Sudan, Iran and Afghanistan, with Lebanon, Algeria and Palestine somewhat more remote prospects. The BBIC Process will assist these efforts as it can.
5. **Sub-regional and national training activities:** Strong interest was expressed in arranging sub-regional training on laboratory biosafety and biosecurity, field epidemiology, disease surveillance, and national preparedness and planning. Plans already exist for laboratory training for MECIDS members. Work needs to be done, and funds raised, to organize similar training for the Levant countries in Beirut, for the Middle East countries in Egypt, for the GCC countries in Oman, and for the Maghreb countries in Morocco. In parallel, work needs to be done with partners to organize epidemiological training.

Conclusions and Assessment



Amb Paul van den Ijssel



Amb Masood Khan (left) and Dr Suleiman Al-Busaidy (right)

The conference was a great success. Participation was up – both in numerical and seniority terms - in comparison with BBIC-2009 (Casablanca), despite the political and social upheavals in the region.

Going into the conference, the aims were to:

- Reaffirm commitment to and give impetus to implementation of the Framework Document as a Plan of Action for the region;
- Obtain commitment for specific sub-regional training and capacity-building activities;
- Give impetus to the establishment of more biosafety associations in the region;
- Continue the process of raising awareness within the MENA region of biosafety and biosecurity issues;
- Obtain commitment for the next regional conference and an offer of a venue in 2013; and
- Broaden the base of funding supporters for the BBIC Process.

All of these objectives were met.

The organizers received one formal and two informal offers for hosting the next regional conference, and several informal offers for hosting Steering Committee meetings and training and capacity building activities. Considerable enthusiasm was generated for sub-regional activities, including laboratory training, epidemiological training, assistance in establishing national biosafety and biosecurity committees, establishing national biosafety associations and conducting sub-regional table top exercises. The press coverage and level of participation ensured that the message of biosafety and biosecurity has reached a wider audience in the MENA region than hitherto. The Conference heard from several funding sources of their interest in receiving bids from those involved in the BBIC Process.

In short, while significant funding and organizational issues still confront the BBIC Process, it has never been in such good standing or had such good prospects going forward.

Acknowledgements

The BBIC Process would like to thank their Royal Highnesses Prince El Hassan bin Talal and Princess Sumaya bint El Hassan for their patronage, and El Hassan Science City for hosting the conference and the Royal Scientific Society and the International Council for the Life Sciences for organizing it. In addition, we should like to thank those whose financial contributions and sponsorship made the conference possible, particularly the Skoll Global Threats Fund, the Global Partnership Program of the Department of Foreign Affairs and International Trade of Canada, the Foundation for Environmental Security and Sustainability and the Elizabeth R Griffin Research Foundation.

In addition, several international and national organizations supported the conference with the provision of expertise, including the World Health Organization, the Implementation Support Unit of the Biological and Toxin Weapons Convention (ISU), the World Organisation for Animal Health (OIE), the UK Health Protection Agency, the Fondation Merieux, PestNet, the Federal Bureau of Investigation, the International Federation of Biosafety Associations, the American Biological Safety Association, the University of Texas Medical Branch, and the African Biological Safety Association.



Dr Scott Field, Skoll Global Threats Fund, presenting at the opening dinner held at the residence of HRH Princess Sumaya bint El Hassan.

Appendix 1: The Conference Communiqué



Conference Statement Biosafety and Biosecurity International Conference 2011 (BBIC-2011)

15 September 2011
El Hassan Science City, Amman

Today, the 3rd Biosafety and Biosecurity International Conference concluded its work in Amman. The Conference was held at El Hassan Science City under the patronage of HRH Prince El Hassan bin Talal. The conference comprised some 130 participants from 23 countries. It heard reports of major progress in promoting healthier and more secure communities in the Middle East and North Africa (MENA) and agreed upon a plan of action for improving the region's preparedness and ability to respond to biological risks.

The Biosafety and Biosecurity International Conference (BBIC-2011) "*Healthier and More Secure Communities in the Middle East and North African Region*" was co-hosted by El Hassan Science City Jordan and the International Council for the Life Sciences. It built upon the work of the very successful BBIC-2007 and BBIC-2009 Conferences held in Abu Dhabi and Casablanca. It also built upon the considerable progress made by countries of the region in implementing elements of biosafety and biosecurity strategies identified as priorities at these conferences.

The conference was opened by His Royal Highness Prince Hassan bin Talal and hosted by Her Royal Highness Princess Sumaya bint El Hassan, in her role as Founder of El Hassan Science City. HRH Princess Sumaya paid tribute to the BBIC Process and prevailed upon the participants to continue their efforts to realise the vision of safer and responsible science. HRH Prince El Hassan bin Talal delivered an important speech on the need to protect and promote human dignity and security.

The experts discussed the further development of biosafety and biosecurity strategies in the MENA region, with particular emphasis on the development of capacity in the region, and the establishment of national and regional biosafety associations. In particular, the participants discussed appropriate strategies and technologies for addressing the region's specific biosafety and biosecurity needs. Specific action was recommended to develop a culture of leadership in biosafety and biosecurity and to strength national and regional networks.

As a result of this conference, it has been agreed to:

- Continue with work to implement the Framework Document "Developing National and Regional Biosafety and Biosecurity Strategies in the Middle East and North Africa", adopted at Casablanca in

- 2009, as the road map for the region's efforts to develop such strategies under the authority of the BBIC Steering Committee. Participants gratefully acknowledged that funding has been generously made available for these core activities;
- Develop the plan of action for working groups of experts in appropriate fields to address technical issues relating to the creation of these strategies;
- Develop, where practicable, national and sub-regional activities to implement the Framework Document;
- Continue efforts to establish Regional Biosafety and Biosecurity Training Centres in the MENA region;
- Encourage capacity building to meet the requirements of IHR (2005) with regard to epidemiological surveillance for infectious diseases;
- Continue work to create, expand and sustain national biosafety associations in the MENA region and coordination and cooperation between them jointly, severally and with the International Federation of Biosafety Associations (IFBA).
- Hold a fourth Biosafety and Biosecurity International Conference in 2013.

Specific immediate actions were initiated:

- To hold a joint biosafety and biosecurity training session for the Middle East Consortium on Infectious Disease Surveillance in November 2011;
- To hold another meeting on the Responsible Conduct of Science in November 2011 in Pakistan;
- To hold another joint biosafety and biosecurity training session for a further four countries in the MENA region in early 2012;
- To hold the next meeting of the BBIC Steering Committee in December 2011;
- To engage governments of the region and regional organizations such as the Arab League to gain their support for and commitment to the BBIC Process.

The participants of the Amman Conference reiterated their strong support for continuing the Biosafety and Biosecurity International Conference Process. Generous offers were received to host the next conference in the series in 2013 and these offers will be pursued by the Steering Committee. The conference appealed to regional and international governments and organizations to provide financial, technical and political support for the BBIC Process.

The participants also agreed to send a message to the Biological Weapons Convention Seventh Review Conference in Geneva in December 2011 bringing to its attention the contribution that the BBIC Process makes towards biosecurity in the region and the value of the Process in ensuring the promulgation *inter alia* of the values of the Convention to the institutional and personal level of those involved in the life sciences in the MENA region. They also urged other regions to draw on the BBIC Process as a possible model to respond to their respective priorities to enable safer management of biological risks, be they natural, accidental or intentional.

The participants thanked their Royal Highnesses Prince El Hassan bin Talal and Princess Sumaya bint El Hassan for their patronage, and El Hassan Science City for hosting the conference and the Royal Scientific Society and the International Council for the Life Sciences for organizing it. In addition, they thanked those whose financial contributions and sponsorship made the conference possible, particularly the Skoll Global Threats Fund, the Global Partnership Program of Canada, the Foundation for Environmental Security and Sustainability and the Elizabeth R Griffin Research Foundation.

