SCUSA 60 THEME:
MEASURING PROGRESS AND DEFINING NEW CHALLENEGES

WMD AND ARMS PROLIFERATION

The SCUSA theme this year is centered on measuring the progress the U.S. has made in security, development, democratization, and in dealing with uncertainty and change. One continuing challenge is the proliferation of weapons, from small arms to high-yield chemical, biological, radiological and nuclear weapons (CBRN)—also known commonly as weapons of mass destruction (WMD)—and their related materials.

Small arms (pistols, assault rifles, grenades, etc.) maim and kill far more people each year than any other kind of weapon. They are the most commonly used weapons in conflicts throughout the world, largely because they are relatively inexpensive, portable and easy to use, and are effortlessly recycled from one conflict or violent community to the next.[1] Kalashnikov assault rifles (AK-47s) are the most widespread military weapons in the world. It is estimated that there are between 50 and 70 million of them spread across the world's five continents. They are used daily by soldiers, fighters, and gang members to inflict untold suffering in many countries.

The trade in small arms takes various forms, recently illustrated by the movie *Lord of War,* starring Nicholas Cage. The majority of the 7 million to 8 million new guns produced every year form the legal trade in small arms—that is, trade authorized by governments. However, limited controls of this legal trade, and a failure to enforce them, means that many arms are diverted into the illegal sector. The thriving black market trade in small arms provides guns to people who cannot obtain them legally, even though the vast majority of these guns have origins in the legal sector.

Within the past decade, the United Nations has taken a special interest in addressing the proliferation of small arms and light weapons, reflected in a "program of action" adopted in 2001 that requires member states to put in place laws and other procedures to control production, export, import, transit and retransfer of small arms and light weapons, as well as registering, tracing and trading. Furthermore, it calls upon member states to identify groups dealing in the illegal arms trade, or similar activities, and to take proper action against them. However, the global trade in small arms and light weapons is a multi-billion dollar industry, and shows no signs of diminishing without greater political will and action worldwide. Since the U.S. is among the world's top five exporters of these weapons, it is only natural that other nations would look to us for leadership on this critical security issue.

Of greater concern to policymakers in the U.S. and our allies is the threat posed by the proliferation of WMD and their related materials. The security challenges in this arena cover a broad spectrum of activities, from state-to-state nuclear proliferation to maritime piracy to rogue scientists working in secret biotechnology laboratories, funded by a sinister terrorist network or even a nation-state. These are complex, multi-dimensional problems requiring a multinational response. For example, the proliferation network developed by Pakistani nuclear scientist Abdul Qadeer Khan led to a successful weapons program for his country, while also enabling the transfer of sensitive technologies and materials to countries hostile to the U.S. (including Libya,

[1] Guns Out of Control: The Continuing Threat of Small Arms, (IRIN Report, United Nations May 2006). Online at: http://www.irinnews.org/webspecials/small-arms/Small-Arms-IRIN-In-Depth.pdf, p. 1.

Iran, Iraq and North Korea). Addressing the threat from weapons proliferation networks has particular importance when considering the implications of these weapons in the hands of violent non-state actors like al-Qaida, for which deterrence and retribution is more complicated than with nation-states.

US and Global Responses to Weapons Proliferation

The U.S. addresses many of these challenges through the Proliferation Security Initiative (PSI), in which intelligence, military and diplomatic services, and law enforcement work to prevent shipments of WMD and related materials worldwide. The PSI is a set of activities, not a formal treaty-based organization. It is best understood as a set of partnerships that establishes the basis for cooperation on specific activities when the need arises. It does not create formal "obligations" for participating states, but does represent a political commitment to establish "best practices" to stop proliferation-related shipments. PSI interdiction training exercises and other operational efforts help states work together in a more cooperative, coordinated, and effective manner to stop, search, and seize shipments.[2]

The Department of State's Bureau of International Security and Nonproliferation (ISN) is responsible for managing a broad range of nonproliferation, counterproliferation and arms control functions.[3] ISN leads U.S. efforts to prevent the spread of weapons of mass destruction (nuclear, chemical, and biological weapons) and their delivery systems. The ISN Bureau:

- spearheads efforts to promote international consensus on WMD proliferation through bilateral and multilateral diplomacy;
- addresses WMD proliferation threats posed by non-state actors and terrorist groups by improving physical security, using interdiction and sanctions, and actively participating in the Proliferation Security Initiative (PSI);
- works closely with the UN, the G-8, NATO, the Organization for the Prohibition of Chemical Weapons (OPCW), the International Atomic Energy Agency (IAEA) and other international institutions and organizations to reduce and eliminate the threat posed by WMD
- supports efforts of foreign partners to prevent, protect against, and respond to the threat or use of WMD by terrorists.

