

# ***After-Action Report***



## ***Countering Biological Threats:***

***National Implementation of the Biological Weapons Convention and  
Multinational Outbreak Response and Bioterrorism Investigation Demonstration***

**Tbilisi, Georgia, 17-19 May 2011**

## Supporting Organizations



Stronger Together

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>OVERVIEW OF THE WORKSHOP ON “COUNTERING BIOLOGICAL THREATS: NATIONAL IMPLEMENTATION OF THE BIOLOGICAL WEAPONS CONVENTION AND MULTINATIONAL OUTBREAK RESPONSE AND BIOTERRORISM INVESTIGATION DEMONSTRATION” .....</b>	<b>6</b>
<b>WORKSHOP ACADEMICS .....</b>	<b>11</b>
<b>Key Messages.....</b>	<b>11</b>
<b>Lessons Learned and Recommendations.....</b>	<b>34</b>
<b>US-GEORGIA CENTRAL PUBLIC HEALTH REFERENCE LABORATORY - SITE VISIT - .....</b>	<b>35</b>
<b>UN SECRETARY- GENERAL'S MECHANISM FOR INVESTIGATION OF ALLEGED USE OF CHEMICAL AND BIOLOGICAL WEAPONS (UNSGM) - TABLETOP EXERCISE -.....</b>	<b>39</b>
<b>Training Objectives.....</b>	<b>42</b>
<b>Exercise Format.....</b>	<b>43</b>
<b>TTX Lessons Learned.....</b>	<b>45</b>
<b>MINISTRY OF INTERNAL AFFAIRS OF GEORGIA - CBRN CONSEQUENCE MANAGEMENT DEMONSTRATION - .....</b>	<b>47</b>
<b>CONCLUSIONS AND WAY FORWARD .....</b>	<b>49</b>
<b>APPENDIX A – WORKSHOP AGENDA .....</b>	<b>54</b>
<b>APPENDIX B – PARTICIPATING ORGANIZATIONS.....</b>	<b>60</b>

## ***EXECUTIVE SUMMARY***

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* was organized by the US Department of Defense (US European Command, Armed Forces Health Surveillance Center, Center for Disaster and Humanitarian Assistance Medicine, and the Defense Threat Reduction Agency) and the US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response (ASPR) with the support of the National Center for Disease Control and Public Health of Georgia (NCDC), the US-Georgia Central Public Health Reference Laboratory (CPHRL), and the Emergency Management Department, Ministry of Internal Affairs of Georgia. It included awareness training, a tabletop exercise designed to review the technical guidelines and procedures associated with the *United Nations Secretary General's Mechanism on Investigation of Alleged Use of Biological and Chemical Weapons* (UNSGM), and a practical demonstration of consequence management capabilities of Georgia's Ministry of Internal Affairs CBRN Rapid Response Team.

Of note, the tabletop exercise was a first of its kind at the international level for awareness raising and review of the UNSGM Technical Guidelines and Procedures including their updated appendices (available online at: [http://www.un.org/disarmament/WMD/Secretary-General\\_Mechanism/appendicies](http://www.un.org/disarmament/WMD/Secretary-General_Mechanism/appendicies)) for timely and efficient investigations of reports on the possible use of chemical and biological weapons. The tabletop exercise was facilitated by two representatives of the UN Office for Disarmament Affairs (UNODA), Dr. Gabriele Kraatz-Wadsack- Chief, Weapons of Mass Destruction Branch and Mr. Franz Kolar- Political Affairs Officer.

In the spirit of President Obama's Transparency and Open Government initiative and its principles of transparency, participation, and collaboration, workshop participants were offered guided tours of the US-Georgia Central Public Health Reference Laboratory (CPHRL) whose mission is to promote public and animal health through infectious disease detection, epidemiological surveillance, and research for the benefit of Georgia, the Caucasus region, and the global community (CPHRL website at: <http://www.cphrl.org>).

The workshop aimed to: i) promote interagency (in particular public health-law enforcement but also civilian-military) cooperation, coordination and synchronization for preparing, detecting,

and responding to infectious disease outbreaks, whether natural, accidental, or deliberate in nature; ii) establish regional partnerships to enhance training and disease surveillance and containment initiatives; and iii) strengthen the core capacities required by the WHO International Health Regulations (IHRs) and existing national measures consistent with the obligations under the Biological Weapons Convention (BWC) and the UN Security Council Resolution 1540 (UNSCR 1540) to deter, prevent, and respond to biological incidents or threats.

The workshop was attended by about 100 participants including civilian and military public and veterinary health (laboratory and preventive medicine personnel, epidemiologists, emergency response planners, administrators), law enforcement, intelligence, and affiliated professionals (other first responders, policy staff, representatives of academia, industry, and other non-governmental organizations) from US, Georgia, Armenia, Azerbaijan, Bulgaria, Romania, Moldova, Turkey, Poland, and Kenya; and representatives of inter-governmental organizations (WHO, UNODA, NATO, and ECDC). Opening remarks were offered by the Dr. Mikheil Dolidze - Deputy Minister, Ministry of Labor, Health and Social Affairs (MoHLSA) of Georgia; Ms. Julie Fisher, Chief of Political and Economical Affairs, US Embassy, Georgia; CAPT Kevin Russell- Director, Global Emerging Infections Surveillance and Response System (GEIS) Operations Division and Deputy Director Armed Forces Health Surveillance Center, US Department of Defense (DOD); and Dr. George Korch, Principal Deputy Assistant Secretary for Preparedness and Response (PD-ASPR), US Department of Health and Human Services (HHS).

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* is the third such event co-organized by DOD and HHS in the European region (for more details on the two workshops organized in 2010 in Georgia and Moldova, please see: <http://www.phe.gov/about/OPP/Pages/bwc.aspx>)

These events illustrate the US Government commitment toward the implementation of the objectives of the *National Strategy for Countering Biological Threats*, to promote global health security and transform the international dialogue on biological threats, as well as working with cross-border and global partners to enhance national, regional, and global health security in accordance with the *National Health Security Strategy*.

This After-Action Report will be published online on the ASPR website at: <http://www.phe.gov/about/OPP/Pages/biosafety.aspx>

**OVERVIEW OF THE WORKSHOP ON  
“COUNTERING BIOLOGICAL THREATS: NATIONAL  
IMPLEMENTATION OF THE BIOLOGICAL WEAPONS CONVENTION  
AND MULTINATIONAL OUTBREAK RESPONSE AND BIOTERRORISM  
INVESTIGATION DEMONSTRATION”**

The *US National Strategy for Countering Biological Threats* emphasizes that the Biological and Toxin Weapons Convention (BWC), which entered into force in 1975 and is the only global nonproliferation regime that addresses biological weapons, is an important means of galvanizing the international community toward countering the biological threats. The 2007-2010 work program of BWC helped strengthen the BWC implementation in States Parties by providing a forum for addressing the biological risks and sharing of best practices in biological risk management among the members of health, security, science, law enforcement, policy-makers, foreign affairs, and civil society communities. The upcoming Seventh Review Conference of BWC in December 2011 constitutes a significant opportunity for States Parties to build upon the successful work program which just concluded and pursue actions to:

- i) promote confidence in effective BWC implementation and compliance;
- ii) prevent and deter bioterrorism; and
- iii) build global capacity to combat biological threats whether natural, accidental, or deliberate in origin.

In order to ensure that the tenets of the BWC are adhered to, States Parties are encouraged to implement national legislation to enforce the provisions of the BWC to prohibit and prevent the development, production, stockpiling, acquisition, retention, transfer or use of biological weapons by anyone under their jurisdiction, as well as parallel measures to prohibit and prevent encouraging, inciting or assisting others in any of these acts. Based on the understandings and agreements reached historically at the Review Conferences, national implementation of BWC includes legislative, administrative, and other measures to enhance domestic compliance systems; education, awareness raising and outreach measures; disease surveillance, detection, and containment; as well as biosafety and biosecurity provisions.

With the 2005 revision of the WHO International Health Regulations (IHRs) (which are an international legal instrument that is binding on 194 countries across the globe, including all the Member States of WHO and which entered into force on 15 June 2007), BWC States Parties recognized that the implementation of consistent policies, operating procedures, and the

operational and technical capacity required by the WHO IHRs will help ensure early warning and efficient international management of a biological incident, whether naturally occurring or deliberate in nature, as well as the implementation of biosafety and biosecurity measures required for effective BWC implementation. In addition, national activities toward meeting the obligations under the BWC and the UN Security Council Resolution 1540 (UNSCR 1540) such as the adoption of appropriate legislative or administrative measures (including criminal law provisions), enhancing effective implementation and enforcement of these measures, and improving coordination and networking among relevant national stakeholders, constitute synergistic means toward building strong barriers to proliferation of biological weapons materials and denying access of non-State actors to such materials.

Effective action and regional/international coordination in case of a potential public health emergency of international concern requires strengthening the national capabilities and public health systems for disease surveillance, detection, diagnosis, and response as well as a multi-sectoral coordinated approach.

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* held in Tbilisi, Georgia, on 17-19 May 2011, aimed to familiarize participants with:

- WHO's revised *International Health Regulations (2005)* and the Global Outbreak Alert and Response Network (GOARN);
- The Biological Weapons Convention (BWC) tenets and instruments for an internationally coordinated approach to combating biological threats;
- *The United Nations (UN) Global Counter-Terrorism Strategy*, a unique global instrument to enhance national, regional and international efforts to counter terrorism;
- The *UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM)* and its key elements [trigger procedures, use of the UNSGM roster of experts and laboratories, and the guidelines and procedures for the conduct of investigations as updated by the UN Office of Disarmament Affairs (UNODA)];
- The goals and requirements of the UN Security Council Resolution 1540 (UNSCR 1540) implementation;

- NATO's resources for assistance to Partner countries, and its *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMDs) and Defending against CBRN Threats*.

The workshop also aimed to highlight the activities and programs of the European Centre for Disease Prevention and Control (ECDC); the US Centers for Disease Control and Prevention (CDC); Armed Forces Health Surveillance Center (AFHSC); US European Command (EUCOM); the Biomedical Advanced Research and Development Authority (BARDA) within the Office of the Assistant Secretary for Preparedness and Response (ASPR) in the U.S. Department of Health and Human Services; the Federal Bureau of Investigation (FBI) WMD Directorate; and the Biological Threats Identification and Countermeasure Center of the Military Institute of Hygiene and Epidemiology of Polish Armed Forces. These organizations emphasized their efforts on building partnerships and collaborations aimed at strengthening the national and international capabilities for responding to infectious disease outbreaks through training of the public health workforce (including joint public health-law enforcement training), developing tools for microbial forensics, implementing laboratory and disease surveillance quality management systems, and developing the necessary medical countermeasures and diagnostic tools for public health medical emergencies.

In addition to the public health-law enforcement collaboration highlighted by the FBI, the civil-military cooperation in biosurveillance was also emphasized in the presentations from EUCOM, AFHSC, and the Walter Reed Army Institute of Research (WRAIR).

The workshop benefited from the participation of representatives of non-governmental organizations (NGOs) such as VERTIC- an independent, not-for-profit NGO, whose mission is to support the development, implementation and effectiveness of international agreements (such as BWC and UNSCR 1540) and related regional and national initiatives; and Virginia Polytechnic Institute & State University (Virginia Tech) – which contributed with a presentation on microbial forensics capability to support attribution and advance global biosecurity.

The National Center for Public Health of the Republic of Moldova also contributed with a presentation on the Moldovan national disease surveillance and response system, including field investigation capabilities and procedures.

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation*

*Demonstration* had the strong support of Georgia's Ministry of Health, Labor and Social Affairs (MoHLSA), the National Center for Disease Control and Public Health of Georgia (NCDC), the US-Georgia Central Public Health Reference Laboratory (CPHRL), Georgia's Biosafety Association, and the Emergency Management Department of the Ministry of Internal Affairs of Georgia.

Georgia joined the Biological Weapons Convention in 1995 and has extensive measures in place to ensure that all activities on its territory are treaty-compliant and that prohibited activities are deterred and detected and perpetrators are prosecuted. Georgia is an active participant in the BWC process (by *inter alia*, submitting annually the Confidence Building Measures reports, making presentations in the BWC Meetings of Experts, and organizing BWC-relevant international workshops and awareness-raising training events) and also implemented effective measures to comply with the UNSCR 1540.

