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**IMPACT OF INDUSTRIALIZATION ON ENVIRONMENT IN INDIA**

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**Abstract:** Industrialization brought economic prosperity; furthermore, it has led to an increase in population, urbanization, obvious stress on basic survival systems, pushing the environmental impacts closer to the limits of the tolerance threshold. With booming industrial growth and a relatively low landmass, environmental sustainability is now becoming an important deciding factor in the industrial development process. The accumulation of evidence consistently indicates that the transition of existing industries into the eco-industrial network through the effective implementation of ecological approaches provides a viable solution to preserve the region's natural resources while improving the regional economy on a lasting basis. After a rigorous assessment of previous and current situations, it necessitates proper planning and an integrated framework that is in harmony with the environment.

Empirical knowledge about the affected area helps to understand the local context and to develop other action plans based on the realities on the ground. To this end, a study was carried out on industrial pollution and the current environmental context of India.

Air pollution, poor waste management, increasing water scarcity, declining groundwater, water pollution, forest conservation and quality, biodiversity loss, and land degradation. Soils and soils are some of the major environmental issues facing India today.

**Keywords:** Earth, Environment, Global, Impact, Industrialization, Pollution.

**Introduction:**

Since the days of the industrial and technological revolution, economic growth has been considered the most important foundation of global growth. Industrial growth has begun with serious downside problems affecting the entire environment. These industries include transport and production, which deplete the earth's resources but also place enormous strains on the environment and the ecosystem. The productivity of industries generally depends on the available natural resources.

The effects of industrialization on the environment have led the way with certain positive and large negative results, with progressive rates and inventions. There is a multitude of ingenious natural elements such as water, air, soil, and fishing that are considered positive and fertile goods. Water, soil, and air pollution are defined as a by-product of economic development in industry and cities. The consequences are global warming and greenhouse effects, which are

massive effects of industrialization on the environment. The deterioration of the whole environment and ecosystem tends to become permanent and have various negative effects on the economy, causing human loss, poor health of employees with high costs to governments, industry, and society.

The constant air and water pollution with its harmful pollutants affect people's quality of life. The rapid growth of the industry is causing harmful effects on human life and polluting water and air. Air and water pollution are therefore the main problems in the establishment of other industries increases the main difficulties of water and soil degradation.

### **I. Environmental Impacts**

There are four main hit points when it comes to industrialization.

1. Air
2. Water
3. Soil
4. Habitat

#### **Pollution of the Environment:**

The introduction of hazardous chemicals, particulate matter, toxic substances, and biological organisms into the Earth's atmosphere is referred to as air pollution. Air pollution is caused by a variety of factors, but industry and factory emissions are frequently cited as major contributors.



(Fig. 1) [Source: <http://environmentinsider.com/wp-content/uploads/2014/06/ase17.jpg>]

Industrial air pollution has a slew of negative environmental consequences and health risks. Below, we go over a few of them in detail.

### **1. Warming of the Planet**

Global warming is often recognized to be one of the most dangerous and serious consequences of air pollution created by industry and other stationary sources. The release of certain gases, such as methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>), which are collectively known as greenhouse gases, is frequently cited as one of the primary causes of global warming. As a result of these greenhouse gases, the temperature of the atmosphere rises, creating global warming. Global warming has numerous negative effects both on the ecological balance as well as human health. It frequently causes glaciers and snow-capped mountains to melt, causing higher water levels in oceans and rivers, increasing the risk of flooding. Apart from this, global warming also often has multiple major health concerns on humans such as an increase in diseases like Lyme, malaria, cholera, dengue, and plague, among others.

### **2. Acid Rain**

Industries often generate enormous amounts of nitrogen and sulfur gases into the Earth's atmosphere. When these gases react with water vapors in the atmosphere, they generally transform into more aggressive gases, particularly nitric acid and sulphuric acid correspondingly. The rain containing considerable concentrations of these acids is known as acid rain. Acid rain has different health and natural dangers. It causes the erosion of monuments and buildings, makes the soil acidic in nature, resulting in diminution of plant and animal growth, among other concerns. Apart from this, acid rain causes major health diseases such as cancer, skin disorders, and even death.

### **Pollution in the Water:**

The industry is a major source of water pollution, releasing pollutants that are exceedingly damaging to people and the environment, particularly in areas where factories are situated near natural water sources. Toxins can take a range of forms, including solid, liquid, and gaseous, and they can all contaminate local water supplies. Even landfills and other waste disposal places, like the River Ganga, can seep poisons into the surrounding water supply, causing pollution.