The Department of Defense and other U.S. agencies also work to curb the proliferation of Man-Portable Air Defense Systems (MANPADs), heavy military equipment (tanks, aircraft, missiles), sensors, lasers, and precision-guided munitions. And several nonproliferation programs have been established under U.S. leadership specifically to prevent nuclear materials and nuclear expertise from falling into the wrong hands. These include the Cooperative Threat Reduction Program, International Materials Protection and Cooperation, Russian Transition Initiatives, HEU Transparency Implementation, Elimination of Weapons-Grade Plutonium Production, Fissile Materials Disposition, the Plutonium Production Reactor Agreement, the Global Threat Reduction Initiative, and the Global Initiative to Combat Nuclear Terrorism.

On an international level, a variety of multilateral treaties and export control regimes—often referred to as the *traditional components* of nonproliferation regimes—include the Nuclear Nonproliferation Treaty, Chemical Weapons Convention, and the Biological Weapons

[2] U.S. Department of State's Proliferation Security Initiative website: http://usinfo.state.gov/products/pubs/proliferation

[3] U.S. Department of State's Bureau of International Security and Nonproliferation website: http://www.state.gov/t/isn

Convention. The Nuclear Nonproliferation Treaty (NPT) entered into force in 1970 and in 1995 was extended indefinitely with review conferences every five years. A multilateral effort led by nuclear weapons states (NWS) of the NPT has three key objectives: prevent the spread of nuclear weapons and technology, promote cooperation in the peaceful uses of nuclear energy, and further the goal of eventual disarmament. A total of 190 states have signed the treaty, five of whom are declared NWS with existing weapons stockpiles, the remaining being non-nuclear weapons states (NNWS) who agree not to seek any. Four states are not signatories to the NPT: India, Israel, Pakistan, and North Korea, all of which either possess, or are strongly suspected of possessing nuclear weapons. The International Atomic Energy Agency (IAEA) is the global organization responsible for assessing whether states comply with their safeguards obligations.

The chemical weapons regime was formally established by the Chemical Weapons Convention (CWC) in 1997,[4] and the Organization for the Prohibition of Chemical Weapons (OPCW) was established to implement the treaty and monitor and verify state compliance. The CWC verification system differs from the NPT/IAEA system in several respects.[5] Since the CWC requires all states parties to declare all chemical weapons stockpiles and chemical weapons production facilities, the inspections regime must verify the destruction of chemical weapons programs, non-diversion from the chemical industry and the absence of clandestine activities. This means that the OPCW must evaluate two types of state declarations during its inspections: declarations on status of the destruction of chemical weapons programs and declarations on commercial and industrial activity related to dual-use chemicals.

The biological nonproliferation regime is based on two multilateral treaties. The Geneva Protocol, signed in 1925, prohibits the use of chemical and biological weapons in war. The Biological Weapons Convention (BWC), signed in 1972, establishes international norms against the possession or development of biological weapons and represents the first multilateral treaty banning an entire category of weapons. The BWC was opened for signature in 1972 and entered into force in 1975. The BWC currently has 155 participating states, who are prohibited from developing, producing, stockpiling, acquiring or retaining biological agents, toxins, weapons or means of delivery. States are further obligated not to transfer these items to any recipient, group of states or international organization. The BWC is supplemented by an export control regime, the Australia Group, created in 1985. An export control regime involves a political agreement (i.e., voluntary) that seeks to coordinate the national transfer policies and licensing procedures of participants and ideally ensures that trade in certain materials and dual-use equipment by industries will not lead to a proliferation of chemical, biological or nuclear weapons.

