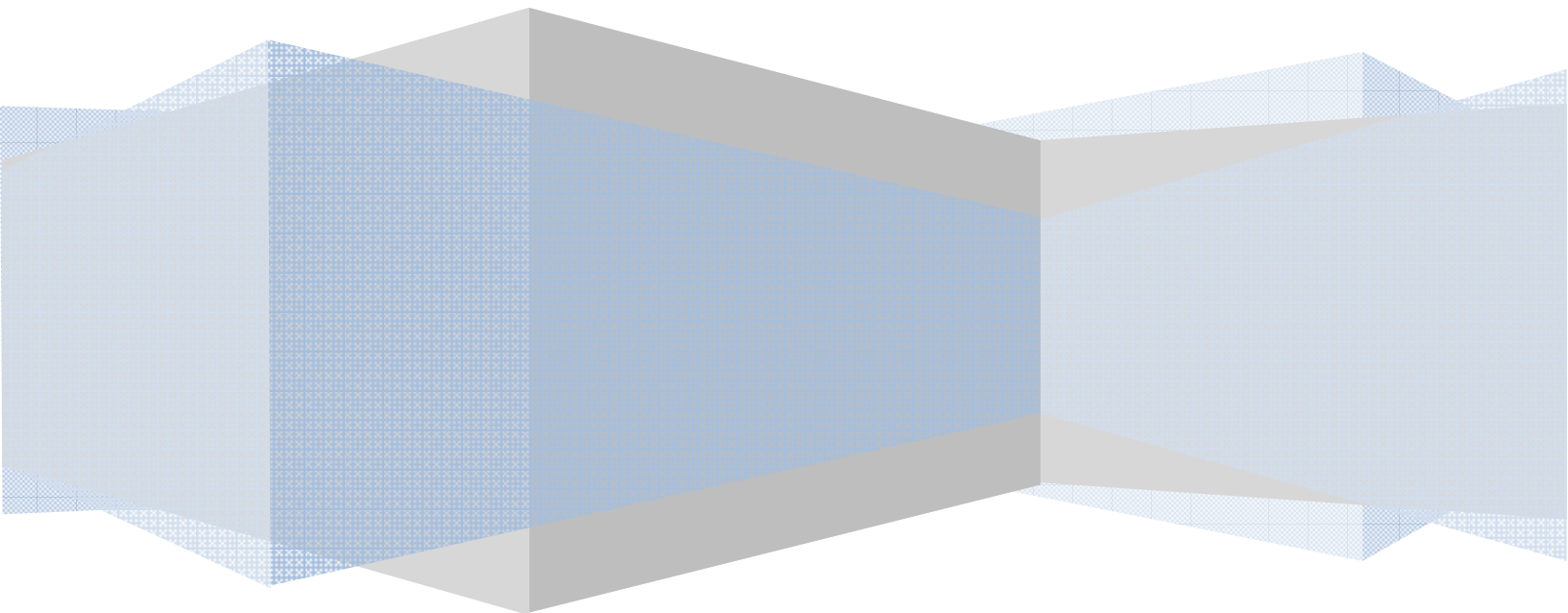


ON HEALTH AND POLLUTION

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One of the worst repercussions of world pollution is the increasing instance of health problems. Health professionals nowadays continue to discover a host of ailments which had otherwise been unknown before. Furthermore, even animal and plant life becomes distressed when air, water, and ground pollution starts to worsen. As humans are situated on top of the food chain and are keen to consume both animals and plants as daily sustenance, they are more at risk to higher infection, weakened immune system, and chemical substance ingestion.

A Concern for both Developed and Developing Nations

As technology becomes highly improved and advancements are made on manufacture, transportation, agriculture, and construction, the environment becomes more exposed to a higher number of contaminants. As a result, health problems worldwide are increasing at an alarming rate, affecting the first-world countries and even the developing and underdeveloped countries.

In fact, in a recent US research, it has been discovered how 200 various diseases are associated with pollution. This includes 37 different types of cancer and even cerebral palsy, in which 75% of the cases started to occur during early gestation. Everyday, thousands of chemicals are released into the air and water and eventually get seeped by the earth. Unfortunately in a blood test examination done on individuals in Europe and the U.S., it has been discovered how people are actually harboring potentially dangerous chemicals and toxins in their bloodstream.

Toddlers and growing children are the worst affected with pollution, as well as the elderly and individuals who are already suffering from cardio-respiratory problems. Since newborns and children tend to take in more air, they are more prone to inhaling a higher degree of pollutants. Moreover, as the immune systems of children are yet to be fully developed, they tend to have lower resistance to environment pollutants and physiological infections.

