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INTERNATIONAL SMUGGLING NETWORKS: WEAPONS OF MASS DESTRUCTION COUNTERPROLIFERATION INITIATIVES

HEARING

BEFORE THE

FINANCIAL MANAGEMENT, THE BUDGET, AND INTERNATIONAL SECURITY SUBCOMMITTEE

OF THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

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WEDNESDAY, JUNE 23, 2004

U.S. SENATE,
SUBCOMMITTEE ON FINANCIAL MANAGEMENT,
THE BUDGET, AND INTERNATIONAL SECURITY,
OF THE COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 4:24 p.m., in room SD–342 Dirksen Senate Office Building, Hon. Peter G. Fitzgerald, Chairman of the Subcommittee, presiding.

Present: Senators Fitzgerald, Akaka, and Lautenberg.

OPENING STATEMENT OF SENATOR FITZGERALD

Senator FITZGERALD. This meeting will come to order. I apologize for the delay in today's hearing. I think it was supposed to start at 2:30 p.m., and now it is almost 4:30 p.m. We got interrupted by a series of votes, and I appreciate our witnesses' patience. I was glad to see you were still here when I arrived.

I would like to welcome the Subcommittee's Ranking Member, Senator Akaka, who is one of the leaders in the Senate on nonproliferation issues. I also would like to welcome our distinguished witnesses from whom we will hear shortly.

Today we are conducting an oversight hearing to examine the clandestine trade of weapons of mass destruction and the U.S. programs and initiatives to counter this dangerous international security threat.

Beginning late last year, we have seen a series of alarming discoveries regarding how weapons of mass destruction—nuclear, chemical, biologica,l and radiological—may be spread around the world.

An editorial in the *Chicago Tribune* of February 1, 2004, entitled "A Nuclear Weapons Wal-Mart," described the situation this way, "For those who track nuclear weapons across the globe, developments over the last weeks have heads spinning like the special centrifuges that enrich uranium for nuclear bombs. That is, very fast."

What is particularly alarming about these discoveries is the apparent ease with which nations or terrorists wishing to do us harm may obtain these lethal materials. The editorial described the nuclear smuggling network that was established and directed by Pakistani nuclear scientist, Abdul Qadeer Khan, to transport nuclear weapons components and related materials around the globe. As

the editorial mentions, upon learning of Khan's dealings, the head of the International Atomic Energy Agency, Mohamed ElBaradei, proclaimed that a "Wal-Mart of private sector proliferation" has existed for over a decade. The editorial concluded with this call on government leaders in the U.S. and abroad: "It's not likely that any single initiative will completely shut down the nuclear Wal-Mart. But by cooperating on a global scale, law enforcement agents can make it a lot harder for nuclear black marketeers to do business."

This hearing builds on a hearing we conducted last year to examine North Korea's role in drug trafficking, counterfeiting, and weapons proliferation. During the hearing we heard disturbing testimony from our witnesses, including two North Korean defectors, about that country's weapons program and its export of dangerous weapons. This past February, Abdul Qadeer Khan, who is considered to be the father of Pakistan's nuclear weapons program, signed a detailed confession admitting to the sale and transfer of materials, designs, and technologies to produce fuel for nuclear weapons. The Khan trade network may be one of the most complex and successful efforts to evade international controls to prevent the spread of nuclear weapons.

Abdul Qadeer Khan directed the trade network in conjunction with a small group of business associates. Together they coordinated the manufacture and shipment of nuclear components from a number of countries to Libya, North Korea, Iran, and possibly others. While the majority of the shipments were components for gas centrifuges that are used to enrich uranium for use in a nuclear weapon, the network also supplied uranium and nuclear weapons designs to Libya.

The Khan network is disturbing for many reasons, most importantly for the opportunity it may have afforded rogue nations or terrorists to circumvent international controls to acquire not only materials, but also the technology, designs, and expertise necessary to build a weapon of mass destruction. The Khan network may already have helped terrorists in this regard. For example, Osama bin Laden has purportedly called it a "duty" for al Qaeda to develop a nuclear bomb.

The *Associated Press* reported in March 2004 that al Qaeda leadership claims to have bought "ready-made nuclear weapons on the black market in Central Asia." While much progress has been made in detecting the extent of the Khan network's operations, many questions remain unanswered. The *Washington Post* reported on May 29, 2004 that investigators had been unable to account for some sensitive parts Libya ordered for use in the construction of a uranium enrichment plant. The failure of these parts to arrive in Libya raises the possibility that the shipments may have been diverted, or that they were being manufactured by unknown suppliers that have not yet been revealed.

According to the same news reports, investigators believe that not only have some suppliers of the network not been identified, but perhaps some customers as well.

I look forward to hearing from our witnesses regarding the progress in dismantling the Khan network, as well as the implications this network has for U.S. and international efforts to stop black market proliferation. The threats posed by the proliferation

of weapons of mass destruction and their delivery systems is increasingly acknowledged around the world to be a growing threat. In response, on May 31, 2002, President Bush announced the Proliferation Security Initiative (PSI), which seeks to combine the use of existing national and international legal authorities with enhanced intelligence sharing and multilateral coordination to improve the interdiction of WMD and WMD-related materials transported around the world. The goal of the PSI is to stop weapons shipments and deter state or non-state actors from engaging in the weapons trade.

Thus far, 14 nations including Australia, France, Japan, Russia, the United Kingdom, Germany, Italy, and Singapore, among others, have joined the United States as core members of the Initiative, and over 60 nations have signaled their willingness to cooperate with the PSI in its interdiction activities.

Additionally, Panama and Liberia, the world's first and second largest shipping registries, have signed boarding agreements indicating their willingness to permit ships carrying their flags to be stopped for inspection. The cooperation of these two nations in conjunction with the core member states will allow approximately 50 percent of the world's commercial shipping fleet to be subject to boarding, search, and seizure.

As we will hear from our witnesses, the PSI is described as an activity rather than an organization. As I understand it, the administration believes that this approach, similar to a coalition of the willing, will prove more responsive and adaptable to changing threats than the alternative which would be the creation of a formal multilateral structure. It is believed that a formal organization could become bogged down in competing priorities and the time consuming nature of a bureaucracy.

The PSI recently celebrated its one-year anniversary and was high on the agenda at the recent G–8 Summit in Sea Island, Georgia. Some outside experts, however, have raised concerns with the approach of the PSI, specifically the time-consuming nature of its activities and its overall effectiveness. We look forward to hearing the views of our witnesses on these issues.

We are privileged today to have senior officials from the Departments of Commerce and State who will address the role of export controls and nonproliferation policy, and the work of the PSI and its future plans, respectively. I look forward to hearing from them on how these aspects of U.S. policy help prevent the spread of WMD and WMD-related materials throughout the world.

We also have with us today a distinguished panel of independent experts in proliferation policy. I look forward to hearing their evaluations of current counterproliferation initiatives. I especially look forward to hearing their thoughts regarding the threat posed by WMD smuggling networks, as well as how efforts like the PSI may help detect and deter future networks from forming.

Before I introduce our witnesses, I would like to recognize the Subcommittee's Ranking Member, Senator Akaka, who may wish to make an opening statement. Senator Akaka.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. Chairman Fitzgerald, thank you very much for holding this hearing. It is a great tradition of this Subcommittee and the full Committee to focus on international security issues. This hearing is a very worthwhile contribution to the Subcommittee's continued efforts to improve the government's ability to address threats to our Nation.

It was more than a year ago that President Bush announced the Proliferation Security Initiative, or PSI. Since then, there have been major developments in counterproliferation, most notably the decision by Libya to end its weapons of mass destruction programs. The Libya case brought into the open what was once only whispered about in the corridors of the intelligence community. That is the black market in WMD materials.

Although much has been written about the A.Q. Khan network operating out of Pakistan, with tentacles in many countries, we still have not fully unraveled this network, and there are other people directing similar operations. Arresting Khan did not destroy this "network." His was only one of many now facilitating the transfer of WMD-related materials. Never before has there been so much demand by so many for WMD materials. As an illustration of these extensive networks for nuclear, chemical, and biological weapons, I wish to point out a chart on either side of this room, prepared by my staff, based on published reports.[1]

What these charts illustrate is that there is a web of relationships, some private, some governmental, that tie illicit activities by either rogue states or terrorist groups to legitimate companies and countries. To focus on stopping activities between rogue countries and terrorist groups would be to place a barrier only partway across the flood of destructive weapons. We need to broaden and intensify our efforts because it is only a matter of time before hundreds of thousands of people are killed in an attack by a weapon of mass destruction, nuclear, biological, or chemical. Yet, rather than aggressively doing all we can to prevent this, the United States, sends at best, mixed messages.

For example, even though the Central Intelligence Agency has identified a bomb exploded by terrorists as a more likely threat than a missile launched by a rogue state, we are spending billions of dollars to develop a national missile defense system that may not work, and against a threat that does not yet exist.

For example, even though countless reports have identified radioactive material in the former Soviet Union as providing the most ready source of material to terrorists, funding requests for programs to secure Russian nuclear materials and eliminate weapons grade plutonium production have decreased.

Even as we decry the development of nuclear weapons by other states, this administration is investing millions in developing a new earth-penetrating nuclear weapon and millions in making new nuclear weapons easier to test.

What we need to do is clear. A simple six-step program would have a tremendous impact: (1) Accelerate efforts of control at radioactive materials worldwide; (2) Accelerate negotiations with the

[1] The chart referred to submitted by Senator Akaka appears in the Appendix on page 108.

Russians to reduce the number of nuclear warheads and the number of weapons on alert status; (3) Set an example by eliminating spending on new nuclear weapons; (4) Ratify the Comprehensive Nuclear Test Ban Treaty; (5) Negotiate a verifiable fissile material cut-off treaty; and (6) Develop and strengthen existing export control systems.

These are only a few steps of a broader agenda, but they are critical components. What is so disappointing is how few of these obvious measures have been adopted.

I am pleased that we have with us today such distinguished witnesses from the administration and the public to discuss these important issues, and I welcome them to the Subcommittee. Thank you, Mr. Chairman.

Senator FITZGERALD. Thank you, Senator Akaka.

Our first witness is the Hon. Peter Lichtenbaum, Assistant Secretary of Commerce for Export Administration at the U.S. Department of Commerce. In his role at the Department of Commerce, Mr. Lichtenbaum is responsible for policies regarding controls on the export of dual-use items for reasons including national security, nonproliferation, and foreign policy. He also manages the Bureau of Industry and Security's participation in multilateral export control regimes and chairs the Inter-Agency Advisory Committee on Export Policy. Prior to his work at the Commerce Department, Mr. Lichtenbaum was with the law firm of Steptoe and Johnson, where he practiced in the firm's international group. He also served in the Treasury Department, where he worked on international law and economic policy issues.

Our second witness is Mark Fitzpatrick, who is Acting Deputy Assistant Secretary for Nonproliferation Controls at the U.S. Department of State. As Acting Deputy Assistant Secretary, Mr. Fitzpatrick oversees programs regarding countries potentially involved in proliferation, interdiction and sanctions cases, cooperative efforts on export controls and border monitoring, as well as other nonproliferation assistance programs. Prior to serving in his current position, Mr. Fitzpatrick served as Director of the Office of Regional Affairs in the Nonproliferation Bureau. The Nonproliferation Bureau compiles and coordinates policy on regional issues involving weapons of mass destruction in specific areas such as Iran, North Korea, and Libya.

Again, I would like to thank you both for being here. I would like to especially thank you for your patience, given our votes this afternoon. In the interest of time, we will include your full statements in the record, and we would ask that you limit your opening remarks to 5 minutes if possible. I will let either of you begin as you choose, whoever wants to go first.

Mr. LICHTENBAUM. Thank you, Mr. Chairman.

Mr. Chairman, Senator Akaka, and Members of the Subcommittee, we appreciate the opportunity to testify here today. Mr. Chairman, as you said, we are here to discuss a very important topic, the U.S. efforts to address the threat posed by international networks who are seeking weapons of mass destruction.

With your permission, Mr. Chairman, I would like to defer to Mr. Fitzpatrick from the State Department to begin our discussion of the administration's counterproliferation initiatives and I will then

discuss the role of export controls in promoting a nonproliferation policy.

Senator FITZGERALD. That is fine. Mr. Fitzpatrick.

TESTIMONY OF MARK T. FITZPATRICK,[1] ACTING DEPUTY ASSISTANT SECRETARY OF STATE, BUREAU OF NONPROLIFERATION

Mr. FITZPATRICK. Thank you, Peter.

Mr. Chairman, Senator Akaka, thank you for the opportunity to speak to you today about the status of efforts to prevent the proliferation of weapons of mass destruction, and in particular, the Proliferation Security Initiative. As you said, I have a prepared statement that has been submitted for the record, so I will confine my oral remarks just to some of the main points in that statement.

The proliferation of weapons of mass destruction remains a serious challenge to our national security. The next steps in the administration's nonproliferation agenda were clearly established by President Bush's February 11 speech at the National Defense University, which also highlighted the reality that the path to proliferation does not always lie in a straight line between supplier and recipient.

We continue to learn about black market operatives who deal in equipment and expertise related to weapons of mass destruction. The extensive network operated by Pakistani nuclear scientist, A.Q. Khan, and now being shut down by U.S. and UK led diplomatic and intelligence efforts is the starkest example of the problem—a shadowy black arms market in which the most dangerous of weapons technology, parts, and materials moved across four continents. Its existence alerts us to the dangers of whether there could be other networks still in operation. Moreover, the threat of onward proliferation is not limited to non-state actors such as A.Q. Khan, but extends to proliferant states cooperating between themselves. This compounds the danger.

Against this backdrop the United States has taken a number of efforts to enhance our ability to detect and prevent illicit procurement or shipment of WMD missiles or related technologies. These efforts include strengthening multilateral regimes and treaties, enhancing export controls and enforcement measures, preventing nuclear smuggling, and taking decisive action against WMD missile and advanced conventional weapon procurements. In the interest of time I will not elaborate on these efforts orally, but note that I address them in detail in my prepared remarks.

I would like to focus though on the Proliferation Security Initiative, PSI, which was announced by President Bush a year ago. The PSI, as you said, Mr. Chairman, is a set of activities, not an organization, activities that provides opportunities for groups of states to work together to address operational and information requirements for effective action against proliferators. Its emergence reflects the reality that even as we continue to support and strengthen existing nonproliferation treaties and regimes, proliferators, and those who facilitate procurement of deadly capabilities, are circumventing existing laws, treaties, and controls.

[1] The prepared statement of Mr. Fitzpatrick appears in the Appendix on page 31.

The PSI was envisioned as a flexible instrument. Its statement of interdiction principles published last September serves as the blueprint for PSI activities. These principles make clear that all PSI activities are consistent with national legal authorities and relevant international law and frameworks.

As the number of states participating in and supporting the PSI grows, we are focusing on concrete, practical activities to establish states' understanding of and capabilities for what will be involved in interdicting cargoes. States are becoming involved in PSI activities in a variety of ways. Some are participating in informational meetings. Others are participating in interdiction training exercises, and still others are stepping forward with new ideas to advance the Proliferation Security Initiative.

For example, in August, Denmark will host a container security workshop, bringing governments and industry experts together to discuss how we can make water-based cargo shipping more secure against proliferation.

Mr. Chairman, you asked about future plans. The United States is pursuing boarding agreements with key flag states to facilitate maritime interdiction cooperation. We have signed two agreements to date, with Liberia and Panama, and have many more under active discussion and consultation. Additionally, we are considering what mechanisms might facilitate cooperation in air and ground interdiction arenas.

In part, because of the sobering lessons learned from A.Q. Khan's activities, the President in February called for the work of PSI to be expanded to focus on shutting down proliferation networks and bringing those involved to full justice.

A year after its creation, the PSI is today a successful initiative that resonates with countries worldwide. Its simple tenets make good nonproliferation sense. States understand that, by working together, we will have a greater impact than by acting alone. Our partners are responding by establishing practical cooperative partnerships to defeat proliferation. As a result, the PSI is poised, through either actual interdiction or the deterrent of threatened interdiction, to impact significantly the international proliferation networks and supplier-recipient relationships among proliferators.

In conclusion, let me emphasize that the proliferation of weapons of mass destruction, missiles, and related materials remains a challenge to international security. I hope my testimony has shown the resolve and commitment of the Federal nonproliferation community to develop solid creative responses to the danger of proliferation, and in particular, responses to illicit procurement of WMD and missiles.

Thank you again for the opportunity to testify here today. I look forward to hearing more about your concerns and to addressing your questions.

Senator FITZGERALD. Thank you. Mr. Lichtenbaum.

TESTIMONY OF PETER LICHTENBAUM,[1] ASSISTANT SECRETARY OF COMMERCE FOR EXPORT ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Mr. LICHTENBAUM. Thank you, Mr. Chairman.

The mission of the Commerce Department's Bureau of Industry and Security, or BIS, is to safeguard U.S. national security, foreign policy, and economic interests through implementing U.S. export control policy on dual-use commodities, software, and technology. In addition, BIS is charged with enhancing compliance with those controls and enforcing them worldwide. We also promote the development of effective export and transit control systems in key countries and transshipment hubs, i.e., controls relating to foreign origin products in addition to U.S.-origin products. In that regard, clearly our work relates to what Senator Akaka mentioned about developing and strengthening existing export control systems.

BIS's principal objective is to ensure that direct exports from the United States and re-exports of U.S.-origin items from third countries are consistent with national security and foreign policy interests, without imposing unnecessary regulatory burdens on U.S. exporters or impeding the flow of legitimate trade.

When dealing with the international WMD networks which are our subject here today, it is critical to promote compliance abroad with our controls, and to that end Commerce has been very active. We conducted four international export control outreach seminars in 2003 with the goal of providing key export control related information to companies that use U.S. original parts for manufacturing, companies that use U.S.-origin system software technology to develop foreign-made products, and companies that re-export U.S. items.

Over 1,000 people attended the BIS conferences which were held in Japan, South Korean, Singapore, and China, and came away with a better understanding of our rules.

However, clearly, controlling the use of U.S. technologies alone is not sufficient to hinder procurement by international WMD networks, as many of the most sensitive items are available in countries throughout the world, and that is a critical challenge for our export control work.

It is imperative, in my view, that the U.S. Government work with international suppliers in order to effectively control the export of these sensitive items. To that end, the United States is leading the efforts to strengthen the four multilateral regimes which are the traditional mechanism for international cooperation in this area. In particular, we are working to improve the control lists, for example, by ensuring that we control any item that is of particular interest to terrorists, and controlling the export of any item intended for use in a WMD program or delivery system through catch-all controls. We think we are making excellent progress working with the State Department toward those ends.

But it is not enough to just work in the traditional export control regimes because only a small portion of countries in the world are members of these regimes, and therefore, BIS participates in U.S. Government efforts to build a more effective international system

[1] The prepared statement of Mr. Lichtenbaum appears in the Appendix on page 36.

of export controls beyond these regimes and by assisting other countries to develop and enforce effective export controls. The importance of those activities is shown by the A.Q. Khan case, which involved technology and components exported from countries who were not members of the regimes.

As part of the State Department's Export Control and Related Border Security Assistance Program, or EXBS, BIS conducts technical exchanges with more than 30 countries that need assistance in this area. Working with other U.S. agencies we design specific programs toward the needs of each country, and then give them training that is customized to their needs.

During the last fiscal year, for example, we conducted 74 bilateral technical exchange workshops and one multilateral conference, as part of the EXBS Program. We helped countries draft legislation and helped companies in those countries adopt effective compliance programs because, as Senator Akaka mentioned, it is not just a question of working at the governmental level, but also doing outreach to the private sector, who may be legitimate countries. There is a long list of countries that we have worked with, many of them in the former Soviet Union. We have developed software that is specifically designed to help companies comply with their national export control rules. We also developed software that helps Customs officials in these countries identify the products that are of most concern to us, because it is often the question of having the training to know when a product that is at the border is an item of concern.

Russia, for example, has begun deploying this product identification tool that we developed in its regional Customs centers in preparation for deployment to more than 150 Customs posts.

We also have another major initiative outside of the EXBS Program to strengthen controls in other countries. In 2002 we launched a Transshipment Country Export Control Initiative, or TECI, and that initiative focuses on transshipment hubs: Cyprus, Hong Kong, Malaysia, Malta, Panama, Singapore, Taiwan, Thailand, and the United Arab Emirates.

Some of these countries do have export control systems in place, but none of them participate in all four of the multilateral regimes that I mentioned. All are major hubs for high tech products and they all operate near countries of concern. Some of them, as you mentioned, have been implicated in some of the recent developments of concern.

Under TECI, BIS has already made significant progress. We have developed a public/private partnership on best practices for export controls. We have placed attaches in Hong Kong and Abu Dhabi, and we visited many of the TECI countries at senior levels, including Hong Kong (where I was a month ago), Malta, Panama, Thailand, and the United Arab Emirates, in order to emphasize the importance of strengthening export control systems.

I think all of these efforts provide countries with the knowledge and the ability to fulfill their commitments to the United Nations. As you know, the United Nations recently passed, at the President's suggestion, UN Security Council Resolution 1540, which calls on countries to adopt effective export control systems.

Finally, with respect to the PSI, which Mr. Fitzpatrick discussed, although the State Department and the Defense Department are properly providing most of the policy and operational leadership, we have participated actively in the development of the Statement of Interdiction Principles, the strategies for outreach to other governments, and particularly are focused on the outreach to industry because we think industry can really play a very important role in leveraging the resources of government in order to make the PSI effective.

So that gives you an overview of our important initiatives, working with other agencies to counter proliferation of WMD technologies. We are strengthening export controls here at home and abroad, and I would be happy to answer any questions that Members of the Subcommittee may have.

Senator FITZGERALD. Thank you very much. Senator Lautenberg.

OPENING STATEMENT OF SENATOR LAUTENBERG

Senator LAUTENBERG. I will try to be brief, but I commend you for holding this hearing. I think it is a particularly important hearing and I commend the Chairman for holding it.

In these days of lots of concerns about the capacity of rogue organizations, rogue countries, to be able to buy materials that are ultimately available to make weapons of mass destruction out of them, we know that delivery systems have been perfected in lots of places. We saw them used, as a matter of fact, in the first Gulf War when missile were fired from Iraq to Israel and Saudi Arabia as well. So we are concerned about the finding of the recent Harvard University report. The authors there found that not nearly enough is being done to keep nuclear fissile materials away from terrorists and rogue states, Iran, Libya, North Korea, to name just the most obvious. The principal conclusion of the authors is that fewer fissile materials were secured in the 2 years after the September 11 attacks then in the 2 years leading up to that horrific day. According to the authors, it will be well over a decade before nuclear fissile materials located in over 140 countries worldwide are adequately secured. Until then such materials are vulnerable to acquisition by terrorists and nations that support them.

In the post-September 11 world the prospect of terrorists acquiring nuclear weapons of mass destruction is particularly alarming. Counterproliferation efforts are urgently needed, and I am pleased that our G–8 partners pledged at the meeting in Sea Island earlier this month to address and curb the spread of nuclear fissile materials.

And as we have learned from revelations about the A.Q. Khan network operating in Pakistan, once fissile and other dangerous materials are out on the world market, it is darn hard to track them down.

I would like to raise several critical questions that our witnesses and we need to address with regard to counterproliferation efforts. First, how well we secured nuclear fissile materials outside of the former Soviet Union. At one point we appropriately focused on our nonproliferation efforts on that region with programs like the Nunn-Lugar Initiative. We cannot do that any longer. Our

counterproliferation efforts cannot be limited to Russia or its neighbors any more, as we heard from——

Senator FITZGERALD. Mr. Lichtenbaum and Mr. Fitzpatrick.

Senator LAUTENBERG. Our counterproliferation efforts cannot be limited to Russia, or its neighbors any more. They must be extended to places like Malaysia and Sudan.

And second, how well have we closed loopholes that let nations develop nuclear weapons programs under the cover of nuclear energy programs? Recently the International Atomic Energy Administration has been having problems getting Iran to cooperate with its inspections because Iranian officials claim they have the right to develop nuclear energy as they see fit.

Third, how well are we developing a global network for border security? I am particularly concerned about export control at our seaports, where over 95 percent of all containers being shipped worldwide are not being inspected.

Fourth, what are we doing diplomatically not only to reduce regional tensions but to send a stern message that smuggling nuclear fissile materials and weapons, or engaging in related trade, is totally unacceptable? I am afraid that the alienation of so many of our allies in other matters might come back to haunt us in this regard. I worry that we are going to have less cooperation in nonproliferation efforts as a result of our diminished credibility worldwide.

Finally, I would like an update on Libya. I have had an active interest there since the downing of PanAm 103, and I have been suspicious from the start by Muammar Qadhafi's sudden desire to reform and to rehabilitate Libya's international standing. Libya's murderers, who went out and killed 38 of my constituents in 1988, along with 140 other Americans, nearly 100 British citizens in the PanAm 103 attack—and I am cautious that Libya has destroyed some of its weapons programs—but I would like to hear from our witnesses about Libya's previous role in global smuggling networks and its ties to Khan and his nefarious deals.

It is a useful hearing, Mr. Chairman, and if we can get answers to some questions, we will have made a good deal of progress.

I thank you and I thank our witnesses for their testimony.

Senator FITZGERALD. Thank you very much, Senator Lautenberg.

I would like to direct this question to either of you. I am curious about the Proliferation Security Initiative. You both described it, or it has been described in many printed materials, particularly in this brochure that they put out, that the PSI is an activity, not an organization. Does that mean there is no organization to this activity? Do we not have to have somewhere an organization, a bureaucracy there? How do we get things done? Little League Baseball is an activity, but there is an organization. There are people organizing the activities that are part of it. So I am curious about that.

Mr. FITZPATRICK. Mr. Chairman, in one sense you are looking at the organization. My colleagues in the State Department are part of what might be described as a loose organization among participating governments, the 14 core group countries, and the additional dozens of countries that have expressed an interest in working together in some part of PSI.

We do not believe that it is necessary always to establish a formal bureaucracy, a secretariat in a foreign capital, where the focus can sometimes become more on the apparatus of the bureaucracy than on the actual functions involved. So we find that in bringing the core countries together, the experts together, the intelligence, the defense operational experts together in various settings, that we can create the wherewithal to be able to effectively interdict.

We want to be able to create rapid response mechanisms, to know the points of contacts in the intelligence, law enforcement, and diplomatic communities, so that when we spy an activity, or one of the partners spies an activity, we can immediately coordinate resources of those countries that can bring resources to bear and take effective action.

We did that in the case of the BBC China that you noted in October, and partly to address Senator Lautenberg's question about Libya.

Senator FITZGERALD. Was this set up by an Executive Order or what created the PSI?

Mr. FITZPATRICK. It was initiated by the President in a speech in Poland over a year ago. It has not required a great deal of additional financial resources because we have been putting together the structure through existing diplomatic resources.

The State Department is the lead on the policy, but the Defense Department is the lead on many of the operational activities.

Senator FITZGERALD. You only have 14 nations involved. That leaves a whole lot of nations that are not involved, and there are no formal treaty obligations behind this, so it is all voluntary. It almost seems like we are not taking this seriously enough. Do we not have to try and get as many nations as possible locked in under formal obligations if we are not going to let trafficking go on?

Mr. FITZPATRICK. One of the areas of formal obligations that we are trying to lock nations into are the boarding agreements that we have been undertaking with the countries that are the largest flag state-nations—Liberia and Panama—as I mentioned, and a dozen or so other countries with whom we are now actively pursuing such formal legal arrangements. As a reult, if there is a vessel flying the Liberian flag that is known to be carrying, or thought to be carrying lethal weapons of mass destruction, we now have a legal basis for interdicting that ship. So I do not think there is any lack of organizational structure to this.

The 14 countries are the ones who inaugurated it, but beyond these there is a spreading tier of other countries that we want to bring into it. The coastal states, the flag states, the transshipment states and the transit states, these are all the countries to whom we're reaching out. And as I noted, there were more than 60 countries that have expressed an interest. Over 60 countries attended the one-year anniversary meeting in Krakow last month.

Senator FITZGERALD. How can we be assured that the PSI activities are receiving adequate resources, or that they are not diverting personnel and funds away from other important activities, if we have no organization that we can look at, see an organization chart, and fund through the annual budgetary process?

I imagine you have many duties in the Department of State and this is just one of your duties. If there is no formal structure to the PSI, how do we know either that you are putting enough time into the PSI or that you are not shirking your other duties? I would imagine there would just be lots and lots of people involved. How many people in the administration through the Departments of Defense, Commerce, and State, would be involved in the PSI?

Mr. FITZPATRICK. My colleague tells me it is probably three dozen or more, who on a daily basis are involved in this. I mean, obviously we have to shift priorities, and this is one of our greatest priorities, so the time that I personally used to spend on worrying about weapons of mass destruction in Iraq, I now spend on PSI, for example.

Senator FITZGERALD. We do not have any PSI offices inside the government?

Mr. FITZPATRICK. Under Secretary Bolton is the head of the effort of the State Department that overlooks PSI, and underneath him, Assistant Secretary John Wolf and my staff.

Senator FITZGERALD. But there would be one person in charge at DOD and one person at Commerce? Is there any one person who is in charge overall?

Mr. FITZPATRICK. Sir, the National Security Council-led Policy Coordination Committee for Proliferation Strategy is the mechanism that coordinates inter-agency, and I think we could point to one individual in each of the agencies that are responsible for this. I hesitate to do so outside the State Department though.

Senator FITZGERALD. OK. I understand that you may have had some successes that you are reluctant to publicize, at least I hope you have had some cases where you have been successful in interdicting weapons of mass destruction, but I am wondering if you might be able to discuss any reasons for the reluctance to inform the public of any interdiction successes?

Mr. FITZPATRICK. Sir, the reason for not publicizing some of the activities of the PSI is that intelligence sources are often the reason we know about activities, and so as not to jeopardize those intelligence sources and methods, this activity really cannot be discussed in this kind of a hearing.

Senator FITZGERALD. OK. Senator Akaka.

Senator AKAKA. Thank you very much, Mr. Chairman.

Mr. Lichtenbaum, the other day the Director General of the International Atomic Energy Agency stated, "The present system of nuclear export controls is clearly deficient. The system relies on informal arrangements that are not only non-binding, but also limited in membership, and many countries with growing industrial capacity are not included. Moreover, at present there is no linkage between the export control system and the verification system."

A system that is deficient when it comes to nuclear material and weapons controls puts all humanity at risk. My question to you is what is the administration proposing to correct these deficiencies? Either one of you may answer that.

Mr. LICHTENBAUM. I think we may both answer, because it is an excellent question, Senator.

With respect to the comment about the Nuclear Suppliers Group, which is the existing multilateral export control regime in the nu-

clear area, it is correct that theNSG has a limited membership. The goal is not to have a universal membership, but to have a membership among the countries who are significant nuclear suppliers. In part that is because that group operates by consensus, so that it is important to only have countries at the table who are significant nuclear suppliers, rather than having a global coverage in membership, and thus having every country in the world be able to have a veto over actions of the NSG.

I might add that consensus rule has on occasion been very important to the United States, so we have historically been a strong supporter of a consensus rule that applies not only in the NSG, but also in the other multilateral regimes.

I think the NSG and the other regimes have shown themselves able to adjust to changing world circumstances and the growth of countries and suppliers where necessary. They have established criteria for membership, and in the case of the NSG, I might draw to your attention the recent accession of China to the NSG, which obviously recognizes the reality of China's status as a nuclear power, its increasing acceptance of responsibility in the export control area, and therefore, properly includes them in the organization that deals with nuclear export controls.

I think where necessary the NSG has shown itself able to include countries who are nuclear suppliers.

With respect to the linkage between the NSG and the IAEA, I might defer to Mr. Fitzpatrick on that if he would care to comment, because I know he has a background with the IAEA, having served in Vienna, and it is a particular responsibility of the State Department.

Mr. FITZPATRICK. Thank you, Senator Akaka. I think Secretary Lichtenbaum answered the question well. I might only add that in addition to the formal membership of regimes, many countries outside the regime conform their controls to regime standards, and this is often one of our bilateral diplomatic goals, to encourage a country—for example, India—to conform their regimes. They cannot be part of the nuclear suppliers group because they do not accept full scope safeguards, but they can conform their export controls to that of the regime, and we are encouraging them to do so.

Regarding the linkage, I have to read more about what the Director General ElBaradei proposed. It is helpful that the Nuclear Supplier Group membership is centered in Vienna, in the same capital that the IAEA has its headquarters so that there are informal linkages. But it would probably be impossible to have too formal of a linkage. If all 100 plus countries that are part of the IAEA were in a suppliers group that operates by consensus, nothing would ever get done.

What we are trying to do in the Nuclear Suppliers Group is plug the loopholes that have allowed some states to acquire nuclear weapons or to come near to acquiring nuclear weapons capabilities under a facade of pursuing peaceful programs. One of the initiatives that President Bush announced in his February 11 speech was to preclude states that do not now have enrichment and reprocessing capabilities from acquiring those capabilities. Draw a line beyond those that have it and no more, would prevent the likes of Iran, for example, from acquiring enrichment technology. And at

the G–8 Summit last week in Sea Island, the G–8 countries, all of them, agreed that it would be prudent to, for at least 1 year, to suspend any expansion of technology to states that do not already have it in enrichment and reprocessing. We would like to make this 1 year become a permanent moratorium.

Senator AKAKA. My time has expired. I have further questions, and I will have questions on China, too. Thank you, Mr. Chairman.

Senator FITZGERALD. Senator Lautenberg.

Senator LAUTENBERG. Thanks, Mr. Chairman.

Mr. Lichtenbaum, are there amounts of dual-use technology and materials that we are aware of that U.S. companies are exporting throughout the world, and obviously if these things were to get into the wrong hands, they could be used to develop terrible weaponry. Do we have any ideas about how much of this dual-use material or technology is being exported by U.S. companies?

Mr. LICHTENBAUM. I guess there would be various ways to measure the volume of dual-use technology or items that are being exported.

Senator LAUTENBERG. Even if we got it down to the incidents of this happening.

Mr. LICHTENBAUM. One way to answer it, and the only way that I can provide to you here, although I would be happy to provide more ways for the record, Senator, would be in terms of the overall U.S. GDP. My recollection is that the amount of licensed trade—that is, items that we require an export license for at the Commerce Department—is somewhere around 1 percent of U.S. GDP, so it is very small as a matter of the overall U.S. economy.

Senator LAUTENBERG. Yes, but the U.S. economy being the size that it is, if it is 1 percent, I mean we are talking about a substantial sum of——

Mr. LICHTENBAUM. That is certainly true.

Senator LAUTENBERG. What do we do about that? I mean the biggest cover for these surreptitious activities is dual use, right? They say, "We just want to use it for nuclear energy." And what the steps that follow are, I guess, traceable but not obvious. What do we learn if we do find out that material has been shipped in the belief that it is going to be used primarily on the energy side?

Mr. LICHTENBAUM. The dual-use items that you are talking about would be our items that are controlled for nuclear nonproliferation reasons, and those we would have subjected, when we issue a license, to license conditions. We license them not just in general for export, but for export to a particular end user for a particular end use. That is inherently part of the obligation of the exporter, to make sure that they comply. There may also be additional conditions that they are required to follow. Frequently we impose license conditions that talk about access to the item or disclosure of technology being limited to certain individuals within the foreign end user, etc. So we have, we think, a well crafted set of commitments that U.S. exporters have to comply with as a condition of exporting a nuclear item to another country.

Certainly, we cannot, under any reasonable scenario, be monitoring every license all the time to make sure that those rules are followed. We do post-shipment verifications. Where we think there is especially sensitive items or end users that are particularly—we

think they are worthy or we would not grant the license, but where we think there is a question perhaps, we would then go and do a post shipment verification, make sure the item is where it is supposed to be.

Senator LAUTENBERG. I do not know how big the opening is there for skullduggery, but the fact is that, as you say, you cannot really monitor it once it is shipped and arrives someplace else. What about re-exportation, how can you verify, or can you verify that the listed recipient of the final destination for export is an accurate assessment of the shipment's ultimate use? It really is kind of the same question, and I guess I do not know what tools you have to do that, but it is something.

When you describe, Mr. Fitzpatrick, the organization that is there to keep an eye on these things, it is a relatively small thing, but problems that might ensure are enormous.

