ASSESSING THE BIOLOGICAL WEAPONS THREAT: RUSSIA AND BEYOND

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ASSESSING THE BIOLOGICAL WEAPONS THREAT: RUSSIA AND BEYOND

WEDNESDAY, MAY 7, 2014

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON EUROPE, EURASIA, AND EMERGING THREATS,
COMMITTEE ON FOREIGN AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:07 p.m., in room 2200, Rayburn House Office Building, Hon. Dana Rohrabacher (chairman of the subcommittee) presiding.

Mr. ROHRABACHER. I call this subcommittee hearing to order. The subject today is, "Assessing the Biological Weapons Threat: Russia and Beyond." The purpose of today's hearing is review the progress of the United States and our partners in Eurasia have made to dismantle and secure the remnants of the Soviet Union's biological weapons program. We will be discussing what the United States and our partners in Russia, Central Asia and the caucuses have accomplished, what, if any, lessons have we learned, and what we can or should not be done—or what can and what should be done to strengthen the Biological Weapons Convention.

During the Cold War, the Soviet Union developed an offensive biological weapons program. It was supported by a large network of facilities which employed an estimated 60,000 workers at its height. Soviet scientists were able to engineer pathogens so deadly that they could be deployed with the same killing power as a nuclear bomb. Biological weapons created in labs are inherently different from natural diseases. Weaponized germs are purposely made to be more deadly, act differently, and resistant to medicine. They can also be delivered in extremely high doses or in combinations to create certain results.

It is alarming to hear that the Soviets continue to develop these weapons into the early 1990s in violation of the 1972 Biological and Toxin Weapons Convention, or the, as it is known as, the BWC. That treaty, still in force today, bans the development, production, and stockpiling of biological weapons. The United States Government, by comparison, unilaterally and completely ended its weapons program, beginning in 1969, so we rapidly ended our biological weapons program as the Soviet Union accelerated theirs.

After the disintegration of the Soviet Union, the United States worked to secure these deadly pathogens, dismantle the facilities, and prevent scientists from selling their knowledge on the black market. Congress created the Cooperative Threat Reduction Program, sometimes informally referred to as Nunn-Lugar, and this

was to secure the WMD materials in Russia and the newly independent States formerly ruled by Moscow.

To date, our Government has spent over $2 billion to secure biological weapons facilities and related materials in the former Soviet Union. I am pleased by the apparent success of these initiatives and at least the preceded success in many cases. The cooperation between our Government and many other countries in Central Asia and the caucuses has led to a safer world, we hope, and that is what we will be talking about today, we believe.

An important part of the BWC is that every 5 years there is a review conference, and it is convened to find ways to improve the convention and to share the data. The next review conference is set to take place in 2016. I look forward to hearing from the witnesses and to hear about their conclusions that they have had about how successful our efforts have been to secure former Soviet biological weapons sites, and based on that experience, what new lessons we can apply to verification or inspections of suspected biological weapons programs in other situations.

There are steps we should take to improve and strengthen the BWC, are there such steps that we can take? And that is what we need to hear today as well, and have we used the lessons from implementing Nunn-Lugar to improve our own defense, at least our own defenses in case of a future biological attack.

Without objection, all members have 5 legislative days to submit additional written questions or extraneous materials for the record.

And with that, I turn to our ranking member, Congressman Keating, for his opening statement.

Mr. KEATING. Well, thank you, Mr. Chairman.

I am pleased to welcome Dr. Smithson, Dr. Franz, Dr. Davis, and Mr. Leitenberg. I am certain we are going to benefit from all your experience. I am pleased, in particular, that Mr. Leitenberg is with us today. Mr. Leitenberg's 2012 book, which was coauthored with Raymond Zilinskas is widely viewed as the seminal history of the Soviet Union's biological weapons program, including the covert program launched in 1970s, well after the Soviet Union signed onto the Biological Weapons and Toxins Convention.

Since the mid-1990s, the United States has invested billions of dollars through Cooperative Threat Reduction Program in dismantling and decontaminating biological weapons testing and productions sites in the former Soviet Union. U.S. programs have also focused on securing pathogens and employing former weapons scientists in civilian work.

This has not been an easy task, given the scope of the Soviet biological weapons program, which at one point employed an estimated 60,000 people at more than 50 sites throughout the Soviet Union.

Although cooperation with former Soviet republics in Central Asia has been generally successful, resulting in the decontamination of biological weapons facilities and containment of dangerous pathogens, the same cannot be said for our cooperation with Russia. In 1992, Russian President Boris Yeltsin acknowledged the existence of a covert Soviet program. He publicly committed Russia to establishing compliance with the biological weapons and toxins convention by prohibiting offensive biological weapons work, initi-

ating the dismantlement of the program inherited from the Soviet Union, and agreeing to allow on-site verification procedures of this dismantlement.

Despite these commitments, Russia refused to allow international inspection in key biological weapons facilities, a policy continued under President Putin. As a result, there has been considerable uncertainty about the dismantlement status of Russia's inherited biological weapons capabilities and reason to believe that Russian scientists may still be engaging in research and development activities. The recent deterioration in U.S. relations with Russia complicates matters even further, as do President Putin's recent statements suggesting a willingness to use biological weapons to "respond to new challenges."

As such, there is much we do not know about Russia's current programs or their intentions. Indeed, what is most striking about the threat posed by biological weapons is how much we don't know. I hope this hearing will help the subcommittee to better understand the scope of the threat as well as the appropriateness and effectiveness of U.S. measures to counteract the threat.

In particular, I look forward to learning how other countries perceive U.S. policy and our commitment to eliminating biological weapons. Successive administrations, Republican and Democrat, have advocated against adding a verification mechanism to the BWC. In 2001, former Under Secretary of State for International Security John Bolton, an official in the George W. Bush administration, argued that traditional arms control measures would not work for biological weapons. Obama administration officials have made similar claims. I look forward to hearing our panelists' views on whether it is possible to strengthen the BWC, and if so, how useful new protocols would be in countering the threat posed by biological weapons.

I hope our witnesses will also assess the risk that Soviet biological weapons, materials, or know-how have fallen into the hands of rogue states or nonstate actors and whether any state or nonstate actors currently have the capability sufficient to use biological weapons to create a mass casualty event.

Finally, despite considerable debate over the extent of the threat posed by biological weapons, the United States has spent over $64 billion on biodefense programs since the anthrax scare of 2001. I hope our witnesses will be able to comment on whether this massive expenditure is proportionate to the threat and welcome their thoughts on the effectiveness of our biodefense programs.

Thank you, Mr. Chairman. I yield back.

Mr. ROHRABACHER. Thank you, and do either of our other colleagues have—Judge Poe. You have an opening statement.

Mr. POE. Thank you, Chairman.

I thank the witnesses for being here. As you know, Mr. Chairman, we are in judiciary in a markup dealing with revising the PATRIOT Act, so I will have to excuse myself and go back to that.

The problem we face today is, how do we protect Americans from the threat of biological weapons when we are dealing with a country, primarily the leader of this country, who cannot be trusted to tell the truth about anything? Now, the United States, United Kingdom eliminated their biological weapons programs over 40

years ago, before the Biological Weapons Convention even existed. The Soviet Union promised, they promised to stop their biological weapons program, but of course, they didn't. Their biological weapons program remained active until the Soviet Union fell in the early 1990s.

Today, Russia is led by Colonel Putin, KGB, who would like nothing more, in my opinion, than to go back to the glory days of the old Soviet Union. Putin, or the Napoleon of Siberia, as I like to call him, has taken over part of a sovereign country, at least two of them now, Georgia and part of Ukraine. I have been to both.

He is using his military and political operatives in these countries to create unrest, and then he says he has to go in and control the area to stop the unrest he started. He did that in both Georgia and Eastern Ukraine, and I do not believe he is through with his aggression. Who's next? Moldova? We will see.

So that is who we are dealing with, Mr. Putin, and he and Russia have signed onto the Biological and Toxin Weapons Convention, the BWC, but we do not know if Russia has followed it because there is no true verification measures in place. Some believe that it has been reported by some that the Russians in fact helped facilitate chemical weapons going to Syria. I don't know if that is true or not, but that has been out there.

In 2009, this administration stopped even negotiating about trying to verify a country was following the BWC; instead, the State Department believes that transparency and diplomacy are enough. After Russia's invasion of Ukraine, I wonder if we still follow that philosophy. Apparently, we do. It appears to me, it is the height of ignorance to trust Putin and his government to keep its word on anything; therefore, verification must be an absolute.

Putin is not our ally; he is not a friend. He is not a friend of the world. And I certainly don't think we can let him get away with breaking his word, so we must act accordingly.

And thank you, Mr. Chairman. I yield back.

Mr. ROHRABACHER. That is just the way it is.

Mr. POE. That is just the way it is, Mr. Chairman, to quote a phrase.

Mr. ROHRABACHER. And Mr. Sires.

Mr. SIRES. I will be very brief.

Chairman, thank you for holding this hearing and thank you for being here today. I have a big concern about the region that used to be part of the Soviet Union, because a lot of these weapons were made in some of these countries, and I am concerned that, are they secure, because they have had a number of militant Islamic groups in this regions? And I am concerned that not—the whole world is in danger from these groups, so I just want to hear what you have to say and maybe get a idea how secure some of these places are where they made some of these weapons. Thank you.

Mr. ROHRABACHER. Oh, thank you.

To testify before us today, we have four distinguished experts on this topic. Each of your full statements will be made part of the record. If you could keep your statements, the verbal part of it, down to about 5 minutes apiece, that would be a big help, but your actual—the whole statement that you have will be part of the record.

Dr. Amy Smithson is a senior fellow at James Martin Center for Nonproliferation Studies and an expert on biological weapons. In the past, she has worked for the Center on Strategic and International Studies and the Henry Stimson Center. At the Stimson Center, she founded their Chemical and Biological Weapons Nonproliferation Project, and she has also worked to help—worked to and helped former weapons scientists engage with civilian companies, thus finding them a peaceful way to use their talents and skills.

We also have with us Dr. David Franz, a retired colonel and a 27-year veteran of the United States Army. He served 23 of those years in the Army Medical Research and Materiel Command and came to command the Army's Medical Research Institute of Infectious Diseases. During the 1990s, he served as a member of a joint British team which inspected former Soviet bioweapons sites. He also later served as the chief inspector for three United Nations inspections missions to Iraq, focusing on that country's bioweapons program.

Mr. Davis served in the Royal Navy and spent—Mr. Davis, our next witness—spent—served in the Royal Navy and spent 10 years in British Intelligence as its principal biological warfare analyst. He debriefed high level Soviet defectors regarding their biowarfare program, and after 1991, he went on the ground to inspect Soviet weapons sites. He has had a very distinguished academic and private sector career with numerous honors, including the Order of the British Empire, bestowed by Queen Elizabeth, II. Mr. Davis is also a fellow in the pharmaceutical medicine and holds doctorate degree in philosophy from the University of Oxford.

Mr. Milton Leitenberg is a senior research scholar at the University of Maryland Center for International and Security Studies. He has almost four decades of experience working in the arms control and issues affiliated with that, and he has been with the Stockholm International Peace Research Institute and published and edited over 150 scholarly works, including a book recently published by Harvard University on the history of Soviet biological weapons and the weapons program.

So I would ask all of you again to keep your statements down to about 5 minutes verbally, but you can put whatever else you want right in the record, and we will start with Dr. Smithson.

STATEMENT OF AMY SMITHSON, PH.D., SENIOR FELLOW, JAMES MARTIN CENTER FOR NONPROLFERATION STUDIES

Ms. SMITHSON. Good afternoon. Since many of the other panelists will focus on issues of Russia and Central Asia, although I address those in my written statement and have been to many of those facilities, I will concentrate instead in my oral remarks on how to strengthen the BWC. And in doing so, what you are going to get is not just the benefit of my thoughts but literally an array of the top experts around the world and from the United States biopharmaceutical industry as well as from the United Nations Special Commission, which was established in 1991 after the first Gulf War to strip Iraq of its weapons of mass destruction.

With regard to the former group of scientists, the ones from the U.S. industry, I convened them on a number of occasions to ponder

whether or not the BWC could indeed be monitored because conventional wisdom says that is not possible. And much to my surprise, quite frankly, they crafted a detailed monitoring protocol for the BWC that relies on many of the standard tools that the inspectors of UNSCOM later used when they went into Iraq.

Now, I don't have time to go into the details of this proposal. I would like to, in question and answer, but what I would like to leave you thinking about that proposal is that it is much more stringent than the draft protocol that the United States Government rightly rejected in 2001. So they are asking for tougher monitoring provisions.

It is also quite contrary to the position of the industry's main trade association, PhRMA, which tends to say that just having inspectors on site could compromise its trade secrets. In contrast, they believe that their monitoring protocol could be implemented without doing that. In fact, they think it would be very, very effective, and their monitoring protocol is equally or less demanding than the inspections that the industry currently undergoes from the Food and Drug Administration. In all except for two cases, one would be the size of the inspection team, which would come with a pack of U.S. escorts that might be difficult for some companies to handle, and the other is the length of time that they would stay on site.

Now, after this work was completed, and I started to interview the UNSCOM inspectors about their experience in Iraq, what struck me is the similarity between what the industry experts were proposing and what UNSCOM actually did in Iraq and how successfully that worked out, even though, before they ever landed in Iraq, quite frankly, the deck was stacked against the UNSCOM inspectors.

First of all, Iraq had already begun to implement a strategy to hide not just its nuclear program but its biological weapons program from the inspectors. Next, the intelligence that they had to work from was, quite frankly, incomplete and sometimes inaccurate. For example, U.S. intelligence had not even managed to identify Al Hakam, which was Iraq's main biological weapons production facility. From the air, it looked very much, in fact almost identical to Iraq's chemical weapons production facility, Al Muthanna. That is just one of the things that intelligence didn't manage to pick up on.

And it is not surprising to me, having worked in this area, that the 2005 report of a blue ribbon panel on U.S. intelligence capabilities to detect weapons of mass destruction programs stated that the U.S. intelligence community "substantially underestimated the scale and maturity of Iraq's" biological weapons program leading into the first Gulf War, and with regard to its estimate going into the 2003 Gulf War, it was "simply wrong."

Nonetheless, during the first two inspections that UNSCOM conducted in the summer of 1991, they managed to pick up significant evidence that there was a biological weapons program. Happy to answer questions about that. Moreover, they identified two commercial facilities, supposed commercial facilities that were actually part of that program. So they believe that it is possible to distin-

guish between the two types of facilities; not in every case, but in some cases.

Now, in 1994, when they resumed inspections, there were only three unspecific intelligence tips that they had to help them in their job. Nonetheless, they did manage to unmask the program using a lot of just plain old smarts and old-fashioned gum shoe detective work. For example, they collected hundreds of documents from suppliers to Iraq's program that allowed them to reverse engineer it. They sampled a sprayer from the production line at Al Hakam that the Iraqis said was making a biopesticide using Bacillus thuringiensis. This is also a simulant for anthrax, and when they took this sample, what they found out is that it would be inoperable for a biopesticide because you would need something of 150 microns or larger, and instead, the sample particle size was 10 microns or less, ideal for a biowarfare agent.

So, with tactics like this, during routine inspections, not no-notice challenge inspections, they painted Iraq into a corner. On the 1st of July 1995, Iraq confessed to having produced anthrax and botulinum toxin. On the spot, the inspectors knew this wasn't the whole truth because the Iraqis said they destroyed these agents in 1990.

Now, this just doesn't make sense. What state makes a super secret weapon only to demolish it before going to war? They also already had a handle on Iraq's biological delivery systems, including the fact that they had purchased a very sophisticated, finely machined spinning dispersal device from a German company, so when the executive director of UNSCOM returned to New York, he briefed the Security Council that, yes, Iraq had produced chemical weapons—excuse me—biological weapons, and they admitted that, but we know that was not the whole truth. We think they weaponized this stuff as well.

So, contrary to popular thinking, the UNSCOM experience really upends conventional wisdom and stands as a direct challenge to the U.S. policy that the BWC is "inherently unverifiable." So my recommendation in preparation for the 2016 Review Conference is that Congress require the executive branch to do its homework, to study the experience of UNSCOM, to take counsel from scientists inside the pharmaceutical industry, and to prepare a report, a multifaceted report that examines the capabilities and limitations, not just of inspections but of intelligence because we are going to need both if they are going to be able to detect and deter biological weapons programs in the future and at present.

