An Ethical Code of Conduct for the Non-proliferation of Biological Agents Among Malaysian Businesses

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Abstract—**Currently, export control monitoring of the proliferation of biological agents in Malaysia falls within the ambit of the Strategic Trade Act 2010 (STA 2010), a law drafted by Malaysia's Ministry of International Trade and Industry (MITI). At the same time, businesses in Malaysia have not gone so far as to initiate an ethical code of conduct to prevent biological agents from being proliferated for bioterrorism. Beneficence provides the ethical foundation for these relevant businesses to prevent bioterrorism. For that reason, this study has the objective of exploring best practices that can be turned into an ethical code of conduct for commercial culture collection businesses in Malaysia, guiding them to prevent biological agents from being proliferated for bioterrorism. The methodology for this study is qualitative based on primary sources such as legislations and international organizational documents as well as secondary sources – all of which are collated and examined through a content analysis. The results of this study indicate lessons learned from the nuclear industry that ought to be incorporated in the envisioned ethical code of conduct such as sharing illicit request information of biological agents among all parties, detection methods, reasons for refusal, personal particulars of requesters, and conducting transactions among peers that adhere to the non-proliferation of biological agents. The Business Ethic Institute of Malaysia (BEIM) and MITI can introduce, create awareness of, and draft a model ethical code of conduct for the non-proliferation of biological agents to guide commercial culture collection businesses in Malaysia.**

Keywords: Strategic Trade Act 2010, bioterrorism, biological agent, commercial culture collection businesses, ethical code of conduct, Resolution 1540, Biological Toxin and Weapons Convention (BTWC)

I. INTRODUCTION

A major event occurred when Malaysia's export control law, the Strategic Trade Act 2010 (STA 2010) [1], a form of technology management, came into force in January, 2011 [2: 20]. An export control law "controls exports of sensitive equipment, software and technology as a means to promote […] national security interests and foreign policy objectives" [3: 1]. Export controls are implemented to restrict illegal technology and weapons, promote regional stability and human rights considerations, and prevent the proliferation of Weapons of Mass Destruction (WMDs), especially for the purpose of international terrorism [3: 1]. Defined as "[m]easures to prevent the spread of biological, chemical, and/or nuclear weapons and their delivery systems", non-proliferation is synonymous with export controls [4: 3]. While the STA 2010 has been enforced for five years, much remains unknown about its implementation among commercial culture collection businesses which may supply and export biological agents, whether knowingly or unknowingly, to prohibited countries and/or individuals. For the purpose of this study, biological agents refer (in section 2 of STA 2010) to any "microbial, micro-organisms, virus or infectious substance derived from them naturally or artificially, as well as their components" [1]. While no terrorist groups have succeeded in utilizing genetic engineering for the creation of a biological weapon [5], [6: 209], both the skills of genetic engineers and easy access to biological agents (if successfully utilized by terrorists someday) could result in catastrophic bioterrorism. Bioterrorism itself is defined as "the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants" [7: 1].

Parallel to the implementation of STA 2010, commercial culture collection businesses should coordinate their own efforts by forming a coalition and drafting an ethical code of conduct to prevent prohibited biological agents from being used for bioterrorism. Meslin [8: 104] points out that the "Statement on Ethical Use of Biotechnology to Promote Public Health and National Security and to Fight against Bioterrorism" by the Biotechnology Industry Organization (BIO) opposes the use of biotechnology for developing weapons. Most crucially, Simms [9: 216-217] underlines that businesses can contribute to the emerging ethics in biotechnology and bioterrorism by practicing business ethics. Indeed, Byrne [10: 201] and Quilop [11:70] argue that businesses have a Corporate Social Responsibility (CSR) towards putting an Internal Compliance Program (ICP) in place

978-1-4799-1723-5/15/$31.00 ©2015 IEEE

that is in line with the country's export control law. In fact, Malaysia's Ministry of International Trade and Industry (MITI), which enforces STA 2010, has indicated that a company's ICP may be regarded as a code of conduct [12: 2]. According to Malaysia's Chief Secretary to the Government, Dr. Ali Hamsa, STA 2010 is aiding the business, trade and commerce community in Malaysia to adhere to high levels of ethical standards and that their supply chain also practices the same conduct [13: 8]. Likewise, the President of the Malaysian International Chamber of Commerce and Industry (MICCI) reckons that STA 2010 aligns Malaysia with global standards for export controls, enabling businesses to be conducted ethically and responsibly [14: 3].

Against this background, this study has the objective of exploring best practices that can be turned into an ethical code of conduct for Malaysia's commercial culture collection businesses, guiding them towards preventing biological agents from being proliferated for bioterrorism, and thereby complementing Malaysia's STA 2010 implementation. In achieving this objective, lessons from the international nuclear industry have been referred to.

