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Good intro.

Power to Save the World

The history of nuclear energy is a controversial one; from passionate support to radical opposition, people all over the world have debated whether nuclear power should be used as a reliable source of energy. Nuclear power is "a method of producing energy that makes use of nuclear fission or nuclear fusion reactions" and nuclear power plants apply the energy generated by these reactions to "turn turbines to generate electricity" (Nuclear Power). Though this energy is hugely efficient, non-polluting, and reliable in comparison to the burning of fossil fuels and the use of wind or solar power, diverse "concerns about the safety of nuclear power . . . have kept many people opposed to using nuclear energy as a major power source" (Nuclear Power). Research on nuclear power and energy at the beginning of its development in the late 1930s to early 1940s was extravagant and by and large financed by the American military and government (Antinuclear Movement). During World War II from 1939 to 1945, inventor and Nobel Prize winner Enrico Fermi built the first nuclear reactor, and physicist J. Robert Oppenheimer built the first atomic bomb as part of the Manhattan Project (Nuclear Power). "The world's first exposure to nuclear power came with the detonation of two fission (atomic) bombs over the Japanese cities of Hiroshima and Nagasaki in 1945, as part of a U.S. effort to end World War II" (Newton). Although scientists "hoped that the power of nuclear energy could be harnessed for human good . . . intense political opposition to nuclear power arose in many nations, including the

U.S." (Newton). These detonations effectively ended World War II, but the shocking destruction and suffering they caused raised concerns from the general public about the dangers of nuclear weapons and the threat of radiation as a result, as well as the fear that hostile enemy nations were in possession of such weapons. Spurred from such deep-rooted concerns and many others, the anti-nuclear movement arose against the development of energy by nuclear power and the manufacturing of nuclear weapons, "[emphasizing] peace and environmentalism, intellectual social activism based on knowledge of nuclear technology and political and moral activism based on conflicts between nuclear power applications and policies and personal values" (Antinuclear Movement). Although the anti-nuclear movement has greatly hindered the progress of nuclear energy, perpetuating the problem of global warming, it eventually made way for further research and awareness, and the development of safer technologies that have begun to change the minds of anti-nuclear activists, thus making stronger the fight against climate change.

Fear within the general public about the potential danger of nuclear power as a result of a lack of sufficient education about the nuclear energy served as the main catalyst for the anti-nuclear movement, thus inhibiting the positive benefits of nuclear power from spreading in awareness. The movement originated through fears of attacks by nuclear weapons and disease by radiation sickness, after the atomic bomb detonations on Hiroshima and Nagasaki to end World War II. Although beforehand the focus had primarily been on technological advancement of nuclear power, after World War II, scientists "were becoming increasingly concerned about the destructive potential of atomic power," and the general population was "united by an urgent conviction that continuing the present course of escalation and confrontation was an invitation to disaster" (Antinuclear Movement). In addition, early in the 1980s it seemed that nuclear war with

the Soviet Union could be just over the horizon as a result of the Cold War. Ironically, this idea of "Soviet military threat" led President Ronald Reagan to invest $1.5 trillion for "military buildup that pointedly included new generations of nuclear weapons," leading the Soviet Union to "add aggressively to its own nuclear arsenal" (Antinuclear Movement). As a result, the general public was astounded by this arms race, and groups such as the Committee for a Sane Nuclear Policy began to protest these military policies, "one popular proposal of [which] called for an immediate halt to the arms race–a 'freeze on all nuclear weapons testing, production, and deployment.'" (Antinuclear Movement). More recently, "renewed concerns about nuclear power plants have also surfaced in the wake of the terrorist attacks in the United States on September 11, 2001." (Pollution Issues). Although the panic about the Soviets' possession of nuclear weapons originally spurred the arms race between the United States and the Soviet Union, the anti-nuclear movement succeeded in stopping the government and military from developing nuclear power and promoted the peace, in addition to reducing nuclear development further even after the arms race scare decreased after the Cold War ended in the early 1990s. The fear of the general public allowed for widespread awareness about nuclear weapons and the development of nuclear power, that would eventually lead to further research about the safety and efficiency of nuclear power, not just as weaponry, but as a source of reliable energy.