I thank you for the opportunity to appear before the committee, and I look forward to questions that you might have.

Mr. ROHRABACHER. Thank you very much.

[The prepared statement of Ms. Smithson follows:]

House Committee on Foreign Affairs
Subcommittee on Europe, Eurasia, and Emerging Threats

Hearing on Assessing the Bioweapons Threat:
Russia and Beyond

Prepared Statement of Amy E. Smithson, PhD
Senior Fellow, James Martin Center for Nonproliferation Studies*

May 7, 2014

Some of the most vexing security problems facing the United States and the international community originate with disease. Public health services worldwide are already hard pressed to identify and respond to natural disease outbreaks. Enter the prospect of a state or terrorist group deliberately releasing disease, particularly communicable pathogens or ones that have been genetically-engineered to make them more lethal or contagious, and the problems for public health services multiply exponentially. For this reason, the Committee's inquiry into biological proliferation concerns in Russia and Central Asia and into the lessons from past experience that should be factored into U.S. government preparations and policy for 2016 Review Conference of the Biological and Toxin Weapons Convention (BWC) is most welcome. I thank you for the opportunity to testify on these matters and hope that my research can shed light on the nature of the problem and constructive steps to prevent manmade biological epidemics.

My remarks are based on a trio of my biological nonproliferation projects. In a 1999 report called *Toxic Archipelago*, I described the proliferation threat posed by un- and underemployed former Soviet chemical and biological weapons scientists. Later, the Nuclear Threat Initiative funded my work to match former Soviet bioweaponeers with prospective research partners in the Western biopharmaceutical industry. My first-hand experience involves visits to over fifteen former Soviet bioweapons institutes and the conduct of a three-day crash course that taught over 120 weaponeers how to do business with their Western counterparts. In addition, I convened veteran U.S. biopharmaceutical industry scientists to solicit their views, concerns, and proposals about monitoring compliance with the BWC, and I interviewed the inspectors of the United Nations Special Commission (UNSCOM), who related what really transpired when they hunted down Iraq's secret bioweapons program after the 1991 Gulf War. I summarize this important case history in this testimony but relate it in much more detail in *Germ Gambits: The Bioweapons Dilemma, Iraq and Beyond* (Stanford Univ. Press, 2011). Today, the Committee has the benefit not just of my thoughts, but of the rich experience and seasoned counsel of a great many of the world's top experts in these matters.

Reducing Biological Weapons Threats in the Former Soviet Union

While the Soviet Union paraded its nuclear weapons through Red Square for all to see, it cloaked its bioweapons program in secrecy and accelerated its work in germ weaponry after inaugurating the BWC in 1975 as a depository nation. The Soviet bioweapons program was roughly as large as its nuclear counterpart, with a work force of over sixty thousand scientists

* Affiliation provided for identification purposes, only. The James Martin Center for Nonproliferation Studies does not take institutional positions on public policy issues.

and technicians, including ten thousand who developed and tested anti-crop and anti-livestock agents. According to several high-level defectors of this program, the Soviets went far past the classic agents like anthrax, pioneering the militarization of hemorrhagic fever viruses by successfully weaponizing Marburg, developing two different strains of plague to resist five known antibiotics apiece, and also altering strains of anthrax, tularemia, and glanders to make them resistant to known antibiotics and vaccines. Soviet bioweaponeers also attempted to create entirely novel virulent strains, including ones that produced toxins. Other Soviet scientists conducted research with bioregulators and neuro-modulating peptides, which are incapacitating agents that can affect individual behavior, for instance by stimulating insomnia and increasing aggressiveness. The capstone of this massive covert weapons program was stockpiles of hundreds of tons of anthrax and dozens of tons of plague and smallpox, mainly for use against U.S. and other Western non-battlefield targets.

In the years following the USSR's collapse, U.S. Cooperative Threat Reduction (CTR) programmers in the State Department scrambled to reach these bioweaponeers with collaborative research grants to provide them with gainful employment that they desperately needed to support their families. Verbally, U.S. officials underscored for the weaponeers who received these "brain drain" prevention grants the condition that they must not share with their advanced knowledge of how to develop, test, produce, and disperse biowarfare agents or peddle weapons materials, particularly genetically-engineered pathogens. This condition appears to have been an important deterrent to misbehavior in the former bioweapons facilities, as the weaponeers began policing the behavior of their colleagues because they understood that funding would be severed for an entire facility if the U.S. government got a whiff that anyone from a facility was engaged in black marketeering or communication with suspected proliferators. The State Department's scientist-to-scientist interactions also proved to be particularly helpful in acclimatizing the former Soviet bioweaponeers to the concept and practices of responsible science.

The Soviet bioweapons program involved dozens of research, development, and production sites. While the Defense Department's CTR programming made some physical security upgrades at a handful of Russian institutes, Moscow was not receptive to proposals to consolidate their seed culture collections. Several other former Soviet states, however, welcomed CTR assistance, particularly Kazakhstan, where CTR aid dismantled the massive anthrax production plant at Stepnogorsk and decontaminated the test site at Vorozhdeniye Island. CTR assistance enabled security upgrades at 22 biological laboratories in Georgia and another 20 in Armenia, Kazakhstan, and Ukraine.

Institutionalization of best practices in safety and security and collaborative research with the former Soviet bioweaponeers helps them understand why their peers overseas eschew the militarization of diseases and can help reduce the possibility that weaponized seed cultures might leak from former Soviet bioweapons facilities. Given the potential devastation that could transpire should what is in the freezers of these institutes make its way into malevolent hands, policymakers should resist the temptation to consider this box as checked off the "to do" list. The U.S. government should spare no effort to continue to engage biological scientists and institute managers in Russia and Central Asia to reinforce the principles and practices of nonproliferation, to improve physical security at these sites, to train the scientists in best practices, and to enhance their disease surveillance capacity.

U.S. Preparation for the 2016 BWC Review Conference

The Committee has also asked what preparations that the U.S. government should undertake in advance of the 2016 Review Conference for the BWC. This 1975 treaty lacks any on-site monitoring or inspection provisions because prevailing sentiment at that time, as conveyed by the 1968 British position, was that verification of a ban on biological weapons was "not possible." International experts met in 1992-1993 to evaluate the ability of 21 procedures to monitor compliance with the BWC, but this preliminary assessment did not generate much political momentum leading into formal negotiations that began 1995 to create a legally binding inspection protocol for the BWC. These talks fell apart in 2001 after the U.S. government pronounced the draft procedures inadequate to detect cheaters yet likely to compromise trade secrets and national security. Thus, in the past few decades, the US government has repeated the statement that the BWC is "unverifiable." On 7 December 2011, Secretary of State Hillary Clinton said that it was "not possible" to fashion a verification regime that could enhance confidence that states were in compliance with the BWC.

Counsel from Industry

The distinguished scientists who crafted the proposal that follows on prospects for BWC monitoring† have extensive experience in research, development, and production in large, multi-national companies and smaller, niche pharmaceutical and biotechnology companies. To solicit their views on the verifiability of the BWC, I first asked these industry scientists to visualize the facilities they had worked in and to articulate what inspectors would need to do to catch illicit weapons activity at those sites. After they assembled their inspection methodology, I asked the industry experts to describe concerns they would have if their inspection strategy, tactics, and tools were applied at their respective facilities. The group identified concerns and then raised and agreed on ways to address those concerns while still satisfying the need of the inspectors to ascertain BWC compliance. In addition, I asked the industry experts to rate how effective their inspection methodology would be in practice and to compare how intrusive their inspection methodology was in comparison to the inspections of the Food and Drug Administration (FDA).

This group of biopharmaceutical industry insiders crafted a detailed monitoring strategy. To begin with, the industry experts recommended that the inspectors rely primarily on open source data, which is likely to be more plentiful, nuanced, and current than a country's declaration. Legitimate pharmaceutical and biotechnology companies make considerable information available about their current and upcoming products, capabilities, and business objectives and practices to attract customers, investors, and media attention to increase sales. Once on site, the industry experts' inspection methodology centers on evaluation of information that inspectors collect is inconsistent with a facility's stated purpose.

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† The trio of reports are: *House of Cards: The Pivotal Importance of a Technically Sound BWC Monitoring Protocol*, Report no. 37 (Washington, DC: The Henry L. Stimson Center, May 2001); *Compliance Through Science: U.S. Pharmaceutical Industry Experts on a Strengthened Bioweapons Nonproliferation Regime*, Report no. 48 (Washington: The Henry L. Stimson Center, September 2002); *Resuscitating the Bioweapons Ban* (Washington, DC: Center for Strategic and International Studies, November 2004).

After an overview briefing of the facility to be inspected, the industry experts proposed an extensive facility tour, with the host facility giving the inspectors critical documents, such as site maps and a piping-and-instrumentation diagram, that would allow them to zero in on unusual features or alterations that merited an explanation as well as any efforts by host officials to steer the inspectors away from important areas. The inspectors should have access to laboratories, the production floor, the product purification area, supply storerooms, the medical facility, the waste treatment area, and the animal facility, without compromising test protocols there. The industry experts recommended the standard inspection tools, namely observation, document reviews, and interviews. They were reticent to allow inspectors to photograph or video the inspection, instead proposing the "work-around" of providing additional information to address the inspectors' inquiries. Of note, the industry experts proposed taking in-process samples if inspectors found indications of noncompliance. Samples would be stored in an onsite lock-box as host officials worked with the inspectors to resolve the compliance concerns. If those concerns persisted, the samples would be analyzed on site using a validated assay or in a certified third-party laboratory. Furthermore, the industry experts backed the notion of a challenge inspection on the heels of a routine inspection that unearthed compliance concerns that could not be resolved. Importantly, the industry experts' BWC monitoring proposal could not be more contrary to the position of the PhRMA, the Pharmaceutical Manufacturers Association, which contends that just allowing inspectors on site would jeopardize trade secrets.

Next, the industry experts argued that skilled inspectors employing their monitoring strategy, tactics, and tools would be able to distinguish legitimate from cheating facilities while not compromising proprietary information. To wit, the industry experts believed the inspectors would really be able to get to the bottom of any possible inconsistencies with a facility's stated purpose in certain physical areas of the facility, such as the waste treatment area, and by poring over documents. Substituting a fake set of documents to mask illicit military activity, the industry experts said, would be a monumental task. As Table 1 shows, the industry experts gave a majority of high inspection effectiveness ratings. Clearly, the industry experts believe that their verification proposal will work in practice. And, as it turns out, the UNSCOM inspectors

Table 1: Industry Experts Predict the Effectiveness of their On-site Inspection Proposal.

Area of Inconsistency with a Site's Stated Purpose	Expected Level of Effectiveness of Inspection Tools Used in Combination
Level of biosafety containment	High
Supplies	High
Equipment, materials of construction	Medium
Medical facilities	High
Plant facilities (e.g., cooling)	High
Waste handling, treatment systems	High with sample Medium to low without sample
Procedures	Low
Management program	High to medium
Downstream processing	Very high
Degree of concern with product integrity/quality	High for human products High to medium for animal products

Microorganisms on site	Medium with sample Low without sample
Animal facilities and numbers	High to medium

proved the industry experts right. Much of what the industry experts proposed for monitoring the BWC bears a close resemblance to what UNSCOM inspectors did successfully when they unveiled the bioweapons program that Iraq spared no effort to hide from them.

When the industry experts assembled a trial inspection plan to test their proposal, they compared the intrusiveness of their BWC verification proposal to that of the inspections that the FDA conducts. The industry experts identified 16 similarities between these two inspection types, seven differences that they believed were unlikely to have any impact on the inspected facility, and another seven differences where their proposed BWC inspection practices would be less demanding than FDA inspections. Of note, the industry experts pegged just two differences where their proposed practices may be more demanding than FDA inspections. First, their BWC inspection team would be on site about five days. FDA teams often do not stay that long, but the industry group pointed out that the FDA sometimes shows up with no notice and stays as long as it deems necessary. Second, the FDA usually sends two or three inspectors. The industry experts believed that sites could accommodate the larger BWC inspection team that they propose, but the accompanying group of U.S. government escorts, who would also require a host facility escort for the duration of the inspection, might stress available manpower.

The industry experts drafted their and assessed their inspection protocol before I showed the group the details of the BWC protocol as it stood in 2001. One of the experts, Dr. George Pierce, summed up their reaction to the draft protocol as follows: "'D' is a good grade because that's really the worst grade you can get. Sometimes an 'F' shows a little innovation." So, the last thing to take note of is that these U.S. biopharmaceutical industry insiders argued for much more stringent inspection procedures than those contained in the draft BWC protocol.

Counsel from UNSCOM Inspectors

While the industry experts' views remain in untested proposal form, the UNSCOM provides a treasure trove of biological field inspection experience. The ceasefire conditions of the 1991 Gulf War gave UNSCOM the role of overseeing the Iraq's disarmament, pitting the inspectors against a country determine to retain its weapons of mass destruction and long-range missiles. When UNSCOM's biological inspectors landed in Baghdad, Iraq had already established a strategy to conceal the bioweapons program, complete with tactics such as their requirement to be able to move sensitive materials or documents on fifteen minutes notice. Iraq's bioweaponeers were also put on notice that they would be killed if they revealed anything to the inspectors. Next, this small group of inspectors knew full well that conventional wisdom held that inspections could not uncover a covert bioweapons program. Iraq's first biological declaration to UNSCOM was null: Iraq claimed to have no biological facilities.

The final factor working against the UNSCOM inspectors was sketchy intelligence. The "signatures" of biological weapons programs are far less discernible than nuclear or chemical weapons programs. Even the telltale signs that do exist, such as the presence of high-level

biosafety containment, are not always reliable. Prior to the 1991 Gulf War, U.S intelligence did not identify Iraq's main bioweapons production facility, Al Hakam, even though this site had a layout very similar to Iraq's chemical weapons production site, Al Muthanna. In the late 1980s, Iraq powered up its germ weapons program with huge purchases of growth media, the nutrients needed for a biological seed culture to replicate itself. Before that, under the guise of legitimate research Iraqi scientists ordered the seed cultures for anthrax, botulinum toxin, and other agents from culture collections in the United States and France. U.S. intelligence apparently did not notice these activities, but in the mid-1990s Israeli intelligence told UNSCOM that Iraq may have purchased a lot of growth media. In 2005, the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction stated that the U.S. intelligence community "substantially underestimated the scale and maturity of Iraq's" bioweapons program before the 1991 Gulf War and that the U.S. intelligence assessment about the threat of Iraq's rejuvenated biological and chemical weapons programs, notably its alleged mobile bioweapons production trailers, prior to the 2003 Gulf War was "simply wrong."

So, to begin with the odds were stacked against UNSCOM's biological inspectors, which makes what transpired during UNSCOM's first two biological inspections all the more noteworthy. When UNSCOM biological inspectors first landed in Baghdad on August 2, 1991, the Iraqis switched from complete denial of a program to a hide-in-the-open strategy, declaring a program of military research that was applicable for defensive or offensive purposes. Over the next few days, the Iraqis said nothing that was consistent with biodefense work, but the inspectors saw hallmarks of an offensive weapons program. At Salmon Pak, the inspectors could see fresh bulldozer tracks from where Iraqis had bulldozed the aerosolization chamber building and the incinerator, two locations that would have provided the inspectors with incriminating evidence. In fact, the Iraqis left the bulldozer was sitting right there, making the "sanitization" of the site all the more evident. The inspectors tracked down an aerosolization chamber large enough to hold primates as test subjects, and they found large primate cages. The Iraqis blurted out that the head of their biological research program reported to Kamal Hussein, who was known to be a central figure in Iraq's unconventional weapons programs. The Iraqis described their research to determine the LD^{50} of pathogens, meaning the amount of agent they would need to disperse to kill fifty percent of the target population. Such research does not jibe with a defensive program, and the Iraqis were working with a strain of anthrax, the Vollum strain, that the United States had weaponized. Scientists typically keep copious records of their work, but Iraq's bioweaponeers gave the inspectors a scant ten research papers. In short, although the inspectors found no biological weapons per se, they saw and heard plenty that pointed to an offensive bioweapons program.

