Nuclear terrorism – background

Nuclear terrorism is understood as use of or threat of use of nuclear or radiological weapons in acts of terrorism. Attacks on facilities handling or storing radioactive material are included.

In the last years, the issue of nuclear terrorism has gained a lot of attention in the international nuclear weapons and disarmament debate – not the least after the t9/11 attacks. Then, it became awfully clear what terrorists are capable of, and the worry increased on the consequences if nuclear weapons were involved. There are many reports and rumours on terrorist groups ambitions of acquiring nuclear weapons, and underground networks dealing with nuclear materials and technology have been revealed. Up to today, however, there is no evidence a terrorist group really would have succeeded in one way or the other with acquiring nuclear weapons.

In 2005, the UN General Assembly unanimously adopted an international convention that bans nuclear terrorism. It took states seven years to negotiate the treaty, that criminalizes the possession, use or threat of use of radioactive device by non-state actors, their partners or organisers with the purpose of killing or causing harm to people, environment or property. The convention entered into force in July 2007 with 22 states joining. The more states that become party to the convention, the more substance will it gain.

Attacking a nuclear power reactor

A terrorist attack on a commercial nuclear power plant with a commercial jet or heavy munitions could have a similar affect to a radiological bomb, and cause for greater casualties. If such an attack were to cause either a meltdown of the reactor core (similar to the Chernobyl disaster), or a dispersal of the spent fuel waste on the site, extensive casualties could be expected. In such an instance, the power plant would be the source of the radiological contamination, and the plane or armament would be the explosive mechanism for spreading radiation over large areas.

Stealing fissile material

The threat from radiological dispersion dims in comparison to the possibility that terrorists could build or obtain an actual atomic bomb. An explosion of even low yield could kill hundreds of thousands of people. A relatively small bomb, say 15-kilotons, detonated in Manhattan could immediately kill upwards of 100,000 inhabitants, followed by a comparable number of deaths in the lingering aftermath.[1]

Fortunately, bomb-grade nuclear fissile material (highly enriched uranium or plutonium) is relatively heavily guarded in most, if not all, nuclear weapon states.

Nonetheless, the possibility of diversion remains. Massive quantities of fissile material exist around

the world. Sophisticated terrorists could fairly readily design and fabricate a workable atomic bomb once they manage to acquire the precious deadly ingredients (the Hiroshima bomb, which used a simple gun-barrel design, is the prime example).

Dirty bombs

The most accessible nuclear device for any terrorist would be a radiological dispersion bomb. This so-called 'dirty bomb' would consist of waste by-products from nuclear reactors wrapped in conventional explosives, which upon detonation would spew deadly radioactive particles into the environment. This is an expedient weapon, in that radioactive waste material is relatively easy to obtain. Radioactive waste is widely found throughout the world, and in general is not as well guarded as actual nuclear weapons.

In the United States, radioactive waste is located at more than 70 commercial nuclear power sites, in 31 states. Enormous quantities also exist overseas — in Europe and Japan in particular. Tons of wastes are transported long distances, including between continents (Japan to Europe and back).

In Russia, security for nuclear waste is especially poor and the potential for diversion and actual use by Islamic radicals has been shown to be very real indeed. In 1996, Islamic rebels from the breakaway province of Chechnya planted, but did not detonate, such a device in Moscow's Izmailovo park to demonstrate Russia's vulnerability. This dirty bomb consisted of a deadly brew of dynamite and one of the highly radioactive by-products of nuclear fission — Cesium 137.[2]

Extreme versions of such gamma-ray emitting bombs, such as a dynamite-laden casket of spent fuel from a nuclear power plant, would not kill quite as many people as died on Sept. 11. A worst-case calculation for an explosion in downtown Manhattan during noontime: more than 2,000 deaths and many thousands more suffering from radiation poisoning. Treatment of those exposed would be greatly hampered by inadequate medical facilities and training. The United States has only a single hospital emergency room dedicated to treating patients exposed to radiation hazards, at Oak Ridge, Tenn.[3]

A credible threat to explode such a bomb in a city could have a powerful impact on the conduct of that state's foreign and military policy, and could possibly have a paralysing effect. Not only would the potential loss of life be considerable, but also the prospect of mass evacuation of dense urban centres would loom large in the minds of policy-makers.

