

# Nuclear power: a burden or a blessing?



**ASSIGN  
BUSTER**

Nuclear Power: A Burden or a Blessing? When the first atomic bomb was dropped on Hiroshima, Japan, the world was thrust into the atomic age. Nuclear power had become a reality. It promised to provide clean, efficient energy for centuries to come. Despite all of the promises, nuclear power has only been put into minimal use. Only a few of the nuclear plants that the government planned on building have actually been built. Some of the plants that were constructed have been shut down. Now, more than fifty years after the dawning of the atomic age, many people are still skeptical about atomic energy. Scientists still have many questions to answer about the long term impact of nuclear waste on the environment. The issue of using nuclear power to produce electricity involves the cost, its radioactive waste, and the public's concern about its safe usage. Atomic energy is the energy stored within the nucleus of an atom. Stable atoms do not release this energy. Radioactive atoms, however, are very unstable and release large quantities of energy. This atomic energy is utilized within a nuclear reactor. Uranium, a radioactive element, is the fuel of most nuclear reactors. Uranium rods are allowed to interact with each other in the core of the reactor. As the rods interact, the radioactive uranium atoms decay and release great amounts of heat. The heat is used to change water into steam. The steam is forced through pipes until it reaches giant turbines. The steam pressure turns the turbines which drive giant electrical generators. Electricity is produced and sent through high voltage power lines to the public. Nuclear power is a very expensive source of energy. First of all, that uranium used for fuel is not found in nature in its elemental form. It is always found bonded with other substances. Once this uranium compound is mined, the uranium must be separated from the other substances. The uranium compound is sent to an

<https://assignbuster.com/nuclear-power-a-burden-or-a-blessing/>

enrichment plant where it can be purified. The purification process is very complicated and involves many complex machines and procedures. Uranium must be sent to several different enrichment plants before it is pure enough to be made into fuel rods. Millions of dollars are spent in order to produce one set of fuel rods. This cost is passed on to the consumer through an increase in energy prices. Most consumers do not want to pay higher energy bills. Some people, however, feel that the higher cost is acceptable because nuclear power is a very efficient source of energy. When a set of uranium fuel rods is installed in a reactor, they will not need to be replaced for several years. Coal-fired power plants are not nearly this efficient. A coal-fired plant burns thousands of tons of coal each day. This difference in efficiency is very important because the world's coal supply is being rapidly depleted. Uranium fuel, on the other hand, is very plentiful. Consumers do not want to worry about the electricity being shut off because the power plant ran out of fuel. They like the piece of mind they get from knowing that the supply of uranium on this planet could provide efficient energy for centuries to come. Another major concern with nuclear power is the waste. Unlike a coal-fired power plant, a nuclear plant does not make pollution while it is on-line. The burning of coal releases many toxic gases, such as carbon dioxide and chlorofluorocarbons. These gases collect in the atmosphere and trap heat energy from the sun as it reflects off the earth's surface. This trapped heat energy causes the increase in temperature of the earth's surface and lower atmosphere known as global warming (Schneider 21). A nuclear reactor does not pollute the air or water like a coal plant. It does, however, produce radioactive waste that is very dangerous. When the uranium fuel rods are spent of their energy and need to be replaced, they cannot simply be thrown

away. The used rods are still very radioactive and will remain so for hundreds of years. The radiation that is released from the rods is very dangerous to humans. Exposure to radiation in large amounts can cause death or extreme tissue damage. Exposure in smaller amounts can cause cancer, sterility, and many other serious health problems. Scientists must be very careful when deciding how to dispose of nuclear waste. Currently, most radioactive waste is stored in canisters in deep underground mines. These canisters are made of reinforced concrete and lead shielding. Their special design keeps the dangerous radiation from escaping into the environment. This storage policy does keep the waste far away from the human population on the surface, but it is not entirely safe. For example, much of the earth's fresh water supply is found in underground aquifers. An aquifer is a large quantity of fresh water trapped deep underground in between layers of rock. If one of these protective canisters were ruptured or compromised in some way, radioactive waste could be introduced into the world's fresh water supply. The waste would contaminate the water and make it unfit to support life. The protective canisters could be compromised in several ways. First of all, a natural event, such as an earthquake, could cause the underground storage area to collapse. The canisters would be crushed and the waste would be introduced into the subterranean environment. Secondly, the radioactive waste could destroy the protective canister from the inside out. Scientists are not sure what kinds of effects radiation has on certain materials when they are exposed to it for long periods of time. The radioactive waste would be released into the ground. These possibilities leave many people concerned that nuclear waste cannot be stored in a safe manner. Many people are against having a nuclear power plant near their

