



INTERNATIONAL ATOMIC ENERGY AGENCY

COMMITTEE DESCRIPTION

The International Atomic Energy Agency (IAEA), established in 1957, helps countries with their nuclear energy needs, as well as how to safely plan the construction of nuclear power plants. They also help train people in how to use nuclear technology for various different needs.

The IAEA is also responsible for monitoring much of the world's nuclear materials used for weapons as well as for peaceful purposes. Even the materials used in research facilities or power plants, for example, can be used to produce a nuclear weapon. This makes monitoring nuclear activity very difficult; IAEA must monitor both governmental and civilian facilities. The success of IAEA's monitoring program depends on the cooperation of governments. Governments sometimes do not like to allow IAEA inspectors to search their nuclear facilities or research buildings, because many defense secrets are kept there. Other times, governments try to create nuclear programs hidden from the attention of the IAEA.

PREVENTING NUCLEAR TERRORISM

INTRODUCTION

In 1945, the United States ended World War II by releasing two nuclear bombs over Japan. The weapons used were the most destructive ever known to humankind. The destruction in Japan was so extensive that the international community realized nuclear weapons could endanger the safety of the world. Not only is the strength of a nuclear explosion devastating, but the radiation produced by the blast lingers, causing illness and deformities in survivors.

This tremendous power makes nuclear weapons an especially frightening technology. It also makes nuclear weapons appealing to terrorists. While many states have struggled for decades to create nuclear weapons, governments are at least subject to the demands of the international community. Countries that have tried to develop a nuclear weapons program face great pressure to **disarm**. However, **terrorist** groups are not accountable to the international community. Terrorist groups, non-government groups that rely on violence against civilians as a strategy, are notoriously unstable. A weapon as destructive as a nuclear bomb would give terrorists enormous physical and political power.



In a world increasingly plagued by the threat of terrorism, dismantling nuclear weapons and securing nuclear materials is more important than ever. The UN and individual member states must do everything possible to prevent terrorist organizations from acquiring or producing nuclear weapons.

“We are not just dealing with the possibility of governments diverting nuclear materials into clandestine weapons programs. Now we have been alerted to the potential of terrorists targeting nuclear facilities or using radioactive sources to incite panic, contaminate property, and even cause injury or death among civilian populations.” - *Mohamed El Baradei, Director-General of the International Atomic Energy Agency*

Source: “Nuclear and Radiological Terrorism,” Carnegie Endowment for International Peace, www.carnegieendowment.org/npp/publications/index.cfm?fa=view&id=1083

BACKGROUND

Nuclear technology involves the reactions of particles within atoms. The release of these particles during nuclear reactions is called **radiation**, which has a number of important scientific applications. Radiation can be used to diagnose illnesses, to treat cancers, to disinfect medical equipment, and to perform scientific research.ⁱ The energy released during nuclear reactions can be used in power plants, and to produce electricity.ⁱⁱ In fact, because nuclear science offers groundbreaking advancements in many fields and creates opportunities for development, the United States and Soviet Union long ago provided radioactive materials to other countries for expressly peaceful purposes.ⁱⁱⁱ

As of June 2008, there were 444 nuclear power plants in the world with another 34 under construction.^{iv} At least 30 countries have **nuclear power reactors**, and over 70 countries have major facilities with nuclear material in them.^v Although nuclear materials and technologies are closely monitored by the International Atomic Energy Agency (IAEA), this monitoring requires the cooperation of governments, which are sometimes eager to create nuclear weapons of their own. Furthermore, terrorist organizations often operate in politically unstable areas, such as some parts of the Middle East and Asia, where governments are not powerful enough to disrupt them. This political instability makes it impossible for the IAEA, or any other international organization, to determine if they are trying to get nuclear weapons.



Angra Nuclear Power Plant, located in Brazil. This power plant was created through a nuclear technology exchange program between Germany and Brazil. It represents one of many examples of the peaceful use of nuclear technology.