What terrorists?

After the 9/11 attacks on the World Trade Center and the Pentagon, US President George W. Bush called out a ”war on terror”. ”*We will find those who did it, we will smoke 'em out of their holes, we will get them running, and we will bring them to justice”,* the President threatened the perpetrators, standing on top of an enormous heap of rubble that had been the WTC.[4] Not long thereafter, the war against the Taliban in Afghanistan was in full spin, and in 2003 the US invaded Iraq to hunt down Saddam Hussein's (non-existing) weapons of mass destruction programme. The so-called war on terror has taken many forms, resulting in severe violations of human rights and freedoms.

The worry about nuclear terrorism has never played at the forefront in the ”war on terror”, however, the risk is often brought up – by the US as well as by other states. And there is a risk – as we have seen above, that terrorists could acquire fissile material to produce a crude nuclear device.

In short, three terrorist groups in three totally different contexts have during the last decade actively

tried to acquire nuclear weapons. In its striving for nuclear weapons they have tried to steal or buy the material needed, or at least made preparations for later stealing or buying.[5] And the world can not rest assured these three were the last. As long as some states have nuclear weapons and threaten to use these – both against states and non-state actors – others will find the nuclear weapon alternative attractive – again, both states and non-state actors.

Al Qaeda

The most well known terrorist network in the world is probably al Qaeda, making Usama bin Laden the most well known terrorist leader. The foundations for al Qaeda was laid already in 1988 by bin Laden in the struggle against the ongoing Soviet occupation of Afghanistan. During the 1990's and 2000's a large number of terrorist acts all over the world have been ascribed to the network. The largest act is the air plane hi-jacking against the World Trade Center and the Pentagon on 9/11 2001.

Bin Laden and the al Qaeda terrorist network have made their own desire for nuclear weapons for use against the United States and its allies explicit, by both word and deed. Bin Laden has called the acquisition of weapons of mass destruction a "religious duty."[6] Reports have it that al Qaeda has been seeking to buy stolen nuclear weapons or nuclear material, and to recruit nuclear expertise, for more than a decade.[7] While most terrorist groups hardly would have the capacity to produce a real nuclear weapon even if they got their hands on enough fissile material, risk is that a large and well-financed network such as al Qaeda – with the right material and enough time – would actually be able to produce at least a more primitive nuclear device.[8]

Al Qaeda today is not the same group that existed before the 9/11 attacks. The previous centrally controlled, organised structure of al Qaeda has been disrupted by the world-wide campaign against the organization since the 9/11 attacks, including the destruction of al Qaeda's Afghanistan sanctuary. In connection to the US attacks on Afghanistan in October 2001, a lot of documentation on the network's nuclear activities was destroyed. Still, many notebooks, terrorist handbooks, and quite some documents regarding nuclear weapons have been found. Designs for a dirty bomb were found, as were designs on crude uranium nuclear weapons. In November 2001, CNN found an Arabic document titled "Superbomb" in the home of Abu Khabbab, the code-name of a senior al Qaeda official. This over 25 pages long document deals with different nuclear weapon designs and properties.[9]

At the same time, it can be assumed that the relatively limited evidence found points to a large gap between the capacity a well-organised network like al Qaeda *could* assemble and the capacity that the network actually has *proven* to assemble. Admittedly, some of the documents found in Afghanistan show that knowledge on advanced nuclear technology could be found within the network. At the same time, other documents are simple and naive. There is as yet no strong, publicly available evidence that the group or its followers have put together the capabilities that would be necessary to make a nuclear bomb. But unfortunately, we simply cannot know what capability al Qaeda and its followers may have managed to keep hidden—or may acquire in the future.

