REPORT

DOES INTENT EQUAL CAPABILITY? Al-Qaeda and Weapons of Mass Destruction

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The prospect of terrorists deploying weapons of mass destruction (WMD) is often referred to as the foremost danger to American national security. This danger has become more realistic because of al-Qaeda's expanding global network and the expressed willingness to kill thousands of civilians. In the past four years, numerous media reports have documented the group's ongoing quest for WMD capabilities; many reports have detailed al-Qaeda members' attempts to manufacture or obtain certain chemical, biological, radiological, and nuclear (CBRN) agents to use in WMD against targets in the West and the Middle East. Yet the question remains: Does al-Qaeda's current WMD capability match its actual intent? While most studies of the group have focused on its explicit desire for WMD, allegations of CBRN acquisition, and the killing potential of specific CBRN agents, few open-source studies have closely examined the evolution of al-Qaeda's consideration of WMD and, most notably, the merit of actual CBRN production instructions as depicted and disseminated in the group's own literature and manuals. The following report will examine the history of al-Qaeda's interest in CBRN agents, the evolution of the network's attitude toward these weapons, and the internal debate within the organization concerning acquisition and use of WMD. More so, the following research will assess the validity of actual CBRN production instructions and capabilities as displayed and disseminated in al-Qaeda's own literature and websites.

KEYWORDS: Al-Qaeda; Terrorism; WMD terrorism; Nuclear; Biological; Chemical; Radiological; CBRN; Terrorist manuals; Uranium; Radium; Plague; Ricin; Cyanide; Hydrogen sulfide; Mustard gas; Botulinum toxin; Cesium 137; RDD; Dirty bomb; Osama Bin Laden; Abu Musab - al Zarqawi; Nuclear preparation encyclopedia; WMD Fatwa

The prospect of terrorists deploying weapons of mass destruction (WMD) is the foremost danger to U.S. national security. During the 2004 U.S. presidential debates, the danger of WMD terrorism was one of the few topics on which both candidates agreed. Since the September 11, 2001 (9/11) attacks in the United States, this danger has become more realistic because of al-Qaeda's expanding global network and its expressed willingness to kill thousands of civilians. In the past four years, there have been numerous media reports concerning the group's ongoing quest for WMD capabilities; many reports have detailed al-Qaeda members' attempts to manufacture or obtain certain chemical, biological, radiological, and nuclear (CBRN) agents to use as a weapon of mass destruction against targets in the West and the Middle East. Yet the question remains: Does al-Qaeda's current WMD capability match its actual intent?

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While most studies of the group have focused on its explicit desire for WMD, allegations of CBRN acquisition, and the killing potential of specific CBRN agents, few open-source studies have closely examined the evolution of al-Qaeda's consideration of WMD and most notably, the merit of actual CBRN production instructions as depicted and disseminated in the group's own literature and manuals. Yet monitoring and analysis of primary al-Qaeda literature provides the most revealing window into the actual motivations, goals, and capabilities of al-Qaeda.

It is not the objective of this report to examine al-Qaeda's ability and desire to target chemical and nuclear facilities within the United States. The prospect of such incidents is worthy of separate and lengthy in-depth investigation and is beyond the scope of this particular research. Nor is it the intent of this report to explore alleged weaknesses of certain American industries to a WMD attack, a topic that has recently attracted much attention in the U.S. news. This report will examine the history of al-Qaeda's interest in CBRN agents, the evolution of the network's attitude toward these weapons, and the internal debate within the organization concerning acquisition and use of WMD. More so, the following research will assess the validity of actual CBRN production instructions and capabilities as displayed and disseminated in al-Qaeda's own literature, manuals, and websites. This sort of analysis on issues of nonproliferation and international terrorism is not often covered in open-source research.

What is al-Qaeda?

Al-Qaeda is a Sunni Salafi Jihadi network with affiliates and supporters spread all over the globe. The network formed its roots during the 1980s when Islamist ideologues began to recruit fighters from the Muslim world to oppose the Soviet invasion of Afghanistan. In the years that followed and up to today, al-Qaeda has continued to attract supporters around the world with its international jihadist ideology. The group has gained much publicity in the past decade following the 1998 U.S. embassy bombings in Kenya and Tanzania and the 9/11 attacks on the World Trade Center and the Pentagon.

Whereas al-Qaeda is often envisioned as a well-defined group, it can be more accurately described as a loosely affiliated network with very little hierarchical structure. The diffused nature of the group poses many obstacles to intelligence collection and has resulted in myriad contradictory and sensationalist accounts in open-source literature. Many reports concerning al-Qaeda's capability to conduct future attacks are focused on a potential WMD capability. While the use of CBRN agents is a real security concern, the al-Qaeda network is more likely to conduct future attacks by utilizing conventional weapons in unconventional ways.

Al-Qaeda aims to expel Westerners and Muslims deemed ''un-Islamic'' from Muslim countries and impose Islamic rule on countries in the Middle East. The group's primary goal during the 1990s was to force U.S. military and civilian establishments out of Saudi Arabia.[1] Since then, al-Qaeda's objective has expanded to include the establishment of a worldwide Islamic community, based on the concept of the *umma* (global caliphate).[2] Current al-Qaeda affiliates aim to replace current, ''corrupt'' Islamic regimes and secular Arab regimes with *Shari'a* Islamic law and to bring under control the regions of the world

that were once under Muslim rule.[3] A commonly cited, long-term goal is to undermine Western hegemony by targeting U.S. allies as well as U.S. military establishments and civilian populations.[4] Osama bin Laden, the most prominent leader of the al-Qaeda network, has specifically identified the United States as the ''great Satan'' and has called for armed struggle against the country and its allies.[5]

The al-Qaeda network has historically supported three different kinds of militant groups: those who target Muslim regimes viewed as ''apostates'' (e.g., Egypt, Saudi Arabia); those struggling to create their own Islamic state (e.g., Chechnya); and those who aim to overthrow regimes that are believed to repress their Muslim populations (e.g., Indonesia, Kosovo).[6] Network affiliates and supporters are encouraged to wage an armed jihad, or holy war, against all enemies of Islam.[7]

Al-Qaeda Affiliates Worldwide

Al-Qaeda proper is in essence the 1998 union of bin Laden's original al-Qaeda and Ayman al-Zawahiri's branch of the Egyptian Islamic Jihad. This union is now known as Qa'idat al-Jihad, although the global network itself is still often referred to as al-Qaeda. As a global movement, al-Qaeda affiliates include, but are not limited to, the following Salafi Jihadi groups:

- Gama'a al-Islamiyya (Egypt)
- Jamiat-ul-Ulema (Pakistan)
- Islamic Army of Aden (Yemen)
- Salafist Group for Preaching & Combat (Algeria)
- Groupe Tunisien Islamique (Tunisia)
- Ansar al-Islam (Iraq)
- al-Tawhid wal Jihad (or al-Qaeda in Iraq)
- Eastern Turkistan Liberation (China)
- Moro Islamic Liberation Front (Philippines)
- Harkat al-Mujahideen (Kashmir)
- Groupe Islamique Combattant Marocain (Morocco)[8]
- Jihad Movement (Bangladesh)
- Jemaah Islamiyyah (Indonesia)
- Libyan Islamic Fighting Group (Libya)
- al-Qaeda fi Jazirat al-Arab (Saudi Arabia)
- Usbat al-Ansar (Lebanon)
- Islamic Movement of Turkistan
- Abu Sayyaf Group (Malaysia, Philippines)
- Jaish-e-Muhammad (Kashmir)
- Lashkar-e-Taiba (Kashmir)
- Jama'at al-Fuqra (Kashmir)

Abu Hafs al-Masri Brigade (al-Qaeda in Europe), Ansar al-Sunna (Iraq), and the Eastern Turkistan Islamic Movement (ETIM) have also been identified as network affiliates.[9] In addition to these identifiable groups, there are numerous ''freelance'' al-Qaeda affiliates in Afghanistan, Algeria, Bosnia, Chechnya, Eritrea, Jordan, Kosovo, Pakistan, Somalia, Tajikistan, and Yemen. Al-Qaeda cells have reportedly been disbanded in Albania, France, Germany, Italy, Spain, Uganda, the United Kingdom, and the United States. Current reports estimate that al-Qaeda affiliates operate in roughly 65 countries around the globe.

Overview of Allegations Concerning al-Qaeda and WMD

The al-Qaeda network poses a significant WMD terror threat, not only because of the group's extensive resources, but also because of its expressed desire to use WMD against its enemies.[10] There is evidence that al-Qaeda remains committed to acquiring CBRN agents and has actively pursued the materials required to weaponize such agents. Equally disconcerting is the wealth of technical information being disseminated to potential supporters outlining the steps necessary to produce both chemical and biological (CB) agents. There have been no reported cases of al-Qaeda affiliates using weaponized CBRN agents in a terrorist attack. However, there is evidence of multiple attempts to acquire and weaponize CBRN agents and efforts to disseminate technical information to supporters. The host of allegations regarding al-Qaeda and CBRN agents ranges from the mid-1990s to the present and mostly consists of attempts by al-Qaeda cells or affiliates to acquire biological agents, various toxic chemicals, radiological material, and uranium. Other allegations include plots to use biological and chemical agents in a terror attack as well as plans to attack nuclear facilities.[11]

The specific biological and chemical agents reportedly pursued by al-Qaeda affiliates are, respectively, anthrax bacteria, botulinum toxin, ricin, yersinia pestis, mustard gas, potassium cyanide, hydrogen cyanide, hydrogen sulfide, sodium nitrate, sodium peroxide, sodium oxide, sarin, and VX. The majority of reports involving CBRN materials are uncorroborated and remain largely speculative.

Chemical Agents

Most reports concerning al-Qaeda's chemical weapons (CW) efforts state simply that there is proof that al-Qaeda is interested in producing or acquiring chemical weapons. Indeed, the 11th volume of al-Qaeda's *Encyclopedia of Jihad* discusses how to construct chemical and biological weapons (CBW).[12] Additionally, Osama bin Laden, himself, has stated that acquiring weapons, including nuclear and chemical weapons, is a Muslim "religious duty."[13] In an interview in 2001 with a Pakistani journalist, bin Laden claimed, "We have chemical and nuclear weapons as a deterrent and if America used them against us we reserve the right to use them."[14] The majority of reports concerning al-Qaeda's chemical weapons capability indicate that the network has researched the production of chemical agents, but has not been able to weaponize such agents.