Let me go on to a different area. When Mr. Khan confessed that his network was engaged in smuggling weapons into Libya, North Korea, among other rogue nations, was the administration aware of these deals with these states considered to be sponsors of terrorism before Mr. Khan's confession, do we know?

Mr. FITZPATRICK. Senator, I regret that the question inevitably strays into the area what we knew through intelligence information, and I am just not able to answer that question in this sort of a structured hearing.

Senator LAUTENBERG. I see. The disclosures about weapons programs in Libya, are they accounted for in transactions that were made through A.Q. Khan network, the materials that were sent to Libya, was there an accounting of that material that we have an awareness of?

Mr. FITZPATRICK. Sir, that is a question that we are intently focusing on right now. We want to be sure with as much confidence as we can, that Libya has accounted for all the materials that came into its possession. Considering all of the information that we have through intelligence, and through what the IAEA has reported about its own investigations, we need to be able to determine with a good deal of certainty that Libya has completely come clean on all of it.

As you know, we have taken out of Libya the most dangerous materials, a planeload in February and a shipload in March. I am not able to tell you now, because we have not finished our consultations with Libya and with the IAEA, but I hope that in the coming months we will be able to give you an affirmative answer to that question, but it is very much the question that is on our minds.

Senator LAUTENBERG. We would be very interested. I am suspicious, as are many of the families of PanAm 103 who lost loved ones, that there is a full intent to become a member of the family of nations that are on this side. So we thank you. We would ask that you inform us if you do get anything.

Mr. Chairman, that concludes it for me, and I thank you very much. Thank the witnesses.

Senator AKAKA [presiding]. Thank you, Senator Lautenberg.

Mr. Lichtenbaum, I said that I would return to China.

China and the United States, after years of negotiations, recently concluded a new agreement on improved end use verification proce-

dures to monitor the ultimate use of dual-use exports to China. The concern is this could allow for increased U.S. high technology exports to China. As you know, Chinese assistance is essential to restricting North Korean WMD-related exports, both because many of those exports may transit Chinese air or sea corridors. However, China has not yet become a member of PSI.

I wonder what your view would be to conditioning U.S. high technology exports on a state's participation in the PSI? If our goal is universal adherence to the program, is this not one way to get it?

Mr. LICHTENBAUM. Thank you, Senator, for a very thoughtful question.

The question of U.S. high technology exports to China is a very important one, as it has both significant economic implications for our country, given the size of the Chinese market, as well as national security implications in light of any potential that high technology items could be diverted, and therefore it is a question that the administration focuses on very intently, as I can testify from my personal experience since coming into office.

I think the balance to be struck in the high technology area has to be developed on a case-by-case basis, so it is difficult to say that if you join PSI, therefore we will open the floodgates and allow you access to our high technology goods. From my own experience working the export control cases, case-by-case through the interagency process, it is critical that we make those judgments in order to protect U.S. national security on a case-by-case basis, and so I would be reluctant to see export controls used as the carrot to entice China to join the PSI.

I would think that it would also be perhaps ineffective in terms of achieving the goal that we all want to achieve, which is China's strong participation in the PSI, and I would welcome Mr. Fitzpatrick's thoughts on this, but I would think that countries' participation in PSI would be most effective if they themselves believe in the program, and believe strongly that it makes sense in terms of their own security interests and the world's security interests for them to participate. Therefore, if they were to join in order to obtain some other benefit, but without fully being on board for the program, it might not be the most effective way to have them participate. So my view would be that it is important for the United States to continue its work with China to persuade them of the benefits of the PSI.

Senator AKAKA. Mr. Fitzpatrick.

Mr. FITZPATRICK. Thank you. Once more I have to say that Secretary Lichtenbaum has put the point very well.

China does support the goals and objectives of PSI, but the proof is in the pudding, and we can point to a factual basis for this. China has been willing to cooperate on a case-by-case basis in stopping proliferation, and in fact, cooperated on a particular case involving chemicals that were destined to North Korea's nuclear weapons program. This was a very high priority, to stop such material going to the North Korea program, and China cooperated in stopping this.

Secretary Powell referred to this case in a recent speech in Texas. I wish I had the exact date, but this is, I think, something we can point to.

That does not mean China's cooperation has been fulsome, but on a case-by-case basis they have been cooperative, and we are strongly encouraging them to do more.

Senator AKAKA. I really appreciate your responses, and I have further questions that we will submit for the record, and I will keep it open for another day for other questions from Members of the Subcommittee.

But I want to thank you very much, Mr. Lichtenbaum and Mr. Fitzpatrick for your presence here. Thank you for being patient, and thank you for being helpful. This will help us determine what we need to do to help our country in PSI and in WMD matters. So thank you very much.

Mr. FITZPATRICK. Thank you, Senator.

Senator AKAKA. Thank you very much.

I would like to call forward the next panel. David Albright, Michael Moodie, Leonard Spector, and Baker Spring.

May I ask the panelists to contain your testimony, and to keep it to 5 minutes.

Our first witness on this panel is David Albright, President and Founder of the Institute for Science and International Security. The institute is a nonpartisan organization dedicated to informing the public of policy issues affecting international security. The Institute's work focuses in part on efforts to stop the spread of nuclear weapons and to enhance the transparency of nuclear arsenals throughout the globe. Dr. Albright has published numerous assessments of secret nuclear weapons programs around the world. From 1992 through 1997, he actively collaborated with the International Atomic Energy Agency to analyze Iraqi documents and past procurement activities. In 1996 he was the first non-governmental inspector of the Iraqi nuclear program.

Next is Michael Moodie, who is President and Co-Founder of the Chemical and Biological Arms Control Institute, a research organization that addresses the challenges to global security and stability. The Institute's work focuses on the elimination of chemical and biological weapons and responses to emerging national security threats. Mr. Moodie has almost 30 years of experience working on international security issues in government, the policy research community and academia. For example, from 1990 through 1993 he served as Assistant Director of the Multilateral Affairs of the U.S. Arms Control and Disarmament Agency, where he advocated U.S. policy relating to arms control in the Geneva-based conference on Disarmament and the United Nations first committee.

Our third witness is Leonard Spector. Good to have you back here. You were with Senator Glenn. Mr. Spector is Deputy Director at the Center for Nonproliferation Studies at the Monterey Institute of International Studies. Mr. Spector leads the Center's Washington office, and also serves as editor in chief of the Center's publications. Prior to joining the Center for Nonproliferation Studies, Mr. Spector served as Assistant Deputy Administrator for Arms Control and Nonproliferation at the National Nuclear Security Administration in the Department of Energy. While serving at the Energy Department Mr. Spector was responsible for the development and implementation of arms control and nonproliferation policy, domestic and multilateral export controls, civilian nuclear pro-

grams in the United States and abroad, as well as initiatives in regions of the world with proliferation activities.

Our fourth and final witness is Baker Spring, who is the F.M. Kirby Research Fellow in National Security Policy at the Heritage Foundation. Mr. Spring's research focuses on U.S. national security issues, including arms control, nonproliferation policy and missile defense. Mr. Spring has written extensively on these topics and others, including nuclear proliferation in North Korea, transforming the U.S. military, and the future of the United Nations. Prior to joining the Heritage Foundation, Mr. Spring served as a defense and foreign policy expert in the offices of former Senator Paula Hawkins of Florida and Senator David Karnes of Nebraska.

Again, I would like to thank our witnesses for taking time out from a busy schedule to be here today to testify. I did ask you to keep it to 5 minutes, and we will include your statements in the record. Let me call on Dr. Albright to begin.

TESTIMONY OF DAVID ALBRIGHT,[1] PRESIDENT AND FOUNDER, INSTITUTE FOR SCIENCE AND INTERNATIONAL SECURITY

Mr. ALBRIGHT. Thank you for having this hearing and inviting me to speak.

One of the biggest surprises about the Khan network was its sheer audacity and scale. It intended to provide Libya a turnkey gas centrifuge facility, something typically reserved for states or large corporations in industrialized nations with full government support and knowledge. The plan called for the network to provide thousands of gas centrifuges, detailed project designs for the centrifuge plant, down to where the toilet paper would go in a bathroom, centrifuge designs, manufacturing equipment and technology to make more centrifuges indigenously, and ongoing technical assistance to help Libya overcome any obstacles in assembling and operating the centrifuges in the plant.

If Libya had continued with its nuclear ambitions and the network had not been exposed, Libya could have succeeded in about 4 or 5 years in assembling its centrifuge plant and operating it to produce significant amounts of highly enriched uranium.

Armed with this HEU, Libya would have known how to turn that HEU into nuclear weapons. The reason is simple. The network provided Libya with information to build a workable nuclear weapon. Libya received almost all of the detailed nuclear weapon component designs, component fabrication information, and assembly instructions for a workable nuclear device.

Much remains to be discovered about this network before its operations are fully understood or its complete demise can be celebrated. It is necessary for governments and the International Atomic Energy Agency to be persevering in investigating this case. If these investigations are not done thoroughly, the risk will be greater that a similar network could rise again from the remnants of the disbanded Khan network.

The first unfinished task is identifying all the network's key players and their activities. Many legal investigations of members

[1] The prepared statement of Mr. Albright appears in the Appendix on page 45.

of the network have started. Momentum may in fact be increasing around the world to prosecute the key players in this network. But a critical task remains, determining all the players and their activities. The ultimate goal should be prosecuting them as fully as possible under both export control laws and laws involving exports to terrorist states as Libya was labeled, and this process will likely take years.

It is also critical to determine the network's customers, and this effort again will take considerable time. Although Khan has admitted that he provided centrifuge items to Libya, North Korea, and Iran, little has been reported about other recipients of centrifuge and nuclear weapons assistance. In addition, many details of this assistance remain unknown, particularly in regards to North Korea. A key question is whether Iran or North Korea also received nuclear weapons design information like Libya did. Questions remain whether Syria was a customer for centrifuge or nuclear weapons assistance, although Khan has denied selling anything to Syria. Finally, did terrorists receive any information or other assistance from the Khan network?

Another unfinished task is understanding the entire supply chain of the network. In the case of Libya the network focused on making what are called P2 centrifuge components outside Pakistan. The Libyans have stated they placed an order for 10,000 P2 machines, which translates into a total of about one million separate components, a staggering number of parts, given the sophistication of gas centrifuge components. The network was assembling a significant cast of experts, companies, suppliers, and workshops to make all these components. The organization of this project was quite impressive.

But investigations of the supply chain of the network are unfinished. It is not known if all the key workshops and companies have been identified. Components may have been made but not delivered to Libya, and components may also have been made for customers other than Libya.

The final task I would like to mention is the retrieving of centrifuge designs and manufacturing instructions from the network. The key to the success of this network was its virtual library of centrifuge designs and details manufacturing manuals and other types of instructions. A key task is to track down the members of this network who have this kind of a sensitive centrifuge information, prosecute them and try to retrieve as much of this information as possible.

However, retrieving all the centrifuge information may not be possible since copies can be made and hidden for years if desired. Thus, even if the retrieval effort is reasonably successful, the centrifuge information may form the core of a future network aimed at secretly producing or selling gas centrifuges.

A priority and a major point of discussion today is preventing other illicit networks similar to the Khan network and nuclear smuggling through less elaborate methods. In addition, steps are needed to increase the probability of more quickly discovering such efforts, and certainly the first priority is fully investigating and dismantling the Khan network. Investigations need to continue and intensify in a range of states including Malaysia, Switzerland, Brit-

ain, France, Italy, Spain, United Arab Emiates, Germany, and Turkey, to just name a few.

More information is needed from states that benefited from this network, particularly Libya, Iran, and eventually North Korea. In addition, Pakistan's cooperation is critical. The Pakistani Government has provided useful information to the IAEA and other states, and it appears committed to providing more information. However, the Pakistani Government should permit the International Atomic Energy Agency and perhaps other governments direct access to A.Q. Khan and his associates involved in this network in Pakistan.

The successes of the Khan network should shatter any complacency about the effectiveness of national and international nuclear related export controls to stop or sound an alarm about illegal of nuclear-related exports. Although the Proliferation Security Initiative is useful and important, it cannot fix the fundamental weaknesses of the current export control regime. The Khan network was masterful in identifying countries that had weak national export control laws, yet adequate industrial capability for the network's purposes. These countries were both inside and outside the Nuclear Suppliers Group.

Although many suppliers to the network did not know the actual purposes of the materials they provided or the parts they were contracted to make, they were often in countries where the authorities were unlikely to carefully scrutinize exports or encourage curiosity about the actual end use of an item. The network also knew how to obtain for its illicit endeavors necessary subcomponents, materials, machine tools and other manufacturing equipment from countries in Europe with stringent export control systems.

Certainly improvements can be made in the traditional export control system, including expanding the membership of the Nuclear Suppliers Group and sharing more information about actual procurements among NSG members and with the IAEA, but these steps are by themselves insufficient. The new UN Security Council Resolution 1504 is also an important step, but it does not go far enough to significantly reduce the risk posed by nuclear smuggling.

The current system lacks an aggressive intrusive verification investigation organization that can provide greater confidence that states are implementing effective export controls and can devote its resources to detecting illicit nuclear and nuclear-related procurements.

What is needed is a universal treaty-based system controlling nuclear export activities that is binding on states and includes a means to verify their compliance. Under such a treaty or agreement, countries would implement a set of nuclear and nuclear-related export control laws and regulations and criminalization procedures similar in nature to those required by UN Security Council Resolution 1540. The agreement, however, would also mandate the International Atomic Energy Agency to verify compliance, ensure the adequacy of those laws, and investigate illicit procurement activities. Signatories would inform the IAEA of all sensitive nuclear or nuclear-related exports, and the IAEA would have the mandate and legal rights to verify that the transactions are indeed legal. It

would verify that a country's declarations about its nuclear or nuclear-related exports or imports is accurate and complete.

Senator AKAKA. Mr. Albright, will you try to wind this up?

Mr. ALBRIGHT. All right. The IAEA is a logical choice to undertake this role. It is already pursuing investigations of illicit procurement activities by Iran and Libya as part of its safeguards responsibilities under the Nonproliferation Treaty.

By linking its safeguard system with export control verification and monitoring, the IAEA would be in a far better position to assure the absence of undeclared nuclear activities and detect cheating in a timely manner. By performing a task that governments have been unable to do, the IAEA, under such a treaty-based system, would significantly increase U.S. and international security. Thank you.

Senator AKAKA. Thank you very much. Mr. Moodie.

TESTIMONY OF MICHAEL MOODIE,[1] PRESIDENT, CHEMICAL AND BIOLOGICAL ARMS CONTROL INSTITUTE

Mr. MOODIE. Thank you, Mr. Chairman, for the opportunity to appear before the Subcommittee.

I would like to begin by suggesting that perhaps I am something of an outlier on this panel. That is not because I think that the problem of the illegal transfer of materials and equipment related to chemical, biological, and nuclear weapons is not important, it is. But the chemical and biological dimension of this issue is a special challenge. Little information is publicly available on trafficking of chemical or biological agents of equipment, especially compared to trafficking of nuclear materials.

More to the point, in my view it is not helpful to try to apply approaches used for dealing with a problem of nuclear trafficking to the issue as it relates to chemical and biological challenges. A chemical or biological equivalent of A.Q. Khan may exist, but he or she would be extremely difficult to identify. In my view three reasons argue for the need for a different approach to the chemical and biological problem.

First, the inherently dual-use nature of chemical and biological materials and equipment. The requisite materials and technologies for making chemical and biological weapons are widely available. In the case of biological agents many can be found in nature. For both chemical and biological weapons key elements are readily found in legitimate biotechnology and chemical industries around the world where they are used for perfectly legitimate commercial and scientific purposes. This combination of availability and legitimate use makes it more difficult to identify potential CBW programs and track related illicit activities, including transfers. In the life sciences this problem is exacerbated by the very small quantities that may be needed to be transferred to bolster a weapon's capability. When snippets of protein are all that you need, the notion of controlling transfers of such material becomes a less than useful option.

Second, the global diffusion of the capability to exploit such elements means the technology development and application no longer

[1] The prepared statement of Mr. Moodie appears in the Appendix on page 52.

conform to natural patterns of the past. There are a number of key dimensions of the global technology diffusion phenomenon with potentially important security implications for the United States that I note in my statement. These developments have created new economic and commercial realities which in turn produce opportunities to overcome some of the traditional barriers to acquiring chemical and biological weapons and open new pathways to successful proliferation. But perhaps the most challenging problem related to technology diffusion is the latency of weapons development capabilities inherent in that diffusion with little or no safety margin for timely and effective responses to a decision by a potential proliferator to pursue breakout.

Third, this latency highlights a third reality, that the problem is more and more about knowledge. This is again especially true with respect to the life sciences. Although it is still an exaggeration to claim that yesterday's Nobel prize winning research is today's standard bench practice and tomorrow's high school science fair project. It is becoming less and less of a stretch. If the necessary materials can be isolated from nature or gained for legitimate scientific and commercial purposes, and they can, and if the critical equipment is available to support business and other economic activity, and it is, then the crucial factor is what people decide to do with those capabilities. The challenge is shaping decisions about how science and technology will be used. The task is to manage the risks associated with the use of that science and technology in such a way that the potential for misuse is minimized.

In this context it is still important to learn what we can from the historical experience we have available, and in my written testimony I discuss a number of historical examples. I also focus on some international initiatives to combat the illicit transfer or smuggling of weapons of mass destruction, including PSI, UN Security Council Resolution 1540 and the G–8 Global Partnership. I do not have time to review these discussions in detail, so in conclusion let me summarize my observations based on looking at these two sets of issues.

First, they further highlight the differences between the application of this approach and the nuclear field on one hand and in the chemical and biological arenas on the other. The fact of the matter is that controlling materials and equipment is more possible in the nuclear arena because they are significant in size and signature. One could also argue that it matters more in the nuclear arena because gaining access to nuclear materials remains a key hurdle to overcome in developing a nuclear weapons capability. This is not the case with respect to chemical and biological weapons for which access to the materials and equipment is not the problem, so much as a range of other technical and engineering challenges.

Second, these cases often underline the difficulty of stopping illicit chemical and biological trafficking. The details of the illicit transfer in the three historical cases I looked at largely came to light only after the fact, suggesting how hard it is to be successful in stopping chemical and especially biological trafficking on a proactive basis, and it will only become more difficult as trends such as global technology diffusion continue.

Third, these difficulties reflect a point made earlier, that in dealing with chemical and particularly biological weapons proliferation, the key factor is not material or equipment, but knowledge. With respect to both the life sciences and chemistry, it is a very different world from that which existed even a decade ago, and our knowledge in these fields and what we will be able to do with that knowledge will only accelerate in the period ahead. The resulting science and technology, however, is neutral, and the issue will be the uses to which that science and technology will be put. Because chemistry and biology will not disappear, we live in a world in which the potential misuse of these vital sciences is a permanent risk. The challenge to governments and the broader community is to find ways to manage those risks successfully. Efforts to control or eliminate the illicit trafficking of chemical or biological materials and equipment will make a contribution to risk management efforts, but they are unlikely to be decisive in and of themselves. To the extent they will matter, it will be to the degree that they reinforce other risk management efforts. Thank you.

Senator AKAKA. Thank you, Mr. Moodie. Mr. Spector.

TESTIMONY OF LEONARD S. SPECTOR,[1] DEPUTY DIRECTOR, CENTER FOR NONPROLIFERATION STUDIES, MONTEREY INSTITUTE OF INTERNATIONAL STUDIES

Mr. SPECTOR. Thank you, Senator, for the opportunity to testify this afternoon.

Last week the Monterey Institute Center for Nonproliferation Studies released an important new book which is directly relevant to the hearings today, entitled "The Four Faces of Nuclear Terrorism." A core conclusion of that study is that today the nuclear threat posed by other nuclear armed states is being eclipsed by a new type of threat, that of nuclear instruments in the hands of non-state terrorist organizations. This reality requires a profound change in the way the United States thinks about national security policy.

It is fair to conclude that at this point in history terrorist organizations are the only entities that are seeking to rain nuclear destruction on the United States without regard to the potential consequences to themselves or to the innumerable innocent victims of such action. Moreover, even in those instances where nuclear assets in the hands of states cause U.S. policy makers deep concerns, in virtually all of these cases the foremost source of their apprehension is the possibility not that the states themselves will use these assets against us, but that these assets will come into the hands of terrorist groups, who are all too eager to do so.

For this reason, as the Subcommittee analyzes the dangers posed by clandestine nuclear smuggling networks, it is crucial to focus, not only on the suppliers, but also on the customers for their dangerous wares.

It appears that A.Q. Khan brought his network to his customers—Iran, Libya, and North Korea. There has been no evidence made public as yet to indicate that the Khan network, itself, pro-

[1] The prepared statement of Mr. Spector with an attachment appears in the Appendix on page 62.

vided nuclear wherewithal to al Qaeda or other terrorist groups, although it is known that certain individual scientists in Pakistan were working with al Qaeda.

The U.S. and international response to A.Q. Khan's activities, which include pressing Pakistan and other states to close down his network, intensifying interdiction efforts through the Proliferation Security Initiative, and pursuing a series of diplomatic efforts to constrain Libya, Iran, and North Korea, are all to the good. But these efforts are not tailored to addressing the most crucial threat, which is nuclear terrorism.

Here the customer is not really susceptible to diplomatic carrots and sticks, and the network that connects terrorists and nuclear materiel is as likely to be comprised of interlinked terrorist cells that reach into poorly secured nuclear centers, as it is to be comprised of unscrupulous nuclear companies, technicians, and middle men that offer their commodities on the international marketplace as Dr. Khan did.

Moreover, terrorists are highly unlikely to seek to manufacture nuclear material. They are much more likely to try to find the material ready made at a poorly secured site, let us say in Russia or perhaps Pakistan, and to use that to fabricate and improvised nuclear device, or they may seek to acquire nuclear weapons themselves.

For these reasons it is essential, even as we attempt to rollback networks, as David Albright and others have urged, that we also focus on securing these materials at the source. This means accelerating programs to secure, consolidate and eliminate weapons usable nuclear materials, and also intensifying efforts to consolidate nuclear weapons, and where possible, in line with existing arms control undertakings, such as the Presidential Nuclear Initiatives of 1991–92, to eliminate these weapons.

In managing nuclear weapons material, moreover, it is crucial to recognize and to act upon the fact that terrorists will be most interested in highly enriched uranium, which they could fabricate far more easily into a nuclear weapon than they could fabricate plutonium. So we need to put HEU first when we try to go about securing these materials.

We, in our study, thus urge the United States to dramatically revise its efforts to protect fissile materials abroad so as to make securing, consolidating and eliminating highly enriched uranium the leading and most urgent task, taking clear precedence over addressing the dangers posed by plutonium which nonetheless must remain an important priority. Our motto should be, put HEU, high enriched uranium, "at the head of the queue" I have also attached a chapter of the conclusions of our book to my testimony, which I hope you will be able to include in the record of this hearing.

I would also add that UN Security Council Resolution 1540, adopted earlier this year, and which is binding on all UN member states, is an extremely valuable step forward because it addresses not only the export control dimension, but also the security of nuclear materials, and requires states to adopt strong measures in both of these areas. It remains to be seen, however, whether the resolution will be effectively implemented, and a particular concern

is the lack of specific standards in the resolution that states would have to meet.

Just to make one final point as I close, the U.S. Government now has a very wide range of initiatives aimed at trying to constrain the dangers that are the subject of this hearing. They are very effective or can be very effective when they all work together and form a web of initiatives, a multi-layered defense, to protect this country from the ultimate nuclear danger. But we need our congressional oversight process to monitor these various and very diverse initiatives. This Subcommittee, being a part of the Governmental Affairs Committee, is uniquely placed to monitor how all of these different elements are interacting together, to identify the areas of success, and to probe for gaps and urge that they be addressed.

Thank you, Senator Akaka.

Senator AKAKA. Thank you. Mr. Spring.

TESTIMONY OF BAKER SPRING,[1] F.M. KIRBY RESEARCH FELLOW IN NATIONAL SECURITY POLICY, THE HERITAGE FOUNDATION

Mr. SPRING. Thank you, Mr. Chairman. I, too, appreciate the opportunity to testify, and I will try and be very brief, given the hour.

Mr. Chairman, the policy of the United States for combating the proliferation of weapons of mass destruction has used four tools. These tools are deterring attacks on the United States and its friends and allies with weapons of mass destruction, maintaining the ability to defend against such attacks, preemptive attacks against those that would threaten the United States and its friends and allies with weapons of mass destruction against whatever capabilities they may possess and arms control.

The trick is to fashion these four essential tools into a coherent policy for combating proliferation that is properly suited to countering the capabilities that either now or in the future could be in the hands of rogue states and terrorist groups.

The Bush Administration is pursuing a number of specific initiatives to attack the proliferation threat posed by international networks that traffic in weapons of mass destruction and weapons technology by limiting access to sensitive materials and interdicting relevant shipments in transit. These include the Proliferation Security Initiative, the Global Threat Reduction Initiative, the Container Security Initiative, the Customs Trade Partnership Against Terrorism Program, and the initiative under the International Shipment Port Security Programs. Obviously, it is a wide variety.

I categorize several of these initiatives, and the PSI in particular, more as arms control activities because they are designed to keep weapons out of the hands of hostile actors, as opposed to direct defense activities.

As we look at these kinds of programs, I think that we should have several guidelines that help us make judgments on what will be effective and how best to pursue these kinds of initiatives. The first of these is to make sure that we use the initiatives to foster

[1] The prepared statement of Mr. Spring appears in the Appendix on page 86.

a healthy competition with the institutions of the treaty-based nonproliferation regime. In other words, that they can go hand in hand, but we hope that we would spur strong actions on both sides.

The second guideline is to resist the temptation to build these particular initiatives into cumbersome international bureaucracies. We have those international bureaucracies. They have strengths, but they also have important weaknesses, and having a diversity of institutions, some more bureaucratic than others, I think, is appropriate.

The third guideline is to design the initiatives to harness the power of sovereign states. Former Secretary of State Schultz has spoken to this issue. I think that it is important that the state-based system be used to the fullest extent possible in terms of combating proliferation.

The fourth guideline is to avoid what I call quid pro quo deals, particularly in these kinds of informal initiatives. They may be necessary in the context of the Atoms for Peace Program, for example, but in narrowly-pursued initiatives, I hope that we do not end up watering down what is the objective or purpose of these initiatives.

Specifically, I have several recommendations, and most of these are particularly appropriate for the Proliferation Security Initiative among those that are being undertaken by the Bush Administration. The first is to focus on cracking down on the domestic sources of proliferation, inside cooperating states uncovered in the investigation of the A.Q. Khan network. Unfortunately, as it has been revealed in the press at least—and I do not know how accurate they may be ultimately, but that PSI countries, for example, have been sources of technology that have gone to that network and then on to other suspect actors.

The second is that with these initiatives I hope that we would forswear international employees and rely on the government employees to perform the bureaucratic functions of these initiatives. I know that the Chairman of the Subcommittee expressed concern about this, but I think it is actually a source of strength.

The third recommendation is to establish new initiatives. The ones that I would be focused on are on international organizations or initiatives that would use individual member states to focus on dismantling weapons programs in countries that agree to that, like Libya, hopefully in the future like North Korea, instead of relying exclusively on the international bureaucracies in the Organization for the Prohibition of Chemical Weapons or the International Atomic Energy Agency. In other words, I would like to see some tiger teams go in and accompany the international bureaucracies in terms of dismantlement.

The same would extend to another initiative that I envision on verification. That is, if the dismantlement process proceeds and other transparency measure are undertaken, that verification is not left up solely to the international bureaucracies.

The final recommendation that I have is something that has been pursued in the PSI in terms of outreach to other states that are not core participants, but are cooperative in terms of their attitudes, and that is by pursuing it on a regional basis. I think the Japanese, in particular, did this very effectively with regard to the

PSI in terms of fostering support from those countries in Asia that have agreed to at least cooperate with the overall initiative.

My bottom line message, I think, Mr. Chairman, is that the international structure is still based largely on the nation state system, and to the extent that we can reinforce the nation state system in order to pursue these goals, as well as benefit from it, I think that the counterproliferation initiatives that the Bush Administration is undertaking will serve as a very useful, indeed, I think, indispensable element of a comprehensive policy for countering proliferation in all of the important categories that we have talked about here today.

Senator AKAKA. Thank you very much for your statements.

I have questions for you, Mr. Albright. On June 24, 2003, the European Union issued a document entitled "Basic Principles for an EU Strategy Against Proliferation of Weapons of Mass Destruction." I am certain you are familiar with this resolution. The EU detailed a plan of action that called for promoting universal adherence to multilateral agreements relating to weapons of mass destruction and their means of delivery, strengthening the biological and chemical weapons conventions, criminalizing the export or brokering of WMD related material, and strengthening export regimes, and there are others.

I would appreciate any thoughts you might have, or any of the others might have on the EU plan, either now or for the record. Was there, for example, any recommendations you disagreed with? The Director General of the International Atomic Energy Agency has called for far-reaching changes to the nuclear nonproliferation regime, and one particular proposal is to make export controls which are now voluntary and legally binding. Again, what are your views on this idea, and do you see any drawbacks to adopting it?

Let me stop with those two, and start with you, Dr. Albright.

Mr. ALBRIGHT. Thanks. I probably know less about the EU deal than you may think. I would say though that I think the EU is trying to put down a marker and a commitment to multilateral solutions, which in general I agree with. I think the idea that is prevalent here of a coalition of the willing driving our foreign policy just does not work. I think that has been our experience historically. You do need binding commitments that are legally enforceable to make progress in these areas, and I think the EU has the right idea.

In terms of export controls, I think I do support trying to create a treaty-based system of export controls. I have been evaluating illicit procurement for 20 years, and it is just so difficult to stop it with the existing system. People like A.Q. Khan make fun of the existing system. You can look in his statements and find how he basically says, "Whatever you do, I will get around it."

So I think we need a fundamental restructuring. I think what ElBaradei has proposed of a treaty-based system is very sound. In my testimony I have tried to convey support for that idea and begin to talk about it, particularly where the International Atomic Energy Agency is used as the verification and monitoring agency. The IAEA exists. It is actively working in this area now, working in Libya, Iran, and on the A.Q. Khan network. It probably has more expertise about the Khan network than any other body, in-

cluding any government, about what that network was doing. I think those kind of activities at the IAEA should be generalized and the IAEA given a mandate to actually work in this area of export controls and monitoring.

Senator AKAKA. Mr. Moodie.

Mr. MOODIE. Thank you, Mr. Chairman. I think any step that reflects a commitment on the part of states to strengthen our ability to deal with proliferation is to be welcome. But I think that we have to be cautious in that because it is easy to talk a good game and harder to play it. I think that historically we have consistently had a problem with the response of the international community, including some of our friends in Europe, to problems of noncompliance. I think we have to be sure that the actions of our allies are matching their rhetoric when it comes to dealing with some of these issues.

In that regard I think the question of how the Europeans will respond to what we are seeing in Iran is a very interesting case study, and how they will play this now that the IAEA has in a sense expressed its displeasure at the Iranian experience. What the Group of Three will do, what their colleagues in the European Union will do, I think is going to be a very interesting measure of how seriously they take their nonproliferation responsibilities.

With respect to export controls, I think they continue to play an enormously helpful role in the overall structure of the nonproliferation efforts, but I think particularly in the chemical area and especially in the biological area, I think export controls over time will be of diminishing utility. They were created in a world with respect to the life sciences and how those sciences are applied commercially on a global basis. That is a world that does not exist any more, and that world is going to change even further, and therefore, the tools we have like export controls that were designed for that different world, I think we have to go back and do a very serious examination as to the nature of their utility in this new world.

Senator AKAKA. Thank you. Mr. Spector.

Mr. SPECTOR. I guess I would say we have a treaty that requires export controls in the nuclear field as well as in the chemical area, but let me just talk about nuclear. The Nonproliferation Treaty requires all member states to make any exports of nuclear goods under International Atomic Energy Agency safeguards. Thus, there is a requirement already that these goods be controlled and that certain restrictions apply. The actual list of items that is to be controlled is developed by the nuclear suppliers countries, but it is also applied by the Nonproliferation Treaty Exporters Group, and I would think that all parties to the Treaty are bound by this de facto, if not de jure. There is also now the Resolution 1540, which places a mandatory requirement for states to have effective export controls on weapons of mass destruction related materials and equipment.

I think if you combine the two of these you have a treaty-based system for virtually all states, with the handful of exceptions of the countries that are not in the Nonproliferation Treaty. But even they are now required, under Resolution 1540 to be mindful of their exports. So I do not know that we want to take this that much further. I think the IAEA has an awful lot to do right now

just trying to manage its safeguards mandate and get this extended with the Additional Protocol and some of the other measures. So I would be hesitant to propose that it take on a major new initiative that would involve a new treaty. I think we would be better off working with the tools that are now in hand, including the treaty-based tools that I mentioned.

Senator AKAKA. Mr. Spring.

Mr. SPRING. I pretty much agree with what has been said here so far, both with regard to the European initiative and with regard to some sort of new treaty-based regime on export controls.

I just have one comment or observation as it relates to the latter issues on export controls, and that is, that if we go down this road, we have to recognize that there are weaknesses in what I call the "least common denominator" decisionmaking process, especially with broad-based multilateral institutions. And to the extent that we fail to recognize that within these institutions—Iran, for example—is still for all intents and purposes a member in good standing of the IAEA, that we will lose sight of some of the other effective measures, I think that we can take, that would be among those narrower coalitions that are the subject of the administration initiatives, including the PSI.

Senator AKAKA. I have other questions for you, and I know the time is late, and I know we have delayed you here tonight. I would ask that we place these questions in the record for you, and you can respond to us. At this time I would want to keep the record open for additional materials until close of business next Wednesday, June 30.

I want to thank you for your knowledge in these areas, and for your responses that will be helpful to us.

So I would like to conclude with this panel. I want to thank you very much for your participation here, and look forward to being in contact with you again.

If there is no further business, then on behalf of the Chairman, Senator Fitzgerald, the hearing is adjourned.

[Whereupon, at 6:16 p.m., the Subcommittee was adjourned.]

APPENDIX

Testimony of Mark T. Fitzpatrick
Deputy Assistant Secretary of State (Acting)
Bureau of Nonproliferation

Mr. Chairman, members of the Committee, thank you for the opportunity to speak to you today about the status of efforts to prevent the proliferation of weapons of mass destruction, and in particular the Proliferation Security Initiative.

The proliferation of weapons of mass destruction remains a serious challenge to our national security. In response to this challenge, we are working with the international community, such as through the unanimous passage of UN Security Council Resolution 1540 in April, and the nonproliferation action plan adopted by the G-8. But much more needs to be done to strengthen our ability to deal effectively with proliferators. In December 2002, President Bush released the National Strategy to Combat Weapons of Mass Destruction, which has guided the Administration's efforts against proliferation. The State Department has been working closely with other federal agencies to advance a shared nonproliferation agenda.

The next steps in the Administration's nonproliferation agenda were clearly established by President Bush's February 11 speech at the National Defense University, where he outlined a series of initiatives to strengthen our hand against proliferators and those who facilitate their efforts. President Bush's speech highlighted the reality that the path to proliferation does not always lie in a straight line between supplier and recipient. We continue to learn about black-market operatives who deal in equipment and expertise related to weapons of mass destruction. As the President stated, "...these dealers are motivated by greed, or fanaticism, or both. They find eager customers in outlaw regimes, which pay millions for the parts and plans they need to speed up their weapons programs."

The extensive network operated by Pakistani nuclear scientist A.Q. Khan, and now being shut down by U.S. and UK led diplomatic and intelligence efforts, is the starkest example of the problem - a shadowy back arms market in which the most dangerous of weapons, technology, parts, and materials moved across four continents. A.Q. Khan and his cohorts in essence provided "one stop shopping" for nuclear aspirant countries. The network used operatives based in Europe, Asia, and Africa: truly a worldwide enterprise - and supplied Libya, Iran, and North Korea. The network has been uncovered and is being shut down, but its existence

alerts us to the dangers of whether there could be other networks or activities that will undercut global counterproliferation efforts. Moreover, the threat of onward proliferation is not limited to non-state actors, such as A.Q. Khan. Proliferant states themselves are cooperating in their WMD and ballistic missile programs, forming in effect consortiums of proliferating states.