Aum Shinrikyo

On 20 March 1995, Japanese doomsday cult Aum Shinrikyo received world-wide attention after dispersing lethal sarin gas in the Tokyo subway. The attack killed 12 and close to 1300 fell ill from inhaling the dangerous gas. In 2001, the sect changed its name to Aleph and today leads a more quite life. The European Union classifies Aum Shinrikyo/Aleph as a terrorist organisation.[10]

The cult had tens of thousands of members at its peak; assets in the range of hundreds of millions of dollars, millions of which it spent on its chemical, biological, and nuclear weapons programs; hundreds of members with advanced technical training, in some cases from Japan's leading universities; and a substantial number of facilities where it could pursue its work in secret. Seen as a religious organization, prior to the Tokyo subway attack, Japanese authorities gave the group remarkably free rein.[11]

The leader of the sect, Shoko Asahara, was obsessed with nuclear weapons and the prospect of nuclear war. The members of the Aum Shinrikyo were to be the only survivors of a nuclear Armageddon at Doomsday.[12] The obsession could also be seen in the ambitious programmes conducted on various waepons of mass destruction.

The cult targeted Russia as a potential source of nuclear weapons, materials, and technology. It reportedly succeeded in recruiting tens of thousands of members there; reportedly recruited both staff members at the Kurchatov Institute (one of Russia's leading nuclear research centres, and a site where hundreds of kilograms of HEU was poorly secured and accounted for at the time) and in the town of Obninsk (site of the Institute of Physics and Power Engineering, where tons of HEU and hundreds of kilograms of weapon-grade plutonium were poorly secured and accounted for at the time). The cult established extended relationships with a variety of senior Russian officials, including the chairman of Russia's Security Council, and it sent senior cult officials on numerous weapons-shopping trips to Russia.[13] In 1994, sect leader Asahara's closest man Hayakawa conducted eight trips to Russia, trying to buy Aum a nuclear warhead.[14]

Chechen guerilla groups

There is a substantial record of interest in, and statements about, chemical, biological, radiological, and nuclear weapons by the more extreme Chechen terrorist factions. Still, it is important to be careful about the "evidence", as in the ongoing conflict, Russian officials have been quick to charge the Chechen with virtually any horrific act or intention imaginable. It is also important not to tar all Chechen nationalists with the same brush – there are many groups not in support of terrorist tactics, and probably even more who would not go as far as to using nuclear weapons. Actually, nationalists fighting for an independent Chechnya might be reluctant to actually use a nuclear bomb against Russia, fearing that the likely response might well effectively obliterate any chance for a functional future Chechen state.

The best documented incident involving Chechen fighters and radiological material—the placement of cesium-137 in a popular Moscow park in 1995—is an example of this kind of restraint: the Chechen fighters placed the material in the park and then informed the Russian media where it was, as a warning, without attempting to use the material for an actual attack.[15]

A number of indicators point to the fact that some Chechen groups could use violence to the extent of nuclear weapons. Many of us remember the attack at a Beslan primary school in September 2004. 32 heavily armed men held the school and all its students hostage, ending in a brutal massacre with over 300 victims – mostly children. Such an act of violence shows that there are groups capable of using extreme violence with civilian victims. Some of the most prominent Chechen factions have increasingly allied themselves with an extreme Islamic agenda that is more global than local, and there have long been ties between some Chechen factions and al Qaeda. Chechen fighters have trained in al Qaeda camps in Afghanistan, foreign al Qaeda fighters have fought in Chechnya, and Chechen fighters have fought for the Taliban and al Qaeda in Afghanistan.[16]

Some statements by Chechen terrorists and documents seized from them have suggested an interest in large-scale nuclear terrorism—either by sabotage of a major nuclear facility or use of a nuclear bomb—and Chechen terrorists have repeatedly indicated an interest in the use of radiological weapons. In 2002, then Chechen leader Aslan Makhadov warned that further acts of terrorism against Russia were likely and that it could not be excluded that some group takes over some nuclear facility. "The results may be catastrophic, not only for Russian society and for Chechen society, but for the whole of Europe", he said.[17]

Chechen groups might well be able to pull together the capabilities needed to acquire nuclear weapons or materials in Russia, though there is no solid evidence that they have done so to date. This, however, does not exclude that these groups in the future – independently or supported by international networks such as al Qaeda – can obtain nuclear weapons or material and technical expertise. Disarmament of all existing arsenals and comprehensive control over stockpiles of fissile material all over the world, therefore, is absolutely necessary.