This being the case, the following sections address the methodology of this study, an overview of the threat posed by biological weapons to Malaysia, export controls within the Biological and Toxin Weapons Convention (BTWC) [15], Resolution 1540 [16] of the United Nations Security Council (UNSC), and the ethics of beneficence to prevent harm. Subsequently, the results and discussion sections focus on STA 2010 as well as an ideal ethical code of conduct to be initiated by a coalition of commercial culture collection businesses in Malaysia after taking into account the lessons learnt from the international nuclear sector.

II. METHODOLOGY

This is a qualitative study, as most primary and secondary sources are examined by means of a content analysis. Malaysia's STA 2010 and MITI's website have been mentioned concerning provisions on monitoring biological agents and obtaining information about ICP. An overview of the threat posed by biological weapons to Malaysia from its Southeast Asian neighbors has relied on internet media and newspaper reports, while elaboration of the principle of beneficence has been found in secondary sources. For the formulation of an ethical code of conduct, secondary sources mentioned business initiatives in the international nuclear industry that could be followed by Malaysia's commercial culture collection businesses. The BTWC, Resolution 1540, and subsequent supporting documents have provided an overview of how Malaysia can fulfill its international obligations through STA 2010.

III. THE THREAT POSED BY BIOLOGICAL WEAPONS TO MALAYSIA

A. External Threat

Within Southeast Asia, terrorists from various countries seem intent on acquiring biological agents for the purpose of creating biological weapons. An anthrax germ from an Indonesian supplier of seed stock was acquired by Al-Qaeda in 2001 which was subsequently supplied to the Moro Islamic Liberation Front (MILF) for US$3,685, shipping costs included [17: 2]. In October 2003, a Jemaah Islamiah (JI) manual was discovered in Cotabato, Philippines, detailing the intention to modify biological agents into biological weapons, thus showing the malevolent intentions of terrorists in the Philippines [18: 1]. Toxins such as botulinum toxin, nicotine, and toxins from poisonous mushrooms and potato buds were highlighted in the JI manual [19: 13]. Then in 2010, Abu Sayyaf was able to mix a form of biological chemicals into improvised explosive devices (IEDs) that wounded ten soldiers in an ambush and landmine explosion in Sumisip, Basilan, in southern Philippines [20]. Deadly toxins and bacteria in the form of *Enterobacter doacae* and *streptococcus agalacteiae* were incorporated in landmines used by the New People's Army (NPA) in southern Mindanao in September, 2013 [21]. Filipino soldiers were injured with evidence of severe infections and blackening of the skin of victims [21].

In October, 2001, Malaysia faced a shocker when the United States (US) announced that an anthrax tainted letter originating from Malaysia was mailed to the Microsoft Licensing Incorporated Office in Reno, Nevada [22:1]. However, this was later proved to be a hoax, thereby clearing Malaysia's tarnished reputation [22: 1]. If this anthrax incident occurred with Malaysia's STA 2010 having been implemented, it would have been an illegally undeclared export by post. Malaysia's then Foreign Minister, Syed Hamid Albar, asserted that no terrorist groups in Malaysia had access to biological weapons [22: 1]. It is disputed whether terrorist groups have access to anthrax besides those within the Malaysian authority's safekeeping within Biosafety Level Three (BSL-3) laboratories scattered throughout Malaysia. Avenues exist, however, for Malaysian terrorist groups to obtain such biological agents as indicated by a subsequent Indonesian example.

In 1998, a few undercover reporters from the United Kingdom's (UK) Sunday Times Insight team approached Bio Farma, an Indonesian research institute based in Bandung, that offered to sell anthrax, plague, brucella and *Escherichia coli (e-coli)* even though the undercover reporters indicated they were from a laboratory in Africa [23: 2]. Without double checking to ensure these reporters were not disguised terrorists, the Indonesian research institute was perfectly willing to supply the necessary [23]. This shows that biological agents can be supplied by commercial culture collection businesses besides government-regulated laboratories.

Tucker [24: 39] once pointed out that given the many state-owned and commercial culture collections worldwide which exchange and sell microbes and toxins for scientific and biomedical research, there certainly needs to be an oversight mechanism in various countries to ensure individuals acquiring biological agents are trustworthy and that the agents will not end up in the wrong hands. Indeed, as highlighted by Atlas [25: 4], the World Health Organization (WHO) has indicated that the world's culture collections (biological resource centers) must never be "mail-order sources for bio threat agents and that diagnostic laboratories must not carelessly become a source of bio weapons for terrorists".

