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Effective Implementation of UNSCR 1540 in Research and Academia: the Role of CBRN Security Culture

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Addressing the CBRN proliferation risks resulting from research and academia has been a continuous challenge. While building on classical non-proliferation instruments developed for State sponsored CBRN programs, many of the current instruments used in the implementation of UNSCR 1540 provide only unsatisfactory protection against the specific risks arising from the research sector.

Inclusion of research and academic institutions in classical non-proliferation regimes (e.g. export-control measures) and relevant conventions (e.g. BTWC, CWC) has proved to be a challenge for a variety of reasons. For example, a contributory factor in the failure to agree on an international verification protocol for biological weapons has been the substantial controversies over how to include biomedical research and development.

In the following sections, the relevance of including academic and research institutions in UNSCR 1540 implementation will first be established. Second, the specific challenges to effective UNSCR 1540 implementation at academic and research institutions will be outlined. Third, the concept of CBRN security culture will be briefly elaborated. Finally, the potential

relevance of a CBRN Security Culture as an instrument in overcoming some of the challenges associated with UNSCR 1540 implementation in academia and research institutions will be discussed.

THE RELEVANCE OF ACADEMIC AND RESEARCH INSTITUTIONS IN EFFECTIVE UNSCR 1549 IMPLEMENTATION

Current and historical examples of incidents and threat scenarios indicate that research and academic institutions are key stakeholders in CBRN security. Thereby, academics and researchers do not act only as potential contributors of knowledge to large State-sponsored CBRN programs but also act as viable and standalone CBRN terrorism players (e.g. US Anthrax case). Therefore, a non-proliferation instrument, such as UNSCR 1540, with the mandate to mitigate CBRN risks arising from non-State actors will have to actively engage into the development and implementation of instruments that mitigate such risks effectively while at the same time protecting other legitimate interests of society and individuals.



Figure 1: The Challenges of Effective UNSCR 1540 Implementation at Academic and Research Institutions

THE CHALLENGES OF EFFECTIVE
UNSCR 1540 IMPLEMENTATION
AT ACADEMIC AND RESEARCH
INSTITUTIONS (FIGURE 1)

Fundamental Rights Dimension

The regulatory complexity of introducing security measures in research, which has a strong foothold in fundamental rights such as academic freedom, freedom of speech or freedom of information, creates substantial challenges to any restrictive regulatory approach. The on-going controversy over how to handle biosecurity-sensitive research information obtained from gain-of-function studies on different influenza virus strains is one example of

these difficulties. In practice, very little constructive work has been carried out on these issues. Effective implementation of UNSCR 1540 in research and academia will need to engage in the question over how balancing of fundamental rights with security can be accomplished. Legal principles that facilitate such balancing, such as the “Proportionality Principle” enshrined in Europe fundamental rights legislation, need to be addressed if effective and sustainable implementation of UNSCR 1540 at the research level is to be achieved.

Research dynamism and the Principle of Certainty

Criminalization in the use of CBRN weapons, a frequently used tool in national implementation of



international CBRN related legal instruments, has only limited preventative capacities. However, extending criminalization into preparatory acts and including, for example, the unlawful possession of dual use materials, technology and information quickly runs into legal limitations. The criminal law principle of “lex certa” requires lawmakers to provide unambiguous and clear definitions of criminal offenses. CBRN security sensitive research, however, unfolds in a constantly and often rapidly changing environment. Criminalization as a preventive measure would, therefore, require constant engagement in technology developments and updating of potential offenses. It is difficult to see how this could be achieved without referring to very generic “catch-all-clauses” that, in turn, would be incompatible with the Principle of “lex certa”.