Most cases involving chemical substances entail the use of cyanide in experiments on animals. One eyewitness account came from Ahmad Rassam, who pleaded guilty in 2001 to plotting to attack Los Angeles International Airport. During his trial, Rassam claimed that he had witnessed an experiment in which cyanide was used to gas a dog.[15] It is unclear how many experiments have been conducted with cyanide, but videotapes allegedly recorded by al-Qaeda affiliates prior to 2001 show dogs being gassed with crude chemicals. Experts have claimed that the substance used was either a crude nerve agent or hydrogen cyanide gas.[16] Other reports claim that al-Qaeda had planned to use cyanide, sarin, or osmium tetroxide against large numbers of people in government buildings, transportation hubs, and shopping centers in Britain, Jordan, and the United States.[17]

There have been specific reports of attempts to produce or acquire cyanide compounds, as well as plots to use cyanide in terrorist attacks. In 2002, British authorities arrested three men who were allegedly planning to use cyanide in an attack on the London subway system.[18] A series of reports in 2004 indicated that U.S. troops in Iraq discovered three kilograms of cyanide at the home of an al-Qaeda affiliate.[19] There are also reports of attempted acquisition of hydrogen cyanide; however, this substance would have to be disseminated in a high concentration in order to cause casualties. Additionally, the gas emits a strong odor of bitter almonds, thus increasing the chance that victims may be able to evacuate the area before the substance becomes lethal.[20] Al-Qaeda has also attempted to procure potassium cyanide, which can be used for cutaneous contamination if mixed with the right chemicals. However, since the substance may appear wet or greasy, it is likely that an individual who has come into contact with the substance would take notice and wash the affected area of skin immediately. For this reason, potassium cyanide is unlikely to cause mass casualties.[21] There are also indications that al-Qaeda has pursued toxic industrial chemicals, such as those used in a foiled attack on government targets in Jordan in April 2004.

Biological Agents

The majority of allegations concerning al-Qaeda's biological endeavors mention attempts to procure and weaponize anthrax bacteria, botulinum toxin, and ricin.[22] Many reports have focused on the former Soviet Union (FSU) as a source of these biological agents. In the mid-1990s, bin Laden associates allegedly attempted to ''purchase'' anthrax bacteria and *yersinia pestis* (plague) in Kazakhstan.[23] Some sources reported in 1999 that al-Qaeda members obtained the Ebola virus and salmonella bacteria from countries of the FSU, anthrax bacteria from East Asia, and botulinum toxin from the Czech Republic.[24] In late 2001, U.S. officials in Afghanistan reported evidence indicating that Russian scientists were assisting al-Qaeda militants in the weaponization of anthrax bacteria.[25]

In 2001, there were several indications that al-Qaeda had a continued interest in acquiring a biological weapon (BW) capability. For one, Mohammad Atta and Zacharias Moussaoui expressed interest in crop dusters prior to the 9/11 attacks.[26] The same year, al-Qaeda associate Ahmad Rassam testified that bin Laden was interested in acquiring aircraft to disseminate biological agents at low altitude.[27] Also in 2001, interrogations of two captured militants in Malaysia led to allegations that al-Qaeda affiliate group Jemaah Islamiyah was attempting to procure and weaponize biological agents.[28] Around the same time, U.S. operatives reported that multiple residences in Afghanistan, including al-Zawahiri's alleged residence in Kabul, tested positive for traces of anthrax bacteria.[29]

The network would need significant technical assistance to weaponize biological agents for use in a terrorist attack. Anthrax bacteria can be harmful if dispersed in aerosol form, or by personal contact. While anthrax bacteria in aerosol form is lethal, it is extremely difficult to weaponize *Bacillus anthracis* spores so they maintain virulence and are easily dispersed. Spore size is crucial to successful deployment of this agent. Botulinum toxin can be difficult to procure through the soil, deteriorates quickly, and is very difficult to use as a WMD. Yet it can be used effectively in aerosol attacks in closed spaces or in small-scale

poisonings.[30] The biological toxin ricin can be extracted from castor beans, and while deadly, it is only suitable for targeted poisonings as it is not contagious.

Radiological Materials

Although there is strong evidence to suggest that al-Qaeda has attempted to procure radiological material, there is no indication that the network has been successful in this endeavor. As with claims of chemical and biological acquisition, many of the allegations surrounding al-Qaeda's procurement of radiological material focus on Afghanistan and countries of the FSU. British authorities claimed to have discovered documents suggesting that the network had constructed a radiological dispersion device, or ''dirty bomb,'' at an unspecified location in Afghanistan.[31] These reports have not been corroborated. Many allegations concerning al-Qaeda's pursuit of radiological material stem from interrogations of militants arrested over the past several years.

In April 2001, Bulgarian businessman Ivan Ivanov reportedly told authorities that he had met bin Laden in China, near the Pakistan border, to discuss business plans for an ''environmental'' company to purchase nuclear waste.[32] In April 2002, another al-Qaeda member, Abu Zubayda, claimed that the network had the knowledge to construct a dirty bomb and hinted that there may be such a device hidden in the United States.[33] A more well-publicized case occurred in May 2002 with the arrest of al-Qaeda affiliate Abdullah al-Muhajir (José Padilla) in Chicago. Padilla claimed that he was part of an al-Qaeda plot to detonate a radiological dispersal device in the United States. He had reportedly attempted to acquire radiological material in Canada.[34] Reports in early 2004 indicate that al-Qaeda affiliate Midhat Mursi (Abu Khabab) may have constructed a radiological dispersal device. Mursi allegedly maintains links with al-Zawahiri.[35] British officials arrested eight men in June 2004 after the discovery of information on explosives, chemicals, and radiological materials and building plans of the New York Stock Exchange, the International Monetary Fund in Washington, D.C., the Citigroup building in New York, and the Prudential building in New Jersey.[36] Reports in late 2004 suggest that an al-Qaeda affiliate by the name of Walid al-Misri told investigators that bin Laden may have purchased radiological material from contacts in Chechnya.[37]

Nuclear Materials

There are many exaggerated accounts of al-Qaeda procuring both radiological and nuclear material in the form of an ''off-the-shelf'' explosive device.[38] Reports in 1998 indicated that bin Laden had plans to acquire nuclear material from Chechen contacts as well as contacts in Kazakhstan.[39] Reports in 2000 allege that bin Laden sent associates to acquire enriched uranium from unspecified Eastern European countries.[40] There were also accounts in 2001 and 2002 that bin Laden had obtained enriched uranium rods and/or a suitcase nuclear weapon from the Russian mafia as well as a Russian-made ''suitcase nuke'' from Central Asian sources.[41] Also in 2001, reports surfaced that Pakistani scientists had shared nuclear information with bin Laden.[42] U.S. authorities have also stated that Pakistani businessman Saifullah Paracha gave al-Qaeda associates information on where to obtain nuclear

weapons. Although Paracha later denied the allegations, he admitted to meeting bin Laden in 1999 to consider a potential business deal.[43] Pakistani journalist Hamid Mir reported in 2004 that al-Zawahiri had claimed in an interview that the al-Qaeda network had acquired nuclear weapons from Central Asia. The al-Qaeda deputy leader allegedly told Mir that affiliates had traveled to ''Moscow, Tashkent, [and] countries in Central Asia'' with the intent to purchase ''portable nuclear material.''[44]

Al-Qaeda's interest in pursuing nuclear weapons is made obvious by statements posted on websites and testimonies from al-Qaeda operatives. In 2001, Jamal al-Fadl claimed that he was responsible for investigating the purchase of uranium to be used in the construction of a nuclear device in the early 1990s.[45] Reports surfaced in 2004 that al-Qaeda had purchased nuclear devices from the Ukraine in 1998. (Ukrainian officials claimed that all nuclear weapons from the FSU had been transferred to Russia as of 1996, and that no such transaction had taken place.)[46] There were also accounts of al-Qaeda attempts to purchase uranium from Russia and Germany in 1998.[47] In 2002, reports indicated that diagrams of U.S. nuclear power plants had been discovered in al-Qaeda facilities in Afghanistan.[48] In January 2005, German authorities arrested suspected al-Qaeda member Ibrahim Muhammad K. for attempting to purchase roughly 48 grams of uranium in September 2002. Muhammad had allegedly approached an unspecified source in Luxembourg to facilitate the transaction.[49] Moroccan investigators reportedly uncovered a plot by al-Qaeda affiliate group Salafia Jihadia to attack a French nuclear power plant at Cap de la Hague, Normandy. Al-Qaeda members had allegedly been involved in the plot.[50]

One major obstacle to the acquisition of a ''ready-made'' device is political will; it is highly doubtful that any regime would transfer such a device to this terrorist network for fear of discovery and subsequent armed retribution by the United States. Reports regarding nuclear weapons development are mostly speculative and highly sensational, although there have been numerous reports of attempts to acquire uranium on multiple occasions.[51] All available reports suggest that al-Qaeda has yet to acquire the requisite amount of fissile material to construct a nuclear device. Equally important, it appears that the network lacks the technical capability to assemble a nuclear device—even if it were to obtain many of the needed materials.

The group would need significant technical assistance from nuclear scientists in order to manufacture a nuclear weapon. Of particular concern is the allegation that a small number of Pakistani nuclear scientists have had contact with al-Qaeda over the past decade. Specific reports allege that two Pakistani scientists transferred nuclear weapon information to Osama bin Laden in the mid-to late 1990s.[52] If these allegations are true, such assistance could increase al-Qaeda's nuclear potential significantly.

Recent Cases Involving CBRN Agents

Ricin Plots in London

On January 5, 2003, six men were arrested in Wood Green, North London, and charged with attempting to ''develop or produce a chemical weapon.''[53] The six men were

identified as Arab men from Algeria or other North African countries. Three days after the arrests, a seventh man was detained in connection with the case. British authorities reported that at least one of the suspects had trained in an al-Qaeda camp in Afghanistan, while the others may have participated in terrorist training exercises in Chechnya and the Pankisi Gorge area of Georgia.[54] The case quickly became world news after British authorities reported the discovery of castor beans, equipment to process the beans, and traces of ricin in the apartment shared by the original six suspects.[55]

Subsequent reports indicated that the men implicated in the ricin plot did indeed maintain connections to the al-Qaeda network and that Osama bin Laden had been directing a number of terrorist cells throughout Europe that were intent on producing poison to be used in terrorist attacks. Despite these numerous allegations, the nature of the London ricin plot remained in question.