Appendix 2: The Conference Agenda

Biosafety and Biosecurity International Conference (BBIC) 2011

El Hassan Science City - Amman, Jordan

12-16 September 2011

Monday, 12 September

Kempinski Hotel Amman

09:00-17:30 Training Programme (Attendance by special invitation)

Pluto Meeting Room - Conference Center (Level -2)

Ms. Heather Sheeley, Biosafety Programme Lead, Health Protection Agency, UK

10:00-12:00 Press Conference

Jupiter Meeting Room - Conference Center (Level -2)

14:00-16:30 BBIC Steering Committee Meeting (Steering Committee members only)

Sun Meeting Room - Conference Center (Level -2)

Chair: HRH Princess Sumaya bint El-Hassan, President, Royal Scientific Society, Jordan

17:30-18:30 Organizational Meeting for Session Chairs and Rapporteurs

Sun Meeting Room - Conference Center (Level -2)

20:00-21:30 Dinner for Steering Committee Members, Trainers, Session Chairs and Rapporteurs

Via Apia Restaurant - Kempinski Hotel Amman (Level -1)

Attended by HRH Princess Sumaya bint El-Hassan, President, Royal Scientific Society, Jordan

Tuesday, 13 September

El Hassan Science City

08:30 Bus Departure from the Kempinski Hotel Amman to El Hassan Science City

09:30-11:00 Formal Opening of the Conference

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Welcoming Remarks: HRH Princess Sumaya bint El-Hassan, President, Royal Scientific Society, Jordan

Keynote Speaker: HRH Prince Hassan bin Talal, Chairman of the Board of Trustees, Royal Scientific Society, Jordan

Dr Nisreen Al-Hmoud, President and Chairperson of BBIC, Jordan

Mr Terence Taylor, President, International Council for the Life Sciences, USA

Dr Ghazi Yehia on behalf of Bernard Vallat, Director General of World Organisation for Animal Health (OIE), France

Mr Mark Gwozdecky, Ambassador of Canada to Jordan and Iraq, Canada

Lady Olga Maitland, President, Defence and Security Forum, UK

11:00-11:30 Break

11:30-13:30 **Session 1 - BBIC Progress Reports**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Chair: HRH Princess Sumaya bint El-Hassan, President, Royal Scientific Society, Jordan

Keynote: **Ambassador Masood Khan**, Pakistan Ambassador to the People's Republic of China, Pakistan

Dr Suleiman al Busaidy, Director, Central Public Health Laboratory – Ministry of Health, Oman

Dr Anwar Nasim, Chairman, Inter-Agency Task Force, BWC, Pakistan

Professor Khalid Tamsamani, Directeur de l'Observatoire Régional de l'Environnement et du Développement Durable, Morocco

Dr Nisreen Al-Hmoud, Head of the Biosafety Unit - Division Head of the Environmental Laboratories, Royal Scientific Society, Jordan

Rapporteur: Ms. Heather Sheeley, Biosafety Programme Lead, Health Protection Agency, UK

13:30-15:00 Lunch (Transfers by Bus)

Opposite Royal Scientific Society Admin Building

15:00-16:30 **Session 2 - Human Capacity Building**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Chair: Dr Bassam Hayek, Independent Consultant, Al Hayek Environmental Consultancy HAYECON, Jordan

Professor Mohammed Hassar, Clinical Pharmacology, Institut Pasteur Du Maroc, Morocco

Professor Erum Khan, Assistant Professor – Department of Pathology, The Aga Khan University, Pakistan

Dr Abdul Karim Nasher, Professor of Zoology, Sana'a University, Yemen

TBD, World Health Organization, Switzerland

Rapporteur: Professor Khalid Tamsamani, Directeur de l'Observatoire Régional de l'Environnement et du Développement Durable, Morocco

16:45 Bus Departure from the El Hassan Science City to the Kempinski Hotel Amman

17:30-18:00 **Rapporteurs Meeting**

Sun Meeting Room - Conference Center (Level -2)

Kempinski Hotel Amman

18:45 Bus Departure from the Kempinski Hotel Amman to the Residence of HRH Princess Sumaya bint El-Hassan

19:30-22:00 *Formal Dinner - Residence of HRH Princess Sumaya bint El-Hassan*

Keynote: Representative, Skoll Global Threats Fund, USA

22:15 Bus Departure from the Residence of HRH Princess Sumaya bint El-Hassan

To the Kempinski Hotel Amman

Wednesday, 14 September

El Hassan Science City

08:15 Bus Departure from the Kempinski Hotel Amman to El Hassan Science City

09:00-10:45 **Session 3 - Physical Infrastructure**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Keynote: Dr Francois-Xavier Babin, Director of International Development, Fondation Merieux, France

Chair: Mr Terence Taylor, President, International Council for the Life Sciences, USA

Ms. Heather Sheeley, Biosafety Programme Lead, Health Protection Agency, UK

Dr Eltayeb Ali, Associate Professor – Radiobiology Laboratory, Sudan Atomic Energy Commission, Sudan

Rapporteur: Mr Edward Stygar, Executive Director, American Biological Safety Association (ABSA), USA

10:45-11:15 Break/Poster Session

11:15-13:00 **Session 4 - Policy and Legal Issues**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Keynote: Ambassador Paul, van den Ijssel, Ambassador of the Netherlands to the Conference on Disarmament, Geneva, Switzerland; and President-Designate of the 7th Review Conference of the Biological Weapons Convention

Chair: Dr Ali Mohammadi, Managing Director, Ferdous International Foundation, Switzerland

Professor Victoria Sutton, Director - Center for Biodefense, Law and Public Policy, Texas Tech University, USA

Mr Tim Trevan, Executive Director, International Council for the Life Sciences, USA

Mr Edward You, Supervisory Special Agent - Weapons of Mass Destruction Directorate, Federal Bureau of Investigation, USA

Rapporteur: Dr Erum Khan, Assistant Professor - Department of Pathology, The Aga Khan University, Pakistan

Regional Paper Presenter: Professor Hany A. El Shemy, Ministry of Higher Education, Egypt

13:00-14:00 Lunch (Transfers by Bus) Opposite Royal Scientific Society Admin Building

14:00-16:00 **Session 5 - Environmental Issues**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Keynote Speaker: Eng. Abeer Sirawan on behalf of HE Hussein Hajj Hassan, Minister of Agriculture, Lebanon

Chair: Dr Ahmed Bashir, Advisor - Secretary General's Office, Environment Agency - Abu Dhabi, UAE

Dr Grahame Jackson, PestNet, Australia

Dr Jacqueline MacDonald, Assistant Professor - Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill, USA

Rapporteur: Dr Edgar Sevilla-Reyes, AMEXBIO, Mexico

Regional Paper Presenters:

Professor Mohammed A Ibrahim, Princess Sumaya University of Technology, Jordan

Dr Nisreen AL-Hmoud, Head of the Biosafety Unit - Division Head of the Environmental Laboratories, Royal Scientific Society, Jordan

16:00-16:30 Break/Poster Session

16:30-18:30 **Session 6 - National Preparedness and Planning**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Keynote: Dr David Heymann, Head – Centre for Global Health Security, The Royal Institute for International Affairs, Chatham House, UK (video)

Chair: Mr Tim Trevan, Executive Director, International Council for the Life Sciences, USA

Dr Assad Ramlawi, Director-General, Public Health Service, Ministry of Health, Palestinian Authority

Dr Edgar Sevilla-Reyes, AMEXBIO, Mexico

Dr Akhila Kosaraju, Vice President Global Development, SIGA Technologies, USA

Dr Rima Khabbaz, Director for Infectious Diseases, Centers for Disease Control and Prevention, USA

Rapporteur: Dr Eltayeb Ali, Associate Professor – Radiobiology Laboratory, Sudan Atomic Energy Commission, Sudan

18:45 Bus Departure from the El Hassan Science City to the Kempinski Hotel Amman

20:00-22:00 Dinner – Kempinski Hotel Amman

Reem Ballroom (Level -1)

