

Air pollution assignment

[Environment](#), [Air](#)



One of the formal definitions of air pollution is as follows – ‘ The presence in the atmosphere of one or more contaminants in such quality and for such duration as is injurious, or tends to be injurious, to human health or welfare, animal or plant life. ‘ It is the contamination of air by the discharge of harmful substances. Air pollution can cause health problems and it can also damage the environment and property. It has caused thinning of the protective ozone layer of the atmosphere, which is leading to climate change.

Modernization and progress have led to air getting more and more polluted over the years. Industries, vehicles, increase in the population, and urbanization are some of the major factors responsible for air pollution. The following industries are among those that emit a great deal of pollutants into the air: thermal power plants, cement, steel, refineries, petrol chemicals, and mines. Air pollution results from a variety of causes, not all of which are within human control. Dust storms in desert areas and smoke from forest fires and grass fires contribute to chemical and particulate pollution of the air.

The source of pollution may be in one country but the impact of pollution may be felt elsewhere. The discovery of pesticides in Antarctica, where they have never been used, suggests the extent to which aerial transport can carry pollutants from one place to another. Probably the most important natural source of air pollution is volcanic activity, which at times pours great amounts of ash and toxic fumes into the atmosphere. The eruptions of such volcanoes as Krakow in Indonesia, Mt. St. Helene in Washington, USA and Katmai in Alaska, USA, have been related to measurable climatic changes.

Listed below are the major air pollutants and their sources. Carbon monoxide (CO) is a colorless, odorless gas that is produced by the incomplete burning of arbor-based fuels including petrol, diesel, and wood. It is also produced from the combustion of natural and synthetic products such as cigarettes. It lowers the amount of oxygen that enters our blood. It can slow our reflexes and make us confused and sleepy. Carbon dioxide (CO₂) is the principle greenhouse gas emitted as a result of human activities such as the burning of coal, oil, and natural gases.

Chlorofluorocarbons (CFC) are gases that are released mainly from air-conditioning systems and refrigeration. When released into the air, CFCs rise to the stratosphere, where they come in intact with few other gases, which leads to a reduction of the ozone layer that protects the earth from the harmful ultraviolet rays of the sun. Lead is present in petrol, diesel, lead batteries, paints, hair dye products, etc. Lead affects children in particular. It can cause nervous system damage and digestive problems and, in some cases, cause cancer.

Ozone occurs naturally in the upper layers of the atmosphere. This important gas shields the earth from the harmful ultraviolet rays of the sun. However, at the ground level, it is a pollutant with highly toxic effects. Vehicles and industries are the major source of ground-level ozone emissions. Ozone makes our eyes itch, burn, and water. It lowers our resistance to colds and pneumonia. Nitrogen oxide (NO_x) causes smog and acid rain. It is produced from burning fuels including petrol, diesel, and coal. Nitrogen oxides can make children susceptible to respiratory diseases in winters.

Suspended particulate matter (SUM) consists of solids in the air in the form of smoke, dust, and vapor that can remain suspended for extended periods and is also the main source of haze which reduces visibility. The finer of these particles, when breathed in can lodge in our lungs and cause lung damage and respiratory problems. Sulfur dioxide (SYS) is a gas produced from burning coal, mainly in thermal power plants. Some industrial processes, such as production of paper and smelting of metals, produce sulfur dioxide. It is a major contributor to smog and acid rain. Sulfur dioxide can lead to lung diseases.

Smog . Smog is a combination of various gases with water vapor and dust. A large part of the gases that form smog is produced when fuels are burnt. Smog forms when heat and sunlight react with these gases and fine particles in the air. Smog can affect outlying suburbs and rural areas as well as big cities. Its occurrences are Often linked to heavy traffic, high temperatures, and calm winds. During the winter, wind speeds are low and cause the smoke and fog to stagnate; hence pollution levels can increase near ground level. This keeps the pollution close to the ground, right where people are breathing.

It hampers visibility and harms the environment. Heavy smog is greatly decreases ultraviolet radiation.. Smog causes a misty haze similar to fog, but very different in composition. In fact the word smog has been coined from a combination of the words fog and smoke. Smog refers to hazy air that causes difficult breathing conditions. The most harmful components of smog are ground-level ozone and fine airborne particles. Ground-level ozone forms

when pollutants released from gasoline and diesel-powered vehicles and oil-based solvents react with heat and sunlight. It is harmful to humans, animals, and plants.

The industries and the households relied heavily on coal for heating and cooking. Due to the burning of coal for heat during the winter months, emissions of smoke and sulfur dioxide were much greater in urban areas than they were during the summer months. Smoke particles trapped in the fog gave it a yellow/black color and this smog often settled over cities for many days. Acid rain Another effect of air pollution is acid rain. The phenomenon occurs when sulfur dioxide and nitrogen Oxides from the burning of fossil fuels such as, petrol, diesel, and coal combine with water vapor in the atmosphere and fall as rain, snow or fog.