The same was true of UNSCOM's second inspection in mid-September 1991. The Iraqis had no real explanation for why the only biosafety level 3 facility in the country, Al Daura Foot and Mouth Disease Vaccine Facility, was operating at a fraction of its capacity even though the facility emerged unscathed from the war. Later, Iraq would admit that Saddam commandeered Al Daura to make warfare agent, and that the alterations the Iraqis made to the plant crippled it. Iraq first declared Al Hakam as a fermenter repair and storage facility, but as the inspectors entered Al Hakam the Iraqis switched stories, claiming the plant was making chicken feed, or single cell protein. UNSCOM inspectors quickly discovered that:

- Al Hakam's layout was wholly inconsistent with a commercial plant;
- little economic justification existed for Al Hakam's purported product;
- seed cultures at the site were inappropriate for a single cell protein plant but typical of a facility engaged in weapons work;
- Al Hakam was abnormally clean and did not appear to be producing much of anything;
- the plant's supposed director did not know basic facts, such as the number of people he employed and Al Hakam's production rates; and,
- the facility had oddly stringent security, not to mention dummy bunkers.

To top it off, trade journals or newspapers contained not a word about Al Hakam. A for-profit company would court the media to generate publicity to attract customers. In short, in its first two inspections, UNSCOM's biological inspectors gathered significant evidence of a covert offensive bioweapons program despite Iraq's efforts to hide the program, and they identified two purportedly commercial plants, Al Daura and Al Hakam, as likely to be involved in Iraq's bioweapons work.

For approximately two and a half years, UNSCOM focused on other disarmament priorities in Iraq and did not conduct any dedicated biological inspections. When UNSCOM ramped up its biological inspections again in mid-1994, within several months the biological inspectors had collected sufficient evidence to cause Iraq's cover stories to crumble and Iraq to admit on July 1, 1995 that it had produced biowarfare agents. The only intelligence tips the inspectors had to go on as they shredded Iraq's cover stories were that Iraq apparently purchased large quantities of growth media, that Projects 85 and 324 were somehow linked to a possible bioweapons program, and that the Iraqis had tried to purchase high-containment ventilation equipment for buildings E and H, without any further specification as to the location of these projects or buildings.

To unmask the program, UNSCOM inspectors tripped up the Iraqis in interviews, gaining key insights into the architecture and activity of the Iraqi bioweapons program. UNSCOM sampled a sprayer on a second Al Hakam production line that the Iraqis claimed was making biopesticide. The sample contained ultra-small particles of *Bacillus thuringiensis*; particles under ten micros in size would be inoperable for a biopesticide but ideal for a biowarfare agent. UNSCOM gathered several hundred documents from Oxoid, Fluka, Niro Atomizer, Chemap, Olsa, Karl Kolb, and other suppliers to Iraq's program. Analysis of these documents allowed the inspectors to reverse engineer Iraq's bioweapons program, even determining that Al Hakam probably became operational in March 1988. UNSCOM's ability to reverse engineer Iraq's program was also aided when UNSCOM broke the codes on Iraq's procurement documents, enabling them to determine Iraq's plans for various items they purchased. The inspectors located 22 tons of growth media, but that left 17 tons missing. By that time, the inspectors knew Iraq had used the missing growth media to make biowarfare agents. As they pressed the Iraqis to explain where it went, the Iraqis slipped up and called Al Hakam Project 324. The Iraqis also turned over the engineering diagrams for Al Hakam, and there, clear as day, the research building and animal house were labelled buildings E and H. Contrary to popular thinking,

UNSCOM inspectors earned these and other revelations about Iraq's bioweapons programs during routine inspections, not during no-notice or challenge inspections.

According to Iraqi Ministry of Health statistics, Iraq used barely a kilogram of growth media annually for hospital diagnostics, so the UNSCOM inspectors knew that Iraq's assertion that hospitals had consumed the 17 tons of missing growth media was ludicrously false. The inspectors presented the Iraqis with an array of incriminating facts to paint them into a corner, forcing the Iraq's *mea culpa* that Iraq made but destroyed its stocks of anthrax and botulinum toxin agent in 1990. Right away, the inspectors knew that Iraq was still not fully coming clean about its bioweapons program. After all, logic dictates that no state would go to all the trouble to make a super-secret weapon, only to demolish it before going to war. Moreover, the inspectors already had a handle on Iraq's biological delivery systems, including bombs, missiles, and a sophisticated, finely crafted spinning dispersal device that a German company sold to Iraq. Therefore, in July 1995 UNSCOM Executive Director Rolf Ekeus briefed the United Nations Security Council that the inspectors contended that the Iraqi declaration was still incomplete, that Iraq had filled munitions with biowarfare agents. Despite Iraq's extensive efforts to hide its bioweapons program, UNSCOM's inspectors did what conventional wisdom says is impossible, they distinguished legitimate facilities from those involved in a weapons program and unearthed a covert bioweapons program.

Concluding Thoughts

When the U.S. government rightly charged that a 1979 outbreak of anthrax at Sverdlovsk was due a leak from a secret Soviet bioweapons facility, the United States could not provide the international community with evidence to back up these charges since the BWC has no inspection provisions. So, the USSR allayed the charges with the assertion that contaminated meat caused the outbreak. Even today, with everything that is known about the Soviet bioweapons program, Russian officials still occasionally revert to the contaminated meat explanation for the outbreak. Moreover, Russia's 1992 voluntary declaration under the auspices of the BWC states that Soviet bioweaponeers failed to achieve anything militarily significant because of inadequate methodology, equipment, and materials and that therefore the USSR did not amass biological weapons.

Meanwhile, former top Soviet bioweaponeerss have aired their suspicions that Russia continues to conduct offensive research and development. Russia still denies outsiders any access to key military biological facilities that were critical components of the Soviet germ weapons program, including the Center for Military-Technical Problems of Anti-Bacteriological Defense at Ekaterinburg, formerly Sverdlovsk; the Scientific Research Institute of Military Medicine in St. Petersburg; the Scientific Research Institute of Microbiology at Vyatka; and the Virology Center of the Scientific Research Institute of Microbiology at Sergeev-Posad. For these and other reasons, the 2013 U.S. arms control compliance report states that it remains "unclear if Russia has fulfilled its obligations under . . . . the BWC."

Countless U.S. leaders have voiced concerns that terrorists might acquire biological weapons, but one must not forget that a state level bioweapons threat exists. Syria, which has recently used chemical weapons, has a bioweapons program, as does North Korea. Quite

frankly, because the BWC is devoid of inspection procedures, there is little assurance to be had that other countries might not be harboring bioweapons programs.

As noted, the intelligence community is seriously limited in its ability to find and characterize covert bioweapons programs, so there is a need to go back to the drawing board on data collection strategies, tactics, and tools that can be used to monitor biological facilities. The U.S. government appears to have done little to learn from the invaluable experience of the UNSCOM's biological inspections, and this oversight must be corrected. With ordinary inspection tools–observation, document tracking, interviews–and old-fashioned gum-shoe detective work, UNSCOM's inspectors collected considerable evidence of bioweapons program, despite the façade of civilian activity. UNSCOM reported Iraq's development, production, and weaponization of biowarfare agents to the Security Council, compelling Iraq to admit culpability. UNSCOM's experience stands as a direct challenge to the U.S. policy that the BWC is "inherently unverifiable."

Considering the counsel of top scientific experts from the U.S. biopharmaceutical industry and UNSCOM's field experience, in preparation for the 2016 BWC Review Conference Congress should require the Executive Branch to employ these valuable resources to prepare a study evaluating the limitations and prospective contributions of intelligence and inspections to the standing need to detect and deter bioweapons proliferation. The study should address the utility of these tools in isolation of each other as well as the potential synergy between intelligence, increasingly powerful sampling and analysis capabilities, analysis of import/export data, and other on-site inspection tools. This study should include an assessment of how the global institutionalization of cross-cutting biosafety, biosecurity, and research oversight standards might benefit detection of covert bioweapons activity. As the U.S. industry experts observed, such standards would generate a voluminous data that can be perused to aid efforts to separate legitimate peaceful biological work from illicit biowarfare activities. To facilitate this study and inject additional on-site experience into the evaluation, the U.S. government should conduct a trial inspection based on the detailed plan laid out by the U.S. industry experts.

This proposed study could find that inspections can be expected to detect certain biowarfare activities reliably, such as the stockpiling of biological weapons and bulk agent production, but not necessarily to catch offensive research and development of biological weapons. Whatever the study's conclusions, the analytical process entailed would be a springboard to identify alternatives to give U.S. policy makers more data of a more reliable qua about suspected bioweapons activities, which would in turn inform U.S. biodefense programs.

Mr. ROHRABACHER. Dr. Franz.

STATEMENT OF DAVID R. FRANZ, PH.D. (FORMER COMMANDER, U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES)

Mr. FRANZ. Chairman Rohrabacher, Ranking Member Keating, and distinguished members, it is an honor to be here today. I think I am going——

Mr. POE. You still live? I didn't pull the plug on you.

Mr. KEATING. Another undetected weapon.

Mr. FRANZ. I think you are going to see that I am going to talk about another piece of this elephant that you are trying to describe, and you will also see that individuals can be friends for a long time and not necessarily agree.

First, I will state four personal biases related to your questions that you provided to us. The Biological Weapons Convention is an important international norm and law. As a Nation, I think it is absolutely critical that we demonstrate globally and consistently our full support for the BWC.

Secondly, the BWC is necessary but not sufficient for our national biosecurity. Verifying that any nation state is in compliance, I believe, is not possible.

Third, reducing the threat requires an integrated effort by the whole of government, academe, industry, NGOs, and a healthy multinational set of partnerships.

And fourth, we must recognize that personal relationships and professional networks that are developed through our cooperative programs contribute directly to our national security.

Now, I would like to go very quickly to pose nine relevant propositions with regard to this space.

One, it is a dangerous biological world out there: 15 million people die annually of communicable and contagious diseases. No one dies from biological warfare or biological terrorism, and a few people die from biocrimes. However, I am convinced that we did achieve nuclear equivalence in killing power in our offensive program before we stopped it in 1969, and that was long before the current biotech revolution.

Two, the threats have changed significantly since the Cold War. We have gone from protecting the military on a distant battlefield to protecting citizens at home, and threats today may come from subnational groups, insiders, biocriminals or nation states. The phrase "of types and in quantities" in Article I of the BWC no longer means ton quantities.Today it can mean grams, or in the case of viruses particularly, it can be much less than grams

Three, in biology, proliferation is over. This is not a nonproliferation issue any more. Proliferation of knowledge, technologies, and capabilities is now global.

Four, quoting Professor Joshua Lederberg, "there is no technical solution." Cutting up an anthrax production fermenter, which we did in Stepnogorsk, the size of a Kansas farm silo is not a lot different than eliminating an ICBM silo. But when the fermenter is scrap and its operator is retired or conducting legitimate research, how do we increase the likelihood that the next generation of molecular biologists and virologists, with much better tools and much

more knowledge, continue to work for the good of their people, their country, and the global community?

Five, health engagement is national security. Leading with public health brings like-minded people and their capabilities together in a nonthreatening environment, working toward an unambiguously positive or humanitarian outcome. It almost guarantees improved understanding and even trust among collaborating partners. Trust between technically qualified individuals often leads to communication and even sometimes trust between governments.

Six, it is about people and relationships. While our understanding of natural health risks and intentional threats will never be close to perfect, it could be better. We must be alert to the ever-changing biological world around us. Friends can and do help us when and where we have them.

Seven, the right engagement metrics can lower the cost and increase our national security. Our tendency is to measure outputs rather than outcomes in these cooperative programs. I have long advocated for a simple set of metrics that begin with wise use of taxpayer dollars and lead to personal relationships of trust as the ultimate goal. It is not easy. It is not very scalable, I admit that, but critical to our national security.

Eight, we must be in it for the long haul. I sometimes have to explain to my international colleagues the short attention span of my Government. Too often we make promises and then move on to something we think is more important the next moment or forget about friends and promises made. A more consistent and stable long-view policy would enhance our national security in this area.

And finally, nine, keeping channels of communication open. For years, during the Cold War, our nuclear scientists and their Soviet counterparts maintained open lines of communication through science academies and organizations like Pugwash. The outcome was, to some degree, stabilizing, I believe. I believe it is easier to do this in biology. Remember, these are long-term tools that I am talking about. Our specialty is not putting out fires but weaving fire retardant into the fabric.

Now is a good time, I believe, to see how well we did 10 years ago—not look at this like an outbreak today—and then adjust as needed. The global biological tapestry is not always a pretty one, but we need every view of it we can find. And we can't do these global things alone. Friends of longstanding in science and public health networks can and will help us even when we are not there. Thank you.

[The prepared statement of Mr. Franz follows:]

Testimony of David R. Franz[1]

Former Commander, U.S. Army Medical Research Institute of Infectious Diseases

Before

The House Subcommittee on Europe, Eurasia, and Emerging Threats

On

"Assessing Biological Weapons Threat: Russia and Beyond"

7 May 2014

Chairman Rohrabacher, Ranking member Keating and distinguished Members, I am honored to have been asked to testify before you at this hearing.

Your questions relate to the Department of State (DoS), the Biological Weapons Convention (BWC), the former Soviet offensive biological weapons (BW) program and verification lessons learned in Central Asia.

As an introduction I will state four personal biases:

1-The BWC is an important international norm and law; as a nation, it is critical that we demonstrate globally and consistently our full support of the BWC and work with other signatories to enforce that norm and law.

2-The BWC is necessary, but not sufficient for our national biosecurity. Verifying that any individual nation state is in compliance with the BWC is not possible.

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[1] I am a former commander of the U.S. Army Medical Research Institute of Infectious Diseases, former Chief Inspector on three United Nations Special Commission (UNSCOM) missions to discover and eventually destroy the Iraqi biological warfare program, former technical expert for all Trilateral (US, UK, RU) negotiations and inspections in the FSU, follower of and occasional participant in BWC activities, active participant in the Nunn-Lugar Cooperative Threat Reduction program from inception both through the U.S. National Academies of Science committees and in direct support of OSD and DTRA, co-chair of the National Academies 2009 report, *Global Security Engagement: A New Model for Cooperative Threat Reduction (CTR 2.0)*, and currently chair of the 'Biological Subgroup' of the NAS's *Committee for International Security and Arms Control*.

3-While the Department of State takes the lead on BWC issues, international engagement which results in reducing the threat of biological attack on the homeland or U.S. forces from outside CONUS requires an integrated effort by the whole-of-government, academe, industry and non-governmental organizations. Internationally, strong multi-national partnerships are needed.

4-Finally, the U.S. Government (USG) must understand the power of human relationships in this complex biological world. As a relevant 2009 National Academy of Sciences (NAS) report stated, we should "recognize that personal relationships and professional networks that are developed through (USG) Cooperative Threat Reduction (CTR) programs contribute directly to our national security..."[2] The *Global Health Security Agenda*, newly introduced by the White House appears to be compatible with that principle.

I will briefly pose nine relevant propositions, drawn from my experience:

1. It's a dangerous biological world even without biological warfare.

Over fifteen million people die and many more are sickened by communicable and endemic disease annually, to include from respiratory infections, diarrheal disease, HIV/AIDS, TB, malaria, and others. We believe 100 million humans died during the 1918 flu pandemic, about four hundred times the number of Japanese killed by our nuclear weapons in WWII. Annually no one dies from intentional biological warfare or bioterrorism, and almost no one dies from biocrimes. However, I am convinced that we, the USG, did achieve "nuclear equivalence" in killing power with bioweapons by 1969 before we ended our own biological weapons program. That was almost 50 years ago, long before the current global biotech revolution.