Against this backdrop, the United States has undertaken a number of efforts, individually and in concert with other states, to enhance its ability to detect and prevent illicit procurement or shipment of WMD, missiles, or related technologies. The key efforts were enunciated by the President in his February 11 speech. Additionally, the Administration has engaged in ongoing efforts that predate revelations of the A.Q. Khan network.

Strengthening Multilateral Treaties and Regimes: Proliferators always probe for vulnerabilities in existing nonproliferation controls, so we constantly work with our partners to adapt, strengthen and update multilateral mechanisms to prevent illicit transfer of key items. For example, in the various supplier regimes -- the Nuclear Suppliers Group, Zangger Committee, Australia Group, Missile Technology Control Regime, and Wassenaar Arrangement -- we are increasing information sharing among members, advocating adoption of "catch all controls," and adopting provisions in regime guidelines that will strengthen the barriers to illicit acquisition of goods that can support weapons of mass destruction and missile programs in countries of proliferation concern. We have also proposed adopting a new standard in the Nuclear Suppliers Group to ban the transfer of enrichment or reprocessing technology to states not already in possession of a full fuel cycle capability. As outlined by the President's February 11 speech, we are working with friends and allies to make the IAEA's Additional Protocol an essential new standard for nuclear safeguards.

Enhancing Export Controls: Through the Export Control and Related Border Security Assistance Program (EXBS) we are helping states in key regions vulnerable to proliferation to establish and enforce more effective controls. We are also working under this program to help states bring their national legal authorities against WMD proliferation up to international standards. In a number of countries where we have such programs, officials using

training and equipment provided under the EXBS program have seized sensitive goods and weapons components bound for programs of proliferation concern.

Preventing Nuclear Smuggling: The State Department leads an interagency group responsible for reviewing reports of nuclear materials smuggling worldwide to determine the credibility of the report and develop appropriate responses in collaboration with other governments. Most reports do not involve weapons usable material or otherwise prove to be "scams," but efforts are working to enhance awareness of the importance of ensuring that nuclear and radioactive materials are secured to protect against smuggling, that information about potential threats to U.S. interests -- including possible links between smugglers and terrorists -- is fully developed, and that those involved are prosecuted.

Taking Decisive Action Against WMD, Missile, and ACW Procurements: Interagency working groups designed to impede trafficking in WMD, missiles, and advanced conventional weaponry meet regularly to assess information about possible transfers and utilize the full range of nonproliferation tools -- from diplomacy and cooperative interdiction to sanctions. A year ago, President Bush launched the Proliferation Security Initiative or PSI, which takes our efforts a step further in seeking to physically stop shipments of WMD, missiles, and related materials from falling into the wrong hands.

The remainder of my comments will focus on the PSI, which, after only a year, now enjoys the support of more than sixty countries and has provided opportunities for groups of states to work together to address operational and informational requirements for effective action against proliferation. The PSI is a set of activities, not an organization. Its emergence reflects the reality that, even as we continue to support and strengthen existing nonproliferation treaties and regimes, proliferators and those who facilitate procurement of deadly capabilities are circumventing existing laws, treaties, and controls. PSI participants commit that, if proliferators manage to place their deadly cargoes aboard an outward-bound ship, plane, train, or truck, we are prepared to stop them.

Through the PSI, we are establishing the basis for practical cooperation among states for effective action to

interdict shipments of WMD, missiles, or related materials at sea, in the air, or on land. Under the PSI, we are also increasing cooperation with other countries to identify and take action against proliferation facilitators -- persons, entities, or groups of entities -- that are helping states or non-state actors acquire WMD and missile capabilities.

The PSI was envisioned as a flexible instrument that would create the basis for rapid action between and among states, a network of partnerships. The PSI Statement of Interdiction Principles published last September serves as the blueprint for PSI activities and commitments and identifies steps that will facilitate effective interdiction. It also makes clear that all PSI activities are consistent with national legal authorities and relevant international law and frameworks.

As the number of states supporting the PSI grows, we are focusing on concrete, practical activities to establish states' understanding of what will be involved in interdicting cargoes, and enhancing their capabilities for effective response if a PSI action requires their assistance. For example, we are asking states to identify dedicated PSI points of contact, to establish smooth internal decision making processes, and to review their national legal authorities both to make clear what action their authorities permit, but also with a view to strengthening those authorities as needed.

State are becoming involved in PSI activities in a variety of ways. Some are participating in informational meetings to enhance their understanding of the initiative and its potential impact and contribution to preventing proliferation. Three information meetings have been held - in Japan, Poland, and Portugal - and additional regionally focused outreach efforts are underway. Other states are participating in interdiction training exercises. Ten interdiction training exercises have been held since last September -- five maritime, three air, and two ground. Still other countries are stepping forward with new ideas to advance the PSI. For example, in August, Denmark will host a container security workshop bringing government and industry experts together to discuss how to make water-based cargo shipping more secure against proliferation.

The United States is pursuing boarding agreements with key flag states to facilitate maritime interdiction

cooperation. We have signed two agreements to date, with Liberia and Panama, and have many more under active discussion. We are also considering what mechanisms might facilitate cooperation in air and ground interdiction arenas.

In part because of the sobering lessons learned from A.Q. Khan's activities, the President in February called for the work of PSI to be expanded to focus on shutting down proliferation networks and bringing those involved to full justice. We have identified key questions for PSI partners to consider regarding enhancing information sharing about proliferant activities, determining where facilitators are operating, deciding what legal options are available to shut down their activities, and assessing how best to coordinate with other states in taking action.

A year after its creation, the PSI is today a successful initiative that resonates with countries worldwide. Its simple tenets and basic principles make good nonproliferation sense; states understand that by working together, we will have a greater impact than acting alone. Our partners also appreciate that the steps identified in the PSI Principles are straightforward and sensible. And they are responding by establishing practical, cooperative partnerships to defeat proliferation. As a result, the PSI is poised, through either actual interdiction or the deterrent of threatened interdiction, to impact significantly the international proliferation networks and supplier-recipient relationships among proliferators. The PSI sends a strong message that the United States and other responsible members of the international community will not stand by while proliferators and those facilitating these activities ply their dangerous trade.

CONCLUSION:

The proliferation of weapons of mass destruction, missiles, and related materials remains a challenge to international security. The terrible events of 9/11 gave new relevance to this challenge and spurred U.S. thinking on what more must be done to prevent WMD and their delivery systems from falling into the hands of state or non-state actors of proliferation concern. I have reviewed for you today only a small number of the many initiatives underway that are designed to meet current challenges head on. I hope my testimony has also shown the resolve and commitment of the U.S. nonproliferation community to develop solid, creative responses to the danger of proliferation and in particular responses to the danger of illicit procurement networks. Thank you again for the opportunity to testify here today. I look forward to answering your questions.

Testimony

Peter Lichtenbaum

Assistant Secretary of Commerce for Export Administration

Before the

Senate Committee on Governmental Affairs

Subcommittee on Financial Management, the Budget, and International Security

"International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives"

June 23, 2004

Chairman Fitzgerald, Senator Akaka, and Members of the Committee:

Thank you for the opportunity to testify today on the U.S. efforts to address the threat posed by the international smuggling of weapons of mass destruction (WMD) technologies.

As you know, the mission of the Commerce Department's Bureau of Industry and Security (BIS) is to advance U.S. national security, foreign policy, and economic interests through the implementation of U.S. export control policy on dual-use commodities, software, and technology. In addition, BIS is charged with enhancing compliance with and enforcement of

U.S. export controls worldwide, and endeavors to promote the development of effective export and transit control systems in key countries and transshipment hubs.

Implementing Effective U.S. Export Controls and Strengthening International Controls

Export controls provide the first line of defense against the proliferation of WMD technologies. Dual-use items subject to BIS regulatory jurisdiction have predominantly civilian uses, but also have military, proliferation, and terrorism-related applications. BIS's principal objective is to ensure that direct exports from the United States and reexports of U.S.-origin items from third countries are consistent with national security and foreign policy interests, without imposing unnecessary regulatory burdens on U.S. exporters or impeding the flow of legitimate trade. The ultimate goal is to prevent U.S.-origin items from falling into the hands of rogue nations, terrorists, and those who would use the goods and technologies against us and our allies.

However, controlling the release of U.S. technologies alone is not sufficient. Many of the most sensitive items are available in countries throughout the world. Therefore, it is imperative that the U.S. government work with international suppliers in order to effectively control the export of sensitive items. Our focus is on improving and implementing the controls agreed to in the four multilateral export control regimes: the Nuclear Suppliers Group (NSG), the Missile Technology Control Regime (MTCR), the Australia Group (AG) (chemical and biological

nonproliferation), and the Wassenaar Arrangement (WA) (conventional arms and dual-use goods and technologies).

The United States continues to lead efforts to strengthen the multilateral regimes by modifying the control lists and refining existing control entries to ensure that they address current technological developments. In addition, the multilateral export control regimes have acknowledged the importance of controlling the export of any item intended for use in a WMD program or delivery system – so-called "catch-all" controls – and addressing the threat of international terrorism. Although export controls cannot solve the threat of terrorism alone, they play a critical role in denying terrorists and proliferators some of the critical tools they need for their hostile operations. Thus, the fight against terrorism must include adding new items to the multilateral control lists to focus on the threats posed by terrorist and sub-national groups, rather than exclusively on military programs of potentially hostile states.

The international community increasingly recognizes the need to strengthen export controls globally, i.e. beyond the existing multilateral arrangements. The most forceful expression of this concern is the recent United Nations Security Council Resolution 1540 (2004), enacted after President Bush proposed it last fall. Resolution 1540 calls on all states to adopt and enforce effective export controls to prevent the proliferation of WMD, their means of delivery, and

related materials. In addition, the following statements demonstrate this high-level political commitment:

- 2004 G-8 Action Plan on Nonproliferation;
- the 2003 joint U.S.-EU statement on WMD proliferation;
- Commitments made by Asia-Pacific Economic Cooperation (APEC) member economies to strengthen their national export control systems in the October 2003 APEC Leaders' Bangkok "Declaration on Partnership for the Future"; and
- the 2003 "Basic Principles for an EU Strategy against Proliferation of Weapons of Mass Destruction" and the associated Action Plan, where the EU Council decided to include non-proliferation commitments that contain export controls requirements in its Association Agreements and other economic or assistance accords with non-EU members.

BIS, as the lead U.S. licensing and enforcement authority for dual-use export controls, participates in U.S. government efforts to build a more effective international system of export controls, by assisting other countries to develop effective export controls.

Commerce's Role in Assisting Other Countries to Develop Effective Export Controls

Export Control and Related Border Security (EXBS) Program

As part of the Department of State's Export Control and Related Border Security Assistance (EXBS) Program, BIS conducts an active program of technical exchanges with more than thirty countries that need assistance in developing an infrastructure for effective national export controls. In April 2004, BIS transformed its ten year-old Nonproliferation Export Control

Cooperation (NEC) program into the Office of International Programs, which plays the leading role in the Bureau's role in cooperative assistance programs.

BIS has developed a Model Country Plan to guide its technical exchange work. The Plan currently identifies 57 outcomes in five functional areas to support the development of an effective national system of dual-use export controls. The five functional elements of the Model Country Plan are:

- the legal basis and framework for non-proliferation and anti-terrorism export controls;
- export control licensing procedures and practices;
- export enforcement;
- industry-government relations; and
- program administration and export control system automation.

Working with other U.S. agencies in the EXBS program, BIS designs a specific program to meet the dual-use export control needs of each country, and then employs an appropriate set of customized training from 54 regularly updated courses.

During Fiscal Year 2003, for example, BIS organized or coordinated 74 bilateral technical exchange workshops and one multilateral conference as part of and in conjunction with the EXBS program, as well as participated in several other exchanges organized by other agencies. The 75 total activities completed in Fiscal Year 2003 represent an increase of 42 percent over

Fiscal Year 2002.

Examples of the activities undertaken during Fiscal Year 2003 ranged from assisting foreign nations draft legislation to helping companies in those countries adopt effective compliance programs. BIS led cooperative bilateral export control workshops with Armenia, Azerbaijan, Bulgaria, the Czech Republic, Georgia, Hungary, India, Kazakhstan, the Kyrgyz Republic, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, and Ukraine, and participated in other multilateral EXBS program activities, such as the Global Transsipment Controls Enforcement Workshop in Sydney, Australia. As a function of these and prior exchanges, BIS helped remedy 39 targeted deficiencies in the infrastructure of dual-use export control systems of cooperating countries. This is an increase of more than 50 percent over the number of deficiencies remedied in Fiscal Year 2002.

In addition to the legal, regulatory, and enforcement expertise that the Bureau provides to the EXBS program, BIS has developed several sophisticated software training tools now in use in several key countries. The Internal Control Program (ICP) software tool, created in 1998, provides companies with self-paced training, searchable databases, and procedure development assistance related to their respective national export control systems. So far, the Bureau has – with EXBS program coordination and funding – made the ICP software available to over 5,000 overseas-based organizations that export dual-use items in Russia, Ukraine, Poland, Hungary, Romania, Kazakhstan, and elsewhere. Several countries now include ICP requirements in their

national laws as a result of this program.

Most recently, BIS, under the auspices of the EXBS program, developed the Product Identification Tool (PIT), which provides training components, a search engine, aids for developing procedures manuals, and an extensive database of controlled items (including photographs) that allow officials in the field to match such items with key trade document information and distinguish between legitimate commerce and suspect transactions. After fitting the baseline PIT to new Russian export control laws, regulations, and procedures, the Government of Russia has begun deploying the PIT in its regional customs centers in preparation for deployment to more than 150 customs posts. A similar project has begun in the Ukraine.

International Export Control Outreach Seminars

BIS also conducted four International Export Control Outreach Seminars in 2003 with the goal of providing key export control related information beneficial to companies that use U.S.-origin parts and components for manufacturing and assembly; companies that use U.S. origin systems, software or technology to develop foreign-made products; and companies that reexport these items. Over 1,000 participants attended the BIS conferences in Japan, South Korea, Singapore, and the People's Republic of China, and came away with a better understanding of U.S. export and reexport control policies and procedures.

Transshipment Country Export Control Initiative (TECI)

In 2002, Commerce launched its Transshipment Country Export Control Initiative (TECI) to increase cooperation and dialogue on export controls and transshipment trade with government and industry in nine major transshipment hubs: Cyprus, Hong Kong, Malaysia, Malta, Panama, Singapore, Taiwan, Thailand, and the United Arab Emirates. Although some of these countries have developed good export control systems, none of them participate in all four of the export control supplier arrangements, all are major hubs for high-technology products, and they all operate near countries of concern.

Under TECI, BIS already has made significant progress toward creating a new public-private partnership on "Best Practices" for export controls with entities engaged in shipping, air cargo, freight forwarding, port operations, and other aspects of transshipment trade facilitation, and created new guidance on re-export controls for U.S. dual-use items. BIS has also oriented more of its efforts to conduct industry outreach and preventive enforcement toward TECI economies, such holding recent seminars on U.S. export controls in Singapore (as well as Tokyo and Seoul) and placing export control attachés in Hong Kong and Abu Dhabi (as well as Moscow, Beijing, and soon New Delhi). It also established a new confidentiality arrangement to enable more effective exchanges of licensing and enforcement information with Hong Kong authorities.

In Fiscal Year 2004, as part of the State Department's EXBS program, BIS has begun to increase the number of technical exchanges and start new technical bilateral exchange programs with Pakistan, Thailand, and Turkey. It also has begun to deploy new Web-based training tools.

All of these BIS efforts provide countries with the knowledge, skills, and abilities to fulfill their commitments under UNSC Resolution 1540 (2004) and various treaty obligations to deter and prevent the proliferation of WMD, their means of delivery, and related items to countries of concern or terrorists. Ultimately, these programs protect against terrorists and others who would threaten our country's national security.

Commerce's Role in the Proliferation Security Initiative (PSI)

Finally, BIS has been an active participant in the President's Proliferation Security Initiative (PSI). Although the Departments of State and Defense have provided most of the policy and operational leadership, BIS has participated in the interagency committee that has had the task of practical development and implementation of the PSI.

In particular, BIS contributed to the development of the PSI Statement of Interdiction Principles, the strategies for outreach to other governments to support the PSI, and has had the lead in developing an industry outreach strategy. BIS anticipates that its role in PSI activities will increase as we work with industry and the law enforcement communities worldwide.

Conclusion

Through the important initiatives I have just described, BIS is actively working with other U.S. agencies to counter the proliferation of WMD technologies by strengthening export controls both at home and abroad, working with foreign countries to develop effective export control systems, conducting international outreach seminars, addressing transshipment concerns, and implementing the President's Proliferation Security Initiative.

Thank you.

Testimony Before the Senate Governmental Affairs Subcommittee on Financial Management, the Budget, and International Security, Hearing on "International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives"

The Khan Network and Its Implications

By David Albright
June 23, 2004

During the 1990s, Libya set out secretly to acquire a gas centrifuge plant and all the associated equipment and materials. Libya sought a large centrifuge plant, sufficient to produce enough highly enriched uranium (HEU) to make roughly 10 nuclear bombs each year.

Libyan nuclear officials had little trouble connecting with a shady, illicit international procurement network that was largely invisible to the world's leading intelligence agencies. This black market network had already supplied Iran with gas centrifuge components and designs. This far-flung network emerged from Pakistan's multi-decade clandestine effort to acquire nuclear weapons by illegally shopping the world for key nuclear and nuclear-related items.

This network is commonly called the "Khan" network, although this name may be misleading by focusing too much on the role of one individual. This network was international and relatively non-hierarchical. The key technology holders and several of its leaders were in Pakistan, including the father of Pakistan's gas centrifuge program, Abdul Qadeer Khan. But many other leaders were spread throughout the world and located in Europe, Dubai in the United Arab Emirates, Turkey, South Africa, and Malaysia. The network also depended on a variety of unwitting manufacturing companies and suppliers on many continents.

The network succeeded in operating in secret for several years before it was exposed through a series of actions by the United States, Britain, and the International Atomic Energy Agency (IAEA). During the IAEA's inspections in Iran during 2003, strong evidence emerged that Pakistani scientists and intermediaries were important clandestine suppliers of centrifuge designs and components to Iran's secret gas centrifuge program. The secret U.S. intelligence community penetration of at least one part of the Khan network led to the dramatic seizure in October 2003 of several containers of centrifuge parts bound for Libya's secret centrifuge program on the ship BBC China. After Libya renounced nuclear weapons and other weapons of mass destruction in December 2003, U.S., British, and IAEA investigations learned many details about the activities of the network. These actions resulted in intensive pressure on the Pakistani government to

conduct a thorough investigation. Once started, the Pakistani investigation led relatively quickly to Khan's confession that he supplied gas centrifuge items to Iran, Libya, and North Korea. IAEA investigations continue to seek a full understanding of the network and the history and procurement activities of Libya's and Iran's secret gas centrifuge programs.

Turn-Key Centrifuge Plant and Bomb Designs

One of the biggest surprises about this network was its sheer audacity and scale. It intended to provide Libya a turn-key gas centrifuge facility, something typically reserved for states or large corporations in industrialized nations with full government support and knowledge. The plan called for the network to supply thousands of centrifuges, piping to connect them together, detailed project designs for the centrifuge plant, electrical and electronic equipment, uranium feed and withdrawal equipment, the initial 20 tonnes of uranium hexafluoride, and equipment to allow Libya to make more, centrifuge designs, manufacturing equipment and technology to make more centrifuges indigenously, and on-going technical assistance to help Libya overcome any obstacles in assembling and operating the centrifuges in the plant. If Libya had continued with its nuclear ambitions and the network had not been exposed, Libya could have succeeded in about 4-5 years in assembling its centrifuge plant and operating it to produce significant amounts of HEU.

Armed with the HEU, Libya would have known how to turn that HEU into nuclear weapons. The reason is simple. The network provided Libya with information to build a workable nuclear weapon. Libya received almost all of the detailed nuclear weapon component designs, component fabrication information, and assembly instructions for a nuclear weapon.

The weapons documents appear to be information Pakistan received from China in the early 1980's, including hand-written notes from lectures given in China. The design is reportedly for a tested Chinese warhead that has a mass of about 500 kilograms and measures less than a meter in diameter. Although this design would not have fit on Libyan SCUD missiles, it could have been air-dropped or intended for a more advanced missile Libya may have sought. The design would have fit on Iranian and North Korean missiles.

Although questions remain about the exact involvement of Pakistani government officials in the network and the extent of senior Pakistani government awareness of the activities of A. Q. Khan and his associates in this network, the Pakistani government was not directing this network. It was essentially a criminal operation, a more disturbing and dangerous operation than if it had been a secret government-controlled effort.

Getting at all the Nodes of the Network

Much remains to be discovered about this network before its operations are fully understood or its complete demise can be trumpeted. It is necessary for governments and the IAEA to be perseverant in investigating this case. If these investigations are not done

thoroughly, the risk will be greater that a similar network could rise again from the remnants of the disbanded Khan network.

Identifying all the Key Players and Their Activities

The network was the creation of A. Q. Khan and his associates who sought to capitalize on the elaborate, highly successful illicit procurement network they had created to supply the Pakistani gas centrifuge program. It had many manifestations over the years and involved many people from a variety of countries. Some international suppliers and middlemen had a long working relationship with Khan and remained committed to the network for two or more decades. Some of these individuals had undergone official investigations and prosecutions in past years, yet they continued working in this network.

The latest rendition of the network, which focused on providing Libya with gas centrifuges, was coordinated by B. S. A. Tahir, a Sri Lankan based in Dubai and Malaysia. It represented the capstone of this multi-decade illicit procurement effort centered in Pakistan.

There was also a familial aspect to the network. Fathers who were involved in the 1970s or 1980s had sons that became involved with their fathers in the 1990s.

Many legal investigations of members of the network have started. Momentum may in fact be increasing around the world to prosecute the key players in this network. But a critical task is determining all the players and their activities. The ultimate goal should be prosecuting them as fully as possible under both export control laws and laws involving exports to terrorist states, as Libya was labeled. This process will likely take years.

Determining the Network's Customers

Although Khan has admitted that he provided centrifuge items to Libya, North Korea, and Iran, little has been reported about other recipients of centrifuge or nuclear weapon assistance. In addition, many details of this assistance remain unknown, particularly in regards to North Korea.

Although considerable information now exists about gas centrifuge assistance to Iran and Libya, far less information is available about the gas centrifuge assistance to North Korea. This deficiency has resulted from North Korea's denial that it has a gas centrifuge program, the lack of IAEA inspections in North Korea, and Pakistan's perceived reluctance to provide information about any nuclear trading with North Korea.

A key question is whether Iran or North Korea also received nuclear weapon information. We know of what appears to have been an early Khan effort in late 1990 to offer centrifuge help and nuclear weapons design information to Iraq. Iraq was not able to pursue this offer other than deciding to request a sample of the offer just prior to the 1991 Persian Gulf War, the start of which ended that effort. Questions remain whether Syria

was a customer for centrifuge or nuclear weapon assistance, although Khan has denied selling anything to Syria. There is also speculation about other customers, including Saudi Arabia and Burma.

In any case, this part of the investigation is not finished. Determining all the customers and what they received will take considerable time.

Taking Stock of the Manufacturers of the P2 Centrifuge Parts

The network sold what the Pakistanis have called the P1 and P2 centrifuges. The roughly 500 P1 centrifuges that went to Iran in the mid-90s were, according to reports, scrapped machines that Pakistan had retired from its main centrifuge program. Members of the network were able to remove them in secret and sell them to Iran. Libya also received 20 of its P1s in that manner.

The P2 centrifuges, which are more advanced machines, reportedly left Pakistan in much smaller numbers. The two that were sent to Libya, for example, were samples or demonstration models. One of the P2s that went to Libya was not suitable for enrichment with uranium hexafluoride gas. It did not have the final surface coating necessary to prevent corrosion by the uranium hexafluoride gas.

In the case of Libya, the network focused on making P2 components outside Pakistan. The Libyans have stated that they placed an order for 10,000 P2 machines, which translates into a total of about one million separate components, a staggering number of parts given the sophistication of gas centrifuge components. The network was assembling a significant cast of experts, companies, suppliers, and workshops to make all these components. The organization of this project was quite impressive.

The workshops that contracted to make components for the network typically imported the necessary items, such as metals, equipment, or subcomponents. After they made the item, they would then send it on – either assembled or as a finished component to Dubai under a false end-user certificate. Then it would be repackaged and sent off to Libya. According to Mohamed ElBaradei, Director General of the IAEA, "Nuclear components designed in one country could be manufactured in another, shipped through a third (which may have appeared to be a legitimate user), assembled in a fourth, and designated for eventual turn-key use in a fifth."

Based on information found in Libya, roughly half dozen key workshops have been identified as making or doing final assembly of the centrifuge components. The network selected a workshop based on the type of centrifuge component needed and the materials and equipment involved in making those particular components. It remains unclear, however, if these are all the workshops involved in making components for Libya and other recipients.

The most well known workshop was located in Malaysia at a company called SCOPE. SCOPE contracted to make up to about 15 percent of the total components for 10,000 centrifuges. SCOPE was making high precision aluminum centrifuge parts.

Workshops in Turkey made the centrifuge motor and frequency converters used to drive the motor and spin the rotor to high speeds. These workshops imported subcomponents from Europe and elsewhere, and they assembled these centrifuge items in Turkey. Under false end-user certificates, these components were shipped to Dubai for repackaging and shipment to Libya. A container of at least some of these items was also on the BBC China, but it was not discovered by investigators after its interception. Eventually, the container arrived in Libya and was declared to the United States and the IAEA.

SCOPE did not make the maraging steel parts for the P2 centrifuge, most comprise the bulk of the rotating components in a centrifuge and are more difficult to make than the aluminum parts. A mystery is which workshop was to make the sensitive maraging steel rotor and bellows. The network appears to have experienced trouble in finding a workshop to make these components, although one workshop may have tried. In the end, the network may have been unable to find a workshop to make these components, and Libya may have needed to make them itself. Perhaps, Libya may have initially intended to buy all the components overseas, but it finally may not have been able to do so in the end.

Libya also ordered from the network a sophisticated manufacturing center, code-named Workshop 1001, to make centrifuge components. The original plan called for this center to make additional centrifuges after the network delivered the first 10,000 centrifuges, either to replace broken ones or add to the total number of centrifuges. However, if the network had difficulty making a component, this center may have had to make that particular component.

Most of the machine tools, furnaces, and other equipment for the center came from Europe, particularly from or through Spain and Italy. The equipment was not on the nuclear dual-use list, but it was still quite good for use in a centrifuge manufacturing program, particularly because the network also supplied detailed manufacturing information for almost all the parts. The bulk, if not all, of this equipment was sent to Libya via Dubai.

Investigations of the supply chain of the network are unfinished. It is not known if all the key workshops and companies have been identified. Components may have been made but not delivered to Libya. Components may have also been made for customers other than Libya.

Retrieving Centrifuge Designs and Manufacturing Instructions from the Network

The key to the success of this network was its virtual library of centrifuge designs and detailed manufacturing manuals. A key task is to track down the members of the network

with this kind of sensitive centrifuge information, prosecute them, and try to retrieve as much of this information as possible.

Although tracking down this kind of information can be difficult, the network may have inadvertently helped by tightly controlling this information and not widely disseminating it. For example, the February 2004 Malaysian police report describes the activities of the Swiss national Urs Tinner at the SCOPE factory. Urs is the son of Friedrich Tinner, who earlier supplied Pakistan and Iraq's secret centrifuge program in the 1980's. Urs carefully controlled the centrifuge design information. He took it to SCOPE to program the machines to make the centrifuge components, but he made sure that others could not remove this sensitive information. When he finished working at SCOPE, he retrieved the information and took it with him.

The fact that the information may be in the hands of just a few members of the network gives hope that it can be retrieved. However, retrieving all the centrifuge information may not be possible, since copies can be made and hidden for years if desired. Thus, even if the retrieval effort is reasonably successful, this centrifuge information may form the core of a future network aimed at secretly producing or selling gas centrifuges.

Recommendations

A priority is preventing other illicit networks like the Khan network and nuclear smuggling through less elaborate methods. In addition, steps are needed to increase the probability of more quickly discovering such efforts.

The first priority is fully investigating and dismantling the "Khan" network. Investigations need to continue and intensify in a range of states, including Malaysia, Switzerland, Britain, France, Italy, Spain, UAE, Germany, and Turkey. More information is needed from states that benefited from this network, particularly Libya, Iran, and eventually North Korea. In addition, Pakistan's cooperation is critical. The Pakistani government has provided useful information to the IAEA and other states, and it appears committed to providing more information. However, the Pakistani government should permit the IAEA, and perhaps other governments, direct access to A. Q. Khan and his associates involved in the network.

The successes of the Khan network should shatter any complacency about the effectiveness of national and international nuclear-related export controls to stop or sound an alarm about illegal nuclear or nuclear-related exports. Although the Proliferation Security Initiative (PSI) is useful in interdicting an illegal shipment once detected, it cannot fix the fundamental weaknesses of the current export control regime.

The network was masterful in identifying countries that had weak national export laws yet adequate industrial capability for the network's purposes. These countries were both inside and outside the Nuclear Suppliers Group (NSG), a voluntary grouping of over 30 of the most advanced countries. Although many suppliers to the network did not know the actual purpose of the materials they provided or the parts they were contracted to

make, they were often in countries where the authorities were unlikely to carefully scrutinize exports or encourage curiosity about the actual end use of an item. The network also knew how to obtain for its illicit endeavors necessary subcomponents, materials, machine tools, and other manufacturing equipment from countries in Europe with stringent export control systems.

Improvements should be made, such as expanding the membership of the NSG and sharing more information about actual procurements among NSG members and with the IAEA, but these steps are by themselves insufficient. The new UN Security Council Resolution 1540 is an important step, but it also does not go far enough to significantly reduce the risk posed by nuclear smuggling. The current system lacks an aggressive, intrusive verification and investigation organization that can provide greater confidence that states are implementing effective export controls and can devote its resources to detecting illicit nuclear and nuclear-related procurements.

What is needed is a universal treaty-based system controlling nuclear export activities that is binding on states and includes a means to verify their compliance. Under such a treaty or agreement, countries would implement a set of nuclear and nuclear-related export control laws and regulations and criminalization procedures, similar in nature to those required by UNSC Resolution 1540. The agreement, however, would also mandate the IAEA to verify compliance, ensure the adequacy of those laws, and investigate illicit procurement activities. Signatories would inform the IAEA of all sensitive nuclear or nuclear-related exports, and the IAEA would have the mandate and legal rights to verify that the transactions are indeed legal. It would verify that a country's declaration about its nuclear or nuclear-related exports or imports is accurate and complete.

The IAEA is a logical choice to undertake this role. It is already pursuing investigations of illicit procurement activities by Iran and Libya as part of its safeguards responsibilities under the Nuclear Non-Proliferation Treaty (NPT). These investigations include taking inventories of all centrifuge equipment and components in Iran and Libya and verifying their accuracy and completeness, determining the suppliers and manufacturing activities of the network, cooperating with a range of governments on the activities of the network, receiving supplier information from member states, and meeting with Pakistani investigators.

By linking its safeguards system with export control verification and monitoring, the IAEA would be in far better position to assure the absence of undeclared nuclear activities and detect cheating in a timely manner. By performing a task that governments have been unable to do, the IAEA under such a treaty-based system would significantly increase U.S. and international security.

Testimony on
"International Smuggling Networks:
Weapons of Mass Destruction Counterproliferation Initiatives"

Before the Subcommittee on
Financial Management, Budget, and International Security
Committee on Governmental Affairs
United States Senate

by
Michael Moodie
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June 23, 2004

On February 11, 2004, at the National Defense University, President George W. Bush claimed that the "greatest threat before humanity today is the possibility of secret sudden attack..." with chemical, biological, radiological, or nuclear weapons. He went on to state that these "materials and technologies, and the people who traffic in them, cross many borders." The threat of chemical and biological weapons (CBW) trafficking is a complex one that involves a number of players, and raises a number of issues for the international community. Little information is available, however, on trafficking of chemical or biological agents or equipment, especially compared to trafficking of nuclear materials.

Indeed, it is not helpful to try to apply the conceptual approach used for dealing with the problem of nuclear trafficking to the issue as it relates to chemical and biological challenges. A chemical or biological equivalent of A.Q. Khan might exist, but he or she would be extremely difficult to identify.

Three reasons argue for the need for a different approach to the challenge of smuggling or illegal transfers of chemical and biological weapons. These are:

- The inherently "dual use" nature of chemical and biological materials and equipment;
- The global diffusion of chemical and biological materials and technology; and
- The challenge as one of transfer of knowledge.

"Dual Use" in Spades

The requisite materials and technologies for making biological and chemical warfare agents are widely available. In the case of biological agents, many can be found in nature. For both chemical and biological weapons, key elements necessary for developing such capabilities are readily found in legitimate biotechnology and chemical industries around the world, where they are used for perfectly legitimate commercial and scientific purposes that can have an enormously positive impact in such areas as health and medicine, agriculture, the environment, and host of other aspects of life. This combination of availability and legitimate use makes it more difficult to identify potential CBW programs and track related illicit activities including transfers. In the life sciences, this problem is exacerbated by the very small quantities that may be transferred to bolster a weapons capability. When snippets of protein are all that you need, the notion of controlling transfers of such materials becomes a less attractive option.

Global Diffusion

A second hallmark of recent science and technology in the life sciences and chemical arenas that militate against attempts to control transfers is the global diffusion of the capability to exploit such elements.

The phenomenon is especially striking in the life sciences. In 2002, for example, the pharmaceutical industries of Asia (excluding Japan), Africa, and Australia experienced growth of 11 percent, nearly matching the 12 percent growth of North America (albeit from a smaller base).[1] Asia outside Japan has over 1,000 biotechnology firms. Singapore is an example of current trends. The government there has made an ambitious commitment of billions of dollars to make Singapore a biotechnology hub of east Asia. China, too, has committed billions of dollars over the next decade to biotechnology funding in basic research and commercial projects in Shanghai, Shenzen, Beijing, and elsewhere.[2]

Globalization means that technology development and application no longer conform to national patterns of the past. Some of the key dimensions of the phenomenon of global technology diffusion with potentially important security implications include:

- The increasing incorporation of civilian technology into the military sphere largely as a result of high quality and lower prices for commercial products;

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[1] Bryan Bergeron and Paul Chan, *Biotech Industry: A Global, Economic,and Financing Overview* (Hoboken, NJ: John Wiley and Sons, 2004) ,p. 55.

[2] G. Steven Burrill, *Biotech 2003: Life Sciences – Revaluation and Restructuring...*, 17th Annual Review of the Industry (San Francisco: Burrill and Co., 2003), p. 287.

- The declining share of the technology market under government control;
- The translation of science and technology into commodities;
- The emergence of a global science and technology base;
- The facilitation of global technology diffusion by the existence of global financial networks;
- the creation of black or gray markets for some technologies; and
- The continuing fusion of diverse technologies in ways that foster dramatic increases in innovation with profound effects on business and commerce, public health and safety, and security.

These and other technology-related developments have created new economic and commercial realities,[3] including

- Lower costs for easier and better technology;
- Miniaturization;
- Flatter organization pyramids with empowered employees;
- New production processes; and
- Greater productivity and more agile manufacturing, leading to smaller manpower and infrastructure requirements, including smaller and more flexible facilities.

In turn, these new economic and commercial realities produce new opportunities to overcome some of the traditional barriers to acquiring CBW and open new pathways to successful proliferation. Among these challenges are legitimate dual use "covers" for development of illegal weapons programs and non-standard or parallel paths to weapons development with sophisticated concealment and deception programs.

Perhaps the most challenging problem of all, however, is the intense latency of weapons development capabilities inherent in technology diffusion with little or no safety margin for timely and effective responses to decisions to pursue "breakout." As technology continues to spread around the world, more and more actors, both state and non-state, will acquire the capability to develop and employ unconventional weapons. The growth of the chemical industry results in a larger potential supply of precursors for the development of chemical weapons. Advances in the life science and biotechnology industries, and the increase of such companies across the world, facilitates a growth in knowledge about sciences that could potentially be misused for malevolent purposes.

Knowledge, Not Materials

[3] Some of these ideas are drawn from "Defining Alternative Futures in the face of Political, Economic, and Technical Change," presentation of Ronald F. Lehman, Director, Center for Global Security Research, Lawrence Livermore National Laboratory, to the 10th Anniversary Conference of the Chemical and Biological Arms Control Institute, November 17, 2003.

