

Benchmark 2

The Current State of Affairs

To gain a comprehensive understanding of national and international controls of nuclear energy, the spread of nuclear energy in the world today, and some issues involved with the use and spread of nuclear energy.

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Objective 1

An understanding of national and international controls of nuclear energy.

Some Organizations That Regulate Nuclear Activity

- International Atomic Energy Agency (IAEA)
<http://www.iaea.org/>
- Argentine Nuclear Regulatory Authority (ARN)
<http://200.0.198.11/Rese%F1a%20de%20Actividades/ingles02/0001.htm>
- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
<http://www.arpansa.gov.au/Regulation/Branch/index.cfm>
- Russian Ministry for Atomic Energy (Minatom)
<http://www.minatom.ru/>
- U.S. Nuclear Regulatory Commission (NRC)
<http://www.nrc.gov/>

Nuclear Treaties and Agreements

1963 Limited Test Ban Treaty- An agreement between the US, USSR, and UK. It prevented nuclear testing above ground, underwater, and in outer space. It allows testing to happen underground as long as the radioactive fallout is not widespread. There have been 116 countries that have signed this. China, that has not signed, violated the guidelines when they did a testing in 1992.

1967 Outer Space Treaty- An agreement between the US, USSR, and UK that banned putting weapons of mass destruction in outer space for military purposes. There have been 86 nations to sign this agreement.

1968 Nuclear Non-Proliferation Treaty- An agreement with the US, USSR, UK, and 133 non nuclear weapon countries that banned the stretch of nuclear weapons. It made sure that countries that did not use nuclear weapons did not start producing them. This was a permanent treaty by May 1995.

1972 Strategic Arms Limitation Treaty I ADM Treaty- Treaty between the US and USSR that restricted the anti-ballistic missile system to an utmost of 100 ABMS launchers and missiles. This treaty also bans application and testing of any of these components.

1972 Strategic Arms Limitation Treaty I Interim Agreement- An agreement between the US and USSR to maintain the amount of strategic ballistic missiles at the same stage for 5 years. The manufacturing of more ICBM silos was controlled, but SLBM launcher quantities could increase if there was a decline in ICBM of SLBM.

1979 Strategic Arms Limitation Treaty II- An agreement between the US and USSR that limited offensive weapons systems and strategic systems. A limit of 2,400 was put on tactical nuclear weapon delivery automobiles, and a max of 1,320 was put on ballistic missiles. In 1986, the United States voided this agreement.

1987 Intermediate-Range Nuclear Forces Treaty (INF)- A treaty between the US and USSR that restricted midway range missiles, short range missiles, and all equipment and facilities that were associated. Inspection on-site was used to make sure the treaty was followed by both countries.

1991 Strategic Arms Reduction Treaty- An agreement between the US and USSR that put a limit on the amount of strategic nuclear delivery vehicles to 1,600. The amount of warheads per country was also limited to 6,000. U.S and Soviets warheads were also reduced by 15% and 25%.

1993 Strategic Arms Reduction Treaty II- An agreement between the US and Russia that further decreased the amount of warheads by 5,000. December 4, 2001 was the date that both sides had to limit their warheads by.

1996 Comprehensive Test Ban Treaty (CTBT) - An agreement signed by the US, CIS, UK, and 90 other countries that banned all nuclear tests above and

below Earth's surface. Supervising systems were worldwide and included 170 seismic stations that were there to monitor for nuclear explosion signs. The only nuclear country to not sign was India and they have carried out five nuclear tests in recent times.

