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A “Cold” Summer

Your parents have just bought you a brand new, bright blue, bouncy ball. One day, your ball accidentally falls into a pile of mud. While you are able to fish it out, some dirt just won't get off. As time passes, the material that the ball is made of starts to degrade, but it's still usable. Until, your ball starts to lose some of its notable properties. First, the color turns gray. Then, the sheen wears off. Finally, it just won't bounce anymore. If this ball was planet earth, the dirt would be CO₂ filling the atmosphere, and the material degrading could be considered as overpopulation, the burning of fossil fuels, pasteurization, deforestation, and industrial activity. The ball losing its color, sheen, and bounciness would be considered the effect of nuclear weapons. First, I'll go into what nuclear winter is, then the environmental production cost of nuclear weapons, some past examples of what's happened, and progress our neighbors have made through rules and regulation. Theories of nuclear winter, dead zones, and past disasters, show that the U.S. should join others in implementing a zero-nuclear use policy.

One notable effect of possible nuclear war would be the hypothesized “nuclear winter”. Nuclear winter is “the chilling of climate that is... a consequence of nuclear war and to result from the prolonged blockage of sunlight by high-altitude dust clouds produced by nuclear explosions,” as defined by Merriam-Webster. In other words, if two countries were to have a nuclear war, smoke from the weapons would “clog” the atmosphere, blocking sunlight from reaching earth. “effects would last for more than a decade...” writes environmentalists Alan

Robock and Owen Brian Toon, on Pg. 1 of the New York Times Op-Ed “Let’s End the Peril of a Nuclear War”. Robock and Toon continue, mentioning that the smoke could rise as high as 25 miles into the atmosphere, thus protecting it from rain and other natural forms of dissipation.

One direct effect of the lack of a sun, would be global famine. Global famine is “a widespread scarcity of food and can cause severe effects on global communities,” as defined by Chris Hufstader of OXFAM. “Even a very ‘limited’ nuclear war, involving less than 0.5% of the world’s nuclear weapons, would be enough to cause catastrophic global climate disruption and a worldwide famine, putting up to 2 billion people at risk,” said Dr. Ira Helfand, the International Physicians for the Prevention of Nuclear War’s co-president. Not only is this extremely likely to cause undernourishment, but it will worsen the lives of 811 million people who already have a lack of access to food (“World Hunger: Key Facts and Statistics 2021”).

Furthermore, nuclear winter is guaranteed to cause rapid marine extinction. Like how winter affects plants, the same goes for our coveted marine life. It’s similar to the idea of ocean acidification due to global warming, only the process takes place much faster, and lowers the temperature (“Global Cooling After Nuclear War Would Harm Ocean Life”). Whether the temperature of a naturally thriving ecosystem drops or rises, the effects would be disastrous. A long-lasting winter isn’t the only negative impact of nuclear weapons, as their production process may level the balance.

The production of nuclear weapons has proven to be harmful to the environment. Firstly, the elements uranium and plutonium are used to fuel the creation of nuclear weapons. According to Stephen Schwartz of The Brookings Institution, “From 1948 through 1996, the United States spent \$165.5 billion manufacturing plutonium, highly-enriched uranium, tritium, and other materials necessary to make nuclear explosives.” Not only are the two quite hard to find/create,

but the mixture of uranium and plutonium that is being produced, is highly radioactive. According to the EPA, the process of using this mixture in the production of nuclear weapons, produces more than 100 million gallons of hazardous liquid waste. Everything that's been contaminated by the waste, is sent to a Waste Isolation Pilot Plant in Carlsbad, New Mexico ("Nuclear Famine: climate effects of regional nuclear war"). If that wasn't enough, "...the Department of Energy is proposing to spend at least \$4.5 billion a year on 'stockpile stewardship' activities," (Schwartz). With that, consider the equipment needed for testing, and how much fuel it requires. Every step in the manufacturing of nukes is both expensive and environmentally harmful. Let's look at a few past examples of disastrous events.

As many say, "old is gold." Only, the past events regarding nuclear weapons and power production weren't gold at all. One such disaster, included a reactor explosion on April 6, 1986, at a power plant known as Chernobyl, located in Ukraine. Jennie Cohen in "History's Worst Nuclear Disasters" includes that not only did this explosion cause thousands of deaths, a thyroid cancer epidemic, and countless birth defects, but it unleashed a wave of radioactive gases onto a nearby town, known as Pripayat. Today, an 18-mile radius around the closed center is predicted to not be livable for another 150 years. Similarly, another accident happened on September 29, 1957, near a town known as Kyshtym. This plant was terribly built, and used only as an attempt to strengthen the Soviet Union's arsenal. On the day of, the cooling system for the waste storage tank failed, causing the radioactive waste to explode. Sadly, a cloud of dangerous particles loomed 300 sq. miles surrounding the facility, and civilians weren't evacuated until a week after. Overall, severe medical conditions were taken upon by many in both incidents, and thousands have passed away because of cancer and other diseases related to the radioactivity. The disasters

at Chernobyl and Kyshtym brought fear amongst all. What have the governments done to stop the production and use of nuclear weapons?

Believe it or not, many neighboring countries have made progress towards a zero-nuclear use policy. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is meant to prevent the spread of nuclear weapons to other countries, eventually to the point of nuclear disarmament. The U.S. does approve of NPT, showing that progress is being made. Similarly, the Treaty on the Prohibition of Nuclear Weapons (TPNW) is focused on prohibition, then complete elimination of nuclear weapons. Currently, this has been implemented by the United Nations, and is yet to receive the U.S.' signature. Consequently, the U.S. has agreed to many other similar treaties, perhaps seen as "small steps" towards the big goal. In fact, former U.S. President Barack Obama is seen to support a nuclear-free world ("Global Zero: Obama's utopian pathway to a nuclear-free world"). Many countries including the U.S. are making progress towards a nuclear ban. Still, our government needs to make sure it happens.

To summarize, the U.S. should implement a zero-nuclear use policy because of rapid climate change, the environmental cost of creation, damage that has already been done, and fellow countries passing similar policies. First, nuclear winter is one of the most dangerous effects of a possible nuclear war. Second, the production cost of nuclear weapons, both financially and environmentally, is extremely high. Next, some of the most horrifying disasters that have taken place due to errors in nuclear use, give reason to agree. Furthermore, progress the U.S. and our neighbors have made towards a nuclear ban was noted. With a zero-nuclear use policy, your bright blue ball is once again, back to its bouncy state.

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