

Strategic Insight

Assessing Al Qaeda's WMD Capabilities

by [Jack Boureston](#)

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Events in the recent past have focused the world on the al Qaeda terrorist organization and its efforts to develop weapons of mass destruction (WMD). WMD can be defined as nuclear, chemical, biological, and radiological weapons. The U.S. Code, Title 5, defines WMD as "any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of (A) toxic or poisonous chemicals or their precursors; (B) a disease organism; or (C) radiation or radioactivity."^[1] According to Deputy Defense Secretary Wolfowitz, "Al Qaeda leader Osama bin Laden said in the past that the acquisition of weapons of mass destruction by his terrorist gang is a religious duty. U.S. and coalition troops in Afghanistan found evidence that al Qaeda was aggressively pursuing chemical, biological, radiological and nuclear information and material."^[2] Now CNN has obtained tapes recording al Qaeda's chemical experiments. As more evidence is found we can begin to understand the details about al Qaeda's WMD objectives. This analysis examines al Qaeda's WMD undertakings as we know them, and describes U.S. efforts to counter, preempt, and otherwise prevent al Qaeda from obtaining a robust WMD arsenal.

Al Qaeda and Nuclear Weapons

We can be reasonably confident that al Qaeda is working to develop both nuclear and radiological devices but so far has not succeeded. Testimony and media reports document several attempts by the group to acquire nuclear materials since the 1990's. In September 1998, Mamdough Mamud Salim, an al Qaeda operative, was arrested for attempting to purchase "enriched uranium" in Western Europe.^[3] Enriched uranium is defined in terms of its concentration of uranium-235 molecules. The more uranium-235 molecules that are in uranium, the more enriched it is. Weapons grade uranium or HEU is enriched to over 90%. In February 2001, Jamal Ahmad al-Fadl, a bin Laden aid, testified that he participated in a deal to acquire uranium.^[4] Al Qaeda's bid for enriched uranium may indicate their interest in developing conventional nuclear weapons. Enriched uranium would probably be used in a gun-assembly device similar to the "Little Boy" device that was dropped on Hiroshima. Coalition troops are combing through 110 facilities throughout Afghanistan trying to find new pieces to the puzzle of al Qaeda's capabilities. In Pakistan CNN happened upon an abandoned house that contained documents "demonstrating al Qaeda's interest in nuclear weapons..." Of particular interest was a 25 page document with information about nuclear weapons design.^[5] It led experts at the Institute for Science and International Security (ISIS) to conclude that "if al Qaeda obtained enough plutonium or highly enriched uranium, we believe it is capable of building a crude nuclear explosive, despite several difficult steps." However, they added, "We cannot say absolutely whether al Qaeda possesses fissile material, but to our knowledge no evidence of possession has surfaced."^[6]

Approximately 25 Kg of highly enriched uranium (HEU) is needed to build a gun-assembly device, and to date there is no evidence that al Qaeda ever acquired any highly enriched uranium or other radioactive substances that could be used to develop conventional nuclear weapons. Additionally, it is not a simple exercise to assemble even a crude nuclear device. ISIS Director David Albright said, "There is no indication that al Qaeda's nuclear work has gone beyond theory. To create a nuclear weapon...a designer

must learn a whole set of manufacturing steps not mentioned in al Qaeda's manual and develop confidence in the weapon's design."[\[7\]](#)

Al Qaeda has also attempted to purchase spent nuclear fuel. In September 2001, a Bulgarian businessman claimed that aides to bin Laden approached him to purchase spent fuel from a local plant. The businessman said he first met with "the Saudi dissident," taken to mean Osama bin Laden, and the next day a young Arab chemical engineer contacted him to ask if he would serve as an intermediary for the transaction. According to the businessman, no deal ever took place. Spent fuel could be used to develop both conventional nuclear weapons and dirty bombs. If it were to be used in nuclear weapons, it would require reprocessing. Spent fuel is reprocessed by separating neutron-absorbing fission products from unused fissile uranium 235 and plutonium 239, and fertile uranium 238. This task requires extensive knowledge of chemical processes and reactions, access to various chemicals not commonly available in industry, laboratories with hot cells, shielding to protect against radioactivity, and other equipment to complete the task. Al Qaeda does not appear to have any of these. Spent fuel could be more easily used in a dirty bomb. In this case, the substance would be combined with a conventional explosive that when set off would spread highly radioactive material over a wide area.