The U.S. partnered with the Government of Georgia to establish a joint Georgian-U.S. laboratory to strengthen the defenses of Georgia, the U.S., and the world against the spread of infectious disease and biological terrorism. Construction began on the joint project in 2006 and was completed in December 2009. The US-Georgia Central Public Health Reference Laboratory (CPHRL) was officially opened on 18 March 2011 by the U.S. Ambassador John Bass, Prime Minister Nikoloz Gilauri, Minister of Labor, Health and Social Affairs Andrew Urushadze, and U.S. Assistant Secretary of Defense Andrew Weber. In the spirit of President Obama's Transparency and Open Government initiative and its principles of transparency, participation, and collaboration, the participants at the workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* were offered guided tours of CPHRL.

*"Developing a modern state-of-the-art laboratory and research excellence center will significantly contribute to the improvement of our national public health surveillance system.*

*Our vision for modern public health is closely linked with biomedical research targeting effective disease control in the country."*

Andrew Urushadze, Minister of Labor, Health and Social Affairs of Georgia

CPHRL website: <http://cphrl.org/en/index.html>

US Embassy in Georgia- News: <http://georgia.usembassy.gov/latest-news/press-releases-2014/united-states-and-georgia-to-open-central-public-health-reference-laboratory-march-16.html>

The Emergency Management Department (EMD) of Georgia's Ministry of Internal Affairs is responsible for the coordination of activities for prevention and consequence management of emergency situations as well the implementation of civil defense tasks in peace time and war or military conflicts. EMD actively participates in NATO's Partnership for Peace program, Civil Emergency Planning meetings and seminars as well as in different types of international training events. It has cooperation agreements in place for emergency management with Armenia, Azerbaijan, Russia, and Ukraine. The EMD offered a demonstration of its capabilities for the workshop participants from US, Georgia, Armenia, Azerbaijan, Bulgaria, Romania, Moldova, Turkey, Poland, and Kenya and other representatives from inter-governmental and non-governmental organizations, at its Rescue Base by the Tbilisi Sea.

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* was organized as a series of plenary presentations ("academics"), a tabletop exercise focused on the *UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM)*, site visit at the US-Georgia Central Public Health Reference Laboratory, and a practical demonstration of consequence management capabilities of Georgia's Ministry of Internal Affairs EMD CBRN Rapid Response Team.

Participants received at registration a welcome package containing the workshop agenda, list of participants, and reference materials for the table top exercise.

At the workshop conclusion, participants received nominal Certificates of Appreciation, disks with the presentations, and group pictures.

## WORKSHOP ACADEMICS

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration*, held in Tbilisi, Georgia, on 17-19 May 2011, commenced with introductory remarks by high-level keynote speakers: Dr. Mikheil Dolidze - Deputy Minister, Ministry of Labor, Health and Social Affairs (MoHLSA) of Georgia; Ms. Julie Fisher, Chief of Political and Economical Affairs, US Embassy, Georgia; CAPT Kevin Russell- Director, Global Emerging Infections Surveillance and Response System (GEIS) Operations Division and Deputy Director Armed Forces Health Surveillance Center, US Department of Defense (DOD); and Dr. George Korch, Principal Deputy Assistant Secretary for Preparedness and Response (PD-ASPR), US Department of Health and Human Services (HHS).

The workshop was organized in four main sessions, with the plenary presentations addressing the multi-layered systems of defense of public health security from an international perspective (international strategies and mechanisms as well as the role of international organizations in, *inter alia*, information sharing on public health events of international concern, early detection and notification, microbial forensics, coordination of regional and international assistance for consequence management, BW nonproliferation) and national perspective (with regard to national response frameworks, including, *inter alia*: laboratory capabilities, national plans and responsible authorities for bio incident consequence management, regional and international collaboration approaches and/or plans for national/international information sharing and notification, epidemiological/law enforcement joint investigations, consequence management, and coordination of assistance).

### Key Messages

The first two sessions session addressed issues relevant to the Biological Weapons Convention (BWC) implementation (such as legislative, regulatory, policy, and other measures to enhance domestic compliance systems; disease surveillance, detection, and containment; as well as biosafety and biosecurity provisions), synergy with other international mechanisms (such as the WHO IHRs and UNSCR 1540) and strategies (including the *United Nations Global Counter-Terrorism Strategy* and NATO's *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMDs) and Defending against CBRN Threats*).

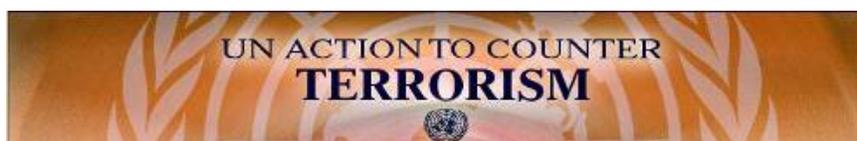
Also emphasized were the national, regional, and international activities of the United States (Department of Health and Human Services and the Department of Defense), ECDC, and WHO toward global health security.



**Dr. Gabriele Kraatz-Wadsack- Chief, Weapons of Mass Destruction Branch, UN Office of Disarmament Affairs (UNODA)** provided an overview of the *United Nations Global Counter-Terrorism Strategy* which was adopted by Member States on 8 September 2006 (in the form of a resolution and an annexed Plan of Action), its four pillars concerning measures: i) to address the conditions conducive to the spread of terrorism; ii) to prevent and combat terrorism; iii) to build States' capacity to prevent and combat terrorism and to strengthen the role of the United Nations system in this regard; and iv) to ensure respect for human rights for all and the rule of law as the fundamental basis of the fight against terrorism. Dr. Kraatz-Wadsack also discussed the role of the UN Counter-Terrorism Implementation Task Force (CTITF) in assisting Member States with Strategy implementation; the role of the CTITF Working Group on Preventing and Responding to WMD Attacks which was established to strengthen the exchange of information and knowledge among relevant UN entities and international organizations related to response to WMD terrorist attacks; and the UNODA role as a focal point within the UN Secretariat in facilitating the administrative and substantive support and coordination for the efficient functioning of the *UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM)*, including the conduct of on-site investigations.

*UNODA main website:* <http://www.un.org/disarmament>

*UNODA information on the United Nations Counter-terrorism Strategy:*  
[http://www.un.org/disarmament/WMD/Counter\\_Terrorism](http://www.un.org/disarmament/WMD/Counter_Terrorism)





**Mr. Guy B. Roberts, Deputy Assistant Secretary General for Weapons of Mass Destruction Policy at NATO**, discussed the NATO's *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of WMDs and Defending against CBRN Threats*, NATO's new (2010) *Strategic Concept*, and NATO's role in international cooperation toward WMD nonproliferation. Mr. Roberts described NATO's partnership initiatives such as the Mediterranean Dialogue, the Partnership Action Plan against Terrorism, and the Istanbul Cooperation Initiative as well as NATO's Centers of Excellence (such as the Joint CBRN Defence CoE in the Czech Republic and the Defence Against Terrorism Centre of Excellence from Turkey). As a political-military organization NATO provides complementary and synergistic capabilities to widen and strengthen the international "web of prevention", the nonproliferation regimes supporting international security, and the international response capabilities, through partnership with relevant countries and other international organizations. NATO's Civil Emergency Planning (which enables Allies and Partner nations to assist each other in preparing for and dealing with the consequences of crisis, disaster or conflict) and its Deployment Health Surveillance Capability (expected to become operational in 2011) illustrate NATO's capabilities and initiatives where the use of civilian and military assets can be dovetailed to achieve the desired goal of international security including health security.

#### Additional references

NATO's *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of WMDs and Defending against CBRN Threats*:

[http://www.nato.int/cps/en/natolive/official\\_texts\\_57218.htm](http://www.nato.int/cps/en/natolive/official_texts_57218.htm)

NATO Civil Emergency Planning:

[http://www.nato.int/cps/en/natolive/topics\\_49158.htm](http://www.nato.int/cps/en/natolive/topics_49158.htm)

NATO's 2011 WMD Forensics Conference:

[http://www.nato.int/nato\\_static/assets/pdf/pdf\\_2011\\_02/20110615\\_WMD-Forensics-Conference-Report.pdf](http://www.nato.int/nato_static/assets/pdf/pdf_2011_02/20110615_WMD-Forensics-Conference-Report.pdf)



**Dr. Eugene Gavrilin, WHO, Laboratory Network Coordinator, Biosafety and biosecurity,** provided an overview of World Health Organization (WHO) - global and regional (European) mechanisms of response to public health threats. Dr. Gavrilin also addressed the implementation of the International Health Regulations (2005) [IHRs] and the WHO event management structures and process.

The current IHRs – the international agreement designed to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade - entered into force on 15 June 2007 and provide the framework for improved international public health security.

The IHRs define a risk management process where Member States work together and through WHO to collectively mitigate public health emergencies. The Global Outbreak Alert and Response Network (GOARN) is the operational arm of the IHRs by which WHO ensures that countries have rapid access to the most appropriate experts and resources for outbreak response. GOARN has helped to build consensus on guiding principles for international outbreak alert and response and to establish operational protocols to standardize field logistics, security, communications, and streamlined administrative processes to ensure rapid mobilization of field teams. WHO has also developed its capacity at all levels, with regional response teams conducting field operations with GOARN Partners.

*WHO websites:*

<http://www.who.int/ihr/en/>

<http://www.who.int/csr/en/index.html>



**Dr. Massimo Ciotti, Senior Advisor, Public Health Capacity and Communication, European Centre for Disease Prevention and Control (ECDC)** discussed the role of ECDC in the identification, assessment, and communication of current and emerging threats to human health from communicable diseases in the European Union (EU) and highlighted the role of his organization in both prevention and response. Dr. Ciotti described the process of Epidemic Intelligence and the ECDC’s early warning and response systems such as the Epidemic Intelligence Information System, the EU Early Warning and Response System, and RAS BICHAT (the EU rapid alert system used for exchanging information on health threats due to deliberate release of CBRN agents), as well as the ECDC Emergency Operations including Communications and Intelligence; Command and Control; Coordination & Documentation; Preparedness and Training.

ECDC has critical functions in bioterrorism prevention and response by strengthening public health systems, providing threat assessments, implementing outbreak response protocols to include discrimination criteria (natural versus deliberate), and interacting with the law enforcement (i.e. joint public health-law enforcement training in field investigation, simulation exercises, etc).

There is a strong partnership between WHO and ECDC, formalized by a memorandum of agreement between the two organizations to have mutual access to WHO’s IHR notifications and ECDC’s Early Warning Response System (EWRS) - which is an IHR-like system established in 1998. Information on potential public health threats is disseminated daily and weekly via the “Threat Tracking Tool” and via the Epidemic Intelligence Information System (EPIS).

*ECDC website: <http://www.ecdc.europa.eu>*

WHO's primary role in response to an accidental or intentional release of a biological agent will be to manage the public health consequences and communicate real-time public health risk assessments and recommendations.

The World Health Assembly Resolutions WHA 54.14 and WHA55.16 committed WHO as the UN specialized health agency to build capacity towards bio incident preparedness in Member States. WHO's approach is through public health system improvement and implementation of the capacity strengthening component of IHR

*“The difficulties of predicting or pre-empting a bioterrorist attack underscore the need for careful preparedness planning. They also lead some analysts to regard strong public health infrastructures as the only reasonable defence ...*

*Routine surveillance systems for epidemic-prone and emerging infectious diseases enhance the capacity to detect and investigate deliberately caused outbreaks, as the initial epidemiological and laboratory techniques are similar to those used for natural outbreaks. Adequate background data on the natural behaviour of infectious diseases facilitate recognition of an unusual event and help determine whether suspicions of a deliberate cause should be investigated.” - WHO/CDS/CSR/EPH/2002.16 /Preparedness for the deliberate use of biological agents - A rational approach to the unthinkable*

WHO also has a role in providing technical support to the UN and international community in the investigations of alleged use as well. It supports the UN Office for Disarmament Affairs (UNODA) which has been mandated by the UN General Assembly Resolution 60/288 (2006) to coordinate the activities to strengthen the Secretary-General's mechanism for investigating alleged use of CBW, emphasizing the need for strengthening the biological area. WHO is assisting UNODA to develop the technical/operational capabilities to conduct an investigation of deliberate biological events.