(“Nuclear Treaties & Agreements” 1-2)

Nuclear Power Laws

Atomic Energy Act of 1954- A fundamental law that both civilians and the military uses of nuclear materials must abide. Civilians and facilities must be licensed to control nuclear materials. It is the duty of the NRC to rule or order the use. The law also declares that the development of nuclear weapons must be in control and be directed to use for world peace, general welfare, and to increase standard of living. (“Nuclear Power Now” 1)

Energy Reorganization Act of 1974- Established the Nuclear Regulatory Commission (NRC). Its responsibilities are split up into functions, the Department of Energy and the NRC. They analyze the production, the promotion, and the regulatory energy-related work. The act is under the Atomic Energy Act of 1954. (“Nuclear Power Now” 1)

Reorganization Plans- Established the U.S. Environmental Protection Agency (EPA). This made applicable environmental standards to protect against radioactive materials. The commission in charge pertains to all emergencies and rule makings. (“Nuclear Power Now” 2)

Nuclear Waste Policy Act of 1982- All high-level radioactive waste and nuclear fuel must be permanently disposed of. The development of this is planned through state, tribal, and public participation to make this place permanent. (“Nuclear Power Now” 2)

Low-Level Radioactive Waste Policy Amendments Act of 1985- Gives the permission of States to dispose of low-level radioactive waste. It generally allows groups of States to locate a place where they can all be served. All facilities will be regulated by the NRC and the act requires that the standards of the Atomic Energy Act must be met under regulatory standards. (“Nuclear Power Now” 2)

Uranium Mill Tailings Radiation Control Act of 1978- The stabilization of uranium or thorium mill sites that could diffuse radon into the environment. The NRC has authority of sites under Title II of the Act. (“Nuclear Power Now” 2)

Nuclear Non-Proliferation Act of 1978- Nuclear weapons are looked to be limited. Also the governing U.S. exports are licensed by the NRA and seeking safeguards systems for international use. (“Nuclear Power Now” 2)

Administrative Procedure Act (5 USC Chapters 5-8) - Originally used to focus on rule making and adjudication. Proposals for open argument are given an opportunity by a party to petition an agency for issuance, amendments, or repeal of a rule. There is also a standard judicial review of actions by the agency. (“Nuclear Power Now” 3)

National Environmental Policy Act- Declare a policy within a nation that will encourage a enjoyable and more productive harmony with man and the environment; to eliminate damage to the environment of biosphere. Also to stimulate the health of man; to get a better understanding of the ecological systems and the natural resources; and to establish a Council on Environmental Quality.(“Nuclear Power Now” 3)

Countries that have given up their Nuclear Programs

- **Belarus, Kazakhstan and Ukraine gave up their nuclear programs that they inherited after the collapse of the Soviet Union they were convinced to become a non nuclear state to join the Non-Proliferation Treaty (NPT) (Cirincione 2).**
- **South Africa gave up its nuclear program on the eve of its transition to majority rule in 1993 the decision could have been reversed but leaders decided that their country without the weapons would be a safer area (Cirincione 2).**
- **Brazil and Argentina eventually gave up their nuclear programs that the military juntas had started when they founded a civilian government**
- **Iraq’s program ended because the United Nations came into the country and made it stop in 1991(Cirincione 2).**
- **Libya is the most recent country that gave up its nuclear programs because they believed it would endanger their country (Cirincione 2).**

Some Countries That Have Violated Nonproliferation Treaties & Agreements

(Touring the Nuclear World)

- **North Korea wants to keep their nuclear program as tools to bargain and use as a deterrent (Cirincione 3).**
- **Iran continues to keep their nuclear program because of fear of an attack from Israel**

- **India and Pakistan also openly test nuclear weapons because they believe that their nuclear activity is their business (Cirincione 3).**

Objective 2

An understanding of the international spread of nuclear energy to countries in the world that have not had nuclear energy before.

Terrorist and Nuclear Weapons

Nuclear materials are widely used around the world today. It is also a highly kept secret among terrorist. These materials are sold on the black market to some terrorist. If a terrorist were to use nuclear weapons to attack a certain country it would cause many casualties. It would destroy an entire city and even more.