On April 13, 2005, a London jury acquitted four of the suspects in the ricin case. Information presented in the trial led to the conclusion that there had been no traces of ricin discovered in the London apartment. While field equipment used by chemical experts did test positive for ricin, subsequent laboratory tests revealed that the reading had been a false positive.[56] Furthermore, it appeared that the five-page document of crude instructions on how to produce ricin, cyanide, and botulinum toxin had been copied from the Internet, as opposed to having been taken from a terrorist training camp in Afghanistan, as previously suspected. Subsequent investigations revealed that the lists of chemical instructions discovered in the London apartment were direct translations from an Internet site maintained in Palo Alto, California.[57]

The only suspect convicted in the trial was Kamel Bourgess, an Algerian who was already serving time in prison for the murder of a British constable in connection with the case.[58] Reports indicate that Bourgess had planned to smear a ricin mixture on door handles in order to cause casualties in North London.[59] However, it appeared that Bourgess was far from being able to carry out the attack, given the crude attempts to produce the poison. Even if he had successfully produced ricin, the substance would not be an appropriate agent to cause mass casualties. Since ricin is a biological toxin as opposed to a bacteria or virus, it is not contagious and cannot spread rapidly between individuals. The surest way to induce fatalities is to encourage inhalation or ingestion of the substance in a powder form or after it is dissolved in a liquid. Ricin is not cutaneously active.

Ansar al-Islam in Northern Iraq

Ansar al-Islam originated in Kurdish northern Iraq and is one of the most active Islamist groups operating in Iraq since well before the 2003 coalition invasion. The group is significant in that it is an al-Qaeda affiliate that has engaged in the production of both biological and chemical agents, purportedly for use as terrorist weapons. Most reports indicate that Ansar has worked with both cyanide and ricin; however, there is no evidence to indicate that the group ever reached a stage of weaponization. Accordingly, it appears that the group's limited arsenal would have only been useful for targeted attacks or assassinations and thus that it did not constitute a true WMD capability.

Available reports indicate that Ansar al-Islam had acquired cyanide over the past few years, as well as a small amount of ricin, but they are unable to confirm the precise amount of each substance or the degree to which the substances had been weaponized.[60] Some reports indicate that Ansar's crude chemical weapons capability included a form of ''cyanide cream'' that ''kills on contact.''[61] Other reports simply state that Ansar was in possession of ''cyanide,'' without specifying storage details or any other information that would indicate what type of cyanide was being used.

Still other reports claim that Ansar had produced or acquired ricin and had conducted biological warfare experiments.[62] One report even alleged that Ansar acquired a quantity of VX smuggled through Turkey in the fall of 2001.[63] While there is proof that Ansar did acquire CB agents, technical details outlining the group's involvement with such agents remain vague and moderately consistent at best. Investigations of the laboratory discovered in northern Iraq revealed that it was rudimentary and that the group was far from achieving a real weapons capability.[64]

Ansar members claimed to have produced ricin, cyanide-based toxics, and aflatoxin prior to the U.S.-led invasion of Iraq in March 2003.[65] Officials from the Patriotic Union of Kurdistan (PUK) corroborated these reports, stating that Ansar members are trained in the production of poisons in ''encampments'' in northern Iraq. Investigations by PUK and coalition officials later revealed a makeshift laboratory that contained traces of ricin, as well as equipment such as surgical masks, latex gloves, and beakers. After the invasion, coalition forces also reportedly uncovered a ''three-volume manual'' that outlined steps for conducting chemical and biological experiments. Specifics on the use of cyanide and ricin were included in the manual.[66] The group had allegedly tested both substances in preparation for future use, including experiments on live animals.[67]

Ansar's choice of ricin and cyanide, as well as the group's failure to weaponize the agents or develop adequate delivery systems, indicates that militants may have been planning to conduct only limited attacks and/or assassinations. Both ricin and cyanide are reasonable choices for a group that is planning to conduct a targeted attack because they are easier substances to manipulate than some of their more virulent or unstable counterparts. In addition, since very little would be needed for a limited attack, it makes sense to choose agents that are easy to acquire and/or produce. Ricin is one of the easier biological toxins to produce, while cyanide is a chemical that can be acquired from an industrial complex. However, despite the deadly nature of these substances, neither can be appropriately labeled as a weapon of mass destruction. Difficulties in weaponization mean that such substances are suitable only for targeted assassinations, as opposed to mass casualty attacks.

Experiments in Afghanistan

Numerous reports since the U.S.-led invasion of Afghanistan in October 2001 have indicated that al-Qaeda was involved in testing CB agents in makeshift laboratories throughout Afghanistan. However, despite evidence pointing to attempts at CBW production, it appears that that network was unable to weaponize CB agents for use in an attack. Local Afghan sources reported in 1999 that bin Laden was using a laboratory in

Charassiab, south of Kabul, to produce chemical weapons.[68] The same year, U.S. sources reported that bin Laden had established crude facilities in Khost and Jalalabad, Afghanistan, in order to test and produce chemical and biological weapons.[69] In early 2002, American troops near Kandahar reported the discovery of an abandoned facility that appeared to have been built to research/weaponize biological agents.[70] Traces of ricin and production instructions were also reportedly discovered in an al-Qaeda safe house.[71] U.S. investigators claimed that they uncovered laboratory equipment in a house near Kandahar that would support "a very limited production of biological and chemical agents."[72]

Al-Qaeda affiliates in Afghanistan have reportedly researched how to use mustard agent and cyanide as weapons of mass destruction.[73] Confiscated documents also reportedly showed al-Qaeda's interest in producing sarin, mustard, and VX.[74] Reports from the late 1990s indicate that the network attempted to create a pesticide/nerve agent with a very high absorption rate and that the substance was tested on dogs and rabbits.[75] Indeed, there is evidence to suggest that al-Qaeda has conducted experiments using crude chemical agents, some of which included the use of cyanide. One of the most telling pieces of evidence is a training video uncovered by investigators in which a dog is enclosed in a box and killed with a chemical substance believed to include cyanide.

Yet despite the myriad reports citing al-Qaeda's efforts at chemical and biological weapons production, all available evidence shows that the network worked only with crude chemicals and was far from a true weapons capability. For one, investigators have not reported the discovery of any kind of dispersal device, a main requirement for the use of a chemical or biological agent for weapons purposes. Additionally, journalists searching an al-Qaeda camp in Khost, Afghanistan discovered stacks of photocopied manuals dealing with CB agents that were downloaded from the websites of American right-wing groups.[76] This lack of technical equipment and expertise is not indicative of a group that poses an immediate WMD threat.

Evolution of al-Qaeda's Attitude toward Weapons of Mass Destruction

WMD acquisition has been a recurring theme in bin Laden's rhetoric—obvious in his steady claims that the Muslim world should achieve military parity with non-Muslims. On May 11, 1998, just three days following India's nuclear tests, Osama bin Laden stated, "We call upon the Muslim nation and Pakistan—its army in particular—to prepare for the jihad. This should include a nuclear force."[77] More than a year later, in reference to the acquisition of weapons of mass destruction in December of 1999, bin Laden told Pakistani journalist Rahimullah Yusufzai, "Acquiring weapons for the defense of Muslims is a religious duty. If I indeed have acquired these weapons I am carrying out a duty. It would be a sin for Muslims not to try and possess weapons that would prevent the infidels from inflicting harm on Muslims."[78]

Initial Interest

Osama bin Laden's initial interest in WMD production likely began around 1994 during his stay in Sudan. During that time, bin Laden became increasingly militant and showed

interest in the acquisition of CBRN agents. His research into chemical weapons began in a laboratory in Khartoum and was supported by elements of the ruling National Islamic Front (NIF) and the Sudanese military.[79] Furthermore, it was reported that bin Laden hired an Egyptian nuclear scientist and was able to purchase one kilogram of uranium from South Africa.[80] Subsequently, an American official reported, ''Osama [was] directly involving himself with the Sudanese government, trying to get it to test poisonous gases in case they could be tried against U.S. troops in Saudi Arabia.''[81]

Some of bin Laden's growing militancy may have been a result of personal difficulties during this time. In February 1994, the Saudi Arabian government revoked his Saudi citizenship and froze his financial assets as a reaction to his aggressive and overt criticism of the monarchy. Later that year, the Saudis also induced his older brother, Bakr, to denounce and condemn Osama on behalf of the bin Laden family. More significantly, it is believed that in February 1994, Osama was the target of two failed assassination attempts. The first failed attempt was carried out by the Saudi intelligence services, while the second was conducted by al-Khulayfi, an angry member of the Egyptian Islamist group al-Takfir Wal Hijra. A failed assassination attempt was also made in Khartoum's central market on the life of Osama's eldest son, Abdullah.[82] These events may have contributed to bin Laden's determination to carry out mass casualty attacks on his enemies.

