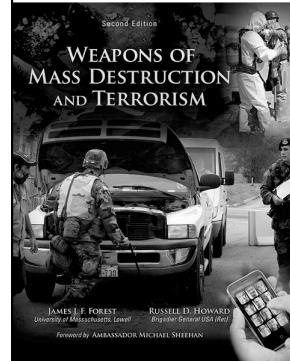


AGENDA

- Admin stuff
 - Papers
 - Observations on the reading assignments?
- CBRN Weapons
- Analyzing the WMD Terror Threat
- Theories
- Projecting the Future WMD Terror Threat

SUGGESTED READING MATERIAL



Published 2012 by James Forest and Brigadier General (retired) Russell Howard

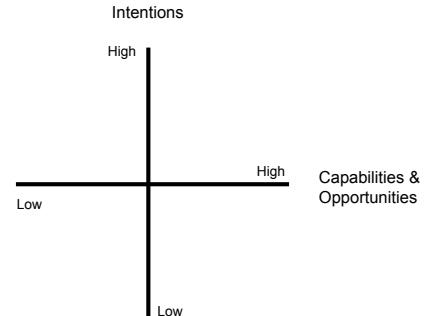
Foreword by Michael Sheehan, DASD for SO/LIC

Preview materials available at <http://www.WMDTerror.net>

CBRN WEAPONS

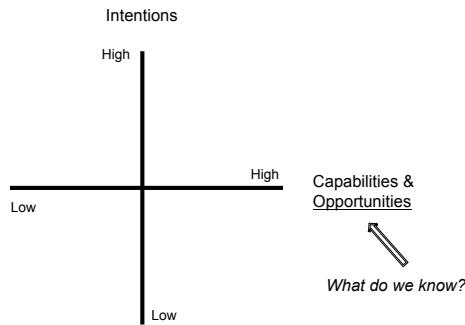
	Chemical	Biological	Radiological	Nuclear
Description	Harmful chemicals	Harmful pathogens	Dangerous radioactivity	Massive destruction
Categories	Choking, blood, blister, nerve toxin	Virus, bacteria, toxin	RDD, RED	Fission, fusion
Delivery	Sprayer, fumes, gas, powder, explosives	Sprayer, fluids, infected item exposure	Explosives, radioactive item exposure	Gun-type, implosion, small or large
Agent Examples	Mustard, sarin, chlorine, vx, phosgene, lewisite, cyanide	Anthrax, ricin, smallpox, tularemia, marburg, ebola	Cesium-137, Cobalt-60, Iridium-192, Strontium-90	Uranium-235 Plutonium-239

ANALYZING THE WMD THREAT



Where do your "favorite" terrorist groups belong in this diagram?

A MODEL FOR ANALYSIS



CAPABILITIES

Which terrorist groups have high capabilities? How do we know?

Group capabilities depend upon:

- Knowledge and skills of organization's members
- Finances
- Environmental context
 - Local grievances that motivate terrorist group recruitment, local sympathizes, etc.
 - access to materials, safe haven, etc.
- Commitment to learning (from own mistakes or successes, from other group strategies, tactics, etc.)
- Other variables?

OPPORTUNITIES TO ACQUIRE CBRN

- Transfer of an intact weapon from a state sponsor
 - The theft or purchase of materials to make and detonate weapons
 - WMD designs, instruction manuals available online

“Pre-positioned WMD”

- Nuclear power plants, chemical storage facilities, biotechnology labs
 - Dams, water protection infrastructure (e.g., Katrina)
 - Urban transportation of toxic chemicals, radiological sources
 - Dual use problem of many technologies, CBR materials

RADIOLOGICAL SOURCES

- 1987: Goinoia, Brazil: old discarded x-ray machine with canister of "glowing material" (cesium-137); kills 4 people, hundreds sick
 - 1998: 19 small tubes of cesium are stolen from a Greensboro, NC hospital, and have never been recovered
 - 2001: strontium-90 stolen from aging Russian lighthouse
 - 2003: Attempt to smuggle (highly radioactive) cesium-137 and strontium-90 from Georgia to Turkey
 - 2003: Chinese doctor Gu Tianming attacks colleague with iridium-192
 - 2003: Schoolteacher in Bangkok arrested attempting to sell cesium-137
 - 2006: Alexander Litvinenko, former Russian spy, is poisoned with radioactive polonium-210

IAEA Trafficking Incident Database

AQ KHAN NETWORK



Abdul Qadeer Khan, headed Pakistan's nuclear program for some 25 years; considered "national hero"

Built a clandestine network, smuggled blueprints out of the Netherlands, etc. in order to develop this nuclear program

28 May 1998: Success
nuclear device

1990s-2000s: Intelligence agencies are increasingly convinced Khan is leading international network, supplying uranium enrichment equipment to at least one customer in the Middle East (thought to be Libya)