Enduring Challenges

The challenge of stopping the proliferation of all these weapons faces a number of hurdles, for example, some believe the NPT has lost its purpose, arguing that although a great majority of signatories continue to comply with the Treaty obligations, the NPT has not prevented the spread of technology and weapons to countries outside the original five NWS. Further, different states each lay emphasis on different aspects of the treaty, creating obstacles to accomplishing any

[4] The Chemical Weapons Convention was adopted in the Conference on Disarmament in 1992, open for signature in 1993 and entered into force in 1997.

[5] This discussion of nonproliferation regimes is largely based on Natasha E. Bajema, "Assessing the Role of the Nonproliferation Regimes: Are they Relevant Tools for Countering WMD Terrorism?" in *Weapons of Mass Destruction and Terrorism*, edited by Russell Howard and James J.F. Forest (New York: McGraw-Hill, 2007).

needed changes. And some have criticized how the recent emphasis on non-proliferation alone has turned attention away from other fundamental aspects of the NPT, like disarmament.[6] In general, the challenges to proliferation can be generally placed into one of two categories: proliferation between states, and proliferation involving non-state actors.

1) Proliferation to States

Global arms proliferation activities range from small arms to nuclear weapons. Kalashnikov rifles, described earlier in this paper as the most widely used weapon in the world, are produced in at least 14 countries, including Albania, Bulgaria, China, Germany, Egypt, Hungary, India, Iraq, North Korea, Poland, Romania, Russia, and Serbia, and most recently Venezuela. Kalashnikov technology has also been used for the development of other derivative assault rifle types manufactured in Finland, Israel, and South Africa, amongst others. For example, the Finish Sako M60, M62, and M76, the Israeli Galil ARM/AR assault rifles, and the South African R4 are all essentially based on the AK-47's main working parts.

The proliferation of these and other small arms and light weapons is the result of (i) the absence of national, regional, and ultimately global standards, laws, and procedures to regulate their transfer and use; (ii) the wide international spread of production capacity of many types of such weapons; and (iii) the easy availability of supplies from the surplus stocks of many types of small arms and light weapons, and their associated ammunition. Tens of thousands of AKs are now being bought, trafficked, and brokered by a new breed of middlemen. International networks of companies, government agencies, and individuals in Europe, the Middle East, North America and elsewhere are involved, augmenting the millions of assault rifles and other small arms currently in circulation.[7]

While no nation publicly acknowledges either an offensive biological weapons (BW) program or stockpile, several nations are considered, with varying degrees of certainty, to have some BW capability: China, Cuba, Egypt, Iran, Israel, North Korea, Russia, Syria, and Taiwan.[8] The covert development of biological weapons, especially in states that have not signed the BWC, remains hard to detect.

While the CWC called upon signatory countries to destroy their stockpiles of chemical weapons, in July 2007, the OPCW confirmed that Albania had become the first country to have destroyed its declared chemical weapons. Five other states—India, Libya, Russia, South Korea, and the United States—have declared possession of such weapons.[9] All have stated that they will destroy their weapons by the Convention's April 29, 2012, deadline. Twelve countries also reported facilities for the production of CW and have pledged to destroy them or convert them to civilian uses. However, observers have expressed doubts that all will be able to do so, owing to technical and legal challenges, and it is suspected that some signatories (such as Iran and China)

[6] Jean du Preez, "The 2005 NPT Review Conference: Challenges and Prospects Ahead" CNS website (2005) http://cns.miis.edu/research/npt/05revconf.htm.

[7] Control Arms. *The AK-47: The World's Favorite Killing Machine* (Control Arms Briefing Note, 26 June, 2006). Online at: http://www.controlarms.org/en/documents%20and%20files/reports/english-reports/the-ak-47-the-worlds-favourite-weapon

[8] Paul K. Kerr, *Nuclear, Biological, and Chemical Weapons and Missiles: Status and Trends.* CRS Report for Congress (February 20, 2008).

[9] Paul K. Kerr, *Nuclear, Biological, and Chemical Weapons and Missiles*.

and several countries that have not ratified the Convention (Egypt, Israel, North Korea, and Syria) may still be developing or producing CW.

