

c/o Mr. Roberts

Boulder Country Day School

4820 Nautilus Ct. N.

Boulder CO, 80301

April 14, 2014

Allison M. Macfarlane

U.S. Nuclear Regulatory Commission

Mail Stop O-16G4

Washington, DC 20555-0001

Dear Ms. Macfarlane,

The modern world needs energy. Everything needs energy; cars, planes, boats, electronics, trains, buildings, and more. In the past, everything used nonrenewable resources; fossil fuels and nuclear energy. Now days, new energy resources are required. These new resources include solar, hydroelectric, wind and biomass power to create a more environmentally friendly way to make energy. But there is still one way that makes more energy than any others: nuclear power. Even though nuclear power is more effective than any other power source (NRCUS), it is still the most dangerous power source and needs to have extra precautions.

The reason why nuclear power is so efficient and dangerous, is because of the way it makes energy: by the splitting of enriched uranium with a process called nuclear fission. In order to turn nuclear fission into electrical energy, nuclear power plant operators have to control the energy given off by the enriched uranium and allow it to heat water into steam. To make this happen, the enriched uranium is formed into bundles, which are controlled by control rods inserted into the uranium. The control rods are made of a material that absorbs neutrons given off by the uranium. The amount of neutrons given off by the uranium heat the surrounding water into steam, which turns a turbine turning a generator. The generator converts the movement of the turbine into electrical energy (How Stuff Works). The downside to this way of creating electrical energy, is the amount of things that could go wrong. The Chernobyl incident was an example of many things going wrong at the same time.

The Chernobyl disaster was a catastrophic nuclear accident that occurred on April 26, 1986 at the Chernobyl Nuclear Power Plant in Ukraine, which at the time was under the control of the Soviet Union. The cause of the disaster was due to a sudden surge of power during a reactor test which caused an explosion of a reactor. The explosion of Unit 4 and fire afterward, released large quantities of radioactive particles into the atmosphere, which spread over much of Russia (the USSR at the time) and Western Europe. The Chernobyl disaster is widely considered to have been the worst nuclear power plant accident in history, and is one of only two classified as a level 7 event, which is the maximum classification on the International Nuclear Event Scale. The other level 7 event was the Fukushima Daiichi nuclear disaster in Japan in 2011. Overall, 31 people died during the Chernobyl accident itself, and long-term effects such as cancers and deformities are still being accounted for (Wikipedia). This should not happen again. To stop a disaster like the Chernobyl or Fukushima from happening again, we need extra precautions.

Since the Chernobyl accident, many people have protested against nuclear power because of the terrible consequences of a failure. Most of the time, people are worried about what happens when there is an accidental spill of nuclear waste into the wilderness, contaminating wildlife and in some cases, mutating the wild life. The cause for the spills are mostly because of structural failures and/or a failure for the people in charge of moving the control rods causing a rupture in the control area, resulting in an explosion. To stop this from happening, it is paramount to take extra precautions towards a failure. The workers need to be trained on any type of situation and how to handle it. The structure has to be able to withstand a catastrophic failure as well. "As a result, the reactors' owners will be required to undertake extensive analyses of their structures and components. Those are generally sturdier than assumed in licensing documents, but owners of some plants may be forced to make physical changes, and are likely to spend about \$5 million each just for the analysis." (The New York Times). Even if that seems a lot for an analysis, it could well save many lives during a catastrophic failure.

Nuclear power is the most effective power source, but when handled wrong, it can result in a catastrophic failure causing deaths and mutations. Due to the most recent failures, there needs to be more new steps to securing a safer world full of nuclear power. These include strengthening the structures that hold the radioactive materials during nuclear fission, have the workers be trained on any type of situation and how to handle it, and having the reactors' owners to be required to undertake extensive analyses of their structures and components. If all of these components of the safety precautions completed, then it could lead us to a safer world.

Respectfully yours,

A handwritten signature in cursive script that reads "Curtis Wientzen". The signature is written in dark ink and is positioned below the "Respectfully yours," text.

Curtis Wientzen

Curtis Wientzen
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