Keynote Speaker: Ms. Caryl Griffin, President, Elizabeth R. Griffin Research Foundation, USA

Thursday, 15 September

El Hassan Science City

07:15 Bus Departure from the Kempinski Hotel Amman to El Hassan Science City

08:00-09:15 **A Biosecurity Tabletop Exercise**

Mr Edward You, Supervisory Special Agent and **Dr William So**, Policy and Program Specialist, Weapons of Mass Destruction Directorate, Federal Bureau of Investigation, USA

Louai Shammout Hall & Ibn Al-Shater Hall @ The Princess Sumaya University for Technology main admin building

09:15-11:00 **Session 7 - Leadership in Biosafety**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Chair: Ms. Caryl Griffin, President, Elizabeth R. Griffin Research Foundation, USA

Ms. Maureen Ellis, Senior Biosecurity Advisor -Global Partnership Program, Department of Foreign Affairs and International Trade, Canada

Dr Willy Tonui, President, African Biosafety Association, Kenya

Dr Anwar Nasim, Chairman, Inter-Agency Task Force, BWC, Pakistan

Dr Anne-Sophie Brocard, Assistant Professor-Department of Pathology, University of Texas Medical Branch, USA

Rapporteur: Dr Rana Amini, Director – Biochemistry Department, Reference Health Laboratories of Iran, Iran

11:00-11:15 Break

11:00-12:15 **Communique Drafting Committee**

HRH Prince Hassan bin Talal Hall

Friendship Auditorium @ Royal Scientific Society Main Admin Building

11:15-12:45 **Session 8 - Synthetic Biology**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

Chair: Professor Zabta Shinwari, Chairman – Department of Biotechnology and Bioinformatics, Quaid-i-Azam University, Pakistan

Professor Robert Carlson, Principal, Biodesic, USA (video)

TBD, Member of the Board, International Association of Synthetic Biology, Germany

Dr Andrew Hessel, Bioinformatics/Biotechnology Co-Chair, Singularity University, USA

Rapporteur: Professor Victoria Sutton, Director – Center for Biodefense, Law and Public Policy, Texas Tech University, USA

Regional Paper Presenter: Professor Syed Sikander Azam, Quad-i-Azam University, Pakistan

12:45-13:15 **Closing Session:**

Friendship Auditorium @ The Princess Sumaya University for Technology main admin building

HRH Princess Sumaya bint El-Hassan, President, Royal Scientific Society, Jordan

13:15-14:00 Lunch (Transfers by Bus)

Opposite Royal Scientific Society Admin Building

14:15 Bus Departure from the El Hassan Science City to the Kempinski Hotel Amman

14:00-16:00 **BBIC Steering Committee Meeting (Members and invited participants only)**

HRH Prince Hassan bin Talal Hall

Royal Scientific Society Main Admin Building

Friday, 16 September

Kempinski Hotel Amman

09:00-17:00 **Workshop on Biosafety Associations (Attendance by special invitation)**

Sun Meeting Room – Conference Center (Level -2)

Keynote: Ms. Maureen Ellis, Senior Biosecurity Advisor - Global Partnership Program, Department of Foreign Affairs and International Trade, Canada, and Co-Chair of the International Federation of Biosafety Associations

Speakers: Mr Edward Stygar, Executive Director, American Biological Safety Association (ABSA), USA

Mr Jim Welch, Executive Director, Elizabeth R. Griffin Research Foundation, USA

Mr Terence Taylor, President, International Council for the Life Sciences, USA

Dr Anne-Sophie Brocard, Assistant Professor-Department of Pathology, University of Texas Medical Branch, USA

Discussants: Mr Ayman Morsy, Representative, Egyptian Biosafety Association, Egypt

Dr Edgar Sevilla-Reyes, AMEXBIO, Mexico

Dr Willy Tonui, President, African Biosafety Association, Kenya and Co-Chair of the International Federation of Biosafety Associations

Dr Erum Khan, Assistant Professor – Department of Pathology, The Aga Khan University, Pakistan

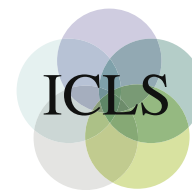
Representative, Egyptian Biosafety Association, Egypt

Professor Khalid Temsamani, Directeur de l'Observatoire Régional de l'Environnement et du Développement Durable, Morocco

Ms. Heather Sheeley, Biosafety Programme Lead, Health Protection Agency, UK

Rapporteur: Mr Tim Trevan, Executive Director, International Council for the Life Sciences, USA

Appendix 3: The Training Session Agenda



The Basics of Biosafety

Heather Sheeley, BA. MSc CBiol. CMIOSH FISTR
Biosafety Programme Lead
UK Health Protection Agency

This is a one-day introduction to the subject of Biosafety in Laboratories. It is designed for:

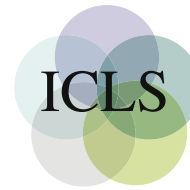
- Laboratory Directors who have responsibility for laboratory operations, quality control and staff safety, and
- senior scientists who might assume the functions of a biosafety officer responsible for risk assessment and for the development of biosafety plans and procedures.

The agenda is as follows:

0900	Welcome
0910	Reasons for Biosafety: protecting laboratory and healthcare staff
0950	Basis of biosafety: aerosols, contamination, sharps
1030	Coffee Break
1045	Laboratory incidents and infections
1200	Decontamination and disinfection
1300	Lunch
1400	Personal Protective Equipment (PPE)
1445	Bench Practices GMP
1530	Coffee break
1545	Hygiene: hand washing etc
1620	Waste Disposal: solids and liquids
1655	Transport of biological samples
1730	Close

The course has been prepared and will be presented by Heather Sheeley. Heather leads the Biosafety Programme at the UK's Health Protection Agency. She is one of the world's leading experts on biosafety and biosecurity and has been responsible for creating biosafety plans for laboratories for many years. In the past, she has held the positions of Co-chair of the International Biosafety Working Group/International Federation of Biosafety Associations, President of the European Biosafety Association, and Chair of the Institute of Safety in Technology and Research.

Appendix 4: The Biosafety Association Workshop Agenda



BBIC 2011 AMMAN

WORKSHOP ON BIOSAFETY ASSOCIATIONS

AGENDA – 16 September 2011

- 0900 Opening remarks and welcome by Mr Tim Trevan, ICLS
- 0930 Why Have a Biosafety Association? Mr Ed Stygar, ABSA
- 1000 Coffee break
- 1015 Lessons from IFBA, Ms Maureen Ellis, IFBA
- 1115 The Biosafety Association as a Training Hub, Dr Anne Sophie Brocard, UTMB
- 1200 Lunch
- 1300 The National Experience: Panel Discussion
 - Dr Willy Tonui, AfBSA
 - Dr Khalid Temsamani, MoBSA
 - Ms Heather Sheeley, EBSA
 - Dr Ayman Morsy, EgBSA
- 1415 Break
- 1430 The Keys to a Successful Biosafety Association and Business Planning Exercise, Mr Ed Stygar, ABSA
- 1700 Closing remarks, Mr Terence Taylor, ICLS

Appendix 5: The Steering Committee Membership

Dr Nisreen Al Hmoud, Jordan
President

Dr Suleiman Al-Busaidy, Oman
Dr Ma'an Al Hakim, UAE
Dr Bassam Al Hijawi, Jordan
Dr Eltayeb Ali, Sudan
Dr Sabah Al Momin, Kuwait
Dr Rana Amini, Iran/USA
Dr Ahmed Bashir, UAE
Ms. Darci Glass-Royal, USA
Dr Bassam Hayek, Jordan
Dr Rima Khabbaz, USA
Mr Muthana Majid, Iraq
Dr Ali Mohammadi, Iran/Switzerland
Dr Anwar Nasim, Pakistan
Dr Assad Ramlawi, Palestinian Authority
Ms. Heather Sheeley, UK
Dr Khalid Temsamani, Morocco
Dr Ghazi Yehia, Lebanon