The Ill Health Effects of Air Pollution

Air pollution is formally defined as the release of chemicals into the air or the atmosphere. A few examples of common air contaminants are sulfur dioxide, carbon monoxide, CFCs or chlorofluorocarbons, diesel particles, and nitrogen oxides. Chemical carcinogens in the air are also often linked to cancer and other deadly diseases.

Although air pollution can potentially affect almost all of the systems within the human body, the often worst affected are the respiratory and the cardiovascular system. Normally, different individuals will have different reactions to air pollutants, depending on health conditions, environment, and genetics. However, increased levels of contamination in the atmosphere are very likely to affect anyone, regardless of age, location, and health status.

Once the lungs and the entire respiratory system experience low quality air through inhalation, it becomes more susceptible to infections. The fact remains however, that in addition to oxygen, there are potentially deadly contaminants present in the air. These contaminants, such as free radicals, metals, and other substances, could easily injure the sensitive lung tissue cells.

Moreover, the cardiovascular system, in addition to the respiratory system, is also adversely affected by air pollutants. The heart and the blood vessels compose the cardiovascular system. This bodily system is responsible for bringing respiratory gases, nutrients, and hormones into the tissues and cells of the body. Therefore, inhalation of air pollutants can cause absorption of these contaminants by the heart through the bloodstream. Inflammatory effects, heart contractions, and deadly arrhythmia are a few of the consequences of chemical absorption into the cardiovascular system.

Thus, lung and heart diseases are very common when air pollutants are inhaled into the bloodstream and carried into the heart and lungs. Lung infections may include bronchitis, pneumonia, cough, and difficulty in breathing. Asthma continues to affect not only children but adults as well. In fact, people who are born without asthma have found themselves afflicted with the condition later in life. Doctors have attributed this to changes in the environment, lifestyle, and the growing number of air contaminants in the atmosphere.

Air pollution can either have short-term or long-term effects on human health. Allergic reaction such as rhinitis, eye irritation, nausea, headaches, and coughing are a few of the short-term bodily reactions. As for the long-term effects of air-borne pollution, heart disease, chronic respiratory disease, brain damage, and nerve damage are among the ill-effects included.

Since air pollution tends to decrease the ozone concentration which occurs naturally in the Earth's stratosphere, the degree of ultraviolet radiation experience by inhabitants on the Earth's surface consequently increases as well. Excessive ultraviolet radiation can damage vegetative life on Earth, distressing harvests and food production. Moreover, radiation is traced as the strongest cause for skin cancer, affecting millions of individuals worldwide.

Oxygen free radicals are also considered to be consequences of chemical substances, whether absorbed through water or through air inhalation. Since these free radicals oxidize low-density lipoproteins, it can lead to blood vessel cells injury and increases the speed of migratory inflammatory cells into the upset areas. If oxygen free radicals are formed in the heart tissues, it can lead to heart cell death.

What Causes Air Contamination ?

Unfortunately, air pollution can exist whether indoors or outdoors. Indoor air pollution can be a result of poor ventilation, cleaning fluids, smoking, paint, and even furniture that contains formaldehyde. For offices, and corporate buildings, indoor pollution coming from copying machines, moldy, air-conditioning systems, carpets, and poorly maintained ducts.

As for external pollution, carbon dioxide accounts as the primary source of air contaminants. Excessive levels of CO₂ in the atmosphere are typically brought about by deforestation, oil industry operations, and fossil fuel burning. The manufacturing of goods and other products normally emits large doses of carbon dioxide. Moreover, carbon dioxide also worsens global warming, which is also considered to be one of the causes of chronic air pollution.

Fuel combustion from transport systems such as automobiles, buses, trains, and jet planes also contributes to air fumes. Fuel burning from industrial plants, especially in areas where development is on the rise, is also a great precursor of air pollution.

Other gases which are also harmful to the atmosphere include sulfur dioxide and nitrogen dioxide. Sulfur dioxide is also the result of excessive coal burning and fossil fuel burning from power plants and factories. Nitrogen dioxide is also an offshoot of power plant and manufacturing plant processes. If both sulfur and nitrogen dioxides are combined, it can produce acid rain, which is harmful to soils, freshwater bodies, and larger bodies of water like seas and oceans.

CFCs or Chlorofluorocarbons are greenhouse gases which moreover affect the atmosphere negatively. It contributes to global warming since CFCs are known to reduce ozone concentration. CFCs are brought about by aerosol cans, plastic foam burning, spray cans, and trickling air conditioning and refrigeration systems.

Smog or photochemical air pollution is another instance of atmosphere contamination. Smog is derived from two separate terms, which is smoke and fog. In this case, water condenses with smoke particles, which normally comes from the excessive burning of coal. As for the highly urbanized cities, which are known to use petroleum instead of coal, photochemical smog is rapidly becoming a source of atmosphere pollution, especially during warmer climates.

