

Air pollution research paper examples

[Environment](#), [Pollution](#)



Air pollution

Introduction

Air pollution can be defined as the introduction of particulate matter, chemicals or biological materials into the atmosphere that cause diseases, discomfort or even death to human beings and also cause damage to the other living organism like the food crops and the microorganisms. The atmosphere is a composite and dynamic gaseous system which is very crucial in supporting life on the Earth planet. The stratospheric depletion of the ozone layer that is caused by air pollution has been classified as a threat to the health of human beings and the ecosystems of Earth. According to the report on the World's Worst Polluted Places that was done by the Blacksmith Institute in the year 2008, urban air quality and indoor air pollution are rated as the two of the worst toxic pollution problems .

Pollutants

Air pollutant is a substance in the air which can lead to harming the environment and human beings. Pollutants can be classified into the forms of gases, liquid droplets or solid particles. Additionally, pollutants may be man-made or natural. Pollutants can also be categorized in two main categories which are secondary or primary. The primary pollutants are those that are emitted directly from a process like ashes from the volcanic eruptions, carbon monoxide emitted by motor vehicles or sulfur dioxide that is released from the factories. The secondary pollutants are not directly emitted. Instead, they are formed in the air where the primary pollutants interact or react. An example is the ground level ozone which is a secondary pollutant

and one of the other secondary pollutants which form the photo chemical smog.

Other pollutants can be classified into both secondary and primary which means they are directly emitted and also formed from the other pollutants that are primary. The main primary pollutants that are as a result of human activity include Sulphur Oxides, Nitrogen Oxides, Carbon Oxide, atmospheric particulate matter, volatile organic compounds, toxic metals, chlorofluorocarbons, ammonia, odors and radioactive pollutants. The secondary pollutants include:

- The particulate materials that are formed from primary pollutants of gaseous forms and smog.
- The ground level ozone which is formed from VOCs and NO_x. The Ozone layer is a major component of the troposphere and also a key constituent of certain regions in the stratosphere.
- The Peroxyacetyl Nitrate which is also formed from the VOCs and NO_x.

The persistent organic pollutants are the organic compounds which have been seen to be environmental degradation resistant through biological, photolytic and chemical processes. For this reason, the pollutants have been seen to be persistent in the environment.

Emission factors

Emission factors of air pollutants are the representative of the values in which people try to relate the amount of pollutants released into the air with those activities that are related to the release of the pollutant. The factors are expressed as the ratio of pollutant weight to a unit volume, duration, or

distance of the activity that emits the pollutants. These factors facilitate emission estimations from various causes of the air pollution. The list of persistent organic products contains 12 compounds. Furans and Dioxins are of the POPs and are created through combustion of the organic products such as the burning of plastic materials in the open. These POPs have been said to be endocrine disruptors and are capable of mutating the genes of human beings.

Indoor Air Quality

Poor ventilation indoors causes air pollution to the places where people usually spend most of their time. A gas referred to as Radon, which is a carcinogen is emanated from the ground in certain areas and as such it is trapped in houses. Construction materials that include plywood and carpeting emit a gas known as formaldehyde. Solvents and paints exude volatile organic compounds during their drying periods. Paints that contain lead have the capability to degenerate in dust particles that are inhaled by human beings. Air pollution that can be said to be intentional through the use incense, air fresheners and other items that are scented can also cause harm to human beings.

Wood fires add large amounts of smoke particles into the atmosphere in and out of houses. Fatalities due to indoor pollution can also be caused through the use of pesticides and other chemicals indoors where there is no proper ventilation. Biological causes of air pollution can also be found indoors like the airborne particulates and gases. Pets also produce dander, also people give out dust from decomposed hair and skin flakes, dust mites in the

beddings, furniture and carpeting also produce some enzymes and fecal droppings that are micrometer sized, mold that is formed in walls generate spores and mycotoxins. Soil, surrounding gardens and houseplants can produce dusts, mold and pollen. The lack of air circulation indoors results to the accumulation of the airborne pollutants more than they would in nature.