Secretariat:
Mr Terence Taylor
Mr Tim Trevan
Ms. Whitney Ray

Appendix 6: Schedule of Principal BBIC Events from November 2007 to January 2012

Date	Event	Location
November 2007	1 st Biosafety and Biosecurity International Conference (BBIC-2007)	Abu Dhabi, UAE
May 2008	Core Group Meeting to draft the BBIC Framework Document	Abu Dhabi, UAE
April 2009	2 nd Biosafety and Biosecurity International Conference (BBIC-2009)	Casablanca, Morocco
April 2009	Inaugural Meeting of the BBIC Steering Committee	Casablanca, Morocco
June 2009	1 st meeting of the Regional Training Centre Feasibility Committee	Amman, Jordan
July 2009	2 nd Meeting of the BBIC Steering Committee	Petra, Jordan
February 2010	1 st Moroccan Biosafety Association (MOBSA) Training Course	Tetouan, Morocco
February 2010	2 nd meeting of the Regional Training Centre Feasibility Committee	Atlanta, USA
May 2010	3 rd meeting of the BBIC Steering Committee	Abu Dhabi, UAE
December 2010	4 th meeting of the BBIC Steering Committee	Beirut, Lebanon
March 2011	Inter-Ministerial Meeting on the Development of a National Biosafety and Biosecurity Infrastructure	Khartoum, Sudan
September 2011	Introduction to Laboratory Risk Assessment and Biosafety Practices Training Course	Amman, Jordan
September 2011	5 th meeting of the BBIC Steering Committee	Amman, Jordan
September 2011	3 rd Biosafety and Biosecurity International Conference (BBIC-2011)	Amman, Jordan
September 2011	6 th meeting of the BBIC Steering Committee	Amman, Jordan
November 2011 (Planned)	Joint Biosafety and Biosecurity Training Course for the Middle East Consortium for Infectious Disease Surveillance (MECIDS)	Jerusalem, Israel
January 2012 (Planned)	7 th meeting of the BBIC Steering Committee and Biosafety and Biosecurity Leadership Session	Sweimeh, Jordan

Appendix 7: The Framework Document

Developing Regional and National Biosafety and Biosecurity Strategies for the Middle East and North Africa (MENA)



The International Council for the Life Sciences

Prepared by: ICLS with the assistance of a core group of experts from the Middle East and North Africa (MENA)

Preface

More than 100 participants from around the world convened in Abu Dhabi, UAE from 12-14 November 2007 for **Biosafety and Biosecurity International Conference 2007 (BBIC 2007): *A Seminar for the Life Sciences and Policy Communities in the MENA Region.***

Conference participants explored biosafety, biosecurity, environmental health and infectious disease issues specific to the MENA region¹ and interacted with experts from other parts of the world.

The conference's recommendations can be grouped under five main themes:

- ☐ Building human resources;
- ☐ Building national and regional legal, institutional and physical infrastructure;
- ☐ Developing national and regional capacity for prevention and preparedness;
- ☐ Improving opportunities for scientists and industry to participate in policy-making;
- ☐ Monitoring and reporting on implementation of recommendations.

In order to carry out these recommendations, a core group of participants worked together to agree an action plan to carry out the conference outcomes, including the development of a framework for a regional biosafety and biosecurity strategy, and to begin planning BBIC 2009, hosted in Casablanca, Morocco from April 2-4, 2009.

The conference featured the following themes for the MENA region:

- ☐ Developing and Implementing Strategies for Biosafety and Biosecurity at the National and Regional level
- ☐ Confronting Biological Risks
- ☐ Strengthening Infectious Disease Surveillance
- ☐ Regional Training Centers for Biosafety, Biosecurity and Infectious Disease
- ☐ Institutional, Physical and Legal Infrastructures to Manage Biological Risks

The framework served as the basis for discussion at the Biosafety and Biosecurity International Conference 2009. As a result of those discussions, some amendments to the framework were suggested and the conference adopted the amended framework by acclamation.

¹ For the purposes of this process, MENA is defined as the following countries: Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, the Palestinian Authority, Jordan, Lebanon, Syria, Iraq, Iran, Pakistan, Saudi Arabia, Yemen, Oman, the United Arab Emirates, Qatar, Bahrain and Kuwait.

Who we are

The International Council for the Life Sciences is a non-profit organization dedicated to enhancing global biological security and safety and reducing the risks of the misuse of the life sciences through the promotion of international standards and the sharing of best practices. The ICLS identifies the most urgent biological risks and promotes global standards for ICLS members to adopt and promote. www.iclscharter.org

The Environment Agency of Abu Dhabi (EAD) is a governmental agency that was established in 1996 with the overall function of protecting and conserving the environment as well as promoting sustainable development in the Emirate of Abu Dhabi, the capital of the United Arab Emirates. www.ead.ae/en/ EAD partnered with the ICLS for both BBIC 2007 and BBIC 09. Biosafety and Biosecurity International Conference 2007 website can be found at www.biosafetyandbiosecurity-2007.org

Royal Scientific Society (RSS) – Jordan is the largest applied research institution, consultation and technical service provider in Jordan. RSS was established in 1970 as an independent, not-for-profit non-governmental Organization (NGO), containing 7 technical centers that house 38 laboratories that are nationally and internationally accredited, and employing more than 600 members and staff; they also partnered with the ICLS for BBIC 09. www.rss.gov.jo

The Moroccan Ministry of Education, Higher Education, Training and Scientific Research is in charge of implementing the national policy for Education and scientific research. Inside this frame and aware of the extreme importance of Biosafety and Biosecurity to overcome dual use of scientific research findings, the Ministry has decided to put in place regulations and codes of conducts for scientists including life sciences. The Ministry is an ICLS partner and hosted BBIC09 in Casablanca, Morocco from April 2-4, 2009. www.enssup.gov.ma

Contact us:

Terence Taylor
President
International Council for the Life Sciences
1747 Pennsylvania Avenue, NW 7th Floor
Washington, DC 20006
USA
Tel: +1(202) 659 8058
Fax: +1 (202) 659 8074
Taylor@iclscharter.org

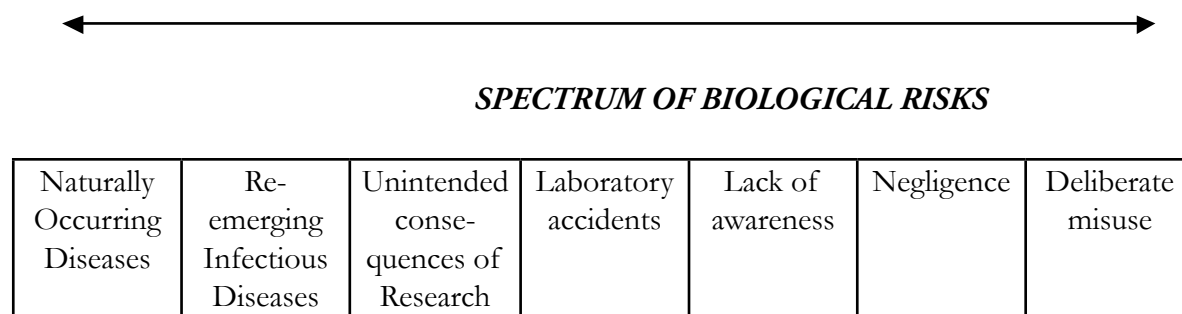
For more information please email:

Tim Trevan at trevan@iclscharter.org

Introduction

Extraordinary advances in biotechnology have brought enormous benefits to medicine, public health, the food industry, agriculture, and industrial processes. However, technological advances also bring with them risks to public safety and security through the possibility of their misuse. Furthermore, in addition to man-made biological risks, humans continue to face natural biological risks such as the threat of pandemics of new and re-emerging infectious diseases.