Internal Debate within al-Qaeda Concerning WMD Acquisition

Subsequent to the formal union of Osama bin Laden's al-Qaeda and Ayman al-Zawahiri's branch of the Egyptian Islamic Jihad in Afghanistan on February 23, 1998, which established ''The World Islamic Front for Jihad Against the Jews and Crusaders,'' a new and more dangerous al-Qaeda transnational organization emerged.[83] Following this union, a series of meetings took place within al-Qaeda's ruling body, Majlis al-Shura, concerning the acquisition of a WMD capability. At this time, the organization's leaders were concerned about an all-out American assault on Afghanistan due to a perceived U.S. desire to control Central Asia or in retaliation for al-Qaeda attacks against Western targets. The al-Qaeda hierarchy was especially concerned with the prospects of American WMD deployment to win the war in Afghanistan. It appears that initially, the al-Qaeda leadership wanted to achieve WMD capability not as a first-strike option, but as a deterrent against U.S. military might and a counterbalance against American and Israeli WMD arsenals. In these meetings within bin Laden's inner circle, members repeatedly raised the following questions: ''Who will protect the Arab Mujahideen in their last abode on the face of the earth? How are they to be protected? Who is going to protect the people, the states, the wealth and the Islam of Central Asia, who have scarcely escaped the assault of the 'Red Satan', only to face a more sinister attack from Washington and Tel Aviv?''[84]

Inside Majlis al-Shura, the hawks frequently asked,

> Who would protect the Muslims from them [the United States and Israel]? Is it the UN or the Security Council? Or is it America's friends and allies among the Arab regimes? What if Israel decided to use atomic bombs, chemical or biological weapons against an Arab or Muslim capital? What if America decided in the near future to lay siege on Afghanistan,

> with its dirty bombs and lethal weaponry? And what would be the Islamic reaction if Afghani cities were targeted from America or Israel with Atomic bombs?[85]

As a result of these internal discussions within Majlis al-Shura, the leadership of al-Qaeda decided to pursue a very ambitious strategy. Its ultimate goal was to obtain atomic weapons and store them on American soil to retaliate immediately for prospective U.S. aggression against Afghanistan or other Muslim lands. In addition, although it was clear to the al-Qaeda leaders that any WMD they could obtain would be inferior to the existing U.S. arsenal, they made the decision that the acquisition of nuclear, chemical, and biological weapons would be a priority for their organization.[86]

Within al-Qaeda's ruling body, various factions voiced different attitudes toward the value of the group's prospective possession of WMD. Some believed that WMD are no more than an empty threat, a "Jinni in a jar," that no rational leadership would ever use. Others argued that any WMD the network was able to acquire would not constitute a strategic weapon, but a purely tactical weapon, because of its likely modest destructive power and primitive qualities. A third faction argued that "weapons of mass destruction would considerably enhance the fighting capability and moral influence of the Mujahideen and the fighters of al-Qaeda. They are in dire need of such weapons to compensate for the vulnerability of their military ordnance, the insufficiency of their numbers and their growing isolation from their peoples."[87] Several al-Qaeda leaders also envisioned WMD paired with suicide attacks to maximize their effect.

Despite their differences, the one point on which the various factions within al-Qaeda's Majlis al-Shura unanimously agreed was their view that the United States was a ferocious enemy but a dishonorable adversary. It would not hesitate to annihilate a weaker opponent but would retreat in disarray if faced with a stronger enemy. To that end, the al-Qaeda leadership agreed to continue to refer to CBRN agents despite their limited operational benefit as weapons of mass destruction in order to sow fear and terror in the minds of their enemies and to "bestow some credibility on the Mujahideen, and maybe some respect, moral influence and an aura of invincibility in the minds of the people."[88]

Current Role of WMD in al-Qaeda's Strategy

Since the late 1990s, changing realities in the Middle East have corresponded with changes in al-Qaeda's attitude toward the role of WMD. Since al-Qaeda's leadership decided to pursue WMD primarily as a deterrent and defensive weapon against possible U.S. aggression and WMD deployment in Afghanistan and other Muslim and Arab lands, various events have occurred that indicate al-Qaeda's WMD policy has evolved from defensive to offensive. The group is in fact aiming to use WMD as a first-strike weapon against the United States and its allies. In 2001, following the 9/11 attacks that killed roughly 3,000 American and other citizens, the United States and its allies invaded Afghanistan and denied al-Qaeda its "last abode on the face of the earth." Recently, many senior members of al-Qaeda have been killed or captured, and bin Laden and al-Zawahiri are on the run. In addition, al-Qaeda has evolved from an organization into a decentralized, global movement made up of independent cells and international affiliates

who adhere to al-Qaeda's doctrine and global vision but are not directly subordinate to the commands of the parent organization.

Additionally, the U.S.-led occupation of Afghanistan and Iraq has changed the reality of the region; al-Qaeda is no longer anticipating and preparing for a full-blown confrontation with the United States. At this point, al-Qaeda is in the midst of a conflict, which it aims to expand and intensify by inducing the United States to act more aggressively in the region in the hopes of escalating Muslim antagonism toward the West and increasing the appeal—and membership—of global jihadi organizations. The al-Qaeda leadership anticipates that new recruits will swell the ranks of these jihadi affiliates and undermine the security and rule of secular or moderate Muslim regimes (e.g., Egypt, Syria, Jordan, Pakistan, Saudi Arabia, Morocco, and Libya). The ultimate goal, as has been the case since the conception of al-Qaeda, is the overthrow of these regimes.

Moreover, attacking American and other Western targets is seen by al-Qaeda as the most effective strategy to drive a wedge between the United States and its Arab and Muslim allies.[89] Furthermore, in light of the open conflict currently under way between al-Qaeda and the United States, coupled with the Western occupation of Iraq and Afghanistan, al-Qaeda leaders see WMD attacks against the United States and the resulting mass casualties as legitimate means of retribution for current and past killings of Muslims in these countries. Bin Laden made this sentiment clear in November 2002 when he stated: ''This is an unfair division. The time has come for us to be equal . . . Just as you kill, you are killed. Just as you bombard, you are bombarded. Rejoice at the harm coming to you.''[90]

Al-Qaeda's assessment of the utility of a WMD capability has evolved from the notion of a defensive tool designed to deter an American attack on Afghanistan and other Muslim areas, to a first-strike weapon that should be deployed against the United States in retribution for past and present killing of Muslims. The hope is that this first-strike capability would also bring about a severe American reprisal that would only serve to garner more support for Islamists in the Muslim world. Accordingly, the leadership of al-Qaeda has recently obtained religious justification from a Muslim scholar to permit WMD use against the United States. In May 2003, bin Laden likely prompted the respected and well-known young Saudi Islamic scholar Shaykh Nasir bin Hamid al-Fahd to issue a *fatwa* (religious decree) in support of such actions. In his 25-page document, ''A Treatise on the Legal Status of Using Weapons of Mass Destruction Against Infidels,'' Shaykh al-Fahd empowered al-Qaeda with a fatwa and provided the religious justification needed to carry out such an attack.

In his document Shaykh al-Fahd argued, ''This matter is so obvious to Muslims that it needs no demonstration . . . . Anyone who considers America's aggression against Muslims and their lands during the past decades . . . will conclude that striking her is permissible merely on the rule of treating as one has been treated. Some brothers have totaled the number of Muslims killed directly or indirectly by their weapons and come up with a figure of nearly 10 million.''[91]

Shaykh al-Fahd also argued in his treatise that in a state of jihad against infidels, the mass killing of American civilians is also permissible. He stated, ''Thus the situation in this

regard is that if those engaged in jihad establish that the evil of the infidels can be repelled only by attacking them at night with weapons of mass destruction, they may be used even if they annihilate all the infidels.''[92] In the conclusion of his treatise, Shaykh al-Fahd did not limit his argument to targeting Western locations and civilians; he argued that while usually the killing of other Muslims is forbidden by God, in the path of jihad it should be permitted. He stated, ''. . . as long as jihad has been commanded . . . and it can be carried out only in this way [i.e., with Muslims being killed in attacks by Muslims], it is permitted.''[93]

This is an important landmark in the evolution of al-Qaeda's view of and quest for a WMD capability. As a religious organization and movement, al-Qaeda has always sought to present itself as working within the limits of what is permissible in Islam and advocates that open jihad against unbelievers is the duty of true Muslims. Prior to May 2003, al-Qaeda leadership did not possess any religious justification to carry out a WMD attack on the West or Western interests in the Middle East. However, Shaykh Al-Fahd's fatwa has removed religious constraints and has empowered al-Qaeda—at least in theory—with justification to carry out such attacks even if they result in mass casualties among Western or Muslim civilians.

More recently, statements from al-Qaeda leaders left little to the imagination and made it abundantly clear that if and when the movement were to acquire a credible WMD capability, it would not hesitate to use such weapons against suitable targets. This new direction was made obvious following the allegations that one of al-Qaeda's cells in Jordan intended to carry out a massive chemical attack in April 2004. After the seizure of large amounts of explosives and chemical precursors by Jordanian security forces and the arrest of several suspects, Abu Musab al-Zarqawi, the sponsor of this attack and bin Laden's lieutenant in Iraq, denied that the group had planned to use chemical weapons in the attack. (Al-Zarqawi is the one-time head of al-Tawhid wal Jihad who, in October 2004, swore allegiance to bin Laden and changed the name of his outfit to al-Qaeda fi Bilad al-Rafidayn [al-Qaeda in the Land of two Rivers, i.e., Iraq].) Although al-Zarqawi claimed that al-Qaeda did not possess WMD, he avowed unequivocally, ''If we had such a bomb—and we ask God that we have such a bomb soon—we would not hesitate for a moment to strike Israeli towns, such as Eilat, Tel Aviv and others.''[94]

These sentiments were echoed by another important jihadi thinker and operative, Mustafa Sit Maryam Nasar, better known by his nom de guerre, Abu Musab al-Suri, who, in December 2004, published the manuscript, ''The International Islamic Resistance Call.''[95] In this 1,600-page global jihadi blueprint and in his ''Letter of Reply to the U.S. State Department,'' al-Suri enthusiastically argues that weapons of mass destruction should be used against the United States and criticizes Osama bin Laden for not using weapons of mass destruction in the 9/11 attacks. He states, ''If I were consulted in the case of that operation I would advise the use of planes in flights from outside the U.S. that would carry WMD. Hitting the U.S. with WMD was and is still very complicated. Yet, it is possible after all, with Allah's help, and more important than being possible—it is vital.''[96] He adds, ''The Muslim resistance elements [must] seriously consider this difficult yet vital direction.''[97]

Al-Qaeda's Evolving Organizational Structure and Implications for WMD Use

It is worth considering the intentions of al-Qaeda in light of the network's transformation into a decentralized organization. This evolution into a global movement with various regional affiliates and autonomous cells increases the risk of an attack utilizing CBRN agents, but decreases the likelihood of any individual cell obtaining a true mass-casualty capability.

Three factors explain the heightened risk of a CBRN attack. First, since operational decisions are currently made by the leaders of individual cells without consent from Majlis al-Shura, these cells operate without oversight from a ruling council; thus, any cell is theoretically free to pursue any course of action that it deems desirable or appropriate. Second, cell leaders are likely to carry out a WMD attack as soon as they have the capability to do so. This has been the case with conventional weapons, and there is no reason to believe that cell leaders would delay an attack once they are armed with weaponized CBRN agents. In addition, it may be in the best interest of cell leaders to precipitate an attack in order to safeguard the virulence and/or potency of any biological or chemical agent employed as a weapon. Third, the fatwa issued by Shaykh Nasir bin Hamid al-Fahd in 2003 served as an open invitation to all al-Qaeda jihadis to deploy WMD against Western interests when they are ready and able. This was the first semblance of religious justification for the use of CBRN materials by al-Qaeda affiliates. Additionally, bin Laden's statement that the acquisition of nuclear and chemical weapons is a religious duty for all Muslims will surely quell any remaining doubts among Salafi Islamists with regard to the use of CBRN agents.

