Using Microbial Forensics to Strengthen Biosecurity and the Implementation of UN Security Council Resolution 1540

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Science Needs for Microbial Forensics: Developing an International Science Roadmap
Croatian Academy of Sciences and Arts, Zagreb, Croatia, 13-16 Oct 2013

Unless otherwise specified, the opinions presented here are those of the presenter and may not necessarily reflect the views of the 1540 Committee, its Group of Experts, or the UN Security Council
Microbial forensics (bio-forensics) is an essential element of a national and international biosecurity infrastructure, as a deterrent and support tool.

Similar to nuclear forensics, bio-forensics may be used as a tool to detect, prevent and deter acts of bioterrorism and illicit trafficking or use of biological materials.

The potential applications of bio-forensics thus may contribute to strengthening biosecurity in the context of resolution 1540 (2004) and to achieving cooperation and synergy among various international security frameworks.
Refrain from providing 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.

Adopt and enforce appropriate effective laws prohibiting activities involving the proliferation of such weapons and their means of delivery to non-State actors, in particular for terrorist purposes, as well any attempts to engage in such activities, assist or finance them.

Implement and enforce appropriate controls over related materials in order to:

- Account for and secure items in production, use, storage or transport;
- Physically protect;
- Detect, deter, prevent and combat the illicit trafficking and brokering through effective border controls and law enforcement efforts;
- Control the export, transit, trans-shipment and re-export and the provision of funds and services related to such export and trans-shipment that would contribute to proliferation;
- Penalize violations.
• **Means of delivery:** missiles, rockets and other unmanned systems capable of delivering nuclear, chemical, or biological weapons, that are specially designed for such use

• **Non-State actor:** individual or entity, not acting under the lawful authority of any State in conducting activities which come within the scope of this resolution

• **Related materials:** materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery

**Definitions for the purpose of resolution 1540 (2004)**
"Two R-400A bombs photographed by UNSCOM inspectors at Murasana Airfield near the Al Walid Airbase in late 1991 bearing the markings indicating they were to be filled with botulinum toxin..."

“[Security Council] calls upon States to renew and fulfill their commitment to multilateral cooperation, in particular within the framework of the International Atomic Energy Agency, the Organization for the Prohibition of Chemical Weapons and the Biological and Toxin Weapons Convention, as important means of pursuing and achieving their common objectives in the area of non-proliferation and of promoting international cooperation for peaceful purposes… [and]

promote the universal adoption and full implementation, and, where necessary, strengthening of multilateral treaties to which they are parties, whose aim is to prevent the proliferation of nuclear, biological or chemical weapons”

“[The Security Council] expresses its intention to **monitor closely the implementation of this resolution** and, at the appropriate level, to **take further decisions which may be required to this end**” - Security Council Resolution 1540 (2004)

- The 1540 Committee established pursuant to resolution 1540 (2004) is a subsidiary body of the Security Council.

- The current **Group of Experts** was established per resolutions 1977 (2011) and 2055 (2012) “**to assist the Committee in carrying out its mandate**…”
The UN Security Council

UN Security Council

Monitoring & national implementation
Assistance
Cooperation with international organizations, including the Security Council committees established pursuant to resolutions 1267 (1999) and 1373 (2001)
Transparency & media outreach

1540 Committee

UN Department of Political Affairs

UN Office for Disarmament Affairs

Regional and sub-regional seminars and workshops

Group of Experts
BWC States Parties have called for “measures for the investigation of alleged use” as part of a “coherent regime to enhance the effectiveness of and improve compliance with the Convention…to be included, as appropriate, in a legally binding instrument”- Special Conference of Parties to the BWC, 19-30 Sep 1994, Final Declaration

“The Conference notes that the Secretary-General’s investigation mechanism, set out in A/44/561 and endorsed by the General Assembly in its resolution 45/57, represents an international institutional mechanism for investigating cases of alleged use of biological or toxin weapons” - Final Document of the Seventh Review Conference, 5-22 Dec 2011.
BW use / bioterrorism / illicit trafficking

Nationally-designated laboratories for internationally accepted definitive confirmation (and attribution)?

AND / OR

United Nations-designated laboratories?
• The development and improvement of technical bio-forensics methods to detect illicit trafficking and biological materials outside of regulatory control, and to prevent and respond to biosecurity events, implicitly strengthen the implementation and enforcement of resolution 1540 (2004).

• While in nuclear forensics the IAEA has a leading role in facilitating the exchange of information and international collaboration as well as providing assistance in support of law enforcement and assessment of nuclear security vulnerabilities, bio-forensics lacks international leadership.

• The potential exists for much more widespread and effective cooperation not only between countries, but also between organizations such as inter alia WHO, OIE, FAO, CWC/OPCW and the BW/ISU.

• A sustained effort is required to build communities of bio-forensics specialists.
• Member States, international organizations, National Academies, professional organizations and academia are essential actors in this effort of developing the S&T foundation of bio-forensics and raising awareness on the possible synergies among its different applications.

Food for thought
“Milestones and concrete projects need to be formulated and pursued in order to effectively realize the full potential of WMD Forensics science to contribute to preventing, deterring and responding to WMD proliferation and terrorism threats”
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