2. The threats have changed significantly since the Cold War.

When I started working at USAMRIID in 1987, we were focused on developing vaccines, drugs and diagnostics and training our uniformed health care providers to deal with roughly a dozen biological agents that we

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[2] Taken from "Global Security Engagement: A New Model for Cooperative Threat Reduction" National Academies Press, 2009. http://www.nap.edu/catalog.php?record_id=12583

believed were weaponized and in the Soviet arsenal. Our military force would have likely faced these weapons in the Fulda Gap during a European land war. We later learned that the Soviet Union was also preparing for ICBM and heavy bomber biological attacks on our homeland. Protecting our military force from a defined set of threat agents with vaccines was difficult, but feasible. Today, the biological threat to the force and our citizens may come from subnational groups, insiders, bio-criminals or possibly nation states that could utilize any number of pathogens. The phrase, "of types and in quantities" in Article I of the BWC no longer means 'tons or hundreds of tons'; today it could mean 'grams' or less of a bacterial, or particularly a viral, agent.

3. In biology, we are beyond 'non-proliferation'

We know much less about state biological programs than about state nuclear programs. Sub-state actors might either obtain a biological weapon or produce one. Pathogens are ubiquitous; compare their availability to the few critical and rare isotopes needed for a nuclear weapon. Some of those pathogens could represent nuclear-equivalence, but many could cause chaos in a city or disrupt a military deployment. Today, technical knowledge and equipment are available essentially everywhere around the globe. In biology PROLIFERATION IS FUNCTIONALLY OVER; proliferation of knowledge, technologies and capabilities is now global.

4. "There is no technical solution..." (Lederberg, 1998)[3]

In 1998, after we understood the enormity of the Soviet offensive program and the potential of the Iraqi one to disrupt, Nobel Laureate Joshua Lederberg said, "There is no technical solution to this problem of biological warfare. It needs an ethical, human and moral solution, if it's going to happen at all...." Then he paused and said, "But would an ethical or moral solution appeal to a sociopath?" The early days of the biological Nunn-Lugar CTR program were similar to the nuclear and missile CTR programs. Cutting up an anthrax production fermenter the size of a Kansas farm silo is not a lot different than eliminating a Soviet silo constructed to launch an ICBM. But, as I noted with respect to proliferation, biothreats are fundamentally different from nuclear threats: One cannot control all of the source material or the means of production. When the anthrax fermenter is

[3] http://archives.newyorker.com/?i=1998-03-09#folio=052

relegated to the scrap heap and its operator is retired or conducting legitimate research how do we increase the likelihood that the next generation of molecular biologists and virologists, with much better tools and knowledge, continues to work for "the good" of their people, their country and for the global community? This is an opportunity for partnership in the life sciences.

5. Health engagement IS national security.

Professor Lederberg was right; counting and measuring things, as we do for nuclear weapons programs, and physical security means aren't the solution to this challenge. But how to apply the "ethical and behavioral" fixes he proposed? I have long concluded that focusing together as partners on hard, common human- and animal-health challenges offers several advantages over "leading with security." Leading with Public Health can make a real difference that is relevant to human health and human security. It brings like-minded people and their technical capabilities together in a non-threatening environment, working toward an unambiguously positive or humanitarian outcome. Most importantly, it almost guarantees improved understanding and even trust among the collaborating partners. Trust between individuals, particularly highly technically qualified individuals, often leads to communication and even trust between governments. And finally, the personal relationships and the open communication that result from real health or science engagement are sustainable at very little cost[4] to the taxpayer even when the official engagement ends. On a personal note, my strong and open relationships, established during the Trilateral and Nunn-Lugar programs, with Russian scientist colleagues have not changed during the course of the current situation in Ukraine and Crimea.

6. It's about people and relationships:

Government funding agencies or congress often mandate metrics of engagement. If the measure of success is to "build a containment laboratory and a security system around it," our contractors go in with a "project" mindset. Just get it done! Such international projects can actually do harm, if the human relationships are not positive…and we have no way of knowing

[4] Airline tickets for credible American scientists willing to listen and build positive collaborative partnerships are one of the most cost-effective expenditures in this business. After the relationships are established, skype and email are powerful low-cost tools to stay in touch.

how the upgraded biological facilities will be used after we depart. However, if real scientists and clinicians engage for mutually relevant reasons, the outcome is typically far different, it is beneficial to our partners and enhancing our own health- and national security. While our understanding of intentional threats and natural disease risks globally will never be even close to perfect, it could be better. We must be alert to the ever-changing biological world around us. Friends can and do help us…when and where we have them.[5]

7. **The right metrics can lower the cost of engagements and increase national security.**

The human tendency is to measure "outputs" rather than "outcomes". I have long advocated for the following metrics for our engagement programs.

a- Are we using taxpayer dollars efficiently?
b- Are our engagement activities really enhancing our partners' health and human security?
c- Are we teaming effectively with the best people; have they 'bought in' to the partnership?
d- Will our work result in sustainable capabilities and positive long-term relationships?
e- Is there evidence of open communication and even **trust, the most relevant and powerful measure of success?**

8. We must be in it for the long haul.

A recent example: Last November, the NAS collaborated with the Russian Academy of Sciences to conduct a meeting on laboratory safety, security and responsible life sciences research with senior scientists from four Central Asian countries. The result was increased communication among those countries and with the U.S., new contacts and collaborators and an enhancement of safety and security awareness in Central Asian labs responsible for infectious disease diagnostics and surveillance. The senior Central Asian scientists strongly supported the idea of conducting a similar

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[5] I have described this concept in greater detail in an OpEd published on the FAS website in November 2012. *With the Changing Biological threat…smart international engagement policy would lower cost and increase national security.*
http://www.virtualbiosecuritycenter.org/blog/op-ed-with-the-changing-biological-threat-smart-international-engagement-to-lower-cost-and-increase-national-security

program for young scientists from Central Asia this year. While in the planning stages, it was abruptly canceled last month and we were asked to think about how to engage Ukraine instead. Such reversals are counterproductive. As an implementer, I often have to explain to my colleagues around the world the short attention span of my government. Human relationships, not only arms control conventions or international regulations, are the key to global security in biology. We have a long history, across many of our departments and agencies, of establishing relationships, or worse, making promises and then moving on to something WE think is more important at the moment or forgetting about friends and promises made. Trusted relationships established with capable scientist colleagues are the best metric of success in this work; not money spent, fences built or training certificates pinned to the walls of laboratories around the globe. It's taking us too long to understand and implement this critical concept.

We can establish these trusted and collaborative partnerships with credible people, when technical knowledge is the currency and honesty, integrity and even a sense of humor are the vehicle. We must therefore, send credible, knowledgeable experts to meet with their equals.

9. **Keeping channels of communication open; an historical example from the nuclear world:**

For years, during the Cold War, our nuclear scientists and their Soviet counterparts maintained open lines of communication through science academies or associations like Pugwash. The outcome was clearly stabilizing even through some very rocky times during the cold war. An open line of communication between equals, senior scientists who knew the weapons systems, the risks and the threats better than their political leaders, was extremely powerful. Our National Academy of Sciences committee called CISAC was central to those historic nuclear Track II relationships. We've been doing the same thing in biology in a number of countries including Russia and those in Central Asia. Now with the Russian incursion into the Ukraine, not only have all Russian formal activities been stopped but those with our friends in Central Asia have also been suspended. The United States has stopped working with friends who, in some cases, desperately need help with important public health issues. Furthermore, they are now threatened with movement of all kinds of people, animals and microbes into their countries as we pull out of Afghanistan. It is extremely

disappointing for me to watch us simply turn our backs on friends....and for us it threatens to draw another veil across some of the few windows we have into a high-risk and dangerous biological world only a 12-14 hour Boeing 777-300 ride from Dulles International Airport.

Mr. ROHRABACHER. Dr. Davis.

STATEMENT OF CHRISTOPHER DAVIS, M.D. (FORMER MEMBER, DEFENSE INTELLIGENCE STAFF OF THE UNITED KINGDOM)

Dr. DAVIS. Mr. Chairman, the timer isn't working. It appears damaged.

Mr. ROHRABACHER. Your mike isn't working?

Dr. DAVIS. The timer isn't working. I fear it was damaged in the recent "attack," yes.

Mr. Chairman, Congressman, good afternoon. First of all, after introduction, I would like to make it quite clear that I am, in fact, a U.S. citizen, although I do sound slightly different, and I am about 407 years too late. I missed the boat all those years ago, but I did make it in the end.

First, please forgive me if I am a little difficult to understand today. I suffered a "biological agent attack" last week in England, concluding my homeland is still upset that I left, so my voice is slightly compromised.

Second, I would like to thank you most sincerely for inviting me to attend this hearing. Friends and colleagues alike have been genuinely worried about what I might experience here. But you know, it never occurred to me to worry. I felt happy to come and share with fellow citizens some thoughts about an important topic.

Finally, having read through my short text, it occurred to me that I might be cast as anti-Russian or rather too critical of my former colleagues in the diplomatic services of the U.K. And the U.S. and neither is true. I have worked with many Russians who were in the former Soviet program and, indeed, some have been guests in my home. And the Russians are very jolly people. I have no problem.

And diplomatic colleagues took positions years ago that they believed at the time were correct. I disagreed then, and I still do. That doesn't mean to say that they are bad people or bad things were done, particularly. It really means that we took a different view of the world.

So I would like just to say a few things. I am going to stick pretty much to what I submitted. I come before you today as a private citizen. I represent no one but myself. The views and opinions expressed by me are entirely my own and do not necessarily reflect those of my own consultancy company, my employer, or my employer's client in whose offices I work, and these organizations and their officials bear nor responsibility whatsoever for my oral and written testimony today. That is important because I absolve everybody from any responsibility. It is me.

In light of my previous work in or with security and intelligence services and organizations on both sides of the Atlantic, I also must make it clear, in giving this testimony, I will at no time write or say anything that transgresses the agreements I made with those organizations many years ago with respect to maintaining the confidentiality of their systems and the knowledge I gained during their employ.

I am a scientist and a physician educated at the Universities of Oxford and London, as was mentioned, and a fellow of the Faculty

of Pharmaceutical Medicine. I have had 38-year career spanning hospital medicine, academic research, military medicine, the pharmaceutical and biotechnology industry, government service, and commercial and contracting companies consulting in the United States, Europe, and Australasia. For 35 of those years, I have been involved with chemical, biological, and nuclear weapons issues. With the singular exception, thank goodness, of actually building nuclear weapons or chemical weapons of any kind or biological weapons of any kind, I have worked on every aspect of the problem of biological weapons, from intelligence through threat analysis and weapons effects, through R&D on personal and collective protection, medical countermeasures, detection systems to national policy, international diplomacy, and cooperative threat reduction.

For 10 years, I served on the Defense Intelligence staff of the United Kingdom with special responsibility for global biological weapons threats and the medical aspects of chemical and biological agents. My particular focus for much of those 10 years was the biological weapons program of the former Soviet Union and Russia, and I was closely involved in a debriefing of the very first defector from the Soviet program, Dr. Vladimir Pasechnik, a very senior institute director who came to the U.K. in October 1989.

Today I have come to ask you to lift the veil that hides the "elephant in the room" that was left behind in the 1990s when direct efforts to persuade Russia to completely abandon their biological weapons appear to have failed.

There is no doubt that what we have come to know as ordinary everyday infectious diseases, to which Dave Franz referred, are making a come back and that a major issue for societies across the globe is the increasingly rapid emergence of multidrug resistant forms of these diseases. I say this up front because it is an existential risk to society, and I do not want the statements I am about to make taken out of context or the question of relative risk to be used as an argument to continue to ignore "the elephant."

Additionally, it is important to state the outset, that for the greater part of the last 20 years, the context of discussions about biological weapons and appropriate medical countermeasures has been that of bioterrorism. Finally, prior to the exposure of the illegal biological weapons program of the former Soviet Union, in the years between 1989 and 1994, the situation was obfuscated by ignorance and denial. That was the era from 1972 to 1989, for which I coined the term "nuclear blindness," to describe a condition characterized by the inability of almost everyone involved in the world of diplomacy, security, intelligence, policy making, or defense, on the allied side, to understand that there was any treat to our security other than that from the possession of tactical or strategic nuclear weapons. Indeed, the mere possession of nuclear weapons was seen to be the answer to all threats and to the possible or actual use of strategic force against the state.

And so to the nub of the matter. The context or room, if you will, in which the pachyderm in question sits has changed. The Russia of today is not the Soviet Union of old, but neither is it the open democratic state for which we hoped, somewhat naively perhaps, back in the 1990s. We have been made patently aware by the events in Georgia and now in Ukraine that Mr. Putin retains all

the values and attitudes that allowed him to rise successfully through the ranks of the KGB. Sadly, this includes an unenlightened quest for power and control over everything and a very typical Russian propensity to never let go of something that could prove of use against any perceived enemy at some point in the future.

For those who, like Putin, live in a world where fear is the predominant emotion determining their existence, enemies are everywhere, and any and all actions are permissible to deal with existential or theoretical threats. Add to this the noxious combination of patriotism and hurt pride born of a bruising exit from the Soviet Communism, and the stage is set. The "elephant," ignored for 18 years, demands our attention.

The "elephant in the room" is, of course, the Russian biological weapons capability. The problem is not new, but the context, Putin's new Russia is. In fact, for most of you, even if you never ever knew anything about this topic, the assumption will be that this is old hat, a problem that was taken care of way back in the early nineties, the 1990s that is, and the story goes something like this: The Soviets and Russians, admitted possession of a massive biological weapons research, development, testing, production, storage, and launch capability; but did that actually happen? No, I contend. They committed to destroying the system, all weapons and methods of dissemination, agents, seed stocks, and productions and operational plans; but did that actually happen? No, it didn't.

Complete openness was achieved, and the new Russian state allowed inspections and verification of all suspect sites; but did that actually happen? No.

As far as I am aware, pretty much all discussion between the U.S. and the U.K. and Russia ground to a halt in mid-1990s because of Russian insistence on pursuing reciprocity, a condition that the then Soviet negotiators persuaded the U.S. State Department to accept at their very first encounter in London in 1990, following the defection of Vladimir Pasechnik in 1989. I know because I sat around that table.

Reciprocity is difficult to achieve when the problem is one-sided. We said it at the time. The U.S. and the U.K. had and have no biological weapons but, in a gesture of reasonableness and openness, agreed to reciprocal visits. This was, of course, a time when the Prime Minister and the President had agreed to deal with this problem secretly, confidentially, and quietly in order to make it easier for the Soviet Union/Russia to comply and get rid of the weapons and move on, rather than pillorying them on the world stage.

Eventually, that mismatch in reality, led to the Russians asking for access to U.S. facilities, both commercial and military, that they knew would be denied, leaving them to maintain that it was in fact the U.S. and the U.K. that were hiding BW R&D, not them. The result, the perfect impasse.

So despite this failure of the "trilateral process," created in late September 1992 in Moscow and the fact that the United States and United Kingdom were certain enough that the offensive biological weapons program was continuing that they challenged the new Russian regime openly about it as late as 1993, most observers in

the world at large assumed that the problem had been solved. The myth that Russia had owned up, explained and destroyed its weapons and opened up its biological weapons establishments grew. And so it was that with improving relations between East and West, the legitimate and very real concern over "loose nukes" and a fundamental lack of understanding of biological weapons by just about everyone involved in decisionmaking, "the elephant" took up residence in the room, and as time passed, it became ever more difficult to mention the name of "the elephant," let alone suggest that it be dealt with; for what good does it do a person or a government to raise an issue that most, if not everyone, regards as dead and buried, especially if international relations seem to be improving; why rock the boat? So "the elephant" has remained in the room for 18 years, but just because we choose not see him does not mean he is no longer there.

So if we assume, as I suggest to you, that Russia did not admit to the real size and capability of its biological weapons systems and it did not get rid of all of them and did not allow the U.S. or the U.K. free unfettered access to its web of military as well as civilian BW sites, because those are the ones that have been mentioned today, and that Mr. Putin, like all his antecedents, would never give up such a key strategic military and diplomatic card, it is not unreasonable for a concerned citizen to ask you to examine following questions: When many of the Biopreparat sites were abandoned or downgraded, what happened to the biological material being worked on at those places? What happened to the experimental results from the Biopreparat institutes? What happened to the policies and tactical and strategic plans for the use of the many types of weapons that were developed? What has been happening at the Russian Ministry of Defense military biological weapons sites in the past 18 years? What happened to the weapon strains of the various BW agents? What happened to military launch vehicles? What happened to plans dealing with every aspect of production and deployment? What happened to the bioregulator program? What happened to the R&D centered on anticrop, antiplant, and antilivestock biological weapons? What happened to the stocks of seed cultures of biological weapons agents designed to be used to fuel a mobilized production of weapons? And there are a number of other questions.

