

Mitigation strategies and solutions essay



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Final Project Atmospheric pollution is a serious problem that the United States faces each day, the problem is growing worse every year because of the millions of drivers on the road and the industrial factories going up around the world. The pollutants in the air are causing the ozone to get thinner and thinner, global warming has become a major problem, the ice melting in arctic places, hurricanes tearing through towns that have never had them before, tsunamis destroying everything in its path in China, and earthquakes killing and destroying thousands of people, homes, and businesses.

The atmosphere is composed of five concentric layers; the troposphere, stratosphere, mesosphere, thermosphere, and exosphere. The atmosphere performs several valuable ecosystem services, first protecting Earth's surface from most of the sun's ultraviolet rays. Second, allowing visible light and some infrared radiation to penetrate, both of which warm Earth's surface and lower atmosphere. However, over the course of the years, the pollution in the air has caused the weather and climate to change.

The two major causes of primary air pollutants are transportation, causing 57% of the air's pollution and fuel combustion, other than vehicles, causing another 21%. They release significant quantities of nitrogen oxides, carbon oxides, particulate matter, and hydrogen oxides into the air. One heavy duty truck emits as much as particulate matter as 150 automobiles, whereas one diesel train engine produces 10 times the particulate matter of a diesel truck.

Electrical power plants and other industrial facilities, known as stationary sources, emit most of the particulate matter and sulfur oxides; they also emit sizable amounts of nitrogen oxides, hydrocarbon, and carbon oxides.

These air pollutants in the atmosphere harm the respiratory tracts of animals, including humans and can worsen existing medical conditions such as chronic lung disease, pneumonia, and cardiovascular problems. By reducing the amount of atmospheric pollution, it will allow the climates to go back to normal, snow in the winter instead of just mild to cold air and hot summers with less humidity or heat waves.

People will be able to conserve energy and the water will become less contaminated. The pollution in the atmosphere contributes to everything including the animals and the food, the more pollutants in the air can cause the plants to die and the animals to become sick and die as well.

Holding seminars to educate people on atmospheric pollutants can reduce the way people use transportation, electricity, natural resources, and the water supply. Smaller more fuel efficient automobiles produce fewer polluting emissions. Even the use of mass transit can reduce automobile use, decreasing nitrogen oxide emissions.

Modification of furnaces and engines to provides more complete combustion helps control the production of both carbon monoxide and hydrocarbons. Stationary landfills are another leading cause of atmospheric pollution; they make up 55.4% of solid waste disposed of everyday.

The process requires solid waste to be placed into the ground, compacted, and covered with a thin layer of soil everyday, this reduces the odor but may cause the gases to seep through the soils waste and accumulate in underground pockets, creating the possibility of an explosion, even in basements of nearby homes.

Leachate which is liquid created from the solid waste can seep from unlined landfills or through cracks in the lining of the lined landfill can potentially contaminate surface water and groundwater. Landfills by nature fill up and more are created but they are not a long term remedy for the disposal of waste. Most of the land for landfills is taken, making the construction of them to become closer to homes, polluting their air. Another type of pollutant is carbon monoxide.

“ Carbon monoxide is a colorless, odorless, tasteless gas against which humans have no protection.

Hemoglobin, which is in the blood, combines with carbon monoxide and carries less oxygen to body tissues causing health and heart effects. Some health problems come from the exhaust fumes leaking into the interior of the automobile. Several hundred Americans die from CO poisoning each year.

The fourth type is hydrocarbons, which are chemical, compounds containing only carbon and hydrogen. Hydrocarbons also arise from gasoline-powered vehicles and from industrial processes. Hydrocarbons are released when fuel in the engine burns partially. When hydrocarbons come in contact with sunlight they form ground level ozone.

Ground level ozone is a major ingredient in the formation of smog.

Ground level ozone is responsible for irritating eyes, damaging lungs, and it complicating respiratory problems". (Zero Waste America) The last type is nitrogen oxides that come from high-temperature combustion, such as that occurring in motor vehicle engines, electric powerplants, and other fuel usage. Nitrogen oxide contributes to acidity in precipitation and production of photochemical smog. Nitrogen oxide is also dangerous it causes serious illness and deaths even if the exposure to NO₂ is short. Detailed Description of the Problem

Air pollution is an ecological problem having to do with toxins in the air.