While the cellular nature of the organization may facilitate the acquisition and deployment of CBRN agents in some ways, the same decentralized structure is likely to prevent any one cell from developing a true mass-casualty capability using CBRN agents. The result is that an individual cell is destined to have a more modest weapons capability than the network as a whole. Individual cells are likely to acquire only low-end CBRN agents, comprising a crude CBRN capability. As previously discussed, such a capability is more suitable for targeted assassinations than for mass-casualty attacks.

One caveat to this argument is that the rank and file of al-Qaeda, and especially the Egyptian cadre, are the most capable components of the al-Qaeda network, and thus worthy of special attention. Al-Zawahiri and his cohorts have thus far evaded capture by Western or allied entities and are likely to remain on the run, at least in the foreseeable future. Given that the cellular structure of al-Qaeda greatly hinders monitoring efforts, it is difficult to accurately assess the threat of this or any one faction. It is possible that the Egyptian cadre is able to acquire or produce more advanced CBRN agents; such a prospect would have serious implications for the security of Western entities around the globe.

How Are WMD Portrayed in al-Qaeda's Literature?

Using the Internet to Export the Revolution

After 9/11, an array of al-Qaeda and pro-al-Qaeda websites have emerged on the Internet. Currently, the al-Qaeda movement relies heavily on these websites to enhance its mission

and spread its message. Furthermore, many al-Qaeda affiliates, such al-Tahwid wal Jihad, the Algerian Salafist Group for Preaching and Combat (GSPC) and many others, have erected their own websites. While most pages on these websites contain religious doctrines, ideological justification, reports of the tyranny of Arab regimes, and anti-Western diatribes outlining historical Muslim grievances against Western powers, a select number of these sources deals specifically with operational terrorist methods and tactics that detail how to carry out terrorist attacks against potential targets and how to manufacture conventional and unconventional weapons. One of the best ways to ascertain information about al-Qaeda and assess its threat, intentions, and capabilities is through active monitoring of various al-Qaeda websites.

One cannot overemphasize the importance of many of these websites. They provide the al-Qaeda network with an effective method to disseminate information, allowing al-Qaeda affiliates, supporters, and independent cells worldwide to learn from the experience of al-Qaeda operatives in various global theaters. Such websites also help supporters to replicate al-Qaeda operations and tactics, thus spawning additional cells in various locations around the globe. This effect was best demonstrated by the latest bombing attempt in London on July 21, 2005, as the would-be bombers manufactured the peroxide-based explosive hexamethylene triperoxide diamine (HMDT).[98] Detailed instructions for the manufacture of this explosive are available on the jihadi website, Mausu'at al-Aqsa al-Jihadiya (the Aqsa Jihadi Encyclopedia).[99] The instructions include technical information regarding temperature, storage, usage, exact ingredients, exact preparation instructions, and various informative pictures of basic, readily available ingredients, including HMDT at various production phases and effects of a blast.[100] It would not be surprising to find that the would-be bombers in this case used these specific instructions to manufacture their explosives.

Several al-Qaeda websites provide detailed instructions on how to manufacture CBRN agents. Most notable of all tactical jihadi websites is Mausu'at al-E'adad (the Preparation Encyclopedia), which is by far the most informative and comprehensive source on al-Qaeda terrorism.[101] It is a large website that contains links to dozens of portals detailing numerous tactical skills used and developed by jihadis. It includes hundreds (if not thousands) of pages on a large array of terrorist topics, and it provides detailed instructions and diagrams concerning guerrilla tactics, light weapons, silencers, marksmanship, self-defense, martial arts, physical education, survival techniques, sabotage techniques, espionage, resistance to interrogations, rocket manufacture, explosive production, suicide-belt production, bombs and landmines, timed explosives, first aid and warnings, chemical weapons, poisons, deadly gases, biological weapons, some basic information about nuclear weapons, and electronics, radar, and airplane-hindering techniques.[102] It also links to scores of Western websites that deal with similar topics.

It is clear that the al-Qaeda movement is disseminating a considerable amount of information on its various websites to export its ideology, to attract new recruits to its cause, and to empower independent cells with advice and instructions needed to organize effectively and carry out random acts of terrorism at important targets worldwide. Most of these websites are surprisingly blunt about their goals and methods. They are also very innovative; it appears that al-Qaeda supporters are putting forth a great deal of effort to

spread their message by using multiple user resource locators (URLs) and, in some cases, password-protected websites. Active monitoring of these mostly Arabic websites is one of the best ways to assess accurately the conventional and WMD threat posed by the al-Qaeda network.

It is important to establish that WMD portrayal in al-Qaeda literature is rather limited. The vast majority of al-Qaeda literature is made up of religious doctrine, writings of famous ideologues (e.g., Ibn Taymiyya, Sayyid Qutb, and Abdullah Azzam), discussion forums among al-Qaeda supporters, reports of daily activities, videos of operations, advice to other jihadis, warnings to other supporters, long anti-Western and anti-Shi'a diatribes, and endless criticism of ''apostate'' moderate and secular Muslim regimes. Only a small part of the literature deals with actual operational topics, and of those, a minority explores weapons of mass destruction.

The Equalizer

Recently, an al-Tawhid wal Jihad (al-Qaeda in Iraq) official website posted an eight-page document specifically dealing with the history of use of biological weapons and indirectly advocating the use of these weapons against the United States. The group clarifies the advantage of biological weapons technology as an effective and affordable WMD that could bring the Mujahideen to parity with the United States. It states, ''The American people are living in fear due to the anthrax phobia. This justified fear among ordinary citizens is due to some casualties from the infected letters . . . . What many Americans do not know is that these microbes are the fruit of the endless greed of their culture.''[103] Following a short chronology of the uses of biological weapons throughout history, the author continues:

> Biological weapons are considered the least complicated and the easiest to manufacture from [*sic*] all weapons of mass destruction. All the information concerning the production of these weapons is readily available in academic books, scholarly publications and even on the internet . . . . In addition to the ease of their production, these weapons are also considered to be the most affordable. With $50,000 a group of amateurs can posses a biological weapon sufficient to threaten a superpower. It is for this reason that biological weapons are called the poor man's atomic weapon.[104]

The view of WMD as the ''equalizer'' that could bring the Mujahideen community to parity with the West is also the theme of other recently published important jihadi literature, namely the previously mentioned text, ''The International Islamic Resistance Call,'' and the *Nuclear Preparation Encyclopedia*. In the first document, arguing that WMDs are the only method that can bring equivalence with the United States, Abu Musab al-Suri states, ''The ultimate choice is the destruction of the United States by operations of strategic symmetry through weapons of mass destruction, namely nuclear, chemical, or biological means, if the Mujahideen can achieve it with the help of those who possess them or through buying them.''[105] He continues to state that acquiring WMD should be a foremost priority of the global jihadi community and is more important than attacking American troops in Iraq. Al-Suri goes so far as to call on the global jihadi movement to

create special elite squads that would carry out strategic operations and should consist of highly trained jihadis who possess advanced WMD knowledge and receive ample financial support "when there is a need to counter attack or to achieve strategic symmetry with the United States."[106]

The second document, the *Nuclear Preparation Encyclopedia*, is authored by the self-described al-Qaeda supporter Layth al-Islam who, in October 2005, posted the document on the al-Firdaws Jihadi website. In this extensive multi-chapter document, the author argues that scientific discovery—namely mastery of nuclear technology—is the desired path for al-Qaeda to gain parity with the West and calls for the construction of jihadi nuclear weapons. He states, "I believe that the strategic balance of power on the battle field will not change for the Mujahideen without correct scientific progress."[107]

Backlash—The Boomerang Effect

Al-Qaeda literature claims that in recent history the United States itself was instrumental in the development of deadly weapons and thus is doomed to be undermined by its own creation. One statement reads:

> It is strange that all these experiments have yet to convince America that it is the most vulnerable nation to such weapons . . . it appears that the capitalist nations which were founded on the sanctity of material values have made their entire cultural makeup a hostage of these imaginary values, so it is challenged by the smallest of beings (microbes), which has revealed their powerlessness . . . the magic spell has turned on the magician.[108]

Although various CBRN production instructions are included in al-Qaeda literature, the vast majority of this information is intended to educate the Mujahideen community on the history, legitimacy, and the effects of CBRN agents.[109] Only a small percentage of such information consists of formulations and recipes geared toward manufacture and production of actual CBRN agents. Furthermore, it is important to note that the volume and the detail of these CBRN instructions pales in comparison to instructions dealing with the manufacture of explosives, guerrilla warfare, use of conventional arms, religious doctrine, ideology, resisting interrogation techniques, and anti-Western and anti-Shi'a diatribes that amount to hundreds of pages. To put things in perspective, a recent posting on one Syrian anti-government, pro-al-Qaeda website dealing with the importance of everyday camera and video usage exceeds in depth and length the instructions on the manufacture and weaponization of the biological toxin ricin.[110]

Evaluation of CBRN Production Instructions as Portrayed in Actual al-Qaeda Literature

In recent years, some al-Qaeda outlets have produced books, manuals, and web pages that discuss in detail the importance and the utility of various poisons, chemical agents, biological agents, and nuclear weapons. Many of these sources contain a great deal of general information on the history, utility, and use of specific agents. Some pages

specifically discuss toxicity and potency of chemical and biological agents, while others discuss how these agents were produced and used throughout history. The most worrisome sections of material dealing with CBRN agents are the instruction pages that detail specific directions for the manufacture of numerous important CBW agents. In most cases, these instructions are specific and easy to emulate. In some cases, the instructions are very vague and do not include key technical information. The production instructions most notably outline the production of the following chemical agents: cyanide, hydrogen sulfide gas, and mustard gas. Instructions also include information on the biological agents ricin, *Yersinia pestis*, and botulinum toxin, as well as information on several other low-end, non-CBRN poisons. Two website postings also instruct the Mujahideen on how to manufacture a nuclear weapon.