Source: www.eletronuclear.gov.br

Kinds of Nuclear Terrorism

In April 2005, the United Nations' *International Convention on the Suppression of Acts of Nuclear Terrorism* defined **nuclear terrorism** as the threat or execution of a threat to use any nuclear or radiological materials in a harmful way by a non-state actor.^{vi} Even using threats or force to illegally receive or sell these materials is considered an act of nuclear terrorism, according to the Federation of American Scientists. Helping any person or groups take the above action can result in the charge of nuclear terrorism.^{vii}

Nuclear weapons are extremely difficult to create or acquire. Even building a bomb similar to the first nuclear weapon ever deployed would require a highly sophisticated nuclear weapons program—a daunting task for even a well-organized terrorist group. They would have to illegally obtain approximately 30 pounds of extremely rare and expensive **nuclear material**, like highly enriched uranium (HEU) or plutonium, in order to produce an actual nuclear bomb. A more sophisticated nuclear bomb would require even more high-grade nuclear material. Due to the fact that these weapons are both dangerous and valuable, they are closely monitored by the IAEA and by the governments that possess them.^{viii}

CRITICAL THINKING

There are many millions of machines and pieces of equipment with radiological materials. It would be very difficult for an international organization to monitor all of these materials individually. What sort of difficulties can you see for the owners of these materials in protecting their property? How can the international community more efficiently help?

An easier weapon to produce is a radiological device, often called a “**dirty bomb**,” in which an explosive is used to spread low-grade radioactive material over a public area. Even though a dirty bomb would not kill thousands of people, as a nuclear explosion would, it could cause billions of dollars in damage and would make thousands of people sick from radiation exposure. Exposure to radiation can cause tissue damage, radiation poisoning and even cancer. This radiation could contaminate buildings and food sources, potentially affecting millions of people.

The materials needed to produce a dirty bomb are readily available to terrorist groups. While producing a nuclear bomb requires obtaining a very specific, powerful nuclear material, a dirty bomb can be made from the radiological substances in hospital equipment, oil drilling facilities or university laboratories.^{ix}

Security Failures

Even though the IAEA monitors nuclear reactors, the plants used to produce electricity, the vast majority of **radiological material** is not contained in them. Most facilities that contain dangerous radiological materials, such as hospitals, universities, and other research facilities, are not as secure as they should be. The safety efforts of most companies that own radiological materials focus on preventing accidental exposure to radiation. Often, when the equipment becomes obsolete, it is



simply discarded, even though the radiological material is still active. Many radioactive materials, which could be used to create a dirty bomb, such as spent X-ray parts, are simply thrown away and discovered later in scrap yards, vehicles and residential buildings.^x Such carelessness with these materials could lead to them falling into the hands of any person who finds them.

Even though the IAEA carefully monitors nuclear activity and products, the Agency is only as effective as the government it monitors. Russia, which owns approximately 16,000 nuclear weapons, does not have the ability to properly secure them.^{xi} Over half of Russia's nuclear weapons facilities do not have modern security systems or dependable tracking systems. Weapons-grade materials have been stolen in the past,^{xii} and employees at some of Russia's most powerful nuclear research institutions have tried to sell nuclear materials and technology to terrorists.^{xiii}

Pakistan, in particular, poses a threat to nuclear safety. The creator of Pakistan's nuclear weapons program, for example, was found to be operating an extensive **black market** for nuclear technology.^{xiv} After secretly creating Pakistan's own nuclear arsenal, Dr. Abdul Qadeer Khan began selling nuclear technology and equipment to countries all over the world, including Iran, Libya and North Korea—all unstable governments with histories of aggression. Some experts worry that this technology and equipment might be purchased or stolen by terrorist networks or that Pakistan's military might sell a nuclear weapon on the black market. In late 2007, a multitude of crises within Pakistan brought the threat of Pakistan's nuclear materials falling into the wrong hands back to the forefront. President Musharraf acted to bring all of Pakistan's nuclear weapons under the control of one authority, but the instability of Pakistan remains a concern.^{xv}

These sorts of security gaps have already been exploited. Between 1993 and 2005, the IAEA has learned of over eight hundred reported cases of illegal activity involving radioactive materials. These activities range from “illegal possession and attempted sale and smuggling, to unauthorized disposal of materials and discoveries of lost radiological sources.” In 16 of the cases, the materials being smuggled were nuclear instead of merely radioactive. HEU and plutonium are the base components of nuclear bombs.^{xvi}

Terrorist Organizations

As terrorism becomes more of a multinational issue, and terrorist organizations grow larger and more far-reaching, its advocates may seek out bigger and more powerful weapons. It can be presumed that groups acting on a global scale would have the will and capital needed to obtain a true nuclear weapon.