In fact in an infamous incident in London in 1952, approximately 4,000 deaths were linked to severe smog which was brought about by coal burning in industrial plants. Ice fog on the other hand, is a combination of ice crystals and smoke elements, typically occurring in locations with high latitudes and low temperatures.

The Health Issues on Water Pollution

Water pollution has been a growing concern for many nations in the recent years. Lakes, oceans, rivers, and groundwater are all prone to both chemical and microbial contamination. The well-developed countries suffer from contaminated water due to waste dumping from large factories, poor fishing practices, and fertilizers from unchecked agricultural systems.

As for the developing nations, pathogens present in water cause contamination and leads to a host of external and internal diseases, such as skin problems and dysentery. Bacteria, viruses, and protozoa are some of the deadly pathogens that pollute untreated water in many poor nations.

Since these poor countries have very little resources for the construction of sewerage systems, proper treatment of sewage, and regular maintenance of septic tanks, pathogens could easily penetrate through the waterways.

The increasing cases of water contamination in different parts of the world today are compounded by the fact that 70% of the Earth's surface is composed of water. However, due to careless practices, lack of knowledge, and too much industrialization, water contamination has placed human life at great risk.

Chemical contamination in the water systems has been linked to certain types of cancer and instances of birth complications in infants. Insecticides, herbicides, and excessive levels of chlorine can all contribute to chemical water pollution. Microbial contagion can be brought about by food processing waste, livestock processes, and other pathogens. As a result, the rate for typhoid fever, diarrhea, cholera, and dysentery worsens, specifically in nations with underdeveloped economies.

Today, there are approximately 1.2 billion people who do not have access to clean, potable water. Basing on this fact, about 80% of all the infectious diseases are actually those acquired from unclean water and water sources. In poor societies, polluted water has always been attributed to the increasing cases of malaria-induced deaths, afflicting both children and adults.

If the oceans become contaminated whether by microbial, chemical, or other particulates, it can harm fish and other forms of marine life as well. If left unchecked, humans could ingest these contaminants and suffer poisoning, cholera, Amoebiasis, and worm diseases.

Arsenic found in drinking water can cause Arsenicosis. Parasite-contaminated water can lead to Schistosomiasis, Ascariasis, and hyatidosis, which can escalate to anaphylactic shock. Viral infections from unclean water can include Hepatitis A, Polio, and Parvoviruses which is associated with Gastroenteritis. People who are prone to allergic reactions can suffer from Meningitis, Hay Fever, and complications of Bladder Cancer.

What Causes Water Pollution?

Water pollution can be caused by chemical substances, microbial components, global warming, radioactive wastes, industrial waste and other wastes brought about by human and commercial activities. Water pollution can either come from a single source or from many sources. A contamination that is caused mainly by chemical leaking for example, which is a single source, is referred to as point-source pollution. This is also called as such because the contaminant affects the water directly.

If the cause is traceable to several factors, or if emits pollutants indirectly such as through transportation or changes in the environment, it is called nonpoint-source pollution. Pesticides and fertilizers from farms which are then transported into water sources are an example of non point sources. Generally, these nonpoint-sources are considered to be more difficult to control and prevent whether by the government or through private organizations.

The Ill Consequences of Soil Contamination on Human Health

Soil pollution takes place when certain chemicals or other man-made components shift the natural balance of the soil, leading to disturbance in an otherwise healthy environment. One of the biggest issues on soil pollution is the effect it has on human health. Diseases can be acquired directly from the soil or indirectly, such as coming from water sources and plant life.

The health effects on soil contamination can never be undermined seeing that people, especially children, are exposed directly to soils, specifically in places such as parks and playgrounds. Moreover, soil pollution can leak into the water supply, which in turn causes water contamination and water-borne diseases.

Depending on the polluting substance, the extent of the damage, and the sensitivity of the inhabitants being distressed, soil contamination can produce varying levels of damage. Pesticides and chromium are carcinogens which are known to cause almost all types of cancer. Lead contamination has been known to deliver unwanted health consequences on children, exposing them to eventual brain damage and even kidney damage. Lead is often found in aviation fuel, gasoline, and paint.

The use of inorganic pesticides and fertilizers, more than managing unwanted infestations from pests and other destructive organisms, has now been link to ill-effects on human health. An individual's level of physical toxicity can drastically increase due to the consumption of vegetables and other harvests subjected to inorganic or artificial treatments.

Impoverished inhabitants who are forced to subsist near dumpsites, landfills, and factories which produce tons of industrial wastes everyday are prone to chronic skin illnesses, impaired immune systems, lung problems, and neurological damage.

Moreover, once soil pollution occurs, the quality of the ground water becomes distressed as well. Once chemical and industrial wastes begin to leak into the soil, it will be easy for the water sources to become contaminated. Since water comprises 70% of the Earth's surface, the effects of this can easily be devastating and far reaching. This can cause cholera, dysentery, gastroenteritis, amoebiasis, and poisoning.

