

## POLLUTION AND ITS TYPES TO COMBET HUMAN HEALTH AND ENVIRONMENTAL CHALLENGES

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**Abstract:** Environment Pollution is the detrimental effects to nature, natural resources and mankind. It means adding impurities to the environment. It is an undesirable change in chemical, physical, and biological characteristics of air, water and soil, which causes the health problem to all the living beings. The unnatural and negative changes in all the dimensions like chemical, physical and biological characteristics of any component of the ecosystem i.e. air, water or soil which can cause harmful effects on various forms of life and property is called environmental pollution. The pollutants may be classified as Degradable or non-persistent pollutants:- these can be broken down rapidly by the natural process e.g. Domestic waste, garbage and sewage. Slowly degradable or persistent pollutants:- these remains in environment for a very long period of time, in unchanged condition, may be for few decades e.g. Pesticides, aerosole Non-degradable pollutants:- these are pollutants never get degraded by any natural process. E.g. Toxic elements like lead, mercury, nuclear waste. The increasing number of forest activities without proper replanting will also exposed to flood problems, soil erosion, landslides and many mere as results ot environmental impacts The urbanization process, couple with the rapid industrial development, without having proper planning and inadequate pollutions control, may also create a long term disasters. Penang island territory has been experiencing the most highly pnyical development growth in this country. Hence, environmental problems are becoming the rna/or issues. This paper will discuss on the various environmental problem, particularly in Penang and possible remedials to be taken by the state and federal authority to overcome the problems. The type ot pollutions such as air and water pollutions, acid rain and of course the reduction of ozone layer. Besides that the increase of heat in our climate will also be of our concerned m the process of urbanization.

**KEY WORDS:** Pollution, Environment Pollution, Pollutants, Air Pollution, Water Pollution, Noise Pollution.

### INTRODUCTION

Man has realized the adverse effect of development pollution. Pollution is manifested in many forms such as air, water, toxic waste, solid waste, noise and occupational health. But man must also aware that the cause of pollution can effect the growth of the National Development. It is necessary to be aware about the future impact of pollution which may create damaging effect to the world ecology Specific health effects on human are only part of the cost of environmental degradation (Wahab 1991). Global effects on property, weather, plants, and animals have been documented. All this relationship of level of the pollution with a wide range of degenerative conditions among populations have been clearly established by medical expert in their epidemiological studies of morbidity (abnormality and deseases) and mortality (death) rates. Some pollution incident may continue to be due to gross organic pollution frequently originating front silage effluents and slurries from sewage treatment plant effluents (Normah 1971) Toxic chemical waste that being deposited by the industrial process and domestic disposal are also considered as major pollutants that increases human exposures to a wider range of contaminants (Roy et al. 1990, Roy 1976, Hirschborn et al. 1991). The pressing need to clean up the environment and save the earth has been recognised internationally But how far the human being realised and aware of ihe important of maintaining stability in every activities that involved with nature of their materialistic needs. Human activities are contributing towards pollution at tremendous speed for the world development (Kenneth et al. 1988). Therefore necessary measures need to be taken in order to control and reduce the level of pollutions. These sectors (Industrials, housing, commercial, agricultural etc ) are are among the major contributors to the environmental pollution, many of which have the great potential to cause damage to the environment

(Environmental Resources Limited 1993). A well understanding of the consequences on how pollutions get started practically and theoretically, may help us to identify the appropriate remedies to this problems especially for the National Development but not to forget the whole universe. The danger that the public is dealing with must have a solution, since there is no possible or guarantee to control everything at once, some prioritization is required.

### 1.1. POLLUTANTS TYPES AND ITS SOURCES

The substance which causes harmful effects or uneasiness in the organisms, then that particular substance may be called as the pollutant (Ismail 1993). The materials that cause pollution are of two types:

1. Persistent pollutants: The pollutants which remain consistent in the environment for a long period of time without any change in its original form are called persistent pollutants. For example pesticides, nuclear wastes, and plastics etc.
2. Non-persistent pollutants: These pollutants are the opposite of persistent pollutant and break down in the simple form. If this process of breaking down is done by living organisms, then such pollutants are referred to as biodegradable pollutants.

From another perspective, pollutants can be classified as follows:

1. Primary Pollutants: Primary pollutants are those which remain in the form in which they were added to the environment for ex. DDT, Plastic
2. Secondary Pollutants: Secondary pollutants are formed due to interaction of primary pollutants amongst themselves viz. PAN by the interaction of NO<sub>x</sub> & Hydrocarbons.

According to their existence in nature:

1. Quantitative Pollutants: These substances are already present in the atmosphere but they become pollutant when their concentration level reaches to a particular level which is above a threshold limit.
2. Qualitative Pollutants: These are man-made pollutants eg. Fungicides, herbicides etc/

According to origin:

1. Man-made Pollutants
2. Natural Pollutants

According to the nature of disposal:

1. Biodegradable Pollutants
2. Non-biodegradable

Pollutants Types of pollution:

### 1.2. AIR POLLUTION:

Air pollution is the presence of one or more disadvantageous content in such quantity and for such duration, as it is catastrophic, or tend to be catastrophic, to human health and welfare, animal or plant life. It is the contaminants of air by the discharge of detrimental substances (Fig. 1). However, the harmful impacts of air pollution and its sources was shown in Table 1.