Although concerns about the possession of nuclear weapons by the Soviet Union was winding down by the end of the Cold War, there was nevertheless much concern about nuclear reactors and power plants since the beginning of the anti-nuclear movement. "Although the government, through the Atomic Energy Commission (AEC), had advocated for peaceful uses of nuclear power since the development of the atomic bomb, little impetus existed for new energy

sources" (Pollution Issues). However, people did not see the need to make the shift from using fossil fuels to nuclear power as the main source of energy, as climate change was not yet such a great widespread concern. Anti-nuclear activists urged the development of alternative sources of energy such as solar and wind power, to dissipate the need for nuclear power that nuclear supporters advocated for. Organizations appealed to the well-developed fear of the general public that nuclear accidents and terrorist attacks were likely to happen, and that waste from nuclear reactions could not be effectively disposed of and posed a serious threat to the environment and general safety (Antinuclear Movement). "In spite of all the systems developed by nuclear engineers, the general public has long had serious concerns about the use of such plants as sources of electrical power. Some fears are baseless; nuclear power plants cannot explode like atomic bombs, and they are so well shielded that they do not leak radiation" (Nuclear Power). Although each side pressed with more effort to sway the general public, the anti-nuclear activists were more successful in collecting supporters because of their appeal to a rather irrational fear of the dangers of nuclear attacks and accidents. Advocates and researchers of nuclear power pushed for publication of studies to spread information to the public, who were generally ignorant about the benefits of nuclear power. Thus, despite the anti-nuclear movement's effort to hinder the deployment of nuclear technologies, in reality it inspired the need for a more informed public and more thorough research. Good analysis

Propaganda also played a role in the panic about nuclear power. In his book, *The Fate of the Earth* (1982), author Jonathan Schell wrote, "Because everything we do and everything we are is in jeopardy, and because the peril is immediate and unremitting, every person is the right person to act and every moment is the right moment to begin, starting with the present moment.

For nothing underscores our common humanity as strongly as the peril of extinction." Schell's work seems to be an distressed overreaction about the consequences of nuclear energy, equating a nuclear accident or attack to the destruction of the world, but he nevertheless inspires a sense of obligation in his readers. In 1978, the release of "The China Syndrome" a movie portraying a "near-disaster at a nuclear power plant" engendered a rather irrational fear about the dangers of power plant accidents. (Pollution Issues). This fear intensified in the general public the following year when the "Three Mile Island accident occurred at a nuclear power plant in Pennsylvania," and again in 1986 when a reactor at the Chernobyl plant exploded in Ukraine (Antinuclear Movement). As a result of the Chernobyl accident, "radioactive waste spewed from a reactor explosion, and over 130,000 people were forced to leave the area. The contamination greatly increased many of their chances of developing cancer" (Pollution Issues). Although the destruction of Chernobyl Unit 4 was considered to be the "worst reactor disaster in history," only fifty-five people died as a result of "neglect and poor management as much as egregious structural flaws" (Mahaffey). Books such as *The Fate of the Earth* and films like "The China Syndrome," highly misleading, strengthened the general public's preconceived notions about the dangers of nuclear power and increased their fear about such dangers. However, the accident at Chernobyl, occurring coincidentally soon after the release of "The China Syndrome" and followed promptly by "widespread physical and socio-political effects," helped to communicate more accurate information about the technology of nuclear power. (Antinuclear Movement). More people began discussing the hazards of power plants publicly demanding the attention of government officials and nuclear scientists and researchers. Since "The China Syndrome" and the accidents at Chernobyl and Three Mile Island, the vastly strengthened anti-nuclear movement

influenced the improvement of operating mechanisms and safety protocols of power plants. Such improvements have inspired a safety-oriented mindset in Americans, emphasizing a common sense of duty.

