

Written Testimony of Professor William C. Potter<sup>1</sup> for the Committee on Foreign Affairs of the U.S. House of Representatives (January 15, 2010)<sup>2</sup>

- I. **Introduction.** It is my honor and great pleasure to speak at this field hearing on Technology Security of the Committee on Foreign Affairs. The subject of the hearing is very timely and important, and I applaud the Committee and Chairman Berman for undertaking this initiative. It also is always a pleasure to return to Stanford where I spent a wonderful time as a postdoctoral fellow many years ago.

By way of introduction and as a caveat, I wish to emphasize that while the Center I direct covers the entire range of weapons of mass destruction and their delivery systems, my own expertise lies primarily in the nuclear sector and issues associated with illicit nuclear trafficking and the dangers posed by non-state actors and nuclear terrorism. As such, my prepared remarks will emphasize these areas.

A number of recent studies, including the important National Research Council report on *Beyond "Fortress America,"* co-chaired by Stanford President John Hennessy and General Brent Scowcroft, have correctly observed that many U.S. export controls developed during the Cold War were designed for a world that no longer exists and are ill-suited to meet today's national security challenges.<sup>3</sup> It is also the case that in an increasingly globalized world, one must be very cautious about imposing restrictions on the flow of information, technology, and scientists in the name of national security without carefully weighing the costs and benefits of such action. It would be equally

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<sup>2</sup> I very much appreciate the comments on an earlier draft of this testimony provided by Jeff Abramson, Michael Beck, Cristina Hansell, Stephanie Lieggi, Miles Pomper, Robert Shaw, Arthur Shulman, Leonard Spector, and Jonathan Tucker.

<sup>3</sup> See National Research Council of the National Academies, *Beyond "Fortress America": National Security Controls on Science and Technology in a Globalized World* (Washington, DC: The National Academies Press, 2009).

shortsighted, however, for the United States to abandon prudent export controls on dual-use technologies and material directly relevant to nuclear, chemical, and biological weapons in the name of economic competitiveness on the grounds that some other states have failed to adopt stringent export controls. Similarly, it would be most unfortunate from the standpoint of weapons of mass destruction (WMD) proliferation were the United States to signal its diminished support for adherence to the export guidelines of existing international nonproliferation regimes, based on the premise that some states already disregard inconvenient nonproliferation export control norms and principles. Unfortunately, one can point to recent examples of both outmoded U.S. and international approaches to export controls and changes to export policy that have been detrimental to U.S. national security.

Illustrative of the problem of outmoded U.S. export controls are current non-immigrant visa regulations that make it difficult for credentialed academic researchers to work with U.S.- based colleagues and for international students with advanced degrees in the science and engineering sectors to extend their stays in the United States for employment purposes. I fully endorse the National Research Council's recommendations with respect to remedies in this sphere, but I also would note the need for more nonproliferation education and training in U.S. industry and academe. Greater self-awareness and self-regulation regarding the security and export of WMD-related material, technology, and knowhow may be the best antidote to more intrusive government controls.

Regrettably, it is also the case that U.S. national security was impaired when, in the name of economic competitiveness and in pursuit of a new strategic partnership with India, the United States gutted important components of its own domestic export control laws and led the charge to exempt one country from the export guidelines of the Nuclear Suppliers Group. A similarly ill-considered congressional initiative in 2005 to make it easier to export highly enriched uranium (HEU) to U.S. allies--promoted in the name of economics and medical necessity-- directly undermined U.S. efforts to persuade other

countries to combat nuclear terrorism by minimizing the use of HEU in the civilian nuclear sector.<sup>4</sup>

My point is not to contest the desirability of reviewing and, where appropriate, revising export control policies to reflect new realities. I fully endorse such a general approach. It is essential, however, to guard against changes in those U.S. export controls that have served us well in curbing the spread of WMD and whose abandonment might inadvertently contribute to the proliferation of nuclear, chemical, or biological weapons. Therefore, in thinking about where possible reform of export control regulations should be pursued, it may make sense to distinguish between export controls targeting WMD-relevant items (especially those in the nuclear sector where technological change has been less dynamic) and those directed at the much larger body of dual-use strategic goods unrelated to WMD. Moreover, it is important to recognize that to the extent that the United States wishes other states to attach greater priority to the development and implementation of domestic nonproliferation export controls, as required by United Nations Security Council Resolution 1540, it must lead by example.