B. Internal Threat

Even in Malaysia's case, its own citizen, Yazid Sufaat, was once given the task of cultivating anthrax as a biological weapon by al-Qaeda in a laboratory near Kandahar, Afghanistan, in 2001 [26: 1]. Since Sufaat's release from imprisonment in 2008, it is not known whether he did try to spread his biological weapons' knowledge to other radical Islamic terrorists in Malaysia. Sufaat is now under the custody of the Malaysian police once again while his court trial is on-going for promoting terrorism in Syria [27].

In Europe, recent concerns were raised that returning Islamic State (IS) fighters from Syria could have acquired biological weapons knowledge [28: 32]. Malaysia should likewise heed this warning as it faces a similar threat from IS terrorists returning to Malaysia with bomb-making knowledge that endangers Malaysia's national security [29]. Thus, it is quite apparent that Malaysia and its Southeast Asian neighbors face the threat of bioterrorism as already discussed.

This also raises a pertinent concern whether Malaysia's own commercial culture collection businesses could unknowingly supply culture media to terrorists if they lack awareness about STA 2010. This requires that culture collection businesses have access to background information about requesters to ensure they are not terrorists trying to use biological agents for bioterrorism, and this ought to be incorporated into an ethical code of conduct heeded by every supplier of biological agents.

IV. MALAYSIA'S INTERNATIONAL OBLIGATIONS

A. The Biological and Toxin Weapons Convention (BTWC) and Resolution 1540

Malaysia's implementation of STA 2010 fulfills its obligation in implementing Article III of the BTWC [15] covering export controls. Specifically, Article III of the BTWC [15] states that "[e]ach State Party to this Convention undertakes not to transfer to any recipient whatsoever, directly or indirectly, and not in any way assist, encourage, or induce any state, group of states or international organizations to manufacture or otherwise acquire any of the agents, toxins, weapons, equipment, or means of delivery […]". While parties to BTWC must draft a national law of export control that restrains the trade of biological agents to hostile states with illicit biological weapons programs, terrorists' development or use of biological weapons is barely addressed within the BTWC's ambit.

Therefore, terrorists' acquisition, retainment, production or development of biological agents prior to its usage as a biological weapon for bioterrorism are not addressed in the BTWC, and terrorists would not be prosecuted because no international law has made it mandatory for states to criminalize these terrorist activities. Nevertheless, subsequent soft law documents like Paragraph 7 of the Final Declarations of the 6th and 7th Review Conferences of the BTWC [30: 8], [31: 9] provide updated and supplementary information besides the BTWC text and state "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 agents or toxins, for non-peaceful purposes". Revill and Dando [32: 56] have thus stated that "[w]hile multilateral arms control and partial disarmament agreements have a fixed central text to work from, they are reconstructed and updated through additional understandings which reflect changing concerns based on the perception by States Parties of the evolving geostrategies context".

Passed on 28 April 2004, the UNSC Resolution 1540 [16] under Chapter VII of the United Nations (UN) Charter requires UN members to implement this Resolution in addressing the biological weapons threat. In contrast to the BTWC, this Resolution stipulates that State Parties must refrain from providing any form of assistance to non-state actors like terrorists that attempt to develop, acquire, manufacture, possess, transport, transfer, or use biological weapons and their means of delivery [16]. Both the BTWC's subsequent document [33: 8] and Resolution 1540 [16] also indicate that national laws must also be implemented to prohibit non-state actors from manufacturing, acquiring, possessing, developing, transporting, transferring, or using biological weapons and their means of delivery. An additional document [33: 8] to the BTWC and Resolution 1540 [16] also emphasizes physical protection measures, border control, and increasing enforcement efforts through international cooperation to prevent illicit trafficking and brokering of such items. A supplementary document [33: 8] to the BTWC and Resolution 1540 [16] also asserts that states and their government machinery must also draft a national control list of strategic and dual items, as well as the names and contact information of individual terrorists, their front companies or their organizations responsible for developing biological weapons for non-peaceful purposes.

In 2008, the Committee for Resolution 1540 stressed the importance of creating awareness among companies and commercial individuals regarding their responsibility to implement an effective export control system through outreach programs organized by government agencies while companies should also implement their own ICP [34: 71]. Encouraging companies to implement their own ICP will enable them to know their customers better, detect suspicious procurement behavior, and notify law enforcement officers of concern [34: 71]. For Malaysia, an ICP is understood as "a commitment taken by the enterprise to voluntarily support the authorities by ensuring that internal controls and procedures are in place that safeguards the enterprise from being taken advantage by proliferators of weapons of mass destruction" [12: 2]. While MITI agrees that an ICP within an individual company can also be called a code of conduct [12], the ethical code of conduct considered in this study is one that will guide a coalition of commercial culture collection businesses along the whole supply chain to adopt best practices that prevent any illicit procurement attempts for the proliferation of biological weapons.