These risks are best represented as a spectrum, ranging from emerging and re-emerging infectious disease through accident and misadventure to deliberate misuse.



In order for the full humanitarian and economic benefits of biotechnology advances to be realized, it is essential that these risks are properly identified, understood, and effectively managed.

For this purpose, the Biosafety and Biosecurity International Conference 2007 was held in Abu Dhabi, UAE November 12-14, 2007. The conference specifically addressed how the risk spectrum applied to the Middle East and North Africa (MENA) region, and assessed what actions would be required by the countries of the region to be fully prepared to manage and mitigate risks across the spectrum.

The conference made many recommendations for how the issues of biosafety and bio-security for the MENA region could be advanced. This paper seeks to provide a framework for how the recommendations of the conference can be implemented.

General Conference Overview

The conference concluded that biosafety and biosecurity are becoming increasingly important strategic issues for all countries in the world. However, they are becoming especially so for countries of the MENA region for the following reasons:

1. With land, fresh water and ocean resources coming under increasing stress as the human population continues to grow, biotechnology will become ever more important to humankind;
2. With greater human population density, pandemics of new or reemerging diseases become ever greater threats;

3. With greater human dependency on biotechnology, the danger posed at each point on the biological risk spectrum increases;
4. Thus humankind needs a holistic approach to bio-safety and bio-security to manage and mitigate risks across the entire breadth of the biological risk spectrum;
5. This is especially so in the MENA region where water and food security are so vulnerable;
6. Furthermore, the constant massive traffic of people, animals, food and goods between countries of the region and between MENA and other parts of the globe further raises the bio-threats to the area.²

The conference noted that many of the biological threats facing the world require concerted global or regional action. National action, while absolutely necessary, cannot always be sufficient to contain or manage biological risks. The need for effective concerted supranational efforts means that cooperating countries need to have a common understanding of the global and regional risks which in turn requires a common risk assessment methodology and common prevention activities. While biological risks do vary from region to region and country to country, without a common methodology for assessing risks and formulating appropriate policies and practices to manage and mitigate these risks, any international effort will be neither concerted nor effective.

The conference noted that a holistic approach to the entire spectrum of biological threats requires that:

- a. governments nationally and regionally are structured and prepared for preventing, identifying and dealing with biological crises;
- b. countries of the region have the physical, institutional and legal infrastructure in place to benefit from biotechnology while protecting against biological risks;
- c. countries of the region have the trained and equipped human resources required to manage and mitigate biological risks; and
- d. Scientists and policymakers regularly interact.

A core group of individuals who attended BBIC 2007 met in Abu Dhabi from May 11-13, 2008 to discuss a framework for national biosafety and biosecurity strategies and a regional strategy for the MENA.

Framework for National Strategies and a Regional Strategy

A strategy should underpin two strategic objectives:

- Biological Risk Control
- Bio Preparedness (including Detection and Response)

Based on a comprehensive risk analysis (including risk assessment, risk management and risk communication), the strategy should also include the following strategic elements:

- ☐ Human and Laboratory Capacity building
- ☐ Legislation, regulation (international and national)
- ☐ Scientific responsibility, ethics-based codes
- ☐ Coordination
- ☐ Awareness

² MENA has constant mass flow of people between countries of the region (e.g. labour from Egypt and Sudan travelling to other countries of the region for work, pilgrims travelling to Holy Places) and between the region and other parts of the globe (e.g. labor from South Asia and Southeast Asia seeking work in MENA countries, illegal immigration from Sub-Saharan Africa, citizens of the MENA area travelling the globe for business and pleasure, the airports of the region as major hubs for travel between Europe and Africa/Asia). Likewise, food and goods are shipped from all around the world into the MENA region. These flows of people, animal and foods each bring with them the possibility of disease being spread.

- ☐ Partnership and collaboration
- ☐ Border Control
- ☐ Surveillance
- ☐ Emergency response
- ☐ Diagnostics
- ☐ Monitoring
- ☐ Reporting and reviews.

The proposed biosafety and biosecurity strategy requires the establishment of a steering committee at both the regional and national levels to take responsibility for strategic leadership for the development, implementation and oversight of an effective biosafety and biosecurity system in countries and the region as a whole

Principal Elements of Strategy

Human Capacity

Human skills in all areas – scientific, technical, policy, risk assessment – are necessary for countering broad spectrum biological risks in the human population, plant, animal and environmental sectors. This ability should be built by:

- ☐ A survey of existing human resource capacity and related educational and training programs;
- ☐ Identifying and prioritize vulnerabilities (lack of training, curricula, etc.);
- ☐ Making a plan for closing the gaps; and
- ☐ Oversight, monitoring and accreditation.

Laboratory and Infrastructure Capability

A need for cross-region ability to meet identified needs in countering broad spectrum biological risks in the human population, plant, animal and environmental sectors. This ability should be built by:

- ☐ A survey of existing laboratory and other related infrastructure and biosafety standards for handling various classes of micro-organisms across all sectors;
- ☐ Identifying and prioritize vulnerabilities (lack of training, equipment, protocols, facilities etc.);
- ☐ Making a plan for closing the gaps; and
- ☐ Oversight, monitoring and accreditation.

Legislation, Regulation and Standards (International, Regional and National)

It is necessary to ensure that regional and national strategies appropriately take account of national and international obligations and best practices. In order to achieve this:

- ☐ Existing legislation, regulations, guidelines and standards should be reviewed and gaps identified;
- ☐ Identification of key organizations and empowered individuals to form a national authority to act as policy makers and coordinators for all biosafety and biosecurity issues;
- ☐ Enhance the participation of academia and industry in policy making;
- ☐ Increase the adherence to biosafety and biosecurity standards for handling various classes of micro-organisms and establish regional standards as necessary;
- ☐ Establish legislation and protocols for cross-border cooperation; and
- ☐ Establish legislation and protocols for emergency situations.

Scientific Responsibility and Ethics-Based Codes

There needs to be a system to ensure individual and collective responsibilities are understood and effectively exercised to promote the safe and secure use of the life sciences. This could be done through ethically based codes, charters or other governance mechanisms. This may include the creation of National Committees for Science Ethics, Bioethics or Biosecurity.

Coordination (Regional and National)

To successfully develop and implement the national and MENA regional biosecurity and biosafety strategy it is vital to engage in interdepartmental, cross-sector and cross border collaboration (as needed). It is suggested that each country's identified national competent authority be the focal point for the coordination of the regional strategy. A small secretariat may be needed to provide assistance.

Awareness

There is a need to raise awareness of the importance of dealing with biological risks and the necessary steps to counter them. Steps that need to be taken include:

- Developing an outreach and communications strategy for raising awareness for:
 - Policy officials
 - Life science and related non-life science professionals from government, academia and the private sector
 - Front line workers
 - Students at all levels in the education system
 - General Public; and
 - Media
- Legislative and regulatory promotion
 - Web-based database for sharing best practices and other information
- The creation of relevant associations, such as a MENA biosafety and biosecurity association and associations at the national level. Linkages should be established with biosafety and biosecurity associations operating in other regions of the world to help further a global network.

Partnership and Collaboration

To successfully develop and implement a biosecurity and biosafety strategy it is vital to engage in interdepartmental, cross-sector, cross border and regional partnerships, both private and public, in order to maximize available resources and to share capabilities, expertise and information.

Border Control

In order to reduce the risks to public health, safety, security and the environment it is essential that measures, facilities and trained personnel are in place at border crossings, ports and airfields that take account of the regulations that relate to international trade and traffic. This includes:

- Training and equipment;
- Licenses, permits and permissions; and
- Protocols.

Surveillance

It is essential to put in place measures to enable early detection, identification of biological risks (including confirmation of area freedom/zero status) and effective responses in all sectors in accordance with regional and international agreements and legal obligations.