I will leave it to leaders from industry and science to depict the shortcomings of the current U.S. export control system as they pertain to economic competitiveness and the unfettered exchange of ideas and information. What I would like to highlight in my prepared remarks this morning are several new nonproliferation realities and how associated WMD proliferation risks are compounded by gaps and weaknesses in the U.S. export control system and the associated international regimes. I will then conclude with a few specific recommendations about what might be done to improve the situation.

## II. **The Evolving Proliferation Challenge.** The world has changed in many ways since the end of the Cold War. Although the new international strategic

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<sup>4</sup> For a discussion of the Burr Amendment, which required the modification of U.S. HEU export rules, see Anya Loukianova and Cristina Hansell, "Leveraging U.S. Policy for a Global Commitment to HEU Elimination" in William C. Potter and Cristina Hansell, eds., *The Global Politics of Combating Nuclear Terrorism: A Supply-Side Approach* (New York: Routledge, 2010), pp. 31-56.

environment has reduced the risks of a superpower nuclear exchange, it also has contributed to the growth of new challenges involving the spread and potential use of weapons of mass destruction. These challenges include the tendency on the part of many states to subordinate nonproliferation considerations to economic and political interests, the development of a global black market in sensitive dual-use technology and material useful for the production and delivery of WMD, and the rise of non-state actors as nuclear suppliers, middlemen, and end-users. Elsewhere I have analyzed how the first two developments have been affected by technological advances, as well as by changes in the international political and economic environment.<sup>5</sup> In the interests of time, I will restrict my oral testimony to a few new nuclear dangers posed by non-state actors.

Although discussions of nuclear terrorism typically focus on the potential use by non-state actors of nuclear explosives, it is important to recognize the proliferation risks posed by non-state actors as suppliers of nuclear material, technology, know-how, weapons designs and, conceivably, the weapons themselves. The extensive nuclear supplier network masterminded by Pakistani scientist A.Q. Khan is illustrative of this proliferation challenge. An analytically distinct but related variant of this threat, also illustrated in part by the Khan network, is the operation of non-state actors as middlemen, connecting nuclear suppliers—both state and non-state entities—with end-users, which also may be either state or non-state actors.

Most available information indicates that Dr. Khan was the entrepreneur behind the emergence of what former IAEA Director General Mohamed ElBaradei has called a “nuclear weapons Wal-Mart.” Nevertheless, one should take care not to equate the international network with one individual or to assume that his enforced retirement has put illicit non-state nuclear suppliers

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<sup>5</sup> See, for example, William C. Potter, “Non-State Actors and Nuclear Proliferation,” in Morten Bremer Maerli and Sverre Lodgaard, eds. *Nuclear Proliferation and International Security* (New York: Routledge, 2007), pp. 194-212. See also Charles D. Ferguson and William C. Potter (with Amy Sands, Leonard S. Spector, and Fred L. Wehling), *The Four Faces of Nuclear Terrorism* (New York: Routledge, 2005).

out of business. Indeed, the so-called “Khan network” was relatively non-hierarchical and involved an international leadership that was widely dispersed around the globe, including locations in Europe, Dubai, South Africa, and Malaysia. Few of its members were ever prosecuted and even fewer were convicted and served prison terms.

Fortunately for nonproliferation, a large gulf usually has separated most individuals with ready access to nuclear material, technology, and know-how from those pariah states or terrorist organizations that covet nuclear weapons. In the former Soviet Union, for example, many of the documented attempts at nuclear trafficking were foiled when amateur thieves incautiously sought to find customers for their contraband. In stark contrast to would-be Russian nuclear entrepreneurs, the Khan network was distinguished by the direct and ready access of its leadership to both Pakistan’s own civilian and military nuclear programs and that of prospective nuclear weapons aspirants. Although it is unlikely that future non-state actors will rival the Khan network in terms of its access to a wide array of sensitive nuclear commodities and practical experience in covert procurement for a dedicated nuclear weapons program, criminal and terrorist organizations will almost certainly attempt to link those with access to sensitive nuclear goods and services to state and non-state actors that covet such commodities.