A Memorandum of Understanding was signed in August 2010 between WHO and UNODA. The roadmap for future collaboration includes:

- Harmonization of relevant operational procedures.’
- Educational/ Training activities.
  - Exchange of invitations to observe/participate in the respective training.
  - Exchange of visits to share experience, information and promote cooperation on a working level:
  - Identification of skills and expertise in relevant Roster
- Endeavor to assist in conducting field operations including equipment, information, and seconding technical experts.



*The Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction* [commonly known as the Biological Weapons Convention (BWC)] entered into force in 1975 as the first international treaty to ban an entire category of weapons. It categorically states that use of biological weapons would be “*repugnant to the conscience of mankind*” and its Article I broadly declares that States Parties are bound “*never in any circumstances to develop, produce, stockpile or otherwise acquire or retain: (1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes; (2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.*” Article III of BWC requires all States Parties to refrain from transferring biological weapons to anyone and from assisting, encouraging or inducing anyone to manufacture or acquire them. Moreover, Article IV prescribes obligations for States Parties to implement the BWC through appropriate national measures including legislative, regulatory or any other appropriate measures that prevent the proliferation of dual-use products and technology for illicit weapon purposes to States as well as non-State actors. The prohibition of the *use* of biological weapons - originating in the *1925 Geneva Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare*, also falls under the purview of BWC (specifically under Article I), as stated at the 4<sup>th</sup> Review Conference.

The BWC States Parties hold Review Conferences every five years (1980, 1986, 1991, 1996, 2001, 2006 – the next one is scheduled for December 2011). Between these Review Conferences States Parties have pursued various activities and initiatives to strengthen the effectiveness and improve the implementation of the Convention. For example, the 6th BWC Review Conference of 2006 created the 2007-2010 intersessional process which consisted of 4 sets of annual meetings prior to the 7th Review Conference (each set includes a one week Meeting of Experts, followed by a one week Meeting of States Parties); established the Implementation Support Unit (ISU); established an action plan for universalization and improving national implementation; improved the Confidence Building Measures information exchange process; worked on enhancing provision of assistance; and built a network of national BWC points of contact. The 7<sup>th</sup> BWC Review Conference (which will take place in December 2011) will consider the

political agreements reached during the 2007-2010 intersessional period and decide on any further legally-binding action.

Considering the importance of biosafety and biosecurity in the context of BWC as well as the role played by professional organizations in regional collaboration and in addressing global biological risk management, **Dr. Lela Bakanidze, National Center for Disease Control and Public Health of Georgia (NCDC)**, presented an overview of political agreements and understandings reached during the intersessional process of the BWC in her newest capacity of **President of Georgia's Biosafety Association**.

The Georgian Biosafety Association is a member of *The Biosafety Association for Central Asia and the Caucasus (BACAC)* which was established in November 2008 to promote biosecurity and biosafety in the region and provide a forum for sharing of best practices in biological risk management.

Dr. Bakanidze discussed the topics of the BWC 2007-2010 intersessional process (listed in the table below) and highlighted the fact that in 2007, with regard to National Implementation, States Parties agreed on the value of:

- 1)- Ensuring domestic coordination of implementation efforts;
- 2)- Ensuring effective enforcement of legislative and regulatory measures;
- 3)- Building capacity to collect evidence and develop early-warning systems;
- 4)- Training law enforcement agencies and providing them with adequate scientific and technical support;
- 5)- Regional and sub-regional cooperation to support national measures.

With regard to biosafety and biosecurity, BWC States Parties agreed in 2008, *inter alia*, on the value of:

- National authorities defining and implementing biosafety & biosecurity concepts in accordance relevant national laws, regulations and policies;
- Ensuring that measures adopted are practical, sustainable, enforceable, are readily understood and are developed in concert with national stakeholders, avoid unduly restricting the pursuit of the biological sciences for peaceful purposes, are adapted for local needs, and appropriate for the agents being handled and the work being undertaken

- Building networks between scientific communities and academic institutions and increasing the interaction with professional associations and working groups at the national, regional and international level

States Parties also recognized the importance of education, training, and awareness-raising activities with regard to the Convention, and they agreed that the codes of conduct “...can complement national legislative, regulatory and oversight frameworks and help guide science so that it is *NOT* misused for prohibited purposes...”

The BWC meetings of 2010 had a record attendance and focused on:

- 1) international cooperation, assistance and exchange in biological sciences and technology for peaceful purposes, and
- 2) capacity building in the fields of disease surveillance, detection, diagnosis, and containment of infectious diseases

The main opportunities and challenges identified by States Parties with regard to these topics were related to:

- Sustainability
- Integrated approach to human, animal, and plant diseases, and
- Coordination of assistance, cooperation, and capacity building.

With regard to the Response to the alleged use of biological weapons (the topic of the 2010 BWC meetings), States Parties noted several challenges to the provision of assistance and coordination with relevant international organizations:

- 1)- The need for clear procedures for submitting requests for assistance or responding;
- 2)- The need for additional resources;
- 3)- The interface between international public health response and international security issues.

Also, on investigations and mitigation of potential impact, States Parties recognized the value of:

- A coordinated government approach
- Addressing all possible implications of an incident
- Clear channels of communication and command
- Accessing expert advice, and
- Training and exercises

Dr. Bakanidze also mentioned that the BWC implementation requires a complex and interlinked national framework, in the context of addressing the entire spectrum of biological risks, which involves:

- Legislation and regulations
- Biosafety and biosecurity
- Oversight of science
- Education and awareness, and
- Disease surveillance

Dr. Bakanidze's presentation is available online on the *BWC Implementation Support Unit's website* at:

[http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/59AD7D9E7488725DC12578A0002E3E8B/\\$file/Bakanidze\\_BWC\\_presentation\\_Georgia\\_workshop-17-19May2011\\_FINAL.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/59AD7D9E7488725DC12578A0002E3E8B/$file/Bakanidze_BWC_presentation_Georgia_workshop-17-19May2011_FINAL.pdf)

Additional reference:

*US-Georgia Joint Paper at the 2010 BWC Meeting of Experts, available at:*  
[http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/3384FE9CC96BB4EFC1257774002F473C/\\$file/Georgia-US\\_Paper\\_for\\_2010\\_BWC\\_MX-07082010.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/3384FE9CC96BB4EFC1257774002F473C/$file/Georgia-US_Paper_for_2010_BWC_MX-07082010.pdf)

National implementation measures for BWC (as well as for UNSCR 1540) were addressed by **Mr. Scott Spence, Senior Legal Officer at VERTIC**. VERTIC is an independent, non-profit making, non-governmental organization located in London, UK, that promotes the effective verification and implementation of arms control, disarmament, and environment agreements.

VERTIC's National Implementation Measures (NIM) Programme, with funding and in-kind assistance from Canada and the United Kingdom, has been developed to assist States in understanding what measures are required at the national level to comply with the prohibitions in a wide range of nuclear, chemical and biological weapons treaties and UN Security Council resolutions and how to implement them. VERTIC prepares 'legislation surveys' for Governments – in this context, a survey is an analysis based on 96 criteria (covering definitions, offences, preparations, jurisdiction, biosafety/biosecurity, transfers control, and enforcement). These surveys clearly identify

the legislative gaps that need to be addressed to fully implement the BWC and the related provisions of UNSCR 1540.

In addition, VERTIC reviews the relevant national legislation and regulations at a Government's request, and with such legislative analysis completed, it can provide direct on-site cooperation to draft legislation in-country, or cooperate remotely.

VERTIC cooperates with the Governments requesting its assistance in developing: i) a comprehensive draft law (using VERTIC sample acts as an option) to implement the BWC and BW-related provisions of UNSCR 1540 to establish biosafety and biosecurity frameworks, and to serve as a starting point for further inter-agency collaboration and development of the draft, and ii) a National Implementation Action Plan.

Mr. Spence emphasized the synergy and overlapping legislative requirements of BWC and BW-related provisions of UNSCR 1540- which was adopted in 2004 under Chapter VII of the UN Charter, it is legally binding on all UN Member States, and aims to curtail the threats to international peace and security caused by the proliferation of nuclear, chemical and biological weapons, as well as their means of delivery to non-State actors, by requiring States to criminalize certain activities and to put in place appropriate and effective national laws and enforcement measures to prohibit and prevent the misuse of controlled items. UNSCR 1540 established the 1540 Committee, whose mandate has been extended three times [UNSC Resolutions 1673 (2006), 1810 (2008), and 1977 (2011)].

Of note, VERTIC continues to work with the respective Government through approval and adoption of the draft law with comments on subsequent drafts (via fax, phone, or e-mail) and an additional in-country visit if necessary. Significantly, the in-country visit is at no cost to requesting Governments.

*VERTIC website: <http://www.vertic.org>*

*BWC ISU website: <http://www.unog.ch/bwc>*

*1540 Committee website: <http://www.un.org/sc/1540>*

## **UN Security Council Resolution 1977 (2011)**

*The Security Council unanimously adopted resolution 1977 (2011) on 20 April 2011. The resolution reaffirms resolution 1540 (2004) which calls on States to implement appropriate effective measures to address the threat that non-State actors may acquire, develop, traffic in or use weapons of mass destruction and their means of delivery.*

*Through resolution 1977 (2011), the Security Council acknowledges the progress made by States in implementing resolution 1540. The Council further notes that the full implementation of resolution 1540 by all States is a long-term task that will require continuous efforts at national, regional and international levels. The new resolution extends the mandate of the 1540 Committee for a period of ten years, which will enhance the 1540 Committee's ability to support the implementation of resolution 1540 and assist States in their efforts, in particular by enabling the Committee to plan its activities over a long period.*

*The new resolution also provides for two Comprehensive Reviews, one after five years and one before the end of the mandate. These comprehensive reviews will provide the Committee with important opportunities to assess implementation of resolution 1540 and to engage in an in-depth dialogue with Member States on issues related to the implementation of resolution 1540.*

*The mandate contained in resolution 1977 (2011) provides the 1540 Committee with a sound and efficient basis for its work over the next decade.*

*The resolution inter alia mandates the Committee to continue to strengthen its role to facilitate the provision of technical assistance and to enhance its cooperation with relevant international, regional and sub-regional organizations.*

*The Committee is also mandated to continue to refine its outreach efforts, and to continue to institute transparency measures, including through regular open meetings with Member States.*

*The resolution urges the Committee to continue to engage actively with States to promote the sharing of experience, lessons learned and effective practices, in the areas covered by resolution 1540 (2004), and dialogue with States on implementation, including through visits to States at their invitation.*

*The resolution also mandates the Committee to conduct annual reviews on the implementation of resolution 1540 (2004) in order to guide its activities, and, on this basis, to include as necessary specific priorities in its annual programme of work.—*

**Briefing by Ambassador Baso Sangqu, Chairman of the Committee established pursuant to Security Council Resolution 1540 (2004), Briefing by the Counter-Terrorism Committees, 16 May 2011**

**Dr. Dana Perkins, Chief, Biological Weapons Nonproliferation and Counterterrorism Branch, Division of Biosafety & Biosecurity, Office of Policy & Planning, Office of the Assistant Secretary for Preparedness and Response (ASPR), US Department of Health and Human Services (HHS),** addressed the overlapping and synergistic reporting requirements on biosafety and biosecurity under the BWC Confidence Building Measures, WHO IHRs, and UNSCR 1540.

Of note, the 2006 Solemn Declaration of BWC States Parties at the 6<sup>th</sup> Review Conference stated that “*terrorists must be prevented from developing, producing, stockpiling, or otherwise acquiring or retaining, and using under any circumstances, biological agents and toxins, equipment, or means of delivery of agents or toxins, for nonpeaceful purposes*”, and recognized the contribution of full and effective implementation of UNSCR 1540 by all States to assist in achieving the objectives of the Convention.

UNSCR 1540 covers all WMDs, reaches beyond the State, and focuses explicitly on the risk that non-State actors might “*acquire, develop, traffic in or use nuclear, chemical and biological weapons and their means of delivery*”.

The resolution calls for the establishment of national legal frameworks to prevent the proliferation of nuclear, chemical and biological weapons, their means of delivery and related materials. This specifically requires a national regulatory framework that covers related materials, equipment and technology to include the following elements:

- A system to account for and secure items in production, use, storage or transport;
- Effective physical protection measures;
- Effective border controls and law enforcement measures; and
- Effective national export and trans-shipment controls.