Research exemptions in export controls an ambiguous loophole

Export control legislation, another important instrument for the implementation of UNSCR 1540, also has difficulties when addressing research and academia. Dual Use export control legislation frequently applies exemptions for “fundamental” or “basic” research, undermining the effectiveness of such instruments in implementing UNSCR 1540 in relation to research and academia. In addition, inconsistent wording and definitions also raise challenging questions about the different remits of such exemptions. For example, inconsistent distinctions between “fundamental” and “non-fundamental” research, or between “basic” and “applied” research exist. Furthermore, in light of the lower thresholds for material and technology in which CBRN terrorism unfolds when compared to military CBRN programs, upholding such exemptions seriously undermines the value of export controls in the effective implementation of UNSCR 1540 in academic and research settings.

Political and economic interests

Effective implementation of UNSCR 1540 in research and academia also faces political headwinds due to substantial societal and economic interests

in the promotion of research. Key areas of CBRN concern, such as biomedical research, synthetic biology, converging technologies, nuclear energy, new medical radiological equipment and therapies are also central in resolving current and future societal problems as well as ensuring prosperity. Regulating such technologies is usually equated with, at least, slowing down new developments and thereby contributing to a disadvantage for those affected by such regulations. These strong political interests have made the development of tools that mitigate the specific nature of CBRN risks in research and academia challenging.

Technical challenges

In addition to these general legal and political challenges, numerous technical challenges in the implementation of UNSCR 1540 in research also exist due to the lower material and technological thresholds at which such activities unfold.

For example, effective border control is frequently limited by the thresholds of the detection technology. For large shipments of chemicals and radioactive substances, a reasonable chance of being detected at borders can be assumed. Detection and identification of materials used in research is not only often complex but is challenging due to the small quantities and the need for low detection thresholds. Thus increasing the likelihood that smuggling will take place undetected.

Furthermore, sensitive CBRN security information can be transferred internationally by the Internet using modern encryption technologies, with little chance of detection by border control agents.

In the light of these weaknesses, it remains largely unresolved how “appropriate controls” can be developed (or put into place) in research and academic institutions.

CBRN security sensitive research.....unfolds in a constantly and often rapidly changing environment.

CBRN SECURITY CULTURE

The concept of Nuclear Security Culture focused

on the human factor has been well established through the IAEA Nuclear Security Series No 7¹. This builds on similar approaches developed for nuclear safety. In the IAEA document, Nuclear Security Culture is defined as:

“The assembly of characteristics, attitudes and behavior of individuals, organizations and institutions, which serves as a means to support and enhance nuclear security.”

At the June 2014 NATO sponsored Advanced Study Institute in Yerevan, Armenia², the possibility of extending this idea of security culture into the area of chemical, biological and radiological security was discussed. Specific questions regarding the role of professional ethics, fundamental rights such as academic freedoms or codes of conduct that relate to CBRN Security Culture were raised.

There was strong support among the experts from the varying disciplines that CBRN Security Culture is not only a viable concept to complement

CBRN Security Culture is not only a viable concept to complement existing initiatives in CBRN security but that it could be especially valuable in mitigating risks arising from research and academia.

existing initiatives in CBRN security but that it could be especially valuable in mitigating risks arising from research and academia. Since it builds on organizational and management structures, the introduction of CBRN Security Culture in research and academia will, however, have to take into consideration the organizational and management structures at these types of institutions. This might differ from the organizational and management structures underlying the Nuclear Security Culture concept and, therefore, may warrant some amendments to the concept applied in the nuclear context. Nonetheless, CBRN Security Culture provides an important additional risk mitigation approach that complements other important measures in UNSCR 1540 implementation.

CBRN SECURITY CULTURE AS A TOOL IN OVERCOMING CURRENT GAPS IN EFFECTIVE UNSCR 1540 IMPLEMENTATION IN ACADEMIC AND RESEARCH INSTITUTIONS

Criminalization, export and border controls, three key elements in UNSCR 1540 implementation, face substantial challenges in handling CBRN risks arising from research and complementary measures are urgently needed.

Over the last ten years numerous codes of conduct (CoC) have been developed by different institutional, national and international sponsors to address the issue of CBRN security in research. Many of these CoC have been purely aspirational, thereby often providing little operational guidance on how to accomplish the goal of CBRN security. As a consequence, professional security ethics equipped with practical tools to accomplish the goal of CBRN security in research and academia is still in its infancy.

