**Research Essay**

Title: Pollution in factories in Michigan causing Global Warming

Total Words Used: 1009/1000

Student Names: (Full Names)

Student 1: Joe Smith (Introduction & Conclusion – 350 words)

Student 2: Maria Ruiz (Body – 350 words)

Student 3: Elizabeth Diaz (Body – 309)

Period Number: 1

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**Introduction**

Most climate scientists agree the main cause of the current global warming trend is human expansion of the greenhouse effect. The warming results from the atmosphere trapping the heat radiating from Earth toward space.Certain gases in the atmosphere block heat from escaping. Long-lived gases that remain semi-permanently in the atmosphere and do not respond physically or chemically to changes in the earth’s temperature. They are forcesthat create the climate change. Gases, such as water vapor, which respond physically or chemically to causes the changes in the temperature.

**Body**

Global warming occurs when carbon dioxide (CO2) and other air pollutants and greenhouse gases collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the earth’s surface. Normally, this radiation would escape into space the space but these pollutants, which can last for years to centuries in the atmosphere, trap the heat and cause the planet to get hotter. That's what's known as the greenhouse effect.In the United States, the burning of fossil fuels to make electricity is the largest source of heat-trapping pollution, producing about two billion tons of CO2 every year. Coal-burning power plants are by far the biggest polluters. The country’s second-largest source of carbon pollution is the transportation sector, which generates about 1.7 billion tons of CO2 emissions a year.Scientists first started writing about global warming in the 1850s. More than a century ago, others explored the possibility of human-caused climate change. Many people still lack a basic scientific understanding of the concept. Outside of textbooks, a Boulder-based astrophysicist Jeffrey Bennett indicated there is nothing controversialin terms of the basic science about global warming. He first wrote a book about global warming in his 2012 kids’ book *The Wizard who Saved the World.*“I felt like we needed to have a way to get kids to understand the topic without scaring them; make them feel like there is something they can do and build a better future with it,” he says. “The same thing that kids need, I think adults need, too.”

With his latest book, *A Global Warming Primer*, Bennett seeks to lay out the science and consequences of climate change in a matter-of-fact way that answers the most common questions about the issue, and examines possible solutions. He systematically addresses (and debunks) the case against climate change, while providing a way for supporters to speak intelligently about it. Bennett’s goal is simple: equip as many people, both children and adults, with a basic and rational understanding of global warming so that even the most hard-hearted skeptics will become believers.

Bennett has been teaching the science behind global warming for decades, beginning with his astronomy classes at the University of Colorado Boulder. “It’s in my notes from 1982,” he says. “Because global warming is an astronomical topic. We learned about it by comparing Earth to Venus.”Only second closest to the Sun. Venus is by far the hottest planet in our solar system, mainly because of the greenhouse gas effect given its atmosphere is 96 percent carbon dioxide.On Earth, human activities are changing the natural greenhouse. Over the last century the burning of fossil fuels like coal and oil has increased the concentration of atmospheric carbon dioxide (CO2). This happens because the coal or oil burning process combines carbon with oxygen in the air to make CO2. To a lesser extent, the clearing of land for agriculture, industry, and other human activities has increased concentrations of greenhouse gases.

The consequences of changing the natural atmospheric greenhouse are difficult to predict, but certain effects seem likely:

* On average, Earth will become warmer. Some regions may welcome warmer temperatures, but others may not.
* Warmer conditions will probably lead to more evaporation and precipitation overall, but individual regions will vary, some becoming wetter and others dryer.
* A stronger greenhouse effect will warm the oceans and partially melt glaciers and other ice, increasing sea level. Ocean water also will expand if it warms, contributing further to sea level rise.

Meanwhile, some crops and other plants may respond favorably to increased atmospheric CO2, growing more vigorously and using water more efficiently. At the same time, higher temperatures and shifting climate patterns may change the areas where crops grow best and affect the makeup of natural plant communities.In its Fifth Assessment Report, the Intergovernmental Panel on Climate Change, a group of 1,300 independent scientific experts from countries all over the world under the auspices of the United Nations, concluded there is a more than 95 percent probability that human activities over the past 50 years have warmed our planet.The industrial activities that our modern civilization depends upon have raised atmospheric carbon dioxide levels from 280 parts per million to 400 parts per million in the last 150 years. The panel also concluded there's a better than 95 percent probability that human-produced greenhouse gases such as carbon dioxide, methane and nitrous oxide have caused much of the observed increase in Earth's temperatures over the past 50 years.However, several lines of evidence show that current global warming by changes in energy from the sun. Since 1750, the average amount of energy coming from the sun remained constant or increased slightly.If a more active sun caused the warming, then scientists would expect to see warmer temperatures in all layers of the atmosphere. Instead, they have observed a cooling in the upper atmosphere, and a warming at the surface and in the lower parts of the atmosphere. That is because greenhouse gases are trapping heat in the lower atmosphere.

**Conclusion**

It is reasonable to assume that changes in the sun's energy output would cause the climate to change, since the sun is the fundamental source of energy that drives our climate system. Indeed, studies show that solar variability has played a role in past climate changes. For example, a decrease in solar activity is thought to have triggered the Little Ice Age between approximately 1650 and 1850, Greenland was cut off by ice from 1410 to the 1720s and glaciers advanced in the Alps.

**Reference**

Bernstein, M. (2002). Using Active Learning to understand global warming. Retrieved from [http://www.Learning\_success in college\_activell.com/articles/](http://www.Learning_English_activell.com/articles/)

Ellis, E., Esler, A. (2007). World View ofglobal warming. Prentice Hall, Boston, MA.

Heine, A. (1991).Surviving global warming. Prentice Hall, Boston, MA.

Kawasaki, G. (2013) The Art of understanding global warming.Prentice Hall, Boston, MA.

**Research Questions**

* 1. What was the labor or environmental law that was broken?
  2. Who was committing the violation (person, group of people, corporation)?
  3. Where did the violation take place (country, state, and city)?
  4. When (must not be older than 5 years) did the violation take place?
  5. Why is this report important?
  6. What are the repercussions if the violations continue?
  7. What are some solutions to solve the problem (provide some solutions to the problem)?