It is to be expected that middlemen already engaged or seeking business in brokering illicit nuclear trade will gravitate toward bases of operations in states with weak or non-existent export control regulations and underdeveloped enforcement mechanisms. Unfortunately, these undesirable characteristics are not limited to the developing world. Indeed, one is hard pressed to find examples of successful prosecutions of illicit nuclear trafficking in which the accused received more than a slap on the wrist, leading some to conclude that **there are greater penalties for driving under the influence than for driving with illicit nuclear goods!** This phenomenon is not confined to the developing world, as evidenced by the difficulty officials from Australia, the European Union, and Japan, among other states, have experienced in prosecuting and convicting many of those implicated in various nuclear and

chemical weapons- related trafficking incidents.<sup>6</sup> The United States may have been more successful than most other states in prosecuting nonproliferation export control violations, because it now has a team of specialized prosecutors and a national coordinator, but it continues to be frustrated by divergent foreign laws and practices. To the extent that the United States is the pace-setter regarding export control enforcement, it is important that penalties for export violations be commensurate with the violation in order to serve a useful deterrent purpose.

III. **Gaps in the Current U.S. System and Practice of Export Controls.** The NRC study, among other reports, catalogues a long list of shortcomings in the current U.S. system of dual-use exports.<sup>7</sup> Many of these deficiencies pertain primarily to controls outside of the narrow area of WMD-related commodities. With respect to WMD controls in particular, I would call attention to the need to:

- *Reorganize the U.S. government bureaucracy for enforcing export controls.* When the U.S. Customs Service was incorporated into the Department of Homeland Security in November 2002, it was split into two separate agencies, Immigration and Customs Enforcement (ICE) and Customs and Border Protection (CBP). Both agencies have other high-profile missions (immigration control and border protection), which constrain their ability to enforce nonproliferation export controls effectively. As a result, many experienced customs inspectors and investigators have been demoralized by the reorganization and left the Federal service, while others are waiting to retire. One solution to this problem would be to reunite the two halves of the former U.S. Customs

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<sup>6</sup> See, for example, Jonathan B. Tucker, *Trafficking Networks for Chemical Weapons Precursors: Lessons from the Iran-Iraq War of the 1980s*, Occasional Paper No. 13 (Monterey, CA: James Martin Center for Nonproliferation Studies, November 2008); Stephanie Lieggi and Masako Toki, "The Mitutoyo Case: Will Japan Learn from Its Mistakes or Repeat Them? Issue Brief, July 31, 2007, Nuclear Threat Initiative Research Library, [www.nti.org/e\\_research/e3.html](http://www.nti.org/e_research/e3.html); and Kenley Butler, Sammy Salama & Leonard S. Spector, "Where is the justice?" *Bulletin of the Atomic Scientists* (November/December 2006), pp. 25-33.

<sup>7</sup> See also the website of the National Association of Manufactures at [www.nam.org](http://www.nam.org).

Service into a specialized agency that is separate from the immigration and border protection missions of DHS.

- *Improve U.S. cooperation with foreign customs services.* The United States cannot prevent WMD proliferation on its own but must cooperate with other like-minded states to control WMD-relevant commodities and equipment. The more countries are aware of illicit trafficking and have effective laws in place to counter it, including criminal sanctions and extradition treaties, the better the odds of success.
- *Devise effective controls in WMD proliferation-relevant areas where new technologies are emerging.* The logic of adjusting export controls to changing conditions should not mean simply relaxing or reducing controls. In some instances, it may be necessary to introduce more sophisticated and tailored approaches. One of the greatest challenges is to devise *effective* (as well as more *efficient*) controls in WMD proliferation relevant areas where new technologies are emerging, sometimes at a rapid pace.<sup>8</sup>

IV. **International Export Control Regime Deficiencies.** To be sure, one can identify significant shortcomings in both the design and performance of the major international export control regimes: the Nuclear Suppliers Group (NSG), the Missile Technology Control Regime (MTCR), the Australia Group, and the Wassenaar Arrangement. These deficiencies include non-membership of some key exporting countries, inconsistent implementation of “catch-all” and “no-undercut” provisions, inadequate reporting and intelligence sharing practices among member states, and lack of familiarity by industry in member states of the provisions governing exports. These problems, however, should not obscure the very useful contribution to WMD nonproliferation made by the NSG, MTCR, and the Australia Group.