These instructions were translated from Arabic and assessed by analysts at the Center for Nonproliferation Studies for merit and accuracy (see Table 1). With regard to CBW formulations, in general, it became obvious that the instructions were amateurish and adequate for the production only of small quantities of crude agents that were not suitable for mass-casualty terrorism.[111] The four different formulations portrayed for ricin are sufficient for the production of a small amount of crude agent.[112] The instructions for mustard gas were incomplete and insufficient for actual production of the agent.[113] In the case of cyanide, the instructions did not indicate that the precursor chemicals were difficult to procure.[114] The process outlined for botulinum toxin was very difficult to master and likely would not have resulted in the successful production of the agent.[115] The instructions for plague bacteria were rudimentary and did not indicate that it would be difficult to find a suitable host to extract a culture, or that the plague is fragile and is very difficult to weaponize and disperse effectively.[116] Primarily, the author borrowed text and sketches from the 1977 American biology book *Microbiology* by Michael J. Pelzcar, Roger D. Reid, and E. C. S. Chan.[117]

As for the various postings dealing with nuclear or radiological weapons, one is mainly informational and appears to be a translation of a document written by Outlaw Labs, which is currently posted on various American websites.[118] A second article, which surveys international instances of radiological contaminations from 1945 to 1987, discusses the possibility of using Cesium-137 in a radiological dispersal devise (RDD). It discusses in general terms the possible sources of the radioactive material and the use of this agent in an RDD. The posting does not provide detailed directions for the construction of the RDD, nor does it detail the amount of Cesium-137 or explosives needed for such an endeavor. It does, however, outline the expected economic damage of such an attack and lists possible Western cities as targets.[119]

A third posting detailing instructions for enrichment of uranium and the manufacture of an atom bomb was ludicrous. The instructions borrowed from a fringe publication in English were simply sub-par and absent of any real scientific expertise. They coach the would-be terrorist not to be fearful of working with nuclear fissile material, for radiation is actually good for us. Furthermore, these instructions teach a would-be terrorist how to enrich uranium on a kitchen table by using ''commercial grade uranium'' metal, hydrofluoric acid, a few buckets, and a bicycle pump.[120] If these instructions were accurate, Iraq and Libya, for example, would not have spent millions of dollars, employed

TABLE 1
Assessment of Production Instructions for CBRN Agents as Displayed in Actual al-Qaeda and other Jihadi Literature and Manuals

Agent	Validity of instructions	Expected quality of agent/ device produced	Outlines for the manufacture of munitions accurate	Instructions for delivery systems credible	Mass casualty potential of this agent if produced following these instructions
Chemical Weapons					
Cyanide (various formulations)	Yes; ingredients are difficult to procure	Very crude	No	No	Very low; more suitable for poisoning or assassination
Hydrogen sulfide gas (2 different formulations)	Yes	Crude	No	No	Low; this agent will work only if deployed in a confined area; awful odor will force people to evacuate the area
Mustard gas	No	These instructions are not sufficient for production	No	No	None
Biological Weapons					
Botulinum toxin	Yes; the process is very difficult to master	Crude; may not work	No	No	Very low; more suitable for poisoning or assassination
Ricin (4 different formulations)	Yes; the process is amateurish	A small amount of crude agent	No	No	Very low; more suitable for poisoning or assassination
Plague (*Yersinia pestis*)	Yes; the process is very difficult to master	Crude; will likely not work	No	Vague, unspecific instructions are provided	Very low
Radiological and Nuclear Weapons					
Cesium-137 (RDD*)	Yes; ingredients are difficult to procure	Very crude; instructions are not precise	No	Vague, unspecific instructions are provided	Very low; depends on amount of and type of explosives used

TABLE 1 (*Continued*)

Agent	Validity of instructions	Expected quality of agent/ device produced	Outlines for the manufacture of munitions accurate	Instructions for delivery systems credible	Mass casualty potential of this agent if produced following these instructions
Highly enriched uranium	No; instructions are ludicrous	These instructions are not sufficient for production	No	No	None
Radium-based gun-type nuclear explosive device	No; radium is not a fissionable material	These instructions are not suitable for production of a nuclear explosive device	No	No; method described is not a credible nuclear warhead delivery system	Very low; this device would amount to an RDD; accordingly, casualty potential depends on amount and type of explosives used

*RDD: Radiological Dispersion Device

thousands of scientists, and purchased reactors, gas centrifuges, and conversion facilities, only to be unsuccessful in attempting to acquire nuclear weapons. Enriching uranium is a technologically formidable task that is beyond the modest scientific means of a transnational terror network with access to ''commercial grade uranium,'' bicycle pumps, and kitchen tables.

The most serious al-Qaeda-related nuclear text, the *Nuclear Preparation Encyclopedia,* was posted in October 2005 on the jihadi website al-Firdaws. As mentioned previously, it is a multi-chapter collection that was compiled and written by a self-described supporter of al-Qaeda, Layth al-Islam (the Lion of Islam). Unlike previous literature that was largely void of scientific data, this document contains tens of pages on a historical survey of nuclear technology, including an Arabic explanation of nuclear experiments, concepts, and an overview of Enrico Fermi as well as other prominent nuclear pioneers. Most disturbing, it includes information about critical mass and the amount of fissile materials needed in the construction of nuclear weapons. In addition, various sketches and diagrams in English and Arabic are provided of purported gun-type and implosion-type nuclear warheads, which are clearly borrowed from open-source information available on the Internet.[121]

The author claims, ''I have been studying nuclear physics for two years on various scientific and Jihadi websites'' and that his posting is ''a present to the Amir [captain] of the Mujahideen Sheikh Osama bin Laden, God bless him, for the Jihad in the path of god.''[122] Although this posting does not provide al-Qaeda terrorists with an accurate

step-by-step blueprint for the construction of a nuclear weapon (à la the warhead assembly design given to Libya by the A. Q. Khan network), it is noteworthy as it reveals an increase in the understanding of nuclear technology by the jihadi community.

However, similar to other al-Qaeda WMD production manuals, this nuclear encyclopedia contains numerous basic technical flaws. The author details steps for the extraction of the radioactive material radium and the assembly of a gun-type radium bomb, which he inaccurately claims can yield a nuclear explosion. This is false, for radium is not a fissionable material and is not suited for nuclear bomb assembly; the instructions outlined would in fact amount to no more than an RDD, provided the perpetrator could extract a sufficient amount of radium through the outlined crude methods and techniques.[123]

Not only are there basic technical flaws in these instructions, but the literature also fails to mention the importance of effective deployment strategies and techniques. Simply stated, even a potent CBRN agent on its own does not equal a weapon of mass destruction. For an agent to be transformed into a true WMD, multiple stages of weaponization are required. Carrying out a successful terrorism attack utilizing CBW agents is a formidable task, as outlined by Dr. Raymond Zilinskas, co-editor of the *Encyclopedia of Bioterrorism Defense*:

> Acquiring an effective biological weapon and carrying out a successful biological attack requires the criminal to take four vital steps: (1) secure a culture of a suitable pathogen or a quantity of toxin; (2) develop an appropriate formulation—that is, a combination of the pathogen or toxin and the substrate in which it is suspended or dissolved; (3) obtain an appropriate container to store safely and transport the formulations; and (4) apply an efficient mechanism to disperse the pathogen or toxin over or onto the target population. In addition, if the BW agent is to be delivered by aerosol, a fifth factor is essential, namely, favorable meteorological conditions for the act of dispersion.[124]

For the most part, al-Qaeda literature does not explore the last three stages of deployment—weaponization, manufacture of munitions, and effective delivery systems—as they lack any real insight into credible techniques of weaponization and deployment of CBRN agents. Procuring an agent is only the first step in the construction of a credible WMD. At a most basic level, a terrorist cell needs the proper technical expertise in order to weaponize and deliver the agent to its target. This involves ensuring the chemical stability of the agent during the filling of munitions (e.g., canisters, shells, artillery, and rockets) as well as throughout the process of deployment.[125] With the exception of a few mentions of crop dusters and a few basic diagrams of CW munition shells, al-Qaeda WMD literature is largely devoid of such specific instructions on how to weaponize, stabilize, and build munitions. Moreover, there are no specific instructions on how to manufacture or utilize credible dispersal methods.

Finally, al-Qaeda literature does not contain any detailed information on the impact of atmospheric conditions (i.e., temperatures, sunlight, rain, altitude, wind speed, wind direction, and turbulence) on the deployment of CBW agents. These are crucial considerations, for these atmospheric conditions have a direct effect on the performance and potency of a CBW agent.[126]

The acquisition of small quantities of ricin or hydrogen sulfide gas neither constitutes a WMD capability nor empowers a terrorist organization to cause mass casualties. Judging from al-Qaeda's literature and open source information, the network's conventional capability for inflicting mass casualties as demonstrated on 9/11 overshadows any actual CBRN capability. It is not clear if the information portrayed in al-Qaeda literature is the full extent of the movement's CBRN knowledge, or if more information is disseminated through secretive channels. However, despite the proliferation of sensational reporting, as well as al-Qaeda's self-proclaimed bravado, many notable experts in the field agree that weaponization and deployment of WMD entails myriad technical and logistical hurdles that no terrorist organization, including al-Qaeda, has demonstrated the means to overcome.[127]

Deployment Instructions as Depicted on al-Qaeda Websites

In general, al-Qaeda's deployment instructions are rather crude and more suited for assassination or poisoning than mass-casualty terrorism. A posting on an al-Qaeda website informs a Mujahid how to purchase and deploy cyanide: "Go to a place that sells poisons and ask about cyanide, which is very affordable. Then purchase some hand lotion at a supermarket specifically the kind that opens pores. Take a teaspoon of cyanide and add some of the hand lotion and mix it well very carefully." Following the preparation instructions, the Mujahid is asked to experiment with the mix by applying it to a rabbit to make sure that the dosage is lethal. Then the instructions specify how to target human beings. They state, "Following the successful experiments put the poison in a glass container and watch out specifically for cars of Americans and other enemies, and apply some of the poison on the door handle. This should not be done in a clumsy way, but you should use a piece of cotton to properly apply . . . this poison on the inside and outside of the handle to come in contact with the fingers of the enemy of God."[128]