The latency inherent in the legitimate diffusion of chemical- and biological-related materials and technology highlight a third reality that complicates efforts to stem the illicit transfers of such materials: the problem is more and more about knowledge. This is, again, especially true with respect to the life sciences. Although it is still an exaggeration to claim that yesterday's Nobel prize winning research is today's standard bench practice and tomorrow's high school science fair project, it is becoming less and less of a stretch. If the necessary materials can be isolated from nature or gained for legitimate scientific and commercial purposes – and they can – and if the critical equipment is available to support business and other economic activity – and it is – then the crucial factor is what people decide to do with them. The challenge is shaping decisions about how science and technology will be used. The task is to manage the risks in such as way that the potential for misuse is minimized. Achieving success in such an enterprise will occur only if a strategy implemented that is as multifaceted as the complex challenges it is meant to address.

This is not to argue that efforts to eliminate the illicit transfers of chemical and biological materials and equipment have no place in such a strategy. They can contribute. But one must accept the limitations of such measures.

Learning from History

In this context it is still important to learn what we can from the experiences of the past. Three examples that deserve some scrutiny include

- The case of Iraq and its WMD programs;
- The efforts of the Aum Shinrikyo; and
- The experience of following Chinese commercial activities.

The cases of Iraq and the Aum Shinrikyo, despite the fact that one was a state and one a non-state actor, shared some similar features. In both cases, the activities that Iraq and Aum engaged in to further their goals of obtaining chemical and biological weapons involved the setting up of front companies, creating international networks, and enlisting the assistance of legitimate companies that did not know the ultimate end of their business activities.

The discovery of clandestine chemical, biological, and nuclear weapons programs by UNSCOM inspectors in Iraq in the 1990s offers a number of insights into how a state acquires and develops CBW programs without raising alarms in the international community. Iraq used a variety of mechanism to procure components for its illicit weapons programs:

- International and Iraqi firms were approached to manufacture weapons components, such as aluminum tubes and pole magnets "without being told the end use for these components".

- Hundreds of multiple, constantly shifting, and overlapping project codes were designated for individual components of all weapons programs. These presented obstacles to national intelligence services trying to track Iraqi weapons programs. In some cases, Iraqis working on various components of weapons programs themselves did not know the final objectives of their programs.
- Iraq invested in legitimate foreign firms that either manufactured equipment useful for the Iraqi clandestine weapon program or could legitimately order such equipment purportedly for their own use.
- Iraq benefited in its use of a complex network of middlemen and front companies.
- When purchasing export control-sensitive items, the Iraqis often placed orders in quantities below the threshold that triggered controls.[4]

Iraq was able to develop an efficient knowledge of system integration, so equipment could be purchased separately and integrated in the country without raising suspicions.[5] This system integration ability was the key to the success the Iraqi program had in eluding the international community regarding its weapons component imports.

In the case of Aum Shinrikyo the cult recruited bright young university graduates, particularly scientists, and put them to work developing biological and chemical weapons. Aum tried several biological and chemical attacks before the March 1995 subway assault, including a successful 1994 sarin attack that killed 7 people. It failed, however, in at least nine biological attacks because Aum never secured the appropriate agents.

After the 1995 subway attack, Japanese police discovered that Aum had accumulated hundreds of tons of chemicals. According to the U.S. Defense Department, Aum "established front companies for legal chemical acquisition, then closed them down when sufficient quantities of precursor material had been purchased."[6] Aum also developed chapters throughout Europe, Russia, and in the United States. Through these offices, in the United States, for example, it attempted to obtain high-tech equipment, such as computer hardware, a Mark IV xp Interferometer (a laser measuring system that can measure plutonium), lasers, and molecular modeling software (in order to create experiments on a computer as opposed to in actuality), among other equipment. Although Aum was able to obtain some of the material it sought, there was suspicion among the private sector from which the materials were bought, and Aum's request for

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[4]David Kay, "Denial and Deception Practices of WMD Proliferators: Iraq and Beyond," *The Washington Quarterly*, 18:1, 1994.

[5] Ibid.

[6] US. Department of Defense, "The Transnational Threat."

purchases were sometimes denied.[7] Attempts were made to procure technology in others parts of the world as well.

A third example that may provide some insights relates to the sanctioning of Chinese companies whose activities were at odds with U.S. nonproliferation policy and legal regulations. Fourteen Chinese companies have been sanctioned for their role in the export of chemical weapons precursors and missile components to states of proliferation concern.[8] Sanctioned companies include China North Industries Corporation (Norinco), China Precision Machinery Import/Export Corporation, the Taian Foreign Trade General Corporation, Liyang Yunlong Chemical Equipment Group, and the Zibo Chemical Equipment Plant, among others.[9] Sanctions against Chinese companies have included license denial, bans on imports, and prohibition of U.S. exports of certain goods to Chinese companies, and denial of U.S. contracts.[10] In addition, the U.S. has strongly pressured China to enact stricter export control laws.

Materials that have been exported that were seen by the United States to warrant such sanctions have been glass lined anti-corrosive tubes that can be used in the manufacture of chemical weapons, and the sale of cruise missile components and other missile-related technologies. What is notable, however, is that, according to a summary of the sanctions provided by the Nuclear Threat Initiative, the most recent sanctions have related primarily to missile technology proliferation activities. The majority of the activity tied directly to potential chemical weapons proliferation occurred in the mid- to late-1990s when Chinese companies were accused of assisting Iran's chemical weapons program.[11] NTI cites no cases of companies sanctioned for biological-related transfers.

International Initiatives to Combat the Smuggling of Weapons of Mass Destruction

In light of the September 11 attacks and the knowledge of the potential terrorist use of chemical and biological weapons to commit further atrocities on U.S. and Western soil, several international initiatives have been enacted in the past two

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[7] "A Case Study on the Aum Shinrikyo," in *Global Proliferation of Weapons of Mass Destruction*, Senate Government Affairs Permanent Subcommittee on Investigations, 31 October 1995.

[8] "Exporting Weapons Draws US Sanctions: China Europe Firms Sell to Iran," *The Washington Times*, May 20, 2002.

[9] "US Nonproliferation Sanctions Against China and/or Chinese Entities," Nuclear Threat Initiative, http://www.nti.org/db/china/sanclist.htm.

[10] Ibid.

[11] Ibid.

years that have, in all or in part, focused on control of illegal trafficking of WMD-related materials and equipment.

In the case of CBW, these efforts build on the work of the Australia Group (AG), an informal mechanism for coordinating national export controls in the chemical and biological arena, established in 1984 following the massive use of chemical weapons during the Iran-Iraq War. Originally involving 18 countries, the Australia Group now numbers 33.

The Australia Group is an informal arrangement that aims to allow exporting or transshipping countries to minimize the risk of assisting chemical and biological weapons proliferation. The Group synchronizes export controls throughout member states and provides a forum through which states can discuss reasons for the denial of certain material or equipment to other states. It requires states to receive permission form another member for exporting dangerous materials and equipment if the first state had denied the export of the same material. Recently, the Australia Group has been working on a provision to curb transfer of knowledge in addition to materials and equipment. It now provides for controls on transfers of "intangibles" (such as at conferences or through conversations among scientists).[12] Although the AG's effectiveness is difficult to gauge, member countries assert that the regime acts as an impediment to CBW proliferation by working to ensure that industries in member nations do not, either inadvertently or intentionally, assist states or groups seeking to develop CBW capabilities.

Not surprisingly, the Australia Group confronts problems and limitations. One limitation is that decisions are made by consensus, which can delay or prevent the adoption of key policies. Also, each AG member determines its own licensing criteria and determines on its own which states are states of concern. Not all states agree as to which states qualify as states of proliferation concern. Another limitation of the Australia Group is that its decisions are not legally binding, and it has no powers of enforcement

Proliferation Security Initiative (PSI)

The Proliferation Security Initiative (PSI) is an effort to promote intelligence sharing, tracking and interdiction operations among like-minded countries. According to one source, the PSI arose "from the administration's frustration over a December 2002 incident in which Spanish forces, acting in concert with the United States, stopped a North Korean shipment of short-range ballistic missiles but ended up letting the ship and its cargo go because they lacked a legal

[12] James I. Seevaratnam, "The Autralia Group: Its Role and Impact as a Nonproliferation Regime," Remarks at the Pugwash Workhsp study group on the Implementation of the CBW Conventions, 26-27 April 2003.

rationale for confiscating the missiles."[13] The PSI allows for the boarding and inspection of ships and planes suspected of carrying illegal shipments of weapons of mass destruction, their precursors, or delivery system components. States that have agreed to participate in the Initiative include Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, the United Kingdom, and the United States among others. The PSI is not a formal organization nor is it a formal international legal agreement. Instead, it is a plan for like-minded nations to cooperate with one another on the sharing of intelligence regarding the interdiction of cargoes possibly involving materials related to weapons of mass destruction or their delivery.

Advocates of PSI say that it has been successful and will be more so as participants gain more experience. Generally, boarding of planes and ships, and seizures of materials will not likely be reported due to the controversial nature of the action. According to those events that have been reported, however, for purposes of this assessment, the most interesting was that of a seizure in August 2003, when a North Korean cargo ship was detained in Taiwan after US intelligence notified Taiwanese officials as to the suspicious nature of the materials on board the ship. Unloaded from the ship was "158 barrels of phosphorous pentasulfide which were then confiscated by government officials." The question, of course, is whether these "dual use" chemicals were to be used for chemical weapons or some other purpose. According to one report, "the vessel was suspected of carrying chemicals associated with rocket fuel..."[14]

United Nations Security Council Resolution 1540 (2004):

United Nations Security Council Resolution 1540 (UNSC 1540), adopted unanimously on April 28, 2004, calls upon states to refrain from assisting non-state actors in the development of weapons of mass destruction, to create harsher domestic laws pertaining to the sale of WMD precursors or delivery system components, and to establish tighter security to protect against theft at sites where weapons of mass destruction are stored.[15] It also calls on all states to promote dialogue and cooperation on nonproliferation as well as on preventing illicit trafficking in weapons of mass destruction, their mans of delivery, and related materials. The resolution establishes a committee of the Security Council that is to report on its implementation no later than six months from the day of adoption. Given that the Security Council historically has been reluctant to engage on issues related to weapons proliferation, passage of this resolution should be acknowledged as an important development.

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[13] Wade Boese, "U.S. Pushes Initiative to Block Shipments of WMD, Missiles," Arms Control Association, July/August 2003.

[14] "Proliferation Security Initiative," GlobalSecurity.org.

[15] U.N. Security Council Resolution 1540 (2004).

Having said that, as with many other UN resolutions, while support exists for its general goals, the issue will be how well UN member implement it. Many UN members are not in a position to act assertively within the six-month window to implement all of the measures called for even if they would want to (which is doubtful), including efforts to bolster physical security at facilities where key material and equipment are stored. Measures to block illicit transfers, not least with respect to export controls, are also not as robust as they should be, and getting states to take the necessary action will require considerable time and effort. Moreover, in the view of some observers, the resolution represents only a first step that does not limit the transfers of dangerous materials among states, only to non-state actors.[16]

The Group of Eight (G-8)

One additional measure that does not relate directly to stopping illicit trafficking in WMD-related materials and equipment but which could have an indirect impact on the severity of the illicit transfer challenge is the effort by the Group of Eight(G-8). In June 2002, the G-8, including Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States (with the European Union as an observer) established the Global Partnership Against the Spread of Weapons of Mass Destruction. The Partnership pledged to raise $20 billion over ten years to combat proliferation of WMD. Of that amount, $10 billion is slated to "reduce the risk that unsecured weapons or materials of mass destruction" pose in terms of their potential to fall into the hands of terrorists.[17] In addition to the G-8 countries, the Global Partnership includes Australia, New Zealand, South Korea, Belgium, Denmark, Ireland, and the Czech Republic.[18] Thus far, $17 billion has been pledged, leaving $3 billion still to be secured. Currently, only Russia is slated to receive this aid, but discussion has been held of the possibility of adding other states to the recipients list.[19] Moreover, from the point of view of CBW it is not clear what the Global Partnership will mean since most of the funds are directed toward dealing with problems related to nuclear weapons.

Conclusion

This brief review of some historical experiences as well as recent steps to bolster efforts to stem illicit trafficking in WMD-related materials and equipment further highlights the differences between the nuclear realm on one hand and the

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[16] Jofi Joseph, "The Proliferation Security Initiative: Can Interdiction Stop Proliferation?" *Arms Control Today*, Arms Control Association, June 2004.

[17] Global Partnership Scorecard.

[18] "G8 Go to Work to Fix Nuke Law Loopholes," United Press International, June 8, 2004.

[19] Global Partnership Scorecard.

chemical and biological arenas on the other. The fact of the matter is that controlling materials and equipment is more possible in the nuclear area because they are more significant in size and signature. One could also argue that it matters more because gaining access to nuclear material remains the key hurdle to overcome in developing a nuclear weapons capability. This is not the case with chemical or biological weapons for which access to the material or relevant technology is not the problem so much as a range of other technical and engineering challenges.

This brief review also underlines the difficulty of stopping illicit chemical and biological trafficking. The illicit transfers in all three cases only came to light after the fact, suggesting how hard it is to be successful in stopping chemical or biological transfers on a proactive basis. It will only become more difficult as trends such as the global technology diffusion of relevant materials and equipment continue. The paucity in recent efforts of reported successes related to chemical or biological materials further reinforces the sense of just how hard this task is.

The difficulty suggested here reflects a point made earlier that represents perhaps the core challenge related to dealing with chemical, and particularly biological weapons proliferation, that is, that the key factor is not material or equipment, but knowledge. With respect to both the life sciences and chemistry, it is a very different world from that which existed even a decade ago, and our knowledge in these fields and what we will be able to do with that knowledge will only accelerate in the period ahead. The resulting science and technology, however, is neutral, and the issue will be the uses to which they will be put. If the choices people make are to emphasize the appropriate use of these life-enhancing capabilities, then those who are involved in both generating the relevant knowledge and applying it in technology must promote a culture of responsibility. Governments must become a partner in doing so.

Because chemistry and biology will not disappear, we live in a world in which the potential misuse of these vital sciences is a permanent risk. The challenge to governments and to the broader community is to find ways to manage those risks successfully. Efforts to control or eliminate the illicit trafficking in relevant materials and equipment will make a contribution to risk management efforts, but they are unlikely to be critical in and of themselves. To the extent they will matter, it will be to the degree they reinforce other risk management efforts, perhaps the most important of which is the promotion globally of a culture of responsibility among all the critical stakeholders. Doing so cannot be done by one state alone. It will take international cooperation and dedication. But there will be no substitute for U.S. leadership.

Center for Nonproliferation Studies
Monterey Institute of International Studies

Nuclear Smuggling Networks and U.S. National Security

Testimony
of
Leonard S. Spector
Deputy Director
Center for Nonproliferation Studies
Monterey Institute of International Studies

Before
the
Subcommittee on Financial Management, the Budget, and International Security
of the
U.S. Senate Committee on Governmental Affairs

June 22, 2004

Testimony of Leonard S. Spector
Deputy Director
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Thank you, Mr. Chairman for the opportunity to testify this afternoon on nuclear smuggling networks and the dangers they pose to U.S. national security.

The Monterey Institute Center for Nonproliferation Studies has monitored nuclear trafficking activities for more than ten years. Our extensive database on this subject, supported by the Nuclear Threat Initiative (NTI), is now available to the public on the NTI website, www.nti.org , and we hope it will be of assistance to the Subcommittee and its staff.

Last week the Center released an important new book, which is directly relevant to today's hearings: *The Four Faces of Nuclear Terrorism.*[1] A core conclusion of the study is that the United States must alter dramatically its ranking of threats to its national security. American thinking about nuclear dangers was forged during the tensions of the Cold War confrontation with another nuclear superpower and in the face of the disturbing, though relatively slow, spread of nuclear arms to additional nations. Today, the nuclear threat posed by other nuclear-armed *states* is being eclipsed by a new type of threat, that of nuclear instruments in the hands of *non-state, terrorist organizations*. This reality requires a profound change in the way the United States thinks about national security policy.

It is fair to conclude that at this point in history, terrorist organizations are the *only* entities that are seeking to rain nuclear destruction on the United States without regard to the potential consequences to themselves or to the innumerable innocent victims of such action. Moreover, even in those instances where nuclear assets in the hands of states cause U.S. policy makers deep concern, in virtually all cases the foremost source of their apprehension is not the possibility that the states, themselves, will use these assets against us, but that these assets may come into the hands of terrorist groups who are all too eager to do so.

For this reason, as the Subcommittee analyses the dangers posed by clandestine nuclear smuggling networks, it is crucial to focus not only on the suppliers, themselves, but on the *customers* for their dangerous wares.

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It appears that A.Q. Khan brought his network to his customers: Iran, Libya, and North Korea. No evidence has been made public to date to indicate that the Khan network,

[1] *The Four Faces of Nuclear Terrorism* by William C. Potter and Charles D. Ferguson, with Amy Sands, Leonard S. Spector, and Fred Wehling (Monterey, CA: Monterey Institute Center for Nonproliferation Studies, 2004), available at www.cns.miis.edu .

itself, provided nuclear aid to al Qaeda or other terrorist organizations (although two Pakistani nuclear scientists are known to have provided assistance to al Qaeda's weapons of mass destruction efforts.) The U.S. and international response to A.Q. Khan's activities – which include pressing Pakistan and other states to close down his network, intensifying interdiction efforts through the Proliferation Security Initiative, and pursuing a series of diplomatic initiatives to constrain Libya, Iran, and North Korea – are all to the good. These efforts, however, are not tailored to addressing the most crucial threat, nuclear terrorism.

Here, the "customer" is not susceptible to diplomatic carrots and sticks, and the "network" that connects terrorists and nuclear matériel is as likely to be comprised of interlinked terror cells that reach into poorly secured nuclear centers, as it to be comprised of unscrupulous nuclear companies, technicians, and middlemen that offer their commodities on the international marketplace. Moreover, terrorists are highly unlikely to seek to manufacture nuclear weapon materials or to be able to do so themselves; their focus will be on acquiring such materials from existing stocks, in order to fabricate an improvised nuclear device, or on acquiring intact nuclear weapons themselves.

For these reasons, it is essential that even as we attempt to roll back the networks that are supporting national nuclear weapon efforts in Iran and North Korea (and, previously, Libya), we focus most intensively on protecting nuclear weapon materials and nuclear weapons, "at the source." This means (1) accelerating programs to secure, consolidate, and eliminate weapons-usable nuclear materials and (2) intensifying efforts to secure and consolidate nuclear weapons, and, in line with arms control undertakings, such as the Presidential Nuclear Initiatives of 1991-1992, eliminate them when appropriate.

In managing nuclear weapon materials, moreover, it is crucial to recognize and act upon the fact that the acquisition by terrorists of *highly enriched uranium* is far more likely to ultimately result in a nuclear detonation on U.S. territory than is their acquisition of the other nuclear weapon material, plutonium. Thus, we urge that the United States dramatically revise its efforts to protect fissile materials abroad so as to make securing, consolidating, and eliminating highly enriched uranium the leading and most urgent task, taking clear precedence over addressing the dangers posed by plutonium, which must, nonetheless, remain an important priority. The overarching principle guiding U.S. policy should be to move toward a world in which fewer countries retain HEU, fewer facilities within countries possess HEU, and fewer locations within those facilities have HEU present.

I have attached the final chapter of our study, with our detailed recommendations for action, at the end of my testimony. Our key vision, as suggested earlier, is that we must revise many long-standing policies concerning nuclear dangers to take cognizance of the nuclear terrorist threat.

I should note that UN Security Council Resolution 1540, adopted earlier this year and which is binding on all UN member states, is an extremely valuable step forward. It

addresses both dimensions of the illicit trafficking/nuclear terror challenge, requiring states to adopt strict export controls over weapons of mass destruction and their precursors and also requiring them to adopt effective measures domestically to protect such assets within their territory. It remains to be seen, however, how the resolution will be implemented. A particular concern is that because it does not embody clear standards, states will claim to be in compliance with its requirements, without actually implementing effective export control and security measures.

Permit me to make one final point, in closing: It is wrong to think of U.S. nonproliferation diplomacy, the Proliferation Security Initiative, the War on Terror, the various U.S. nuclear material protection programs in Russia, and efforts to control our borders (including the Port Security Initiative), as disparate, unrelated undertakings. They are all part of a web of efforts to create a multi-layered defense, to protect this country from the ultimate nuclear danger.

At this time, al Qaeda may well be the only organization that might contemplate the most devastating forms of nuclear terror and that might have the resources to execute such a plot. If progress can be made across this spectrum of programs, we may be able to contain this threat.

This Subcommittee, with its wide-ranging jurisdiction over the organization of the U.S. government to combat proliferation in its many forms, would be well-served to follow up today's hearing with additional inquiries on the implementation and integration of these various activities. I believe you would observe a number of important successes and will also identify, as we have, a number of serious gaps in current efforts that need to be urgently addressed.

7

Meeting the Challenge

A Plan for Urgent Action Against Nuclear Terrorism

The foregoing chapters have reviewed the dangers posed by the four faces of nuclear terrorism: the theft and detonation of an intact nuclear weapon, the theft or purchase of fissile material leading to the fabrication and detonation of a crude nuclear weapon, the attack on or sabotage of nuclear installations, and the dispersal of highly radioactive material by conventional explosives or other means. This analysis, while describing many initiatives under way to meet these growing dangers, also revealed significant gaps in these efforts. This chapter will distill these findings and highlight the most critical priorities in need of immediate attention by the United States and other concerned nations.

The foremost requirement, which underpins all of the specific recommendations made below, is the need for the United States to alter dramatically its ranking of threats to its national security and to that of its friends and allies. American thinking about nuclear dangers was forged during the tensions of the Cold War confrontation with another nuclear superpower and in the face of the disturbing, though relatively slow, spread of nuclear arms to additional nations. Today, the nuclear threat posed by other nuclear-armed states is being eclipsed by a new type of threat, that of nuclear instruments in the hands of non-state, terrorist organizations. This reality requires a profound change in the way the United States thinks about nuclear policy.

It is fair to conclude that at this point in history, terrorist organizations are the *only* entities that are seeking to rain nuclear destruction on the United States without regard to the potential consequences to them-

selves or to the innumerable innocent victims of such action. Moreover, even in those instances where nuclear assets in the hands of states cause U.S. policy makers deep concern, in virtually all cases the foremost source of their apprehension is not the possibility that the states, themselves, will use these assets against the United States, but that these assets may come into the hands of terrorist groups who are all too eager to do so.

Russia, President Bush has declared, is a partner, not an enemy; it is highly unlikely to use its nuclear capabilities against the United States. Rather, the principal U.S. concern in this setting is that because of poor security terrorists might gain access to Russian nuclear weapons, weapons-usable material, or extremely powerful radioactive sources and use these capabilities against U.S. targets.

Pakistani nuclear weapons and weapons material pose a danger not because Pakistan's current government might threaten the United States. Rather they constitute a grave threat because figures in Pakistan's nuclear or military establishment who are sympathetic to radical Islam may offer nuclear materials or assistance to terrorist organizations espousing an intensely anti-Western ideology—and because a coup or political instability in Pakistan may bring to power radical Islamists, who would inherit Pakistan's nuclear assets and who would be closely tied to terrorist groups.

Iran's acquisition of nuclear arms and of weapons-usable uranium, similarly, is particularly threatening because of the Iranian Revolutionary Government's links to terrorist organizations. Even North Korea, whose long-range nuclear missile program could well threaten the U.S. homeland in the future, is likely to be deterred from ever using such weapons against the United States. North Korea poses a more serious danger to the United States because of its possible sale of nuclear assets to state sponsors of terrorism or to terrorists themselves, who might act independently to wreak destruction in the U.S. homeland.

The new salience of the nuclear terrorist threat must transform the way the United States thinks about and responds to a range of nuclear dangers. During the Cold War, Russia's enormous intercontinental ballistic missile warheads were perceived to pose the gravest danger to the

United States. Today, however, Russia's *smallest* nuclear weapons pose the greatest threat. Deployed in part on Russia's front lines, often under questionable security, and sometimes lacking internal locks to prevent unauthorized use, Russia's tactical nuclear weapons are far more attractive to terrorists than less portable strategic warheads attached to long-range missiles in secure silos or well-protected mobile missile bases.

Similarly, during the Cold War, the knowledge that Russian nuclear-armed missiles could obliterate hundreds of U.S. cities overshadowed the lesser threats of sabotage of U.S. nuclear facilities and the use of radiological weapons. But when terrorism is the leading concern, what were once "lesser included threats" need to be appreciated as significant dangers in their own right. As noted in Chapters 5 and 6, the destruction of a nuclear power plant or the use of a potent RDD could make large areas uninhabitable and cause massive economic dislocation. Although such incidents would cause only a small fraction of the destruction of a single nuclear detonation, if repeated at multiple locations, they could cause widespread panic and, potentially, loss of confidence in the ability of the U.S. government to protect its citizens.

Despite the recognition of the dangers of nuclear terrorism by President Bush and other U.S leaders, numerous U.S. nuclear policies remain mired in the past and are impeding measures to reduce the nuclear terror dangers of today. Thinking about U.S.-Russian nuclear arms control arrangements, for example, requires extensive restructuring to give heightened prominence to the terrorist threat. The 2002 Moscow Treaty, which reduces nuclear deployments of strategic nuclear warheads by two-thirds, for example, will lessen the scale of an increasingly unlikely future nuclear exchange between Washington and Moscow. Its most important and most immediate contribution to U.S. national security, however, will more likely come from a factor that none of the negotiators gave thought to: the fact that the treaty will significantly reduce the number of warheads transported annually to and from Russian deployment sites on vulnerable rail links and through vulnerable rail transfer centers, thereby reducing the number of attractive targets for would-be nuclear terrorists. However, a shortcoming of this treaty is that it does not require any irreversible removal or destruction of nuclear warheads.

Each side is allowed to keep as many strategic nuclear warheads as it wants in storage, potentially raising the risk of terrorist acquisition of any portable strategic warheads kept in reserve.

In contrast, central features of the nonbinding 1991-1992 Presidential Nuclear Initiatives were specifically intended to reduce the proliferation dangers posed by U.S. and Russian tactical nuclear weapons, the weapons most attractive to terrorists. These understandings have led to the complete elimination in both the United States and Russia of certain classes of tactical nuclear weapons and provide that most categories retained in Russia will be placed in central storage, although this undertaking has yet to be fully implemented. If terrorism using nuclear weapons is, indeed, the paramount U.S. national security concern, future U.S.-Russian arms control agreements will need to follow the example of the 1991-1992 initiatives and incorporate measures aimed directly at reducing this danger—such as arrangements for the elimination of nuclear warheads—rather than leaving progress toward nuclear terror dangers to happenstance.

Multilateral arms control measures must also be reevaluated in terms of their potential contribution to reducing the nuclear terror threats. A global Fissile Material Cut-Off Treaty (FMCT), for example, which would prohibit the further production of fissile materials for nuclear weapons, was first envisioned nearly a decade ago as a nonproliferation measure that would cap the fissile material stocks of the nuclear-armed states and, thus, indirectly, the size of their nuclear arsenals. Although this goal is highly worthwhile in itself, today it is clear that such a treaty would serve a second, equally important objective: capping certain classes of fissile material and reducing the number of processing facilities that might be targets of terrorists seeking to develop an improvised nuclear device.[1] This crucially important, but heretofore overlooked, benefit of the treaty should spur the member states of the Conference on Disarmament in Geneva, where the treaty is to be negotiated, to put aside disputes over unrelated issues which have stalled negotiations and to begin this process in earnest.

Numerous additional U.S. nuclear policies of today that are discussed throughout this book and highlighted in the remainder of this chapter

are similarly tied too closely to past thinking and need revision based on the recognition that non-state actors seeking to cause nuclear mayhem represent the paramount threat facing the United States today. Among the policies that need reexamination are U.S. nuclear material security programs that do not give priority to the fissile material of greatest interest to terrorists—that is, highly enriched uranium; U.S. nuclear-weapon-security assistance programs that restrict aid for fear of supporting Russian nuclear weapon deployments and operations; the continued Cold War-era deployments of nuclear weapons in Western Europe; and the failure of any U.S. agency or international organization to champion alternative technologies that could reduce the use of hard-to-secure radioactive sources worldwide.

The United States is not the only state pursuing shortsighted nuclear policies, however. Russia, too, is a potential target of nuclear terror, but despite its growing hard currency reserves and budget surpluses it continues to spend only a pittance on securing its own nuclear resources, leaving the United States to provide the lion's share of the costs of multi-billion-dollar security upgrades.[2] In these circumstances, Russia's support for the recently adopted UN Security Council Resolution 1540, creating a legally binding requirement for all UN member states to provide for the security of their nuclear assets, is somewhat ironic.

Equally out of step with the new realities of international security are the decisions of a number of foreign governments to continue separating weapons-usable plutonium from spent nuclear power plant fuel when they have no practical program for using the separated material—reprocessing without a purpose. Although a number of states have responsibly abandoned this practice, it continues in the United Kingdom, which has no domestic plutonium use program. Japan, similarly, is paying to have civil plutonium separated in Great Britain and France; the separated material continues to accumulate there because domestic opposition, among other factors, has brought Japan's plutonium use program to a virtual standstill. Notwithstanding such reverses, Japan is also completing a massive plutonium separation plant at home. As for Russia, even as it accepts billions of dollars in foreign assistance to improve the protection of its nuclear-weapon-usable materials, it continues to

add to the nuclear terror danger by separating fresh plutonium from spent nuclear power plant fuel, with no current plans for its use.

In sum, virtually the entire spectrum of nuclear policy—including arms control, deployments, threat reduction assistance, civilian nuclear energy, and even medical and industrial uses of potent radioactive sources—needs reshaping in the United States and in many other countries to give full recognition to the paramount dangers of nuclear terrorism. Sadly, there is still far to go before, in each of these policy areas, countering nuclear terrorism becomes an aim point, not an afterthought.

Although such a new strategic vision lags far behind the dramatic shift in the threat environment, as earlier chapters have noted, numerous U.S. and international programs have been initiated to alleviate terrorist threats. The global war on terror has disrupted some terrorist organizations, removed certain safe havens, and interfered with some terrorist financing activities. The United States is also improving port and border detection of illicit trafficking of nuclear and radioactive materials into this country, work that will require years of additional effort to complete. New radiation sensors are being installed around certain cities considered likely terrorist targets, and commercial air travel security has been significantly tightened to reduce the risk that a commercial aircraft might be used as an instrument of a terrorist attack.

During 2004, a number of notable initiatives are likely to strengthen these efforts further. The adoption of Security Council Resolution 1540, noted above, requiring all UN member states to adopt measures to secure their nuclear assets, to adopt effective export controls on WMD material, and to criminalize actions by non-state actors to develop WMD is a major step forward, although its contribution to reducing nuclear terror dangers will be felt only once states fully implement its requirements. The Department of Energy's May 2004 Global Threat Reduction Initiative to sweep up all stocks of U.S. and Soviet/Russian-origin highly enriched uranium at vulnerable research centers around the globe is another signal development. Although this very positive initiative es-

tablished an ambitious and laudable deadline for completion of repatriation of Soviet- and Russian-origin fresh fuel (end of 2005) and for spent fuel (end of 2010), it is far from clear whether the U.S. government has crafted a workable plan with the necessary high-level institutional champions and financial resources to overcome the many bureaucratic obstacles that have long impeded implementation of less ambitious HEU initiatives in the past within both the United States and Russia. Moreover, the deadline for repatriating irradiated fuel containing HEU needs to be significantly shortened. The IAEA's increasing high-level attention to high-consequence nuclear terror threats, observed in new programs and in major addresses by IAEA Director General Mohammed ElBaradei, are also to be applauded. The agency, however, needs to reconcile these very prudent programs and pronouncements with an institutional culture that continues to support the export and use by member states of HEU-fueled reactors.

The benefits from these initiatives, both those directed at countering terrorism and those directed more specifically at protecting nuclear assets, are cumulative and mutually reinforcing, and in time, they will develop into a "defense in depth" that will reduce the overall danger of nuclear terrorism to acceptable levels. In this respect, it is worth reemphasizing that very few terrorist organizations known today have the capabilities to execute the most complex nuclear terror scenarios, those involving the theft of nuclear weapons or materials in the former Soviet Union or South Asia and the subsequent detonation of a nuclear explosive in the United States. Thus, locating and obstructing terrorist groups can have a significant impact on thwarting the gravest nuclear terror dangers, and further enhancements of this and all elements of the layered defense approach to this threat deserve strong support. However, the United States and its international partners can make the most rapid advances by taking specific, urgent actions to secure nuclear weapons, fissile material, nuclear facilities, and high-risk radioactive sources.

The crucial first step, however, is to recognize the preeminence of nuclear terrorism, in all of its manifestations, as the leading national security challenge facing the United States and its friends and allies.

Urgent Priorities

Our fundamental conclusion is that the United States must work immediately to *reduce the probability of nuclear terror acts with the highest consequences and mitigate the consequences of the nuclear terror acts that are the most probable.*

Because terrorist attacks with nuclear explosives would have devastating consequences, urgent and immediate changes are needed in U.S. efforts to secure nuclear weapons and materials abroad. At the same time, because we conclude that terrorism involving radioactive materials is virtually inevitable, it is crucial that the United States prepare now to deal with such an event and its aftermath, even as efforts to control and secure high-risk radioactive sources are intensified. Steady progress must also continue in protecting nuclear facilities against attack or sabotage. With this in mind, we have identified the most urgent practical steps toward these twin objectives, measures that could make a significant difference in the next year to 18 months. Without abandoning other valuable efforts, these need to become the focal point of U.S. and international action in the immediate future—the leading edge of global efforts to reduce the nuclear terror danger.

Reducing the Probability of Nuclear Terrorism with Nuclear Weapons or Improvised Nuclear Devices

We believe the United States must reprioritize its efforts to prevent the terrorist detonation of a nuclear device by dramatically intensifying its focus on three key policies: putting HEU first; reducing nuclear terror risks in South and Central Asia; and securing vulnerable Russian nuclear weapons.

Put HEU First

The United States must dramatically revise U.S. efforts to protect fissile materials abroad so as to make securing, consolidating, and eliminating *highly enriched uranium* the leading and most urgent task, taking clear precedence over addressing the dangers posed by plutonium, which must, nonetheless, remain an important priority. The overarching principle guiding policy should be to move toward a world in which fewer countries retain HEU, fewer facilities within countries possess HEU, and fewer locations within those facilities have HEU present. Specifically, we urge that the following steps be implemented as rapidly as possible.

- *Put HEU at the head of the queue, when securing nuclear materials.* The Department of Energy must establish clear priorities in its extensive Material Protection, Control, and Accounting (MPC&A) program in Russia that unambiguously place sites containing HEU at the top of its list, and it must aggressively pursue the completion of security upgrades at these locations, with the goal of finishing the implementation of "rapid upgrades" within one year.

- *Renew the U.S. initiative to accelerate down-blending of Russian HEU.* The United States should redouble its efforts to accelerate the down-blending of Russian HEU to the non-weapons-usable enrichment level, as recommended by the U.S. National Academy of Sciences. In 2003, the United States gained Russian agreement to increase the down-blending of HEU by 1.5 tons annually, with the resulting low-enriched uranium to be placed in a strategic reserve in the United States. The U.S. Congress refused to fund the initiative, however. The president should make this an urgent priority in the current budget cycle, citing the need to reduce the threat of nuclear terrorism, while also pressing Russia to enlarge further the annual amount

of down-blended HEU. The costs would be modest in the context of the overall budget for material protection, consolidation, and elimination and could be partially recouped at some point in the future when the material might be gradually sold off in a way that did not perturb the commercial low-enriched uranium market.

- *Accelerate repatriation of Soviet/Russian- and-U.S.-origin HEU.* The Department of Energy must implement its new Global Threat Reduction Initiative at an accelerated schedule, especially with respect to HEU in the form of spent fuel. Highest priority should be given to removing HEU from Belarus, Kazakhstan, Ukraine, Uzbekistan, and the former Yugoslavia.[3] Repatriation of all U.S.-origin HEU must be completed well in advance of the current target date, which is 2014. A policy to accomplish these objectives must be informed by an understanding of the significant bureaucratic, technical, economic, political, and national security impediments to HEU consolidation and elimination, and the development of compelling incentives to overcome these obstacles on a site-by-site basis.