It takes approximately 25 kg of HEU to produce a large enough yield to detonate a nuclear weapon, what is defined by the IAEA as a ‘significant quantity.’^{xvii} Most cases of the IAEA discovering smuggled or illegal transport of HEU or plutonium have only been measurable in grams, with one or two exceptions.^{xviii} This is not to say that there is little danger of a group one day amassing enough material for a bomb. The US Department of Energy has warned that “it may even be possible for intruders in a fissile-materials storage facility to use nuclear materials for onsite assembly of an improvised nuclear device in the short time before guards could intervene.”^{xix}



Al Qaeda, the terrorist group that attacked New York City's World Trade Center on September 11, 2001, is a prime example of the global terrorist network described above. As early as 1994, al Qaeda attempted to purchase uranium, paying \$1.5 million for it; the uranium turned out to be fake.^{xx} Al Qaeda leader Osama bin Laden described the acquisition of nuclear weapons as a "religious duty," and called for the deaths of millions of American citizens.^{xxi}

"The risk of a complete nuclear device falling in to the hands of terrorists, or a would-be-nuclear-weapon state is a nightmare scenario, but because of gaps in Russian warhead security, it is a possibility."

Source: "Preventing Nuclear Terrorism," Carnegie Endowment for International Peace, www.carnegieendowment.org/npp/publications/index.cfm?fa=view&id=950

Russia has a history of being contacted by such groups to provide nuclear information. In October 2000, Raisa Vdovichenko, a Russian Security Council member, told journalists about an issue involving the Taliban, the former leaders of Afghanistan. He said that representatives of the Taliban approached a scientist at, "an institution related to nuclear technologies to go to their country to work there in this field."^{xxii} While that worker did not go, three of his fellow workers left for other countries. It is not known exactly where they went.^{xxiii}

"A capable and well-organized terrorist group plausibly could make, deliver, and detonate at least a crude nuclear bomb capable of incinerating the heart of any major city in the world."
– May 2004 Report of Harvard University's Project on Managing the Atom

Source: "Nuclear Terrorism: A Brief Review of Threats and Responses" CRS Report for Congress, Congressional Research Service, September 2004, www.fas.org/irp/crs/RL32595.pdf

Aum Shinrikyo, a Japanese terrorist group famous for using nerve gas to kill 12 commuters on subways in 2005, has also tried to obtain nuclear weapons. Russian and Japanese press have alleged that Aum Shinrikyo recruited scientists at Russian nuclear research facilities and established relationships with top Russian security officials, but these claims have yet to be proven.^{xxiv}

Terrorist factions of the Chechen separatist movement in Russia also pose a threat to nuclear safety. In 1995, Chechen fighters placed radiological material in Moscow's Izmailovskiy Park as a threat to the Russian government.^{xxv} Chechen leadership have since indicated that they may try to obtain a full-scale nuclear weapon in the future.^{xxvi}



serum gas attacks of 1995.

Source: http://aboutjapan.japansociety.org/content.cfm/sarin_gas_attack_cleanup

CRITICAL THINKING

It is easy to confuse terrorist networks and aggressive states. This is especially true when a state harbors terrorists or supports terrorist actions. The international community treats aggressive states and terrorists very differently. How are they different? How should the international community address

Political Problems with Nonproliferation

The insecurity of nuclear weapons, nuclear material and radiological material is a threat to the entire international community. In light of this, the international community must ensure that those countries that possess any or all of these technologies are in complete control of the materials they work with. It can be argued that the easiest and safest way to keep nuclear weapons out of the hands of terrorists is for nuclear powers to disarm their nuclear stockpiles. These countries that have invested years of research and millions of dollars in creating their nuclear weapons programs, however, are unwilling to do this.