According to a February 2008 report to Congress, the Central Intelligence Agency has identified several dangerous chemical and biological weapons proliferation trends:[10]

- Developments in biotechnology, including genetic engineering, may produce a wide variety of live agents and toxins that are difficult to detect and counter; and new CW agents and mixtures of CW and BW agents are being developed.
- Some countries are becoming self-sufficient in producing CW and BW agents and less dependent on imports.
- Countries are using the natural overlap between weapons and civilian applications of chemical and biological materials to conceal CW and BW production; controlling exports of dual-use technology is ever more difficult.
- Countries with CW and BW capabilities are acquiring sophisticated delivery systems including cruise and ballistic missiles.
- Scientists with experience in CW and BW production continue to leave countries of the former Soviet Union.
- About one dozen terrorist groups have sought CW, BW, and nuclear material or expressed interest in them; several countries with CW and BW capabilities have sponsored terrorists.

In terms of delivery systems for potential WMD, dozens of countries have or are developing short-range ballistic missiles and more are likely to buy them. Over 80 countries have cruise missiles; about 40 manufacture or have the ability to manufacture them. The US is the most prolific exporter of cruise missile systems, while North Korea is the world's most prolific exporter of ballistic missiles and related technologies.

On the nuclear level, state-to-state proliferation violates NPT prohibitions against states acquiring WMD capabilities on their own. Two states of significant concern today are Iran and North Korea. In the mid- to late-1990s, despite elections won by reformists, the U.S. began to impose sanctions on Iran for sponsoring terrorism and seeking to gain nuclear weapons. In 2002, amid emerging signs that it had violated its NPT obligations, Iran was named as part of the "axis of evil" by President Bush along with Iraq and North Korea. Since 2003, Iran has admitted to six violations to the NPT, including not declaring the import, conversion, and enrichment of uranium beginning in 1991, the construction of experimental sites where nuclear material was used beginning in 1993, and producing and extracting plutonium for experiments as early as 1988.[11] Additionally, there is evidence that these efforts are not merely aimed at building power infrastructure, but will ultimately be used to produce nuclear weapons. As a result, the UN has since passed resolutions and trade sanctions in an effort to halt the Iranian enrichment program and the IAEA has increased the pressure on Iran to completely disclose its entire nuclear program. Despite this pressure, Iranian leaders remain resolute on continuing their country's progress. Iran's nuclear infrastructure is rapidly becoming a credible threat. In June 2008, IAEA Director Mohammed El Baradei stated that it would take as few as six months for Iran to produce a nuclear weapon.

Like Iran, North Korea was a signatory to the NPT until 2003 when it removed the existing IAEA safeguards at its facilities and announced its withdrawal from the NPT. North

[10] Paul K. Kerr, *Nuclear, Biological, and Chemical Weapons and Missiles*.

[11] Mohammed El Baradei, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran" (2004) http://www.iaea.org/Publications/Documents/Board/2004/gov2004-83.pdf

Korea has accused the U.S. of displaying hostile intent and harboring a desire to invade and, consequently, they announced that they were pursuing a nuclear deterrent to U.S. action. Although saying that the nuclear issue was a bilateral one with the U.S., North Korea eventually agreed to three- and six-party talks (involving China, Russia, Japan, and South Korea in addition to the U.S.) in 2003. Despite numerous rounds of talks over the next three years, during which various agreements and statements were made and later retracted (some have suggested that the timing of North Korea's agreed shutdowns was simply a way for them to extract fuel rods for plutonium processing), North Korea announced a successful nuclear detonation on October 9, 2006. Air samples taken appeared to confirm that a test of a less than one kiloton yield device had indeed occurred.

Six-party talks resumed in 2007 and North Korea hosted a team of experts from Russia, China, and the U.S. in September 2007 to discuss denuclearization. The result of these talks included the shutdown of North Korea's plutonium productions facilities and the removal of some trade sanctions. However, the agreement is currently in danger because North Korea, noting that the U.S. has not de-listed North Korea from the list of states supporting terrorism, has declared that it will reopen its plutonium production facilities. The United States has not removed North Korea from the list because North Korea has not disclosed all of its nuclear activities. There are additional concerns concerning the stability of North Korea; there are rumors of Kim Jong Il's poor health and there is no clear successor to Kim should he perish.