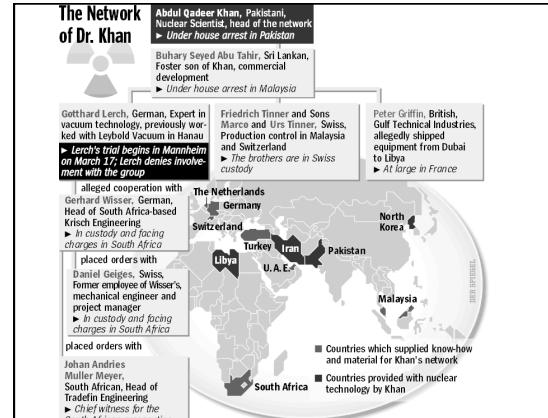
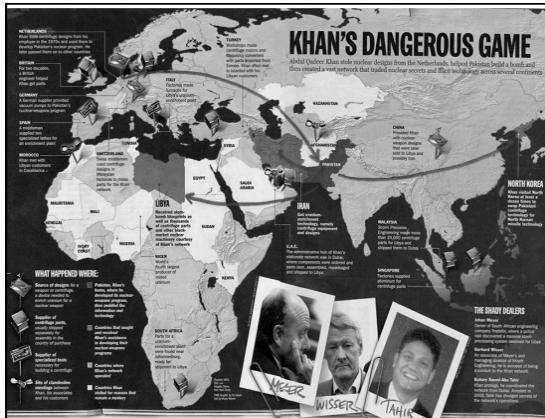
October 2003: Interception of a ship headed for Libya carrying centrifuge parts; IAEA warns Pakistan of possible nuclear leaks

February 2004: Khan makes a televised confession, after which he receives a presidential pardon and is confined to "house arrest" (released 2009)

"NUKES-R-US": ITEMS FOR SALE

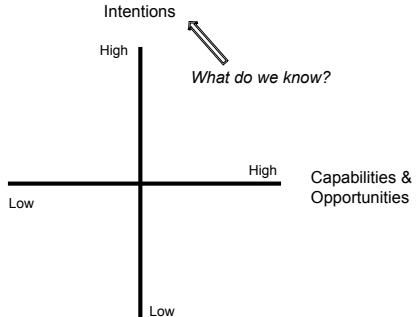
Products offered by Khan's network included:

- A comprehensive “starter kit” for uranium enrichment program
 - Rudimentary P-1 centrifuge blueprints, a variant of a design that Khan stole from Urenco in the 1970s
 - More sophisticated P-2 (Chinese-aided) centrifuge designs
 - Necessary components to build P-2 centrifuges
 - State-of-the-art P-3 centrifuges
 - Blueprints of Chinese nuclear warheads
 - Two ton of uranium hexafluoride, enough for one nuclear bomb if sufficiently enriched
 - Contact information for consulting services in assembly and repair



Break

A MODEL FOR ANALYSIS



INTENTIONS

- "The probability of a terrorist organization using a chemical, biological, radiological, or nuclear weapon, or high-yield explosives, has increased significantly during the past decade."
– 2003 US National Strategy for Combating Terrorism
 - "Terrorists have declared their intention to acquire and use weapons of mass destruction (WMD) to inflict even more catastrophic attacks against the United States . . . and other interests around the world."
– 2006 US National Strategy for Combating Terrorism
- "Dozens of identified domestic and international terrorists and terrorist groups have expressed their intent to obtain and use WMD."
– Denis Blair, Director of National Intelligence, 2010
- "There is a high likelihood of some type of WMD terrorist attack by the year 2013."
– Commission on the Prevention of WMD Proliferation and Terrorism, 2008

WMD TERROR ATTACKS

History of WMD attacks by non-state actors is very thin . . .

- 1984, The Dalles, Oregon: Rajneeshes poison locals with salmonella
- June 1990, Sri Lanka: Liberation Tigers of Tamil Eelam (LTTE) used chlorine in its assault on a Sri Lankan Armed Forces camp at East Kiran
- Japan, 1994-1995: Aum Shinrikyo uses sarin nerve agent for attacks in Matsumoto and Tokyo
- U.S., September-October 2001: anthrax attacks through U.S. mail
- Russia, 1995: Chechen rebels planted a dirty bomb in Moscow's Ismailovsky Park, but did not detonate

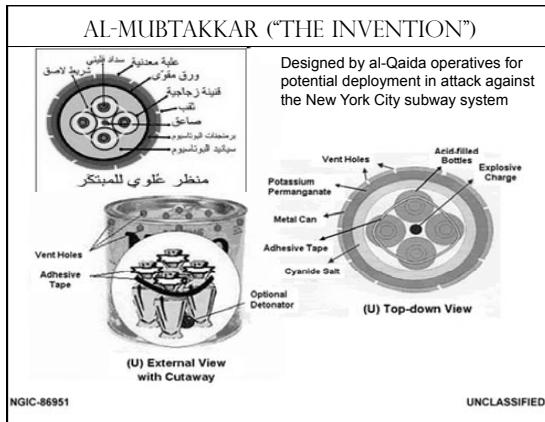
WEAPON EFFECTS

Different interests according to weapon type

- Biological and chemical weapons can be deployed silently. Effects produced by chemical and biological weapons are usually delayed and spread over time.
- Radiological weapons involve both explosion and long-term effects
- Nuclear weapons are unique in their explosive energy (derived from fission) which can cause catastrophic damage and long-term radiation
- Terrorists prefer spectacular, massive impact, instant worldwide publicity, shock & awe effect
- Thus, nuclear or radiological may be more likely, but are more significantly more difficult