UN Security Council Resolution 1540 also emphasizes that the international legal framework facilitates a strategy of “prevention” based upon each individual State accepting “responsibility” for implementing measures against the proliferation of materials and weapons. These measures are to be reported to the 1540 Committee -which was established pursuant to the resolution.

The main UNSCR 1540 obligations are contained in the operative paragraphs (OP) 1 to 3. OP1 prohibits States to provide *"any form of support to non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery."* OP2 requires States to adopt and enforce appropriate and effective laws to prohibit such activities under their national legislation in order to prevent any non-state actor from engaging in these acts autonomously (i.e. without State support). OP3 prescribes that UN members implement and enforce a comprehensive system of domestic controls on WMD and related materials.

For biological weapons and related materials, the 1540 Committee identified the following areas where domestic controls should be implemented and enforced:

- Measures to account for/secure production
- Measures to account for/secure use
- Measures to account for/secure storage
- Measures to account for/secure transport
- Regulations for physical protection of facilities/materials/transports
- Licensing/registration of facilities/persons handling biological materials
- Reliability check of personnel
- Measures to account for/secure/physically protect means of delivery
- Regulations for genetic engineering work
- Other legislation / regulations related to safety and security of biological materials

Dr. Perkins provided an overview of the 1540 Committee and gave examples of biosafety & biosecurity reports taken from the 1540 Matrix of the United States, as updated on 30 December 2010.

Dr. Perkins also emphasized the requirements of the International Health Regulations on biosafety and biosecurity (as illustrated by the IHR global indicators for annual reporting to the World Health Assembly and the WHO annual questionnaire on Laboratory core capacity).

Significantly, the BWC Meeting of States Parties of 2008 noted that *"pursuing biosafety and biosecurity measures could also contribute to the fulfillment of their other respective international obligations and agreements, such as the revised International Health Regulations of the WHO"*.

The BWC Confidence Building Measures (CBMs) were introduced in 1986 "*in order to prevent or reduce the occurrence of ambiguities, doubts and suspicions and in order to improve international cooperation in the field of peaceful biological activities*". Dr. Perkins noted opportunities to report on biosafety & biosecurity national implementation measures on CBM forms and gave examples from the US CBM report covering calendar year 2010.

Dr. Perkins also highlighted the fact that the US Strategies, such as the *National Strategy on Countering Biological Threats* and the *National Health Security Strategy*, emphasize the US commitment to work with international partners to advance global health security. This strategic goal is also imprinted in the WHO IHRs, BWC, and UNSCR 1540 common tenets to:

- Promote international dialogue and cooperation and to strengthen national systems and frameworks of biological risk management, in order to
- Ensure and promote the peaceful, safe and secure pursuit of life sciences for the benefit of humanity

Dr. Perkins's presentation is available online on the *BWC Implementation Support Unit's website* at:

[http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/D22D772BC9C85F40C12578A0002E34CE/\\$file/Perkins\\_Georgia\\_presentation-Biosafety-Biosecurity-final\\_COMPRESSED.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/D22D772BC9C85F40C12578A0002E34CE/$file/Perkins_Georgia_presentation-Biosafety-Biosecurity-final_COMPRESSED.pdf)

WHO IHRs website: <http://www.who.int/ihr/en/>

BWC ISU website: <http://www.unog.ch/bwc>

1540 Committee website: <http://www.un.org/sc/1540>

HHS/ASPR website: <http://www.phe.gov/about/OPP/Pages/bwc.aspx>

National, regional, and international activities of the United States toward global health security were emphasized by speakers from the Department of Health and Human Services and the Department of Defense.

**Dr Rohit A Chitale, Epidemiologist and Senior Analyst, Global Disease Detection Operations Center, Center for Global Health, Centers for Disease Control and**

**Prevention (CDC), US Department of Health and Human Services (HHS)**, provided an overview of CDC' Global Disease Detection (GDD) Program and its activities as a WHO Collaborating Center for Implementation of IHR National Surveillance and Response Capacity on:

- Disease detection and response
- Training in field epidemiology and laboratory methods
- Pandemic influenza preparedness
- Human - animal health interface
- Health communication and information technology
- Laboratory systems and biosafety

Dr. Chitale also discussed the GDD Operations Center which is housed in CDC' main Emergency Operations Center (EOC), consolidates international outbreak information from sources inside and outside of CDC, systematically conducts risk assessments, reporting and responding to infectious disease events in support of IHRs, and facilitates rapid responses via emergency response outbreak contingency funds.

*CDC/GDD website: <http://www.cdc.gov/globalhealth/GDD/>*

**Dr. Gary Disbrow, Deputy Director, Division of CBRN Countermeasures, Biomedical Advanced Research and Development Authority (BARDA), Office of the Assistant Secretary for Preparedness and Response (ASPR), US Department of Health and Human Services (HHS)**, provided an overview of the ASPR office (structure and mission) and BARDA's role in ensuring the availability of countermeasures to address public health emergencies.

Dr. Disbrow also discussed the recent review and outcomes of the Public Health Emergency Medical Countermeasures Enterprise, current CBRN-countermeasures funding mechanisms and opportunities for interfacing with BARDA.

On behalf of the HHS Secretary, the Assistant Secretary for Preparedness and Response (ASPR)<sup>i</sup> leads the Federal public health and medical response; promotes community preparedness and prevention; builds public health partnerships with Federal departments and agencies, academic institutions and private sector partners; coordinates the development and implementation of national policies and plans related to public health and medical preparedness and response; oversees the advanced research, development, and procurement of qualified countermeasures; and provides guidance in international

programs, initiatives, and policies that deal with public health and medical emergency preparedness and response. ASPR oversees the implementation of the *National Health Security Strategy*; is the primary HHS liaison to and leads the coordination of National Security Staff's policy initiatives; and is responsible for the integration of national public health and medical preparedness and response efforts into the Federal interagency planning and policy processes including those relevant to international efforts targeting biological non-proliferation. Within the ASPR office, the Biomedical Advanced Research and Development Authority (BARDA) provides an integrated, systematic approach to the development and purchase of the necessary medical countermeasures for public health medical emergencies.

Main ASPR website: <http://www.phe.gov>

BARDA websites:

<http://www.phe.gov/about/barda>

<http://www.medicalcountermeasures.gov>

**Dr. Matt Wyatt, Chief Joint Force Health Protection, United States European Command (EUCOM), US Department of Defense (DOD)**, highlighted the existing and emerging biological threats and challenges as well as the developing synergy between public health and security (national and international). Dr. Wyatt emphasized the critical importance placed by DOD on biosurveillance which has potential implications on:

- The health of the deployed force
- The early warning for naturally occurring or man-made disease events
- The national and international response, and
- Nonproliferation and deterrence efforts.

Dr. Wyatt also addressed the civil-military cooperation and partnership in disease surveillance and the Global Emerging Infections Surveillance and Response System (GEIS) activities which are built on interagency and international partnerships, dialogue, and response. GEIS promotes global health security and facilitates obtaining timely and accurate insights on current and emerging risks by strengthening surveillance of human and zoonotic diseases and enhancing effective communication with relevant stakeholders.

The U.S. European Command (EUCOM) is one of the United States' forward-deployed Geographical Combatant Commands which is responsible for the U.S. military relations with NATO and 51 countries on two continents with a total population of close to a

billion people (all of Europe, large portions of Asia, parts of the Middle East, and the Arctic and Atlantic Oceans). EUCOM is comprised of components from all of America's military services which provide ready forces for regional security; these components teamed with our long-time allies and newfound partners in the region to provide cooperative solutions to mutual security challenges. Continuing to build these enduring partnerships in the region ensures we are "**Stronger Together**".

*EUCOM website: <http://www.eucom.mil/english/MissionAndVision.asp>*

**Dr. Kevin Russell, Deputy Director, Armed Forces Health Surveillance Center (AFHSC)**, provided an overview of AFHSC's mission and its Division of Global Emerging Infections Surveillance and Response System (GEIS) in support of IHRs. GEIS contributes to worldwide emerging infectious disease (EID) surveillance and response via capacity-building initiatives such as developing laboratory infrastructure, strengthening host-country disease surveillance initiatives, transferring technical expertise and training personnel. The majority of these initiatives supported primarily human health entities (in 67 countries); however, projects also supported animal health entities for zoonotic diseases in 8 countries. During 2009, AFHSC-GEIS supported 18 partner organizations that conducted 123 training events in 40 countries involving at least 3,130 people, including many host-country personnel, in direct support of assisting with WHO IHRs implementation. These training activities were primarily in the areas of pandemic preparedness, outbreak investigation and response, EID surveillance, and diagnostics.

Reference: Sanchez *et al*, 2011, *Capacity-building efforts by the AFHSC-GEIS program*, BMC Public Health, Mar 4;11 Suppl 2:S4, available online at:

<http://www.biomedcentral.com/content/pdf/1471-2458-11-s2-s4.pdf>

*AFHSC websites:*

<http://afhsc.army.mil>

<http://afhsc.army.mil/geis>

**Dr. Arthur Lyons, Chief of the Clinical Research Department of Walter Reed Army Research Institute (WRAIR) Division of Viral Diseases, US Department of Defense (DOD)**, also presented on the role of the US military, in particular on its clinical research programs in successful international collaborations and sustainable capacity building. WRAIR is the largest biomedical research facility administered by DOD and focuses on basic and applied medical research. WRAIR is particularly well known for advances in the field of tropical and infectious disease medicine. Dr. Lyons also serves as Co-Director of the US-Georgia Central Public Health Reference Laboratory (CPHRL) and as such, he discussed the general vision of WRAIR collaboration with Georgia on:

- Implementing full time public health, medical and research staff,
- Participating in cooperative surveillance and research projects on:
  - Zoonotic disease surveillance and research
  - Influenza surveillance
  - Bacteriophage research
  - Wound infection research
  - Vector-borne disease surveillance and research
- Building capacity (e.g. training Georgian scientists and public health personnel)
- Providing subject matter expertise on biosurveillance, pathogen research, medical countermeasures development, grant writing, etc
- Supporting Georgia's public health needs.

The CPHRL is envisioned to become a regional training center (on areas such as epidemiology, biosafety, clinical matters, and good laboratory practices), genetic characterization of pathogens, and regional confirmation of laboratory testing.

*WRAIR website:* <http://wrair-www.army.mil>

*CPHRL website:* <http://cphrl.org/en/index.html>

**Dr. Stela Gheorghita, Deputy Director, National Center for Public Health of the Republic of Moldova** presented on the Moldovan national disease surveillance and response system, including field investigation capabilities and procedures. In the Republic of Moldova, the Governmental Decision no. 961 of 21 August 2006 established a national laboratory network for the surveillance and control of radioactive, poisonous and highly toxic substances, and of biologic agents in the environment. The Ministry of

Health Decision no. 268 of 06 August 2009 nominated the National Center for Public Health as the National Focal Point (NFP) for the WHO IHRs.

The National Center for Public Health has been a strong driving force, not only in initiating the IHR implementation process, but also in ensuring the involvement of all key stakeholders in the development of the draft national plan of action (including the establishment of an inter-agency, multisectoral committee as a platform for planning and consensus building) which was presented to the Government for approval in February 2008. Thus, the Republic of Moldova was one of the few countries that, at that time, had come so far in the implementation process.

Dr. Gheorghita also discussed the electronic disease surveillance system implemented in the Republic of Moldova, which allows the real time monitoring, analysis and assessment of public health indicators and events in the country (integrating demographic, clinical, epidemiologic, and laboratory data). The electronic disease surveillance system routinely collects data about occurrence of diseases on Moldova's national territory, and it is complemented by an event monitoring component where information on potential threats is routinely searched for and assessed with the system generating emergency alerts (based on the events' temporal and spatial occurrence and clustering).

The system can also be used to generate user-defined alerts on:

- CBRN incidents;
- Novel or unknown disease causes;
- Communicable diseases via human-to-human transmission, vectors, or trade goods (including food) and environmental release;
- Public health emergency requiring immediate mitigation;
- Unusual events (not characteristic for the time, space, or population surveilled).

The electronic disease surveillance system in the Republic of Moldova integrates human and veterinary disease surveillance and allows statistics and GIS analysis as well as the generation of specific or general reports.