2) Proliferation Involving Non-State Actors

The most obvious shortcoming of nonproliferation regimes is that the treaties are designed to regulate, monitor and verify the actions of states—i.e., to prevent state proliferation—and not to curb activities of non-state actors.[12] Following the attacks of September 11, 2001, attention focused especially on terrorist use of WMD, reflected in a new doctrine derived from Vice President Dick Cheney's reported statement that "If there's a one percent chance that Pakistani scientists are helping al Qaeda build or develop a nuclear weapon, we have to treat it as a certainty in terms of our response."[13] Terrorism expert Bruce Hoffman recently argued that "we face a two-fold challenge from both al Qaeda, given its longstanding and documented ambitions to develop capabilities spanning all four weapons categories—chemical, biological, radiological, and nuclear—as well as from associated and affiliated jihadis, who are attracted to these weapons not necessarily because of their putative killing potential, but because of the profoundly corrosive and unsettling psychological effects that even a limited, discrete attack using a chemical, biological, or radiological weapon could have on a targeted society and nation."[14]

Of all the types of WMD that terrorists may attempt to employ, the kind that has the greatest potential to cause mass casualties, physical devastation over a large area, and widespread panic, is nuclear. Fortunately, the materials required to construct a nuclear weapon are difficult to obtain, making a terrorist attack with a nuclear weapon still far less likely than an attack by more conventional means (and explaining to a large degree why no terrorist group to date has used a nuclear weapon in any attack). Still, the potential consequences of a nuclear

[12] Natasha E. Bajema, "Assessing the Role of the Nonproliferation Regimes."
[13] Quoted in Ron Suskind, *The One Percent Doctrine: Deep Inside America's Pursuit of Its Enemies Since 9/11* (New York: Simon & Schuster, 2006), p. 62.
[14] Bruce Hoffman, "CBRN Terrorism Post-9/11," in *Weapons of Mass Destruction and Terrorism*, edited by Russell Howard and James J.F. Forest (New York: McGraw-Hill, 2007).

terrorist attack demand that considerable effort be focused toward ensuring the likelihood of such an attack remains low.

It is important to draw the distinction between "radiological weapons" and "nuclear weapons". The most common type of radiological weapon (commonly referred to as either a radiological dispersal device (RDD) or "dirty bomb") would simply be a conventional explosive device designed to spread radiological contamination. The explosive power of this type of RDD would most likely be on the order of hundreds of *pounds* of TNT and be solely due to the conventional explosives – there would be no nuclear yield. The casualties caused by an RDD will almost exclusively be due to the explosive force of the conventional explosives used to disperse the radioactive material. The main effect of the radioactive contamination spread by an RDD will be to spread fear among the local population and to cause the target nation to expend a large amount capital and effort to decontaminate the affected area. Constructing a RDD would be a much simpler task for a terrorist group than constructing a nuclear weapon. Essentially, all the terrorist would need is a radioactive source (the larger the activity better) and conventional explosives. Since radioactive sources are commonly used in medical facilities, universities, and in industry, it would not be overly difficult for a terrorist group to obtain the needed material either legally or illegally. Compounding the problem is the fact that many of these radioactive sources are not under the strictest security, especially outside the U.S., Japan, and Western Europe. Currently, a terrorist RDD attack is more likely to occur than a terrorist attack using a nuclear weapon.

In contrast, a nuclear weapon is defined as "a device that releases nuclear energy in an explosive manner as a result of nuclear chain reactions involving the fission or fusion, or both, of atomic nuclei."[15] The explosive force of nuclear weapons is typically measured in thousands of *tons* of TNT, referred to as its yield. For example, a nuclear weapon with an explosive force of 5,000 tons of TNT would be said to have a yield of 5 kT (kilotons). The energy released in a nuclear explosion is divided among three primary effects, blast, thermal, and nuclear radiation. For a nuclear weapon detonated near the Earth's surface, about 50% of a nuclear weapon's explosive energy will be released in the form of blast and shock, 35% will be in the form of thermal effects, and the remaining 15% will be from nuclear radiation (prompt and delayed). Even a small nuclear weapon (~ 1 kT) detonated in a major city would destroy all structures within about a kilometer and kill tens of thousands of people instantly. These effects would be compounded by mass panic, disruption of emergency services, and nuclear fallout (radioactive contamination). A terrorist attack on a major city with a nuclear weapon would be disaster of unparalleled proportions.