Evidence pointing to al Qaeda's interest in developing dirty bombs can be found in the June 2002 arrest of suspected al Qaeda associate Abdullah al Muhajir, also known as Jose Padilla. Muhajir was arrested by U.S. authorities for scheming to develop and use a dirty bomb in an American city.[\[8\]](#) Another piece of evidence is a set of containers found in Afghanistan that were marked with skull and cross bones and filled with a liquid registering a slight radioactive signature. Investigators believe that al Qaeda members were duped into thinking that this substance was actually highly radioactive material that could be used to develop a nuclear or radiological weapon.[\[9\]](#)

In addition to attempting to acquire nuclear material, al Qaeda solicited help from foreign entities to construct nuclear weapons. Several texts discuss help from Kazakhs, from Russians, and even from Iraqi technicians in developing nuclear weaponry.[\[10\]](#) None of these citations can be substantiated however. In Pakistan, a number of nuclear scientists were arrested for allegedly assisting al Qaeda with nuclear technologies. Media accounts do not detail the scientists' assistance to al Qaeda, but they do cite one scientist, Sultan Bashiruddin Mahmood, admitting that he met with al Qaeda and helped the organization through his non-profit "humanitarian" organization.[\[11\]](#) Mahmood is believed to have been a senior member of Pakistan's nuclear weapons program, "with broad access to classified information."[\[12\]](#) Western experts are concerned that he and others may have transferred nuclear knowledge, equipment, or materials to the Taliban, which in turn would have been passed to al Qaeda.[\[13\]](#)

Reports also claim that al Qaeda attempted to purchase whole nuclear weapon assemblies. In 1998, the Paris-based Arabic paper *Al-Watan Al-Arabi* ran a story about a "nuclear warhead deal," where al Qaeda members and Chechen crime figures met to exchange two tons of opium and \$30 million in cash for 20 nuclear warheads.[\[14\]](#) There is no evidence that this exchange ever took place, nor is it likely that al Qaeda has ever possessed nuclear warheads. Other stories have turned up in the press with variations on this theme. Some include deals with Russian crime members and other underworld figures.

In sum, although we can be certain of al Qaeda's objective to develop a nuclear capability, so far there is no evidence that the organization ever acquired enough nuclear material to develop a nuclear weapon, nor does it appear that they were able to acquire whole nuclear weapon assemblies.

Al Qaeda and Chemical and Biological Weapons (CBW)

We can be equally certain that al Qaeda has aggressively pursued a chemical and biological weapon (CBW) capability. They may have advanced more in these fields than in the nuclear realm. Although it is difficult to point to physical evidence of al Qaeda's CBW capability, several hints suggest the likelihood that al Qaeda has produced small amounts of some type of agent. One comes from a 10 volume "Encyclopedia of Afghanistan Resistance" which was found while coalition forces were inspecting a camp

close to Jalalabad. The encyclopedia contains precise formulas for manufacturing toxins, botulinum, and ricin. The document also instructs would-be perpetrators in methods of disseminating the deadly materials.^[15] Al Qaeda members attempted to learn how to fly and wanted to purchase crop dusters that analysts believe may be used to disseminate anthrax and chemical or biologic agents.

The next indication of al Qaeda's chemical weapons interest comes from a recently discovered videotape that records experiments involving dogs that were exposed to vapors from a "white liquid." In the tape, the dogs struggle, vomit, have trouble breathing, and finally die. Some experts speculate that the gas was a nerve agent such as sarin.