A-Q Khan Network

A black market for nuclear weapons materials and technology, providing those who can pay enough with the capacity to destroy the world – it might sound like a Bond movie, but is actually as real as it gets. Abdul Qader Khan, more commonly called A Q Khan, is the father of the Pakistani nuclear bomb. He is a national hero, assumed to have raised Pakistan's international reputation and political power. The fact that he also is responsible for a advanced underground network providing Iran, Libya and North Korea with nuclear material does not seem to wipe off his heroic halo.

A Q Khan worked with nuclear weapons technology in the Netherlands in the 1970's. In 1975, following India's 1974 nuclear test, Pakistan became panicky not fall behind regarding nuclear development. Around the same time, Dutch authorities discovered that Khan had leaked top secret nuclear information to Pakistan. In 1976, Khan suddenly left the Netherlands and returned to Pakistan. With the help of contacts from his time in the Netherlands, he could quickly pull together a programme for uranium enrichment in Pakistan, making it possible for the country to conduct a nuclear test in 1998 and announce itself a nuclear weapon state.[18]

In the first years of the 21st century, suspicions grew that A Q Khan not only had developed Pakistan's nuclear weapon capacity, but also started an underground black market providing other actors with nuclear materials. Above all, Muslim countries were contacted, among these Egypt, Iran, Libya, Saudi Arabia and Syria. Documentation has popped up revealing that Khan offered Iraq to buy nuclear weapons material and technology during the 1990's – an offer that Saddam Hussein turned down.[19] Also Egypt, Syria and Saudi Arabia declined. There are suspicions about the A Q Khan network having contacted al Qaeda and helped the terrorist network acquiring nuclear secrets prior to the fall of the Taliban in Afghanistan.[20]

One thing is clear: when Iran after a lot of ifs and buts allowed for IAEA inspections in 2003, the inspectors found that the centrifuges used in the Iranian uranium enrichment programme were of Pakistani origin. The centrifuges were to the detail identical with those used by Dutch Urenco where the young A Q Khan had worked in the 1970's. Khan had brought the design home to Pakistan and then sold it on, e.g. to Iran.[21] During the 1980's some Iranian scientists also received training in Pakistan's most prominent nuclear research institutes.[22]

The A Q Khan contacts with North Korea are shrouded in mystery and hard to sort out. It is known

that Khan undertook a number of trips to North Korea and cooperated on the development of a Pakistani missile programme. There are suspicions that Khan during this cooperation may have tied contacts for future nuclear weapons affairs. Khan is said to have delivered centrifuges for uranium enrichment and nuclear weapon designs and other technical information to North Korea between the 1970's and early 2000's.[23] For a long time, the government of Pakistan denied that Pakistan would have any connection with the North Korean nuclear weapon programme. In 2005, however, Pakistan's President Pervez Musharraf confirmed that the A Q Khan network was responsible for supplying North Korea with uranium centrifuges. Musharraf was careful to underline that Khan in no other way was part of proliferating nuclear information to North Korea.[24]

The network's most ambitious customer, however, was Libya, which ordered a gas-centrifuge plant sufficient to produce enough highly enriched uranium to turn out roughly 10 nuclear weapons annually. In addition to the means to produce fissile material, the Khan network also gave Libya the information necessary to build a nuclear weapon.[25] On 19 December 2003, the Socialist People's Libyan Arab Jamahiriya (Libya) agreed to eliminate all materials, equipment, and programs resulting in the production of nuclear or other internationally proscribed weapons. Libya's leader Colonel Mu'ammar al-Qadhdhafi admitted that, in contravention of its international obligations under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), Libya had pursued a nuclear weapons program, allegedly to counter the covert Israeli nuclear program. In 2004, groups from the United States and Britain began dismantling Libya's nuclear weapons infrastructure with oversight from the International Atomic Energy Agency (IAEA).[26] Libya's decision to give up its nuclear weapons programme and join the NPT as a non-nuclear weapon state was the beginning of the unravelling of the A Q Khan network.