Finally, biological weapons are not weapons of mass destruction. It is an epithet coined, you many not be surprised to hear, by the Soviets back in the 1960s, no doubt to obscure future discussion and negotiation by lumping them in the basket with nuclear weapons at a time when their possession was still legal. In fact, they comprise a complete suite of possibilities for killing or injuring or disabling humans, animals, plants as a means to achieve politically sanctioned ends, just as the panoply of conventional weapons can within a purely ballistic context. However, they are distinguished in at least one particular respect from true weapons of mass destruction on one hand and conventional weapons on the other; they can be used for strategic purposes without damaging materiel infrastructure.

Therefore, with Mr. Putin in power in Russia, it would be as well for the United States to stop ignoring "the elephant" and address

these unanswered questions. There is now nothing to be lost and everything to be gained by doing so. Thank you for your listening.

Mr. ROHRABACHER. A little bit longer than 5 minutes.

Dr. DAVIS. I am sorry. I didn't have a watch.

Mr. ROHRABACHER. Well, it was London time. That was it.

Dr. DAVIS. I am jet lagged.

[The prepared statement of Dr. Davis follows:]

House Committee on Foreign Affairs
Subcommittee on Europe, Eurasia, and Emerging Threats

"Assessing the Biological Weapons Threat: Russia and Beyond"

Prepared Statement of Christopher J. Davis, O.B.E., D.Phil., M.B.B.S.,
B.Sc.(Hons), F.F.P.M.(R.C.P.)

The Elephant in the Room

- Pre-amble:
  - I come before you today as a private citizen. I represent no one but myself. The views and opinions expressed herein are entirely my own and do not necessarily reflect those of my own consultancy company (The INTUINT Consultancy Ltd.), my employer (Conceptual MindWorks Inc.) or my employer's client (The US Department of Health & Human Services), in whose offices I work, and these organizations and their officials bear no responsibility whatsoever for my oral and written testimony today.
  - In light of my previous work in or with security and intelligence organizations on both sides of the Atlantic, I must make it clear that in giving this testimony I will at no time write or say anything that transgresses the agreements I made with those organizations with respect to maintaining the confidentiality of their systems and the knowledge gained in their employ.
  - I am a scientist and a physician educated at the Universities of Oxford and London and a Fellow of the Faculty of Pharmaceutical Medicine. I have had a 38 year career spanning hospital medicine, academic research, military medicine, the pharmaceutical/biotechnology industry, government service and commercial contracting companies and consulting in the United States, Europe and Australasia.
  - For 35 of those years I have been involved with chemical, biological and nuclear weapons issues. With the singular exception of actually building weapons I have worked on every aspect of the problem from intelligence, threat analysis and weapons effects through R&D on personal and collective protection and medical countermeasures and detection systems

to national policy, international diplomacy and Co-operative Threat Reduction.

- For 10 years I served on the Defence Intelligence Staff of the United Kingdom with special responsibility for global biological weapons threats and the medical aspects of chemical and biological agent use. My particular focus for much of those 10 years was the biological weapons program of the former Soviet Union and Russia. I was closely involved in debriefing the first defector from the Soviet program, Vladimir Pasechnik, a very senior institute director who came to the UK in October 1989.
- Today I have come to ask you to lift the veil that hides "The Elephant in the Room" that was left behind in the mid-1990s when direct efforts to persuade Russia to completely abandon their biological weapons appear to have failed.

- There is no doubt that what we have come to know as ordinary, every-day infectious diseases are making a come-back and that a major issue for societies across the globe is the increasingly rapid emergence of multi-drug resistant forms of these diseases. I say this 'up front' because it is an existential risk to society and I do not want the statements that I am about to make taken out of context, or the question of relative risk to be used as an argument to continue to ignore "The Elephant".
- Additionally, it is important to state at the outset that for the greater part of the last 20 years the context of any discussion about biological weapons and appropriate medical countermeasures has been that of 'bioterrorism'.
- Finally, prior to the exposure of the illegal biological weapons program of the former Soviet Union, in the years between 1989 and 1994, the situation was obfuscated by ignorance and denial. That was the era, from 1972 to 1989, for which I coined the term "Nuclear Blindness" – to describe a condition characterized by the inability of almost everyone involved in the world of diplomacy, security, intelligence, policy-making or defense, on the Allied side, to understand that there was any threat to our security other than that from the possession of tactical or strategic nuclear weapons. Indeed, the mere possession of nuclear weapons was seen to be the answer to all threats and to the possible or actual use of strategic force against the state.
- And so to the nub of the matter in hand today. The context or "room' if you will, in which the 'pachyderm' in question sits, has changed. The Russia of today is not the Soviet Union of old, but neither is it the open democratic state

for which we hoped, somewhat naively perhaps, back in the '90s. We have been made painfully aware by the events in Georgia and now in Ukraine that Mr. Putin retains all the values and attitudes that allowed him to rise successfully through the ranks of the KGB. Sadly this includes an unenlightened quest for power and control over everything, and a very typical Russian propensity to never let go of something that could prove of use against any perceived "enemy" at some point in the future. For those who, like Putin, live in a world where fear is the predominant emotion determining their existence, "enemies" are everywhere and any and all actions are permissible to deal with existential or theoretical threats. Add to this the noxious combination of patriotism and hurt pride, born of a bruising exit from Soviet Communism and the stage is set. The Elephant, ignored for 18 years, demands our attention!

- The Elephant in the room is of course, Russian Biological Weapons Capability – the problem is not new but the context, Putin's New Russia, is. In fact for most of you, even if you ever knew anything about this topic, the assumption will be that this is "old hat", a problem that was taken care of way back in the early '90s…the 1990s that is! And the story goes something like this:-
    - The Soviets/Russians admitted possession of a massive biological weapons research, development, testing, production, storage and launch capability –BUT, did that actually happen? NO!
    - They committed to destroying the system, all weapons and methods of dissemination, agents, seed stocks and production and operational plans – BUT, did that actually happen? NO!
    - Complete openness was achieved and the new Russian state allowed inspections and verification of all "suspect" sites – BUT, did that actually happen? NO!
- As far as I am aware pretty much all discussion between the US, the UK and Russia ground to a halt in the mid-1990s because of Russian insistence on pursuing reciprocity, a condition that the then Soviet negotiators persuaded the US State Department to accept at their very first encounter in London in 1990, following the defection of Vladimir Pasechnik in 1989. Reciprocity is difficult to achieve when the problem is one-sided. The US and the UK had (and have) no biological weapons but in a gesture of reasonableness and openness agreed to reciprocal visits. Eventually that mismatch in reality led to the Russians asking for access to US facilities, both commercial and military, that they knew would be denied, leaving them to maintain that it was in fact the US and UK that were hiding BW R&D, not them; the result – the perfect impasse. So,

despite the failure of this "Trilateral Process" created in late September 1992 in Moscow, and the fact that the United States and the United Kingdom were certain enough that the offensive biological weapons program was continuing that they challenged the new Russian regime openly about it as late as 1993 most observers in the world at large assumed that the "problem" had been solved. The myth that Russia had owned up, explained and destroyed its weapons and opened up its Biological Weapons establishments grew.

- And so it was that with improving relations between East and West, the legitimate and very real concern over "loose nukes" *and* a fundamental lack of understanding of biological weapons by just about everyone involved in decision-making, the Elephant took up residence in the room. And as time passed it became ever more difficult to mention the name of the Elephant let alone suggest that it be dealt with, for what good does it do a person or a government to raise an issue that most, if not everyone, regards as dead and buried, especially if international relations seem to be improving; why rock the boat. So the Elephant has remained in the room for 18 years. But, just because we choose not to see him does not mean that he is no longer there.
- So, if we assume, as I suggest to you, that Russia did not admit to the real size and capability of it biological weapons systems, that it did not get rid of all of them and did not allow the US or the UK free, unfettered access to its web of Military as well as civilian BW sites, and that Mr. Putin, like all his antecedents, would never give up such a key strategic military and diplomatic card, is it not reasonable for a concerned citizen to ask you to examine the following questions:-
    - When many of the Biopreparat sites were abandoned or downgraded, what happened to the biological material being worked on at these places?
    - What happened to the experimental results from the Biopreparat Institutes?
    - What happened to the policies and tactical and strategic plans for the use of the many types of weapons that were developed?
    - What has been happening at the Russian Ministry of Defense Military Biological Weapons sites in the past 18 years or so?
    - What happened to the weapon strains of the various BW agents?
    - What happened to the military launch vehicles?
    - What happened to plans detailing every aspect of production and deployment?

  - What happened to the bioregulator program?
  - What happened to the R&D centered on anti-crop, anti-plant, and anti-livestock biological weapons agents?
  - What happened to the stocks of seed cultures of biological weapons agents designed to be used to fuel the mobilized production of weapons?
  - Was there a space-based biological weapons capability?
  - Was there any human genetics-related biological weapons research?
- Finally, Biological Weapons are not weapons of mass destruction, an epithet coined, you may not be surprised to hear, by the Soviets back in the 1960s no doubt to obscure future discussion and negotiation by lumping them in the basket with nuclear weapons at a time when their possession was still legal.
- In fact they comprise a complete suite of possibilities for killing and injuring or disabling, humans, animals and plants as a means to achieve politically sanctioned ends, just as the panoply of conventional weapons can within the purely ballistic context. However, they are distinguished in at least one critical respect from true weapons of mass destruction on one hand, and conventional weapons on the other. They can be used for strategic purposes without damaging materiel infrastructure.
- Therefore, with Mr. Putin in power in Russia it would be as well for the US to stop ignoring the Elephant and address these unanswered questions. There is now nothing to be lost and everything to be gained by doing so.

Mr. ROHRABACHER. And finally, we have Mr. Leitenberg with us and our last witness.

Now, there will be some votes coming up, so we want to get moving as fast as we can, but Mr. Leitenberg, you may proceed with your testimony.

STATEMENT OF MR. MILTON LEITENBERG, SENIOR RESEARCH SCHOLAR, CENTER FOR INTERNATIONAL AND SECURITY STUDIES AT MARYLAND, SCHOOL OF PUBLIC POLICY, UNIVERSITY OF MARYLAND

Mr. LEITENBERG. Thank you very much, and thank you, Congressman Rohrabacher and Congressman Keating.

Mr. ROHRABACHER. Make sure you talk real close to that mike.

Mr. LEITENBERG. I am sorry, I had not pushed the green button. Thank you for having me to testify.

I will try and be a little briefer. I think a large part of Christopher's elephant is in there or as much as we could pack into 900 pages, so I think a substantial number of the questions that he asked are in fact answerable, and perhaps I will find a moment to do that.

I submitted a statement, which is simply a precis of the book but I will try and make my remarks a bit broader and speak about three things: A little bit about the Soviet program and what is left of it because an important part of the book concerned the U.S. and the British Government efforts to get President Yeltsin—President Gorbachev, first—General Secretary Gorbachev, President Gorbachev, then President Yeltsin to put an end to that program, and we failed, both the U.S. and the British Governments failed in that, and that is gone into. There is 150 pages in the book describing that, and in substantial detail.

So I will say a little bit about the Soviets and the Russians, and then I want to say something about the biological threat currently to the United States from state and nonstate actors, since that has been mentioned by both of the introductory remarks. Finally, I want to say something about the Biological Weapons Convention and verification and compliance

Quickly to the remnants of the Soviet BW program existing in Russia today. There are three reasons to be concerned about what is in Russia. The first of which was referred to, is that the Russian foreign ministry and Ministry of Defense took part in negotiations, but it was essentially the Ministry of Defense that destroyed what was called the "Trilateral Negotiations" between 1993 and 1996, and it was not accepted by either our Government or the British Government. Secretary Christopher was going to Moscow, other senior U.S. officials, then Lynn Davis was going to Moscow. We kept on. I quote President Clinton's letter to President Yeltsin in 1995, we were pressing—and the Gore-Chernomyrdin Commission took this up. We were pressing this issue, but the Russians ran the negotiations into the ground. I haven't time to deal with it, but they did. It was not our undoing. It was theirs.

Second, as a corollary of that, which was also mentioned, the three Ministry of Defense facilities have never been visited by anybody from any other country to this day. They are closed. We don't know what they are doing. They may or may not have an active

offensive program. I presume they do. I do not believe that the U.S. Government thinks they are producing and stockpiling agents anymore, but we don't know that.

The third thing is President Putin. There was a very surprising occurrence in February and March 2012, and I will read this: "In a somewhat bizarre development in February/March 2012, Putin and then Russian Minister of Defense Anatoly Serdyukov publicly referred to 28 tasks that Putin had established for the Russian Ministry of Defense in order to prepare for threats for the future." Putin wrote that Russia needed to be prepared for "quick and effective response to new challenges," and one of the tasks that Putin specified was "the development of weapons based on new physical principles, radiation, geophysical, wave, genetic, and psychophysical, et cetera." Genetic can only mean one thing. That would be a violation of the Biological Weapons Convention. The others happen to be a violation of one of Brezhnev's favorite arms control treaties that the Russians fought for 4 years called the "Hostile Use of Environmental Modification Technologies," signed May 18th, 1977, and entered into force on October 5th, 1978.

So all of the things that Putin rattled off would be in violation of either the Biological Weapons Convention or what is called the ENMOD Treaty.

Two or three short other points, because they were raised in various remarks and questions. We do not believe that any agents or weapons from the Soviet program went out of the Soviet Union or Russia to either other states or nonstate actors. There is one possible exception to this, but I don't think you are really asking about that. If you go back to the Reagan administration and the "Yellow-Rain" accusations that the Soviet Union had transferred what were called mycotoxins, trichothecene mycotoxins, to Vietnam to use against Hmong and Meo tribesmen, which had fought for the U.S. This is after 1975, between 1976 and 1982. That has never been resolved. The U.S. Department of State to this day maintains those claims. Canada, Great Britain, Sweden, and Australia did their own chemical analyses and could not verify the U.S. claims, and most of the arms control community does not believe those allegations, but except for that story, if you segregate that out, we do not believe that any agents went out of the Soviet program anywheres.

Secondly, because it is in Amy's testimony, she actually has a better summary of the Soviet program than I wrote, she refers to genetic engineering. The entire post-1972 Soviet BW program was to adapt molecular genetics to do what the classical early program from 1945 to 1972 had not succeeded in doing: To insert antibiotic resistance, and to change the antigenic structure on the organism so that you fool vaccines and things like that.

Their development program succeeded in that, but that happened between 1984, 1985, and 1990. Pasechnik—Vladimir Pasechnik came out in October 1989. By April/May 1990, the U.S. Government and the British Government were beating on Mr. Gorbachev's head to put an end to this, and so those new agents were never produced and stockpiled. The Soviet stockpile was the classical old nongenetically modified agents.

All right. The current biological weapons threat to the United States by state and nonstate actors. There are very few state BW

programs. We have changed our notion from the 1970s, 1980s, that there were perhaps 10, 11, 12. In 2006, 2007, our Noncompliance statements drastically changed. We reduced that to five or six countries, and the phraseology about those five or six countries, even the ones that we still were worried about. There is Russia, question mark; there is China, also question mark; North Korea, probably; Iran, possibly; Israel, yes, but we don't know what is left of it. You have five. We don't know anything about stockpiles in these countries. We assume they have offensive programs, perhaps, but our compliance statements uses phraseology about capabilities in industrial infrastructure, pharmaceutical infrastructure, scientific capability. That would apply to all our NATO allies, all EU countries, and to the United States more than anyone else. So those are not criteria for an offensive BW program. So it is a big question mark.

Nonstate actor programs or terrorists, there is no evidence that any state has ever given a nonstate actor biological weapons. As for the famous programs that were tried by the two major groups: First, the Aum Shinrikyo between 1990 and 1994. They never obtained a pathogen, an active pathogen to work with. They had a strain that is used for vaccination of animals, a vaccine strain. You can't make a weapon out of that. It obviously doesn't work. So they didn't have anything of any kind to work with, and what little work they did was incompetent.

