Reaching Critical Will
Women's International League for Peace and Freedom
777 UN Plaza, 6th Floor, New York, NY 10017 Tel: 212.682.1265 Fax: 212.286.8211
Email: info@reachingcriticalwill.org Web: http://www.reachingcriticalwill.org

Nuclear Energy

Introduction

While virtually the whole world stands against the development and use of nuclear weapons, attitudes vary when it comes to the development and use of nuclear energy. However, the health and environmental costs of nuclear energy are horrific. The possibility of accidents (such as Three Mile Island and Chernobyl, which caused environmental, economic, health, and social damage to the areas and communities in the regions), the threat of nuclear terrorism, the potential for proliferation of nuclear weapons, and the damaging effects from the entire nuclear cycle all indicate that the risks of nuclear energy far outweigh the benefit.

Nuclear Energy and Nuclear Weapons

The nuclear Non-Proliferation Treaty almost absolutely guarantees the right of each member state to develop the technology for nuclear energy programmes. However, there is a strong correlation between nuclear energy and nuclear weapons, because the same technology and ingredients are used for both. Nuclear energy can facilitate **proliferation**, the spread of nuclear weapons to new countries. For example, Iraq and North Korea developed clandestine nuclear weapons programmes under the guise of "peaceful" nuclear energy programmes.

Nuclear Fuel Cycle

Nuclear energy is problematic at each stage of its cycle:

1. *Uranium mining.* Uranium is extracted from underground and open pit mines. For every ton of uranium oxide produced, thousands of tons of wastes, or tailings, are left behind. Often the tailings are simply dumped on the land near the mine and left to the effects of the elements. Wind carries radon gas and radioactive dust from these tailings for many miles. Contaminated rainwater enters the soil, the watershed, and, eventually, the food chain, **endangering the health of people, animals, and the planet**. Uranium mining on indigenous and tribal peoples' lands has **devastated local communities and environments** in North America, Australia, Africa, and Asia.

2. *Enrichment.* After mining the uranium mineral is refined to uranium oxide, called yellowcake. This natural uranium is processed and then enriched. Industrial processes enrich uranium by concentrating the amount of its fissile isotopes to 3% or more for use as reactor fuel. **Uranium can be further enriched for use in nuclear weapon—**the technology used to enrich uranium to 3% is the same as is used to enrich it to 20%, the level necessary for use in a nuclear weapon.

3. *Reprocessing.* Reprocessing is a chemical reaction that separates plutonium and uranium from fuel which has been irradiated in reactors. The plutonium is important for weapons production, while the uranium is basically a byproduct that can be recycled as fuel. Because reprocessing is also part of the civilian nuclear fuel cycle, reprocessing is a key link between civilian nuclear power and nuclear weapons production. Thus, **the existence of a reprocessing plant is what gives a country the ability to produce plutonium for nuclear weapons.** Four-fifths of the plutonium in the world today has been produced by commercial nuclear power reactors. This spread of plutonium through nuclear power has increased the number of potential nuclear

weapons states to 46. The five declared nuclear weapons nations—China, France, Russia, the United Kingdom, and the United States—are only one-ninth of the real "nuclear club".[1]

4. *Radioactive waste.* By the year 2000, the nuclear industry had created 201,000 tons of highly radioactive irradiated (used) fuel rods. Waste from nuclear energy production must be safely and securely stored for between 10,000 years and 240,000 years in order to prevent health and environmental disasters from **radioactive contamination**. None of the 44 countries with nuclear reactors has a solution to the waste problem. The wastes are either kept in "temporary", **above-ground** storage facilities or buried in shallow pits. Wastes have been dumped directly into the ground, lakes and oceans of the world. A 2003 MIT study projected that, if the world expands its nuclear energy production to 1,000 gigawatts by 2050 (an increase of 2% per year), a new storage facility equal to the currently planned capacity of Yucca Mountain would have to be created somewhere in the world about every three to four years to permanently store the spent nuclear fuel.[2]

Nuclear Energy and Climate Change

Some proponents of nuclear energy argue that it is a clean source of energy that can safely and effectively be used to produce electricity without CO2 emissions, as an alternative to fossile fuels. However, research has shown that taking into account the entire nuclear fuel cycle, between 34 and 60 grams of CO2 are emitted per generated kilowatt hour. Estimates place the CO2 per unit of energy at 4-5 times higher than the average quantities of CO2 produced from renewable energy sources.[3] In addition, nuclear power usage has environmental, health, and security risks that make it an undesirable substitute for fossil fuels. Many sources of renewable energy do not pose such great risks, and thus should be explored.

Resources

For additional information, check out the following web sites:

How Stuff Works
A clear, illustrated explanation of the processes of nuclear power and energy production.
http://science.howstuffworks.com/nuclear-power.htm

International Campaign to Abolish Nuclear Weapons (ICAN)
Campaign to demand a Nuclear Weapons Convention.
http://www.icanw.org/nuclear-chain

NucNews.Net
Offers news bulletins on nuclear energy from a wide array of sources, updated almost daily.
http://www.nucnews.net/

Nuclear Information and Resource Service
An information and networking center for citizens concerned about nuclear energy issues.
http://www.nirs.org/

---

1 Jan Thomas et al, *Safe Energy Handbook*, Plutonium Free Future, Santa Barbara, CA: INOCHI, 1997. http://www.nonukes.org/safenrgy.htm

2 John Deutch and Ernest J. Moniz et al, *The Future of Nuclear Power: An Interdisciplinary MIT Study*, Cambridge, MA: MIT, 2003.

3 "Nuclear Energy," NuclearFiles.org, Rockville, MD: Nuclear Age Peace Foundation, 2001. http://www.nuclearfiles.org/menu/key-issues/nuclear-energy/basics/introduction.htm