- *Accelerate conversion of research reactors.* All civilian research reactors currently reliant on HEU should be converted to use low-enriched uranium fuel. In addition, efforts should be undertaken immediately to adopt legally binding prohibitions on the export of HEU-fueled research (and power) reactors.

- *Encourage Japan to build a strategic low-enriched uranium reserve, using material from Russian HEU, to increase the rate of HEU elimination.* The United States, through the G-8 Global Partnership to Combat the Proliferation of Weapons and Materials of Mass Destruction, should encourage Japan to build a strategic low-enriched uranium reserve composed of material down-blended from Russian weapons HEU, with the goal of increasing significantly beyond current levels the total amount of Russian HEU eliminated annually. Japan has long justified its plutonium separation program on the grounds that it will guarantee that country energy independence by providing a

domestic source of nuclear power plant fuel. The strategic low-enriched uranium would achieve this result far more rapidly. Equally important, it would permit Japan to defer the start-up of the Rokkasho-Mura reprocessing plant and avoid the terrorist risks associated with the accumulation of additional, currently unneeded stocks of plutonium.

- *Use the Mayak Fissile Material Storage Facility to secure HEU.* Simultaneously, the United States should press Russia to place 200 tons of HEU within the high-security Mayak facility, which was designed to accept this quantity of this material, until additional down-blending capabilities are available. If necessary, the United States should pay for the costs of transporting the HEU to the Mayak facility, an expense that would be offset by the reduced costs of securing the material elsewhere, under the MPC&A program,[4] and by the savings from postponing the plutonium disposition program, discussed below.

- *Subordinate the Plutonium Disposition Program to focus diplomatic and financial resources more intensively on HEU.* With the opening of the Mayak Fissile Material Storage Facility, 25 tons of Russian weapons plutonium will be placed in highly secure storage over the next four years, greatly reducing the risk of terrorism involving this material and simultaneously reducing the urgency of the longer-term program to work with Russia to eliminate this material.[5] Accordingly, we recommend that the United States temporarily subordinate the latter program, which has made minimal progress in the face of numerous bureaucratic and technical problems, to efforts to address the HEU danger. Rather than continuing to expend high-level political capital on this initiative with little result, the United States should concentrate its efforts on implementing the next phases of the HEU security, consolidation, and elimination program, which will have a far greater short-term impact in reducing the danger of nuclear terrorism. If new funding for such HEU efforts, to include the costs of transporting HEU to Mayak, cannot be added to the

federal budget, it would be a wise investment to shift monies from the Plutonium Disposition Program for this purpose.

We would also recommend that the premises underlying the Plutonium Disposition Program be carefully reexamined in light of heightened concerns regarding nuclear terrorism. While the long-term goal of eliminating separated weapons plutonium is laudable, the program as currently envisioned entails greatly increased shorter-term risks by removing plutonium from secure storage, introducing it into numerous additional facilities, and transporting it over considerable distances within Russia.

Reduce Nuclear Risks in South and Central Asia

The United States and its allies must recognize that for the moment, the locus of greatest nuclear terror danger is South and Central Asia, a zone where Islamic militant terrorist groups are very active and where the risk of their gaining access to nuclear materials—especially from unreliable elements within the Pakistan establishment or from certain vulnerable sites in Kazakhstan and Uzbekistan—is highest. Accordingly,

- It is of urgent importance to remove the relatively small but nuclear-terrorism- significant quantity of fissile material from Central Asia.

- The United States must implement a strategy of promoting internal and regional stability, while maximizing—consistent with the dictates of the Non-Proliferation Treaty—the sharing of unclassified technology to help Pakistan securely manage its nuclear assets.

- It is also critically important for the United States to develop contingency plans, potentially involving the use of American nuclear recovery teams or specialized military forces, to help secure Pakistani nuclear assets in the event of instability in that country, to ensure that these assets do not fall into the hands of terrorist organizations or their sponsors.

Secure Vulnerable Russian Nuclear Weapons

The last area that must be addressed to reduce the likelihood of highest-consequence nuclear terrorism is securing Russia's most vulnerable nuclear weapons, in particular those tactical nuclear weapons that are forward deployed and portable and that may lack permissive action links.

- Specifically, the United States must encourage Russia to implement fully its pledges under the 1991-1992 Presidential Nuclear Initiatives, including the removal to central storage of all but one category of tactical nuclear weapons. Ideally, all tactical nuclear weapons should be stored at exceptionally secure facilities far from populated regions. In parallel, the United States should declare its intention to return to U.S. territory the small number of air-launched tactical nuclear weapons currently deployed in Europe. Although probably less at risk to terrorist seizure than tactical nuclear weapons forward deployed in Russia, there no longer is a military justification for their presence in Europe. The U.S. action, while valuable in its own right, might be linked to Russian agreement to move its tactical nuclear arms to more secure locations.

- In the meantime, the Bush administration must revamp its current policy prohibiting security assistance for Russian nuclear weapons that are operationally deployed and/or where such assistance might indirectly contribute to Russian nuclear operational capabilities. As President Bush has stressed, the greatest danger to the United States today comes from weapons of mass destruction in the hands of terrorists, not from Russia, which we no longer treat as an enemy. Protecting those sites where tactical nuclear weapons remain against terrorist access must be a priority goal.

Mitigating the Consequences of the Most Likely Nuclear Terror Acts

The use of radioactive materials to cause massive disruption and economic loss is by far the most likely nuclear terror act. Although loss of life and destruction of property would not begin to rival that from a nuclear detonation, the harm caused would be grievous, particularly if radiological attacks were launched in multiple locations. Given the significant quantities of radioactive material currently outside regulatory control around the world, the unambiguous evidence of terrorist interest in using these materials to cause harm, and the ease of carrying out a radiological attack, we believe that such an attack is all but inevitable. Thus, even as the United States pursues measures to reduce the availability of radioactive materials, it should greatly increase its preparations for a radiological terror event through the following measures.

Train Officials and Responders

Federal, state, and local governments need to plan and train extensively to cope with a radiological attack.

- These efforts must include: preparing public communications strategies, readying evacuation plans and escape routes, coordinating the deployment and application of monitoring and detection capabilities, stockpiling and preparing distribution plans for specialized emergency equipment, training first responders and law enforcement/traffic officials to operate in a radioactive environment, and preparing medical facilities to cope with injured individuals contaminated by radioactive materials and those, likely rarer, cases of illness due to radiation exposure.

Develop Decontamination Technologies, Post-Attack Therapies, and a New Consensus on Standards

The most damaging impact from most radiological attacks will be the contamination of property, destroying property values and disrupting employment patterns. If decontamination technologies were available

and rapidly put to use, such impacts could be significantly reduced. Similarly, if therapies were available for purging radioactive materials from the body, short- and long-term health effects from a radiation incident could be minimized. In both of these areas, much research is under way, but much remains to be done. The public must also have confidence in government pronouncements regarding the safety of decontaminated areas if they are to be restored to their prior economic uses.

- Research on and the development of decontamination technologies and post-event therapies must be greatly accelerated. They are the linchpin for meeting the threat of radiological attack because they not only mitigate the consequences of such attacks, but, if widely publicized beforehand, would reduce panic and assist in emergency management. Perhaps even more important, if these technologies are developed, they could reduce the likelihood of such attacks by making them less attractive to terrorists seeking massive disruption of our society.

- No less important is the need to develop workable standards for decontamination that effectively and credibly protect public health, while providing greater flexibility in the continued use of economic resources than would be allowed under current standards. A new consensus on this issue is urgently needed before an actual incident so that the public can be confident that the standards are based on scientific principles, not on expediency in the wake of a terrorist attack.

Control Radioactive Materials

We have emphasized the need to prepare for a radiological attack because we fear that such an attack could occur at any time and is all but inevitable in coming years. Nonetheless, even as we prepare for this eventuality, it is essential to improve controls over radioactive materials so that over time, the likelihood of a radiological attack can be reduced. A comprehensive program requires positive regulation over radioac-

tive materials throughout their "life cycle" —from production, to use, to ultimate disposition. Currently, extensive efforts are under way in the United States, among the G-8 industrialized states (including the European Union), and at the IAEA to establish such comprehensive controls, but major gaps remain. For the near term, the following initiatives can have the greatest impact and deserve the most urgent attention.

- Locate and secure remaining radio-thermal generators in the former Soviet Union, arranging for substitute technologies in remote locations requiring electricity.

- In the United States and within the G-8 (including the EU), impose mandatory physical security and accounting controls over the most dangerous classes of radioactive sources, beginning with the most potent; use U.S.-G-8 regulations as a model to encourage comparable regulations globally.

- Impose rigorous domestic licensing and import and export controls over high-risk radioactive sources that include prelicensing determinations of credentials of end users; use U.S.-G-8 regulations as a model to encourage comparable regulations globally.

- In the United States and within the G-8 (including the EU), develop or accelerate programs to sweep up and store securely unwanted (disused) radioactive sources and provide for their ultimate safe and secure disposition, at interim sites if necessary, until permanent repositories are available. In the United States, fully fund and implement the U.S. Department of Energy Off-Site Source Recovery Program and extend it to all high-risk unwanted sources in this country. Encourage parallel programs globally.

- Actively promote the use of alternative technologies to radioactive sources, where appropriate. Subsidize substitution alternatives in states lacking adequate regulatory controls over radioactive materials.

Ensure that any radioactive sources and related equipment that are displaced by substitution are not introduced into a secondary market that may lead to their acquisition by states with inadequate regulatory controls.

Improve Protection of Nuclear Facilities against Attack or Sabotage

With certain qualifications, U.S. nuclear power plants pose considerable obstacles to successful terrorism leading to a major release of radioactivity. These facilities are built to withstand many physical challenges through the use of containment structures as well as redundant safety systems. The U.S. Nuclear Regulatory Commission required intensified security measures at U.S nuclear power plants after September 11, 2001, and it has gradually formalized these requirements, which, we understand, are adjusted according to the level of terror threat identified by the U.S. Department of Homeland Security. The United States and other Western states are also reported to have enhanced security at other nuclear facilities with large inventories of radioactivity, including plutonium extraction plants and high-level nuclear waste facilities.

Important gaps in this improved security situation remain to be addressed, but we believe that these fixes, while important, do not require the extremely urgent priority that we would attach to our recommendations to improve the security of fissile materials and nuclear weapons and to address the dangers of a radiological attack. In this context, we recommend the following measures be implemented.

- We are not confident that the "design basis threat" adopted by the NRC (or reportedly by other regulatory bodies in other states) fully reflects the magnitude of the September 11 attack—19 motivated and well-trained attackers operating in four separate teams. Accordingly, we believe the United States should increase preparedness to address more demanding threats than incorporated in current regulations. Moreover, similar to the nuclear industry's preparation for beyond design-basis accidents, the NRC and the nuclear industry must expedite preparedness for beyond design-basis attacks or sabotage of nuclear facilities.

- Certain vital nuclear safety systems, such as reactor control rooms and some types of spent fuel pools, are potentially vulnerable to attack from the air or from stand-off weapons because they are outside of nuclear power plant containments. A variety of cost-effective measures for hardening these plant elements have been proposed; these should be evaluated on an urgent basis and steps taken rapidly to mitigate these potential vulnerabilities. The United States should also encourage Great Britain and Russia to maintain high security at nuclear power plants without containments.

- The NRC currently is too dependent on a compliance-based approach for evaluating nuclear power plant security. It must implement a performance-based system of evaluation in which design basis threats are continually tested.

- Research reactors, though containing only a fraction of the radiation inventory of a nuclear power plant, are often located in urban settings. Many of the low-power research reactors do not use containment buildings, and even the high-power research reactors that do, have much weaker containment structures than found at commercial power plants. A formal U.S. government assessment of the risks posed by these facilities and of any measures needed to secure them against attack or sabotage is urgently needed.

Educate the Public

One of the most dangerous elements of a radiological attack is the panic that it can spur, which would likely lead to more immediate casualties than the ionizing radiation itself triggered by the attack.

- It is imperative that the public be *psychologically immunized* against the radiological attack threat, through an extensive public education campaign that leads citizens to understand (1) that such attacks rarely pose immediate threats to life, (2) that the decision to shelter or flee will depend on the circumstances of the event and that minimizing risk to personal health will depend on rapidly receiving and

adhering to guidance from governmental authorities, and (3) that proper treatment can greatly reduce long-term health effects in many cases.

Sustaining the Effort

The action plan enumerated above provides a blueprint for significantly reducing the most salient risks stemming from the four faces of nuclear terrorism. However, neither these urgent steps nor the more comprehensive measures listed in previous chapters will eliminate these risks completely. The dangers of nuclear terrorism will continue to confront the United States and other nations as long as nuclear weapons, weapons-useable nuclear material, and high-risk radioactive sources continue to exist. Recognizing this, the United States allies must develop a sustained defense-in-depth against nuclear terrorism. At the global level, states and international organizations must consistently weigh the risks of nuclear terrorism in making decisions on the development and use of nuclear assets and radioactive materials. At the national level, deployment patterns and storage arrangements for nuclear weapons, decisions to produce nuclear weapons materials for civilian purposes, choices regarding nuclear power plant designs, and decisions to use radioactive sources or substitutes, must all take the risk of nuclear terrorism into account.

Nuclear weapons offer terrorists the ultimate means of inflicting mass destruction. A combined strategy of enhanced intelligence, disruption of terrorist organizations, protection of nuclear weapons and material, and emergency preparedness is required to combat this threat. The United States and its allies must therefore give high priority to a coordinated and sustained effort to reduce the risks of nuclear terrorism as an essential element of the worldwide struggle against terror.

[1] Under the FMCT, as many now envision it, states would be required to place under IAEA inspection any fissile material they produce to ensure it will not be used for nuclear weapons; fissile material production under such IAEA safeguards for peaceful purposes could continue. With one important use for fissile materials eliminated, it is assumed that total stocks would grow at a slower rate than would otherwise be the case and, presumably, certain production facilities would be closed, reducing potential terrorist targets. It may be noted,

however, that in a number of countries, the treaty, as a practical matter, might end the production of certain forms of particularly dangerous fissile material altogether—for example, weapons-grade HEU and weapons-grade plutonium. HEU enriched to lower levels and reactor-grade plutonium would present added challenges to terrorists seeking to use them for improvised nuclear devices.

[2] Matthew Bunn and Anthony Wier, *Securing the Bomb: An Agenda for Action*, Project on Managing the Atom, Harvard University, Report Commissioned by the Nuclear Threat Initiative, May 2004.

[3] Although nearly 50kg of fresh HEU fuel was removed from Vinca (outside of Belgrade) in 2002, a large quantity of equally dangerous HEU in spent fuel remains on site.

[4] It may be noted that much of the HEU in question appears to be located currently at highly classified Russian sites where the United States has had difficulty gaining access and implementing MPC&A measures. The Mayak option would have the added benefit of removing the HEU from locations where security is of uncertain quality to one where it is known to be very high.

[5] The Mayak facility would hold 25 tons of the 34 intended for ultimate disposition and could be expanded to hold additional quantities if Russia chose to make them available.

The Testimony of Baker Spring

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The Heritage Foundation

On

International Smuggling Networks:
Weapons of Mass Destruction Counterproliferation Initiatives

Before

The Senate Subcommittee on Financial Management,
the Budget, and International Security

June 23, 2004

Mr. Chairman, it is an honor to have the opportunity to testify before this distinguished Subcommittee on the networks smuggling weapons and weapons technology and the Bush Administration's efforts to combat this source of proliferation.

For the benefit of the Subcommittee, I would first like to describe for you The Heritage Foundation. The Heritage Foundation is a public policy, research, and educational organization operating under Section 501(C)(3). It is privately supported, and receives no funds from any government at any level, nor does it perform any government or other contract work.

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Mr. Chairman, the policy of the United States for combating the proliferation of weapons of mass destruction has rested on four pillars. These four pillars are: 1) deterring attacks on the U.S. and its friends and allies with weapons of mass destruction; 2) maintaining the ability to defend against such attacks; 3) preemptive attacks against those that would threaten the U.S. and its friends and allies with weapons of mass destruction and against whatever capabilities they may possess; and 4) arms control, which is designed to limit the access of hostile forces to these kinds of weapons and their delivery systems.

This four-part policy remains the foundation of the U.S. effort for combating proliferation, despite the fact that those who seek to threaten the U.S. and its allies are a different cast of characters from those of the Cold War era and their capabilities differ. Two significant differences are that rogue states and terrorist organizations are now at the forefront of those that threaten the U.S. and they support and are supported by a shadowy network of traffickers in weapons and weapons technology. The trick is to fashion these four essential tools into a coherent policy for combating proliferation that is properly suited to countering the capabilities that either are now or in the future could be in the hands of such rogue states and terrorist groups.

The Bush Administration is pursuing a number of specific initiatives to attack the proliferation threat posed by international networks that traffic in weapons of mass destruction and weapons technology by interdicting relevant shipments in transit. These include the Proliferation Security Initiative (PSI), the Container Security Initiative (CSI), the Customs Trade Partnership Against Terrorism (C-TPAT), and the initiative under the International Ship and Port Security (ISPS) program. Among these, however, the PSI is the initiative most directly related to countering proliferation, as opposed to preventing attack or providing for homeland security. Thus, I will focus my remarks on the PSI.

The PSI seeks to coordinate the actions of individual states in interdicting shipments of weapons, weapons components, and weapons production equipment. Experts have defined the PSI as a counterproliferation activity. I see it more as an arms control activity, albeit an aggressive one, because it is designed to keep weapons out of the hands of hostile actors more than a means to deter, defend against or preempt attacks with weapons of mass destruction.

By spearheading PSI, the Bush Administration has taken a major step toward balancing international and national authority in controlling weapons proliferation. This approach allows each participating state to make a contribution toward interdicting relevant shipments in a way that is consistent with its national laws and policies. By sidestepping the "least-common-denominator" approach for establishing international non-proliferation policy that is inherent in the consensus-based decision-making process of an international treaty regime, the PSI has already demonstrated that it will make a powerful contribution toward stemming proliferation.

As a means of hindering proliferation, multilateral arms control has become too dependent on a treaty regime managed by cumbersome international bureaucracies. This dependency weakens the critical effort to control the proliferation of biological, chemical, and nuclear weapons and their delivery systems by depriving it of needed flexibility and access to a wider variety of tools. Augmenting the treaty regime and its institutions--e.g., the Biological Weapons Convention (BWC), the Chemical Weapons Convention (CWC), the Comprehensive Test Ban Treaty (CTBT), the Nuclear Non-Proliferation Treaty (NPT), the Organization for the Prohibition of Chemical Weapons (OPCW), and the International Atomic Energy Agency (IAEA) -- necessarily depends on encouraging individual states to exercise their sovereign authority to control proliferation.

Non-proliferation should not remain an effort in which centralized international authorities seek to override state sovereignty. Rather, the international treaty regime should share with national authorities the responsibility for addressing proliferation.

THE RISE OF THE PSI

President George W. Bush proposed the PSI, in general terms, in Poland at the Group of 8 (G-8) summit on May 31, 2003. Specifically, the President stated:

> And I call on America's G-8 partners to follow through on their financial commitments so that we can stop proliferation at one of its sources. When weapons of mass destruction or their components are in transit, we must have the means and authority to seize them. So today I announce a new effort to fight proliferation called the Proliferation Security Initiative. The United States and a number of our close allies, including Poland, have begun working on new agreements to search planes and ships carrying suspect cargo and to seize illegal weapons or missile technologies. Over time, we will extend this partnership as broadly as possible to keep the

world's most destructive weapons away from our shores and out of the hands of our common enemies.

The first follow-up meeting of the core group of PSI nations was in Madrid, Spain, on June 15, 2003. At this meeting, the participating states agreed to an initiative describing the strategies for intercepting suspicious cargoes, including those that might include chemical, biological, or nuclear weapons or missiles, as well as missile components.

The second meeting was on July 9-10, 2003, in Brisbane, Australia. This meeting focused on establishing the most effective modalities for interdiction activities. The conference found that information sharing among participating states is essential to effective interdiction. The Brisbane conference also supported steps for strengthening domestic non-proliferation laws in participating states, including enhanced export controls.

The third meeting of core PSI participants, in Paris, France, on September 4, 2003, was perhaps the most important. At this meeting, the principles governing the PSI were established. The 11 states agreed to four principles, which call on all states concerned about proliferation to:

1. Take steps to interdict the transfer or transport of weapons of mass destruction (WMD), their delivery systems, and related systems to and from states and non-state actors of "proliferation concern";
2. Adopt streamlined procedures for rapid exchange of information regarding suspected proliferation activity;

3. Strengthen both national legal authorities and relevant international law to support PSI commitments; and
4. Take specific actions to support interdiction of cargoes of WMD, delivery systems, and related materials consistent with national and international laws--including not transporting such cargoes, boarding and searching vessels flying their flags that are reasonably suspected of carrying such cargoes, allowing authorities from other states to stop and search vessels in international waters, interdicting aircraft transiting their airspace that are suspected of carrying prohibited cargoes, and inspecting all types of transportation vehicles using ports, airfields, or other facilities for the transshipment of prohibited cargoes.

The fourth PSI meeting was in London, England, on October 9-10, 2003, and focused on broadening international support for the PSI principles adopted at the Paris meeting. Identifying the PSI as an inclusive global initiative, participants stated that over 50 countries had expressed support for the principles by the time of the London meeting.

The final PSI meeting of 2003 was an experts-level meeting in Washington, D.C., on December 16-17. The focus of this meeting was on how to conduct interdiction operations. In addition to the original participating states, representatives from Canada, Denmark, Norway, Singapore, and Turkey attended this meeting. Further, Deputy Secretary of Defense Paul Wolfowitz committed the U.S. Department of Defense "to making interdiction [under the PSI] an essential mission for [the U.S.] military."

The first PSI meeting of 2004 took place in Lisbon, Portugal, on March 4 and 5. Among the accomplishments at this meeting was a decision to prevent the facilitators of the proliferation of weapons of mass destruction, including individual traders and

companies, from engaging in this kind of weapons trade. PSI participants pledged to continue their efforts to broaden international support for the initiative.

The most recent PSI meeting took place in Krakow, Poland, on May 31st and June 1st. This meeting, which marked the first anniversary of the PSI, brought together representatives from over 60 governments worldwide to coordinate their efforts to counter shipments of weapons of mass destruction and supporting technologies.

EXERCISES AND INTERDICTIONS

While planning and organizing the PSI, the participating states are also undertaking a series of training exercises and interdiction operations. These activities demonstrate that the PSI is not just a series of meetings: It is resulting in concrete actions to stem the flow of dangerous materials and equipment to those states and non-state actors that wish to obtain biological, chemical, nuclear, and radiological weapons and the missiles to deliver them.

Exercises

PSI nations have undertaken a number of training exercises since the adoption of the interdiction principles in September 2003. Among these are:

1. An Australian-led maritime interdiction training exercise in the Coral Sea in September 2003;
2. A British-led air interdiction command post exercise in London in October 2003;
3. An October 2003 maritime interdiction training exercise in the Mediterranean Sea, led by Spain;

4. A November 2003 maritime interdiction training exercise in the Mediterranean Sea, led by France;
5. A January 2004 maritime interdiction training exercise in the Arabian Sea, led by the U.S.; and
6. An Italian-led air interception training exercise in February 2004.

Interdiction Activities

Despite the fact that the PSI is only a little more than a year old, the participating states have already undertaken interdiction operations. Bush Administration officials have stated, however, that these operations will be announced or discussed in public in only a few cases. The speed of the response signals one of the core strengths of the PSI: the demonstrated ability to bring to bear the existing assets and capabilities of member states without the exhausting and time-consuming effort of building a large international bureaucracy.

An important, publicly announced case concerned an attempt to ship centrifuges for producing nuclear weapons material to Libya. President Bush described the interdiction in a February 11, 2004, speech on countering the threat of weapons of mass destruction. According to President Bush, U.S. and British intelligence identified the shipment as the products of a Malaysian facility and tracked its initial delivery to Dubai. There, the equipment was transferred to a German-owned ship, the BBC China. After the BBC China passed through the Suez Canal, German and Italian authorities stopped the ship and unveiled the clandestine cargo of centrifuge parts.

In December 2003, Libya announced its intention to terminate its nuclear and chemical weapons programs and forgo a biological weapons program. While it cannot be

proven, it is reasonable to assume that the interdiction contributed to Libya's decision, since U.S. and British officials confronted Libyan officials regarding the interdiction prior to the announcement.

PUTTING THE PSI IN PERSPECTIVE: GUIDELINES FOR THE FUTURE

Given the early indications of success under the PSI, the U.S. and other participating states should use it as a basis for continuing to expand the tools for combating proliferation. In reality, the PSI represents a new approach to arms control: an approach designed not to replace the existing treaty-based regime, but to augment it by expanding the arms control effort. Given the current context, the ongoing effort to build and strengthen the PSI should be directed according to the following guidelines:

Guideline #1: Foster healthy competition with the institutions of the treaty-based non-proliferation regime. The treaty-based international non-proliferation regime should not have monopolistic powers. With few exceptions, this regime has dominated the world of arms control in the area of non-proliferation. As a result, it exhibits the classic weaknesses associated with any monopoly. It is large, slow, complacent, and lacking in creativity. It is easily distracted and drawn into matters tangential to its primary purpose. The bureaucracies that manage the regime seem more interested in self-protection and perpetuation than in meeting new demands.

The following are just some of the shortcomings that have surfaced with the treaty-based regime and its affiliated bureaucracies over the years:

- Debate over the NPT has become more focused on the tangential issue of "general and complete disarmament" than on the object and purpose of the treaty, which is stemming the spread of nuclear weapons.
- The BWC is inherently unverifiable. Nevertheless, considerable effort was put into the unachievable goal of crafting a verification protocol to the treaty. Predictably, this effort failed in July 2001.
- The CWC is unenforceable. The result is that significant chemical arsenals will remain intact for the foreseeable future, despite the treaty's assertion that it will "exclude completely the possibility of the use of chemical weapons." The CWC represents a wet blanket for creative efforts to address the enduring chemical weapons threat.
- The CTBT will not be brought into force, but this fact has had little impact on those pursuing a futile effort to find a magic formula for bringing it into force. As a result, the CTBT has become yet another distraction in the effort to stem nuclear proliferation.
- The OPCW Director General was dismissed for mismanagement in 2002.
- The IAEA underestimated the scope of the Iraqi nuclear weapons program in the late 1980s and early 1990s.

Clearly, the international treaty-based regime for combating proliferation could use some healthy competition. Thus, the PSI should not be pursued as a replacement for the treaty-based regime but as a supplement. Under Secretary of State John Bolton has confirmed the U.S. government's intention to participate in the PSI on this basis.

In essence, the PSI--and any additional non-proliferation initiatives or activities of a similar nature--should serve as a force to counter the monopolistic behavior present in the treaty-based regime. In effect, they should represent new entrepreneurial players in the non-proliferation arms control market. Institutions such as the NPT, the CWC, the IAEA, and the OPCW should be forced to compete.

Guideline #2: Resist the temptation to build cumbersome international bureaucracies. Under Secretary of State John Bolton has noted on several occasions that the PSI is "an activity rather than an organization." This is appropriate. As noted earlier, the PSI has resulted in a series of substantive exercises and actual interdiction operations, despite commencing less than a year ago. This has been possible because the member states are focused on their interdiction activities and not on building a bureaucracy. The OPCW, by comparison, is seven years old and, by its own account, has been focused on building an international bureaucracy. The OPCW Web site boasts that the organization has 158 member countries (as of the end of 2003) and a staff of 500 people from 66 countries, communicates in six different languages, spends about 60 million euros annually, and forces "big, rich countries" to finance the majority of its operations while "some smaller and/or poorer countries pay as little as one thousandth of one percent of the budget." Clearly, the OPCW leadership is not focused on fashioning a "lean and mean" organization that is results-oriented.

As the PSI matures, however, pressure to "institutionalize" will likely grow. This pressure should be resisted. Building an international bureaucracy will only distract PSI participating states from performing the essential function of interdicting weapons-related

shipments. The same bias against institutionalization should be applied to any future PSI-related companion initiatives.

Guideline #3: Harness the power of sovereign states. Harnessing the power of sovereign states would make contributions to controlling proliferation that the international treaty-based regime cannot match. The PSI is completely dependent on the determination and assets of its participating states to interdict weapons-related shipments. This is a source of strength, not weakness. This approach, along with a relatively select membership, allows the PSI to avoid the least-common-denominator decision-making process associated with the treaty-based non-proliferation regime. It also allows the PSI to take advantage of the capabilities of its participating states.

The comparison with the CWC is useful. As noted earlier, as of the end of 2003, the OPCW had 158 member countries in its Conference of State Parties. Article VIII of the CWC directs that decisions by the Conference of State Parties on substantive matters should, if at all possible, be by consensus. At a minimum, such decisions require a two-thirds majority of the member states present and voting. Needless to say, a bias toward consensus among 158 countries--including countries determined to cheat on their non-proliferation obligations--is not a formula for efficient decision-making.

Further, the CWC established the OPCW. The OPCW was built from scratch with in-house capabilities and designed to be at arms length from the governments of the member countries. This effectively made the OPCW a separate power center--opposite the member countries and their governments--and blocked its access to most contributions that the governments might otherwise make toward fulfilling the CWC's purpose.

The PSI is currently designed to take advantage of the capabilities of its participating countries and avoid creating a separate power center. By harnessing these capabilities--as opposed to striking a pose of neutrality among the participating states--the PSI enables rapid-fire decisions and will have an impact on stemming proliferation that far outstrips the modest size of its membership.

Former Secretary of State George Shultz spoke of the importance of the nation-state system in February in a speech at the Library of Congress. His words should help guide the PSI. He stated:

> First and foremost, we must shore up the state system. The world has worked for three centuries with the sovereign state as the basic operating entity, presumably accountable to its citizens and responsible for their well-being. In this system, states also interact with each other to accomplish ends that transcend their borders. They create international organizations to serve their ends, not govern them.

Guideline #4: Avoid *quid pro quo* deals that compromise the mission. The PSI is keenly focused on interdiction activities. Likewise, the designers of the initiative have avoided adopting competing priorities within the initiative. This is a wise choice. Adopting competing priorities would necessarily dilute the purpose of the PSI and lessen its effectiveness.

By contrast, the desultory treaty-based non-proliferation regime is defined by competing priorities that are a direct result of *quid pro quo* deals codified by the treaties themselves. For example, the NPT codifies a deal between nuclear supplier states and non-weapons states. The deal commits the supplier states to support peaceful nuclear programs in the non-weapons states, and the non-weapons states commit to forgo nuclear weapons.

The problem is that a non-weapons state like Iran can use the international commitment to support its peaceful activities both to facilitate and to shield from public view an illegal nuclear weapons development and acquisition program. President Bush spoke of this shortcoming in his February 11 speech: "These [proliferating] regimes are allowed to produce nuclear material that can be used to build bombs under the cover of civilian nuclear programs."

This is not to say that *quid pro quo* arrangements such as those in the NPT are always a bad choice, but to recognize that such arrangements are a source of weakness in the agreements and treaties that use them. It is essential to recognize, as well, that is a weakness that need not apply to all non-proliferation agreements and initiatives. The founders of the PSI have avoided resorting to these kinds of arrangements, and the PSI is stronger for it.

BUILDING ON A GOOD IDEA

Consistent with the guidelines outlined above, Members of Congress could make five specific recommendations to the Bush Administration regarding the PSI and its broader policy for using arms control to combat proliferation. These recommendations would assist in strengthening the PSI and expanding the concept to other areas through similar initiatives.

None of these recommendations are legislative. Embedding the PSI in domestic law would likely undermine the responsiveness of the initiative in fulfilling its defined responsibilities for stemming proliferation. Rather, these are recommendations that

individual Members of Congress could suggest to the Bush Administration in private meetings or public hearings.

Recommendation #1: Focus on cracking down on domestic sources of proliferation within PSI member states uncovered in the Khan investigation. Recent press accounts indicate that in several instances, European sources supplied nuclear weapons production components to Abdul Qadeer Khan's nuclear black market operation. One account charges that Peter Griffin, a British citizen living in France, was a middleman in a project to make centrifuge components in Libya. The article goes on to say that machines for this project came from Spain and Italy. France, Italy, Spain and the United Kingdom are all PSI countries.

Whether or not the specific charges are true, the successful penetration of the Khan nuclear black market network is clearly providing numerous leads to the original sources of nuclear weapons production components. Further, it appears that in a number of cases PSI states are the sources of these components. Members of Congress should press the Bush Administration to obtain a commitment from all PSI states that they will work aggressively to follow the leads resulting from the penetration of the Khan network and work to shut down any supplier operations within their borders.

While this recommendation would expand the mandate of the PSI beyond interdiction, this is a limited expansion and will not serve to distract the PSI from its central mission. President Bush has already called on PSI states to cooperate in the area of law enforcement. Further, the United Nations Security Council adopted a resolution on April 28th that directs member states to "adopt and enforce appropriate effective laws

which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery…."

Recommendation #2: Forswear any international employees under the initiative. PSI countries should not succumb to the temptation to build the PSI into an international bureaucracy. Such a step would only duplicate a significant weakness in the existing treaty-based non-proliferation arms control regime.

One way to reduce the likelihood of this mistake is for PSI member states to issue a declaration that the PSI will not hire staff. Rather, the declaration should state that the participating governments should provide the manpower required to support PSI activities and that these individuals will remain employees of those governments. Members of Congress should recommend that the Bush Administration propose such a declaration to other PSI countries.

Recommendation #3: Establish companion initiatives for dismantling weapons programs and verifying their destruction. The interdiction activities of the PSI are an essential part of an effective non-proliferation regime. Two other areas of an effective non-proliferation regime deserve similar initiatives: dismantlement of weapons programs and verification.

The PSI's core mandate is interdiction. As indicated earlier, expanding that limited mandate to cover law enforcement activities is appropriate. However, a further expansion of the PSI would only distract the initiative from its central mission and undermine its effectiveness. The better alternative is to pursue dismantlement and verification as separate initiatives.

The need for initiatives on dismantlement and verification occurs in the context of special agreements with would-be proliferating countries to abandon their weapons programs. Libya, for example, has recently made such a commitment. It is even possible, although unlikely, that North Korea could sign an agreement to dismantle its weapons programs as well. As a result, the U.S. could spearhead the creation of a Weapons Program Dismantlement Initiative (WDI) and a Non-Proliferation Verification Initiative (NPVI).

- In a WDI, participating states would contribute teams of experts to assist in the dismantlement process. These experts, however, would remain employees of the participating governments, insofar as a WDI, like the PSI, would remain "an activity rather than an organization."
- In an NPVI, the same concept would have participating states create teams to verify completion of the destruction process and certify that no new weapons programs emerge in the applicable states. This approach is consistent with Guideline #2 and Guideline #3 for directing the PSI and similar initiatives.

Without such initiatives, the temptation will be to turn destruction and verification responsibilities over to the international bureaucracies associated with the treaty-based regime. As noted in Guideline #1, these bureaucracies should not be given monopolistic control over non-proliferation activities.

In this regard, it is interesting to note that the U.S. and the United Kingdom are working with the IAEA and the OPCW to dismantle Libya's weapons programs. They did

not just turn over responsibility for the destruction program to the IAEA and the OPCW. Using the team approach would be entirely appropriate in future cases.

Recommendation #4: Propose a fifth principle for the PSI on the provision of dual-use systems and components. This additional principle would commit participating states not to interdict shipments to would-be proliferating state of dual-use systems that could reasonably be assumed to provide a weapon production capability, even if they are ostensibly for peaceful purposes. Adopting this principle would signal that PSI countries would resist the kind of *quid pro quo* deal that weakens the nuclear non-proliferation regime, as described in Guideline #4.

The PSI should seek to raise the standards for non-proliferation and not just settle for improving operating procedures under the existing standards. Under current practice, non-nuclear NPT states, for example, are effectively entitled to a wide variety of dual-use nuclear equipment to support ostensibly peaceful nuclear programs. Much of this can be used in the production of nuclear weapons. Just because a non-nuclear state wants dual-use equipment, however, does not mean that it should get the equipment in every instance.