The Al Qaeda program between 1997 to December 2001, and I am the person that got the papers declassified, the papers we found in Afghanistan, they, too, never obtained a pathogen to work with. There were two or three incompetent people that they trusted that they thought would do the laboratory work. They never got to their A, B, Cs. Neither of these two groups got to the first essentials of doing anything.

All right. Now, let's say something about compliance, and I want to use——

Mr. ROHRABACHER. If you could summarize, please, because we are——

Mr. LEITENBERG. Well, I will be as quick as I can.

Mr. ROHRABACHER. We are going to vote pretty soon.

Mr. LEITENBERG. Dave Franz has as his second point, and I think it is quite important, "Verifying that any individual nation state is in compliance with the BWC is not possible." That is true as an absolute, but it is not true in the real world. When UNSCOM, which Dave participated in, went to Iraq and there were teams of 10, 15 people, and there were disputes amongst them whether a particular Iraqi facility was an offensive one or a defensive one. There were such disputes, though Amy's description of the early UNSCOM missions is very good.

Nevertheless, they have also participated in trilateral inspections in Russia which began in August 1991 and lasted through 1995. I should be corrected if I am mistaken, but to my understanding, unanimously, all the members of the U.S. and British teams that went to those sites decided that they were looking at elements and infrastructure of an offensive BW program. As best I know, nobody disagreed with that.

Therefore, you don't know things absolutely, but if we had such people as went into the former Soviet Union in Russia from 1991 to 1995 walking around the Russian Ministry of Defense facilities now, and if we had them walking around facilities in Iran, we would have a very much better idea of what was taking place in those places and whether they had an offensive BW program or not. I can add to this, but your red light is on.

Mr. ROHRABACHER. Thank you very much. We do have time constraints here.

[The prepared statement of Mr. Leitenberg follows:]

The Biological Weapons Program of the Soviet Union

Submitted by:

Milton Leitenberg
Senior Research Scholar
University of Maryland
School of Public Policy
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7 May 2014

The Biological Weapons Program of the Soviet Union[1]

In a highly unusual and unanticipated development, the United States government announced the end of its offensive biological weapons (BW) program on November 25, 1969. US BW stockpiles were destroyed in 1971-1972, and facilities converted. Great Britain, by then also divested of its BW program, proposed a treaty banning BW, which had been until that time always combined with chemical weapons in arms-control negotiations. The Soviet Union initially opposed this proposal, but changed its position in 1971. The USSR and the US then negotiated the final language of the treaty: it would ban the development, production, stockpiling, acquisition, retention and transfer of BW. However the US-Soviet treaty language deleted two key provisions of the British draft treaty: a ban on research, and the inclusion of on-site verification provisions. The Biological Weapons Convention (BWC) was signed on April 10, 1972 and ratified, entering into force on March 27, 1975.

Precisely at the end of 1971, the Central Committee of the Soviet Union, under Leonid Brezhnev, approved a massive expansion of the Soviet offensive BW program. From 1975 on the Soviet BW program existed in violation of the international treaty. It was a position that the USSR could maintain only through decades of deception and blatant lying. The instrumental forces in the Soviet decision-making structure that were responsible for maintaining the program during this period were a small coterie of scientists at the senior level of the Soviet Academy of Sciences, the 15th Directorate of the General Staff and senior officials of the Military Industrial Commission (VPK). If, and when, the program was definitively closed down in the decades after the dissolution of the USSR remains unknown to this day.

Why did the Soviet leadership do this? What did they intend to use BW for? Against who? In what circumstances? Why did Michael Gorbachev, despite his enormous achievements in strategic and conventional arms control in the face of opposition by the Soviet Ministry of Defense, fail to abolish the BW program? Why did an inept and disinterested Boris Yeltsin also fail to abolish the program?

The Soviet BW program was initiated in 1928. Germany was not then an enemy, neither was the US, and no other country at the time had such a program. It continued during WW 2 and directly afterwards. After 1945, the Soviet program benefited from information obtained from the wartime Japanese and US BW programs, in the US case particularly from two books written by Theodor Rosebury, an instrumental figure in the US wartime program. Rosebury's publications emphasized aerosol distribution of pathogens, which became the major means of BW dispersion. Beginning in 1949, the USSR also initiated a campaign of falsely accusing the US of *using* BW all over the world, most famously during the Korean War. The accusations continued until 1978-1988. All of the accusations were fabrications.

In the pre-1969 US BW program, as in the pre-1972 Soviet one, classical genetic selection techniques were used to select for characteristics that would enhance the virulence and hardiness of pathogens that could incapacitate or kill men, animals or plants. In addition, an effort was made to obtain antibiotic-resistant strains of these organisms, as well as ones with

[1] Milton Leitenberg and Raymond A. Zilinskas, *The Soviet Biological Weapons Program. A History*, Harvard University Press, Cambridge, MA, 2012.

modified surface antigenic properties. The latter ability would permit the pathogen to overcome the opponents' defenses, both vaccines and antibiotics, as well as evade detection and identification systems. The purpose of the post-1972 Soviet BW program was to use the new techniques of molecular genetics for the same purposes. It is notable that virtually every research direction of the post-1972 Soviet BW program followed elements that were already discernable in the pre-1969 US program. In addition, US Department of Defense authorities were extremely careless in publishing technical details of US BW submunitions in 1962 and 1972 in unclassified or declassified reports that were apparently acquired and copied by the USSR.

US government agencies may have made one additional contribution to the Soviet BW effort. The FBI and US Army were carrying out a CW and BW disinformation effort from 1965 on aimed at misleading Soviet intelligence and defense scientists about aspects of US CW and BW R&D. In an incomprehensibly foolish initiative unsupervised and unknown to other US government agencies, messages were also sent after November 1969 through a double agent, claiming that the US was continuing a covert offensive BW program. This only came to the attention of the National Security Council and the CIA in early 1971, and by mid-1971, before the BWC was signed, the false disinformation effort was shut off. Soviet Central Committee documents dating from 1986 to 1992 that were obtained in 2006 unfortunately shed no light as to whether or in what manner or degree the US disinformation may have affected Soviet policy. It is never referred to in the Central Committee documents. It also seems clear that Soviet intelligence agencies were never able to locate where in the US any such offensive BW effort could have been taking place between 1971 and 1992. My own conclusions following interviews with Soviet officials on the pre-1992 Politburo staff and in the former Soviet Ministry of Foreign Affairs, as well as senior scientists/managers within the Soviet BW program, was that the patently counterproductive US disinformation effort did *not* affect Soviet decision-making to massively violate the Biological Weapons Convention.

The post-1972 Soviet BW program was composed of four major components, with support from several additional institutional actors. The main elements were major facilities in the Ministries of Defense, Agriculture and Health and the newly created nominally civilian Biopreparat organization. Between them they comprised 40-50 research, development and production facilities plus the large military testing site on Vozrozhdeniye Island in the Aral Sea. A key element of the post-1972 program was at least seven or eight "mobilization capacity production facilities." These were cumulatively capable of initiating production of thousands of tons of BW agents within a year of being ordered to in anticipation of a major war with the US. By 1990 the USSR had proof-tested 13 agents as well as delivery systems for them. However its existing BW stockpiles at that time were still composed of classical not-genetically modified bacterial and viral strains. The BW delivery systems produced by the Soviet military were spray systems for medium bombers and bomblet multiple munitions to be contained in air-delivered munitions. However neither of these methods could reach the continental US, aside from Alaska, and no evidence was found for Soviet possession of an ICBM delivered BW warhead, as has been reported elsewhere. Europe and NATO forces and installations in Europe and its periphery, as well as China, would perforce therefore have been the targets of Soviet biological weapons.

In late-October 1989, the director of one of the major Soviet BW R&D facilities defected to the UK and was debriefed by UK and US government officials. In mid-March 1990 the US and UK presented a joint demarche to the Soviet government asking it to terminate its BW program. Politburo documents demonstrate that discussion of the BW program, referred to as "Special Problems," had already begun in November 1986. These deliberations proposed the destruction of the Soviet BW stockpiles while retaining the rest of the program, but destruction was apparently not initiated until late in 1989.

On as many as fifteen occasions between May 1990 and July 1991, President Bush, Prime Minister Thatcher, their foreign ministers and ambassadors in Moscow and other senior US and UK officials pressed Gorbachev and Soviet Foreign Minister Shevardnadze to close down the Soviet BW program, with no success. Soviet Politburo documents demonstrate with absolute certainty that Gorbachev knew that the USSR maintained an illegal offensive BW program, but he repeatedly denied its existence to Bush, Thatcher and US Secretary of State Baker. Soviet military officials habitually lied to Gorbachev and the Politburo, and during the same time period, Gorbachev was beset with the dissolution of the Warsaw Pact, the issue of German reunification, drastic food shortages in Moscow and other Soviet cities, demands for independence by the Baltic republics and Georgia, and the initiation of Yeltsin's reach for political power. It was also the time during which Gorbachev had swung his support to hard-line elements in the Kremlin, with the coup attempt occurring in mid-August 1991. It was the weakest and most difficult period of Gorbachev's political control while in office.

When Yeltsin took office in January 1992, the US forced his public admission that there had been an offensive Soviet BW program and that it had continued until March 1992. Yeltsin promised the US president and the British prime minister to abolish the program, which he apparently presumed to think would be possible by decree, and to dismiss the military officials who had run the program for the preceding decades. However, he did not do any of these things. These same military officials who advised Yeltsin in January 1992 to continue the BW program remained in their positions. Following additional defections from the program, the US and UK stated that the BW program continued as of September 1992, and they forced Russian agreement to the Trilateral Statement, signed in Moscow in September 1992. Russia committed itself in the document to allow access to the biological weapon facilities of the Russian Ministry of Defense. However Russian negotiating teams ran these negotiations into the ground between 1993 and 1996, at which point they were discontinued. An unconcerned and essentially oblivious Yeltsin had long before this point simply washed his hands of the issue despite repeated appeals by President Clinton and his senior officials.

US and EU assistance programs for the conversion of the Biopreparat and Ministry of Agriculture facilities led to access to these and assurance that they were subsequently performing legitimate civilian research and commercial activities. Virtually no proliferation apparently took place from the Soviet BW program. Official annual US government declarations continue to question Russian compliance with the BWC, and the three major Ministry of Defense facilities remain closed to this day.

In a somewhat bizarre development in February and March 2012 Putin and then-Russian Minister of Defense Anatoly Serdyukov publicly referred to 28 tasks that Putin

established for the RF-MOD in order "to prepare for threats of the future." Putin wrote that Russia needed to be prepared for "quick and effective responses to new challenges," and one of the 28 tasks that Putin specified as "The development of weapons based on new physical principles: radiation, geophysical, wave, genetic, psychophysical, etc."[2] "Genetic" weapons would obviously be forbidden by the Biological Weapons Convention, and the remainder are an arms control nightmare that would explicitly contravene another multilateral arms control treaty that was championed by the Brezhnev administration, the Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Technologies, signed on May 18, 1977 and entered into force on October 5, 1978.

The three primary issues of current concern regarding Russia and biological weapons are therefore the following:

1) Russia destroyed the Trilateral negotiations that followed from the September 1992 US-UK-Russian Trilateral Agreement.

2) As a corollary, the three Russian Ministry of Defense BW laboratories remain closed to international examination. There is no way of knowing whether these institutions continue an offensive BW program, and if so, to what degree.

3) The statement by President Vladimir Putin in February-March 2012 to develop genetic weapons is extremely problematic and troubling. Putin's remarks were never revoked or clarified to this date.

[2] "Being strong: national security guarantees for Russia." Rt.com, February 20, 2012. http://rt.com/politics/official-word/strong-putin-military-russia-711/

Mr. LEITENBERG. I would like to say something about the verification protocol if you can have that later.

Mr. ROHRABACHER. I will yield to my colleague for his questions first, but go, go right ahead.

Mr. KEATING. Thank you, Mr. Chairman.

You covered a lot of the ground in terms of the questions I had with the remarks, but I want to—part of it could be consensus, too. Let me hit a couple of issues.

One, in terms of the more fundamental attacks and the types of biological weapons that could be put into place at a more fundamental basis. One of my concerns is, since this group's publications like Inspire that are providing basic information, how to assemble a bomb, how to do this at home, are there biological weapons, more simplistic ones that can be manufactured more easily, and therefore, can some of that information be communicated over the internet by groups to disseminate it, how to formulate that now? And so if anyone wants to take a shot at that, I will allow them to.

Dr. Franz, thank you, and thank you for your service to our country.

Mr. FRANZ. I think that it is clear that—first, anything is possible, and as I said, I think proliferation of capabilities and technologies and knowledge is over.

However, I think about tacit knowledge. Having spent a lot of time with some of our old bioweaponeers, it is a little bit like our mothers making biscuits without a recipe. There is more than just following a cookbook, and as Milton stated, those sub-state actors who have tried it have not really been very successful and not even been close.

So I think that starting—I am probably concerned more about an insider scientist than I am about a terrorist becoming a scientist. I am also concerned about a terrorist organization recruiting scientists, which is certainly possible, but I think it is important to note that the—there is a big difference between what the Soviet Union was doing and what we were doing in our old offensive program, and what is possible, and it might even just be disruption, as you saw with the anthrax letters that we had here on the Hill in 2001. It was terribly disruptive, terribly expensive, and yet it was—it was gram quantities.

So, it is—in a sense, you can say anything is possible, but it is—I have spent my life trying to do good things with biology. It is also hard to do bad things with biology, to some degree.

Mr. KEATING. Dr. Smithson.

Ms. SMITHSON. One of the things that frustrates me is when I see someone go on TV, usually someone with scientific credentials, who says I can do this. Yes, perhaps they could, but each of these agents actually has different characteristics both in the fermenter and to disperse. So while you may be able to read things, in fact, can read things on the Web about fermentation of various biological agents, and there is information out there about dispersal, knowing what to use with which agent is going to be a considerable problem for any individual or group trying to master this.

And Dave is exactly right about the tacit knowledge that goes into this equation. Inspire does indeed have some articles, as does the encyclopedia of Jihad, and there have been analyses done of a

variety of cookbooks that individuals have published, and in almost each and every case, you will find that there are technical problems to what they recommend.

The issue is that equipment is being deskilled. In other words, as more sophisticated equipment disperses around the world, and this has considerable benefit on the good side of science, but it will also make it perhaps easier for those with malevolent intent to do something bad with a pathogen, and that is because they won't have to have as much of this tacit knowledge, the machine will do it for them. So we have got a point in the future where our problem will become more challenging, but right now, it is one where I think his description of an insider threat versus a terrorist that hasn't scientific knowledge is very accurate.

Mr. KEATING. It is more of a threat of obtaining it rather than creating it.

Now, I think Mr. Leitenberg was going in this direction, and I want to ask him this question and all of you this question because——

Mr. LEITENBERG. I would like chip in on these—on this, too.

Mr. KEATING. You can—let me get the question out. You can jump in and—please. But the—it is the issue of verification. Some of you have addressed that in your statements, but I want to get a sense here. Some of you say really it can't be verified. There are different scales of how much can be verified. I just want to quickly, our panel to discuss how well can we verify some of this, because if we can't or if it is near impossible, then that is good to know as a starting point because if we are going into the 2016 review conference and—it would be good to know because that will be discussed, I am sure, there, but if it is a discussion that is going nowhere, I would like your opinions on that. Verification, how well can we do it?

Mr. LEITENBERG. Can I first say something about the previous discussion? I want to make three short points to my colleagues.

Mr. ROHRABACHER. Answer that one and then go right into your points.

Mr. LEITENBERG. Okay. This is——

Mr. FRANZ. Let me respond to Milton's comment about my comments. I stand by my statement that we—that it is impossible to verify compliance. I can't assure you that any country is not doing anything contravening the Biological Weapons Convention, and I stand by that.

He talked about my time in Iraq and my time in Russia. In Iraq, the problem was trying to figure out if it was an offensive program or if it was a legitimate program. It was this dual use issue that was really hard, and they were pretty good at hiding things, so we had to sort through that, and eventually, we learned from people—and Amy knows this story better than I do, even though I was there—from people with regard to what they were doing.

In Russia, there was no question that in my eyes that we were—when I walked into Obolensk, this was an offensive program. I had lived and was running a vaccine development facility here in this country, a biodefense facility, and it was nothing like that. So I had no question that that was an offensive program, but I can't verify either that it is ongoing or that had stopped. That is a—that is the

issue with regard to verification. It is not that you can't walk into a country or a facility and have some sense, but verifying compliance, I believe, is not possible.