Dr. Gheorghita also discussed the steps for outbreak investigations and field response, including personnel, personal protective equipment, sample collection devices and procedures, packaging and transportation.

Dr. Gheorghita also emphasized the need for joint public health-law enforcement training in the Republic of Moldova and the inclusion of other relevant (national and international) stakeholders in exercises aimed at strengthening the national preparedness and response capabilities.

*National Center for Public Health website: <http://www.cnsp.md/index.php>*

Additional references:

*Trilateral US-Romania-Moldova Forum on Outbreak Response and Bioterrorism Investigation:*

*<http://www.phe.gov/Preparedness/international/Pages/orbitforum.aspx>*

*NATO disaster response exercise “CODRII 2011”: <http://www.nato.int/eadrcc/2011/08-CODRII-moldova/index.html>*

**Mr. Selwyn Jamison, Program Manager, Bioterrorism Prevention, Weapons of Mass Destruction Directorate, Federal Bureau of Investigation (FBI), US Department of Justice (DOJ),** described the joint public health-law enforcement training instituted by the FBI and CDC in the United States. The Joint Criminal-Epidemiological Investigations Course is a two-day curriculum of lectures and exercises; about 21 such courses have been completed for more than 1000 trainees.

Mr. Jamison also defined the goals of public health and law enforcement during an event, discussed the key elements for planning, prevention and response, and described approaches for information sharing during an event. The speaker highlighted the benefits of working in partnership and the critical elements for achieving common goals (i.e. protecting the public, preventing/ containing the disease, identifying those responsible for the threat/attack, protecting own personnel during response/investigation), securing dangerous pathogens, establishing information sharing protocols and procedures (related to threat assessment, investigations, and interviews), and conducting joint training. Mr. Jamison also highlighted the *Criminal and Epidemiological Investigation Handbook* developed by FBI and CDC (available online at: <http://www2.cdc.gov/phlp/docs/CrimEpiHandbook2006.pdf>) and the multilateral and bilateral efforts to conduct international training on the joint investigations model.

FBI website: <http://www.fbi.gov>

Reference:

*US Paper at the 2010 BWC Meeting of Experts:*

[http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/0CE09D711251F0E6C1257776005262DB/\\$file/BWC-National+Paper-Joint+Investigations+fbi.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/0CE09D711251F0E6C1257776005262DB/$file/BWC-National+Paper-Joint+Investigations+fbi.pdf)

The *US National Strategy for Countering Biological Threats* states that the primary objectives of any investigation into the alleged or intended use or the development of biological weapons, are to prevent casualties, protect the public health, and attribute the event to its perpetrator(s) by analyzing data from a variety of sources, including technical information on samples containing biological material derived through microbial forensic analyses. One of the Strategy objectives refers to the US need to expand its capability to prevent, attribute, and apprehend, to “ensure that law enforcement, national security, and homeland security communities have access to the full range of tools and capabilities needed to identify and disrupt the efforts of those with ill intent—preferably before they have the opportunity to conduct an attack—and apprehend and successfully prosecute all offenders”.

**Dr. Randall Murch, Professor at the Virginia Polytechnic Institute & State University (Virginia Tech)**, provided an overview of the microbial forensics (bioforensics) field in a presentation called “Exploring an International Microbial Forensics Capability to Support Attribution and Advance Global Biosecurity”. Dr. Murch addressed the question *How Can and Does Forensic Science Contribute To Investigative, Intelligence, Policy, Political, Legal, Diplomatic and Operational “System” That Lead to “Command Decisions” Regarding “Attribution” and Follow On Actions?* and discussed the means by which forensic science can support and facilitate direct investigations, operations and decisions. The speaker also suggested developing a Strategy within the international /transnational frameworks and move forward with specific demonstration initiatives. Dr. Murch also emphasized (through several notional scenarios) the need for established relationships, assets, and procedures to effectively sustain a bioforensics capability at the time of need. Moreover, he stressed that whether or not existing or future forensic capabilities lead to

deterrence is dependent upon whether or not such forensic capabilities are demonstrable, testable or perceived by one's adversary to be so.

Reference:

*Presentation at the 2010 BWC Meeting of Experts:*

[http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/A84D69661F8E0195C12577AC004A4C3F/\\$file/BWC\\_MSP\\_2010-Panel-100826-PM-Murch.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/A84D69661F8E0195C12577AC004A4C3F/$file/BWC_MSP_2010-Panel-100826-PM-Murch.pdf)

**Mr. Grzegorz Graniak from the Biological Threats Identification and Countermeasure Centre of the Polish Armed Forces Military Institute of Hygiene and Epidemiology (MIHE)**, discussed state-of-the-art pathogen identification methods in joint epidemiological-law enforcement investigations. In particular, the speaker addressed genotyping tools for identifying molecular signatures of biological agents such as Multi Locus Sequence Typing (MLST), MLVA (Multi Locus VNTR Analysis), microarrays, and pyrosequencing techniques. These techniques (as well as the international databases currently in development) could be useful tools of forensic epidemiology supporting potential investigations into the alleged / intended use or the development of biological weapons.

*MIHE website:* <http://www.wihe.waw.pl/ang/index.php?id=1>

*Biological Threats Identification and Countermeasure Centre website:*  
<http://www.wihe.pulawy.pl/en/>

## Lessons Learned and Recommendations

From the organizers' point of view, the didactic part of the workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* held in Tbilisi, Georgia, on 17-19 May 2011, proceeded generally well and accomplished its stated goals to familiarize participants with:

- The WHO's revised *International Health Regulations (2005)* and the Global Outbreak Alert and Response Network (GOARN);
- The Biological Weapons Convention (BWC) tenets and instruments for an internationally coordinated approach to combating biological threats;
- *The United Nations (UN) Global Counter-Terrorism Strategy*, a unique global instrument to enhance national, regional and international efforts to counter terrorism;
- *The UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM)* and its key elements [trigger procedures, use of the UNSGM roster of experts and laboratories, and the guidelines and procedures for the conduct of investigations as updated by the UN Office of Disarmament Affairs (UNODA)];
- The goals and requirements of the UN Security Council Resolution 1540 (UNSCR 1540) implementation;
- NATO's resources for assistance to Partner countries, and its *Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMDs) and Defending against CBRN Threats*.

It also provided "food for thought" on issues such as training on criminal-epidemiological joint investigations, the role of microbial forensics in deterring biological threats, and compliance with the biosafety/biosecurity reporting requirements under the BWC CBMs, UNSCR 1540, and WHO IHRs in order to maximize the use of limited national resources.

There were however a few lessons learned that should be taken into consideration in order to improve the overall quality of training when planning similar events:

### Planning:

- Planning should be optimized to ensure an appropriate balance of public health, law enforcement, policy-makers, and security personnel in attendance as well as the distribution of participants lists in advance to the tabletop facilitators in order to customize the questions during the facilitated discussions (IMPROVE);

### Content:

- The workshop had the right mix of strategic (policy-level, inter-governmental), tactical, and operational briefings, both civilian and military, to engage a very diverse audience (SUSTAIN);
- While the training schedule was full, consideration should be given for additional national-level (non-US) presentations, similar to those offered at this particular event by Poland and the Republic of Moldova (IMPROVE)

### Execution:

- Assign personnel to ensure in advance of the formal start of training day that the A/V equipment is functional, speakers are given the necessary instructions on its use, and all up-to-date presentations for the day are loaded and displayed correctly on the screen (IMPROVE)

## **US-GEORGIA CENTRAL PUBLIC HEALTH REFERENCE LABORATORY - SITE VISIT -**

The construction of the US-Georgia Central Public Health Reference Laboratory (CPHRL) began in 2006 as a US-Georgia joint project and was completed in December 2009. US technical staff with expertise in public and animal health and epidemiology will work together with their colleagues from Georgia in this facility on joint research projects for the health security of Georgia, Caucasus and the global community. Similar health research facilities where US and host nation personnel work together on joint research projects currently exists in Thailand and Kenya.

CPHRL was officially open on 18 March 2011 at a ceremony attended by US Ambassador John Bass, Prime Minister Nikoloz Gilauri, MoHLSA Minister Andrew Urushadze, and the US Assistant Secretary of Defense Andrew Weber.

The Obama Administration is “*committed to creating an unprecedented level of openness in government*” and to fostering a more open government based on three principles: transparency, public participation, and collaboration. In the spirit of President Obama’s Transparency and Open Government initiative, workshop participants were offered guided tours of the US-Georgia Central Public Health Reference Laboratory (CPHRL) whose mission is to promote public and animal health through infectious disease detection, epidemiological surveillance, and research for the benefit of Georgia, the Caucasus region, and the global community. During this visit, US technical staff from the Battelle Memorial Institute gave an overview of the facility’s capabilities and functional areas and answered the participants’ questions.

CPHRL website: <http://www.cphrl.org>

US Embassy in Georgia news: <http://georgia.usembassy.gov/latest-news/press-releases-2014/united-states-and-georgia-to-open-central-public-health-reference-laboratory-march-16.html>

Transparency and Open Government:

[http://www.whitehouse.gov/the\\_press\\_office/TransparencyandOpenGovernment](http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment)



*Workshop participants visit the US-Georgia CPHRL. From left to right, clockwise: Picture 1- One of the visitors groups is shown in front of CPHRL building; Picture 2- One of the visitors groups is shown departing the CPHRL building; Picture 3- Dr. Jason Mott, BSL-3 Operations and CPHRL Manager, answers visitors' questions; Picture 4- Dr. Susan Weekly, CPHRL Biosafety Manager, greets Dr. Dana Perkins from HHS/ASPR; Picture 5- Dr. Arthur Lyons, CPHRL Co-Director, guides a group touring CPHRL; Picture 6- Dr. Susan Weekly, CPHRL Biosafety Manager, answers questions from Dr. George Korch, PD-ASPR, during a group tour of CPHRL.*

Significantly, while this workshop was intended to build regional partnerships in the European area and strengthen the collaboration with intergovernmental organizations, we have also invited two participants from Kenya, Dr. Austin A. Ochieng- the Chairman of Kenya's National and Biological Weapons and Toxins Committee and Ms. Roselida Owuor-Senior Science Secretary with Kenya's National Council for Higher Education, Science and Technology. Both are members of Kenya's Delegation to the BWC. Kenya is also planning to host a regional workshop focused on BWC implementation in the Fall of 2011.

Kenya is emerging as a regional leader in promoting the BWC tenets and its universalization. In February 2010 Kenya hosted **The Africa Biosafety and Biosecurity Workshop on Implementation of United Nations Security Council Resolution 1540** which aimed to promote the building of national- and regional-level capacity to advance full implementation of UNSCR 1540. The workshop brought together about 120 participants from 20 African countries (Algeria, Botswana, Burkina Faso, Cameroon, Democratic Republic of the Congo, Congo, Egypt, Ethiopia, Gabon, Ghana, Kenya, Libya, Mali, Morocco, Nigeria, Senegal, South Africa, United Republic of Tanzania, Tunisia and Uganda), UK and US, international organizations (BWC ISU, WHO, OIE, UNODA, 1540 Committee, Council of the European Union), non-governmental organizations (VERTIC, ISS), National Science Academies, and professional associations (National Biosafety Associations). The workshop focused on pathogen security measures, building national and regionally-integrated disease surveillance systems and effective biosafety/biosecurity practices as required by UNSCR 1540, BWC, and WHO IHRs.

The workshop included laboratory visits at the Kenya Medical Research Institute (KEMRI) (including the US CDC's Global Disease Detection Center which is headquartered at KEMRI) and the International Livestock Research Institute (ILRI), to observe how biosafety and biosecurity best practices are implemented.