What Causes Soil Pollution?

The common precursors of soil pollution are underground tank ruptures, excessive pesticide use, oil dumping, landfill wastes, and industrial wastes. A certain area of the soil can become polluted if harmful substances are leaked directly onto the surface and are absorbed eventually. Contamination can also be acquired through migration, such as when the primary occurrence of ground pollution has taken place primarily in another area.

The more common ground pollutants include heavy metals, hydrocarbons, pesticides, herbicides, and chlorinated hydrocarbons or CFH. The heavy metals may include chromium and cadmium. Cadmium is often linked to rechargeable batteries, which is in wide use today for electronic devices.

The practice of industries and factories in creating fertilizer out of industrial derivatives often results to the pollution of soils with harmful heavy metals. Landfills are also known to leak chemical elements into the soil and eventually into the groundwater. As a result, the soil becomes infertile and unfit for growing plant life, which is then harvested for human consumption.

Other Forms of Pollution Prevalent Today

Apart from air pollution, water pollution, and soil contamination, there are other forms of pollution posing real-life problems to both the environment and human life today. Radioactive contamination is often brought about by environmental radioactivity, fission product, nuclear fall outs and radiation poisoning. Radioactive matters are known to cause many types of cancer, such as lung cancer and kidney cancer, and can also promote birth defects.

Light pollution, noise pollution, and visual pollution are several other forms as well. Noise pollution has been recognized to promote mental state imbalance in an individual, leading to mental impairment and psychosis. It can induce irritability, susceptibility to ulcers, fatigues, migraines, and reduced productivity levels. As for other physiological effects, it can induce hearing defects or impairments. However, the effects can vary depending on several factors, such as the susceptibility of the affected individual, the time extent of the contact, and the loudness of the noise. The manner of consistency of the exposure is also crucial.

Effectively Treating Pollution

Pollution control measures are being adopted presently in order to minimize the adverse health and environmental effects of pollution. Without effective pollution management, the stability of human health and the natural environment will be more difficult to maintain.

For air pollution, treatment may include the removal or reduction of harmful gases and particulate matters in the atmosphere. Automobile emissions are controlled more effectively by the reduction in engine combustion temperatures.

Treatment of waste water systems may include removal of large debris, floating materials, and any suspended substances inside tanks. If these practices are adopted by various municipalities, it can remove 60 percent of solid waste and approximately 35 percent of biodegradable organic matter. As for the secondary treatment, microorganisms are used to breakdown waste matter biologically, those which has been left from the primary treatment.

Advanced treatment of waste includes biological, physical, and chemical methods. These treatments are done in order to reduce or entirely remove any substances which promote unnecessary growth of algae as well as to eliminate

pollutants brought about by industrial activities, such as chemicals and heavy metals.

A Few Facts and Statistics on Pollution Health Issues

- According to Environmental Defense in the U.S., diesel emissions account for a total of 70% of the entire risk for air pollution-induced cancer in the country. An individual risks getting cancer ten times more by inhaling diesel exhaust than by inhaling a combination of all the other air contaminants.
- In the U.S., power plant releases are known to cause more than 2,800 lung cancer deaths and 38,200 heart attacks each year.
- In Asia, countries like Shanghai, Hong Kong, and Singapore presently have some of the busiest ports worldwide. Ship emissions from these ports lead to an approximate number of 60,000 deaths annually, specifically from respiratory and cardiovascular ailments.
- According to estimates, about 1.2 to 1.5 billion of people don't have access to clean water. The lack of clean, potable water accounts for about 250 million cases of water-borne diseases and 5 million deaths annually worldwide.

- About 85% of the total area of Bangladesh has polluted groundwater, and every year, 1.2 million inhabitants in the country are exposed to arsenic poisoning. This includes children, women and elderly people.
- Annually, plastic substances in oceans and fresh waters cause the deaths of 1 million sea birds, 100,000 marine mammals, and innumerable fish.
- 80% of coastal water pollution is derived from land-based practices. This includes factory operations, landfills, dumpsites, and other sources of ground contamination.
- As reported by a Cornell University researcher, 40% of deaths all over the globe are caused by water, soil, and air pollution.
- Malaria mosquitoes which thrive in contaminated water kill 1.2 million to 2.7 million people annually while air pollution causes the deaths of 3 million people each year.
- According to National Geographic News, China has the worst air pollution in the world, responsible for causing the highest number of premature deaths annually.
- Pollution from global warming has increased by 3% on 2007 from 2006.
- About 60,000,000 plastic bottles are thrown into landfills within the U.S. each day. It requires 1.5 million barrels of crude oil annually to create plastic bottles. In translation, this quantity of fuel is sufficient to run 100,000 automobiles annually.