President Bush recognized this when he announced in his February 11 speech that he is seeking future restrictions on the transfer of enrichment and reprocessing equipment. As a result, it is entirely appropriate that the PSI countries agree to a principle that calls for blocking the transfer of dual-use equipment and components to any would-be proliferating country. Congress should recommend that the Bush Administration seek adoption of this new principle at a future meeting of PSI countries.

Recommendation #5: Use PSI partners to encourage outside support for PSI on a regional basis. PSI participants are seeking the support of other states for the initiative. As of October 2003, some 50 countries had expressed support for the PSI. Several weeks later, Under Secretary of State John Bolton told the Arms Control Association that outside support for the initiative was continuing to grow.

One of the reasons behind the momentum for outside support of the PSI is that Japan hosted a meeting of Asian nations to inform them about the initiative and ask for their support. This kind of regional approach to spreading support for the PSI should continue to pay dividends. Congress could suggest to the Bush Administration and other PSI governments that they host similar regional meetings.

Today's security requirements call for a system of international cooperation that is more flexible than the system used during the Cold War. This new system has been called "coalitions of the willing." While this term is used more commonly in the context of cooperation in defense activities and military operations, it is equally appropriate to describe a new system for arms control cooperation.

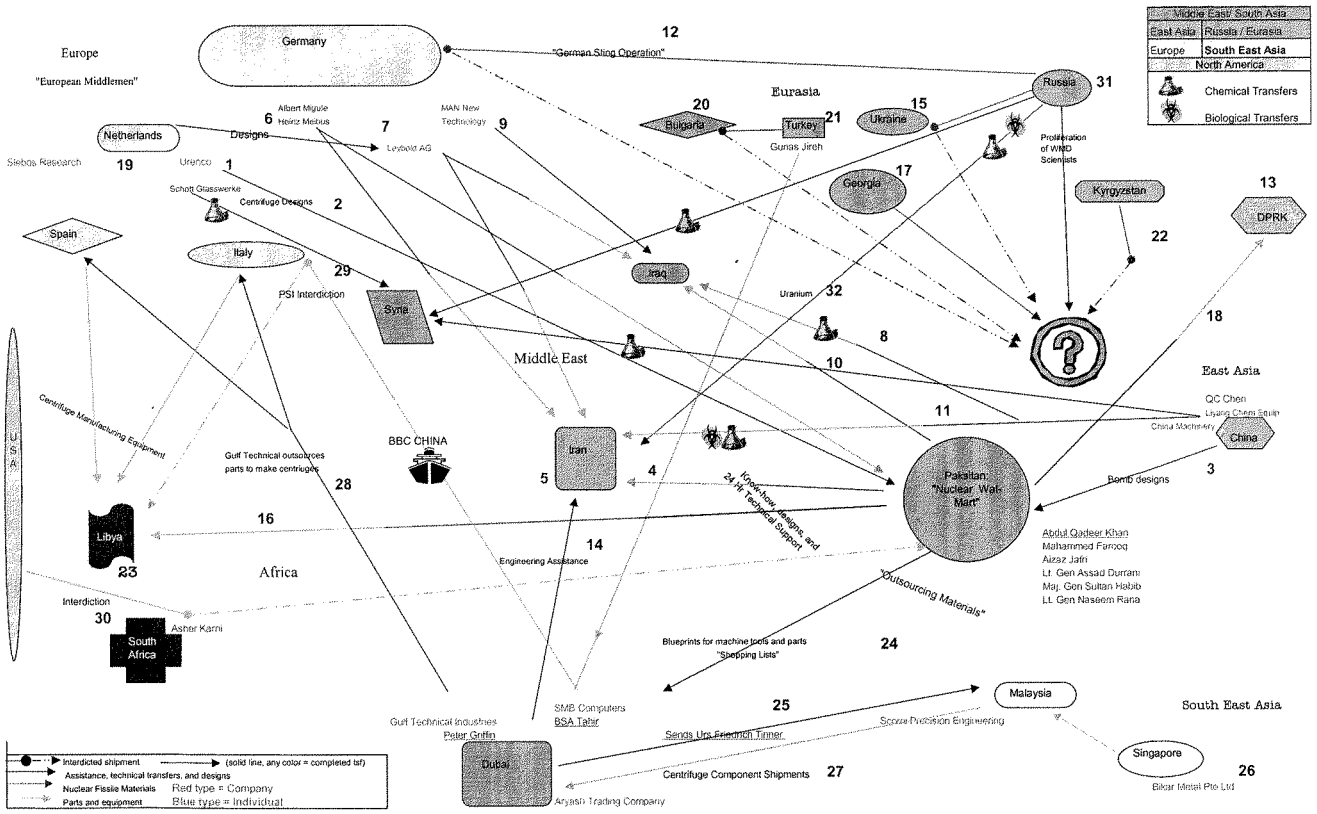
CONCLUSION

Mr. Chairman, the nation-state remains the primary component of the international system. The extent to which the international non-proliferation effort fails to account for this fact is the extent to which the effort is weakened. The PSI works within the structure of the nation-state system. It reinforces national sovereignty rather than weakening sovereignty by vesting enforcement authority in some supranational body like

the United Nations. As a result, it strengthens the forces for non-proliferation worldwide by harnessing the strengths of the nation-state system.

Further, today's world is more complex and less predictable than during the Cold War. As a result, rigidly structured international coalitions cannot effectively respond to the rapid pace of threatening developments. The appropriate response is to create less formal and more loosely structured international coalitions that are more responsive and adaptive. This is the case with arms control as well as with military operations. The PSI shows how the "coalitions-of-the-willing" concept can be applied to arms control and non-proliferation.

The attacks of September 11, 2001, Mr. Chairman, serve as a warning to civilized nations of the intolerable risks associated with the unchecked proliferation of biological, chemical, and nuclear weapons and the missiles to deliver them. While arms control is only one of several tools for combating proliferation, it is an essential one. If arms control is left completely in the hands of ineffective and unaccountable international bureaucracies, this essential tool of non-proliferation will atrophy. The PSI serves to ensure that such an unfortunate outcome is not the result.


Middle East/ South Asia
East Asia
Russia / Eurasia
Europe
South East Asia
North America
Chemical Transfers
Biological Transfers
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Netherlands
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Siebas Research
Urenco
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Albert Migule
Heinz Miebus
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Designs
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Leybold AG
MAN New Technology
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Schott Glasswerke
Centrifuge Designs
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Spain
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PSI Interdiction
Syria
Bulgaria
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Turkey
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Gunas Jireh
Ukraine
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Georgia
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Proliferation of WMD Scientists
Kyrgyzstan
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DPRK
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Iraq
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China Machinery
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Centrifuge Manufacturing Equipment
Gulf Technical outsources parts to make centrifuges
28
BBC CHINA
Iran
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Know-how, designs, and 24 hr Technical Support
Pakistan: "Nuclear Wal-Mart"
Bomb designs
Abdul Qadeer Khan
Mohammed Farooq
Aizaz Jafri
Lt. Gen Assad Durrani
Maj. Gen Sultan Habib
Lt. Gen Naseem Rana
Libya
23
16
Africa
14
Engineering Assistance
"Outsourcing Materials"
Interdiction
30
Ashar Karni
South Africa
Blueprints for machine tools and parts
"Shopping Lists"
24
Malaysia
South East Asia
25
SMB Computers
BSA Tahir
Gulf Technical Industries
Peter Griffin
Sends Urs Friedrich Tinner
Scope Precision Engineering
Dubai
Aryash Trading Company
Centrifuge Component Shipments
27
Singapore
26
Bikar Metal Pte Ltd
Interdicted shipment
(solid line, any color = completed tsf)
Assistance, technical transfers, and designs
Nuclear Fissile Materials
Parts and equipment
Red type = Company
Blue type = Individual

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Peter G. Fitzgerald (#1)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

Given the importance of the PSI to U.S. counterproliferation policy, how can we be assured that PSI activities are receiving adequate resources and are not diverting personnel or funds away from other important activities?

Answer:

The Department of State's Bureau of Nonproliferation is responsible for numerous high priority issues, including the PSI. It is a testament to the managers, staff, and executive offices supporting the Bureau that we successfully support numerous high priority issues effectively with available personnel and funding. The State Department is responsible for developing PSI policy and supporting diplomatic aspects of the initiative. There is no other funding "requirement" for Department efforts.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Peter G. Fitzgerald (#2)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

One of the benefits of the PSI is its ability to deter states or non-state actors from engaging in the trade of weapons of mass destruction of other sensitive items for fear of being caught. I understand, however, that there is a reluctance to publicize PSI successes.

A. Would you please discuss the reasons for this reluctance to inform the international public of PSI successes?

B. If successful PSI activities are not disclosed, how will this affect the Initiative's ability to deter would-be proliferators from engaging in the trade of weapons of mass destruction?

Answer:

The reluctance to publicize PSI successes stems from the importance of protecting intelligence sources and methods, which are frequently the basis for PSI activity. When a PSI action has occurred where making it public will not compromise critical sources and methods, we do so without hesitation. The publicized account of the BBC China interdiction is a good example of this approach. The PSI is not suffering because we are not able to make public the instances where cooperation between or among states is

taking place to stop shipments of WMD, their delivery systems, or related materials. Those entities or states that have had their shipments stopped or interrupted know clearly the actions that have been taken; it is not necessary to publicize actions. Moreover, we do not discount the deterrent value of the very existence of the PSI on would-be proliferators; regardless of an accounting of how many interdictions have occurred, the fact that PSI exists means that states and non-state actors are having to think twice before shipping items of PSI concern, since they cannot be certain that their shipment will arrive at its intended destination.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Mark Fitzgerald (3a)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

Would you please discuss the DMI and how it will improve current counterproliferation efforts?

Answer:

The Dangerous Materials Initiative (DMI) responds to President Bush's February 11 call to strengthen efforts to stop the spread of weapons of mass destruction. The DMI improves U.S. counterproliferation efforts by identifying and filling gaps in U.S. nonproliferation assistance and helping focus executive branch attention on urgent priorities, especially in the areas of export control enforcement and biosecurity.

DMI aims to develop bilateral technical assistance projects to help other countries enact and enforce strict export controls over dangerous materials, secure these materials within their borders, and expand nonproliferation efforts beyond the Former Soviet Union (FSU). The State Department's Nonproliferation Bureau leads, funds and manages this effort

through the Bureau's Nonproliferation and Disarmament Fund (NDF). To date, DMI has contributed to the disarmament of Libya, initiated the redirection of Iraqi weapons scientists to civilian work, and reinforced biosecurity efforts in Central Asia. On the horizon, recently approved DMI projects will help develop international WHO guidelines to secure dangerous pathogens, strengthen export control enforcement in Asia, and continue the effort to rid Libya of WMD programs.

DMI will continue to "think outside the box" in the area of nonproliferation assistance and ensure that new projects track closely with evolving nonproliferation policy objectives.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Peter Fitzgerald (#3b)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

Will the DMI coordinate with the PSI? (i.e., Will any information gathered through the DMI be shared with the PSI?)

Answer:

The DMI is a bilateral technical assistance effort, aimed at helping other countries develop the capacity to control dangerous materials within their borders. In contrast, PSI is an international, global effort aimed at stopping shipments of weapons of mass destruction (WMD), their delivery systems, and related materials. PSI also aims to identify proliferation facilitators, shut them down and bring those involved to justice. DMI technical assistance projects are not intended to function as conduits for information to support PSI activities. However, DMI is helping to develop national capacity to track and control dangerous materials and will serve PSI goals by strengthening governments' ability to prevent illicit shipments from transiting their national borders.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Peter G. Fitzgerald (#3c)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

Is the State Department considering other initiatives to improve U.S. counterproliferation activities?

Answer:

On February 11, the President made a speech at National Defense University in which he called for improving the architecture of our key nonproliferation instruments and institutions. One critical focus is how to strengthen the conditions governing permitted exports of nuclear-related equipment and materials and to whom they can be exported. The Department is responding to the President's call in the following ways:

- Curbing the spread of uranium enrichment and plutonium reprocessing (ENR) technology.
- Establishing better control over radioactive sources that could be essential ingredients in a "dirty bomb." This means developing systems to continuously track radioactive sources in all locations, in order to preclude illicit access, loss and theft.

- Strengthening the protection of nuclear sources and expanding the scope of the Convention on the Physical Protection on Nuclear Materials (CPPNM).
- Promoting creation of a special committee within the International Atomic Energy Agency (IAEA) Board of Governors to undertake a review of ways to strengthen the IAEA's safeguards and nonproliferation functions.
- Within the Nuclear Suppliers Group (NSG), denying nuclear technology to countries that do not sign an Additional Protocol to their safeguards agreements with the IAEA.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Peter G. Fitzgerald (#4)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

The Department of Defense also plays a critical role in the PSI.

A. Could you please elaborate on the Defense Department's role in PSI?

B. How do the Departments of State and Commerce coordinate with the Department of Defense?

C. Could you please discuss the role of the Department of Homeland Security and how you coordinate with that Department?

D. What safeguards have you instituted to avoid bureaucratic overlap and duplication of efforts?

Answer:

We cannot speak for the Department of Defense or Commerce regarding their specific roles in the PSI and respectfully request that you direct questions to appropriate officials in those agencies.

The PSI involves many agencies across government working together to advance this Presidential initiative. The State Department has the overall

lead in PSI diplomacy, as evidenced by Under Secretary of State John Bolton's visible and crucial role in building the initiative after it was announced by the President. The State Department coordinates its efforts on PSI with all other agencies involved in the PSI, including Defense, Commerce, Homeland Security, Energy, Justice, the FBI, Transportation, and the Intelligence Community. The National Security Council (NSC) chairs an interagency policy coordination committee that focuses on coordination of PSI activities and helps ensure against bureaucratic overlap and duplication of effort. The swift development of this initiative in one year's time is testament to the effectiveness of this flexible organization of efforts.

Question for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Peter G. Fitzgerald (#5)
Committee on Government Affairs
Subcommittee on Financial Management, the Budget
and International Security
June 23, 2004

Question:

Could you please advise the Subcommittee of the State Department's assessment of the threat posed by unprotected arsenals of conventional weapons in the former Soviet Republics? What actions are the State Department, other countries and international organizations such as the Organization for Security Cooperation in Europe (OSCE) taking to address this threat?

Answer:

Large, excess stockpiles of conventional weapons in Europe and Eurasia are a serious issue. We are actively engaged to find solutions. The large majority of stockpiles in the former Soviet Republics are under government control, however, a number of countries have munitions stores that remain poorly secured and/or have weak export control systems/enforcement. The State Department, both directly and in collaboration with other countries and international organizations, is working assiduously to address these shortcomings, albeit with very scarce resources.

Determined diplomatic efforts are ongoing to prevent transfers to regions in conflict, states that sponsor terrorism and terrorist organizations. As part of the

global war on terrorism, we have sought to build on our broad base of European and Eurasian partnerships to combat the gray arms trade.

Coordinated action, information-sharing, interdiction and border security cooperation are working well in Eastern Europe, the Baltics and Balkans - buttressed by superb cooperation from traditional allies and friends.

We also have an ongoing dialogue with countries of the former Soviet Union on conventional weapons transfers, improving transparency as well as how we might work together to reduce the proliferation risk from excess conventional weapons stockpiles. We seek more concrete results similar to those achieved by our new partners in Europe.

The State Department continues to implement a very productive Export Control and Related Border Security (EXBS) program. EXBS has strengthened a number of national legal frameworks and enforcement capabilities with real results.

The Department also continues to execute an effective small arms and light weapons destruction program, as well as efforts to secure weapons stockpiles. Our programs have destroyed over 440,000 weapons and over 75 million rounds of ammunition in Albania, Bulgaria, Romania, and Serbia. We also have destroyed nearly 5,000 man-portable air defense systems (MANPADS) in Bosnia, and another 1,200 in Serbia and Montenegro. New multilateral and bilateral programs

to eliminate small arms and light weapons (SA/LW) and MANPADS, and to improve stockpile security, are being developed in the region. Nevertheless, we are continually compelled to make difficult choices about where these extremely limited resources are best directed to support U.S. national security interests.

Our bilateral efforts are supported by multilateral organizations. As a matter of policy, the U.S. Government supports all efforts by governments and law enforcement organizations to end the international traffic in illicit arms to criminal and terrorist organizations or sponsors and to UN-sanctioned regimes.

NATO and the OSCE support expanding cooperation to control munitions and sensitive dual-use items and technologies covered by nonproliferation regimes such as the Wassenaar Arrangement. NATO administers a NATO-Partnership for Peace (PFP) trust to destroy excess ammunition and weapons, based on financial contributions from alliance members, and the OSCE has a similar mechanism to support member states requiring assistance with the disposal of excess and dangerous munitions. This year, the OSCE also adopted the Wassenaar Arrangement guidelines on MANPADS.

We are at an important point: many of our new partners are turning away from the arms markets and military cooperation of the past toward a future that is compatible with our Euro-Atlantic security vision. Sustaining this progress will require not only continued diplomacy with the countries of Eurasia, but also increased efforts to expand our programs to achieve more comprehensive results regarding excess weapons stockpiles throughout the rest of Europe and Eurasia.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Daniel Akaka (#1)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

Mr. Fitzpatrick, recently, Assistant Secretary of State John Wolf stated that the Nuclear Non-Proliferation Treaty (NPT) "remains the cornerstone of U.S. nuclear nonproliferation policy," and the NPT, Mr. Wolf noted, envisions "eventual denuclearization by the nuclear powers."

Would you please outline for us today what steps the Administration is taking and by when they will be taken to eliminate our nuclear weapons?

Answer:

Article VI of the 1970 NPT calls on all parties to pursue "effective measures relating to cessation of the nuclear arms "race" at an early date and to nuclear disarmament." All U.S. Administrations have taken this obligation very seriously and with the end of the Cold War the nuclear arms race between the United States and Russia has ended.

President Bush has sustained and strengthened the U.S. record of compliance with Article VI . The transformation of our relationship with Russia has led in part to a U.S. commitment to reduce our strategic nuclear warheads to the lowest level in decades. This commitment and a similar one by President Putin were later codified in the Moscow Treaty, which entered into force on June 1,

2003. Previous efforts to reduce below the 6,000 warhead level of the 1991 START Treaty had failed. President Bush's approach placed the United States and Russia on a path to reduce the number of operational strategic nuclear warheads to 1,700-2,200 by December 31, 2012.

Other policies of the Administration that contribute to U.S. Article VI undertakings include adopting a new approach to deterrence that will reduce U.S. reliance on nuclear forces. The new security environment, which features a more diffuse threat and the additional concern of non-state actors seeking weapons of mass destruction, demands that we place more resources into other means of deterrence, including missile defenses and the development of advanced conventional weapons. The Administration has also increased funding for cooperative threat reduction programs run by the Departments of Energy, Defense and State to a level of more than $1 billion annually. These programs have helped to remove from deployment more than 6,000 Russian strategic nuclear warheads and have led to the conversion of enough Russian fissile material to make at least 8,000 nuclear weapons. This effort contributes significantly toward ensuring the irreversibility of nuclear reductions, and toward the Article VI goal of nuclear disarmament.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Daniel Akaka (#2)
Subcommittee on Financial Management, the Budget,
and International Security
Committee on Government Affairs
June 23, 2004

Question:

Some have expressed concern that the PSI's activities may not be consistent with international law. What sort of formal review was conducted to ensure that PSI activities do not breach international law and could you share those assessments with us?

Answer:

The Proliferation Security Initiative "Statement of Interdiction Principles" is the blueprint for PSI activities. This document was developed by the United States working initially with ten other countries. The Statement of Interdiction Principles was published September 4, 2003 by the eleven countries (i.e., Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, the UK, and the U.S.). That "Statement" calls upon states to support PSI efforts to the extent possible "consistent with national legal authority and relevant international law and frameworks." While some countries initially misunderstood the basis upon which PSI activities would take place, the Statement of Interdiction Principles" is clear that PSI activities will be consistent with relevant international law.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Daniel Akaka (#3)
Subcommittee on Financial Management,
the Budget, and International Security
Committee on Government Affairs
June 23, 2004

Question:

On Monday it was reported that Iran seized three British naval vessels that allegedly had strayed into Iranian waters. Iranian Revolutionary Guards arrested the crew and searched the ship for weapons. This sounds a little like PSI activities but with the roles of participants reversed.

Are you concerned that nations that are considered targets of the PSI will use it as a precedent to impede activities by the United States and our allies?

Answer:

We would strongly reject any such false analogy by proliferating states. With regard to the questions, as referenced above, the PSI requires that all interdictions be taken consistent with international law. The PSI does not create the possibility for states to take actions outside of existing legal norms. What the PSI does do is increase coordination and efforts of countries so that when we do act we are prepared to work cooperatively with our allies and partners.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Daniel Akaka (#4)
Subcommittee on Financial Management, the Budget,
and International Security
Committee on Government Affairs
June 23, 2004

Question:

Mr. Fitzpatrick, as PSI is the Administration's principal program for our counterproliferation efforts, shouldn't it have a dedicated funding stream for its activities?

Answer:

The PSI is not an organization and there is no specific PSI "program" that requires a dedicated funding stream. The PSI represents a more organized and systematic effort to advance a key aspect of counterproliferation policy, and is correctly described as a set of activities. The State Department role in PSI is to contribute to development of policy and diplomatic aspects of the initiative. As I mentioned during my testimony, the State Department Bureau of Nonproliferation treats the PSI as a priority and has reordered its personnel resources to ensure that work required for PSI is adequately staffed. Similarly, we have reordered travel priorities to free up funds from existing accounts for travel in support of PSI activities. Speaking only for the State Department, no additional funding is required at this time to carry out this work.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Daniel Akaka (#5)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

I understand that A.Q. Kahn is still under house arrest in Pakistan. As you know, it does not seem possible that he could operate for so long, so openly, amassing so publicly millions of dollars without the support of military and security institutions inside Pakistan. Have we been given access to his full interrogation reports, have we sought direct access to him, and have we gotten to the bottom of his smuggling network?

Answer:

The Government of Pakistan is conducting its own investigation of the A.Q. Khan network. It has shared with us some information it has developed from that investigation and it has agreed to continue to share information with us. The information Pakistan has provided to us has been important to our global efforts to dismantle the network. We believe that President Musharraf's efforts to shut down the activities of the network in Pakistan have been successful. However, we remain concerned that the network could be reconstituted. For this reason, we are reassured by President Musharraf's statements that Khan remains under close watch and his movements are restricted; we understand, however, that Khan is not

under actual house arrest. It is also notable that Khan's pardon is conditioned on his continued cooperation.

We have extensive knowledge of the A.Q. Khan network. As the President has said, the information we know about the A.Q. Khan network was pieced together over several years by American and British intelligence officers, who identified the network's key experts, agents, and money men and mapped the extent of its operations. Pakistan and other governments around the world have worked closely with us to unravel the network and put an end to its activities.

We have learned much about this network and the international black market in weapons of mass destruction and related technologies. We continue to gather information to develop a complete picture of Khan's activities and the damage they have caused.

As the White House has said, we value the assurances given by President Musharraf that the Government of Pakistan was not participating in any kind of WMD proliferation activity. President Musharraf has pledged to ensure that Pakistan will not be a source for illegal proliferation in the future. We believe President Musharraf takes these issues seriously. Moreover, we continue to work, both unilaterally and bilaterally with our international partners, and in international organizations to implement

measures to strengthen international efforts to counter the threat of proliferation of weapons of mass destruction. We have an ongoing dialogue with the government of Pakistan on these issues. In connection with this, we have a bilateral program to help Pakistan bring its export controls in line with accepted international standards.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Daniel Akaka (#6)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

In your testimony, you mentioned a PSI meeting on container security that takes place in Denmark in August.

A. Can you list the countries participating in the meeting?

B. Which agencies in the U.S. government are participating?

C. Which members of private industry will be participating?

D. The Department of Homeland Security has taken the lead on container security within the U.S. Government. Can you explain why the Department of Homeland Security is not taking the lead in this meeting?

E. If DHS is not involved in this meeting, can you explain why?

F. Can you explain the format and goals of the meeting?

G. Will the meeting focus on issues of technology or policy?

Answer:

While my testimony did refer to a Danish-hosted meeting on container security issues, it is more accurate to describe the meeting as being organized to support the PSI and offer a venue to bring together government

and industry to discuss issues of importance relating to maritime interdictions. It is not an effort related to the Container Security Initiative (CSI), which is the effort that DHS takes the lead on for our government. Where CSI is focused on assuring the security of container traffic entering the United States, the Danish seminar will provide a forum for key shipping industry leaders to learn about the PSI and understand how PSI activities might impact their interests. The United States will be represented in the meeting by officials from the Department of Defense, Department of State, Department of Commerce, and Department of Homeland Security (USCG, Customs). The agenda, scope, and goals for the meeting are still being developed by the host government.

Questions for the Record Submitted to
Deputy Assistant Secretary Mark Fitzpatrick by
Senator Daniel Akaka (7)
Committee on Government Affairs
Subcommittee on Financial Management,
the Budget, and International Security
June 23, 2004

Question:

Dr. Albright in his testimony makes a number of recommendations. I would appreciate it if you could respond to his suggestions:

First, he suggests expanding the membership of the NSG and to provide for sharing of more information about actual procurements among NSG members and with the IAEA. Is this something you would support and if so, what is the best process for ensuring that it occurs?

Second, he calls for a "universal treaty-based system controlling nuclear export activities that is binding on states and includes a means to verify their compliance. Under such a treaty or agreement, countries would implement a set of nuclear and nuclear -related export control laws and regulations and criminalization procedures, similar in nature to those required by UNSC Resolution 1540. The agreement, however, would also mandate the IAEA to verify compliance, ensure the adequacy of those laws, and investigate illicit procurement activities. Signatories would inform the IAEA of all sensitive nuclear or nuclear -related exports, and the IAEA would have the mandate and legal rights to verify that the transactions are indeed illegal. It would verify that a country's declaration about its nuclear or nuclear-related exports or imports is accurate and complete."

I would appreciate your assessment of this last suggestion of Dr. Albright's. Would such an approach be a useful addition to international efforts to control proliferation and if not, why not?

Answer:

Dr. Albright's recommendations reflect serious consideration of the challenges to the nonproliferation regime created by smuggling networks and clandestine nuclear programs.

With regard to membership expansion, the 2004 NSG Plenary accepted four new members, including China, a nuclear weapons state and the last major supplier not yet a member of the Group. With 44 members the NSG is the largest of the multilateral WMD/missile export control groups. NSG Participating Governments recognize the need to strike a balance between continuing to add members while remaining small enough to maintain the ability to reach consensus on important nonproliferation issues.

With regard to information sharing, the United States has vigorously pursued proposals to expand NSG information sharing to include reports of denials of nuclear Trigger List items and approvals of both Trigger List and nuclear-related dual-use items. The United States has also led NSG efforts to increase information sharing with non-members and the IAEA through enhanced outreach efforts. Recently, the current NSG Chairman, Richard Ekwall of Sweden, met with IAEA Director General ElBaradei to explore ways of improving IAEA-NSG communications.

The IAEA already plays a significant role in verifying nuclear and nuclear-related exports and imports. The Nuclear Nonproliferation Treaty (NPT) effectively requires states party to the Treaty to control the export of nuclear material to ensure that IAEA safeguards are applied to that material in the recipient state. It also requires states to control the export of and especially designed and prepared nuclear equipment and material, so as to ensure that IAEA safeguards are applied to nuclear material used with or produced from such equipment and material.

In the early 1990s, the IAEA Board of Governors adopted a voluntary scheme for reporting to the IAEA on nuclear exports, to which the United States subscribes. For states that have brought the Additional Protocol into force, such reporting is mandatory. Under the Protocol, the IAEA has the right to verify imports, based on information provided by another state. The Administration actively seeking universal adherence to the Additional Protocol, and is working with the IAEA, the G-8 and others to this end. In that regard, I welcome the Senate's decision to consent to ratification of the U.S. Additional Protocol, and I look forward to early Congressional action on implementing legislation. My staff is ready to work with the relevant committees to that end. The Administration is also seeking G-8 endorsement of and NSG consensus on making the AP a condition of supply for nuclear transfers.

UNSC Resolution 1540 requires all states to establish and maintain appropriate and effective export and transshipment controls over items that could be used for the design, development, production or use of nuclear weapons. States will be reporting to the Security Council in October on their efforts to comply with this legally binding obligation.

In addition to the obligations under existing treaties and the UNSC Resolution, many states have shown a willingness to coordinate their export control efforts through the multilateral export control regimes. All of the current multilateral WMD/missile control regimes are entirely voluntary, being implemented by each member through its respective domestic law and policy. Similarly the intense international efforts led by the U.S. to develop and implement an international Code of Practice for Control of Radioactive Sources are entirely voluntary rather than treaty-based. These efforts, as well as efforts to strengthen compliance with existing treaty obligations offer a practical and achievable means for enhancing global security against proliferators and terrorists. The Administration intends to continue vigorous efforts to strengthen all of the multilateral regimes.

The IAEA has limited expertise in the export control area, and is not in a position to ensure the adequacy of states export control laws. On the other hand, the United States provides assistance bilaterally to help states implement effective

export controls. The IAEA maintains a database of reported incidents of illicit trafficking in nuclear and radioactive materials. This is an important resource for assessing the problem. We encourage all states participate in this database and report on any such incidents.

"International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives" June 23, 2004

Hearing Before the Senate Subcommittee on Financial Management, the Budget, and International Security of the Committee on Governmental Affairs

Bureau of Industry and Security Responses to Questions for the Record

Department of Commerce, Secretary Lichtenbaum's responses to questions for the record.

QUESTIONS FROM SENATOR FITZGERALD:

Question 1. The investigation of the A. Q. Khan network indicates that the network was specifically designed to avoid export controls and routed its shipments through ports known to be lax on the enforcement of such controls. A March 4, 2004 New York Times article regarding the Khan network mentioned the port of Dubai in the United Arab Emirates (U.A.E.) as one such port.

A. What sort of information does the Department of Commerce review regarding the export policies and practices of other nations?

BIS Response: The Department of Commerce reviews information on the export policies and practices of other nations in many ways. For example, it learns about the policies and practices of many countries through participation in the major international export control regimes, i.e., the Australia Group, the Nuclear Suppliers Group (NSG), the Missile Technology Control Regime (MTCR), and the Wassenaar Arrangement, as well as the Organization for the Prohibition of Chemical Weapons (OPCW) of the Chemical Weapons Convention (CWC) and the Zangger Committee of the Nuclear Nonproliferation Treaty (NPT).

In addition, Department officials engage in frequent, substantive bilateral contacts with officials of other governments who provide access to information on those governments' export control policies and practices.

The Department of Commerce also participates in assessments of national export control capabilities coordinated by the U.S. Department of State's Export Control and Border Security Assistance (EXBS) program. This effort covers many countries that do not belong to the major international export control regimes, including a number of countries that serve as major transshipment hubs. These assessments focus on major "functional areas" of a licensing system, such as laws and regulations, enforcement capabilities, industry-government relations, and licensing and product classification capabilities. Commerce uses these assessments to guide the development of technical exchange programs to address national infrastructure deficiencies. The Department of Commerce conducts annually more than 75 such technical exchange programs under the State-led EXBS program.

The Department of Commerce also obtains critical information on country export control regimes directly from industry and through governments in other countries through this program. In addition, the Department of Commerce reviews independent assessments of export control systems conducted by non-governmental organizations, such as the Center for International Trade and Security of the University of Georgia and the Center for Nonproliferation Studies of the Monterey Institute of International Studies.

B. Is the Department of Commerce working with the U.A.E. to strengthen its enforcement of export controls?

BIS Response: The Department of Commerce has been actively working with the U.A.E. to strengthen its export control system. One of the Department's top priorities is to seek adoption by the U.A.E. of an export control law that establishes a strong export control system. BIS officials from the Commerce Department's Bureau of Industry and Security provided a draft template for such a law in December 2003. The U.A.E. has subsequently prepared a draft law, and raised the expectation of enactment as early as the end of 2004. In February 2004, Under Secretary Juster traveled to the U.A.E. and met with senior U.A.E. officials to discuss the draft law and other export control issues. If enacted as drafted, this law should enhance U.S. export control cooperation with U.A.E. government officials.

In addition to advising on the overall framework for export controls, the Department of Commerce has provided training to U.A.E. officials related to commodity classification, jurisdictional issues for munitions versus dual-use items, and international export control regimes. The Department has also participated in other export control workshops in the U.A.E.. For example, in the April 2004 National Control List workshop, the United Kingdom export control officials provided training on classification issues, in addition to training provided to U.A.E. officials by U.S. officials.

The Department of Commerce, with coordination and funding from the State Department's Export Control and related Border Security (EXBS) program, also is ready to provide assistance on developing a national control list and other elements of an export control system, pending further efforts by the U.A.E. to establish its legal framework for export controls. In that context, the Department of Commerce worked with representatives from other USG agencies, the UK, the U.A.E. and other countries to prepare a document on the essential elements of an effective export control law at the State Department's EXBS-sponsored Global Transshipment Control Workshop in Malta in May 2004.

In addition, the Department has had an export control attaché posted in Abu Dhabi since 2002, in recognition of the U.A.E.'s role as a regional transshipment hub. The attaché is a trained law enforcement agent and conducts Pre-License Checks (PLCs) and Post Shipment Verifications (PSVs), which are targeted to prevent the diversion of controlled U.S. goods to prohibited end-uses and end-users or to embargoed destinations in the Middle East or elsewhere. The attaché has also been instrumental in conducting outreach with U.A.E.-based companies and key quasi-governmental organizations (e.g., U.A.E. port authorities).

C. Have other countries strengthened their export control regimes since the launch of the PSI? If so, which countries?

BIS Response: The Proliferation Security Initiative (PSI), which was announced by President Bush in May 2003, focuses primarily on interdiction of WMD, their delivery systems, and related materials flowing to and from states and non-state actors of proliferation concern, rather than on export controls. The PSI "Statement of Interdiction Principles" does identify strengthening of regional legal authorities against WMD proliferation as a step that states should implement. However, separate from the U.S. Government's engagement with other countries on export controls, countries should continue to strengthen their export control regimes based upon the requirements of UNSCR 1540, the momentum of support for WMD interdiction as expressed in PSI, and by the revelations associated with the Khan network. Countries that have strengthened their export control regimes since May 2003 include Panama, Russia, Ukraine, India, Armenia, and Turkey.

D. What recommendations would you propose to improve U.S. cooperation with other nations regarding export controls on sensitive technologies and dual-use items?

BIS Response: One way to improve cooperation is the successful implementation of existing mechanisms, as demonstrated by the strengthened international commitment for improved cooperation on export controls. For example, following the President's call for action, the UN Security Council unanimously passed Resolution 1540 on April 28, 2004. UNSCR 1540 requires states to enact legislation to criminalize WMD proliferation activities, establish effective export controls, and secure proliferation-sensitive materials. UNSCR 1540 requires states report to the Security Council on their implementation efforts by October 28, 2004. The United States is taking the lead in this action and plans to submit a report by early September 2004. The reports should enable the United States to identify priority countries and specific steps for outreach and other assistance.

Other mechanisms also exist for improving cooperation. The Asia Pacific Economic Cooperation (APEC) 2003 Bangkok Leaders' Declaration committed members to take all essential actions to strengthen international non-proliferation regimes and to adopt and enforce effective export controls. Now we are working within APEC to ensure implementation of this commitment. In the context of multilateral export control regimes where there is a high degree of consensus, the United States is focusing on implementation of multilateral controls by members of regimes.

The Department of Commerce also is working to improve cooperation in developing basic export control systems through coordination with and through funding provided by the Department of State's Export Control and Border Security Assistance (EXBS) program. The Department of Commerce conducts over 75 technical exchanges with a number of countries related to export control laws and regulations, licensing systems, enforcement capabilities, product identification, and government-industry outreach. Through these exchanges, the

Department of Commerce gathers information critical to strategic planning on further cooperative efforts on export controls with these countries.

It is also important to offer assistance to key transshipment countries and ensure that they develop basic export control systems. In 2002, the Department of Commerce launched the Transshipment Country Export Control Initiative (TECI) to increase cooperation and dialogue on export controls and transshipment trade with government and industry in nine major transshipment hubs: Cyprus, Hong Kong, Malaysia, Malta, Panama, Singapore, Taiwan, Thailand, and the United Arab Emirates (U.A.E.). Although some of these economies have developed effective export control systems, all are major hubs for high-technology products, they all operate near countries of concern, and none of them participates in all four of the export control supplier arrangements.