*New Approaches to Global Security: Engagement Aims to Reduce Threats:*

<http://africom.wordpress.com/2010/04/08/new-approaches-to-global-scurity-engagement-aims-to-reduce-threats>

*1540 Committee press release:* <http://www.un.org/News/Press/docs/2010/dc3207.doc.htm>

*The Africa Biosafety and Biosecurity Workshop on Implementation of United Nations Security Council Resolution 1540:* <https://1540.sandia.gov/past-workshops/africa2010>

*Global Disease Detection- CDC in Kenya:* <http://www.cdc.gov/globalhealth/GDD/kenya.htm>

***UN SECRETARY- GENERAL'S MECHANISM FOR INVESTIGATION OF  
ALLEGED USE OF CHEMICAL AND BIOLOGICAL WEAPONS (UNSGM)  
- TABLETOP EXERCISE -***

The third session of the workshop explored the UN and international collaboration and response to allegations of BW use, via a tabletop exercise (facilitated discussions) focused on the *UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons* (UNSGM) in a fictional scenario which started with a letter to the UN Secretary General from a UN Member State alleging BW use. Triggered by a request from any Member State, the UN Secretary-General is authorized to launch an investigation (including dispatching a fact-finding team to the site of the alleged incident(s)) and to report the results to all UN Member States. The UNSGM is intended to ascertain in an objective manner facts of alleged violations of the 1925 Geneva Protocol, which bans the use of chemical and biological weapons.

The UNSGM has never been triggered (yet) on allegations of BW use. However, since 1987, there were six investigations carried out in relation to allegations of use of chemical weapons (four of these investigations were related to the Iran-Iraq war). Two investigations took place in 1992 in response to reports of alleged use of chemical weapons in Mozambique and Azerbaijan.

For the tabletop exercise, the workshop participants reviewed and employed the UNSGM Technical Guidelines and Procedures as well as the recently updated Appendices (available online at:

[http://www.un.org/disarmament/WMD/Secretary-General\\_Mechanism/appendicies](http://www.un.org/disarmament/WMD/Secretary-General_Mechanism/appendicies) ).

Of note, the tabletop exercise was a first of its kind at the international level for awareness raising and review/application of the UNSGM Technical Guidelines and Procedures (including their updated appendices) in a fictional scenario of alleged BW use. This tabletop exercise built on the foundation of the first training course for UN experts which was organized by the Ministry of Foreign Affairs of Sweden in 2009 in Umea, Sweden.

While not specifically mentioned in the text of the Convention (Article VI of BWC provides an opportunity for BWC States Parties to request the UN Security Council to investigate alleged breaches of the BWC and to comply with its subsequent decisions without mentioning the UNSGM), the UNSGM is a mechanism available to BWC States Parties, as noted at the Sixth

Review Conference of BWC in 2006. Of note, the Security Council has no standing investigative entity of its own. The strengthening of UNSGM requires the support and contribution of the BWC States Parties, in particular by volunteering qualified laboratories and national technical experts for the UNODA rosters on UNSGM as well as supporting relevant training of laboratories and nominated experts to familiarize them with the work as a team in a UN environment.

#### **Article VI of the Biological Weapons Convention**

*(1) Any State Party to this Convention which finds that any other State Party is acting in breach of obligations deriving from the provisions of the Convention may lodge a complaint with the Security Council of the United Nations. Such a complaint should include all possible evidence confirming its validity, as well as a request for its consideration by the Security Council.*

*(2) Each State Party to this Convention undertakes to cooperate in carrying out any investigation which the Security Council may initiate, in accordance with the provisions of the Charter of the United Nations, on the basis of the complaint received by the Council. The Security Council shall inform the States Parties to the Convention of the results of the investigation.*

#### **Excerpts on Article VI from *The Fourth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, Geneva, 25 November - 6 December 1996, BWC/CONF.IV/9, Geneva***

*“... The Conference invites the Security Council to consider immediately any complaint lodged under Article VI and to initiate any measures it considers necessary for the investigation of the complaint in accordance with the Charter. The Conference reaffirms the undertaking of each State Party to cooperate in carrying out any investigations which the Security Council may initiate.*

*The Conference recalls, in this context, United Nations Security Council resolution 620 (1988), which at the time encouraged the United Nations Secretary-General to carry out prompt investigations, in response to allegations brought to its attention by any Member State concerning the possible use of chemical and bacteriological (biological) or toxin weapons that could entail a violation of the 1925 Geneva Protocol or of any other applicable rule of international treaty or customary law.*

*The Conference also recalls the technical guidelines and procedures contained in Annex I of United Nations document A/44/561 to guide the United Nations Secretary-General on the timely and efficient investigation of reports of the possible use of such weapons.*

*The States Parties reaffirm their agreement to consult, at the request of any State Party, regarding allegations of use or threat of use of bacteriological (biological) or toxin weapons and to cooperate fully with the United Nations Secretary-General in carrying out such investigations...”*

*“... We will need data to request an investigation...”*

*One tool for multilateral investigations is through the existing United Nations mechanism, whereby any member state can bring allegations of BW use to the Secretary General and request that the UN initiate an investigation using personnel drawn from a UN maintained list of experts. Historically, the upside to utilizing a UN investigation has been international buy-in to the results of the investigation. Downsides, however, have included problems with timeliness and political interference.*

*Another possible tool drawing on the UN would be to turn to the World Health Organization to coordinate an investigation, drawing on its Global Outbreak Alert and Response Network, or GOARN. The GOARN investigates, responds to, and works to contain disease outbreaks, as well as other public health events, and operates as part of the WHO's overall work to strengthen global health security.*

*Yet another tool would be to work with regional entities, such as NATO, which has a multinational CBRN defense battalion that can provide response teams, laboratory assets and logistical support to lead or support missions investigating allegations of BW use.*

*We should also ask of ourselves and each other what national means and methods exist that can contribute to all of these multilateral tools. We must all work together to identify the resources and tools that exist for BW use investigations and to encourage development of resources that are still desired.*

*One of the areas we are lacking is in the collection and analysis of baseline data to understand when events have occurred and how to trace them. We need reliable, global information and communication about disease patterns or unusual outbreaks that could signal a bioterrorist attack or bioweapons release, creating a baseline epidemiological picture to enable the world to better protect against the deliberate use of biological pathogens as weapons.*

*We especially need a database of global isolates and strains to enable the tracing of agents used in a BW event to specific regions of the world. And to make all of this happen, both at a national and international level, we need to work together to address these issues realistically...”*

Excerpts from the Remarks at the Kings College London Centre for Science and Security Studies London, United Kingdom, July 12, 2006, of Paula A. DeSutter, Assistant Secretary for Verification, Compliance, and Implementation, U.S. Department of State

*Online at:*

*[http://www.nti.org/e\\_research/source\\_docs/us/departement\\_state/briefings\\_speeches\\_testimony/59.pdf](http://www.nti.org/e_research/source_docs/us/departement_state/briefings_speeches_testimony/59.pdf)*

At the 2010 Annual Meeting of States Parties to the BWC, Ambassador Laura Kennedy, the U.S. Special Representative for Biological and Toxin Weapons Convention Issues, stated that: “*We should call on States Parties to work to identify and resolve legal and other barriers to prompt, effective international cooperation. We hope also to welcome the efforts made by individual States Parties and the UN Office of Disarmament Affairs to ensure that the UN Secretary-General’s Mechanism would be able to respond effectively if called upon to investigate an allegation of BW use, and to encourage further work in this area.*”

Strengthening the UNSGM and increasing its efficiency “*if called upon to investigate an allegation of BW use*” – as Ambassador Kennedy stated in her statement at the 2010 BWC Meeting of States Parties- also requires interaction with a number of international organizations (such as WHO, FAO, OIE, and INTERPOL) which are also expected to participate in international responses to BW use, including acts of terrorism and criminal offenses.

## **Training Objectives**

### ***TTX Goals and Objectives***

- To foster improved understanding of the UNSGM technical guidelines and procedures as well as the updated appendices in a fictional scenario of disease outbreak/BW use
- To familiarize participants with the UN mandate, the scope of in-country mission activities, the fact-finding activities at the site(s) of alleged BW use, and the existing international agreements/activities which the UN Secretary General may use to complement/synergize the UNSGM
- To emphasize the concept that the UNSGM is NOT a criminal investigation aimed at attribution and that the UN team is required to provide, as soon as possible, an estimate on possible victims and type of injuries to the UN Secretary General for the provision of aid and life saving activities
- To contribute to the international community’s preparedness to respond to violations of the global and total prohibition on the use of biological and toxin weapons

## *General Mission Areas for Participants' Consideration*

- Preliminary plan and sources of information (official channel or 'open source', including requests for information to inter-governmental and other UN bodies);
- Mission plan and scope of in-country mission activities;
- Fact-finding activities at the site(s) of alleged use;
- Sampling, chain of custody, sample transportation, interviewing witnesses, record keeping, confidentiality, coordination with the host country, and other technical, logistical, and legal aspects related to the UNSGM;
- Reporting to the UN Secretary General;
- Potential follow-up actions.

### Exercise Format

At the exercise start, **Mr. Franz Kolar, Political Affairs Officer, UN Office of Disarmament Affairs (UNODA)**, described the fact-finding scope of the UNSGM, the partnership with other inter-governmental organizations (OPCW, WHO, FAO, OIE, Interpol), and the UNSGM comprehensive coverage (launching the investigation; the role of consultants, experts, and laboratories; preparations and conduct of fact-finding missions; technical procedures for fact-finding activities; drafting and content of report). The UNODA role is to serve as a focal point within the UN Secretariat to facilitate the administrative and substantive support and coordination for the efficient functioning of the investigative mechanism, including the conduct of on-site investigations.

Mr. Kolar also invited the representatives of the countries attending the workshop to consider the nominal inclusion of their experts and/or laboratories on the UN rosters, highlighting the future opportunities to train as UN-fact finding teams and also contribute to the ongoing process of updating of the UNSGM Technical Guidelines and Procedures (TGPs) and their respective appendices.

Participants were divided into three break-out groups and encouraged to share their views with their group and the workshop audience at large. Mr. Franz Kolar served as the TTX Coordinator with support from Dr. Dana Perkins (HHS/ASPR).

**Index of the Appendices to the Technical Guidelines and Procedures (TGPs) for the  
UN Secretary General's Mechanism for Investigation of Alleged Use of Chemical, Biological or Toxin Weapons  
(UNSGM)**

**APPENDIX I**

Types of information to be provided as available by a Member State to the Secretary-General in reporting the possible use of chemical, biological, or toxin (CBT) weapons

**APPENDIX II**

Information to be provided by Member States when proposing experts

**APPENDIX III**

Equipment and supplies

**APPENDIX IV**

List of areas of expertise for experts

**APPENDIX V**

List of diagnostic and analytical laboratory specializations

**APPENDIX VI**

Information to be provided by Member States when proposing diagnostic and analytical laboratories

**APPENDIX VII**

Procedures for sample collection, handling, storage, transport, and analysis

**APPENDIX VIII**

[Deleted]

**APPENDIX IX**

Interviewing of witnesses/victims

**APPENDIX A**

Pre-mission planning

**APPENDIX B**

Measures to protect the confidentiality of investigations of alleged use of CBT weapons

**APPENDIX C**

Report of investigation activities

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<sup>5</sup> Available at: <http://daccess-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/564/46/IMG/NR056446.pdf?OpenElement>

<sup>6</sup> Updated Appendices to the UNSGM Technical Guidelines and Procedures are available at: [http://www.un.org/disarmament/WMD/Secretary-General\\_Mechanism/appendices/](http://www.un.org/disarmament/WMD/Secretary-General_Mechanism/appendices/)

## TTX Lessons Learned

- There is a need for additional training events of this kind to familiarize the international community and a wide range of stakeholders with the mandate, scope, and nature of the UNSGM; for this purpose, UNODA is requesting the support and effective action of UN Member States;
- Such training could be organized at the national level with all relevant stakeholders since it may take a ‘whole of government’ approach to facilitate the UNSGM’s fact-finding mission in a respective country, and each country should identify any potential legal, administrative, and policy issues in advance and address them with UNODA;
- All experts (more than 240 nominated by UN Member States on the UNODA rosters for the UNSGM) should be trained (an initial and refresher training plan should be considered);
- The 40+ laboratories currently on the UN roster should also be involved in training (for instance by assigning them ‘roles’ in fictional scenarios of tabletop exercises);
- Collaborations, partnerships, and synergies of the UN expert team with inter-governmental and other UN bodies should be well understood and considered during future training events.