Other instructions dealing with deployment of low-end (non-CBW) poisons advocate targeting individuals in their cars and poisoning food in a supermarket: "[L]ook for a vaccination needle and fill it with the agent and spray this material into to the air conditioning openings of a car or house, if you could do this to the enemies of god, knowing that targeting the car would be much better."[129] As for targeting American customers at a supermarket, the advice states:

> All that you have to do is to go to the supermarket were the American pigs shop. Observe him well and make sure that you are close to him especially to his shopping cart . . . . if this pig puts some uncovered vegetables or fruit in his cart you should spray this material (poison) on them when he is not paying attention . . . . if you can, it is preferable to stick the needle in the fruit.[130]

Not surprisingly, these instructions clearly portray al-Qaeda's intent to harm Americans in their cars, homes, or supermarkets; at the same time they are clearly deficient and incapable of instructing readers in how to use CBRN agents and other poisons in a mass-casualty attack. If anything, such directions clearly demonstrate the amateurish nature of CBRN attacks currently concocted by al-Qaeda supporters. The

prospects of using an aerosol dispersion device for deployment and contaminating water or food supplies are mentioned briefly in a few sources; some even advocate combining CBRN agents with explosives or suicide bombings. Yet there is no detailed discussion of the matter, nor are there any specific instructions on how to manufacture or utilize such devices to deploy actual CBRN agents.[131]

The results of an assessment of current al-Qaeda CBRN agent production and deployment capabilities fall in line with al-Qaeda's originally stated goals as portrayed in the internal meeting of Majlis al-Shura in the late 1990s. It appears that al-Qaeda leaders and outlets are intentionally exaggerating the organization's CBRN capability by making provocative statements to provoke fear among their enemies and to enhance the combat capability and influence of their fighters. Proclamations of ''weapons of mass destruction'' possession also increase the stature and the apparent capability of the al-Qaeda movement. At the same time, it is not the intention of this paper to dismiss out of hand the network's WMD threat to the West. To the contrary, despite the inherent flaws in production instructions of most CBRN agents currently portrayed on al-Qaeda outlets, it appears that the organization is fully intent on achieving a WMD capability. For that reason alone, it is essential to continue monitoring al-Qaeda outlets to accurately ascertain the organization's future capabilities and technical prowess.

Difficulties in Manufacturing – Lessons from Libya and Iraq

At the most basic level, developing and weaponizing CBRN agents is not an easy undertaking. Many developing nations that employed hundreds of trained technicians and scientists and allocated millions of dollars over many decades were not able to achieve a significant WMD capability. Libya is a prime example of the inherent difficulty of manufacturing and weaponizing such agents. Libya had a scientific cadre of 120 chemical, 800 nuclear, and 4,000 missile specialists.[132] Overall, the country had spent hundreds of millions of dollars on relatively sophisticated labs for the production and weaponization of CBRN agents. Yet the net result of this largely uninterrupted lavish effort was rather unimpressive. Following Libya's unilateral disarmament on December 19, 2003, the country's entire WMD arsenal was revealed as 23 tons of mustard gas, a few hundred short-range Scud missiles, five untested longer-range Scuds, and virtually no nuclear or biological weapons production capability.

Another illustrative example is Iraq. Prior to 1991, Iraq invested more funds in WMD manufacture and research than any other developing country and was able to produce and weaponize an array of CBW agents. Iraq also employed tens of thousands of scientists and technicians in its various WMD production facilities. Nevertheless, it was not able to weaponize anthrax bacteria in a powder form. This is a noteworthy fact, especially considering the enormous attention garnered by the anthrax cases in 2001. A 2003 report for the Pentagon estimated that if terrorists released a large amount of anthrax bacteria in a large city under optimal weather conditions, it would infect 200,000 people in an area 40 miles downwind.[133] The specter of biological agent release under optimal weather conditions is truly horrifying, but if Saddam Hussein, with his lavish labs and thousands of

capable scientists, could not weaponize anthrax bacteria spores, how could a few jihadis in Waziristan produce a sufficient amount of this agent to carry out a mass-casualty attack?

Capability does not equal intent, and no amount of anti-Western animosity, religious fervor, wishful thinking, enthusiasm, or threatening rhetoric from al-Qaeda can overcome the formidable technical challenges involved in the weaponization and deployment of high-end CBRN agents. These hurdles can only be overcome if and when the al-Qaeda movement acquires such scientific capability that fortunately still appears beyond its means.

Difficulties in Deployment – The Case of Aum Shinrikyo

In March 1995, the Japanese cult Aum Shinrikyo released sarin gas in the Tokyo subway system, killing 12 people and injuring more than 1,000.[134] Cultists spread the sarin solution by puncturing small bags containing the agent with sharpened umbrella tips. One Aum member was placed on each of five subway cars converging on the Kasumigaseki station during morning rush hour. In this way, the cult hoped to effect the highest number of casualties. The incident was the culmination of years of secretive research and development efforts to produce biological and chemical agents as terrorist weapons. Although the subway attacks resulted in a loss of human life and led to widespread panic throughout Tokyo, the incident could have had far deadlier repercussions had the agent been weaponized and disseminated using more advanced techniques. The fact that Aum was unable to perpetrate a true mass-casualty WMD attack after years of research and development efforts at a cost of hundreds of thousands of dollars has important implications for the WMD potential of other terrorist groups such as al-Qaeda.

Aum recruited experts in biochemistry, physics, engineering, and other technical specializations in order to participate in the group's CBW program. In the early 1990s, Aum scientists began experiments with the intent to produce a series of nerve agents, including sarin, soman, tabun, and VX.[135] The group also acquired hydrogen cyanide and sodium cyanide.[136] Japanese authorities believe that by 1995, the cult had produced both botulinum toxin and anthrax bacteria. Aum scientists were also able to acquire advanced laboratory materials, including filtration systems, electron microscopes, sophisticated computer systems, and documents describing the intricacies of agent cultivation.[137] The cult obtained this specialized equipment through complex procurement networks and actually acquired many precursor chemicals through legal channels in the pharmaceutical industry.[138]

Aum Shinrikyo allegedly conducted at least 20 attacks utilizing chemical and biological agents between 1990 and 1995; however, few of these attacks resulted in any casualties.[139] In total, Aum conducted six attacks using botulinum toxin, four attacks using anthrax bacteria, five attacks using sarin, three attacks using VX, and two attacks using hydrogen cyanide. Only 20 individuals were killed as a result of these 20 attacks, spread across five years. While any number of casualties is unfortunate, this number is small given the cult's intent to cause mass fatalities in the majority of these cases. Attempts at mass-casualty terrorism include an attack in the summer of 1993, during which Aum members sprayed what they believed was anthrax bacteria off the roof of an eight-story

building for four straight days.[140] Another failed attack occurred in early March 1995, as the cult attempted to spread what they believed was botulinum toxin in the Tokyo subway but was unable to properly disseminate the agent.[141] In fact, Aum produced neither *Bacillus anthracis* nor botulinum toxin.

Despite the ease of acquisition of precursor materials and equipment, the high level of technical expertise among group members, and the relatively long periods of time that the group was able to operate in secret without police intervention, the cult was still unable to carry out a single true mass-casualty attack. Al-Qaeda appears to be far less organized than the Aum Shinrikyo cult had been before the March 1995 sarin attacks in Tokyo. Additionally, there is no evidence to suggest that the al-Qaeda network has had access to the kinds of sophisticated technology or expertise enjoyed by Aum cultists in the 1990s. The case of Aum Shinrikyo thus serves as a historical testimony to the difficulty of developing a true mass-casualty capability through the production of CBW agents.

Mass Destruction versus Mass Disruption

Radiological Dispersion Device

Many media reports over the past few years have speculated on the possibility of a terrorist attack using an RDD, or dirty bomb. Indeed, instances of attempted acquisition of radiological materials by al-Qaeda affiliates have occurred. While it is possible that a terrorist might be able to acquire radiological material and successfully construct an RDD, the likely effects of such an attack are less acute than most reports indicate. Mass casualties are unlikely to result from an RDD attack. An explosive RDD, which uses a conventional blast to disperse radiological material, is likely to cause casualties only in the immediate vicinity of the explosion. In addition, these casualties would likely be caused by the explosion itself, rather than by the effects of radiation.[142] Even a ''passive RDD,'' which releases radiological material manually placed near a target, would cause radiation sickness only to those in the immediate area and only after long periods of exposure.[143] The most dangerous scenario would be direct inhalation or ingestion of a radiological substance. An ''atmospheric RDD,'' which converts radioactive material into a substance that can be carried through the air, may contaminate a wider area but may not cause mass casualties since radiation levels would be low after the material is dispersed. The real outcome of any RDD attack would be widespread panic and economic disruption. For these reasons, an RDD is not so much a weapon of mass destruction as it is a weapon of mass disruption.

Although al-Qaeda has expressed an interest in acquiring radiological material and has attempted to acquire such material on numerous occasions, it does not appear that network affiliates have been able to construct an RDD device. While an RDD would be much easier to construct than a nuclear device, formidable obstacles still exist that can prevent a terrorist group from successfully carrying out an RDD attack. For one, a group would have to acquire a radioactive isotope with a relatively short half-life in order to ensure maximum radiation. Only a handful of isotopes would be useful in a radiological attack: cobalt-60, strontium-90, yttrium-90, iridium-192, cesium-137, plutonium-238,

radium-226, americium-241, and californium-252.[144] Experts suggest that it is very unlikely to have a high number of casualties, or even a large number of people with severe radiation sickness, from an RDD attack. Indeed, it is probable that only those individuals who are close enough to the device to risk sustained injuries or death from the explosion would receive lethal doses of radiation.

In addition, it is likely that individuals near an explosion would move quickly from the area, thus drastically reducing the chance of radiation sickness. These individuals may experience burns on the skin or changes in the number of white blood cells, but would likely avoid more severe reactions. The only scenarios which could generate high numbers of fatalities under the right circumstances would be direct exposure to radioactive material emitting gamma rays, or injuries sustained from an explosion involving radioactive shrapnel.[145]

Although many sources of radioactive isotopes exist, numerous obstacles can prevent terrorist acquisition. For one, Russian radioisotope thermal generators and *Gamma-Kolos* seed irradiators are radiation "megasources" that have been cited as "vulnerable" to terrorist acquisition.[146] Large numbers of radioactive isotopes are also found in spent fuel from nuclear power plants. Although these sources would be a terrorist gold mine in terms of the sheer amount of radioactive material, spent fuel is usually encased in containers estimated to weigh one-half a metric ton. Also, spent fuel emits extremely high levels of radiation—a fact that would heavily complicate efforts at transportation.[147] Terrorists would be most likely to acquire radioactive material from the open market, as many radioactive isotopes are used in commercial practices such as communication technology and medical procedures. Furthermore, regulatory procedures to track global shipments of radiological materials used in commercial applications are not as consistent or widespread as those in place to regulate the transfer of nuclear material.