Emergency Response

There must be effective and tested measures and plans in place to deal with major emergencies. Including:

- ☐ Training of first responders and key workers;
- ☐ Equipment, including pre-positioned stockpiles, and facilities;
- ☐ Surge capacity;
- ☐ Biological alert/alarm system and emergency network for coordination;
- ☐ Test exercises (both in table-top and field form); and
- ☐ Sharing of experience across borders and with international inter-governmental organizations (e.g. WHO, OIE, FAO) as necessary.

Diagnostics

There must adequate measures developed for timely, front line diagnostics and referral system (an inter-connected network that is comprehensive enough for the needs of the region). This includes:

- ☐ Common protocols;
- ☐ Biosafety standards for handling various classes of micro-organisms;
- ☐ Test equipment;
- ☐ Trained staff; and
- ☐ Safe and secure transport of samples.

Monitoring and Review

It is necessary to set up an effective national system for monitoring the development and implementation of the national biosafety and biosecurity strategy, including compliance with legislation and regulations. This system should also analyze the effectiveness of all aspects of biosafety and biosecurity management and enable its continuing suitability in a changing environment.

Reporting

A system should be established to ensure national governments' international and regional reporting responsibilities are properly conducted and their domestic reporting requirements are complied with. Reporting will take various forms.

Recommendations from BBIC 2007 in Abu Dhabi, UAE and BBIC 2009 in Casablanca, Morocco

BBIC 2007's recommendations to strengthen biological safety and security fell under five main themes:

- Building human resources;
- Building national and regional legal, institutional and physical infrastructure;
- Developing national and regional capacity for prevention and preparedness;
- Improving opportunities for scientists and industry to participate in policy-making; and
- Monitoring and reporting on implementation of recommendations.

In addition, it was recommended to establish a Standing Committee to assess the feasibility of one or more Regional Training Centers (RTC).

It is thus proposed by the Core Group to establish four thematic ad hoc Working Groups to address the first four themes, a Steering Committee on implementation, and a temporary Standing Committee to address the feasibility of Regional Training Centre(s).

BBIC 2009, with a few additions and amendments, endorsed the recommendations of BBIC 2007 and the Core Group as contained in the Framework document circulated to participants in BBIC 2009. The conference also suggested that the ICLS should provide secretariat support pending the development of a standing regional secretariat.

1. The Steering Committee on Implementation

Purpose: The purpose of this committee would be to:

- Provide a mechanism for reporting gaps analyses to governments;
- Contribute to the development of biosafety and biosecurity strategies at national and regional levels;
- Assist in the planning and organization of Biennial Conferences;
- Report on implementation to the Biennial Conference;
- Select materials to be posted on a dedicated website to support implementation of the Action Plan. Such materials might include conference, working group and Committee presentations and papers, action plans, resource and contact lists;
- Maintain smooth, regular communications among conference participants between annual conferences; and
- Establish a funding mechanism.

Membership: To be effective, membership of the Steering Committee should include each of the Chairs of the four thematic committees and of the RTC Standing Committee along with members of the Secretariat and representatives of appropriate international and regional organizations. In addition, regional representatives from government (scientists and policy-makers), industry and academia, and international industry associations would all be able to benefit the work of this committee.

2. Ad Hoc Working Group I: Human Capital Development

Purpose: The purpose of this Working Group would be to review existing materials from other regions and nations and to develop tailored regional and national materials as follows:

- Curricula for teaching bio-safety, bio-security and bio-ethics to biotechnology professionals, frontline workers, policy officials and students at all levels, and to improve awareness of these issues in general;
- Curriculum for training the trainers;
- Best Practices for industry and other relevant laboratories;
- A Code of Bioethics for all scientists and professionals in the biotechnology sector; and
- Methodologies to assess existing human bio-safety/security capabilities and to identify training needs.

In addition, this Working Group would encourage the dissemination of ideas and scientific knowledge between scientists and policy-makers nationally, regionally and internationally by:

- Encouraging scientists', policy-makers' and other stakeholders' participation in national, regional and international conferences on biosafety and biosecurity and infectious disease;
- Facilitating and arranging exchanges of scientists, policy-makers and other stakeholders and between scientific institutions at the international, regional and national levels;
- Developing national and regional non-governmental networks of interested parties, e.g. through industry, scientific and professional associations, including establishing a Middle East and North Africa Biosafety Association; and
- Creating a website and biosafety and biosecurity digital library for the MENA Region for networking, information exchange and dissemination of information amongst the MENA biosafety and biosecurity community.

Membership: This Working Group should include regional representatives from the health, agricultural, environmental and fisheries sectors, academia and industry, along with a few select international experts with relevant experience.

3. Ad Hoc Working Group II: Institutional, Physical and Legal Infrastructure

Purpose: The purpose of this Working Group would be to review existing infrastructure in the region, to identify needs for further development, and to develop action plans to address these needs. Specific areas to address could include:

- Development of common systems and methods;
- Identification, where already established, of the National Authority within each government to act as the principal national policy-making and focal point on all issues pertaining to biosecurity and biosafety, and, where these do not exist, encouragements of national governments to form them;
- Creation of a database of existing legislation and resources, establishment of in-country points of contact, and identification of national points of contacts within the region;
- Assessing national and regional infrastructure needs at the institutional, legal and physical levels and development of action plans to address these needs;
- Creation of a national committee of experts, designation of centres of expertise in each area of biosafety and biosecurity, and creation of national contact lists for these experts and centres;
- Identification of existing diagnostic and analytical capabilities, and of needs in this area;
- Evaluation of existing capabilities vis-à-vis IT tools for biosafety and biosecurity;
- Evaluation of capabilities to turn actionable data into timely and appropriate action at national and regional levels, and of needs in this area;
- Identification and review of existing standards, accreditation and monitoring systems;
- Evaluation of existing regulations, practices and capabilities, and of needs for transport of pathogens and other related biological material; and
- Evaluation of national and regional implementation of the relevant provisions of existing international and regional obligations, such as the International Health Regulations, the Biological and Toxin Weapons Convention, UN Security Council Resolution 1540, and IMO and ICAO regulations.

Membership: This Working Group should include regional representatives from the law and order (Ministry of Interior/Defense), health, agricultural, environmental and fisheries sectors, academia and industry, along with a few select international experts with relevant experience.

4. Ad Hoc Working Group III: National and Regional Prevention and Preparedness

Purpose: The purpose of this Working Group would be to:

- Develop and share tools and methodologies for national and regional bio-risk assessment;
- Identify the biosafety and biosecurity and disease outbreak scenarios of most concern nationally and regionally and to develop preparedness plans for dealing with each scenario;
- Test the developed preparedness plans using appropriate methods, such as field and table top exercises, and amend them as necessary;
- Share the tested preparedness plans with other countries of the region;
- Identify existing public health surveillance capabilities and future needs, including disease surveillance for humans, animal and plant disease. Surveillance should be simple, flexible, accurate, representative, complete, affordable and timely. For national surveillance:
 - Create relevant check lists;
 - Undertake situation analyses and needs assessments;
 - Identify weak points;
 - Develop a plan of action to improve surveillance through:
 - Involvement of all health providers and other stakeholders;
 - Improvement of laboratory diagnostics and the establishment of national referral laboratories;
 - Activating public health laws in each country concerning reporting and notification;
 - Developing guidelines and protocols accredited by WHO;
 - Training relevant staff; and
 - Raising awareness within the medical and public communities;
- Identify existing diagnostic capacity and outbreak reporting procedures and future needs; and
- Identify border control issues of relevance to national and regional biosafety and biosecurity strategies and future needs to develop these, including in relation to:
 - Cooperation;
 - Exchanges of experience and medical samples for confirmation leading eventually to an established quality assurance system so that all laboratory results will be accepted by others;
 - Develop a regional plan;
 - Implementing the International Health Regulations (IHR); and
 - Screening at the borders of humans, animals and food, with due regard to human rights and dignity.

