**POLLUTION IN CITIES Assignment**

You will create a visual representation of different elements of pollution that will include hand-drawn images and hand-written text. Your finished assignment will be #5 in your Unit 7 Binder.

WATER POLLUTION

AIR POLLUTION

POLLUTION

DISEASE

LAND POLLUTION

AIR POLLUTION

Describe the causes and effects of air pollution

Provide at least 2 possible solutions to this issue

Must include at least one hand-drawn color image

WATER POLLUTION

Describe the causes and effects of water pollution

Provide at least 2 possible solutions to this issue

Must include at least one hand-drawn color image

LAND POLLUTION

Describe the causes and effects of land pollution

Provide at least 2 possible solutions to this issue

Must include at least one hand-drawn color image

DISEASE

Describe how people and cities cause the spread of diseases and its effect on the people of those cities

Provide at least 2 possible solutions to preventing the spread of disease

Must include at least one hand-drawn color image

**Air Pollution**

Air pollution refers to the contamination of the air, whether that be indoors or outside. A physical, biological or chemical alteration to the air in the atmosphere can be termed as pollution. It occurs when any harmful gases, dust, or smoke enters into the atmosphere and makes it difficult for plants, animals and humans to survive as the air becomes dirty.

**Cases of Air Pollution**

**1. Burning of Fossil Fuels:** Sulfur dioxide emitted from the combustion of [fossil fuels](https://www.conserve-energy-future.com/Advantages_FossilFuels.php) like coal, petroleum and other factory combustibles is one the major cause of air pollution. Vehicles including trucks, cars, trains, and airplanes cause immense amounts of pollution

**2. Agricultural activities:** Ammonia is a very common by product from agriculture related activities and is one of the most hazardous gases in the atmosphere. Use of insecticides, pesticides and fertilizers in agricultural activities has grown quite a lot. They emit harmful chemicals into the air.

**3. Exhaust from factories and industries:** Manufacturing industries release large amounts of carbon monoxide, hydrocarbons, organic compounds, and chemicals into the air thereby depleting the quality of air. Petroleum refineries also release hydrocarbons and various other chemicals that pollute the air and also cause [land pollution](https://www.conserve-energy-future.com/causes-effects-solutions-of-land-pollution.php).

**4. Mining operations:** Mining is a process wherein minerals below the earth are extracted using large equipment. During the process dust and chemicals are released in the air causing massive air pollution.

**Effects of Air Pollution**

1. **Respiratory and heart problems:** The effects of air pollution are known to create several respiratory and heart conditions along with cancer, among other threats to the body. Several millions are known to have died due to direct or indirect effects of air pollution. Children in areas exposed to air pollutants are said to commonly suffer from pneumonia and asthma.
2. **Global warming:** Another direct effect is global warming. With increased temperatures worldwide has led to an increase in sea levels, melting of ice from colder regions and icebergs, displacement and loss of habitat.

**Water Pollution**

Infested with waste ranging from floating plastic bags to chemical waste, our water bodies have turned into a pool of poison. The contamination of water bodies in simplest words means water pollution. Thereby the abuse of lakes, ponds, oceans, rivers, reservoirs etc. is water pollution. [Pollution](https://www.conserve-energy-future.com/PollutionTypes.php) of water occurs when substances that will modify the water in negative fashion are discharged in it. This discharge of pollutants can be direct as well as indirect.