Mr. KEATING. All right. Thank you. Appreciate that.

Mr. Leitenberg, would you like to follow up on that?

Mr. LEITENBERG. Well, I think we should probably stick with the verification for the moment then, and I will try and come back if I can to the earlier question.

How well can we verify? Much better. One can never know more by not having on-site inspection than by having it. In other words, you are not going to learn more by not getting in the front door than you will if you got in the front door. I mean, that is—there is no way in the world that I can understand that any differently.

Mr. ROHRABACHER. That makes sense, yes.

Mr. LEITENBERG. Now, in publications going back to 1996, I have used a five-page list of criteria that were developed at after AFMIC, the Armed Forces Medical Intelligence Command, if I remember. In other words, our BW intelligence community had drawn up under five different categories, if you walked into a site or if you looked at the site and then inside and how it was managed and how its economics were run, they had five sets of criteria with six or seven points under each one that would help you distinguish between a facility that was doing offensive BW work and a facility that was doing none, that was doing defensive BW work.

Again, I agree with Dave, nothing is absolute, but you—you get closer and closer, you hone in. I also, since 1970, have written a successive group of studies, and there is a chapter in the book which I repeated again in terms of the Soviet program specifically, can you tell the difference in the laboratory—in laboratory, not in a production facility but at the level of the science in the laboratory, can you tell the difference between work that is offensive and work that is defensive? It is an extremely intricate question, but I think you can or you can get a good way toward it. Now, you asked about——

Mr. KEATING. Real quick, if I could. I got the thrust of my question answered. That being that, forensically, you can go back and determine that in terms of verification. It is just not something that could be done, but if I could, just because I don't want to—we do—we are up against the rollcall, I would like to yield back to the chair, and you could follow up in his questioning some of that. I want to make sure the chair has the chance.

Mr. ROHRABACHER. What are the positive—why would someone want to develop these things for positive reasons? I mean, is it—keep getting this word "positive" in there. Is there a development of a chemical biological agent for something other than hurting somebody and killing people? We have just tried to create a dichotomy here between different substances. It would seem to me that we are talking about a human endeavor that is in and of itself evil.

Ms. SMITHSON. Pathogens are studied by legitimate scientists in order to find cures for diseases, to develop antivirals, and antibiotics, and so it is this thin area of what is—what is a good medical use, and where has this knowledge been distorted and used for military purposes?

Mr. ROHRABACHER. Correct me if I am wrong, but that would be a very limited, very small operation as compared to something where you are trying to create a weapons system.

Ms. SMITHSON. And that is the scale that Dr. Franz referred to.

Mr. ROHRABACHER. That is miniscule compared to major production.

Ms. SMITHSON. I have been upstairs in Obolensk as well, and it hit me across the face that this was no legitimate pharmaceutical activity because of the scale of the high containment area there. So, indeed, in some cases, you can tell right away, not just by the physical infrastructure, but there are likely to be questions that you want to ask that are hard questions about, what are you doing here that is different from what you say you are doing here? And that is the crux of the verification methodology that the industry experts put forward in their monitoring proposal for the BWC, and they describe which areas of a facility that you would go to in order to get the best information and how you can monitor things just by looking at the documentation.

And in Iraq, there were many things that they found just in the documentation that were both incriminating in some cases, and on other facilities, it was very clear that they were engaged in legitimate activity, whether it was baking bread, making beer or, indeed, making medicines. So you can tell the difference.

Mr. ROHRABACHER. Mr. Leitenberg's point that there is certainly no way that you are going to learn less by having someone go into one of those situations. But it seems to me that, well, when people did go into this in Iraq, did you find that people working on these positive type of chemical biological projects, or was this all the total——

Mr. FRANZ. No, we didn't at Al Hakum or Al Manal or at other places, but we did at Samarra drug industries, for example. We looked at a lot of places. There were just a handful that were used as negative.

Mr. ROHRABACHER. Used as what?

Mr. FRANZ. Uses for the weapons program, I am sorry.

Mr. ROHRABACHER. And the rest of them were used for?

Mr. FRANZ. And many of these were used for their biopharmaceutical industry, food industry; it was very common.

Mr. ROHRABACHER. There are go. I learned something.

Mr. LEITENBERG. Different sites, different sites.

Mr. ROHRABACHER. Right. Different sites. Let me ask you this about—a vote has been called, and the chair plans to try to finish the questions up in the next 5 minutes, and we will have to call an end to the hearing. Let me go real quickly.

The Nunn-Lugar, the effect of Nunn-Lugar, some indicated to me that Nunn-Lugar had a major impact of reducing the stockpiles of chemical-biological weapons in the former Soviet Union, but what happened is that the actual weapons were systems that were upgraded. And we were actually paying for upgrading the weapons systems there.

Mr. LEITENBERG. The Nunn-Lugar program has done much to get rid of the Soviet chemical weapons stockpile. It did nothing to get rid of the Soviet biological weapons stockpile, because we and the British believed that they got rid of the stockpile between late

1989 and perhaps mid-1991 by themselves. Part of that stockpile we then redug up twice, because it was buried on this Vozrozhdeniya Island. It was anthrax, and it wasn't decontaminated very well. We didn't want anybody to get it, so we dug it up twice and re-decontaminated—so, yes, that was probably paid for by Nunn-Lugar. But in other words, the Russians got rid of their stocks initially by themselves.

Now the answer to Chris' questions, where are those cultures? Where are all the protocols? They are unquestionably sitting in the Ministry of Defense, the Russian Ministry of Defense in the old 15th Directorate that was simply renamed. It now has to do with biodefense; all they did was change the title. In the early years, they kept all the same people. And they are no doubt sitting there.

Well, we saved our cultures in our own type culture collections. We saved 6,000 classified documents. We had a big team sitting at Fort Detrick in USAMRIID for 2½ years I think it was looking at 16,000—17,000 documents deciding which would be sequestered and kept and which would be released to the public.

There is no question that the Russians kept their documentation and their protocols. We don't think they destroyed that.

Mr. ROHRABACHER. Do you think—again, we are hearing about a dichotomy about the type of offensive system versus a nonoffensive system of earlier weapons. How can you make that distinction? I am trying to figure that out?

Dr. DAVIS. Mr. Chairman, a confusion has occurred I think in semantics here. We are only talking about weapons. We are not talking about good weapons, bad weapons. We are talking about weapons. And somewhere along the line, we used the terms positive and negative. The positive thing was about the use of biological agents for illness in treatment, et cetera, et cetera. Antibiotics or those kinds of things. Molecular biology. That is one side. That is the plus biology side. The negative biology side is what you do to make weapons.

I would just say, adding quickly here, following the comments that have been made. When you look at verification, you look at biological weapons, you are not talking about a single process, if you like. The process of production has changed enormously. I was the first man into Obolensk in January 1991, and it was a massive facility. I was the guy inside the explosive chamber with the incident and all the rest of it, and we had a bag full of intelligence to go in with. We knew exactly the background, et cetera.

Today, if you look at what is happening in the biotech industry, you can do what you did with something the size of this room with something much, much smaller. And that is where so many things on the production side have gone. The signature of what looks bad; what could be done with a small amount of materiel.

The second thing is the other side of weapons is that, you know, it is no good simply having 5 liters of materiel. You actually have to disseminate that materiel in an effective fashion. That is where technique, technology and understanding occurs, and how to make biological agents into weapons.

Mr. ROHRABACHER. The point has been made earlier about the difference between a site that is involved with inventing and devel-

oping a system versus a site that would be producing enough for a utilization as a weapon.

Just one last point here then. Apparently, it looks like the United States went into this sincerely with an idea of trying to bring down the level of the threat of use of some sort of chemical biological agent on human beings. And that threat that posed all of human kind. And we stopped our production; the Soviets did not. But they became Russia. I take from the testimony that Russia is still producing chemical biological weapons.

Mr. LEITENBERG. No, no, absolutely not.

Mr. ROHRABACHER. They just didn't destroy what they had?

Mr. LEITENBERG. We keep talking about an offensive and defensive program. First of all, there is no such thing as a defensive biological weapon. A defensive biological program means you make vaccines. You make pharmaceuticals, which is a chemical, rather than a vaccine. You make masks. You make suits. You make particular kinds of clothing. That is all defensive. That is legitimate under the convention. You can do that.

There is no such thing as a defensive biological weapon.

I forget what the other part of the question was at the very end.

Mr. ROHRABACHER. I am going to give each of you 30 seconds to summarize, then we have to go vote.

Mr. KEATING. The $64 billion, is that well spent?

Mr. ROHRABACHER. You got 30 seconds to tell me whether or not you think this program has been a plus, minus, or what. You have 30 seconds each because then we have to go vote. I am sorry.

Ms. SMITHSON. The Cooperative Threat Reduction Program has been a tremendous plus for U.S. And international security, not only because they dismantled actual weapons systems, nuclear and chemical weapons at Shchuchye, but because we went in with grant assistance for the former Soviet chemical biological and nuclear weapons at a point at which they were under or unemployed and we kept them gainfully employed so they would not——

Mr. ROHRABACHER. Good point.

Yes, sir?

Mr. FRANZ. I have been actively involved in the Nunn-Lugar program since the beginning, and I am, as you can tell from my testimony, I am a real supporter of the people-to-people engagement. And I have close friends in Russia. I have close friends around the world, some of whom have worked in weapons programs in the past who no longer work in weapons programs.

And I believe because it is very difficult—I think it is a lot different to send in an inspector to prove or disprove if that there is a weapons program in an organization or in a country than it is to make friends in that country and learn to know them well and even build trust.

Mr. ROHRABACHER. The program is a success, but the friendship is even better.

Yes, sir, Mr. Davis? Dr. Davis.

Dr. DAVIS. And I used to contract under CTR with Russia for a number of years. People on the ground that did the work, I thought it was an excellent program. I will make my final remark: "The elephant is still in the room."

Mr. ROHRABACHER. Okay.

Mr. LEITENBERG. Three answers to your question: Russia is not producing chemical weapons, at least we don't think so. Under the OPCW, both the United States and Russia have now for 20 years been destroying their existing chemical weapons stocks. We are each down to the last—we are down to our last 7 or 10 percent. The Russians are about down to their last 15 or 20 percent. That is chemical weapons.

Biological weapons, to the best of my knowledge, the U.S. Government doesn't believe the Soviet Union is producing biological weapons. We are suspicious that they may be maintaining an offensive program in those three Ministry of Defense facilities, but we have no way to know.

Mr. ROHRABACHER. And we should demand to see those facilities?

Mr. LEITENBERG. Excuse me?

Mr. ROHRABACHER. We should demand to see those facilities.

Mr. LEITENBERG. Oh, absolutely.

Mr. ROHRABACHER. There you go. Thank you all for testifying today. There will be a lot of people looking at what you have said, and this will spur a lot of conservation and talk on this issue, which was the purpose of this hearing.

This hearing is now adjourned.

[Whereupon, at 3:30 p.m., the subcommittee was adjourned.]

APPENDIX

Material Submitted for the Record

SUBCOMMITTEE HEARING NOTICE
COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515-6128

Subcommittee on Europe, Eurasia, and Emerging Threats
Dana Rohrabacher (R-CA), Chairman

May 6, 2014

TO: MEMBERS OF THE COMMITTEE ON FOREIGN AFFAIRS

You are respectfully requested to attend an OPEN hearing of the Committee on Foreign Affairs to be held by the Subcommittee on Europe, Eurasia and Emerging Threats in Room 2200 of the Rayburn House Office Building (and available on the Committee website at www.foreignaffairs.gov):

DATE: Wednesday, May 7, 2014

TIME: 2:00 p.m.

SUBJECT: Assessing the Biological Weapons Threat: Russia and Beyond

WITNESSES: Amy Smithson, M.D.
Senior Fellow
James Martin Center for Nonprolferation Studies

David R. Franz, Ph.D.
(Former Commander, U.S. Army Medical Research Institute of Infectious Diseases)

Christopher Davis, M.D.
(Former Member, Defence Intelligence Staff of the United Kingdom)

Milton Leitenberg
Senior Research Scholar
Center for International and Security Studies at Maryland
University of Maryland

By Direction of the Chairman

The Committee on Foreign Affairs seeks to make its facilities accessible to persons with disabilities. If you are in need of special accommodations, please call 202/225-5021 at least four business days in advance of the event, whenever practicable. Questions with regard to special accommodations in general (including availability of Committee materials in alternative formats and assistive listening devices) may be directed to the Committee.

COMMITTEE ON FOREIGN AFFAIRS

MINUTES OF SUBCOMMITTEE ON *Europe, Eurasia, and Emerging Threats* HEARING

Day *Wednesday* **Date** *05/07/2014* **Room** *2200*

Starting Time *2:08 p.m.* **Ending Time** *3:30 p.m.*

Recesses [ ] (____to____) (____to____) (____to____) (____to____) (____to____) (____to____)

Presiding Member(s)

Chairman Dana Rohrabacher

Check all of the following that apply:

Open Session [✓]
Executive (closed) Session [ ]
Televised [ ]

Electronically Recorded (taped) [✓]
Stenographic Record [✓]

TITLE OF HEARING:

"Assessing the Biological Weapons Threat: Russia and Beyond"

SUBCOMMITTEE MEMBERS PRESENT:

Chairman Dana Rohrabacher, Ranking Member Bill Keating, Rep. Ted Poe, Rep. Albio Sires

NON-SUBCOMMITTEE MEMBERS PRESENT: *(Mark with an * if they are not members of full committee.)*

N/A

HEARING WITNESSES: Same as meeting notice attached? Yes [✓] **No** [ ]
(If "no", please list below and include title, agency, department, or organization.)

STATEMENTS FOR THE RECORD: *(List any statements submitted for the record.)*

N/A

TIME SCHEDULED TO RECONVENE _____
or
TIME ADJOURNED *3:30 p.m.*

Subcommittee Staff Director

MATERIAL SUBMITTED FOR THE RECORD BY MR. MILTON LEITENBERG, SENIOR RESEARCH SCHOLAR, CENTER FOR INTERNATIONAL AND SECURITY STUDIES AT MARYLAND, SCHOOL OF PUBLIC POLICY, UNIVERSITY OF MARYLAND

DTRA Bio-Defense Way Ahead Project

Milton Leitenberg[1]

Center for International and Security Studies

University of Maryland

October 25, 2009

[NOTE: The remaining pages are not reprinted here but are available in committee records.]

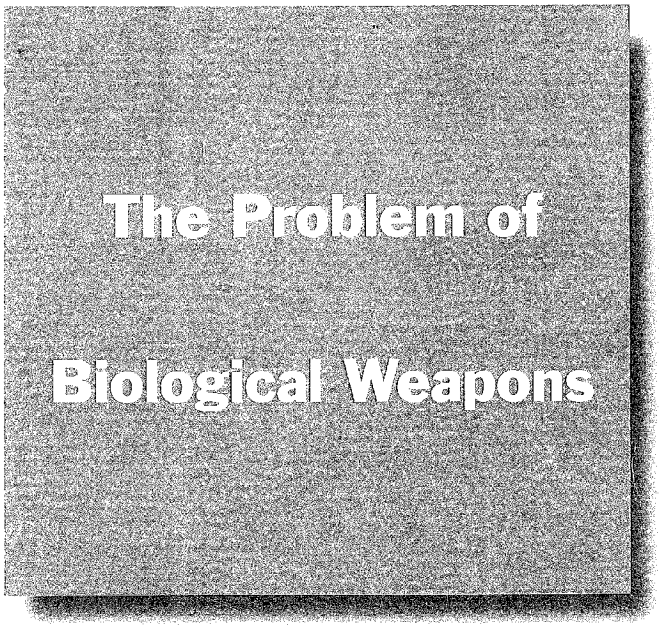
ASSESSING THE BIOLOGICAL WEAPONS AND BIOTERRORISM THREAT

Milton Leitenberg

December 2005

[NOTE: The remaining pages are not reprinted here but are available in committee records. This publication may also be accessed on the Internet at the following URL: http://www.strategicstudiesinstitute.army.mil/pubs/download.cfm?q=639]

SWEDISH NATIONAL DEFENCE COLLEGE – ACTA B27
Department of Security and Strategic Studies



Milton Leitenberg

SWEDISH
NATIONAL DEFENCE COLLEGE
DEPARTMENT OF SECURITY AND STRATEGIC STUDIES

6/2004

[NOTE: The remaining pages are not reprinted here but are available in committee records.]