According to the article “The Nuclear Terrorist Threat,” Kevin O’Neill states that “terrorist organizations could over time develop such a capability” to make a nuclear weapon (O’Neill 1). In order for a terrorist to get materials for a nuclear weapon they have to know about the certain materials needed. They are can get information off the internet and find ways in books that teach how to build weapons. “Terrorists bent on assembling a nuclear explosive must acquire sufficient quantities of plutonium that is in a weapons-usable form” (“The Nuclear Terrorist Threat” 2). Since the break up of the Soviet Union it made nuclear weapons more accessible to other countries. If a terrorist were to attack with a nuclear weapon the damage would cause contamination among the area.

Countries that Could Develop Nuclear Weapons

According to Fox News “30 countries could soon have technology that would let them produce atomic weapons in a very short time” (“U.N. Agency” 1)

These are some countries that have the means to produce nuclear technology. Also some of these countries are considering developing nuclear programs.

- Australia
- Argentina
- South Africa
- Canada
- Germany
- Sweden
- Belgium
- Switzerland
- Taiwan
- Spain
- Hungary
- Slovakia
- Lithuania
- Ghana
- Indonesia

- Jordan
- Namibia
- Moldova
- Nigeria
- Poland
- Thailand
- Turkey
- Yemen

(“U.S. Agency” 2)

Objective 3

An understanding of the international challenges related to nuclear energy.

Nuclear Terrorism

Nuclear terrorism is an offense committed if a person intentionally uses in any way radioactive material to cause death or serious body injuries (“Nuclear Terrorism” 1).

A few attempted attacks on the United States and other countries:

- June 2002 an American Jose Padilla planned to use radioactive material to bomb the city of Chicago (“Nuclear Terrorism” 1).
- In November 2006 Military Intelligence said that some Islamic terrorist mostly the al-Qaida were planning to use nuclear weapons to bomb cities of the United Kingdom (“Nuclear Terrorism” 2).
- In June 2007 Fox News said that the FBI released to the press the name of the operations leader for developing tactical plans for detonating nuclear bombs in several American cities simultaneously (“Nuclear Terrorism” 2).

Information about Nuclear Power and Storage:

- Pakistan is the one country that has nuclear power possession that holds a serious risk to international security (“Nuclear Terrorism” 3).
- Russia had a great project on destroying chemical waste in certain areas. (“Nuclear Terrorism” 3)

Nuclear Energy

Safety & Security

In the United States, the nation’s nuclear power plants are the safest and most secure industrial facilities. There are many layers of physical security, high levels of equipped performance that protect plant workers, the public, and the environment (“Safety & Security” 1).

U.S. nuclear plants are well-designed, operated by trained personnel, defended against attack and prepared in the event of an emergency (“Safety & Security” 1).

Each nuclear power plant has extensive security measures in place to protect the facility from intruders. The nuclear energy industry has substantially enhanced security at nuclear plants ever since the attack on September 11 (“Safety & Security” 1).

Every countries nuclear plant has a very extensive security measure in case of an emergency. With the participation of local and state emergency response organizations, companies test that plan regularly. (“Safety & Security” 1)

Benefits and risks

Benefits: If the Nuclear Power Industry lives up to its promises for 3rd generation plants, the total cost of Nuclear Power including construction, operational, waste disposal and decommissioning costs is in the range 3 - 5 cents per Kilowatt-Hour depending on the interest rate obtained for the construction. Current world proven reserves of Uranium are sufficient to

supply current world demand for 50 years. Speculative reserves provide an additional 150 years of supply. There is sufficient Uranium and Thorium on Earth for Fourth Generation reactors to supply the total World demand for energy for hundreds of centuries.

(“The Benefits of Nuclear Power” 1)

Risks: The International Atomic Energy Agency is responsible for monitoring the world’s nuclear facilities and for preventing the spreading of nuclear weapons, but their protection contains somber limitations. Mining, refining, and the enrichment of uranium and the production of plutonium reduce radioactive isotopes. These isotopes contaminate the nearby area, including the groundwater, air, land, plants, and equipment. Because of this, humans and the entire ecosystem are affected.

(“Lai, Leslie and Kristin Morrison” 2)

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