

The Case Against Nuclear Power

Nuclear power generation has many, many problems.

1. *Pollution.* Nuclear power requires a rare form of uranium: up to 4,000 tons of uranium ore must be mined to produce each ton of fuel. That translates to 100,000 tons of ore per year per plant. Uranium mines are associated with various pollution problems.ⁱ Uranium itself is toxic, and it is processed using other toxic chemicals. Refining uranium consumes power and requires highly specialized equipment and technical expertise.ⁱⁱ
2. *Nuclear accidents.* In the most common reactor designs, chain reactions have to be slowed by systems built into the power plant. If these fail, the reaction accelerates, melting the uranium in the reactor, which then pools on the reactor floor. There, it can go supercritical. If it does, it can melt its way through the bottom of the reactor and into the ground, where it encounters ground water, which explodes into steam, spewing radioactivity for miles around. Alternatively, the reactor could itself explode. In the Three Mile Island accident (1979), a small part of the uranium melted. Little radiation escaped, but it was very close! Chernobyl exploded (1986), releasing more radioactivity than the nuclear bombs dropped on Hiroshima and Nagasaki. It caused the resettlement of 400,000 people, and an increased incidence of radiation-related health problems from the Ukraine to Finland. The death toll was listed at a few hundred, but is thought to be much, much higher. There have been less publicized nuclear accidents in Canada (1952), England (1957), Russia (1957), East Germany (1976), and Japan (1999, 2002, 2007) ⁱⁱⁱ
3. *Cost.* The true cost of nuclear power is unknown, as the Federal Government subsidizes the industry in multiple ways.^{iv} In addition, nuclear plants are difficult to build and often incur terrible cost overruns (collectively \$80 billion of overruns in the U.S. alone^v). Overruns are not confined to the past^{vi}.
4. *Nuclear Waste.* A typical nuclear plant produces 30 tons of highly radioactive and toxic waste per year. In addition, parts of the plant become radioactive. Eventually, the plant reaches the end of its useful life, and must then be disposed of safely. Spent fuel remains dangerously radioactive for thousands of years, more than the entire recorded history of humankind. There are two challenges: how to safely store it so that it never poisons the planet, and how to keep it out of the hands of terrorists. Various schemes have been proposed: entombing it onsite in glass or concrete (this is what they did at Chernobyl, but it is already breaking apart), dropping it into deep ocean trenches, or even sending it into space. In the U.S. we don't have a national policy. The closest we came was a plan to entomb it in Yucca Mountain, Nevada, a dry, geologically stable place (you have to keep it dry, or the stuff will leech into the groundwater). Objections to this scheme prevented it from implementation. Many believe that it is impossible to store anything anywhere for thousands of years and know that it will be safe for the whole time. Nuclear waste is currently stored on-site at reactors, possibly the least safe option of all.

ⁱ See, for instance, *Environmental aspects of uranium mining*, Uranium Information Center, Australian Information Center, <http://www.uic.com.au/nip10.htm>. See also *Uranium mine tailings*, Anti-Nuclear Alliance of Western Australia, <http://www.anawa.org.au/mining/tailings.html>.

ⁱⁱ Uranium processing. (2007). In *Encyclopædia Britannica*. Retrieved November 25, 2007, from Encyclopædia Britannica Online: <http://www.britannica.com/eb/article-9110680>.

ⁱⁱⁱ Nersesian, Roy. (2007) *Energy for the 21st Century*. Armonk, NY: M.E. Sharpe.

^{iv} Caldicott, Helen. (2006) Nuclear energy will not reduce pollution. In D. Dupler (Ed.), *Conserving the environment*. Farmington Hills, MI: Greenhaven Press.

^v Murkowski, John. (2/19/2006). *Putting a price on nuclear power*. Viewed online 11/26/2007 at Red Orbit, http://www.redorbit.com/news/science/398986/putting_a_price_on_nuclear_power/index.html?source=r_science.

^{vi} Scotton, Geoffrey. (8/30/2007). Huge cost overruns mark nuclear industry. *Calgary Herald*. Viewed online 11/26/2007 at <http://www.canada.com/calgaryherald/news/calgarybusiness/story.html?id=afeb07dc-a5ff-4608-a9f7-450367ff99ef&k=46161&p=2>.