**Causes/Effects of Water Pollution –**

1. **Industrial waste:** Industries produce huge amounts of waste, which contains toxic chemicals and pollutants that can cause [air pollution](https://www.conserve-energy-future.com/causes-effects-solutions-of-air-pollution.php) and damage to our environment. Many industries do not have proper waste management systems and drain the waste into the fresh water which goes into rivers, canals and later in to the sea. The toxic chemicals have the capability to change the color of the water, increase the amount of minerals, change the temperature of water and pose serious hazards to water organisms.
2. **Sewage and waste water:** The sewage and waste water that is produced by each household is chemically treated and released into the sea with fresh water. The sewage water carries harmful bacteria and chemicals that can cause serious health problems. The sewers of cities house several pathogens and diseases. Microorganisms in water are known to be causes of some very deadly diseases and become the breeding grounds for other creatures that act like carriers.
3. **Mining activities:** Mining is the process of crushing the rock and extracting coal and other minerals from underground. These elements when extracted in the raw form contains harmful chemicals and can increase the amount of toxic elements when mixed up with water which may result in health problems. Mining activities emit metal waste and sulphides from the rocks and can run off into water supplies.
4. **Chemical fertilizers and pesticides:** Chemical fertilizers and pesticides are used by farmers to protect crops from insects and bacteria. They are useful for the plants’ growth. However, when these chemicals are mixed up with irrigation systems and run off they become harmful. Also, when it rains, the chemicals mix up with rainwater and flow down into rivers and canals which pose serious damages for aquatic animals and plants.
5. **Burning of fossil fuels:** [Fossil fuels](https://www.conserve-energy-future.com/FossilFuels.php) like coal and oil when burnt produce substantial amount of ash in the atmosphere. The particles which contain toxic chemicals when mixed with water vapor result in [acid rain](https://www.conserve-energy-future.com/causes-and-effects-of-acid-rain.php). Also, carbon dioxide is released from [burning of fossil fuels](https://www.conserve-energy-future.com/HowFossilFuelsWork.php) which result in global warming.
6. **Accidental Oil leakage:** Oil spills pose a huge concern as large amount of oil enters into the sea and does not dissolve with water. Oil spills cause many problems for local marine wildlife such as fish, birds and sea otters.

**Land Pollution**

Land pollution means degradation or destruction of earth’s surface and soil that lessens the quality and/or productivity of the land as an ideal place for agriculture, forestation, construction caused directly or indirectly by human activities.

**Causes of Land Pollution –**

1. **Deforestation and soil erosion:** [Deforestation](https://www.conserve-energy-future.com/causes-effects-solutions-of-deforestation.php) carried out to create dry lands is one of the major concerns. Land that is once converted into a dry or barren land, can never be made fertile again, whatever the magnitude of measures to redeem it are. Land conversion, meaning the alteration or modification of the original properties of the land to make it use-worthy for a specific purpose is another major cause. Also there is a constant waste of land. Unused available land over the years turns barren and then this land then cannot be used.
2. **Agricultural activities:** With a growing human population, demand for food has increased considerably. Farmers often use highly toxic fertilizers and pesticides to get rid of insects, fungi and bacteria from their crops. However, with the overuse of these chemicals, they result in contamination and poisoning of soil.
3. **Overcrowded landfills:** Each household produces tons of garbage each year. Garbage like aluminum, plastic, paper, cloth, and wood is collected and sent to the local [recycling](https://www.conserve-energy-future.com/Recycling.php) unit. Items that cannot be recycled become a part of the landfills that hampers the beauty of the city and cause land pollution.
4. **Industrialization:** Due to increase in demand for food and shelter more goods are produced. This resulted in creation of more waste that needs to be disposed of.  To meet the demand of the growing population, more industries were developed which leads to deforestation. Research and development paved the way for modern fertilizers and chemicals that were highly toxic and led to soil contamination.
5. **Sewage treatment:** Large amount of solid waste is leftover once the sewage has been treated. The leftover material is sent to landfill sites, which ends up polluting the environment.