Health effects

Pollution of air is a major risk factor for many health conditions that include heart diseases, respiratory infections, and even lung cancer and this is according to the World Health Organization (WHO). The health conditions that are as a result of air pollution are coughing, wheezing, difficulty in breathing and aggravation of the already existing cardiac and respiratory problems. The effects can lead to an increased use of medication, increased visits to the doctors and the emergency rooms, more premature deaths and also increased hospital admissions. The effects of poor quality of air to human beings' are far reaching but mostly affects the respiratory and the cardiovascular system. The reactions of individuals to air pollutants are depended on the types of pollutants that a person has been exposed to, the genetics and health status and also the degree of exposure.

It has been estimated that both outdoor and indoor air pollutions have resulted to 3.3 million deaths all over the world. The children that are less than five years of age living in the developing countries have been seen to be the vulnerable as regards to the total deaths attributed to outdoor and indoor air pollution. World Health Organization has stated that 2.4 million people are dying every year from reasons that are directly related to air

pollution. 1. 5 million of the deaths are attributed to the indoor air pollution. Studies of epidemiological indicate that more than half a million Americans are dying every year due to cardiopulmonary diseases that are related to breathing in fine particles in the air. A study carried out by the University of Birmingham also indicates that there is very strong relationship between deaths caused by pneumonia and air pollution by motor vehicles.

All over the world, more yearly deaths are associated to air pollution than those related to automobile accidents. According to the study conducted by European Commission in the 2005, pollution of air reduces the life expectancy of human being by an average on nine months. The causes of the deaths are lung and heart diseases, asthma, respiratory allergies and emphysema. The US EPA has estimated that the proposed changes in the technology of diesel engine could result to more than 11, 000 lesser premature deaths, 15, 000 lesser heart attacks, 7, 000 lesser visits to the emergency rooms by children who suffer from asthma and 9, 000 lesser hospital admissions related to respiratory problems every year in the U. S.

The worst civilian air pollution calamity in India took place in the year 1984 which is referred to as the Bhopal Disaster. Industrial vapours leaked from the Union Carbide Factory that belonged to the Union Carbide Inc U. S. A. It took the lives on more than 25, 000 individuals. The United Kingdom also experienced its worst air pollution in December 4th referred to as the Great Smog of 1952 that formed all over London. More than 4, 000 more people died in the following six days and some more 8, 000 in the following months.

A current economic study on the impacts of health that are related to costs of air pollution in Los Angeles and the San Joaquin Valley indicates that more

than 3, 800 individuals are dying prematurely every year for the reasons of air pollution.

Diesel exhaust has been rated to be a main contribution to the particulate matter of air pollution that is derived from combustion. Following some experiments on human studies, through a proper exposure to chamber setup, the diesel exhaust is associated to the acute vascular dysfunctions and the increased formation of thrombus. This serves as a link between the association of particulate matter in the pollution of air and the increase in cardiovascular mortality and morbidity.

Effects of air pollution on children

All over the world, the children that live in cities that have high exposure to air pollution are at a high risk to develop health complications such as pneumonia, asthma and other respiratory infections. For the reasons that children are at most times outdoors, they are more vulnerable to dangers of air pollution. There are also increased risks of having low birth weights for children in such cities. World Health Organizations gave out reports which show that the highest concentrations of matter particles in the air are found in countries that have low economic power, high poverty and increasing rates of growth. However, in the U. S. despite passing the Clean Air Act in the year 2002, almost 146 million citizens of Americans are living in areas where the concentration of some air pollutants are higher than the federal standards. Measure to protect children's health have been taken to in cities like India and New Delhi where vehicles use natural gas that is compressed so as to help in the elimination of pea soup smog.

Efforts to reduce air pollution

There are several technologies of air control and strategies of planning land uses that are available in efforts to reduce air pollution. In the most basic level, planning on the use of land is probable to involve transport infrastructure and zoning planning. In the more developed countries, planning on the use of land is a crucial part of the social policy that ensures the land is efficiently used to protect the environment. The efforts to reduce air pollution include primary regulations, expansion of regulations to new levels, increasing the efficiency of using fuel and the conversion to fuels that are cleaner such as biodiesel, bioethanol and electric.

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