<https://assignbuster.com/nuclear-power-a-burden-or-a-blessing/>

home. They fear that a nuclear accident could jeopardize the lives of their families. Several severe nuclear accidents that occurred in the last several decades have caused people to fear nuclear power. One of the worst nuclear accidents in history occurred at the Chernobyl power plant in Russia. A reactor at that plant suffered a complete meltdown. A meltdown occurs when the nuclear reaction in the core of the reactor gets out of control and damages the reactor. Many safety features are installed in nuclear plants to prevent a meltdown from ever happening. In the case of the Chernobyl accident, the safety features failed, and the meltdown completely destroyed the reactor and the concrete safety cap that keeps the deadly radiation from escaping into the environment. The nuclear reaction continued out of control after the reactor and safety cap were destroyed. Chunks of radioactive debris and radiation were blown out of the plant and showered down on the nearby villages and farmland. Many people died from radiation sickness while others died years later from cancer caused by exposure to radiation. Many women who survived the tragedy later bore children with extreme birth defects. The crops and livestock on the nearby farms were also contaminated, making them completely unusable. Today, the effects of this terrible accident at the Chernobyl power plant are still being felt in Russia. Another accident occurred at the Three Mile Island (TMI) nuclear plant in the United States. One of the TMI reactors also suffered a meltdown. During this accident, however, the dangerous radiation released was contained within the plant and did not contaminate the surrounding area. This American power plant had much better safety features than its Russian counterpart. After the accident at TMI, it was determined that the accident was caused by human error, not equipment failure (Walsh 34). This accident is proof that

<https://assignbuster.com/nuclear-power-a-burden-or-a-blessing/>

nuclear power is safe even when things go wrong. Despite the successful containment of the dangerous radiation, many people who lived near the plant panicked and fled their homes after the accident. Much of the panic was caused by the media. The media described the situation to be far worse than it actually was, and misinformed the public to the point of panic (Walsh 41). Panic could have been avoided if the TMI administrators would have been quicker to inform the public about the situation and what action they should take. The TMI accident was made much worse through bad communication. Many people have an unfounded fear of nuclear power. Author Richard Rhodes attributes this fear to the cold war. People associate nuclear power with the weapons of mass destruction that bear the same name. A nuclear bomb, however, is completely different from a nuclear reactor. A nuclear reactor cannot cause the damage that a nuclear bomb can. Mr. Rhodes argues, "No one has been killed in a U. S. commercial nuclear power accident in three decades of successful operation, nor has commercial power released more than minimal amounts of radioactivity" (Rhodes 7). Mr. Rhodes wonders why the anti-nuclear power activists do not attack an industry that is truly dangerous. He argues that automobiles produce unhealthy smog and kill 50,000 people each year (Rhodes 7). Despite Mr. Rhodes arguments, nuclear power continues to be one of the most protested industries in the world. In conclusion, the issue of using nuclear power to produce electricity involves its high cost, its waste, and the public's concern of its safe usage. Nuclear power is very expensive and complicated, but provides reliable, efficient power. The radioactive waste produced by a nuclear plant, however, is very dangerous and difficult to store safely. Many people do not feel safe having nuclear plants near their

<https://assignbuster.com/nuclear-power-a-burden-or-a-blessing/>

homes. They fear that a nuclear accident could destroy their happy lives. As long as the world needs electricity, however, there will be nuclear power.

People will continue to discuss the issue of nuclear power for a long time to come.

Works Cited Rhodes, Richard. Nuclear Renewal. Middlesex: Penguin, 1993. Schneider, Stephen H. Global Warming. San Francisco: Sierra Club, 1989. Walsh, Edward J. Democracy in the Shadows: Citizen mobilization in the Wake of the Accident at Three Mile Island. Westport, CT: Greenwood, 1988.