In lieu of complete disarmament, the next safest option is for those states that are nuclear-capable to cooperate in reducing their weapons stockpile and securing their radiological materials. The United States and Russia, which have more nuclear weapons than all other countries combined, work closely to ensure the protection of Russia's stockpile; the US has even funded the dismantling of Russian nuclear arms.^{xxvii} However, allowing the United States to monitor Russia's weapons disarmament poses the risk of revealing defense secrets. Countries that rely on the international community to disarm nuclear weapons or protect nuclear materials may feel that their security is being compromised.^{xxviii}

Currently, there are a total of nine states that are believed to possess nuclear weapons. They are the United States, United Kingdom, the Russian Federation, France, The People's Republic of China, Iran, Israel, India, Pakistan, and the Democratic People's Republic of Korea (North Korea). None of these states are willing to completely disarm, believing nuclear weapons are a vital part of their defense. The only state that has ever willingly given up a nuclear program that actually developed weapons is South Africa.^{xxix}

PAST INTERNATIONAL ACTION

The Non-Proliferation Treaty (NPT)

To stop the spread of nuclear weapons, UN member states adopted the *Treaty on the Non-Proliferation of Nuclear Weapons* (or NPT, for "Non-Proliferation Treaty") in 1970. The NPT had three main points. First, the five countries with nuclear weapons at that time—China, France, the Soviet Union (today the Russian Federation), the United Kingdom and the United States—would not give nuclear weapons or technology to other countries. Second, non-nuclear-weapons countries would not develop or obtain weapons, though they are allowed to possess civilian nuclear programs for energy. Third, all countries would discuss disarmament and create "a treaty on general and complete disarmament under strict and effective international control."^{xxx}



CRITICAL THINKING

During the Cold War, countries competed to produce powerful and destructive nuclear arsenals. They did not necessarily want to use these weapons; instead the weapons were a demonstration of power and a deterrent to attack. Do you think terrorists want to acquire nuclear weapons for similar or different reasons? Explain.

The goal of the NPT was to prevent new countries from getting nuclear weapons. It did not ban nuclear weapons as long as they were owned only by the five countries mentioned above.

The IAEA oversees if and how countries are following the NPT. To do this, the Agency sets up “safeguard” systems with each country that has ratified the treaty. These “safeguards”—which come from separate agreements between each country and the IAEA—allow officials to inspect nuclear facilities. Additionally, in 1998, the model Additional Protocol was developed, providing a framework for granting the IAEA greater powers in its investigative duties. So far, 88 countries have signed onto Additional Protocols to their safeguard agreements and have brought them into force.^{xxxii}

The NPT has been a very successful international document, but it has not always been followed. For instance, the Treaty states that the international community should have serious talks about complete nuclear disarmament. After almost 40 years, disarmament is still a major question.

SAFEGUARDS

“Safeguards” have been important elements in the disarmament debate.

A safeguard is an activity that allows the IAEA to make sure that countries do not use nuclear technology to make weapons. Countries set up this system through the NPT, but each country makes its own safeguards agreement with the IAEA. Today, there are over 140 agreements in place.

Through safeguards, countries can make sure that others are following the rules. Safeguard activities can include inspections, video-camera monitoring and reviewing reports from countries. Safeguards can be made even more effective if countries sign “additional protocols,” which give IAEA inspectors more power. Not all countries sign these documents, though.

For more information on safeguards and IAEA inspections, visit www.iaea.org/publications/factsheets/english/sg_overview.html

Conventions and Resolutions

In 1987 the *Convention on the Physical Protection of Nuclear Material* entered into force. This convention required that all parties to the convention take “appropriate steps” to ensure that nuclear materials are protected from theft and illegal trafficking. The convention requires that states not export, import or allow the transportation of dangerous nuclear or radiological materials unless the state can ensure that the material will be completely protected. If dangerous nuclear or radiological materials are stolen, states must cooperate with international organizations and with other countries to recover



the materials. The convention even describes the kinds of protection dangerous materials will require, such as constant surveillance, trusted guards and physical barriers.^{xxxii}

In 1997, the UN General Assembly (GA) adopted Resolution 51/210, *Measures to Eliminate International Terrorism*, which noted the increasing frequency of terrorist attacks. The resolution calls for member states to enter into international agreements that help prevent terrorist activity. This includes sharing information and assisting attempts to arrest and prosecute suspected terrorists. The resolution also called for the creation of a committee to study the prevention of international terrorism.^{xxxiii} The GA passed Resolution 52/164, the *International Convention for the Suppression of Terrorist Bombings*, in 1998. This resolution compels states to arrest and punish any terrorists who attempt to create, deliver or detonate a bomb, and to assist one another in the arrest of terrorists.^{xxxiv}