A real concern is that terrorists with a high level of technical expertise may be able to use radiological material to contaminate a target without using an explosive device. Some isotopes can be dissolved and sprayed, while some can be vaporized, or even burned.[148] These delivery methods would require special technical skills and expertise in order to carry out an effective terrorist attack. Another concern is the fact that so many al-Qaeda affiliates are willing to die in the process of carrying out an attack. For this reason, if the group is able to procure a large amount of radioactive material, it may be less concerned about the technical expertise required to conduct a sophisticated attack; instead, they may opt to sacrifice a life in order to deliver a lethal dose of radiological material to a target. Radiological material that is ingested or inhaled is the most deadly, and this can only really occur in close proximity to a highly radioactive source.

Crude CBW Agents and Mass Disruption

Similar to an RDD, crude CBW agents can also be used as weapons of mass disruption. Such an attack would certainly instill fear and anxiety and would probably have serious economic consequences. A CBW attack on government buildings, transportation networks, or supermarkets would most likely result in the closure of these sites as well as an overcrowding of hospitals with the concerned citizens. Other effects could include a

disproportionately high demand for vaccinations or other medical treatments, as well as a sharp decrease in traffic on public transportation systems. Additionally, an agent disseminated using an explosive device could result in significant structural damage.

Despite the difficulties inherent in obtaining a true WMD capability with CBW agents, it is clear that such substances are suitable as a terrorist weapon. The use of a chemical or biological agent, albeit crude, has the potential to cause fear and panic disproportionate to the actual effect of the agent. Thus, if the purpose of terrorism is indeed to terrorize, then CBW agents can also be used to produce a highly effective weapon. However, while they may succeed in terrorizing a population and causing massive economic disruption, it is unlikely that such agents would be capable of causing mass casualties.

Conventional Weapons as WMD

Some may argue that massive conventional weapons in the hands of terrorists could be considered a form of WMD and could serve as an alternative to CBRN agents. Indeed, the large majority of al-Qaeda literature dealing with operational methods outline the use of conventional explosives and guerrilla warfare. This fact does not dilute the group's intentions and capabilities; rather, it tends to reinforce it. While al-Qaeda's intention is most certainly to attack American and Western influences around the globe in whatever way possible, the most successful attacks to date have utilized conventional weapons or nontraditional weapons used in unconventional ways. The most obvious example is the 9/11 attacks in New York and Washington, D.C., that killed approximately 3,000 people. Other examples of highly effective conventional attacks include the U.S. embassy bombings in Kenya and Tanzania in 1998, and most recently, numerous car and suicide bombings in Iraq.

Nevertheless, these successes have failed to trump the appeal of CBRN agents as potential terrorist weapons. Utilizing CBRN agents would add a degree of unprecedented fear to an attack and impart status on those responsible, although the actual mass-casualty effects of such an attack would be limited. Despite this drawback, the al-Qaeda network is aggressively attempting to procure CBRN agents, although it will continue to rely primarily on conventional methods of attack.

Possible Sources of CBRN Acquisition—Countries of the Former Soviet Union

Much has been written on the dangers of terrorist acquisition of CBRN agents from the countries of the former Soviet Union. These accounts are not totally speculative; as Nikolai Patrushev, Chief of the Russian Federal Security Service, told journalists on August 19, 2005, "Terrorists are striving to gain access to biological, nuclear and chemical arms. We have registered such attempts and have information to that effect . . . . Our task is to stop them from having access to them."[149] Indeed, former U.S. intelligence officials have stated that organized crime and corruption in the FSU, and particularly in Russia, have increased the risk of al-Qaeda acquiring CBRN materials from these countries.[150]

Efforts to bolster security at former Soviet weapons facilities have been under way since the early 1990s; however, there are significant obstacles to ensuring the safety of CBRN materials at these facilities. One of the main concerns is funding: Russian officials have reported that expected financial contributions from foreign countries have not been able to meet the security needs of several important facilities.[151] Many of these include ''anti-plague'' laboratories that secretly supplied pathogens to the Soviet offensive BW program during the Cold War. Because these facilities were not officially part of the Soviet BW program, they are not eligible to receive funding from foreign governments.[152]

Nuclear experts have stated that it is possible al-Qaeda could acquire uranium from the FSU to use in a crude nuclear device. Others believe that a preferable path to nuclear acquisition for the group would be to obtain an ''off-the-shelf'' device. Although unlikely, even if such scenarios come to fruition, significant obstacles to terrorist acquisition and use of such devices remain. For one, many Soviet weapons were equipped with permissive action links (PALs) in order to enhance security and prevent unintended detonation. Additionally, many Russian nuclear devices were constructed with plutonium, which is more radioactive than HEU and thus more likely to be identified during transportation through countries that utilize radiological sensors as part of their security procedures.[153] Still, not all nuclear devices were assembled with PALs, and not all countries screen for radiological materials moving past their borders.

Although there is evidence that CBRN materials in the FSU are vulnerable to criminal or terrorist acquisition, it is unlikely that the al-Qaeda network has already procured these materials, in light of the apparent lack of technical expertise as revealed by foiled plots and active monitoring of al-Qaeda-sponsored websites. Reports stating that Osama bin Laden ''purchased'' biological or chemical weapons are largely speculative, as are reports indicating that bin Laden was able to acquire materials for chemical weapons from the former Soviet Union during the mid-1990s.[154]

Additionally, sources from the International Atomic Energy Agency have claimed that only 10 incidents of theft involving HEU have occurred over the past 10 years, each involving less than a kilogram, and none have involved the al-Qaeda network.[155] While it does not appear that al-Qaeda has succeeded in procuring CBRN materials from the FSU, it is unwise to discount the network's commitment to obtaining these materials. In June 2002, for example, Russia's Federal Security Service reported an al-Qaeda attempt to secure 11 pounds of radioactive thallium from decommissioned Russian submarines.[156] There will surely be more opportunities for al-Qaeda to procure CBRN materials as long as these materials remain unsecured.

Conclusions: Capability versus Intent

Open-source information suggests that al-Qaeda has yet to build a real CBRN capability for mass destruction. As discussed, an examination of al-Qaeda's own literature and manuals reveals many flaws in its CBRN production instructions—a fact that would hinder any real WMD deployment. However, it is important to note that all evidence from Western sources and al-Qaeda's own websites and publications indicate that the movement itself and its various affiliates are aggressively pursuing such a capability. It is hard to determine if and

when these groups will actually attempt to produce CBRN agents and delivery systems that could potentially cause mass destruction equal to or greater than the horrendous human and capital loss of 9/11.

Fortunately, obtaining a real WMD capability that is capable of killing thousands is a difficult challenge, as evidenced by the history of both rogue regimes such as Libya and Iraq and previous terrorist organizations such as Aum Shinrikyo. Most current evidence suggests that al-Qaeda is still far away from a true WMD capability and that most CBRN agents acquired by this group or its affiliates are crude and more suited for small-scale assassinations, contaminations, and poisonings.

However, the fact that al-Qaeda and its affiliates may be far from perpetrating a mass casualty CBRN attack does not warrant reduced vigilance of their activities. Even so, it is important to keep the threat in perspective and not attribute to these terrorists any capabilities that they still do not possess. Doing so serves no tangible purpose; even without mastery of CBRN agents, al-Qaeda and its affiliates are extremely dangerous and demand the cooperation of the United States, Europe, and Arab and Muslim regimes to pursue aggressive military and law enforcement tactics that will hinder their operational capabilities, as well as a series of sound, long-term political policies that will help curb the appeal and recruitment potential of these equal-opportunity terrorists. The near- and long-term danger in al-Qaeda's current ability to recruit, indoctrinate, train, and graduate large numbers of suicide jihadis all over the world overshadows any possession of a WMD, short of a nuclear bomb.

It can be argued that the most dangerous aspect of the al-Qaeda network is its ability to recruit and replenish its ranks with young jihadis who are willing to die for their cause around the globe. This real capacity for regeneration and export of destructive ideology and training eclipses any attempt by the group or its affiliates to acquire CBRN agents that currently seem beyond their rudimentary technical capabilities.

It is certainly difficult for al-Qaeda or its affiliates, who are on the receiving end of the most comprehensive and aggressive counterterrorism operation in modern history, to engage in the manufacture of actual high-end WMD agents beyond the rudimentary stage, as has been discussed. As for the prospect of nuclear terrorism, however, exhaustive efforts should be made to prevent the al-Qaeda network from acquiring nuclear devices or fissile materials that can be used to build such weapons. Besides the technical difficulties inherent in the manufacture of nuclear devices, the acquisition of fissile materials remains the greatest obstacle to nuclear warhead assembly. Nevertheless, should sufficient amounts of HEU fall into the hands of al-Qaeda, the network's destructive potential would multiply exponentially. When considering the specter of nuclear weapons in the hands of al-Qaeda, there simply is no acceptable margin of error.

At the same time, the risk from al-Qaeda's use of conventional terror tactics as seen in recent years probably exceeds any current risk from attempts to develop or deploy WMD agents. While the killing potential of these agents is theoretically high given modest technical and delivery means, it likely pales in comparison to the real threat of conventional weapons. Overall, al-Qaeda's current technical knowledge and WMD capability are likely most suitable for assassinations rather than large-scale attacks aimed

at mass casualties. In the near future, the al-Qaeda network is likely to continue to use conventional weapons and atypical weapons in creative ways.

Note

Even though all toxins are chemicals, they fall under the purview of the Biological Weapons Conventions (BWC), and for this reason, many analysts term them as ''biological agents.''

Disclaimer: The full Internet addresses of pro al-Qaeda websites are intentionally withheld by the authors for security reasons. If you have any questions about sources, please contact the authors directly.

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