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<sup>8</sup> As part of a two-year study on the Governance of Emerging Dual-Use Chemical and Biological Technologies, the James Martin Center for Nonproliferation Studies is examining over a dozen emerging technologies (including chemical micro-reactors, viral synthesis, and synthetic genomics) that have enormous economic and/or therapeutic promise, but could also be used for malevolent purposes by terrorists or states.

It also should be noted that these nonproliferation regimes were not driven primarily by Cold War considerations or attempts to stymie the Soviet Union's quest for WMD.<sup>9</sup> Indeed, in the nuclear sector during much of the Cold War the United States and the Soviet Union pursued remarkably similar nuclear export control and nonproliferation policies, and Washington often found it easier to cooperate closely with Moscow on nuclear nonproliferation and export control issues than it did with some of its close allies. As such, it does not follow logically that these export control arrangements should be scrapped or substantially modified simply because the Cold War has ended.

Despite progress in expanding international support for prudent nonproliferation export control measures designed to address the growing threat posed by non-state actors, many countries today still regard WMD terrorism as someone else's problem. As my CNS colleague Dr. Jonathan Tucker has demonstrated in the realm of chemical weapons precursors, states either may "not share U.S. concerns about the need to prevent the diversion of dual-use materials and equipment to WMD programs or lack the resources to perform this task effectively."<sup>10</sup> A tendency to discount nonproliferation considerations is reinforced by "just-in-time" inventory practices and free-trade zones, which depend on and are designed to expedite and/or avoid export controls. Indeed, many exporters prefer to use ports and transit hubs where customs enforcement is minimal or lax, making them easier and faster to transit—but also facilitating illicit trade in WMD-related items. As Tucker observes, "[i]n addition to economic pressures, the lack of a global consensus on 'best practices' for customs inspections has hampered the development of international standards."<sup>11</sup> Yet another challenge is that throughout the Asia-Pacific region, information on cargo manifests is considered proprietary and few details must be declared.

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<sup>9</sup> See Congressional Research Service (Mary Beth Nikitin, Coordinator), "Proliferation Control Regimes: Background and Status," Updated January 31, 2008.

<sup>10</sup> Tucker, *Trafficking Networks*, p. 35.

<sup>11</sup> *Ibid.*

The difficulty of prosecuting export control violations—in the United States and abroad—further undermines the deterrent value of export controls. Many countries, including our closest allies do not recognize the U.S. legal concept of extraterritorial jurisdiction and do not permit the extradition of their citizens.

As one contemplates reforms for the U.S. export control system, one must be aware of the liabilities that result from divergent international practices and priorities, as well as the shortcomings of existing international export control regimes. It is also the case, however, that many states do follow the U.S. lead on nonproliferation export policy and that, by and large, nonproliferation export control norms and practices have become more prudent and widespread over time. This positive trend in strengthening domestic export controls is perhaps most obvious with respect to China's national trade control system, although further improvements in enforcement are still needed. Although the 2008 NSG exemption granted to India marked a major step backward in the international nuclear export control arena, it is all the more imperative today to strengthen the NSG and the other international mechanisms that focus on WMD proliferation.

**IV. Corrective Measures.** A sound U.S. approach to nonproliferation export controls requires a two-pronged approach: (1) recognition and retention of those aspects of the system that have performed well, and (2) introduction of new features that will enhance economic competitiveness and information and technology flow without weakening the international nonproliferation regime. Let me conclude my prepared remarks by suggesting how these dual objectives may be pursued in tandem.

Retain the “Catch-All Rule.” Whatever the United States does, it must be very careful not to make matters worse. Among other things this dictum cautions against acceptance of the advice of those who would like to dilute or restrict further the “catch-all” provision in Part 744 of the Export Administration Regulations. This provision holds that that dual-use items or technologies that are not on the Commerce Control List may still require an export license if the exporter has reason to believe that the item is intended for the development, production, or delivery of nuclear, biological, or chemical weapons. In fact, an

increasing number of companies today have made strides in incorporating the “catch-all” philosophy into their internal compliance programs, and greater efforts should be made to encourage the adoption of WMD nonproliferation objectives as a component of corporate social responsibility goals.

