Nuclear energy: Benefits And Drawbacks

Have you ever heard of nuclear energy? Nuclear energy is a commonly used energy source that is produced from atoms splitting in a reactor that is used to heat water into steam, to turn a turbine, and create electricity. Its energy is released during nuclear fission or fusion. Nuclear fusion is when nuclei with low atomic numbers conjoin/fuse to create a heavier nucleus. While on the other hand, nuclear fission is when an already heavy nucleus splits due to interaction with another particle or naturally. Research on nuclear energy started around the time before World War II. It was initially only studied in order to develop weapons of defense. However, years later, scientists started venturing out to new ways that nuclear power could be used. The first nuclear reactor was built in 1942, and gained the name of the Chicago Pile 1. It wasn't until the 1960s, when the nuclear power industry started growing big in the United States. Nuclear energy has became more and more reliable over the years, and has became more effective due to technological advances. While nuclear energy isn't renewable, it has been used for many great things over the years, and is expected to last for a long time.

Uranium is a chemical element used to fuel nuclear power plants. Its symbol is 'U', while its atomic number is 92. Uranium is a naturally radioactive chemical element, this makes it perfect for nuclear power fuel. Stephanie writes, "The half-life of uranium-238 is 4.5 billion years. It decays into radium-226, which in turn decays into radon-222. Radon-222 becomes polonium-210, which finally decays into a stable nuclide, lead."("Facts About Uranium.", par. 15). Also, not to mention that the power plants do not use carbon emissions, this is all due to the powerful Uranium used instead. Nuclear fuel is also extremely dense.

There are many benefits to using nuclear power, including the fact that it is environmentally safe. Nuclear energy prevents greenhouse gases, which are extremely bad for our atmosphere/overall environment. Nuclear energy doesn't emit pollutants such as nitrogen oxide, particulate matter, mercury, etc. Nuclear energy is also sustainable, it runs 24/7 at a rate of 18-24 months. Christina writes, "Nuclear energy isn't considered renewable energy, given its dependence on a mined, finite resource, but because operating reactors do not emit any of the greenhouse gases that contribute to global warming, proponents say it should be considered a climate change solution."("What is Nuclear Energy and Is It a Viable Resource?", par. 7). Nuclear energy is considered to last somewhere around 200 more years according to its current consumption rate. Nuclear energy is very powerful and provides lots of energy across the nation. "Nuclear energy provides about 20% of U.S. electricity, and this share has remained stable since around 1990. Nuclear power plants had a capacity factor of 93% in 2018." ("Nuclear Energy Factsheet", par. 1).

Nuclear energy also has its disadvantages, much like any other energy source. For initial installment, nuclear power plants can cost billions of dollars. In my opinion, it's worth the investment due to the fact that it runs at a relatively cheap price, for such a long time. "Although nuclear energy production does not create any emissions, it does produce radioactive waste that must be securely stored so it doesn't pollute the environment… Storage of radioactive waste is a major challenge facing nuclear power plants".("The Pros & Cons of Nuclear Energy: Is It Safe?", par. 17-18). Accidents can also happen from time to time, for example, look at Chernobyl. There was a power overload, causing the nuclear power plant reactor to explode.

With more advanced designs and models to come along, accidents like this are less prone to happening. Accidents, however, may still happen in the future, or maybe even in the present.

Nuclear power is commonly used in the U.S., and can be considered a reliable, safe, and clean source of energy. Though, nuclear energy does have its downsides, it also has many advantages as well. Mike writes, “Nuclear energy provided 55% of America’s carbon-free electricity in 2018, making it by far the largest domestic source of clean energy.”(“5 Fast Facts About Nuclear Energy”, par. 2). So not only is nuclear energy, for the most part, environmentally safe, but it’s also very powerful. A total of 29 states in the U.S. are home to 96 nuclear reactors. The reactors were enough to power at least 20% of the nation’s clean energy. However, I do think that the worst part is the installment fee. Once it’s installed, it is relatively cheap, and is no problem, money-wise, to run but the installment fee is a lot of money that the U.S doesn’t need to be spending.