Question 2. This past January, the General Accounting Office (GAO) published a report criticizing the Commerce Department's lack of post-shipment verification of dual-use items. Post-shipment verification is intended to ensure that sensitive items are being properly used. The GAO report states that between fiscal years 2000 and 2002, only six percent of dual-use licenses that were approved for the sale of items to countries of concern were reviewed upon their receipt.

A. If the Commerce Department is unable to complete post-shipment checks on dual-use items, how can we be assured that American-made products are not being misused for dangerous purposes?

BIS Response: The Department of Commerce protects against the diversion of sensitive U.S.-origin items through the licensing process which is complemented by targeted post-shipment verifications (PSVs). In the context of the licensing process, the Department undertakes a number of activities designed to minimize the risk of diversion. These activities include obtaining information about foreign end-users from government agencies, examining the bona fides, past licensing history, and PSVs for all the parties to the transaction, obtaining foreign government assurances regarding the end-user and conducting pre-license checks to verify that the an appropriate end-user is receiving the controlled U.S. item for an appropriate purpose. Once a controlled item leaves the United States, U.S. companies also often have access to the item because of license conditions and/or the need to conduct maintenance or provide support. Companies are required by law to report any observation of mis-use, diversion or violation of license conditions. The Department also receives support in tracking movements of some controlled items once they leave the United States through coordinated information sharing information with other governments. Further, the intelligence community is also active in protecting against the diversion of sensitive items by identifying international diversion networks. In addition to the above-mentioned activities, the Department adds the additional assurance of conducting post-shipment verifications (PSVs).

The Department of Commerce has established priorities to make the best use of its resources by targeting PSVs to cover a representative sample of the most sensitive items in destinations of potential concern. The Department targets high priorities by using an established protocol that

includes a number of variables to determine whether a PSV should be initiated including: information about the parties to the transaction, the proposed end-use, the ultimate destination, previous licensing history, and newly developed concerns about known end-users.

The GAO report flagged the difficulties that the U.S. government was having in conducting such checks in China. However, in April 2004, the Department of Commerce and China's Ministry of Commerce agreed on procedures to strengthen end-use visit cooperation. This agreement is part of the Department's effort to establish priorities and target destinations for PSVs where there may be a high risk of diversion. This agreement is part of the Department's effort to establish priorities and target destinations for PSVs where there may be a high risk of diversion. With the April 2004 agreement, the Department of Commerce has established a mechanism to work with China's government to resolve questions about end-users and end-uses for sensitive items; thereby increasing assurances that sensitive items are not being will not be diverted to inappropriate end-users or for inappropriate end-uses.

The PSVs are intended to verify delivery of an item to a stated end-user for a stated end-use and should not be expected to present a comprehensive solution to policing licensed transactions or license conditions. PSVs complement the licensing process. In approving a license the U.S. Government will considers a wide range of information about the end-user, including the end-user's past licensing history, input from the intelligence community, and pre-license checks. In brief, by the time an export is approved the U.S. Government has a substantial degree of confidence that the item will not be diverted to an inappropriate end-use. Moreover, BIS takes other enforcement actions to prevent diversion such as pre-inspection checks, which are designed to provide special training and checklists for Department inspectors before they conduct PSVs. In short, the license process, PSVs, and other enforcement actions help to ensure that the U.S. Government has a substantial degree of confidence that the item will not be diverted to an inappropriate end-use.

B. What steps is the Department taking to address the concerns raised by the GAO?

BIS Response: The GAO made three specific recommendations in its report: (1) improve technical training for enforcement personnel conducting PSV checks; (2) ensure that personnel conducting PSV checks assess compliance with license conditions, and (3) require that the exporter inform the end-user in writing of the license conditions.

The Department of Commerce has taken significant steps to strengthen the PSV process in line with the GAO's recommendations. (1) The Department's Bureau of Industry and Security, which has responsibility for PSVs, has adopted a new Safeguard protocol that requires training for all Safeguards team members prior to their departure on commodity recognition/identification and end-use check procedures. (2) Commerce Safeguards teams are now required to bring a copy of the license conditions for each PSV. In addition, Commerce is undertaking an effort to standardize conditions and to review whether conditions can reasonably be enforced. (3) Commerce agrees that an "in writing" requirement could add value to many license conditions and improve end-use checks. Currently, the majority of licenses are issued

with the requirement that the applicant must inform the consignee of all license conditions and the Department of Commerce has permitted the applicant to choose the best means of communicating the license conditions. However, the Department of Commerce is planning on strengthening this condition by adding an "in writing" requirement to the conditions language on licenses. This revision is currently undergoing internal Bureau of Industry and Security review, which is expected to be completed by the end of August 2004.

C. What recommendations would you make to improve the safeguards on the sale of dual-use items abroad?

BIS Response: Improving safeguards on the sale of dual-use items abroad continues to be a priority for the Department of Commerce. Additional resources to conduct safeguard activities would be one way to improve safeguards. Currently, the Department of Commerce's initiatives to improve safeguards include providing assistance to improve other countries' export control systems, increasing the use of intelligence resources to vet potential end-users, and working with U.S. industry to identify potential diversion risks, in addition to continuing to improve the system for doing PSVs within the available resources. Additional resources for conducting PSV checks would also improve the safeguards on the sale of dual-use items abroad. The Department has also taken an interagency approach to identify safeguard trip country selections by including the Departments of Defense, State, and Energy in the selection process.

QUESTIONS FROM SENATOR AKAKA:

Question 1. The unmasking of the Khan smuggling network underscores the need for a global network of responsible governments acting in concert. But the current control regimes were all designed to convince governments not to develop weapons or proliferate weapons technologies to others. Many of the smuggling regimes are outside our usual radar screens. We need a comprehensive strategy to address the weaknesses in each regime, a diplomatic strategy to win support for improvements, and someone in the Executive Branch at the most senior level to make it happen.

My question to you is how is the Administration using its analysis of the Khan smuggling network and applying it to revising and strengthening our efforts to improve nonproliferation and export control regimes?

BIS Response: Cooperation among governments ultimately uncovered the A.Q. Khan network. However, additional government cooperation is necessary to achieve our nonproliferation goals and prevent the creation of new smuggling networks.

The unmasking of the Khan smuggling network has been a major topic of discussion within several of the export control regimes. In the nuclear technology area, Nuclear Suppliers Group (NSG) members took several actions in an effort to prevent the creation of other Khan-like

networks. In May 2004, NSG members agreed to: (1) refocus the way information is shared within the NSG to emphasize identification of procurement networks; (2) adopt a comprehensive catch-all principle in the dual-use guidelines to provide a national legal basis to control the export of nuclear related items not on control lists; (3) establish an ad hoc intelligence group to review and address issues related to dual-use nuclear related transfers of concern; and (4) create a workshop on sensitive technologies to educate non-members on the potential for their industries to be used as a source for clandestine procurement.

In February 2004, President Bush proposed important further measures to strengthen the rules of the Nuclear Suppliers Group (NSG). Specifically, the President called for banning the sale of enrichment and reprocessing technology to those states that do not already possess such full-scale, functioning enrichment and reprocessing plants, and for transfer of trigger list items to a non-nuclear weapons state only if the receiving state has signed an IAEA Additional Protocol. The United States is currently working toward adoption of President Bush's proposals within the NSG.

At the June 2004 G-8 Summit at Sea Island, Georgia, G-8 Leaders significantly furthered the President's proposals. They agreed to "work to establish new measures so that sensitive nuclear items with proliferation potential will not be exported to states that may seek to use them for weapons purposes, or allow them to fall into terrorist hands. The export of such items should only occur pursuant to criteria consistent with global non-proliferation norms and to states rigorously committed to these norms." The G-8 leaders aimed to have such measures by their next Summit and, in the interim, agreed not to inaugurate new initiatives involving transfer of enrichment or reprocessing equipment or technology to additional states. The G-8 Leaders also called for universal adoption of the Additional Protocol and stressed that it must be an essential new standard in the field of nuclear supply arrangements.

The Australia Group has also responded to the existence of increasingly sophisticated procurement activities by agreeing at its June 2004 Plenary to consider the issue of "brokering" controls. Controls for intermediaries to transactions could play a key role in curtailing the activities of intermediaries and front companies, such as the Khan network.

Outside of the individual regimes, the United States is working with a growing number of countries in the Proliferation Security Initiative (PSI), which President Bush announced in May 2003, to interdict proliferation-related shipments. In February 2004, based in part on the revelations of the Khan network, the President called for the expansion of the work of the PSI to include law enforcement cooperation to shut down proliferation networks and entities. PSI participants supported this expanded role for PSI in March 2004, and we are continuing to work with PSI supporters to implement this role.

Question 2. Can you also tell me who in the Administration is responsible for developing a strategy to strengthen our export control regimes?

BIS Response: Under the leadership of President Bush, as articulated in the September 2002 National Strategy to Combat Weapons of Mass Destruction, the Administration is following a comprehensive strategy which includes strengthening our domestic export control programs, and the multilateral export control regimes in which the United States participates, in the context of strengthening our overall nonproliferation and counterproliferation strategies. Participants in these efforts include the Departments of State, Defense, Commerce, Energy, the Nuclear Regulatory Commission and other relevant agencies.

Question 3. Dr. Albright in his testimony makes a number of recommendations. I would appreciate it if you could respond to his suggestions:

First, he suggests expanding the membership of the NSG and to provide for sharing of more information about actual procurements among NSG members and with the IAEA. Is this something you would support and if so, what is the best process for ensuring that it occurs?

Second, he calls for a "universal treaty-based system controlling nuclear export activities that is binding on states and includes a means to verify their compliance. Under such a treaty or agreement, countries would implement a set of nuclear and nuclear-related export control laws and regulations and criminalization procedures, similar in nature to those required by UNSC Resolution 1540. The agreement, however, would also mandate the IAEA to verify compliance, ensure the adequacy of those laws, and investigate illicit procurement activities. Signatories would inform the IAEA of all sensitive nuclear or nuclear-related exports, and the IAEA would have the mandate and legal rights to verify that the transactions are indeed illegal. It would verify that a country's declaration about its nuclear or nuclear-related exports or imports is accurate and complete."

I would appreciate your assessment of this last suggestion of Dr. Albright's. Would such an approach be a useful addition to international efforts to control proliferation, and if not, why not?

BIS Response: Dr. Albright stated in his testimony that the Khan network targeted for procurement sources in countries with weak national export control laws, which included countries both inside and outside the NSG. The U.S. Government is working to strengthen NSG guidelines. As noted previously, the U.S. Government has a number of efforts underway in which we are working with countries to improve their export control systems Dr. Albright also suggested increasing membership in the NSG. The U.S. Government considers possible new members of the NSG on a case-by-case basis. Among factors considered for NSG membership are whether the applicant: (1) is a producer of commodities on the NSG control list; (2) has good non-proliferation credentials; and (3) has an effective export control procedure in place. In May 2004, the NSG invited China, Estonia, Lithuania and Malta to become NSG members. The

United States also encourages other states to adopt NSG guidelines in their own export control practices.

With regard to sharing of information about actual procurement, NSG members recently agreed to refocus the way information is shared within the NSG to emphasize identification of procurement networks.

With regard to Dr. Albright's second suggestion, the State Department is providing the Administration's assessment of his suggestion.

Senator Akaka
Questions for the Record
Hearing: "International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives"

Questions for Mr. Albright:

1. Mr. Albright, many argue that the Khan smuggling effort is unique, and it is possible to eliminate it.

Do you agree with that assessment and, if so, what makes it unique compared to the previous networks that supplied nuclear weapons materials to Pakistan, Iraq, India, Libya, South Africa, North Korea, and perhaps others from the 1970's to the present?

Answer: The Khan network differs in key respects from earlier networks that aimed to supply a secret national nuclear weapons program through illicit overseas procurement. The Khan network was an off-shore, difficult to trace multinational operation with an extensive set of subcontractors, purchasing agents, and consultants that was supplying Libya with a "turn-key" gas centrifuge plant and associated feed production and centrifuge manufacturing facilities. Previously, only advanced nations or sophisticated nuclear companies in industrialized countries were believed to be capable of transferring a turn-key centrifuge plant, and none of these entities were viewed as willing to sell such items to countries such as Libya.

However, the Khan network should not be looked upon as unique in the sense that other, similarly dangerous illicit procurement networks could not arise, perhaps from the remnants of the Khan network or independently of it. The Khan network grew out of illicit, amoral procurement efforts by Pakistanis to outfit their own nuclear weapons program. Other national-based networks exist. Despite being customers of the Khan network, Iran and North Korea have also operated their own networks to supply their nuclear programs. Key players in the Khan network's sales to Libya earlier operated independently of this network, making important sales to Iran, North Korea, and South Africa of dual-use or direct-use nuclear items. Thus, another Khan-like network could arise from illicit national

procurement efforts and initiatives by enterprising middlemen intent on bolstering their illegal profits.

Many efforts focus on eliminating the Khan network. Several rigorous and thorough investigations and prosecutions of the members of the Khan network have been launched. More investigations are necessary, if the network and its remnants are to be permanently eliminated. In addition, national and international export control systems will have to be strengthened significantly to prevent additional Khan networks.

2. Two of the countries involved in the Khan affair, Malaysia and the UAE are not members of the Nuclear Suppliers Group (NSG).

Do you think it would be useful to expand participation in the NSG and why isn't there information sharing between the Nuclear Suppliers Group and the International Atomic Energy Agency?

Answer: The NSG should be expanded in membership, but such a step is not enough to prevent or significantly reduce the likelihood of other illicit procurement networks.

The NSG shares among its members export denials made by individual NSG members. The NSG should share its denial list with the IAEA. Members of the NSG should also share with the IAEA information about certain key approvals, equipment that they allow to be exported. Currently export approvals are not routinely shared among NSG members for fear of negative commercial impacts. Essentially, many countries resist sharing information on the activities of their companies.

3. Iran, if it had adhered to the Additional Protocol several years ago, would have been required to report many of its nuclear fuel cycle activities to the IAEA.

In your view, would this requirement have been sufficient to halt its weapons related program and, in addition, what do you think the

prospects are for gaining universal adherence by all IAEA members to the Additional Protocol?

Answer: Gaining universal adherence to the Additional Protocol must remain a priority of the IAEA and the US government. As your question implies, the Protocol makes it harder for countries to hide secret nuclear activities and facilities and acts as a deterrent against such efforts arising in the first place. Nonetheless, achieving universal adherence remains difficult, and the United States in particular will need to press countries harder to accept the Protocol.

If Iran had implemented the Additional Protocol earlier, it would have had to reveal to the IAEA a wide range of secret nuclear activities and facilities as part of its initial declaration under the Protocol. The IAEA would not have had to use extraordinary means to uncover many of these activities and facilities, almost all of which did not violate Iran's obligations under its traditional safeguards agreement.

The Protocol significantly complicates a country's effort to build secret weapons-related facilities without being detected. If Iran had implemented the Protocol several years ago, it would have had to reveal its intentions far earlier and in a more transparent way. Such early notice would have allowed quicker US and international response to stop these plans before Iran had already built facilities, such as uranium enrichment plants, at great cost.

Questions for the Record
Senator Peter G. Fitzgerald
International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives
Senate Committee on Governmental Affairs
Subcommittee on Financial Management, the Budget, and International Security
June 23, 2004

Questions for the Record

Questions for David Albright, President and Founder, Institute for Science and International Security

1. As I understand, you have tracked the A. Q. Khan network since it was first disclosed earlier this year.

A. What is your assessment of U.S. and international investigations of the Khan network?

Answer: National and IAEA investigations of the Khan network have intensified and led to a number of arrests. Cooperation among key nations and the IAEA appears excellent and is producing additional investigations and a more thorough understanding of the network's activities and key players. Nonetheless, more thorough investigations are needed in several countries. In addition, results of these investigations should be made public.

A major weakness of the current effort is the lack of direct access by the IAEA to A. Q. Khan and other key Pakistani members of the network. Although the IAEA and other nations benefit from their contact with the Pakistani government, they need direct access to Khan and his associates to ask their own questions and form their own conclusions about the credibility of those answers.

B. Do you believe that the majority of suppliers and customers of the network have been discovered, or have investigations just begun to unravel a smuggling ring that is more extensive than originally believed?

Answer: I believe that most suppliers have been identified, but key ones may still elude the authorities. A particular troubling mystery is which companies or individuals were or were planning to make the various items comprising the centrifuge rotor. In addition, critical, highly sensitive centrifuge information remains missing.

C. Do you believe current U.S. and international efforts to prevent the spread of WMD and WMD-related components are capable of preventing future networks from developing?

Answer: Additional actions and initiatives are needed to prevent future networks. Several of these initiatives are discussed in my written testimony. A principal recommendation in my testimony is the need for verifiable agreements and policies to

ensure the effectiveness of national export control systems for nuclear and nuclear-related items and to task a central organization such as the IAEA with monitoring of key exports and investigations of illicit procurement.

2. The Proliferation Security Initiative (PSI) has been made the cornerstone of U.S. counterproliferation policy.

A. What is your assessment of the PSI and its ability to deter and prevent the proliferation of WMD?

Answer: PSI is an important complement to existing non-proliferation tools. By providing a method to intercept illegal shipments, PSI can contribute importantly to stopping the spread of nuclear weapons when critical shipments are seized. But it is only one of many tools and cannot be expected to play a decisive role in deterring proliferation.

B. Do you believe the current organizational structure, resources, and personnel allocated to the PSI are sufficient to fulfill its stated mission?

Answer: I have not assessed the current organizational structure, resources, or personnel allocated to the PSI.

C. What recommendations would you make to improve the effectiveness of U.S. counterproliferation policy?

Answer: With respect to the implications of the Khan network on US conterproliferation policy, I have discussed several in my testimony. A key one is for the administration to embrace policies that move beyond the NSG, PSI, and UNSC resolution 1540 to a more universal and effective approach able to deal with the failures of the current system that have been highlighted by the Khan network.

3. During the most recent PSI meeting in Krakow, Poland, on May 31st and June 1st of this year, representatives from over 60 governments worldwide convened to address the flow of weapons of mass destruction.

A. In your view, how many more countries would you like to see participate in the PSI?

Answer: I have not assessed the adequacy of the current number of nations involved in PSI. Nonetheless, involving more countries is in general desirable if it leads to more information sharing between all participants about potential illicit shipments.

B. Can you name specific countries that the United States Government should make a special effort to recruit to participate in the PSI?

Answer: I have not assessed this issue.

D. What recommendations would you make to ensure that the participating countries are doing everything they can to counter shipments of weapons of mass destruction?

Answer: The problems extend way beyond the PSI initiative. All nations need to apply more resources and importance to stopping illegal or questionable exports that benefit WMD programs. They also need to implement effective methods to raise awareness within companies about ways to defeat illegal or questionable exports. Although the PSI initiative is useful, it does not deal significantly with the problems facing us today in stopping countries or terrorists from obtaining the wherewithal to make WMD.

Responses of

LEONARD S. SPECTOR
Deputy Director, Monterey Institute Center for Nonproliferation Studies
to
Written Questions
Submitted by Members
of
the Subcommittee on Financial Management, the Budget, and International Security
of
the Senate Governmental Affairs Committee

QUESTIONS SUBMITTED BY
SENATOR PETER G. FITZGERALD

Q. 1A: What is the likelihood that the A.Q. Khan network indirectly (through a participating state such as Syria) supplied Al-Qaeda, or some other terrorist network with nuclear expertise.

Ans.: Given the secrecy surrounding the Khan network and surrounding U.S. efforts to roll it up, this is a difficult question to answer. From what is known publicly, the Khan network was focused on providing the technology, hardware, and material needed to enrich uranium to weapons grade in highly complex facilities. Construction and operation of such facilities would require considerable scientific, engineering, construction, and financial resources of a scale that would be available to national governments, but not to terrorist networks. Thus, it is not likely that enrichment know-how received by Iran, for example, would have been passed on to terrorists: such organizations would have been unable to exploit it.

However, Khan also provided a nuclear weapon design, specifically of a warhead designed for a missile, and extensive technical notes on its manufacture. It is possible that information of this kind could be useful to a terrorist organization if it were able to obtain weapons-usable nuclear materials and then sought to assemble an improvised nuclear device.

Of greatest concern, of course, is the possibility that Iran might use the technology it obtained from Khan to produce highly enriched uranium and that the material might then find its way to terrorists. This might occur at the behest of Iranian political leaders, through the assistance of senior officials in the Iranian nuclear establishment, or by theft by lower-level insider technicians.

Q: 1B: If significant nuclear expertise or material was shared with a terrorist network, are you able to estimate the amount of time required for al-Qaeda, or another terrorist organization, to construct a fully functioning nuclear weapon?

A: As suggested above, the most serious danger would come from the provision of weapons-grade nuclear materials to a terrorist organization. It is possible that such a group could prepare many or possibly all of the non-nuclear parts of an improvised nuclear device in advance of obtaining the required nuclear material, in which case assembly of the device might be possible very rapidly, perhaps in a week. Preparing the non-nuclear elements might require several months of work, assuming the terrorist organization could assemble a team with the necessary metallurgical, engineering, and scientific skills.

Q 2: The U.S. is currently working aggressively to curtail the state sponsored programs to which terrorists might gain access.

(A) Given that your testimony discusses the need to dramatically improve the vigilance of existing nuclear centers outside the U.S., do you believe the U.S. should prioritize its resources to emphasize the protection of existing nuclear centers?

Ans.: It is crucially important that the U.S. continue its efforts to help secure these locations, particularly in Russia, and to provide assistance to Pakistan to permit that country to do the same. First priority should given to securing highly enriched uranium because, of the two nuclear materials that can be used as the core of a nuclear weapon (plutonium is the second such material), highly enriched uranium is the one that terrorists could most easily into an improvised nuclear device. Indeed, many experts believe that terrorist organizations would not be able to muster the necessary skills to build a much more complex plutonium bomb.

(B) If terrorists were to attempt to steal nuclear components in order to build a nuclear weapon, which countries would the terrorists target to acquire these components.

Ans.: As mentioned earlier, the most critical component would be weapons-usable nuclear material. Russia and Pakistan would be the most likely targets for terrorists.

Q. 3: Your written testimony discusses the interconnectedness of U.S. initiatives and programs pertaining to weapons proliferation. These initiatives, which exist in both domestic and international organizations, operate without a lead agency or umbrella organization to prioritize and direct specific resources and activities. This raises questions regarding coordination, including ways in which intelligence may be shared.

(A) Does an organization or other body currently exist, either within the U.S. or internationally, that you believe could most effectively administer this coordination effort, or would you suggest creating a new organization?

Ans.: Coordinating bodies do exist. In the United States, it is the interagency process within the U.S. government, involving all of the agencies with responsibilities in these areas. Internationally, coordination for many of these programs is handled through the G-8 Global Partnership for Combating Weapons and Materials of Mass Destruction. These bodies convene intermittently to harmonize the efforts of their constituent groups, but do not provide day-to-day management or policy guidance.

(B) What recommendation would you make to improve the organizational structure of nonproliferation programs and activities that would maximize the efficiency and communication between these programs without creating a burdensome bureaucracy?

Ans.: My experience during my tenure at the Department of Energy from September 1997 to January 2001 (prior to 9/11) was that in routine operations, the interagency process functioned well to resolve differences among agencies and to coordinate their activities where jurisdictions overlapped. But, standing alone, this process did not normally introduce new initiatives; this required action at the Presidential, or at least Departmental Secretary level. Once new initiatives were launched, however, the interagency worked quite well to flesh out the requirements established at the political level. This was shown in the evolution of the Clinton Administration's Enhanced Threat Reduction Initiative, which was launched after the summer 1998 Russian financial crisis, and this was no doubt the approach used by the Bush Administration to develop the Proliferation Security Initiative.

A good compromise between establishing a czar and doing nothing would be for Congress to establish a standing Senior Nonproliferation Committee in the Executive Branch, at the Deputy Secretary level, including Deputy Secretaries from the Departments of Homeland Security, Defense, State, and Energy (possibly HHS, as well). The Committee would be required to meet twice yearly to review the status of U.S. nonproliferation programs and related diplomatic initiatives and to provide recommendations to the President. Because the officials involved would be quite senior, the forum would be better able to develop and launch new initiatives than the current interagency process.

QUESTIONS SUBMITTED BY
SENATOR DANIEL AKAKA

Q 1: This week, the Director General of the International Atomic Energy Agency stated that the threat of a terrorist attack using nuclear weapons is "real and imminent" and that it was a "race against time to prevent terrorists from obtaining nuclear materials." ... Why doesn't the Administration seem to share the same sense of urgency? Are these problems too hard?

Ans.: In many respects, the Administration is taking this threat very seriously. Funding has been increased for securing nuclear weapon materials in Russia, and the Administration is pressing for greater participation by other donor states; new, Administration-led efforts are under way in the United States, within the Group of Eight,

and at the International Atomic Energy Agency to reduce the threat posed by radioactive sources; and the Administration it can take much credit for the adoption of UN Security Council Resolution 1540, requiring all states to effectively secure weapons-of-mass-destruction related materials and equipment domestically. And, of course, the Administration is devoting great effort to the overall war against terrorism.

What my colleagues and I found, however, in preparing our recent study was that the Administration has missed a number of crucial points in implementing its nuclear policies because it has failed to internalize the centrality of the nuclear terror threat as the single greatest danger we face. If this were fully appreciated, then the Department of Energy would be focusing first on securing highly enriched uranium as its leading priority. If this were fully appreciated, then Department of Defense efforts to secure nuclear weapons in Russia would be expanded and accelerated, with concerns about possibly helping Russian nuclear weapon operations given only secondary weight. If this were fully appreciated, programs would be mounted to find substitutes for the use of radioactive sources in industry, medicine, and research. But these priorities, as clear as they should be, have not been adopted by the Administration.

Q 2: The new book by the Monterey Institute Center for Nonproliferation Studies, *The Four Faces of Nuclear Terrorism,* states "at this point in history, terrorist organizations are the only entities that are seeking to rain nuclear destruction on the United States or its European allies without regard to the potential consequences to themselves or to the innumerable innocent victims of such action."

You go on to point out, "During the Cold War, our greatest concern was the danger posed by the Soviet Union's most powerful nuclear weapons, deployed on its most powerful missiles. Today, Russia's *smallest* nuclear weapons pose the greatest threat."

What should the Congress be doing that it is not doing to make the American people – and perhaps even the world – more secure?

Ans: First, Congress should press the Administration to pursue the priorities I have outlined above by adjusting U.S. nuclear policies to reflect the preeminence of the nuclear *terror* danger. Hearings, publicity, and political pressure from the Congress may be sufficient to cause this change, but the possibility of legislation to mandate these reprioritizations should also be considered, if necessary.

Secondly, as members of the Subcommittee have noted, the United States is now pursuing a considerable number of programs aimed reducing the nuclear terror threat. With its mandate to oversee the organization of the U.S. government, this committee is uniquely situated to assess how effectively all of these programs, taken together, are meeting the nuclear terror challenge, to identify areas of success, and to address gaps that may be found. I would urge the Subcommittee to exercise this broad-ranging oversight authority fully and energetically.

Q 3 (A): Should the Nuclear Suppliers Group be expanded in order to provide for the sharing of more information about actual procurements among NSG members and with the IAEA and, if so, what is the best process for ensuring that this occurs?

Ans.: Expanding the membership of the NSG has both advantages and disadvantages. The advantages are that additional states become enmeshed in a strict export control arrangement that is actively seeking to reduce proliferation dangers. In addition, information sharing among NSG members helps ensure that all members are working to reinforce each other's decisions. However, a disadvantage of expanding membership is that this can make achieving consensus more difficult, for example, in deciding on enhancements of the NSG rules. In the end, potential additions to the NSG need to be reviewed on a case-by-case basis.

The issue of sharing information with the IAEA regarding nuclear transfers that comes to the attention of NSG members and that is shared within the group is a separate issue. Clearly, this would be a desirable reform and one that could be accomplished as a matter of NSG policy, without the need for any formal international agreements. Currently, to support its inspection activities the IAEA is empowered to receive intelligence information from IAEA member states,. Special arrangements are in place at the agency to ensure the confidentiality of such intelligence information. Parallel arrangements could be made for the agency's receipt and management of information on nuclear transfers received from the NSG.

Q 3 (B): Dr. Albright calls for a "universal treaty-based system controlling nuclear export activities that is binding on states and includes a means to verify their compliance. Under such a treaty or agreement, countries would implement a set of nuclear and nuclear related export control laws and regulations and criminalization procedures, similar to those required by UNSC Resolution 1540. The agreement, however, would also mandate the IAEA to verify compliance, ensure the adequacy of those laws, and investigate illicit procurement activities. Signatories would inform the IAEA of all sensitive nuclear or nuclear-related exports, and the IAEA would have the mandate and legal rights to verify whether the transactions are legal. It would verify that a country's declaration about its nuclear or nuclear-related exports is accurate and complete."

I would appreciate your assessment of this last suggestion of Dr. Albright. Would such an approach be a useful addition to international efforts to control proliferation and if not, why not?

Ans.: In my oral testimony, I expressed reservations regarding the desirability of developing a new, universal treaty-based system for controlling nuclear exports, citing the fact that a treaty with wide membership already exists that addresses this issue, namely the Nuclear Nonproliferation Treaty (NPT). In addition, I pointed out, UN Security Council Resolution 1540 now requires all states to implement effective measures to control exports of weapons of mass destruction. This also would appear to weaken the case that a new treaty is needed. In effect, I argued, we would do better to

utilize these existing mechanisms to universalize nuclear export controls, rather than invest our diplomatic energies in developing a new treaty.

Nonetheless, a comprehensive treaty would be able to include elements that these mechanisms lack, such as an explicit mandate for an IAEA monitoring role and a list of controlled items that might go beyond those on existing multinational control lists. The most thoughtful position, therefore, might be to consider a new comprehensive treaty as a desirable goal, but to use existing mechanisms as a bridge to the treaty, whose negotiation and adoption would undoubtedly a good number of years to complete. Several steps could be taken immediately.

For example, effective export controls could immediately be made an essential and visible part of NPT compliance. Article III of the NPT prohibits all parties from exporting nuclear materials or nuclear equipment that has been "especially designed or prepared" for the use, processing, or production of nuclear materials, unless the exporter can be sure that in the recipient state any nuclear material the commodity uses, processes, or produces will be placed under IAEA safeguards. This necessarily implies that every member state must set up a system for controlling such exports and must use such a system to verify that these exports will be placed under IAEA inspection in the receiving country. States that fail to take these steps should be deemed to be in violation of the NPT, especially if there is evidence that they have permitted nuclear-specific exports without the necessary safeguards.

Malaysia may be a case in point. It appears that some nuclear items (such as molecular pumps) exported from Malaysia to Libya by the A.Q Khan network are considered internationally to be "especially designed or prepared" for nuclear use but, since they were destined for a nuclear weapons program, clearly, the nuclear material they were to help produce in Libya was not going to be placed under IAEA safeguards. A proper export control system would have examined the stated end use for the commodity, including a statement describing to the facility where the equipment was to be used, and would have confirmed that the facility was subject to IAEA inspection.

The IAEA could be called upon, under operating arrangements already in place, to investigate specific cases in recipient and/or exporter states on the grounds that the behavior under investigation – shipment of a nuclear commodity to a facility not subject to IAEA inspection – was inconsistent with the importing state's IAEA inspection obligations. The IAEA, it should be noted, already tracks imports and exports of nuclear materials around the globe. In time, it could be tasked with tracking transfers of equipment especially designed or prepared for nuclear use.

A second strengthening of international nuclear export controls that could be quickly implemented on a mandatory basis would be to have the UN Security Council interpret the requirement in Resolution 1540 that states adopt effective export controls, as embodying the requirement that states control a specific list of nuclear items, namely the list adopted by the NPT Exporters Committee or the more expansive list of the Nuclear

Suppliers Group (which includes dual-use nuclear items, in addition to those especially designed and prepared for nuclear use).

The above suggestions would take advantage of existing, legally binding international requirements that extend to a very wide range of states, providing a significant strengthening of export controls worldwide, as work on a more focused international instrument were negotiated.

Questions for the Record
Senator Peter G. Fitzgerald
International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives
Senate Committee on Governmental Affairs
Subcommittee on Financial Management, the Budget, and International Security
June 23, 2004

Questions for the Record

Questions for Baker Spring, F.M. Kirby Research Fellow in National Security Policy, Heritage Foundation

1. Mr. Spring, in your testimony you cite the "early indications of success" under the Proliferation Security Initiative (PSI), and suggest that the PSI "represents a new approach to arms control."

A. What recommendations would you make to ensure that the PSI continues to be a successful program and in your view, has the U.S. Government provided sufficient resources to ensure the success of PSI? If not, what recommendations would you make in this regard?

B. How would you like to see the PSI develop over the next year? Five years? Ten years? What long-range goals would you set for the PSI?

2. You highlight in your testimony that during the most recent PSI meeting in Krakow, Poland, on May 31st and June 1st of this year, representatives from over 60 governments worldwide convened to address the flow of weapons of mass destruction.

A. In your view, how many more countries would you like to see participate in the PSI?

B. Can you name specific countries that the United States Government should make a special effort to recruit to participate in the PSI?

C. What recommendations would you make to ensure that the participating countries are doing everything they can to counter shipments of weapons of mass destruction?

D. What mechanisms exist that allow those countries participating in the PSI to share information and their experiences – whether success stories or failures?

E. As the number of countries participating in the PSI increases, to what extent will the United States be required to provide financial support to those countries with limited resources?

3. In your testimony you highlighted how the International Atomic Energy Administration (IAEA) "underestimated the scope of the Iraqi nuclear weapons program in the late 1980s and early 1990s." Could you please elaborate on this statement and, if possible, provide some specific examples of the IAEA's work at that time? In your view, how does the IAEA's action during that timeframe relate to the needs we are facing today in countering the proliferation of weapons of mass destruction?

4. In your testimony, you stress the need to ensure the PSI remains focused on its core mission – the interdiction of weapons of mass destruction. You also recommend that separate initiatives be established to pursue dismantlement of weapons programs and verification.

A. What recommendations would you make to ensure that mission creep does not dilute the focus of the PSI on interdiction?

B. Could you please elaborate on your recommendation to establish separate initiatives for dismantlement and verification? Would these initiatives be structured in a way that mirrors the structure of the PSI?

July 14, 2004

The Honorable Peter G. Fitzgerald
Subcommittee on Financial Management,
The Budget, and International Security
United States Senate
446 Hart Senate Office Building
Washington, D.C. 20510

Dear Mr. Chairman:

This letter is in response to questions for the official record you directed to me following the June 23rd hearing on "International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives." My responses to your questions are as follows:

Question 1-A: I have the following recommendations to ensure that the PSI continues to be a successful program: 1) avoid building the PSI into an international institution with a cumbersome bureaucracy; 2) use to the maximum extent possible the state system to bolster the activities of the PSI; 3) position the PSI as an outlet for international cooperation in countering proliferation that augments the existing treaty-based non-proliferation regime; 4) keep the PSI narrowly focused on interdiction operations, including those derived from the law enforcement activities of the participating states; 5) seek the authorization for the interdiction of certain dual use systems and materials; and 6) use regional forums to promote broader support for the PSI.

There is no simple answer to the question whether the U.S. government is providing sufficient resources to the PSI. This is because it is a cooperative activity among participating states and depends on the cumulative contributions of those states. Since the PSI was established a little more than a year ago, there has been an extensive array of activities, including organizational meetings and exercises and an unspecified number of interdiction operations, which serve to indicate that the PSI is receiving adequate resources from the participating states. The U.S. has been a major contributor and I have not heard complaints from other states that the U.S. is failing to provide sufficient contributions.

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Question 1-B: In the years ahead, I would like to see the PSI build a solid track record of performing successful interdiction operations. This will require that the participating states stayed focused on the interdiction mission and not allow themselves to become distracted by tangential matters. It will also require the participating states to institute an efficient and flexible decision-making procedure for authorizing and conducting interdiction operations, as well as undertaking exercises and training activities.