In no other area of CBRN security is the human factor of such central importance in ensuring security

1 IAEA Nuclear Security Series No. 7: Nuclear Security Culture http://www-pub.iaea.org/MTCD/publications/PDF/Pub1347_web.pdf

2 The NATO sponsored Advanced Study Institute on CBRN security culture was a major international event in the series of workshops, training sessions and briefings organized by the Center for International Trade and Security at the University of Georgia, USA. Other partner organizations for the Yerevan event included UNODA, OSCE, STCU (Science and Technology Center in Ukraine), ICCSS (International Center for Chemical Safety and Security) and others. Over 50 international experts focused on developing a road map for CBRN culture promotion by synthesizing the experience accumulated by governments, industries and academia into comprehensive and universally applicable good practice tools and models that would be based on shared principles and approaches in these four domains. A major goal was not only to promote the CBRN security culture concept but also introduce compatible assessment and enhancement methodologies.



than in research and academia. Approaches, such as CBRN Security Culture, that focus on increasing security through enhancing attitudes and behaviors therefore provides a sensible approach to overcome some of the previously mentioned limitations. If embedded in collective self-governance, for example, CBRN Security Culture reduces fundamental rights concerns frequently associated with the introduction of prohibitive or restrictive legal measures on research. In addition, it provides a framework to include a new group of stakeholders into the governance of CBRN threats, by actively including civil society actors (e.g. researchers, academics, private enterprises) and take advantage of their individual and collective self-governance capacities and risk management know-how.

Nonetheless, future work is needed to transform CBRN Security Culture from the conceptual to the operational level. For research and academia this will require at the macro-level the development of practical mechanisms to resolve conflicts between security and other viable individual and societal interests. While at the micro-level it will require the development of tailored tools and monitoring concepts (e.g. for self-assessment) that take into account, not only the specific institutional setting of academia and research, but also the specific nature of the risks.

EXCELLENCE IN SCIENCE AND EXCELLENCE IN SECURITY

There is no good science without good ethics and if ethics is about reducing harm, security must be part of ethics. It follows that security considerations must therefore be integral elements in good science. To ensure that security considerations are integrated in research two elements are of key importance: training and education on the one-hand and oversight on the other-hand.

With regard to training, numerous initiatives have been launched in the last years to integrate security considerations into the training of researchers. For example, at the University of Vienna, for many years I have been teaching a course on laboratory safety and security. The course integrates chemical, biological and radiological safety and security in one training module. The development of such comprehensive training curricula is of special interest for the area of life sciences where chemical, biological and radiological risks often co-exist within one organizational unit.

Furthermore, security funding institutions have started to include CBRN security assessments into their funding scheme. As an example, the European Commission requires researchers in its research funding programs to take into account and carry out a self-assessment of CBRN security issues when writing up their research proposals. CBRN security (as well as safety) issues are also included into the proposal assessment during the so-called Ethics scrutiny process, in which independent experts (including security experts) participate.

Developing, operationalizing and implementing CBRN Security Culture as a practical tool to address the human factor in CBRN security sensitive research will not only support educational and training activities, but also provide funding institutions with clear behavioral and management standards in funding CBRN security sensitive research, thereby ensuring that excellence in science goes hand-in-hand with excellence in security.

CONCLUSIONS

Although UNSCR 1540 provides for a wide ranging set of tools to address CBRN threats by non-State actors, it contains serious gaps in managing the risks arising from research and academia. CBRN Security Culture, understood as a management and organizational system that focuses on the human factor, provides a new avenue to overcome current challenges and gaps in the implementation of UNSCR 1540 at academic and research institutions.

By focusing on the human factor and adding capacities of individual and collective self-governance of civil society and enterprises, CBRN Security Culture can provide a new and complementary element to the existing tool set of UNSCR 1540 implementation. Engaging in all available options to implement 1540 will be essential to effectively counter the complexity of the CBRN threat by non-State actors.

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