**Effects of Land Pollution –**

1. **Soil pollution**: Soil pollution is another form of land pollution, where the upper layer of the soil is damaged. This is caused by the overuse of chemical fertilizers, soil erosion caused by running water and other pest control measures; this leads to loss of fertile land for agriculture, forest cover, fodder patches for grazing etc.
2. **Change in climate patterns:** The effects of land pollution are very hazardous and can lead to the loss of ecosystems. When land is polluted, it directly or indirectly affects the [climate patterns](https://www.conserve-energy-future.com/ClimateChangeEffects.php).
3. **Environmental Impact:**When deforestation is committed, the tree cover is compromised on. This leads to a steep imbalance in the rain cycle. A disturbed rain cycle affects a lot of factors. To begin with, the green cover is reduced. Trees and plants help balance the atmosphere, without them we are subjected to various concerns like [global warming](https://www.conserve-energy-future.com/GlobalWarmingCauses.php), the [greenhouse effect](https://www.conserve-energy-future.com/GreenhouseEffectCauses.php), irregular rainfall and flash floods among other imbalances.
4. **Effect on human health:** When the land is contaminated with toxic chemicals and pesticides it can lead to problems such as skin cancer and human respiratory system issues. The toxic chemicals can reach our body through foods and vegetables grown in polluted soil.

**Disease**

The latest population projections from the United Nations, announced in a new report last summer, estimate that the [world's population](http://www.livescience.com/topics/world-population/) will reach 9.6 billion people by mid-century, and 11 billion by 2100. The sheer number of people, their interactions with animals and ecosystems, and the increase in international trade and travel are all factors that will likely change the way humanity deals with preventing and treating epidemics, experts say. In fact, the unprecedented growth of the human population in the second half of the last century — growing from 2.5 billion to 6 billion — may have already started changing how infectious diseases emerge.

"There's a strong correlation between the risk of pandemic and human population density. We've done the math and we've proved it," said Dr. Peter Daszak, a disease ecologist and the president of Eco Health Alliance.

In light of the continuous population growth, health authorities are calling for strengthening public health organizations, and giving more resources to systems that would protect people. Researchers are studying ways to identify viruses faster, so that vaccines could be developed early in the process. Additionally, scientists are trying to understand the complicated interactions between humans and the surrounding ecosystem, so that they could identify emerging disease hotspots and find the next emerging virus before it finds humans. All of these are done in an effort to have the new creative solutions that [preventing pandemics](http://www.livescience.com/2407-predicting-major-virus.html) on a populated planet would require.

The number of pathogens originating in wildlife and infecting humans has increased with time, too, Daszak's research shows. In the last decade of the 20th century, such pathogens were responsible for more than half of the new infectious diseases that cropped up in that time period.

Human contact with wildlife species that facilitate the transmission of novel viruses may increase in the future, as the population grows and humans searching for places to live and farm fan out to areas inhabited by or closer to wildlife.

Stephan Morse, an epidemiologist at Columbia University, was in the early years of his career when the first case of [HIV/AIDS](http://www.livescience.com/34699-hiv-aids-symptoms-treament-prevention.html) was detected in the United States in 1981. In a pandemic that continues to this day, HIV, believed to have originated in chimpanzees, has infected 60 million people and caused an estimated 30 million deaths.

As viruses constantly change, it is also possible for them to mutate in a way that allows them to [easily spread among people](http://www.livescience.com/34646-h7n9-flu-spread-ferrets.html). In fact, one of the hardest questions for the scientists to solve is not just how viruses living in animals become able to infect humans, but also what makes them able to move from person to person.

Today, travelers are just a few hours' flight away from places that would have taken months to travel to by ground or sea in the past. This is a boon not just to humans, but to the microbes they carry. Sick travelers can [introduce pathogens to new people as they travel](http://www.livescience.com/13878-health-hazards-air-travel.html), and at their destination, before they even realize they are sick. With future population growth, simple math suggests that there's going to be more travelers, potentially helping epidemics grow by quickly spreading the contagion.

A traveling virus may also cause economic damage, beyond even the costs associated with disease treatment and control. SARS cost billions of dollars by cutting international travel by 50 to 70 percent, and affected businesses in several sectors. Growth of the Chinese GDP fell by 2 percentage points in one quarter, and half a percentage point in annual growth, according to the World Bank and the Chinese government’s estimations.