Question 2-A: There is no ideal number of participating states in the PSI. In this regard, it is important to note that the PSI distinguishes between the eleven original "core" participating states and those that have expressed support for the initiative. Over 60 states have expressed support for the initiative. While it might appear that obtaining the broadest level of participation would strengthen the PSI, I believe that it is more important that all of the core states participating in exercises and operations remain committed supporters of the initiative. A "least common denominator" decision-making process for undertaking interdiction exercises and operations will weaken the overall effort. Adding participating states increases the risk that the PSI will become bogged down in internal disputes.

Question 2-B: The eleven original core participating states provide an effective base for conducting successful interdiction exercises and operations. It is questionable whether the U.S. should pursue a policy of recruiting new PSI participants. The PSI is designed to allow participating states to undertake interdiction operations on their own. In this context, the best approach for individual states to demonstrate support is by undertaking national actions to interdict the dangerous trade in weapons, weapons material and weapons production components. It is these actions that should serve as a basis for the U.S. to judge the qualifications of other would-be PSI participants.

Question 2-C: As I indicated above, the best way to ensure participating states are doing everything they should to counter weapons shipments is to review the interdiction actions they have taken on a national basis.

Question 2-D: PSI countries can share information through the full array of channels available. These include diplomatic, intelligence-sharing, law enforcement assistance, and military-to-military channels. An additional channel is the one established by the interdiction exercises that have been undertaken pursuant to the PSI.

Question 2-E: The U.S. should not expect to provide large-scale financial support to other countries under the PSI. Rather, the U.S. should expect these countries to undertake interdiction activities to fullest extent they are capable.

Question 3: In 1993, I authored a Heritage Foundation *Backgrounder* that detailed the shortcomings of the IAEA's assessment of the Iraqi nuclear weapons development program prior to Operation Desert Storm. I have enclosed a copy of that *Backgrounder* for inclusion in the record. The intervening years have not altered my view that the IAEA needs to sharpen its focus on its non-proliferation safeguards and enforcement responsibilities. It also remains my view that the U.S. must seek other approaches to addressing the proliferation threat that augment the activities of the IAEA. The PSI represents just one of those additional approaches.

Question 4-A: My central recommendations for keeping the PSI focused on its interdiction mission are: 1) do not allow it to become an international institution with a bureaucracy; 2) hold the number of core participating states to a small number of committed states; and 3) create companion initiatives to address other pressing non-proliferation issues, as opposed to expanding the mandate of the PSI.

Question 4-B: My proposals for establishing companion initiatives to the PSI would adopt a similar approach. They should build cooperation among a small number of committed states and depend on those states to furnish the assets required to undertake the required activities. I envision two such companion initiatives.

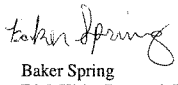
The first initiative would undertake the necessary activities to dismantle weapons of mass destruction programs in willing countries. When Libya agreed to abandon its weapons of mass destruction programs last year, the U.S. and Great Britain faced a choice. They could have turned the dismantlement responsibilities over to the IAEA and the Organization for the Prohibition of Chemical Weapons (OPCW). The U.S. and Great Britain chose to participate directly in the dismantlement activities, along with the IAEA and the OPCW. They chose wisely. This experience indicates that U.S. interests would be served by enlisting a small group of states to furnish the capabilities for dismantling weapons programs in other states that may follow Libya's example.

The second companion initiative would provide an additional verification mechanism to those provided by the IAEA and the OPCW, to provide a limited safeguard capability concerning biological programs, where no verification regime exists under the Biological Weapons Convention (BWC) and for verifying the termination of missile programs. In this case, the participating states would seek agreements with states of proliferation concern to verify they are not operating clandestine weapons programs. These agreements could allow for verification activities, for example, that are stricter than the IAEA's safeguards. The participating states would furnish the experts, equipment, and transportation to conduct inspections. These teams of inspectors would augment the inspections and safeguard activities already provided by the treaty-based non-proliferation regime.

The Honorable Peter G. Fitzgerald
July 14, 2004
Page 4

Mr. Chairman, thank you for affording me the opportunity to testify on the important subject of combating proliferation. Please find enclosed the corrected transcript of the hearing. Please do not hesitate to contract me if I may be of further service to the Subcommittee.

Sincerely,



Baker Spring
F.M. Kirby Research Fellow
in National Security Policy

Enclosure

The Heritage Foundation Backgrounder

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The Thomas A. Roe Institute for Economic Policy Studies

May 19, 1993

CONTROLLING THE BOMB: INTERNATIONAL CONSTRAINTS ON NUCLEAR WEAPONS ARE NOT ENOUGH

INTRODUCTION

Could the Persian Gulf war have "gone nuclear?" The suggestion is not so farfetched. After the war, nuclear weapons inspectors uncovered evidence that Iraqi efforts to obtain a nuclear weapon were much further advanced than Western governments had believed. Inspectors from the International Atomic Energy Agency (IAEA)—an organization affiliated with the United Nations that monitors nuclear programs worldwide—discovered that Iraqi dictator Saddam Hussein was only months away from construction of a nuclear weapon. Saddam was building a nuclear weapon despite the fact that Iraq is a signatory to the 1968 Nuclear Non-Proliferation Treaty (NPT), which is the centerpiece of the international community's campaign to prevent the spread of nuclear weapons.

In signing the NPT, non-nuclear states forswear the development of nuclear weapons. Charged by the U.N. with monitoring international compliance with the NPT, the IAEA regularly inspects nuclear research and power facilities to prevent the diversion of ostensibly peaceful nuclear facilities to weapons programs. But Iraq had built extensive weapons development facilities clandestinely, outside the view of IAEA inspectors, in clear violation of Iraq's commitment under the NPT not to acquire nuclear weapons.

The revelations about Iraq's secret nuclear weapons program, combined with North Korea's March 11 announcement of its decision to withdraw from the NPT, have raised questions about the value of the NPT and the competence of the IAEA in detecting and preventing the diversion of nuclear power technology and materials to weapons programs.[1] The revelations also have prompted many in Congress to advocate expanding the IAEA's inspection authority to search for facilities that member countries have con-

1 For one of the harshest assessments of the IAEA, see Gary Milhollin, "The Iraqi Bomb," *The New Yorker*, February 1, 1993.

Note: Nothing written here is to be construed as necessarily reflecting the views of The Heritage Foundation or as an attempt to aid or hinder the passage of any bill before Congress.

cealed. Proponents of strengthening IAEA also recommend increasing U.S. funding for the IAEA from about $22 million a year to over $27 million.

While there are ways to improve the IAEA, there are limits to what the agency can do. It is a common misunderstanding that the IAEA is responsible for enforcing the NPT. In fact, it is responsible only for detecting the diversion of peaceful nuclear facilities and materials to military purposes. Further, as an international organization, the IAEA must seek a consensus among its member states. These include the very nations whose nuclear facilities it inspects and on whose cooperation it ultimately must rely. This limits the IAEA's effectiveness because individual countries may refuse to allow inspectors to search for nuclear facilities they have hidden. The uncovering of Iraq's secret program was possible only because the inspections were forced on Baghdad as a consequence of its defeat in the 1991 Gulf war.

The IAEA also may be contributing to the very problem of proliferation that it seeks to prevent. The IAEA charter directs the organization to assist its member countries in developing nuclear technology. This is a result of the original Eisenhower "Atoms for Peace" proposal for the peaceful use of nuclear power that served as the foundation for the IAEA. Thus, the IAEA inadvertently may be assisting some countries in gaining the technical expertise to develop nuclear weapons.

Given these circumstances, it is clear that tinkering with the IAEA will not substantially slow the spread of nuclear weapons. Therefore, the U.S. needs to be cautious about the various proposals for strengthening the IAEA. Rather than relying exclusively on the IAEA to curtail the spread of nuclear weapons, the U.S. needs a policy backing up a strengthened IAEA with stronger U.S. action. Thus, the U.S. should:

- ✔ **Urge the IAEA Board of Governors, the organization's policy-making body, to focus inspections on countries that pose the most urgent proliferation threats.** The IAEA historically has conducted its inspections of nuclear facilities according to the number of nuclear facilities a particular country possesses and the ease of confirming that these facilities have not been used for military purposes. As such, countries which pose little threat of developing their own nuclear weapons, such as Germany and Japan, are inspected repeatedly, while countries such as Iraq have received relatively few inspections. Since the risk of proliferation is based on the desire of specific governments to acquire nuclear weapons, not on the number or type of nuclear facilities any particular nation possesses, the schedule of IAEA inspections should take into account the compliance record compiled by individual members.

- ✔ **Scale back the IAEA's technical assistance programs, which help member countries develop their own nuclear industries.** The IAEA's assistance of member countries in developing their nuclear industries can run counter to its non-proliferation mission. By providing these countries with the technology to produce fissionable material, the IAEA can inadvertently be assisting a secret nuclear weapons program. Before Congress increases funding for the IAEA to improve inspections, the money for the technical assistance programs should first be reduced. This will force the IAEA to be more careful about which countries it assists and the sort of assistance it provides. Before Congress gives more money to the IAEA, it should be assured that the funds will not

go to assist a country like Iraq. Nor should they be used to improve the capacity of nuclear programs to produce fissionable material.

✔ **Press for non-proliferation inspections of foreign nuclear facilities by U.S. inspectors.** There is no reason why the U.S. must rely on the IAEA alone to discover whether a country is diverting nuclear material to the production of weapons. In addition to expanding its intelligence programs to monitor nuclear proliferation, the U.S. should insist on performing its own inspections to supplement those conducted by the IAEA. While the Clinton Administration should press for inspections in all countries suspected of violations, it should insist on inspections in all countries receiving nuclear fuel and technical assistance from the U.S. Refusal to accept supplemental U.S. inspections should be interpreted as a signal that the country is trying to obtain nuclear weapons. Washington should then cut off all nuclear fuel supplies and technical assistance programs.

✔ **Press to halt the growth of uranium enrichment and reprocessing facilities.** These technologies are essential to producing highly enriched uranium and plutonium, the key ingredients for producing nuclear weapons. Of course, these facilities are also used for making fuel for non-military nuclear reactors. To prevent countries from building uranium enrichment and reprocessing facilities of their own, the U.S. should propose establishing reprocessing facilities in the U.S. and the other nuclear weapons states designated by the Nuclear Non-Proliferation Treaty: China, France, Great Britain, and Russia.[2] The goals should be not only to prevent the proliferation of enrichment and reprocessing facilities, but to limit international trade in the most sensitive elements of nuclear weapons production.

✔ **Reserve the right to use military force to defend America from nuclear proliferation threats.** No arms control effort, no matter how tightly written or strictly implemented, will stop proliferation completely. Some countries will refuse to participate in an arms control agreement, or if they do agree, they will violate it. Therefore, the U.S. will need to maintain the military capability to stop the transfers of sensitive nuclear production equipment and technology to hostile countries and to disable or destroy nuclear weapons facilities. Covert actions and military operations are appropriate means for countering nuclear proliferation if it endangers American national security.

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2 While the Nuclear Non-Proliferation Treaty designates the Union of Soviet Socialist Republics as one of the five states designated to possess such weapons, Russia is expected to succeed the USSR in this capacity.

THE INTERNATIONAL CAMPAIGN TO CONTROL THE SPREAD OF NUCLEAR WEAPONS

The centerpiece of the international effort to curtail the spread of nuclear arms is the 1968 Nuclear Non-Proliferation Treaty (NPT). Under this agreement, five designated nuclear weapons states—the U.S., Britain, China, France, and Russia (which replaces the Soviet Union) — pledged not to provide nuclear weapons or the technology to construct them to other countries. These five weapons states also agreed to support peaceful nuclear programs in non-weapon states. Non-weapon states signing the NPT, meaning all others that acceded to the Treaty, promised not to acquire nuclear explosives and to place their nuclear facilities under international safeguards. The NPT currently has over 150 participating states. The rationale behind the NPT is to use the desire of non-weapon states to acquire nuclear technology, primarily as a means to generate electrical power, as an incentive to gain pledges to forswear building nuclear arms.

Countries on the Waiting List to Join the "Nuclear Club" and Their Membership in International Nuclear Organizations

	NPT Signatory	IAEA Member
Argentina		✓
Brazil		✓
Egypt	✓	✓
India		✓
Iraq	✓	✓
Israel		✓
Iran	✓	✓
Japan	✓	✓
Libya	✓	✓
North Korea	✓*	✓
Pakistan		✓
Saudi Arabia	✓	✓
South Korea	✓	✓
South Africa	✓	✓
Syria	✓	✓
Taiwan	✓	✓

* North Korea has announced its intention to withdraw from the NPT.
Note: NPT=Non-Proliferation Treaty, IAEA=International Atomic Energy Agency. The "Nuclear Club" is made up of Britain, China, France, Russia, and the U.S.

The primary responsibility for detecting the diversion of nuclear technology to weapons purposes rests with the International Atomic Energy Agency (IAEA). The IAEA was created in 1957 as an outgrowth of President Dwight Eisenhower's "Atoms for Peace" plan, first proposed in a December 8, 1953, speech to the U.N. General Assembly. Eisenhower offered to help other countries to take advantage of the peaceful uses of nuclear power. Underlying this proposal was the assumption that the most effective way to stop nuclear proliferation was for the U.S. and other nuclear powers to achieve greater control over the trade in nuclear technology.

The IAEA was formed to serve two purposes: to facilitate international cooperation in developing nuclear energy programs for peaceful purposes, and to monitor whether nations receiving nuclear technology were using it to build weapons. Although the IAEA was established before the NPT, it was accorded the role of "safeguarding" against the diversion of nuclear technology under the terms of the NPT. The IAEA's responsibility was to confirm that a non-weapon state was using its nuclear facilities only for peaceful

purposes. While the IAEA has the right to inspect facilities, it has no power to enforce compliance with the NPT. Enforcement is the responsibility of the international community. The IAEA reports annually to the U.N. General Assembly and to the U.N. Security Council. When a country is caught violating the NPT, the Security Council is supposed to recommend action to enforce the agreement.

Headquartered in Vienna, the IAEA consists of three main organizations: the Board of Governors, the General Conference, and the Secretariat. The Board of Governors is the senior policy-arm of the Agency. Its 35 members serve one-year terms. The General Conference is comprised of delegates from each of the IAEA's 114 member states. Its role is confined largely to organizational questions. Proposals before the General Conference must be approved by two-thirds of the members present. The Secretariat, led by a Director General, performs the daily functions of the IAEA. These include inspections of nuclear facilities and technical assistance to member states. The Director General, currently Hans Blix of Sweden, is elected to a four-year term by the Board Governors with the approval of the General Conference. The IAEA budget in 1990 was about $178 million, with the U.S. contributing about $22 million.

The IAEA inspection staff monitors nuclear facilities throughout the world to detect whether nuclear materials intended for peaceful purposes are being used to construct weapons. These inspectors, who may be drawn from any member country, monitor the transfer of nuclear materials to nuclear facilities. Nuclear weapons can be produced from either highly enriched uranium or plutonium. Highly enriched uranium consists of at least 90 percent of the uranium 235 isotope. Low-enriched uranium, which consists of about 3 percent of uranium 235, is used in most power reactors. Since natural uranium contains less than 1 percent uranium 235, some degree of treatment, or enrichment, is required to produce fuel for nuclear power reactors. The IAEA monitors the fuel to assure that it is not enriched further to produce bomb-grade material.

Plutonium is produced from natural or low-enriched uranium fuel in power reactors as the fuel is spent during power production. The reaction cycle transmutes small quantities of the uranium fuel into plutonium, which must be extracted from the spent fuel. This extraction procedure is called reprocessing. In this instance, the IAEA inspectors account for the spent fuel to ensure that none has been used for producing plutonium through reprocessing. Plutonium also can be used as a power reactor fuel. While the U.S. has abandoned its plutonium fuel program, Britain, France, Germany, and Japan have continued theirs. Where power reactors are fueled with plutonium, the IAEA inspectors must account for the plutonium to ensure that none has been diverted to produce a nuclear weapon.

While the majority of facilities inspected by the IAEA are those that have been "declared" by individual governments, the IAEA has the authority to conduct uninvited special inspections of the nuclear facilities that are not acknowledged by the member government. But it has shown reluctance to undertake such special inspections without authorization from the U.N. Security Council. The reason: the IAEA depends on a consensus in making decisions and is reluctant to accuse a member of violating its non-proliferation commitments. Such timidity was a key factor in Iraq's ability to dupe nuclear inspectors. Iraq constructed several secret nuclear facilities which it refused to acknowledge to the IAEA. Prior to the Gulf war, the IAEA did not order special inspections of Iraq's nuclear facilities because it feared undermining the Agency's international consensus.

Building on the NPT

The efforts of the IAEA were supplemented in the 1970s by two international organizations which established guidelines for the export of nuclear materials, production equipment, and technologies. The first was the Non-Proliferation Treaty Exporters Committee organized by advanced countries, often referred to as the Zangger Committee, after its Chairman, Swiss nuclear expert Claude Zangger. As a result of the Zangger Committee's work, ten countries, including the U.S., Britain, and the Soviet Union, established in August 1974 a list of nuclear materials and production equipment that would not be exported unless the purchasing country abided by IAEA safeguards.[3] These countries have since been joined by several other countries, including Japan and Sweden, capable of exporting nuclear technology.

The Zangger Committee guidelines were expanded through meetings of the Nuclear Suppliers Group, another association of countries that export nuclear technology. Members of this group are the U.S., Canada, France, Britain, Japan, the Soviet Union, and West Germany. The Nuclear Suppliers Group agreed in January 1976 to expand on the Zangger Committee guidelines by including France (which was then neither a signatory to the NPT nor a participant in the Zangger Committee). The group also agreed to impose export guidelines not only on nuclear technology, but on nuclear materials and production equipment. Other countries have since adopted the Nuclear Supplier Group guidelines as well. These countries are Australia, Belgium, Czechoslovakia, East Germany, Finland, Italy, the Netherlands, Poland, Sweden, and Switzerland.[4] The Nuclear Suppliers Group, during a meeting in March 1991, established additional export guidelines on equipment used to produce nuclear facilities and equipment that could be used either in the nuclear sector or other industries.

IRAQ'S NUCLEAR WEAPONS DEVELOPMENT PROGRAM

The combination of international control mechanisms on the export and use of nuclear materials, production equipment, and technology is designed to detect and ultimately deter circumvention of the NPT. But the system is far from perfect, as the revelations regarding Iraq's secret nuclear weapons program have made clear.

Begun in the mid-1950s, Iraq's nuclear program was at first modest. Baghdad opened a Soviet-supplied research reactor in 1968 and acceded to the NPT the following year. In the 1970s Iraq became more ambitious, acquiring French assistance for its nuclear power and research program.[5] The French agreed to help Iraq build two reactors at the Tuwaitha site near Baghdad. The larger of the two reactors was known as Osirak. The project quickly raised concerns about proliferation because the Osirak reactor required highly en-

3 Leonard S. Spector, *Nuclear Proliferation Today* (Cambridge, Massachusetts: Ballinger, 1984), pp. 446-447. The original ten countries were: U.S., Australia, Canada, Denmark, Finland, Great Britain, the Netherlands, Norway, the Soviet Union, and West Germany.

4 *Ibid.*, pp. 447-451.

5 For a detailed description of Iraq's nuclear program prior to the destruction of Tammuz I reactor by the Israelis in 1981, see *ibid.*, pp.165-188.

riched uranium fuel, a material suitable for constructing an explosive device. In addition, the reactor was capable of producing small quantities of plutonium.

The Iraqi government also bought from Italy the technology needed to extract plutonium from treated uranium, which is necessary to construct an explosive device. Iraq purchased large quantities of processed uranium ore and smaller quantities of depleted uranium from Brazil, Italy, Niger, and Portugal. This uranium could be transformed into weapons-grade plutonium in the Osirak reactor.

Iraq's drive to develop nuclear weapons was set back when Israeli jets destroyed the Osirak reactor on June 7, 1981. Attempts to rebuild the reactor after the raid were hampered because of several of Iraq's suppliers of nuclear technology—primarily France and Italy—would not provide assistance until Iraq first complied with IAEA safeguards. But Iraq launched a more vigorous effort to obtain nuclear weapons as its 1980-1988 war with Iran wound down. This increased activity resulted in a series of revelations in 1989 about Iraq's secret nuclear program. In 1989 Western governments discovered that Iraq was trying to obtain uranium enrichment centrifuges, which are used to increase the concentration of the isotope uranium 235. On March 28, 1990, a U.S. Customs Service "sting" operation led to the arrest of five people in London for attempting to acquire nuclear bomb triggers for Iraq.[6]

Despite these revelations, the full extent of Iraq's nuclear program did not become apparent until after the end of Operation Desert Storm in early 1991. As a condition for terminating the conflict, U.N. Security Council Resolution 687 required Iraq to destroy all of its nuclear weapons facilities. To implement the resolution, the Security Council instructed the IAEA to conduct inspections of Iraq's nuclear facilities, beginning in May 1991.

Before the inspections began, Iraq revealed for the first time that it was producing its own processed uranium ore (called "yellowcake") at its Al-Qaim facility.[7] But the Iraqis deliberately understated the scale of their uranium-enrichment program. During their second inspection in the summer of 1991, IAEA inspectors photographed Iraqis removing uranium enrichment equipment at Falluja, some forty miles west of Baghdad.[8] Subsequently, Baghdad was forced to admit in a July 7, 1991, letter to the Security Council that it was clandestinely operating three separate uranium enrichment programs, each using a different technology.

Iraq's deceptive practices toward the IAEA inspectors led to a U.N. deadline for revealing all remaining nuclear sites. Baghdad submitted a list of additional facilities three days after the deadline of July 25, 1991. This list revealed that Iraq also had mounted a secret program for reprocessing plutonium. But even this list was incomplete. Another inspection discovered a previously unknown facility, called the Al-Furat project.[9]

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6 Leonard S. Spector, *Nuclear Ambitions* (Boulder, Colorado: Westview, 1990), pp. 192-193.

7 David Kay, testimony before the United States Senate Committee on Foreign Relations, Senate Hearing 102-422, "Nuclear Proliferation: Learning from the Iraq Experience" (Washington, D.C.: Government Printing Office, 1992), p. 14.

8 *Ibid.*, p. 15.

9 *Ibid.*

In September 1991, an IAEA inspection team discovered at a petrochemical facility near Baghdad over 45,000 pages of documents outlining the full scope of the Iraqi nuclear weapons program. The documents removed all doubt that Iraq was managing a very ambitious clandestine nuclear weapons program.[10] The discoveries made in the earlier inspections led the IAEA to supervise the destruction of Iraqi nuclear facilities at Al-Atheer and other locations in April, May, and June of 1992. The August 1992 IAEA inspection led the inspection team's leader, Maurizio Zifferero, to declare that the Iraqi nuclear program was "at zero." But the IAEA also recommended caution, arguing that Iraq still retains the scientific expertise and technical know-how to resume its nuclear weapons program.[11]

IAEA inspections continue in Iraq despite Saddam's footdragging and frequent noncompliance. The Iraqis are hostile toward the IAEA inspectors, often trying to intimidate them with threats of force. Western observers speculate that the Iraqis may be trying to prevent the IAEA from discovering a secret underground nuclear facility.

IRAQ'S NUCLEAR PROGRAM SPURS CONGRESS INTO ACTION

The dramatic revelations unearthed by the inspections of Iraq's nuclear program have spurred Congress to consider several legislative proposals to "strengthen" the IAEA. Among these is an increase in U.S. funding for the IAEA and an expansion of its authority to conduct inspections of so-called undeclared nuclear facilities. Companion measures offered in the last Congress by Representative Edward Markey (H.R. 2755) and then-Senator Timothy Wirth (S. 1601) would direct the U.S. to undertake multilateral negotiations to expand the inspection authority of the IAEA. Two other companion measures, introduced by Representative Fortney Stark (H.J.Res. 351) and Senator John Glenn (S.J.Res. 216), recommend giving the IAEA the power to impose fines on countries that violate safeguard procedures. Stark and Glenn also proposed expanding the coverage of IAEA safeguards to include facilities that manufacture equipment, such as centrifuges, that are used to produce fissionable material or nuclear explosives. While neither of these proposals was enacted in 102nd Congress, attempts certainly will be made to adopt them in the current 103rd Congress.

Weakness of the IAEA Action Proposals

There are two problems with Congress's approach to strengthening the IAEA. First, congressional reformers focus almost exclusively on the IAEA's inspection mandate, while ignoring the fact that the IAEA's role in assisting supposedly non-military nuclear industries inadvertently contributes to the problem of proliferation. Second, the proposal by Representative Stark and Senator Glenn overlooks the weaknesses of the IAEA, which can work only when a consensus exists among its members. Although a strong international consensus produced dramatic results in ferreting out Iraq's nuclear secrets, this was an unusual situation because of the obvious threatening nature of Iraq. Such an

10 *Ibid.*, p. 16.
11 Reuter, "Iraq Seen Unable to Make A-Bomb," *The Washington Post*, September 5, 1992, p. A30.

international consensus may be lacking in the future if the offender is less bellicose than Saddam Hussein.

It would be unwise for the U.S. to become overly reliant on the IAEA for curtailing the spread of nuclear weapons. The agency has failed in the past, and it will surely fail again. America needs a stronger policy, one that does not depend exclusively on the good will and agreement of other nations.

STRENGTHENING THE IAEA

The U.S. should recognize the IAEA has both strengths and weaknesses. Once this is realized, the Clinton Administration can develop an anti-proliferation policy that seeks not only to reform the IAEA, but to prepare for the times when it will surely fail. Thus, the U.S. should:

✔ Urge the IAEA Board of Governors to focus inspections on countries that pose the most urgent proliferation threats.

Some countries receive far fewer IAEA inspections than others. For example, while Iran and India are seldom inspected, Canada, Germany, and Japan, together account for two-thirds of IAEA inspections.[12] To be sure, Canada, Germany, and Japan have more nuclear facilities to inspect than Iran or India, and these facilities are of types that need to be closely monitored to account for the whereabouts of their nuclear fuel. But there is no indication that these three countries have attempted to use their nuclear facilities to build nuclear weapons. The same cannot be said of India, which exploded a nuclear device in 1974, and Iran, which is believed to be pursuing a nuclear weapons program. Therefore, the IAEA's system for scheduling inspections is not only wasteful and inefficient, but ineffective because it targets the wrong countries.

The risk of nuclear proliferation posed by a country is based on the nuclear ambitions of its government, not merely on the number or type of its nuclear facilities. Therefore, the IAEA should revise its inspection schedules to concentrate on the most likely threats of nuclear proliferation, such as Iraq. The IAEA also should establish a minimum number of inspections even for countries with spotless records. No country should be allowed to exempt itself from the inspection process.

✔ Scale back the IAEA's technical assistance programs, which help member countries develop their own nuclear industries.

The IAEA historically has allocated funds equally to inspection and technical assistance programs. In 1992, roughly $65 million will go to each of these activities.[13] This division of resources, largely the result of demands by Third World members, is misplaced. More funds should be given to inspections than to assisting non-military nuclear programs. Before the U.S. makes large-scale increases in its contribution to the

12 Telephone interview on June 12, 1992, with David Sloss, of the Arms Control and Disarmament Agency.
13 These figures were supplied by the International Atomic Energy Agency Liaison Office in New York.

IAEA budget, it should demand that the IAEA give a higher priority to its inspection or "safeguard" budget.

The IAEA's technical assistance to nuclear industries runs counter to its nonproliferation mission. Since this assistance sometimes ends up helping tyrants like Saddam Hussein to build weapons, it should be curtailed. Before Congress increases funding for the IAEA, it should press it to reduce spending on technical assistance to questionable countries like Iran and Iraq. It is disturbing that the IAEA in 1990 provided Iraq with $266,000 of technical assistance.[14]

✔ Press for non-proliferation inspections of foreign nuclear facilities by U.S. inspectors.

When the U.S. and other nuclear supplier states provide nuclear fuel or facilities to so-called non-weapons states, they generally require that the recipient country allow periodic IAEA inspections of its facilities. The U.S. and other nuclear suppliers rely heavily on the IAEA to warn them if nuclear fuel or facilities are used illegally to manufacture weapons.

The IAEA's Director General, Hans Blix, has emphasized that much of Iraq's illegal nuclear activity was conducted secretly at sites not monitored by the IAEA. Indeed, on October 8, 1991, he told the U.N. Security Council: "The lessons from Iraq are almost written on the wall. No inspection system can blindly grope for undeclared facilities."[15] But Blix is sidestepping an important point. Iraq was able to produce undetected small amounts of plutonium from uranium at its Tuwaitha facility, which was under IAEA safeguards.[16] Therefore, there is reason to believe that IAEA safeguards may not be adequate to prevent a determined regime from attaining nuclear weapons.

The U.S. need not rely exclusively on the IAEA to discover whether the NPT is being violated. In addition to focusing its own intelligence assets on detecting nuclear weapons development programs, the U.S. should insist on performing its own inspections of nuclear facilities to supplement those conducted by the IAEA. Supplemental inspections could be stipulated as part of a sales agreement with a foreign country's nuclear agency. In addition, the U.S. could provide inspection services as part of an agreement between other countries. For example, it could assist South Korea in inspecting the nuclear facilities of North Korea. While these inspections should in no way be interpreted as a substitute for IAEA inspections, they can help lessen the IAEA's heavy inspection burden. However, if a country refuses these supplemental inspections, it should be interpreted as a sign of bad faith and as a possible indication that an illegal nuclear weapon program is underway.

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14 According to the International Atomic Energy Agency's 1990 Report on Technical Assistance.

15 Blix's statement is reprinted in Zachary S. Davis and Warren H. Donnelly, "Iraq and Nuclear Weapons," Congressional Research Service, March 2, 1992, p. 8.

16 Leonard S. Spector, *Deterring Regional Threats from Nuclear Proliferation* (Carlisle Barracks: U.S. Army War College, 1992.), p. 17.

✔ Press to halt the proliferation of enrichment and reprocessing facilities.

Enrichment and reprocessing technologies are essential to producing highly enriched uranium or plutonium, the key ingredients for producing nuclear weapons. Thus, the spread of enrichment and reprocessing facilities around the world is itself a nuclear weapons proliferation threat.

The U.S. argued in the Nuclear Suppliers Group in 1975 that nuclear supplier states should prohibit the transfer of uranium enrichment and reprocessing technology and facilities as a means of preventing nuclear proliferation.[17] The U.S. should revive this proposal and plan to establish a multilateral agreement between nuclear weapons states and non-weapon states to govern the transfer of uranium enrichment and reprocessing technologies. The U.S., Britain, China, France, and Russia would pledge to make enriched uranium or plutonium fuel available to non-weapons states if they pledged not to build their own enrichment or reprocessing facilities. Nuclear suppliers also would agree to bar the export of enrichment or reprocessing facilities and their components.[18] The near-term goal should be to prevent the spread of enrichment and reprocessing facilities beyond those countries already possessing them.

✔ Reserve the right to use military force to defend America from nuclear proliferation threats.

No non-proliferation agreement, no matter how tightly written or strictly enforced, will completely prevent the spread of nuclear weapons. IAEA inspections did not deter Iraq from trying to build nuclear weapons. While these barriers slowed the Iraqi nuclear weapons program, the 1981 Israeli raid on the Osirak reactor and the 1991 Persian Gulf war were mainly responsible for Saddam not getting the bomb.

The IAEA has fairly broad authority to inspect the nuclear facilities of member states, but it is not an enforcement agency. According to the IAEA's charter, the IAEA Board of Governors has three options when it discovers violations. First, it can curtail or suspend nuclear assistance to the offending country. Second, it can demand that the member state return materials and equipment made available to it. Third, it can suspend the country's IAEA membership. However, the IAEA has no direct authority to dismantle, destroy, or otherwise render harmless any nation's nuclear facilities. In Iraq's case, this authority was provided by U.N. Security Council Resolution 687, which conditioned the February 27, 1991, cease-fire in the Persian Gulf war on the dismantling of Iraq's weapons of mass destruction.

To take such strong action in the future, the IAEA will need a supportive international consensus and the specific approval of the Security Council. But such conditions may not be forthcoming. Given the inherent weaknesses of the IAEA as an institution, the U.S. must be prepared to block, by military force if necessary, the transfer of sensi-

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17 Spector, *Nuclear Proliferation Today*, pp. 448-449.

18 Title I of the Nuclear Non-Proliferation Act of 1978 contains the legislative authority for the Clinton Administration to pursue such an agreement.

tive nuclear production equipment and technology when they pose a threat to U.S. security and interests. Further, Washington must be prepared to disable or destroy weapons facilities if a transfer already has taken place. Covert actions and military operations are both necessary parts of such a policy. Covert actions could include interdicting clandestine shipments of sensitive nuclear production equipment and weapons components. Military options include bombing missions such as the one undertaken by the Israelis in 1981. Also U.S. special operation forces may be called upon to disable or destroy a nuclear weapons facility. In both cases, emphasis should be placed on developing military tactics that reduce the risk of disbursing radioactive material.

CONCLUSION

The revelations about Iraq's nuclear weapons program underscore the weaknesses of the IAEA as a watchdog against nuclear proliferation. Iraq is not likely to be the last country to try illegally to acquire nuclear weapons. North Korea announced its withdrawal from the NPT on March 12, 1993. It also announced it would bar IAEA inspectors from two suspicious sites.

In order to address the weaknesses in the international nuclear inspection system, the U.S. first will need to convince the IAEA to revise its inspection schedule. Second, it should demand that the IAEA change its budget priorities, to assure that inspection activities are funded more generously than technical assistance programs for nuclear industries. It should back such a demand by refusing to give the IAEA more money until its current priorities change. Third, the U.S. should conduct its own inspections to supplement those performed by the IAEA. Fourth, the U.S. should forge an international agreement that halts the trend toward the proliferation of uranium enrichment and reprocessing facilities around the world. Finally, the U.S. must be prepared to take covert or even overt military action to stop nuclear proliferation, when arms control fails to do the job.

This policy will build on the International Atomic Energy's Agency's strengths, while compensating for its weaknesses. International agreements are not enough in the war against nuclear proliferation. A threat as serious as this requires U.S. action beyond relying on the good faith of the likes of Saddam Hussein.

Baker Spring
Senior Policy Analyst

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July 14, 2004

The Honorable Daniel K. Akaka
Subcommittee on Financial Management,
The Budget, and International Security
United States Senate
446 Hart Senate Office Building
Washington, D.C. 20510

Dear Senator Akaka:

This letter is in response to questions for the official record you directed to me following the June 23rd hearing on "International Smuggling Networks: Weapons of Mass Destruction Counterproliferation Initiatives." My responses to your questions are as follows:

Question 1: The PSI, because of its built-in flexibility and small number of "core" participants, should seek standards for interdicting dual use equipment and components that do not necessarily reflect the consensus-based definitions established by existing international agreements. Indeed, I hope PSI states will reject a single standard to apply to all states of proliferation concern regarding the shipment of dual use equipment and components. Rather, specific interdiction operations for disrupting the flow of sensitive dual use equipment and components should be undertaken based, in part, on the proliferation activities of the target states. Further, I would not rely on a "separate PSI agency" to set comprehensive standards. The better alternative is for the PSI core participants to undertake specific interdiction operations on either a national or cooperative basis as specific decisions to design and initiate operations are made. In short, the flexibility of the PSI should allow for custom-built interdiction operations, whether the target shipment consists of weapons, weapons production facilities and equipment, or dual use equipment and components.

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The Honorable Daniel K. Akaka
July 14, 2004
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Question 2: It is true that the individual states participating in the PSI have both strengths and weaknesses in terms of their abilities to detect illicit shipments and interdict them. I do not expect the PSI to result in all its participating states achieving equivalent capabilities. Rather, I expect each state to perform national interdiction operations and contribute to cooperative interdiction operations to the best of their ability, and in the case of cooperative interdiction operations, to coordinate their activities to take the best advantage of each state's contribution. While all PSI participating states should seek to improve their interdiction capabilities as the initiative matures, I do not believe it is necessary to establish a uniform standard. Certainly, this approach is better than establishing a uniform standard among a large number of states that is based on the "least common denominator."

Senator Akaka, thank you for your ongoing interest in the important subject of combating proliferation. Please do not hesitate to contract me if I may be of further service to you and other members of the Subcommittee.

Sincerely,

Baker Spring

Baker Spring
F.M. Kirby Research Fellow
in National Security Policy