V. BENEFICENCE LINKAGE WITH ETHICS

The principle of beneficence requires actions on the part of individuals to refrain from harming others which is considered a negative duty [35: 20], [36: 203]. Beauchamp [37: 20]

specifically states that beneficence "[…] requires us to abstain from injuring others and to help others further their important and legitimate interests, largely by preventing or removing possible harms". Thus, beneficence has one element relevant to this study, namely, the injunction not to inflict harm, also known as the principle of non-maleficence.

According to Fisher [35: 20], the principle of beneficence "can provide a helpful analytic framework for considering ethical issues that arise in business". Moreover, beneficence outlines the duties that businesses have towards their stakeholders. Fisher [35: 22] insists that businesses have obligations to the community and environment as these are aspects that can be harmed by the operations of particular businesses.

Going back to the Biofarma case in Indonesia [23], this pharmaceutical company should have thoroughly investigated the background of the requesters before ever supplying their request. As indicated by Shapcott [36: 203], the duty to prevent harm to other fellow beings includes restraining from exporting damaging goods and by-products able to cause harm. This applies to Biofarma, for it should be cautious in wanting to supply and export those biological agents to the undercover reporters, especially without thoroughly checking whether they could be terrorists. Thus, beneficence serves as a guide for commercial culture collection businesses in making an ethical decision to refuse to supply biological agents domestically or internationally should there be any suspicion concerning the requester in order to prevent catastrophic bioterrorism.

VI. EXPORT CONTROL REGULATION IN MALAYSIA

A. Overview of STA 2010

This section begins with a brief overview of the scope of STA 2010. The preamble of Malaysia's STA 2010 [1] concerns the aim of the law in controlling exports, transshipment, transit and brokering of strategic items, including arms and related materials, as well as other activities that may facilitate the design, development, and production of biological weapons and their delivery systems. Biological weapon in section 2 of STA 2010 is defined as "any 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 purpose, and weapons, equipment or means of delivery designed to use biological agents or toxins for hostile purposes or in armed conflict" [1]. STA 2010 also stipulates the justification of biological weapons for prophylactic, protective or peaceful purposes like vaccine creation under section 2 even though this is prohibited in situations of armed conflict or hostility [1].

STA 2010 describes exports in section 2 as "to take or cause to be taken out of Malaysia any items by land, sea or air, or to place any items in a conveyance for the purpose of such items being taken out of Malaysia" [1]. A group of terrorists in Malaysia can easily form a front company and then make a request to the commercial culture collection business to export biological agents overseas to their counterpart for the hidden purpose of creating biological weapons. STA 2010, under section 9(1), has stringent requirements for export, transshipment and transit of strategic items such as biological agents which require a permit [1]. Subsequently, there is a need to require an export permit or a special permit as stipulated in section 14 (1) of STA 2010 to export strategic items to prohibited or restricted end-users which refer to a list of individuals, entities, states and destinations that are prohibited or restricted under the Strategic Trade (Restricted End-User and Prohibited End-Users) Orders 2010 [1], [38]. This is to ensure that any entity in Malaysia would not export biological agents that may assist in the development of biological weapons in other states, thereby tarnishing Malaysia's reputation besides safeguarding its own national security. STA 2010 (section 8(1)) defines a restricted end-user as an individual involved in "any activity that supports the development, production, handling, usage, maintenance, storage, inventory or proliferation of any WMD and its delivery systems" [1].

B. Code of Conduct for Monitoring Biological Agents

Complementing STA 2010, MITI has made it known to businesses in Malaysia involved in the exportation of strategic and dual-use items that they should form their own ICP. The ICP requires that an enterprise in Malaysia has "procedures in place to ensure that thorough investigations of the buyer and the end-user had been undertaken prior to shipment and export of strategic items and/or technology" [12: 3]. Therefore, commercial culture collection businesses in Malaysia will have to form their own ICP and ensure that any requester requesting biological agents to be exported overseas are not terrorists and the end-users based overseas are not affiliated with any terrorist organizations that promote bioterrorism. Therefore, it would be useful for a coalition of commercial culture collection businesses in Malaysia to have their own ethical code of conduct for preventing the proliferation of biological agents by means of salient features that can be practically implemented.