In February 2004, A Q Khan admitted his underground business with Iran, Libya, North Korea and other countries with an official apology in Pakistani television. According to the media, Khan admitted to having established the nuclear black market in order to allow for Muslim states to acquire nuclear weapons for increased security.[27] Khan claimed at his confession that the Pakistani government had never had anything to do with the illegal affairs. Many experts say this is impossible – that nuclear weapon proliferation to this extent could not have passed without the consent of Pakistan's government. Moreover, Khan used the government's military air craft for some of the transports.[28] President Musharraf announced the day after Khan's televised apology that he accepted the apology, Khan regardless being a national hero for developing the Pakistani nuclear weapon programme. Initially, Musharraf refused an arrest of Khan, but after increased pressure agreed to keep him in house arrest. Khan has his government's protection and no outsiders are allowed to meet or interrogate him. For example, IAEA inspectors are kept at a proper distance from the house where he is arrested.[29] Neither Khan nor his co-workers have, as of yet, been charges with their illegal nuclear weapons affairs.

The fact that A Q Khan's underground nuclear weapons black-market could persist so long without being revealed is frightening. Even though Khan is removed from the market, there is no saying that no similar nuclear black-market selling nuclear weapons, material and technology could be going on without our understanding – or could be created. As long as some states reserve the right to maintain nuclear arsenals, other states will desire their own. And those who want nuclear weapons will acquire these weapons, no matter what control mechanisms put in place. The best guarantee against nuclear weapon proliferation – to states as well as non-state actors – is complete elimination of all nuclear weapons from all the world's arsenals.

Nuclear weapons against terrorists?

Retaliating a terrorist attack with nuclear weapons is close to impossible. A terrorist group is most often not tied to a particular state, so how can it be determined against whom or what state the counter attack should be targeted? Nuclear retaliation against a terrorist group or a part of a terrorist group in a certain state would cause far to extensive harm to civilians to even be considered an alternative.

Resolution against weapons of mass destruction terrorism

In April 2004, the UN Security Council adopted resolution 1540. The Security Council is the highest decision making body of the UN, meaning all Member States are to follow decisions made by the Council. The main points of resolution 1540 are for all states nationally to prohibit and obstruct non-state actors from obtaining or developing weapons of mass destruction. The resolution strengthens export and import controls and call upon all states to participate in international dialogue and cooperation to hinder proliferation of weapons of mass destruction to non-state actors.

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1 http://www.cdi.org/terrorism/nuclear.cfm
2 http://www.nationalreview.com/comment/comment-riebling102402.asp
3 http://www.cdi.org/terrorism/nuclear.cfm
4 http://www.npr.org/news/specials/tradecenter/tradecenter.html
5 http://www.nti.org/e_research/cnwm/threat/demand.asp#status
6 http://www.pbs.org/wgbh/pages/frontline/shows/binladen/who/edicts.html
7 http://cns.miis.edu/pubs/other/sjm_cht.htm
8 http://www.nti.org/e_research/cnwm/threat/demand.asp#status
9 http://www.nautilus.org/archives/fora/Special-Policy-Forum/47_Albright.html
10 http://eur-lex.europa.eu/LexUriServ/site/en/oj/2005/l_340/l_34020051223en00640066.pdf
11 http://www.nti.org/e_research/cnwm/threat/demand.asp#_ftn35
12 http://rand.org/pubs/documented_briefings/2005/RAND_DB458.pdf
13 http://www.fas.org/irp/congress/1995_rpt/aum/part06.htm
14 http://www.ssi.se/forskning/Rapporter/P1317_Otillaten_hanter031007.pdf
15 http://www.nationalreview.com/comment/comment-riebling102402.asp
16 http://www.nti.org/e_research/cnwm/threat/demand.asp#_ftn45
17 http://ann.sagepub.com/cgi/reprint/607/1/64
18 http://www.globalsecurity.org/wmd/world/pakistan/khan.htm
19 http://www.isis-online.org/publications/southasia/khan_memo.html
20 http://www.twq.com/05spring/docs/05spring_albright.pdf
21 http://www.opendemocracy.net/globalization-india_pakistan/khan_iran_3956.jsp
22 http://www.carnegieendowment.org/static/npp/Khan_Chronology.pdf
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