INDICATIONS OF CBRN INTENT

- 1998: Chechen rebels attempt to detonate dirty bomb on railway
- 2002: Jose Padilla charged with Al Qaida dirty bomb plot in US
- 2003: Kamal Bourquass indicted in north London for raw ingredients for making cyanide and ricin, instruction manuals
- 2004: seven pounds of cyanide salt are found during a raid on a Baghdad house reportedly connected with al Qaeda
- 2004: a "chemical laboratory" is discovered in Fallujah containing potassium cyanide, hydrochloric acid, and sulfuric acid
- 2007: Australian home-grown terrorist group allegedly plans to attack the Lucas Heights nuclear reactor with rocket launchers
- August 2008: FARC attempts to sell uranium (not weapons-grade)



A LONE WOLF WMD TERROR THREAT?

9 December 9, 2008: James Cummings, resident of Belfast, Maine, shot dead by his wife; had \$2 million inheritance, and believed to have ties with white supremacist groups

Radioactive materials found in the home:

- Four bottles of depleted uranium 238, purchased online from [United Nuclear Scientific Equipment & Supplies](#)
- Two jars of thorium 232, produced at home from electrodes
- Beryllium, purchased from a vendor in Colorado



James Cummings



346 High Street
Belfast, Maine

Explosives materials found in the home:

- Four 1-gallon containers of 35% hydrogen peroxide (necessary precursor for the manufacture of peroxide-based explosives – used in London 2005 suicide attack, et al.)
- Lithium metal, thermite, and aluminum powder (materials used to sensitize and amplify the effects of explosives)
- boron, black iron oxide and magnesium ribbon

Instructions for making "dirty bombs" are also found, including information about cesium-137, strontium-90 and cobalt-60

Source: FBI IIR 4 218 1563 09

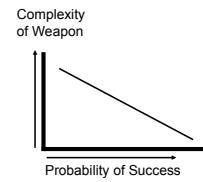
THEORIES

Many different theories proposed as to why so few WMD terrorist groups have crossed the WMD threshold

- Practical Constraints Theories
- Strategic Constraints Theories
- Environmental Constraints Theories

1. PRACTICAL CONSTRAINTS

- The more complex the weapon, the lower the probability of success
- WMDs are far more expensive, difficult to acquire and handle
- For the most part, we can't really test these weapons to make sure we've got the right formula, delivery mechanism
- "These weapons are just too complicated . . ."



2. STRATEGIC CONSTRAINTS

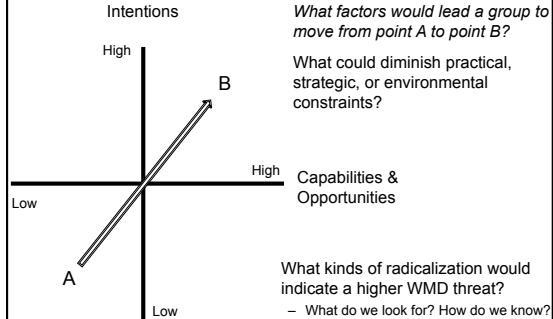
- Limited (if any) strategic benefit from developing, acquiring, using a WMD compared to other weapons
 - Depends on ideology, local context; *will a WMD help us achieve our objectives faster/better than other means?*
- Could be counterproductive
 - Deemed repulsive by core constituencies, general public
 - Provoke massive government response

3. ENVIRONMENTAL CONSTRAINTS

- Access to core materials needed to construct WMD is difficult
 - In many cases, may want to attack in foreign country
 - Either need to smuggle a weapon across border, or access materials and manufacture weapon in unfamiliar territory
- International community is making huge strides in non-proliferation, intelligence and interdiction

YOUR THEORY . . . ?

PROJECTING THE FUTURE WMD THREAT



FINAL THOUGHTS

- The threat is real, but within narrow parameters
- Most important dimensions:
 - Motivations / Intentions
 - Capabilities
 - Opportunities
 - Constraints to overcome . . .

DISCUSSION / FINAL EXAM

- What are the challenges associated with terrorist acquisition and use of CBRN-E weapons?
- Under what circumstances would a well-funded terrorist group launch a WMD attack against the US, and what kind of weapon would they use?
- Some argue that as long as high-yield explosives remain relatively easy to acquire or manufacture, the threat of a WMD terrorist attack is really exaggerated. Do you agree? Why or why not?
- How can we influence groups to stay away from the WMD threshold? What can be done to exacerbate the practical, strategic, environmental constraints they already face?

QUESTIONS?