Work with Other Countries to Reform Their National Laws and Practices. A major step forward in promoting WMD-related export controls internationally was taken in April 2004 when the United Nations Security Council adopted Resolution (UNSCR) 1540. This measure, among other things, requires all UN member states to adopt and enforce effective laws which prohibit non-state actors from acquiring WMD, their delivery systems, and the materials needed to produce them. Although few states directly challenge this mandate, its implementation has been undermined in many countries due to lack of resources, competing demands, and poor understanding of the relevance of the measure for their own national security interests. If UNSCR 1540 is to be effective as an export control initiative, it will be necessary for the United States to increase its support for regional and national 1540 training programs. To comply fully with UNSCR1540, it also would be desirable for states to amend their extradition treaties to cover WMD-related export violations.<sup>12</sup>

Increase Funding for Export Control Enforcement. Effective export control enforcement continues to be hampered by the lack of sufficient personnel to undertake proper end-use checks and aggressively pursue investigations of suspected violations. It does little good, for example, to identify new cases that merit investigation if one is unable to assign trained personnel to conduct investigations at home and abroad.<sup>13</sup>

Explore New Remedies for Export Control Violations. The demanding legal standard for proving criminal violations of the Export Administration Regulations suggests that new types of remedies are needed in an age of

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<sup>12</sup> This point also is made by Tucker, p. 38.

<sup>13</sup> On this issue see “Testimony of Arthur Shulman,” Hearing on the Export Administration Act: A Review of Outstanding Policy Considerations, House Committee on Foreign Affairs, Subcommittee on Terrorism, Nonproliferation, and Trade (July 9, 2009).

economic globalization. One promising approach is to impose financial sanctions against companies and persons involved in WMD-related trafficking, such as those mandated by the Iran Nonproliferation Act of 2000 and Executive Order 13382 of June 2005. Other possible sanctions against companies and persons involved in the trafficking of WMD-related materials and equipment include the denial of export rights to the United States or restrictions on individual travel.

Invest More in Nonproliferation Education and Training. It is necessary but not sufficient to adopt new rules and regulations internationally with respect to WMD-related exports. Equally important is the need to build a global nonproliferation and security culture in which government and industry officials, scientists, and graduate students who work with dual use WMD-related technology and materials in the nuclear, biological, and chemical fields learn to appreciate the potential dangers posed by these items and become familiar with the domestic and international regulations governing their use.

I will conclude my remarks by touching on the issue of nonproliferation export controls as it pertains to the university environment. At a time when the great majority of U.S. government officials and politicians of different political persuasions agree on the dangers posed by WMD proliferation, it is surprising how limited the opportunities are for students at all levels of education to acquire formal training in the field.<sup>14</sup> In a very small way, the Monterey Institute of International Studies is trying to address this knowledge gap by offering a new Masters degree program in Nonproliferation and Terrorism Studies—the first of its kind in the world. But many more universities will need to follow suit if we are to train the next generation of nonproliferation specialists or even introduce our future leaders in government, science, and industry to the subject.

One practical step to remedy the problem, at least in the United States, would be to pass a National Nonproliferation Education Act, perhaps modeled after

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<sup>14</sup> “Nonproliferation Education in the United States, Part I: Undergraduate Education,” *The Nonproliferation Review* (Fall/Winter 2002), pp. 9-30.

the National Defense Education Act or the National Security Education Act. Such legislation, ideally funded by a one-time appropriation of around \$50 million, would provide up to 50 fellowships per year to graduate students to pursue advanced multidisciplinary training in nonproliferation studies at the universities of their choice. An act of this sort would have the dual positive benefit of attracting top-notch young talent to the field and encouraging more universities to offer courses on nonproliferation issues (including export controls) in order to attract tuition-paying students. While not a short-term solution to our current predicament, this approach would help to create the next generation of experts on whom the United States will rely to tackle increasingly complex task of preventing the proliferation of nuclear, biological, and chemical weapons of mass destruction.