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## Dirty Power, or a Dirty Word?

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December 13, 2013  
Course: ENSC 230

## Dirty Power, or a Dirty Word?

By Kyle Chapo  
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When you hear the word *Nuclear*, the first thing you think of is probably mushroom clouds, Mutually Assured Destruction, the Cold War, and, most likely, the recent tension between the US and Iran. The very next thing you probably think of is either Chernobyl or Fukushima, and this is a problem. As a society, the word *Nuclear* has become an expletive along the lines of *tax increase*, or *gun control*, a toxic word to be reviled, which could easily bring any politician's career crashing down. The problem hinges on the fact that arguably the greatest and most horrific innovations of the modern age both derive from the same basic principles. And this is one of the greatest tragedies of our time.

The Cold War is long over, and the only nuclear power hostile to the United States is far too terrified of angering its neighbor- which happens to be one of our closest trading allies- to attack us. It is time to stop thinking of "Nuclear" as a thing of destruction and darkness, and instead think of it as a source of light. As it stands, Nuclear power is the single best option humanity has for powering the future.

Critics of nuclear power will usually point to one of two incidents. For the last two years, the event always brought up is the accident at the Fukushima Daiichi Nuclear Plant. On March 11, 2011, a tsunami damaged the plant forcing a shutdown and evacuation. Not a single person was killed by radiation- in fact, the highest dosages received were comparable to a few full-body CAT scans, and far from lethal. Despite the lack of harm, even now, two years later the incident still receives significant media coverage.

This would have been more appropriate in the aftermath of Chernobyl, the other poster-child for nuclear criticism. Chernobyl was a truly disastrous event, one that continues to have effects today. Singular, preventable incidents are a poor reason to stop using what is arguably the most promising way of powering the future. When the Cuyahoga River burst into flames in the 1969, America didn't ban industry; doing so would have had unacceptable consequences. Instead, we passed the Clean Water Act, which allowed us to continue to live our lives while making us safer. Similarly, nuclear power should be addressed with oversight, not the total ban many call for.

Nothing will ever be completely safe, but it is no great challenge to make nuclear power safer than any other power source. Numerous technologies are being developed to make nuclear power safer and cleaner, including Thorium-based reactors and liquid salt reactors. However, as in so many other areas, the US is losing ground in our technology to other countries, primarily China. In an industry as tightly regulated as nuclear power, improving safety is a very simple matter, especially as many US nuclear plants are now coming up for re-certification. Sadly, in the current political environment, proposing anything but an end of nuclear power will result in massive popular outcry from a poorly informed public.

Estimates for total historic fatalities due to nuclear power are difficult to calculate, largely because death tolls associated with radiation are difficult to track. Regardless, no fatality estimate comes anywhere close to the estimated 76,000 lives a recent NASA report estimated are saved annually as a result of decreased pollution due to nuclear power. As it stands, there simply

isn't another method of energy production that can meet the growing demands of modern society as safely.

Since nuclear weapons were mentioned earlier, it would be remiss not to mention a secondary, but very valuable role of nuclear power plants. One of the best ways to "cool" nuclear material from decommissioned weapons is in power plants. At present, a company called Southern Nuclear runs a trio of power plants fueled by nuclear material from retired USSR weapons. This is a significantly safer and more useful alternative to just storing it in a box for the next few thousand years.

Simply put, nuclear power may not be a perfect solution to powering the future, but it stands as the only viable method of powering the future. The most vitriolic of its opponents would do well to consider their own emotional prejudices on the matter, and the lack of alternatives currently available to us.

#### Sources

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I cannot vouch for the impartiality or reliability of any of these sources other than the IAEA study and NASA's data. However, I have taken into account obvious biases when getting data from these articles. I misinterpreted some data in my first draft, which is part of the reason for the significant reworking. I didn't focus more on breeder reactors because the technology and principles it is based on are both immensely complicated, and I lack any real understanding of nuclear physics. This applies to the whole of this writing- I have no background or formal education in nuclear physics, and have to take scientific claims at face value. Hopefully, my arguments here are closer to the truth than my previous draft.

Hopefully I copied my email to you properly.