Some useful lessons are to be learned from the international nuclear industry. For Hund and Seward [39: 42], [40:9], the nuclear industry should merely conduct business transactions with suppliers that equally adhere to non-proliferation and, if needed be, terminate business deals with suppliers of proliferation concern along the supply chain. Similarly, commercial culture collection businesses in Malaysia should agree to conduct business transactions only with businesses seeking to prevent the proliferation of biological agents for nefarious purposes. Abroad, businesses in the nuclear industry have considered non-proliferation as their CSR and thus audited fellow businesses to ensure they all comply with non-proliferation as an ethical code of conduct [40: 9]. This should likewise be applicable to Malaysian commercial culture collection businesses. There is also a consensus among scholars [39: 42], [40: 13], [41:18] that the nuclear industry should share best practices for identifying an illicit request, the reasons for refusing such a request together with personal particulars of the intended recipients (name and country) to ensure no company should fulfill such an order. For Malaysia, the commercial culture collection businesses should not only

share information among themselves but also with MITI concerning any illicit request of biological agents, the requesters' name and country, detection methods in identifying the illicit request, and the reasons for refusal. Malaysia's commercial culture collection businesses should extend best practices of curbing proliferation beyond a country's jurisdiction to make it applicable to subsidiaries, brokers, business partners and distributors abroad. In learning from the nuclear industry about sharing information, this enables related parties to detect the latest entities involved in proliferation and the methods to be emulated by Malaysia's commercial culture collection businesses. Another useful lesson drawn from the nuclear industry is that failure to share pertinent information between the International Atomic Energy Agency (IAEA), national regulators, and the nuclear industry has led to new nuclear procurement networks, front companies and undetected methods of proliferation [41: 6]. Therefore, MITI and the commercial culture collection businesses in Malaysia must cooperate to prevent the proliferation of biological agents for malevolent intentions and to break up newly formed procurement networks and front companies.

MITI, together with commercial culture collection businesses in Malaysia, can also record cases of illicit requests and refusals and publish export licensing statistics that gauge the effectiveness of implementing export controls in the country. Therefore, it is crucial that MITI must extend its existing outreach activities [42] to the commercial culture collection businesses, making them aware that any order of biological agents from overseas could be destined for bioterrorism and thus ought to be refused.

MITI should also collaborate with the Business Ethics Institute of Malaysia (BEIM) in championing good business ethics by introducing non-proliferation as a CSR among the commercial culture collection businesses in Malaysia so as to prevent the proliferation of biological agents for bioterrorism. Since BEIM conducts training workshops on the importance of self-regulation [43], the starting point is to stress to BEIM the importance of introducing non-proliferation as a CSR in Malaysia, since, to the best of our knowledge, this has never been carried out. BEIM can certainly assist MITI in drafting an ethical code of conduct for businesses in Malaysia to abide by, especially concerning non-proliferation initiatives. BEIM can also solicit the assistance of foreign companies in Malaysia that already implement their own ICP to share best practices with local Malaysian Small Medium Enterprises (SMEs) unfamiliar with the ICP and to instill the ethics of non-proliferation among them. Thus, assistance from BEIM can certainly go a long way in helping MITI introduce a non-proliferation ethic in Malaysia specifically for the non-proliferation of biological agents meant for bioterrorism.

VII. CONCLUSION

This study begins with the objective of exploring best practices that can be turned into an ethical code of conduct for commercial culture collection businesses in Malaysia that can guide them towards preventing biological agents from being proliferated for bioterrorism. Such a code of conduct would complement Malaysia's STA 2010 implementation. The results from this study indicate that much can be learned from initiatives taken within the international nuclear industry as features to be included in Malaysia's ethical code of conduct. These include sharing of information and best practices not only within the commercial culture collection industry itself but also with MITI concerning detection methods, reasons for refusal of an illicit request, and sharing of requesters' personal particulars, thereby assisting MITI to compile statistics regarding the effectiveness of export controls. Commercial culture collection businesses in Malaysia should conduct business transactions among peers that share the same value as in preventing the non-proliferation of biological agents while shunning businesses that do not subscribe to the same ethic. Engaging BEIM to introduce, create awareness of, and draft an ethical code of conduct for non-proliferation as a CSR among commercial culture collection businesses in Malaysia in collaboration with MITI will certainly underscore the importance of implementing export control measures.

While this study used initiatives taken from the nuclear industry as a role model, these best practices have been limited to that particular industry. Therefore, further studies in gauging best practices conducted internationally within the chemical industry can contribute to the envisioned ethical code of conduct meant for the non-proliferation of biological agents in Malaysia. Besides, businesses and policy makers will benefit from being able to choose from best practices in both international nuclear and chemical industry initiatives. This will complement STA 2010 implementation besides promoting public–private sector cooperation.

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