*Scenes from the UNSGM tabletop exercise. From left to right, clockwise: Picture 1- Participants from Romania and Moldova brainstorm during TTX proceedings; Picture 2- Participants from Kenya listen to the introductory remarks on UNSGM; Picture 3- Participants from Armenia listen to the introductory remarks on UNSGM; Picture 4- Representatives of VERTIC, ECDC, BioPolicy Institute and Virginia Tech participate in the TTX; Picture 5- Representatives from Georgia and Armenia discuss the UNSGM during the TTX; Picture 6- UNODA representative, Mr. Franz Kolar, describes the TTX scenario to the workshop audience.*

**MINISTRY OF INTERNAL AFFAIRS OF GEORGIA**  
**- CBRN CONSEQUENCE MANAGEMENT DEMONSTRATION -**

The Emergency Management Department (EMD) of Georgia's Ministry of Internal Affairs (MoIA) is responsible for the coordination of activities for the prevention and consequence management of emergency situations as well the implementation of civil defense tasks in peace time and war or military conflicts.

MoIA's EMD functions in the context of Georgia's "*Unified system of prevention of emergencies and liquidation of results of such emergencies*".

There are defined tasks of the "Unified system" to be executed during and prior to the actual emergencies.. Namely, pre-emergency, the "Unified system" should ensure:

- Forecasting potential emergencies and the expected social-economic impact;
- Developing and implementing measures to ensure the protection of population and territories against emergencies;
- Implementing target and scientific-technical programs:
  - For risk assessment and prevention;
  - For ensuring the continuity of operations of industrial, cultural, and other critical infrastructure and objectives during emergencies;
- Ensuring the readiness of forces and the means for emergency response as well as the availability of special bodies authorized for this purpose (e.g. for training of first responders);
- Ensuring the availability of materiel and personnel assets for consequence management of potential emergencies;

When an emergency occurs, the "Unified system" will execute consequence management operations to save lives and property.

EMD actively participates in NATO Partnership for Peace program, Civil Emergency Planning meetings and seminars as well as in different types of international training events. It has cooperation agreements in place for emergency management with Armenia, Azerbaijan, Russia, and Ukraine.

The EMD offered a demonstration of its capabilities for the workshop participants from US, Georgia, Armenia, Azerbaijan, Bulgaria, Romania, Moldova, Turkey, Poland, and Kenya and other representatives from inter-governmental and non-governmental organizations, at its Rescue Base by the Tbilisi Sea.

The organizers wish to thank Captain Nodar Nadirashvili from the Georgian Police for coordinating the practical demonstration for the benefit of workshop participants and the Emergency Management Department (EMD) of Georgia’s Ministry of Internal Affairs for executing this demonstration.



*Scenes from Georgia’s CBRN consequence management demonstration. From left to right, clockwise: Picture 1- The CBRN Rapid Response Team is setting up the equipment and materials for the demonstration; Picture 2- A “victim” is carried on a stretcher toward the place where medical assistance is to be provided; Picture 3- The CBRN Rapid Response Team is demonstrating personnel decontamination procedures; Picture 4- Workshop participants applaud the execution of the CBRN Consequence Management demonstration.*

## CONCLUSIONS AND WAY FORWARD

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* was organized by the US Department of Defense (US European Command, Armed Forces Health Surveillance Center, Center for Disaster and Humanitarian Assistance Medicine, and the Defense Threat Reduction Agency) and the US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response (ASPR) with the support of the National Center for Disease Control and Public Health of Georgia (NCDC), the US-Georgia Central Public Health Reference Laboratory (CPHRL), and the Emergency Management Department of the Ministry of Internal Affairs of Georgia. It included biological weapons proliferation prevention awareness training, a tabletop exercise designed to review the technical guidelines and procedures associated with the *United Nations Secretary General's Mechanism on Investigation of Alleged Use of Biological and Chemical Weapons* (UNSGM), and a practical demonstration of consequence management capabilities of Georgia's Ministry of Internal Affairs CBRN Rapid Response Team.

The Obama Administration is “committed to creating an unprecedented level of openness in government” and to fostering a more open government based on three principles: transparency, public participation, and collaboration. Similarly, the *G8 Foreign Ministers' Statement on BWC* released on 15 March 2011 in Paris (<http://www.g8.utoronto.ca/foreign/formin110315-bwten.html>), notes that “transparency among [BWC] States Parties is an essential condition for confidence”. In the spirit of President Obama's Transparency and Open Government initiative and the G8 Foreign Ministers' call “to pursue with all States Parties work to improve transparency”, workshop participants were offered guided tours of the US-Georgia Central Public Health Reference Laboratory (CPHRL) whose mission is to promote public and animal health through infectious disease detection, epidemiological surveillance, and research for the benefit of Georgia, the Caucasus region, and the global community.

Of note, Georgia and the United States have a strong partnership and collaboration on health issues. In February 2011 for instance, Georgia's First Lady, Sandra Elisabeth Roelofs, hosted a conference in Washington DC, to foster innovation in health care delivery in Georgia, create a roadmap for the sustained development of the Georgian health care system, generate awareness of the current status of health care, and institutionalize the support of the Georgian expat community and international development organizations. The U.S. Secretary of Health and

Human Services, Kathleen Sebelius, attended this conference (which also sought to create a dialogue for best practices and expertise among the biomedical and public health communities in both Georgia and the United States and attract investment into Georgia's health system).

The world responses to recent public health events (such as the 2009 influenza pandemic) and the medical support needed for a variety of natural disasters clearly showed that more has to be done in the areas of public health and security in terms of international cooperation and collaboration.

We live in a world where multiple challenges to human and international security converge, from inter-state or ethnic conflicts and organized crime, to public health emergencies, and the omnipresent risk of terrorism. The possible misapplication of technological developments in the area of life sciences and the risk posed by the development or use of a biological weapon by States or non-state-actors are also major issues for the international community.

The diversity of these challenges and their global nature suggest that a potential solution could be as complex as the problem itself, requiring the involvement of multiple communities and mitigation strategies, as well as sustained support of robust laboratory, surveillance, veterinary, medical, and public health capacities in all countries all over the world

As Dr. George Korch, the Principal Deputy Assistant Secretary for Preparedness and Response, mentioned during his opening remarks, the CHALLENGES we all face are also OPPORTUNITIES to work in collaboration, within and across borders, to mitigate these threats and build understanding and confidence.

To this end, the US-Georgia Central Public Health Reference Laboratory (CPHRL) project is an example of countries working in partnership to foster improved preparedness and response to public health emergencies regardless of cause, and to enhance our joint action and unity of mission at the national, regional, and international level.

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* aimed to: i) promote interagency (in particular public health-law enforcement but also civilian-military) cooperation, coordination and synchronization for preparing, detecting, and responding to infectious disease outbreaks, whether natural, accidental, or deliberate in nature; ii) establish regional partnerships to enhance training and disease surveillance and

containment initiatives; and iii) strengthen the core capacities required by the WHO International Health Regulations (IHRs) and existing national measures consistent with the obligations under the Biological Weapons Convention (BWC) and the UN Security Council Resolution 1540 (UNSCR 1540) to deter, prevent, and respond to biological incidents or threats.

The workshop was attended by about 100 participants including civilian and military public and veterinary health (laboratory and preventive medicine personnel, epidemiologists, emergency response planners, administrators), law enforcement, intelligence, and affiliated professionals (other first responders, policy staff, representatives of academia, industry, and other non-governmental organizations) from US, Georgia, Armenia, Azerbaijan, Bulgaria, Romania, Moldova, Turkey, Poland, and Kenya; and representatives of inter-governmental organizations (WHO, UNODA, NATO, and ECDC). Opening remarks were offered by the Dr. Mikheil Dolidze - Deputy Minister, Ministry of Labor, Health and Social Affairs (MoHLSA) of Georgia; Ms. Julie Fisher, Chief of Political and Economical Affairs, US Embassy, Georgia; CAPT Kevin Russell- Director, Global Emerging Infections Surveillance and Response System (GEIS) Operations Division and Deputy Director Armed Forces Health Surveillance Center, US Department of Defense (DOD); and Dr. George Korch, Principal Deputy Assistant Secretary for Preparedness and Response (PD-ASPR), US Department of Health and Human Services (HHS).

A summary of this workshop has been posted online by the following organizations:

- BWC Implementation Support Unit: main website at: <http://www.unog.ch/bwc> (under 'Latest Information/News' section); direct link: [http://www.unog.ch/80256EE600585943/\(httpPages\)/87CF9BFD24A8D05FC1257574004B285B?OpenDocument](http://www.unog.ch/80256EE600585943/(httpPages)/87CF9BFD24A8D05FC1257574004B285B?OpenDocument)
- The Virtual Biosecurity Center: main website at: <http://virtualbiosecuritycenter.org> ; direct link: <http://virtualbiosecuritycenter.org/library/countering-biological-threats-national-implementation-of-the-biological-weapons-convention-and-multinational-outbreak-response-and-bioterrorism-investigation-demonstration-workshop-summary>
- VERTIC: main website at: <http://www.vertic.org>; direct link: <http://www.vertic.org/pages/posts/countering-biological-threats-conference-summary-released-109.php?searchresult=1&sstring=georgia>

The screenshot shows the UNOG website's 'Disarmament' page. The header includes the UNOG logo and navigation tabs. The main content area is titled 'Disarmament' and features a 'Latest Information' section. A red box highlights a news item: 'Workshop: Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration'. The text describes the workshop held in Tbilisi, Georgia, from May 17-19, 2011, co-organized by the Georgian Ministry of Labor, Health, and Social Affairs, the National Center for Disease Control of Georgia, and the U.S. Department of Defense and Health and Human Services. The objectives include strengthening regional/international communication, enhancing awareness of criminal and terrorist networks, and creating regional work groups for cooperation and sharing of resources. The news item also mentions that a workshop summary is available and references biosafety and biosecurity reporting under the BWC Confidence Building Measures, WHO International Health Regulations, and UN Security Council Resolution 1540. To the right of the news item, there are sections for 'Related Information' and 'Events & Meetings' with a calendar for May 2011.

Snapshot of the website of the BWC Implementation Support Unit where the information about the workshop is posted (reference:

[http://www.unog.ch/80256EE600585943/\(httpPages\)/87CF9BFD24A8D05FC1257574004B285B?OpenDocument](http://www.unog.ch/80256EE600585943/(httpPages)/87CF9BFD24A8D05FC1257574004B285B?OpenDocument)

The workshop on *Countering Biological Threats: National Implementation of the Biological Weapons Convention and Multinational Outbreak Response and Bioterrorism Investigation Demonstration* is the third such event co-organized by DOD and HHS in the European region (for more details on the previous workshops, see:

<http://www.phe.gov/about/OPP/Pages/bwc.aspx>

Addressing the global health security problems requires multilateral and multisectoral cooperation and a purposeful engagement in learning across borders and professional sectors. Similar to the previous workshops we organized in 2010, recognizing the common problems we all face in this world without borders as well as the complexity and interconnections among the challenges we all face in this century, provided the “common language” to explore solutions, build bridges among various cultures, and connect inter-national resources and people.

Last but not least, training in a multi-national environment offers the opportunity of participants to serve as “cultural diplomats”, exchanging ideas, information, values, beliefs, and other aspects of culture, and thus fostering mutual understanding.



Workshop participants visited the monument "*History of Georgia*"- popularly known as "Stonehenge" and shown in pictures 1 and 2 above – designed by Zurab Tsereteli (born in 1934 in Tbilisi). As an example of interconnectedness, Tsereteli’s bronze sculpture of *St. George the Victorious* is on the north lawn of the United Nations Headquarters in New York; his 175-ton sculpture entitled “*To The Struggle Against World Terrorism*” is in Bayonne, New Jersey; the latter consists of a 100-foot tall rectangular bronze block with a fissure down the middle in which a teardrop in memory of those whose lives were lost is suspended; nine pathways lead to the 11-sided granite base where names of 9/11 victims as well as victims of the 1993 World Trade Center bombings are engraved.