The last hint of al Qaeda's chemical weapons capability comes from Ahmed Ressum, an Algerian man accused of planning to bomb the Los Angeles airport. Ressum testified that al Qaeda taught him to poison people by putting toxins on doorknobs, and that he engaged in experiments in which dogs were injected with a mixture containing cyanide and sulphuric acid.^[16] Although a stock of agents or their precursors were not found, it is obvious that some quantity of an agent was obtained by al Qaeda personnel.

How did al Qaeda acquire CBW materials in the first place? One possibility is outlined in a September 2001 British media report alleging that operatives may have acquired samples of anthrax, salmonella, and e-coli through Czech facilities. However, this has not been proven and Czech officials deny the allegations.

What we can conclude from captured documents, media reports, and U.S. government statements is that al Qaeda has obtained chemical agents, albeit probably in small quantities, and performed experiments on live subjects to determine the lethality of the substances. Manuals and testimony also indicate that al Qaeda has determined how to operationalize chemical and biological warfare.

Limited WMD Capability at Best

Despite al Qaeda's genuine interest in developing nuclear, biological, and chemical weapons, the organization has probably not been very successful in developing any such devices. If they do have a stockpile of nuclear, chemical, or biological weapons, investigators have not found it. Nevertheless, al Qaeda appears to be continuing its efforts to build these weapons and therefore the likelihood that they will succeed in the future remains high.^[17] Stephen Younger, Director of the Defense Threat Reduction Agency (DTRA) commented that although al Qaeda apparently had only limited WMD developing capabilities in Afghanistan, "it doesn't mean that they do not have a different capability elsewhere." Speaking specifically to al Qaeda's intent to develop a nuclear capability, Younger said, "al Qaeda leaders may have connections in other countries that already have the technological base for building nuclear weapons. They have the money to make such links...and they may have...access to people in countries with advanced technological capability."^[18] Bottom line, there is still much to learn about al Qaeda's WMD capability, but from what we do know, there is cause for serious concern.

Neutralizing the al Qaeda Threat

Since the threat is very real, attention is focused on stopping al Qaeda before they can obtain usable quantities of WMD. On the nuclear side, Dr. Albright recommends that the United States and its allies make it a priority to locate scientists or technicians connected to al Qaeda nuclear efforts; accelerate efforts to find international al Qaeda ' sleeper cells ' that may be working to master nuclear crafts; improve fissile material security; and more effectively coordinate between coalition governments.^[19]

There is no doubt that the United States is adapting its security policies to this new environment. As a part of its new strategic doctrine, the Bush Administration is moving away from the policies of containment and deterrence, towards a doctrine that supports "preemptive attacks against terrorists and hostile states that have chemical, biological, or nuclear weapons."^[20] In his June address to the 2002 West Point

graduating class President Bush said, "Our security will require the best intelligence, to reveal threats hidden in caves and growing in laboratories. Our security will require modernizing domestic agencies such as the FBI, so they're prepared to act, and act quickly, against danger. Our security will require transforming...a military that must be ready to strike at a moment's notice in any dark corner of the world. And our security will require all Americans to be forward-looking and resolute, to be ready for preemptive action when necessary to defend our liberty and to defend our lives."[\[21\]](#)

Traditional methods of preventing WMD proliferation are not effective against a transnational, non-state actor such as al Qaeda. The group has operatives in at least 40 and perhaps up to 60 different countries. Secretary of Defense Rumsfeld suggested that the way to counter terrorism is through greater law enforcement and intelligence gathering activities. He described the task as one of "bringing all elements of national power to bear —political, diplomatic, economic, financial, intelligence gathering, overt, covert—all of that."[\[22\]](#) To this end, intelligence agencies are reviewing their practices to determine how they may more effectively gather information on non-state actors. For instance, improving human intelligence capabilities is once again becoming a priority in an environment where national technical means cannot infiltrate terrorist cells. Additionally, new types of indicators and warnings are being sought to foretell future terrorist activities.[\[23\]](#) Lastly, the United States is using its influence and power to coordinate more effectively with the 70-plus coalition countries to beef up collective information gathering and sharing capabilities, train national forces, and work with international law enforcement agencies to "take the battle to the enemy, disrupt his plans, and confront the worst threats before they emerge."[\[24\]](#)

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