Membership: This Working Group should include regional representatives from the law and order (Ministry of Interior/Defense), health, agricultural, environmental and fisheries sectors, academia and industry, along with a few select international experts with relevant experience.

5. Ad Hoc Working Group IV: Policy-Making

Purpose: The purpose of this Working Group would be to:

- Identify international/regional gaps on biosafety and biosecurity issues, and propose mechanisms to create needed policies, standards and regulations at the international/regional levels;
- Identify and propose ways to encourage stakeholders' awareness of all key issues in the biosafety and biosecurity area, through greater interaction between policy-makers on the one hand and scientists, academics and industry on the other;
- Identify and propose ways to broaden scientists', academia's and industry's participation in and input into policy-making on issues relating to biosafety and biosecurity and infectious disease surveillance; and
- Identify needs and propose ideas for national and regional communications plans in the event of major biological crises.

Membership: This Working Group should include regional representatives from the law and order (Ministry of Interior/Defense), health, agricultural, environmental and fisheries sectors, academia and industry, along with a few select international experts with relevant experience.

6. Standing Committee to Assess the Feasibility of Regional Training Centre(s)

Purpose: The purpose of this committee would be to:

- Analyze the region's needs for training in the biosafety and biosecurity area;
- Assess the feasibility of establishing one or more Regional Training Centers;
- Assess the requisite resources to establish Regional Training Centre(s) to meet the MENA area needs;
- Identify suppliers of and funding sources for the requisite resources;
- Make recommendations to the next Annual Conference; and
- As far as possible, use existing training curricula and facilities.

Membership: This committee should include representatives from each of the countries/institutions interested in hosting a Regional Training Centre, health, agricultural, environmental and fisheries sectors, academia and industry, along with a few select international experts with relevant experience.

Timing

The revised framework will be distributed to the scientific and policy communities in the MENA region in accordance with plans approved by the Steering Committee.

The revised framework document will serve as a roadmap for the creation of national and regional biosafety and biosecurity strategies in the MENA region.

Resources

The following organizations, non-profits, government entities have agreed to work together to help develop and implement biosafety and biosecurity strategies at the national and regional level.

Environment Agency of Abu Dhabi (EAD)

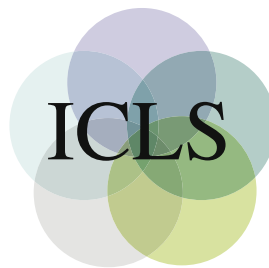
International Council for the Life Sciences (ICLS)

Ministry of Education, Higher Education, Training and Scientific Research for the Kingdom of Morocco

Royal Scientific Society of Jordan (RSS)

Steering Committee

- Chair: Dr Abdulhafid Debbagh
- Dr. Sabah Al Momin
- Dr. Rana Amini
- Dr. Ahmed K. Bashir
- Dr. Ruth Berkelman
- Dr. Suleiman al Busaidy
- Dr. Eltayeb Ali
- Dr. Bassam Hayek
- Dr. Bassam al Hijawi
- Dr. Rima Khabbaz
- Dr. Maan al Hakim
- Dr. Ali Akbar Mohammadi
- Dr. Anwar Nasim
- Dr. Assad Ramlawi
- Dr. Mohammad Sharif
- Ms. Heather Sheeley
- Mr. Terence Taylor
- Dr. Khalid Temsamani
- Mr. Tim Trevan
- Dr. Ghazi Yehia



Appendix 8: List of Participants*

- Dr Amanullah Tareq Wardak, Provincial Health Directorate, Afghanistan
- Dr Arslan Chikhaoui Nord-Sud, Ventures, Algeria
- Mr Kamel Dehili, AUP Technology Algeria (IT for Safety & Security), Algeria
- Mr Messaoud Ramdani, Uni Ferhat Abbas Setif, Algeria
- Dr Grahame Jackson, Pestnet, Australia
- Ms Maureen Ellis, Global Partnership Programme – Department of Foreign Affairs and International Trade, Canada
- Amb Mark Gwozdecky, Canadian Embassy – Jordan, Canada
- Mr Trevor Smith Global Partnership Programme - Department of Foreign Affairs and International Trade, Canada
- Prof Hany A El-Shemy , Ministry of Higher Education, Egypt
- Dr Ayman Abdel-Magid El-Shibiny, Suez Canal University, Egypt
- Mr Ayman Morsy, Egyptian Biosafety Association, Egypt
- Dr Francois-Xavier Babin, Fondation Merieux, France
- Dr Rana Amini, WHO Consultant, Iran/USA
- Prof Hayfa Al-Attiya, College of Science, University of Baghdad, Iraq
- Dr Hayder Fouad, Department of Biological Activities, National Monitoring Directorate, Iraq
- Dr Ahlam Ibrahim, Medical Technical Institute/Baghdad, Iraq
- Mr Muthana Majid, Otago University School of Medicine, New Zealand/Iraq
- Prof Zuhair Zahid, College of Medicine/University of Baghdad, Iraq
- Guilio Mancini, Landau Network-Centro Volta, Italy
- Ms Nadia Sulehat, Ministry of Water and Irrigation (MWI)/ Water Authority of Jordan (WAJ), Jordan
- Ms Aseel Abu Alshaar, Jordan University for Science and Technology, Jordan
- Dr Ehab Abu-Basha, Jordan University of Science and Technology, Jordan
- Mr Ali Hassan Abu-Hammour, AOAD, Jordan
- Dr Luay F Abu-Qatouseh, Jordan Company for Antibody Production, Jordan
- Eng Abeer Al Balawneh, National Center for Agricultural Research and Extension, Jordan
- Hiyam Al Rousan, Royal Scientific Society of Jordan, Jordan
- Dr Amjed Al-Fahoum, Yarmouk University, Jordan
- Dr Luna Al-Hadidi, National Center for Agricultural Research and Extension, Jordan
- Eng Nuwar Al-Huseini, Royal Scientific Society, Jordan
- Mr Amer Al-Jarrah, Military Laboratories for Quality Control, Jordan
- Ms Sana Al-Joubbeh, Ministry of Water and Irrigation (MWI)/ Water Authority of Jordan (WAJ), Jordan
- Dr Saad Al-Kharabsheh, Jordan
- Prof Ahmed Al-Majali, Jordan University of Science and Technology, Jordan
- Dr Khaled Al-Qaoud, Jordan Company for Antibody Production, Jordan
- Mr Munther Al-Qudah, Miyahuna Company, Jordan
- Dr Moh'd Al-Rifae, National Center for Agricultural Research and Extension, Jordan
- Mr Khalil Al-Saradeh, Ministry of Water and Irrigation (MWI)/ Water Authority of Jordan (WAJ), Jordan
- Dr Nisreen AlHmoud, Royal Scientific Society of Jordan, Jordan
- Dr Abbas As-Sayyah, Royal Scientific Society of Jordan, Jordan
- Ms Lina Asfora, Royal Scientific Society, Jordan
- Ms Bara Attily, Jordan Environment Society, Jordan
- Mr Basem Bataienh, Jordan University for Science and Technology, Jordan
- Mr Ibrahim Baydoun, Jordan University for Science and Technology, Jordan
- HH Al-Sharif Nasser bin Nasser, MESIS, Jordan
- HRH Prince El Hassan Bin Talal Majlis El Hassan, Jordan
- HRH Princess Sumaya bint El Hassan, Royal Scientific Society of Jordan, Jordan
- Eng Nidal Daradkeh, National Center for Agricultural Research and Extension, Jordan
- Dr Susan Dura National Center for Agricultural Research and Extension, Jordan
- Dr Nizar Haddad National Center for Agricultural Research and Extension, Jordan
- Mr Hazem Haddad, Jordan University for Science and Technology, Jordan

* Participants are listed by country alphabetically.