**Figure 1:** Harmful Impact of Air Pollution

Some of the air pollutants, their sources and effects:

Name of the pollutants	Sources	Health effects
Nitrogen oxides	Industries, vehicles and power plants	Problems in the lungs, respiratory systems and causes asthma and bronchitis.
Carbon monoxide	Emission and burning of fossil fuels	Severe headache, irritation to mucous membrane, unconsciousness and death.
Carbon dioxide	Burning of fossil fuels	Vision problem, severe headache and heart strain.
Suspended particulate matter	Vehicular emission and burning of fossil fuels.	Lung irritation reduces development of RBC and pulmonary malfunctioning.
Sulphur oxide	Industries and power plant	Irritation in eyes and throat, allergies, cough etc.
Smog	Industries and vehicular pollution	Respiratory and eye problem
Hydrocarbons	Burning of fossil fuels	Kidney problems, irritation in eyes, nose and throat, asthma, hypertension and carcinogenic

		effects on lungs.
Chlorofluorocarbons	Refrigerators, emission from jets	Depletion of ozone layer, global warming

**Table 1:** The impacts of Air Pollutants and Its Sources.

### 1.3. WATER POLLUTION

Water pollution means that the equilibrium of fresh water content is being polluted with the existence of organic matters, toxic substances and reduction of oxygen level in it, which causes bad effect to its user and living organism. Water is the most important natural sources because it is the agents for all kind of human activities including basic need for the living organism in the whole universe. Like air pollution, water pollution has existed for centuries and it has resulted in mass deaths because of water borne diseases such as thypoid. Direct pollutants are sewage, suspended solid, infectious agents such as bacteria, viruses, parasites, plant nutrients, exotic chemicals, radioactive disposal, heat and oil (Idris 1993). Other sources of pollutant are such as detergent, farming sewage disposal and pesticides. Natural water resources that are effected by pollutant are rain fall, rivers, lakes, underground water and sea water (Cook 1992)). Most of the time, water contamination produces bad odour, resulted in lowering fertility rates in general health (social aspects) and even causing death.



**Figure 2:** Showing the hazardous impact of water pollution.

The modern society mostly depends on a staggering array of chemicals which are released into the environment by manufacturing process and use of cleaners, paints, plastics, dyes, preservatives, drugs and other common products (Nadrin et al. 1992). This may result in the irreversible and additive effects on human system. Solid waste is also the detritus of production and consumption (Fig.2). It includes sludge from waste water treatment, domestic disposal or garbage, waste from agricultural, animal, mining and industrial process, construction and commercial activities. Solid waste made from those soluble materials will form a polluted liquid called leachate when it comes into contact with water. Leachate may contain toxic and carcinogenic chemicals, viruses, metals, bacteria and decaying organic matter (New Straits Times Editor 199, Smith 1992, Ariff 1992, Samad 1992). A leachate plume may form if water is present and will move underground, entering the ground aquifer and pollute it. Its solution is massive and costly. ACID RAIN Acid rain is formed when there are too much of gaseous such as sulphur dioxide, carbon dioxide, carbon monoxide,  $NO_2$  and other hydrocarbon that react with the presence of water through a chemical reaction. It can produce nitric acid, sulphuric acid, HCL and methyl sulphuric acid, which then fall on to the earth as an acid rain (Taharin et al. 1992). It causes damages to buildings, plants, crops, impact on health, effects on aquatic ecosystems and fish and of course the fresh water. Actually most of the pollutions are interdependent on each other.

#### 1.4. NOISE POLLUTION

Due to increasing noise around the civilizations, noise pollution has become a matter of concern. Some of its major causes are vehicles, aircraft, industrial machines, loudspeakers, crackers, etc (Fig. 3). The word noise is derived from a Latin word 'Nausea' which means sickness in which one feels the need to vomit. Noise is the unpleasant and undesirable sound which leads to discomfort in human beings. The intensity of sound is measured in decibels (dB) (Chiew 1992, Rozario 1999). The faintest sound which can be heard by the Human ear is 1 Db. Some other appliances also contribute to noise pollution like television, transistor, radio, etc. when used at high volume.

Types of Noise Pollution

Following are the three types of pollution:

- Transport Noise
- Neighbourhood Noise
- Industrial Noise

##### Transport Noise

It mainly consists of traffic noise which has increased in recent years with the increase in the number of vehicles. The increase in noise pollution leads to deafening of older people, headache, hypertension, etc.

##### Neighbourhood Noise

The noise from gadgets, household utensils etc. Some of the main sources are musical instruments, transistors, loudspeakers, etc.

##### Industrial Noise

It is the high-intensity sound which is caused by heavy industrial machines. According to many researches, industrial noise pollution damages the hearing ability to around 20%.



Figure 3: Impacts of Noise Pollution.

### Causes and Sources of Noise Pollution

Following are the causes and sources of noise pollution:

- **Industrialisation:** Industrialisation has led to an increase in noise pollution as the use of heavy machinery such as generators, mills, huge exhaust fans are used, resulting in the production of unwanted noise.
- **Vehicles:** Increased number of vehicles on the roads are the second reason for noise pollution.
- **Events:** Weddings, public gatherings involve loudspeakers to play music resulting in the production of unwanted noise in the neighbourhood.
- **Construction sites:** Mining, construction of buildings, etc add to the noise pollution.

### CONCLUSION

Therefore, it is best that we sit together in a round table discussing the circumstances that we could react towards the environmental pollution effect on the national development in order to have the balance in built and natural environment. The effectiveness of environmental education, as a preventive strategy in environmental management, hinges upon careful planning, effective coordination and willingness and commitment among all environment - related agencies and organizations, both in and outside the Government. The Government in creating a pollution-free environment and promoting sustainable resource development Focus will be given to conservation, environment and ecological balance within the context of sustainable development And we are hoping that, when comprehensive preventive planet care are shown to be practical by an active, vocal minority, it will be demanded and implemented by the majority.

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