### **Among the pollutants emitted by industrial sources are:**

- 1. Sulfur** - is a mineral that is found in the soil. This is a non-metallic material that is toxic to marine life.
- 2. Asbestos** – This contaminant is known to cause cancer. It can cause illnesses like asbestosis and several types of cancer when inhaled.
- 3. Mercury and lead** – These are metallic elements that can harm humans and animals' health and the environment. It's also dangerously poisonous. Because it is non-

biodegradable, it is usually difficult to remove it from the environment once it has gotten into it.

### **Pollution caused by the oil industry:**

Shipping, run-offs, and oil dumping on the ocean's surface occur on a daily basis. Oil spills account for around 12% of all oil entering the ocean. Oil spills are particularly dangerous to nearby marine animals such as fish, birds, and sea otters, as well as other aquatic life. Because oil does not disperse, it clings to the surface of the water, suffocating fish. Seabirds' feathers become entangled with oil, making it harder for them to fly. As a result, some animals perish.

### **Pollution of the Soil:**

Another issue that arises as a result of industrialization is soil contamination. Although lead pollution is the most common, other heavy metals and harmful compounds can also leak into the soil and contaminate any crops that grow there. The presence of xenobiotics (human-made) chemicals or other modifications in the natural soil environment produce soil contamination or pollution as part of land degradation. Industrial activities, agricultural chemicals, and inappropriate waste disposal are the most common causes. Petroleum hydrocarbons, polynuclear aromatic hydrocarbon solvents, insecticides, lead, and other heavy metals are the most prevalent compounds involved.

The degree of industrialization and the intensity of chemical compounds are linked to contamination. Health concerns from direct contact with contaminated soil, fumes from toxins, or secondary pollution of water supplies inside and beneath the soil are the main reasons for concern about soil contamination. Contaminated soil mapping and cleanups are time-consuming and costly activities that necessitate considerable knowledge of geology, hydrology, chemistry, computer modeling, and GIS in Environmental Contamination, as well as an understanding of industrial chemistry's history.

### **Habitat:**

Industrialization has led to catastrophic habitat degradation. Forests are hacked down for their lumber, and ecosystems are destroyed to develop roads, strip mining, and gravel pits. Destroying these habitats disturbs local ecosystems and leads to plant and animal extinction if the species are unable to move or adapt to their new circumstances.

## **II. The Impact of Industrialization**

The most serious issue is air pollution, which is caused by the smoke and fumes produced by the burning of fossil fuels. The Environmental Protection Agency (EPA) of the United States controls more than 80 different poisons found in industrial pollution, ranging from asbestos and



dioxin to lead and chromium. Despite these limitations, industries are among the world's most polluting sources of air pollution.



(Fig. 2) [Source: <https://cff2.earth.com/uploads/2016/12/19122358/industrialization-stock.jpg>]

Water pollution is an issue in these locations as well, particularly in areas where factories are located near natural water sources. Toxins can take a range of forms, including solid, liquid, and gaseous, and they can all contaminate local water supplies. Even landfills and other waste disposal places can seep poisons into surrounding water supplies, causing contamination such as that seen in the Nile River.

### **The Cycle of Carbon**

Another issue that arises as a result of industrialization is soil contamination. Although lead pollution is the most common, other heavy metals and harmful compounds can also leak into the soil and contaminate any crops that grow there.



(Fig.3) [Source: <https://suez.azureedge.net/-/media/suez-global/images/header/e-secteurs/power-industry.jpg?v=1&d=20180820T152259Z>]

Finally, development has resulted in significant habitat loss. To build roads, strip mines, and gravel pits, forests are cut down for their lumber, and ecosystems are destroyed. Destruction of these habitats disrupts local ecosystems and may result in plant and animal extinction if species are unable to move or adapt to their new environment.

**Conclusion:** The problem of industrial pollution affects every country on the earth. With the growing threat of industrial pollution, many organizations and individuals are attempting to reduce carbon footprints and live and work in an environmentally responsible manner.

Industrial pollution, on the other hand, is still widespread, and proper management and regulation will require many years. There are numerous measures that can be performed to find long-term answers to the situation.

Controlling the source- Adopting new technology, providing effective employee training for safe use, developing better waste disposal equipment, and being more mindful about the use of raw materials can all assist to reduce industrial pollution at its source.

Reuse and recycle- To reduce industrial pollution, greater recycling efforts should be used to recycle as much dirty water as possible in industries.

Resource Decontamination- To clean the water and soil, organic methods should be used, such as employing bacteria that naturally feed on heavy metals and garbage. Cooling rooms or dumpsters must be built to allow enterprises to recycle the water they require rather than returning it to the natural water source from whence it originated.

Appropriate Treatment of Industrial Waste -Pollution can be reduced by creating and implementing adequate treatment facilities for handling industrial waste, as well as proper practices.

Habitat restoration and reforestation- Planting additional trees and plants in habitats can assist wildlife to reclaim their homes, while the trees can also help filter the air and function as a buffer against the environment.

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