MEETING OF THE STATES PARTIES TO THE CONVENTION ON THE PROHIBITION OF THE DEVELOPMENT, PRODUCTION AND STOCKPILING OF BACTERIOLOGICAL (BIOLOGICAL) AND TOXIN WEAPONS AND ON THEIR DESTRUCTION

BWC/MSP/2009/WP.4
7 December 2009

ENGLISH ONLY

2009 Meeting
Geneva, 7-11 December 2009
Item 6 of the agenda
Consideration of, with a view to enhancing international cooperation, assistance and exchange in biological sciences and technology for peaceful purposes, promoting capacity building in the fields of disease surveillance, detection, diagnosis, and containment of infectious diseases

POLICY ISSUES FOR THE SEVENTH REVIEW CONFERENCE

Submitted by Canada[1]

1. The Seventh Review Conference will be held in 2011, now less than two years away. Canada and the other members of the JACKSNNZ believe that States Parties to the Convention should begin to consider the range of important policy issues that they will deal with at the Review Conference. With this in mind, Canada is submitting the annexed discussion paper for the consideration of delegations over the coming months.

2. The paper, which was authored by Dr. Jeremy Littlewood of the Canadian Centre of Intelligence and Security Studies at Carleton University and was commissioned by the International Security Research and Outreach Programme of Foreign Affairs and International Affairs Canada, contains a range of ideas and proposals which may be of interest to States Parties. The views and positions expressed in the report are solely those of the author: the paper is contributed purely to stimulate informal discussion among States Parties in preparation for the Review Conference.

[1] This paper is a Canadian-sponsored discussion paper submitted by Japan, Australia, Canada, Republic of Korea, Switzerland, Norway and New Zealand (JACKSNNZ.)

Annex

How to approach compliance issues in the Biological and Toxin Weapons Convention: policy issues for the Seventh BTWC Review Conference in 2011

Introduction

1. The threat posed to states from biological weapons exists in two areas: that from other states and that from non-state actors, with the latter (terrorist threat) now receiving much more emphasis from security experts than the concern with inter-state conflict. The Biological and Toxin Weapons Convention (BTWC) is sufficiently comprehensive – if implemented fully – to counter both state and non-state threats. Implementation of the Convention, however, lacks a coherent and continuous 'serious administration' that is strategic in design and intent. Although the norm against the use of biological and toxin weapons is robust and the legal, regulatory, and structured architecture that gives effect to that norm in national and international policy reasonably well developed, attention to the problem posed by biological weapons is haphazard due to the disparate nature of the mechanisms employed at the sub-national, national, and international levels to counter the threat. Different international organizations, agencies, and coalitions generally address discrete aspects of the overall problem, just as a range of national government departments are responsible for discrete areas of implementation under the BTWC and the other agreements and arrangements, e.g. United Nations Security Council Resolution 1540 (2004), the G8 Global Partnership, and the guidelines on Laboratory Biosafety and Biosecurity.

2. States parties to the BTWC have in the past reached agreement and developed additional understandings by consensus to address the threats posed by biological weapons. This evolutionary and incremental approach to strengthening the Convention and enhancing its implementation has served states parties and the international community well, taking advantage of propitious windows of opportunity to move the Convention forward when possible and maintaining the legitimacy of the BTWC when it has been subjected to harsh political pressures or in the face of scientific and technological developments. Nevertheless, for states parties collectively the horizon of activity has usually been in five year blocks, identified by a formal review conference and the activity that follows it before the next review conference. Indeed, for many states parties, attention is only focused on the BTWC at, and in the immediate run-up to, review conferences and other meetings.

3. The seventh review conference of the Convention is scheduled to occur in 2011, most likely towards the end of that year. No immediate crisis is on the horizon at this time, but a number of nagging disputes related to how and when to strengthen the Convention can be clearly identified. These disputes, if not resolved in a satisfactory manner, risk presenting states parties with what at least some significant actors consider to be two unpalatable choices in 2011. The first choice is whether or not to return to negotiations on a multilaterally agreed, legally binding, single additional agreement to implement formal compliance and cooperation mechanisms under the Convention: that is to say, a return to a process akin to the BTWC Protocol negotiations between 1995 and 2001. The second choice is whether or not to continue on the modest,

[NOTE: The remaining pages are not reprinted here but are available in committee records.]

House Committee on Foreign Affairs
Subcommittee on Europe, Eurasia, and Emerging Threats

Hearing on Assessing the Bioweapons Threat:
Russia and Beyond

Questions for the Record from the Honorable George Holding

Responses from Amy E. Smithson, PhD
Senior Fellow, James Martin Center for Nonproliferation Studies*

1. While the United States gave up its biological weapons program in 1970, inspections in the late-1990s suggested that the Russians had not eliminated the weapons program that it inherited from the former Soviet Union.

a. Do we know if that program still continues?

In its 1992 voluntary confidence-building declaration under the Biological and Toxin Weapons Convention, the Russian government stated that the Soviet bioweapons program did not achieve anything militarily significant. Nonetheless, there are several reasons to believe that statement is completely false and that Russia continues some level of offensive biological weapons work. First, Russia's assertion that the Soviet program it inherited was insignificant directly contradicts the accounts of high-level defectors from the program, which are conveyed authoritatively and at length in Ken Alibek's *Biohazard* and Raymond Zilinskas and Milton Leitenberg's *The Soviet Biological Weapons Program: A History*. Moreover, US and British inspectors who visited Soviet/Russian facilities under the Trilateral Agreement, which was designed to ascertain whether Russia had closed down the program, could readily see ample evidence consistent with a massive effort to research, develop, test, and produce biological weapons. And, under the umbrella of the Cooperative Threat Reduction program, countless individuals who engaged in collaborative peaceful research with scientists at a great many of the facilities that were formerly involved in the Soviet bioweapons program observed the same things. Having been to over fifteen of these facilities, I can personally confirm the observations of these experts.

Thanks in no small part to Cooperative Threat Reduction programming, the vast majority of the facilities previously involved in the Soviet weapons program are now conducting legitimate research and commercial production activity. With Cooperative Threat Reduction funds one such facility, Stepnogorsk, which had the capacity to produce multiple tons of anthrax, was disassembled. However, the Russians continue to deny US or other non-Russian personnel any access to a handful of military biological facilities that the aforementioned defectors say were at the heart of the USSR's bioweapons program. In public statements, such as the 2013 arms control compliance report, the US government states that it is "unclear" whether Russia is

*Affiliation provided for identification purposes. only. The James Martin Center for Nonproliferation Studies does not take institutional positions on public policy issues.

in complaince with the Biological and Toxin Weapons Convention. For the reasons listed above, I share concerns that Russia's bioweapons program remains active.

b. What actions has the U.S. taken to ensure that the biological weapons capabilities of the former Soviet Union have been eliminated?

Under the auspices of the Cooperative Threat Reduction program, initiated by former Senators Richard Lugar (R-IN) and Sam Nunn (D-GA), the US government has devoted considerable resources to help Russia and the former Soviet states secure and safely dismantle the weapons and infrastructure associated with the USSR's weapons of mass destruction. Cooperative Threat Reduction programming, implemented chiefly by the Departments of Defense, State, and Energy, includes efforts to improve security at former Soviet bioweapons facilities, to dismantle infrastructure, and to engage the scientists who created the USSR's biological weapons capabilities in peaceful research activity, where possible helping them transition to gainful commercial work. The aforementioned departments can provide voluminous detail on their biological Cooperative Threat Reduction work in Russia.

c. Have the Russians refused to cooperate in the elimination process?

The closer to the USSR's December 1991 collapse, the more cooperative the Russians were with US government efforts to secure their bioweapons facilities and enroll bioweaponeers in collaborative research grants. Gradually, Russia's cooperation decreased, to the point where simple dialogue about possible joint activity even became difficult. Along the way, Russia refused to grant permission for one of the original architects of the Cooperative Threat Reduction program, former Senator Richard Lugar (R-IN), to visit some of the military biological facilities that remain closed to outsiders. So, yes, the Russian government has declined specific US proposals to reduce residual biological threats from the Soviet era and has for almost a decade generally backed away from the biological portfolio of the Cooperative Threat Reduction program.

2. Given Russia's involvement in plans to remove and destroy Syria's chemical weapons stockpile, has the United States and the international community ever asked for Moscow's assistance regarding a possible Syrian biological weapons program? If so, what has been the Russian response?

A direct answer to this question can be obtained from the US government officials who were involved in discussions with their Russian counterparts about unconventional weapons in Syria. United Nations Security Council Resolution 2118 speaks only to chemical disarmament, and Syria joined the Chemical Weapons Convention in mid-September 2013. International efforts to work with Syria are therefore ongoing through the Organization for the Prohibition of

Chemical Weapons, the inspectorate for the chemical weapons ban, and the Joint OPCW-United Nations mission, which is helping with logistics and security for the OPCW's inspections in Syria. Syria has signed, but not ratified and deposited an instrument of ratification for the Biological and Toxin Weapons Convention, so any members of this treaty concerned about a biological weapons program in Syria would probably be reaching out to Syria through bilateral channels.

From the outside, however, it is clear that Russia's cooperation with chemical weapons disarmament efforts in Syria has been on-again/off-again. This sporadic cooperation may be attributable to Russia's past involvement in Syria's chemical weapons program, notably the sale of equipment, chemical weapons precursors, and perhaps technical know-how to Syria in the early 1990s under the guise of environmental cooperation. Given how recalcitrant Russia has been on matters biological for many years, the safe assumption is that Russian officials would resist any US and international efforts to address a possible bioweapons program in Syria. That assumption is reinforced by Moscow's repeated public assertions that rebel forces in Syria are responsible for the chemical weapons attacks that have been occuring there since December 2012, all evidence to the contrary.

RESPONSES FROM MR. MILTON LEITENBERG, SENIOR RESEARCH SCHOLAR, CENTER FOR INTERNATIONAL AND SECURITY STUDIES AT MARYLAND, SCHOOL OF PUBLIC POLICY, UNIVERSITY OF MARYLAND, TO QUESTIONS SUBMITTED FOR THE RECORD BY THE HONORABLE GEORGE HOLDING, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

The answers to many of these questions were provided, all or in part, and in some cases for the most part, in the written submissions and in the oral testimony to the Subcommittee by Amy Smithson, Christopher Davis, and Milton Leitenberg

1. While the United States gave up its biological weapons program in 1970, inspections in the late-1990s suggested that the Russians had not eliminated the weapons program that it inherited from the former Soviet Union.
a. Do we know if that [weapons] program still continues?

No, neither the United States nor the United Kingdom, the partner of the U.S. in the 1993 through 1996 Trilateral negotiations with Russia, know whether or to what degree it continues today.
However it is presumed by both governments that if it continues it almost certainly does so in very greatly reduced circumstances in comparison to the years prior to 1992 :
-- It is relegated to the three institutes belonging to the Russian Ministry of Defense
-- the other major segments of the Soviet offensive [viz"weapons"] biological weapons program that were located in the very extensive "Biopreperat" R &D system, the Ministry of Health, the Ministry of Agriculture, and the Academy of Sciences, which together totalled another 40 or 45 research, development and production facilities, are all assumed to have discontinued work on offensive biological weapons issues in the early 1990's. (A defensive BW program is permitted by the Biological and Toxin Weapons Convention, and is vigorously maintained by the U.S. in particular , as well as the U.K. and numerous other countries.)
-- the three Russian Ministry of Defense biological weapons facilities no longer have the use of the former USSR's major outdoors BW testing facility on Vozrozhdeniye Island in the Aral Sea.
-- All the large Soviet-era biological weapons mobilization capacity production facilites are assumed to be no longer in operation.
-- My understanding is that the U.S. and U.K. governments do not believe that there has been any biological weapons production in Russia since the early 1990's, and they assume that none is taking place now.
-- Since it is also assumed that between 1989 and 1991 the USSR destroyed the biological weapons stockpiles that it had maintained untill then, the U.S. and U.K. governments therefore also assume that there are no longer any biological weapons stockpiles within Russia.
[For greater detail on these questions, see *THE SOVIET BIOLOGICAL WEAPONS PROGRAM, A HISTORY,* Milton Leitenberg and Raymond Zilinskas, 2012, pages 562 to 678. These pages also apply to question 1(b) below.]

1 (b.) What actions has the U.S. taken to ensure that the biological weapons capabilities of the former Soviet Union have been eliminated?

Very extensive pressure was first brought to bear on the adminstration of President Gorbachev by the U.S. and U.K. governments between the early spring of 1990 and December 1991 to close down the Soviet biological weapons program.
Contact about the subject was already begun with represenatatives of President Yeltsin in the late fall of 1991, before the expiration of the USSR. Following the September 1992

Trilateral Agreement between the U.S., U.K. and Russia the Trilateral negotiations took place between early 1993 and the end of 1996. They deadlocked at that point due to obstructionism on the part of the Russian side, most particularly its Ministry of Defense, There have been no negotiations since. Absolutely none took place during the eight years of the Bush administraion, and none have taken place during the current administration.
This is however only a part of the answer. The second part concerns the U.S government efforts undertaken under the auspices of the Nunn-Lugar Program, the CTR program of the Dept. of Defense and others. These programs were able to reach the institutes and scientists of the aforementioned portions of the former Soviet BW program not under the direct jurisdiction of the Russian Ministry of Defense. These efforts were described in some detail in the paper submitted to the Subcommittee by Amy Smithson, and so nothing further is added here

1(*c) Have the Russians refused to cooperate in the elimination process?*
As indicated, the Russian Ministry of Defense refused to participate in any of the international arrangements that offered funding to their biological weapons related institutes in exchange for opening them to transparency by international partners. Most of the other components of the former offensive BW program of the former USSR, however cooperated extensively with the ISTC, the CTR and other programs funded by U.S., EU and other internatinal donors -- untill recently.
After the 2012 elections in Russia the policies of the Putin government changed in regard to the overall Russia-U.S. agreements regarding external funding for programs in former BW institutes and scientists, including the ISTC. After a year of clearly unpromising negotiations the Russian government ended all cooperation by institutes in Russia with the ISTC. (There may be additional information on this point in Amy Smithson's statement submitted to the Committee.)The CTR programs of DOD had already been curtailed inside Russia a half dozen years earlier.
The three facilities of the Russian Ministry of Defense remain closed to any oversight by international observers,

2. Given Russia's involvement in plans to remove and destroy Syria's chemical weapons stockpile, has the United States and the international community ever asked for Moscow's assistance regarding a possible Syrian biological weapons program? If so, what has been the Russian response?

There is no firm publicly available evidence that a Syrian biological weapons program exists, and if it does, what its status is. The very short paragraph that speaks to the question that is included in the statement by then National Intelligence Director James Clapper on March 12, 2013 to the Senate Intelligence Committee contains numerous caveats and qualifications within its five lines. (If there is a more recent public iteration of that assessment I have not seen it.) It is not publicly known whether additional more detailed information is available to the intelligence community, and if

so, what the specifics of that might be. The open literature contains references to a single Syrian government research insitute in Damascus that was reportedly responsible for research pertaining to chemical weapons, and possibly also to biological and nuclear weapons.

There is also no publicly available information to indicate whether the United States or any other government or international body has ever approached Russian government agencies to ask them whether Syria was engaged in an offensive biological weapons program. Presumably no country or international agency would do that unless it held what it felt to be reasonbly convincing evidence that such aprogram existed. One always has to keep in mind that a defensive biological weapons program is permitted under the provisions of the BTWC treaty, as is demonstrated by the very advanced and extensive biodefense program of the United States. In view of the fact that Israel has maintained a dedicated biological weapons research institute for over five decades, and at least in the past an offensive biological weapons program as well, it would not be very surprising if Syria maintained at least some elements of a defensive program if nothing else.

Since it is not known if anyone ever approached Russian government agencies regarding the question of a possible Syrian BW program, it is also not known what their reply may have been.

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