In addition to concerns about the dangers of nuclear power plant meltdowns and "explosions," anti-nuclear activists were worried about how nuclear technologies and the disposal of waste might negatively impact the environment. Such concerns included that "about thermal pollution due to hot water" (Antinuclear Movement) and "the effect of radiation emissions from nuclear plants" (Nuclear Heritage). "Several scientists challenged the prevailing view that the small amounts of radiation released by nuclear power plants during normal operation were not a problem. This exchange of views about radiation risks caused further uneasiness about nuclear power, especially among those unable to evaluate the conflicting claims" (Nuclear Heritage). "Government officials continued to search for ways to deal with the problem of the radioactive waste produced by the nuclear power plants" (Pollution Issues). Despite the fact that many Americans were misinformed about the dangers of nuclear power, the awareness about nuclear energy was spreading enough so that experts took action to attempt to educate the general public about the truth about nuclear energy, and how it has the potential to be a hugely efficient and non-polluting source of energy for the world.

Although environmentalists remained concerned about the harmful environmental effects of radiation from nuclear power, in recent years, they have begun to weigh those risks against those of climate change. With new research studies being published, more and more grew excited about the benefits of nuclear power in reducing fossil fuel pollution. Thus, activists and environmentalists who may have been against the development and use of nuclear power

cheap sources of electricity" (Pollution Issues). Currently, 118 operating nuclear reactors in North America provide about 20% of the United States's energy and 12% of Canada's, as opposed to in the 26 in the United States in 2000 (US Nuclear Power Plants). comparison to In this way the anti-nuclear movement has become less and less successful as it has become increasingly apparent that nuclear energy will play a crucial role in the fight against climate change. Since 2011, more and more projects have been funded for the research of such technologies, in the hopes that Americans and people all over the world will see that its benefits truly outweigh its risks, and that our use of it will reduce our fossil fuel emissions and potentially bring an end to global warming.

Looking back on the original goals of the anti-nuclear movement, it mainly aimed to promote peace and denounce nuclear power as a form of weaponry, in addition to advocating for more environmentally-friendly sources of energy. Thus, from the beginning of the movement to the present day it achieved these goals: it defunded nuclear projects, prevented the use of nuclear power, and although many fears were irrational, it spread awareness of the certain dangers that led to further research and the development of safer technologies. Like most movements that protest something, the achievement of its goals meant that there was no longer any need for it. Once the anti-nuclear movement had achieved raised awareness about the dangers of nuclear power, work was done to minimize such dangers and new knowledge about the benefits of nuclear power began to spread. Thus, the anti-nuclear movement was successful in its achieving its goals, but it is now time for Americans and all people around the world to advocate for the gradual diminishing of our reliance on fossil fuels and the far more extended use of nuclear power as our main source of energy, for it truly is the power to save the world.

Great.

Good conclusion and relation to thesis. More comments on back.

technologies were beginning to recognize its advantages as they became increasingly safer and better managed. Nuclear power continued to develop around the world, and public consciousness about its benefits and dangers increased. As concerns about climate change steadily increased as the decades passed and nuclear technologies became safer, environmentalists began looking to nuclear power as a possible solution to global warming.

Although the anti-nuclear movement's main goals were to defund any nuclear power-developing projects and stop its progression, its traditional argument has weakened as the technologies have become safer and concerns about nuclear war and terrorism and power plant meltdowns and impossible "explosions" have subsided. In addition, "increases in oil prices, concerns about global warming, and the slow advances in alternative energy sources [have caused] commercial nuclear power [to] come to the forefront of energy and environmental policy decisions" (Antinuclear Movement). As a result, funding for nuclear energy research has risen; the Obama administration in particular has sought to fund more nuclear power plants. In 2010, the proposed budget for nuclear research in 2011 "provides a 5 percent increase for research and development of nuclear technology for a total request of $824 million. . . . Obama seeks to create new [research and development] programs to 'better align program functions with strategic goals.' The budget supports work on small modular reactors, long-term use of lightweight reactors and next generation nuclear reactors with $195 million for the 'Reactor Concepts Research, Development and Demonstration' program," as well as another $123 million for other parts of the project (Howell). Thus with "increased public awareness of the environmental problems engendered by fossil fuels, the government pressed forward with the development of several nuclear power plants, ostensibly to reduce American dependence on oil and provide

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Sarah,

Really great job here. Your paper was extremely well-researched and written. I enjoyed your objective analysis and use of both quote evidence and statistics. I still have 10 to go, but this is the best paper so far - you should be proud.

- Ms. Signore.