- Dr Nizar Haddad National Center for Agricultural Research and Extension, Jordan
- Mr Hazem Haddad, Jordan University for Science and Technology, Jordan
- Dr Aktham j Haddadin, Ministry of Health, Jordan
- Ms Louma Halasa, UN Development Programme, Jordan
- Mr Nart Hameed, El Hassan Science City, Jordan
- Mr Rahdi Hamsha, Jordan University for Science and Technology, Jordan
- Eng Ammar Hattar, National Center for Agricultural Research and Extension, Jordan
- Dr Bassam O Hayek, Al Hayek for Environmental Consultancy, Jordan
- Dr Nawal Hijjawi, El-Hashmiah University, Jordan
- Prof Hala Khyami Horani, University of Jordan, Jordan
- Ms Rawan Khasawneh, Jordan University for Science and Technology, Jordan
- Ms Rana Khasawneh, Jordan University for Science and Technology, Jordan
- Ms Anood Khreis, Jordan University for Science and Technology, Jordan
- Ms Suha Makhloof, Jordan University for Science and Technology, Jordan
- Dr Mohammad Mudawi, UN Development Programme, Jordan
- Prof Mohammed Abdel, Qader Obaide Princess Sumaya University for Technology, Jordan
- Mr Abdallah Obidat, Royal Scientific Society, Jordan
- Ms Jamileh Ofie, Ministry of Water and Irrigation (MWI)/ Water Authority of Jordan (WAJ), Jordan
- Ms Hiyam Sa'aydeh, Ministry of Water and Irrigation (MWI)/ Water Authority of Jordan (WAJ), Jordan
- Ms Mervat Salman, Royal Scientific Society, Jordan
- Ms Suha Shouqar, Royal Scientific Society, Jordan
- Mr Nizar Zahran, Royal Scientific Society of Jordan, Jordan
- Dr Willy Tonui, African Biological Safety Association, Kenya
- Dr Sabah Al-Momin, Kuwait Institute for Scientific Research, Kuwait
- Dr Ghazi Al-Hakim, Ministry of Agriculture, Lebanon
- Dr Ghassan Mattar, American University of Beirut, Lebanon
- Eng Abeer Sirawan, Ministry of Agriculture, Lebanon
- Dr Ghazi Yehia, World Organisation for Animal Health (OIE), Lebanon
- Mr Edgar Reyes, Amexbio AC, Mexico
- Prof Mustapha Ennaji, Director Laboratory of Virology, Morocco
- Prof Khalid Fares, Université Cadi Ayyad, Faculté des Sciences-Semlalia, Département de Biologie, Morocco
- Prof Mohamed Hassar, Institut Pasteur Casablanca, Morocco
- Dr Meryem Lemrani, Laboratoire des leishmanioses/Institut Pasteur du Maroc, Morocco
- Dr Khalid R Tamsamani, Regional Observatory for Environment and Sustainable Development, Morocco
- Mr Hamed Suleiman, Hamed Al Bortamani Ministry of Defence, Oman
- Dr Suleiman Al-Busaidy, Ministry of Health, Oman
- Dr Syed Azam, Quaid-i-Azam University, Pakistan
- Dr Abid Azhar, Karachi Institute of Biotechnology and Genetic Engineering, University of Karachi, Pakistan
- Amb Mohammad Masood, Khan Embassy of Islamic Republic of Pakistan in Beijing, Pakistan
- Dr Anwar Nasim, COMSTECH Secretariat, Pakistan
- Mr Muhammad Qasim, National Referral Laboratory for Tuberculosis, Pakistan
- Dr Zabta K Shinwari, Quaid-i-Azam University, Pakistan
- Prof Ziad Abdeen, Al-Quds University, Palestinian Authority
- Dr Assad Ramlawi, Ministry of Health, Palestinian Authority
- Dr Nisreen Shuaibi, Middle East Consortium on Infectious Disease Surveillance (MECIDS), Palestinian Authority
- Mr Sari Hussein, Middle East Consortium on Infectious Disease Surveillance (MECIDS), Palestinian National Authority
- Prof Migdam Abdelgani, The National Centre for Research, Sudan
- Dr Eltayeb A E Ali, Sudan Atomic Energy Commission, Sudan
- Dr Abdelgader Ballal Mohamed, Ministry of Animal Resources and Fisheries, Sudan
- Dr Abdelmonim Hassan, Sudan Atomic Energy Commission, Sudan
- Dr Adil Ahmed Ismail, Ministry of Health, Sudan
- Dr Imad Konozy, Africa City of Technology, Sudan
- Dr Somia Okoued, Ministry of Health, Sudan
- Dr Osama Rayis, Africa Technology City, Sudan
- Dr Mohammed Salih, Osman Industrial Research and Consulting Centre, Sudan

- Dr Elagib Tahani, Agricultural Research Corporation, Sudan
- Dr Ali Mohammadi, Ferdous International Foundation, Switzerland
- Amb Paul Van Den Ijssel, Permanent Representation of the Kingdom of the Netherlands to the United Nations, Geneva, BTWC President Designate, Switzerland
- Dr Ahmed Bashir, Environment Agency - Abu Dhabi (EAD), UAE
- Mr David Elliott, DSTL Porton Down, UK
- Mr Robin Hay, Temple London, UK
- Lady Olga Maitland, Defence and Security Forum, UK
- Ms Heather Sheeley, Health Protection Agency, UK
- Dr Anne-Sophie Brocard, UTMB, USA
- Mr Scott Field, Skoll Global Threats Fund, USA
- Mrs Caryl Griffin, Elizabeth R Griffin Research Foundation, USA
- Dr Andrew Hessel, Singularity University, USA
- Dr Rima Khabbaz, Centers for Disease Control and Prevention, USA
- Ms Akhila Kosaraju, SIGA Technologies, USA
- Dr Jacqueline MacDonald, School of Public Health, The University of North Carolina at Chapel Hill, USA
- Ms Whitney Ray, International Council for the Life Sciences, USA
- Ms Debra Sharpe, Working Buildings, USA
- Dr William So, FBI, USA
- Ed Stygar, American Biological Safety Association, USA
- Dr Victoria Sutton, Texas Tech University, USA
- Mr Terence Taylor, International Council for the Life Sciences, USA
- Mr Tim Trevan, International Council for the Life Sciences, USA
- Mr James Tunkey, I-OnAsia, USA
- Mr Jim Welch, Elizabeth R Griffin Research Foundation, USA
- Dr Fatima Ahmed Alhadi, Plant Physiology, Sana'a University, Yemen
- Dr Abdul Karim Nasher, Biology Department- Sana'a, Yemen

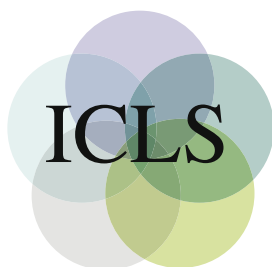
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- Federal Bureau of Investigation, USA
- Government of the United Kingdom, UK
- International Federation of Biosafety Associations
- Islamic Development Bank
- Robert and Ardis James Foundation, USA
- John D. and Catherine T. MacArthur Foundation, USA
- Nuclear Threat Initiative, USA
- Mr. James Tunkey and Mrs. Catherine Chin, USA
- Vanguard Charitable Endowment Program, USA
- Umniah Mobile Company, Jordan

Contact Information



International Council for the Life Sciences

4245 Fairfax Drive, Suite 625
Arlington, Virginia USA 22203
Phone: +1 202-659-8058
Fax: +1 202-659-8074
www.iclscharter.org
www.BBIC-2011.org



El Hassan Science City

PO Box 2438
Al-Jubaiha 11941
Hashemite Kingdom of Jordan
Phone: +962 6 5344804
Fax: +962 6 5347331
www.ehsc.jo



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Royal Scientific Society

Royal Scientific Society

PO Box 2438
Al-Jubaiha 11941
Hashemite Kingdom of Jordan
Phone: +962 6 5344701
Fax: +962 6 5347806
www.rss.jo

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