Air pollution causes a number of health and ecological problems. The earth is getting hotter, people are getting sick. Every day, the average person inhales about 20, 000 liters of air. Every time we breathe, we risk inhaling dangerous chemicals that have found their way into the air.

Air pollution includes all contaminants found in the atmosphere. These dangerous substances can be either in the form of gases or particles. Air pollution can be found both outdoors and indoors. It causes health problems like cancer, emphysema, and asthma.

It also causes the depletion of the ozone layer, which results in global warming and melting of the ice caps. Up until the industrial era, the air was fairly clean. The use of smokestacks and the burning of fuels puts many pollutants in the air during this period of time. The increased use of fossil

fuels today also builds on this. The hole in the ozone layer over Antarctica has grown to its greatest size.

If pollution continues as bad as it is, the O-Zone layer will be depleted enough to let ultra violet rays into the Earth causing skin cancer, global warming, and other problems with heat and ultra violet rays.

Dr Michael Kurylo, manager of NASA's, Upper Atmosphere Research Program, said: " These observations reinforce concerns about the weakness of Earth's ozone layer. The ozone layer protects our planet from harmful ultraviolet radiation and ozone depletion is believed to contribute to high rates of skin cancer in countries like Australia. It was hoped that the Montreal Protocol in 1987, which restricted the release of man-made pollutants such as chlorofluorocarbons (CFCs) would lead to a recovery of the ozone layer by 2050". (Inform Global Database)

Smog is a mix of many pollutants, chiefly ground-level ozone and particulate matter. Ozone is formed from nitrogen oxides or NOX and volatile organic compounds or VOC.

In the summer months, more than half of all people are exposed to ground-level ozone concentrations that are above the current national ambient air quality objective of 82 parts per billion over a one-hour period. In the United States, the main sources of NOX are transportation, industrial boilers, and power generation from fossil fuels. Natural sources of NOX are considered negligible. The main sources of human-made VOC are fuels and solvents.

While natural sources of VOC (primarily from vegetation) are 5.5 times human-made sources, it is important to note that locally, in the most populous smog-affected regions, VOC emissions tend to dominate during ozone episodes. While ozone affects only a few regions, most large cities experience levels of particulate matter that are known to have significant impacts on human health. Ground-level ozone and particulates are linked to a range of adverse health impacts, including respiratory distress, increased emergency hospital visits and hospital admissions, even premature death.

Recent studies show that there appears to be no human health “threshold” for either ground-level ozone or fine particulates.

Having government and global support and funding will show people how serious they are with reducing the atmospheric pollution. This will get people involved in helping save what is left of the Earth's atmosphere, the more they are educated by environmental programs, the more likely they are to get involved because they will know what to do to prevent their actions and tell others. Many restrictions are made for businesses and factories, but what is more important than the health of our people. Action should be taken right away.

Important advantages of passing extra restrictions on factories and businesses are involved within this action. Not only will the factories realize how much pollution they have caused without these conditions, but also they will prevent hurting the health of others. Each of these devices is exactly what we need in order to stop air pollution. The government should take action passing a restriction on equipment within factories and businesses.

The inspection should consist of requiring four different conditions or devices: a flare burner, an ionizing radiation, crosscurrents contacting of the waste gas stream with an acceptor, and change all combustion to natural gas combustion. Like most laws, if one device or condition is not present then the company should be fined a large sum of money.

In order for the company to continue staying open the missing devices or conditions should be present within the following two weeks. ” (Wikipedia)

Trying to reduce atmospheric pollution will not happen with one person; it will take thousands of people but with the more help, the better the chances of cleaning the air. The benefit will be that the air will be cleaner making it easier to breathe, less allergies and help problems will exist, people will conserve energy, and the water will become less contaminated. The downfall will be that not enough people will get involved in saving the atmosphere, trees and plants will die because of the poor air quality, people’s health will get worse, the food will become less healthy to eat, and the animals will die.