These gases can also be emitted from natural sources like volcanoes. Acid rain causes extensive damage to water, forest, soil resources and even human health. Many lakes and streams have been contaminated and this has led to the disappearance of some species offish in Europe, USA and Canada as also extensive damage to forests and other forms of life. It is said that it can corrode buildings and be hazardous to human health. Because the contaminants are carried long distances, the sources of acid rain are difficult to pinpoint and hence difficult to control.

For example, the acid rain that may have damaged some forest in Canada could have originated in the industrial areas of LISA. In fact, this has created agreements between Canada and the United States and among European countries over the causes of and solutions to the problem of acid rain. The

international scope of the problem has led to the signing of international agreements on the limitation of sulfur and nitrogen oxide emissions. What you can do to reduce air pollution [Pick] [pick] I [pick] I Encourage your family to walk to the neighborhood market.

I Whenever possible take your bicycle. I As far as possible use public forms of transport. I Don't let your father drop you to school, take the school bus. I Encourage your family to form a car pool to office and back. I[pick] I Reduce the use of aerosols in the household. I Look after the trees in your neighborhood. I Begin a tree-watch group to ensure that they are well tended and cared for. When not required. L[pick] Switch-off all the lights and fans If possible share your room with others when the reconditioned, cooler or fan is on.

I Do not burn leaves in your garden, put them in a compost pit. I Make sure that the pollution check for your family car is done at regular intervals fitted with catalytic converters. Unleaded petrol. Cars should, as far as possible, be I I[pick] I Use only [pick]Health impact of specific air pollutants Some of these gases can seriously and adversely affect the health of the population and should be given due attention by the concerned authority. The gases mentioned below are mainly outdoor air pollutants but some of them can and do occur indoor depending on the source and the circumstances. pick]Tobacco smoke. Tobacco smoke generates a wide range of harmful chemicals and is a major cause of ill health, as it is known to cause cancer, not only to the smoker but affecting passive smokers too. It is well- now that smoking affects the passive smoker (the person who is in the vicinity of a

smoker and is not himself/herself a smoker) ranging from burning sensation in the eyes or nose, and throat irritation, to cancer, bronchitis, severe asthma, and a decrease in lung function. [pick]Physiological pollutants.

These are mostly allergens that can cause asthma, hay fever, and other allergic diseases. [pick]Volatile organic compounds. Volatile compounds can cause irritation of the eye, nose and throat. In severe cases there may be headaches, nausea, and loss of coordination. In the longer run, some of them are suspected to cause damage to the liver and other parts of the body.

[pick]Formaldehyde. Exposure causes irritation to the eyes, nose and may cause allergies in some people. [pick]Lead. Prolonged exposure can cause damage to the nervous system, digestive problems, and in some cases cause cancer.

It is especially hazardous to small children. [pick]Radon. A radioactive gas that can accumulate inside the house, it originates from the rocks and soil under the house and its level is dominated by the outdoor air and also to some extent the other gases being emitted indoors. Exposure to this gas increases the risk of lung cancer. [pick]Ozone. Exposure to this gas makes our eyes itch, burn, and water and it has also been associated with increase in respiratory disorders such as asthma. It lowers our resistance to colds and pneumonia. [pick]Oxides of nitrogen. This gas can make children susceptible to respiratory diseases in the winters. [pick]Carbon monoxide. CO (carbon monoxide) combines with hemoglobin to lessen the amount of oxygen that enters our blood through our lungs. The binding with other heme proteins causes changes in the function of the affected organs such as the brain and

he cardiovascular system, and also the developing fetus. It can impair our concentration, slow our reflexes, and make us confused and sleepy.

[pick]Sulfur dioxide. SO_2 (sulfur dioxide) in the air is caused due to the rise in combustion of fossil fuels. It can oxidize and form sulfuric acid mist. SO_2 in the air leads to diseases of the lung and other lung disorders such as wheezing and shortness of breath. Long-term effects are more difficult to ascertain as SO_2 exposure is often combined with that of SUM. [pick]SUM (suspended particulate matter). Suspended matter consists of dust, fumes, soot and smoke.

The main chemical component of SUM that is of major concern is lead, others being nickel, arsenic, and those present in diesel exhaust. These particles when breathed in, lodge in our lung tissues and cause lung damage and respiratory problems. The importance of SUM as a major pollutant needs special emphasis as a) it affects more people globally than any other pollutant on a continuing basis; b) there is more monitoring data available on this than any other pollutant; and c) more epidemiological evidence has been collected on the exposure to this than to any other pollutant.