In April 2005, the General Assembly adopted the *International Convention for the Suppression of Acts of Nuclear Terrorism*. This document touches on many of the sensitive issues involving nuclear terrorism. For example, it recognizes the right of every member state to benefit from nuclear technology. While it requires countries to share information necessary to protect themselves from nuclear crimes, it also allows them to keep certain information—such as defense tactics or surveillance technology—secret. The convention requires that states cooperate to investigate arrest and prosecute all nuclear terrorists, regardless of their citizenship or national origin.^{xxxv}

In spite of these important international agreements, experts still worry that not enough has been done to secure nuclear materials. In 2004, a report released by American scientists indicated that most security efforts are made on a case-by-case basis. Even though the *Convention on the Physical Protection of Nuclear Materials* describes how certain materials or weapons must be secured, no comprehensive international plan has been established to protect these dangerous substances.^{xxxvi}

RECOMMENDATIONS FOR CREATING A RESOLUTION

Delegates should work to address the following when creating draft resolutions:

- Setting universal guidelines for the protection of nuclear and radiological material;
- Furthering efforts to disarm or reduce nuclear stockpiles in nuclear-capable countries;
- Sharing information about terrorist networks and improving international efforts to fight terrorist organizations; and
- Improving transparency in the security process, so the international community can be certain that countries are protecting their dangerous materials, without compromising national security.



QUESTIONS TO CONSIDER

1. Does your country have nuclear weapons? Why or why not?
2. Does your country have a nuclear-energy program or programs that use radiological materials? If so, how does your country protect its hazardous materials?
3. Is your country affected by terrorism? Does your country harbor terrorist networks? Do neighboring countries? Is your country targeted by terrorist organizations?
4. Has your country signed the Non-Proliferation Treaty? Why or why not? Has it ever in the past or present had a nuclear program of any sort? What changes can be made to better the NPT?
5. Has it signed the conventions and resolutions on preventing terrorism and protecting nuclear materials? Why or why not?

SOURCES FOR FURTHER RESEARCH

International Atomic Energy Agency www.iaea.org

Federation of American Scientists www.fas.org

Arms Control Association www.armscontrol.org

“Proliferation News and Resources,” Carnegie Endowment for International Peace
www.carnegieendowment.org/npp



TERMS AND CONCEPTS

Disarm: to dismantle weapons programs.

Terrorist: a person who engages in terrorism. Terrorism is the use of violence against civilians to cause fear, in order to achieve a political or religious goal.

Radiation: the release of energy and subatomic particles from a material.

Nuclear power reactors: the facilities that use nuclear technology to produce electricity.

Nuclear materials: materials that can release powerful atomic energy through the breakdown of its atoms. “Nuclear materials” usually refers to the powerful substances that can be used to create a bomb – such as enriched uranium or plutonium.

Radiological materials: materials that release subatomic particles called “radiation.” Radiological materials involve the release of atomic energy and the breakdown of atoms. They may loosely be called “nuclear materials” because they involve the nucleus of the atom, but they are not as powerful or dangerous as high-grade nuclear materials. Radiological materials cannot be converted in to a full-scale nuclear weapon. Instead, they are generally used for scientific research.

Nuclear terrorism: the threat to use any nuclear or radiological materials in a harmful way.

Nuclear weapon: a weapon of mass destruction that detonates by nuclear reaction, the interaction of particles within an atom. Nuclear weapons are the most destructive weapons ever created by humans. They have only been detonated twice in history, and even those initial uses are considered controversial.

Dirty bomb: a weapon that uses an explosion to spread low-grade radiological material over a wide area, causing injury or death from radiation exposure.

Black market: the purchase and sale of illegal goods. Black market operations are secretive and often involve networks of criminal organizations as both suppliers and consumers of illegal materials.

Safeguards: an activity that allows the IAEA to make sure that countries do not use nuclear technology to make weapons. Through safeguards, countries can make sure others are following the rules. Safeguard activities can include inspections, video-camera monitoring and reviewing reports from countries.



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