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Recycling Clean Energy

Nuclear energy is one of the cleanest sources of energy available. It does not produce carbon dioxide as the beta decay of Uranium is an exothermic spontaneous process that produces helium. Unfortunately, nuclear waste storage is a large problem in the United States, the cost of maintaining the waste storage facilities alone is 46.7 billion dollars. There is the constant threat of leaks and contaminated water leaking into drinking supplies. Then there is the danger of the current geological storage tanks lasting longer than humanity and spoiling the future environment as current nuclear waste takes millions of years to decompose to a state where radioactivity is no longer a threat to living things.

Instead, the US could be providing more clean energy and saving the environment from potential disaster in the future by recycling the nuclear waste and putting it back into reactors to use this resource to its fullest capacity. Uranium 235 is used in reactors for a few days before it beta-decays into Uranium 238, this process only allows the reactor to use less than five percent of the energy potential. The recycling process of U-238 adds a neutron to the U-238 and after a chemical binding process taking place over several days, the ion becomes Plutonium-239. Pu-239 behaves very similarly to U-235 and can be placed back into a reactor to produce more clean energy. After this second chance of use, the waste Pu-239 only takes a few hundred years to fully decay. A much shorter period of time compared to the decay of U-238 with millions of years to decay.

Nuclear meltdowns is the main concern for many people when it comes to broader nuclear energy use. The incidents at Three Mile Island in 1979 and Chernobyl in 1986 are almost

always mentioned in an argument against nuclear energy as a whole. The Three Mile Island Incident is the worst incident in US history, but there weren't any casualties and the radiation given off in the process of preventing a meltdown was less than the normal radiation given off by the earth in that area. Studies found no link to any health problems in local population that could have had a direct connection the Three Mile Island Incident. The Chernobyl disaster, on the other hand, did have casualties, fifty eight confirmed operators, firemen, and others. This disaster was caused by the flawed design of the reactor itself and improper training of its operators. In 2011, there was a meltdown at the Fukushima Nuclear Plant in Japan. There have been no reported deaths from the initial meltdown or from radiation sickness, although there have been around one thousand deaths caused by maintaining the evacuation that could have been prevented if the government had allowed people to return to their homes after the all clear was called, instead of delaying. The cause of this incident was nature made and not caused by any error on behalf of the operators. A monstrous tsunami following a large earthquake caused the power running the cooling system to fail.

Today, President Carter's nuclear recycling policy still stands. The announcement of the policy review stated that Uranium mining was sufficient to keep America's nuclear reactors running and that no government money would be spent on researching the recycling process nor to fund the development of nuclear technology that was not for commercial use, meaning nuclear warheads and other weapons. Though, these two processes are intrinsically linked as Plutonium is one of the potential fuel cells for nuclear bombs. Today, technology and safety protocols are much more advanced than the incidents and policies of the past. Even more recent incidents have had no casualties due to direct fallout, the threat of nuclear energy is minimal and with

recycling practices, the mining of Uranium could slow down and prevent more accidents on that side of the process.

Nuclear energy is one of the safest sources of energy. Compared to petroleum products, there are fewer major events and disasters per year that have human casualties.