*Workshop participants visit the "History of Georgia" monument. Picture 1 (left): Dr. Stela Gheorghita from Moldova and Dr. Dana Perkins from US, in front of Georgia’s “Stonehenge”; Picture 2 (right)- Workshop participants from Kenya, US, Georgia and Armenia have a group photo to keep the memories alive.*

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## APPENDIX A – WORKSHOP AGENDA



### Agenda

**Tbilisi, Georgia**  
**Sheraton Metschi Palace Hotel**  
**17-19 May 2010**



**MONDAY, 16 MAY 2011**

**1600-2000 Early Registration**

**TUESDAY, 17 May 2011**

07:00-8:00	<b>Registration</b>
9:00	<p style="text-align: center;"><b>Welcome and Opening Remarks</b></p> <ul style="list-style-type: none"> <li>- Dr. Mikheil Dolidze - Deputy Minister, Ministry of Labor, Health and Social Affairs (MoHLSA) of Georgia</li> <li>- Ms. Julie Fisher, Chief of Political and Economical Affairs, US Embassy, Georgia</li> <li>- CAPT Kevin Russell, Deputy Director Armed Forces Health Surveillance Center (AFHSC), US Department of Defense</li> <li>- Dr. George Korch, Principal Deputy Assistant Secretary for Preparedness and Response (PD-ASPR), US Department of Health and Human Services</li> </ul>

10.00	<p align="center"><b>Session I: Implementation of the Biological Weapons Convention, Essential Pillars: Disease Surveillance, Health Security, Non-Proliferation</b></p> <p><i>In order to ensure that the tenets of the BWC are adhered to, States Parties are encouraged to implement national legislation to enforce the provisions of the BWC to prohibit and prevent the development, production, stockpiling, acquisition, retention, transfer or use of biological weapons by anyone under their jurisdiction, as well as parallel measures to prohibit and prevent encouraging, inciting or assisting others in any of these acts. However, the precise details of what measures are necessary to accomplish these goals and implement the provisions of the Convention are at the discretion of individual States Parties. Based on the understandings and agreements reached historically at the Review Conferences, national implementation of BWC includes legislative, administrative, and other measures to enhance domestic compliance systems; education, awareness raising and outreach measures; disease surveillance, detection, and containment; as well as biosafety and biosecurity provisions.</i></p>
	<p>08.30- 09.00  <b>Policy Perspectives on Public Health &amp; International Security: Biosurveillance Synergy in Emerging Disease and Biological Warfare</b></p> <p>Dr. Matt Wyatt, Chief Joint Force Health Protection, United States European Command, Office of the Surgeon General</p> <p>09.00-09.30  <b>United Nations Global Counter-terrorism Strategy and relevant mandates related to Weapons of Mass Destruction and alleged use investigations</b></p> <p>Dr. Gabriele Kraatz-Wadsack, Chief, Weapons of Mass Destruction Branch, United Nations Office of Disarmament Affairs (UNODA)</p> <p>09.30-10.00  <b>Political Agreements and Understandings Reached During the 2007-2010 Work Program of the Biological Weapons Convention</b></p> <p>Dr. Lela Bakanidze, President, Georgian Biosafety Association</p> <p><b><u>10.00- 10.30 Morning break</u></b></p>
10.30	<p align="center"><b>Session II: International coordination and cross-sectoral response to public health emergencies</b></p> <p><i>Planning and responding to potential public health emergencies of international concern requires cross-sectoral collaboration and validated channels of communication. This session will explore the role of public health, law enforcement, and civil-military cooperation in preparedness and response to biological threats.</i></p>
	10.30-11.00

*World Health Organization (WHO) - global and regional mechanisms of response to public health threats*

Dr. Eugene Gavrilin, Regional Laboratory Network Coordinator, Laboratory Biosafety and Biosecurity, Division of Communicable Diseases, Health Security and Environment, World Health Organization - Europe

11.00-11.30

*Health Security in Europe: ECDC Early Detection of Public Health Threats of European Union Concern*

Dr. Massimo Ciotti, Senior Advisor, Public Health Capacity and Communication, European Centre for Disease Prevention and Control

**11.30-13.00 Lunch**

13.00-13.30

*Epidemic intelligence, early alerting and information sharing: The U.S. CDC's GDD Operations Center*

Dr. Rohit Chitale, Epidemiologist and Senior Analyst, Global Disease Detection Operations Center, Center for Global Health, Centers for Disease Control and Prevention (CDC), US Department of Health and Human Services

13.30-14.00

*Hostis Humanis Generis: NATO's Role in Preventing the Most Horrible of Horribles: The Bio-Threat Challenge*

Mr. Guy Roberts, Deputy Assistant Secretary General for WMD Policy, NATO

14.00-14.30

*Global Military Surveillance for EID: The GEIS Network*

Dr. Kevin Russell, Deputy Director, Armed Forces Health Surveillance Center, Director, Division of Global Emerging Infections Surveillance and Response (GEIS), US Department of Defense

**14.30-14.45 Afternoon break**

14.45-15.15

*National Implementation Measures for the Biological Weapons Convention and UN Security Council Resolution 1540*

Mr. Scott Spence, Senior Legal Officer, VERTIC

15.15-15.45

*Biosafety and Biosecurity Reporting under the BWC Confidence Building Measures, WHO International Health Regulations, and UN Security Council Resolution 1540*

	Dr. Dana Perkins, Chief, Biological Weapons Nonproliferation and Counterterrorism Branch, Division of Biosafety & Biosecurity, Office of Policy & Planning, Office of the Assistant Secretary for Preparedness and Response (ASPR), US Department of Health and Human Services
17:00-21:00	<b>Icebreaker &amp; Hors D'Oeuvres</b> Sponsored by MJ Lawrence Consulting, Munich, Germany

**WEDNESDAY, 18 May 2011**

**08.45-09.00 Administrative announcements**

9:00	<b>Session III: Integrating Health Surveillance with Biothreat Notification and Law Enforcement- Forensics and Attribution</b>
	<p><b>09.00-09.30</b> <i>Joint Public Health and Law Enforcement Investigations: "Enhancing Relationships to Improve Readiness"</i></p> <p>Mr. Selwyn Jamison, Program Manager, Bioterrorism Prevention, FBI WMD Directorate</p> <p><b>09.30-10.00</b> <i>Exploring International Microbial Forensics Capability to Support Attribution and Advance Global Biosecurity</i></p> <p>Dr. Randall Murch, Virginia Polytechnic Institute and State University, USA</p> <p><b><u>10.00-10.30 Morning break</u></b></p> <p><b>10.30-11.00</b> <i>Biothreat Response: State of the Art Methods for Pathogen Characterization in Joint Epidemiological/Law Enforcement</i></p> <p>Mr. Grzegorz Graniak, Biothreat Identification and Countermeasure Centre, The General Karol Kaczkowski Military Institute of Hygiene and Epidemiology (MIHE), Poland</p> <p><b>11.00-11.30</b> <i>Enhancing the Medical Countermeasures Enterprise</i></p> <p>Dr. Gary Disbrow, Deputy Director, Division of CBRN Countermeasures, Biomedical Advanced Research and Development Authority (BARDA), Office of Assistant Secretary for Preparedness and Response (ASPR), US Department of Health and Human Services, Washington, D.C.</p>

	<p><b><u>11.30-13.00 Lunch</u></b></p>
<p>13.00</p>	<p><b>Session IV: Technical Guidelines and Procedures of the United Nations Secretary General's Mechanism on Investigation of Alleged Use of Biological and Chemical Weapons (UNSGM)</b></p> <p><b>-- Facilitator: Mr. Franz Kolar, Political Affairs Officer, UN Office for Disarmament Affairs (UNODA)</b></p> <p><i>The UNSGM is triggered by a request to the Secretary General to carry out promptly investigations in response to reports that may be brought to his attention by any UN Member State concerning the possible use of chemical and biological or toxin weapons (CBTW) that may constitute a violation of the 1925 Geneva Protocol or other relevant rules of customary international law in order to ascertain the facts of the matter, and to report promptly the results of any such investigation to all Member States. The Annex I to the UN General Assembly Document A/44/561 from 04 October 1989 contains recommendations by the group of experts convened pursuant to General Assembly Resolution A/RES/42/37C for technical guidelines and procedures (TGPs) for timely and efficient investigations of reports on the possible use of CBW. The TGPs were endorsed by the UN General Assembly in 1990 (RES/45/57. Updated Appendices to the UNSGM Technical Guidelines and Procedures are available at: <a href="http://www.un.org/disarmament/WMD/Secretary-General_Mechanism/appendices">http://www.un.org/disarmament/WMD/Secretary-General_Mechanism/appendices</a> This session will consist of a facilitated discussion of the UNSGM Technical Guidelines and Procedures (including the Appendices).</i></p> <p><b><u>15.00-15.15 Afternoon Break</u></b></p>

**THURSDAY, 19 May 2011**

9.00-9.30

*Public Health Emergency- Preparedness and Response*

Dr. Stela Gheorghita, Deputy Director, National Center for Public Health, Ministry of Health, Republic of Moldova

9.30-10.00

*Walter Reed Army Institute of Research – International Activities*

Dr. Arthur Lyons, Chief of the Clinical Research Department of Walter Reed Army Research Institute (WRAIR) Division of Viral Diseases, US Department of Defense, Co-Director, CPHRL, Georgia

	<b>Multinational Outbreak Response and Bioterrorism Investigation Demonstration (MORBID)</b>
	Consequence Management of Biological Incidents (Georgia MoIA, Rescue Base, Tbilisi Sea)  CPHRL visit
12.30-14.00	<b>Lunch Closing Comments, Awards and Certificates</b>
14:00	<b>End of Conference</b>

## APPENDIX B – PARTICIPATING ORGANIZATIONS

### Inter-Governmental Organizations

World Health Organization (WHO)  
United Nations Office of Disarmament Affairs (UNODA)  
European Center for Disease Control and Prevention (ECDC)  
North Atlantic Treaty Organization (NATO)

### USA

US Embassy, Georgia  
US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response (ASPR), Immediate Office, Office of Policy & Planning, and BARDA  
US Department of Health and Human Services, Centers for Disease Control and Prevention (CDC)  
US Department of Defense, Center for Disaster and Humanitarian Assistance Medicine (CDHAM)  
US Department of Defense, Armed Forces Health Surveillance Center (AFHSC)  
US Department of Defense, United States European Command (EUCOM)  
US Department of Defense, Defense Threat Reduction Agency (DTRA)  
National Counterterrorism Center  
Federal Bureau of Investigation (FBI), WMD Directorate

### Georgia

Ministry of Health, Labor and Social Affairs (MoHLSA)  
National Center for Disease Control and Public Health (NCDC)  
US-Georgia Central Public Health Reference Laboratory (CPHRL)  
Ministry of Internal Affairs, Emergency Management Department  
Ministry of Internal Affairs, Medical Service  
National Security Council  
Ministry of Finance, Revenue Service

## **Bulgaria**

Military Medical Academy, Scientific Center for Military Epidemiology and Hygiene  
Ministry of Interior  
Ministry of Health, National Center for Infectious and Parasitic Diseases

## **Romania**

Ministry of Defense, Defense Policy Department  
Ministry of Defense, Medical Research Center  
Ministry of Defense, Office of Surgeon General

## **Moldova**

Ministry of Health, National Center for Public Health  
Ministry of Defense, Defense Policy & Planning Directorate  
Ministry of Interior, Department of Civil Protection and Emergency Situations  
Ministry of Interior, Chemical and Medico-biological Protection Division

## **Armenia**

Ministry of Emergency Services, Armenian Rescue Service  
Ministry of Health, State Hygiene and Anti-Epidemic Inspectorate  
Ministry of Agriculture, Republican Veterinary Anti-epizootic and Diagnostic Center  
Ministry of Defense, NBC Defense Department  
Ministry of Defense, Military Medical Department  
Ministry of Health  
National Security Service

## **Azerbaijan**

Ministry of Agriculture, Azerbaijan State Veterinary Service  
Ministry of Health, Azerbaijan State Anti Plague Station  
Ministry of Health, Azerbaijan State Scientific Institute for Veterinary Preparations  
Ministry of Defense,, Sanitary-Epidemiology Section

## **Turkey**

Prime Ministry Disaster and Emergency Management Presidency (DEMP)

## **Poland**

Ministry of Health, Sanitary Inspectorate  
Biothreat Identification and Countermeasure Centre, Military Institute of Hygiene and  
Epidemiology, Polish Armed Forces  
Ministry of Interior and Administration

## **Kenya**

National Biological Weapons and Toxins Committee  
National Council for Science and Technology

## **Non-Governmental Organizations**

Verification, Research, Training and Information Centre (VERTIC), UK  
American Association for Laboratory Accreditation (A2LA), USA  
MJ Lawrence Consulting, Germany  
International Security and Biopolicy Institute, USA  
Virginia Tech University, USA  
Battelle, USA  
Technology Management Company, Georgia  
University of Nairobi, Kenya

## Supporting Organizations



*Stronger Together*