The main limiting factor preventing terrorists from constructing a nuclear weapon is (to date) their inability to obtain the sufficient quantities (typically tens of kilogram) of either highly-enriched uranium (HEU) or plutonium. Neither HEU nor plutonium occurs naturally, and producing them in the quantities needed for a nuclear weapon is beyond the reasonable capability of any terrorist organization. To obtain the HEU or plutonium for a nuclear weapon, terrorists will have to either steal it or acquire it from a sponsor state with production capability. Despite the difficulties involved, compelling evidence exists that terrorist organizations, including Al Qaeda, are actively trying to obtain the means and materials needed to construct a nuclear device. The best way to prevent nuclear terrorism from happening is to prevent terrorists from ever acquiring a nuclear weapon. If terrorists do acquire a nuclear weapon, the U.S. and Europe

[15] *Weapons of Mass Destruction Terms Handbook*, DSWA-AR-40H, 1 June 1998.

cannot depend on its border security and detection efforts at its ports to ensure the weapon does not get into the country.

Questions for Discussion

(1) Some questions to consider about proliferation in general include:

- Are the programs and initiatives currently in place adequate, or are others needed? If new programs are needed, what should they be? Can the U.S. do a better job at gaining world cooperation on nonproliferation issues?
- Is the IAEA an effective monitor for Treaty non-compliance regarding safeguards and security of nuclear technology?
- The 2005 NPT Review Conference met to review the implementation of the NPT, but was unable to produce consensus on many issues. Why are states disagreeing? On what issues? How does this impact the U.S.?
- What role does the U.S. play as a NWS and larger power to influence the NPT?
- Is there still a place for a multilateral approach to nonproliferation?

(2) Some questions to consider about nuclear terrorism and proliferation to non-state actors:

- What should the main U.S. effort be in ensuring that it is never the victim of nuclear terrorism?
- Are U.S. efforts to prevent nuclear terrorism enough?
- Based on the relatively low probability of nuclear terrorism, is the U.S. doing too much, diverting money that could be better spent elsewhere for more pressing immediate needs?
- Does the 2006 United States-India Peaceful Atomic Energy Cooperation Act help or hinder our credibility in the fight against nuclear terrorism?
- Since ensuring that terrorists do not obtain HEU or plutonium is generally regarded as the key to preventing nuclear terrorism, is the U.S. putting too much effort into border security and detection measures?
- What should the U.S. policy be to limit the possibility of nuclear terrorism?

(3) Some questions to consider about state-based proliferation challenges:

- Are Iraq and North Korea planning to develop offensive nuclear arsenals? How do their actions impact the United States and U.S. foreign policy?
- Why are we so aggressive in trying to dissuade Iran and North Korea from developing nuclear weapons, but are seemingly little concerned with either Israel's or India's nuclear programs?
- How does this affect our credibility in dealing with Iran and North Korea?
- Is a nuclear weapon in Iran or North Korea worth going to war over?
- What is the limit of actions that the U.S. should take to prevent the development of a nuclear weapon in Iran or North Korea?
- Should the U.S. be willing to take unilateral action in Iran or North Korea?
- Should the U.S. make a formal written statement of non-aggression against North Korea in return for nuclear openness?
- Is North Korea's known proliferation of WMD-related and missile technology a sign of what's to come in WMD proliferation?

- Can we believe Iranian claims that their nuclear program is for peaceful purposes?
- Would a peaceful Iranian or North Korean nuclear program be acceptable? Which state poses the greater threat and deserves the priority of non-proliferation efforts?
- What is the next policy step if currently imposed sanctions and talks continue to fail in their desired intent?
- Should the next U.S. president engage in personal diplomacy with these states "without pre-conditions" or would this legitimize regimes that sponsor terrorism?

RECOMMENDED READINGS

**** Key Resources***

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*Nuclear Threat Initiative. www.nti.org
*Organization for the Prohibition of Chemical Weapons http://www.opcw.org
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