



## The Effects of Industrial Pollution on the Environment

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### Abstract

Industrial pollution is pollution with materials used for industrial purposes or those materials that are left over from various industries, and it is one of the most dangerous types of pollution known because of its side effects and toxicity to living organisms.

Modern technology in the fields of life has become one of the main things in many countries of the world, which is the main cause of industrial pollution, and there is no doubt that industrial pollutants, especially chemical ones, have strong stability and do not decompose naturally, and therefore their effects remain for long periods, although living organisms possess the ability to self-repair in the event of exposure to pollutants or toxins of those pollutants, but their ability to decrease in the event of exposure to high doses of toxins. The amount of chemical pollutant needed to kill 50% of the members of a given community is called (lethal dose 50) and is symbolized by (LD 50).

**Keywords:** Pollution, Hydrocarbon, Asbestos, Pesticides.

## INTRODUCTION

### Pollution levels:

1. **Non-hazardous:** It is the pollution that humans can live with without being exposed to harm, and it does not affect the environmental balance.
2. **Danger:** It is pollution that has negative effects on humans and the environment in which they live.
3. **Destructive:** It is the pollution in which the environment and people collapse, and the elimination of all forms of environmental balance, and its repair requires long years and high expenses.

### Industrial pollution damage:

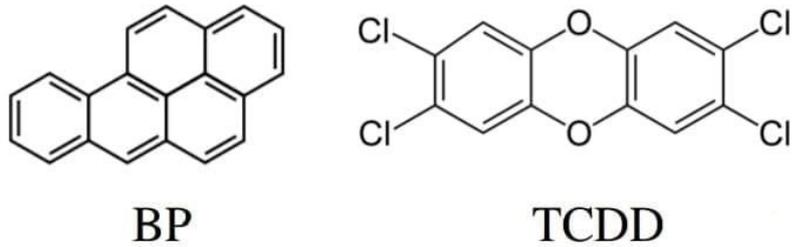
1. An imbalance in biological diversity and the extinction of some plants and animals.
2. It eats up the ozone layer.
3. Global warming and climate instability.
4. Increased levels of harmful oxides and suspended heavy metals.
5. The occurrence of self-fires due to flammable toxic gases. High rates of cancer, kidney and liver failure, and fetal abnormalities.
6. Deposition of industrial components in the agricultural soil for long periods of time.

### Types of industrial pollutants:

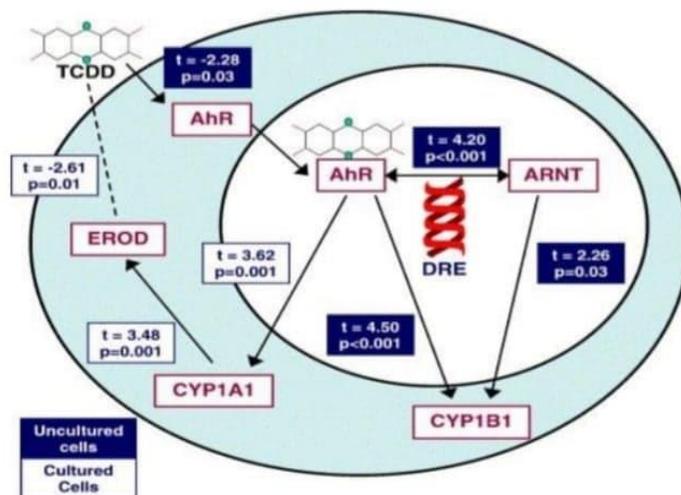
#### 1. Hydrocarbons:

Hydrocarbons are among the hazardous environmental pollutants, which are characterized by their high toxicity and relative stability. They transform from one form to another, which makes their disposal difficult. Polycyclic aromatic hydrocarbons (PAHs) are among the most widespread and most toxic, as their speed of action reaches a limit similar to nerve gases, such as dioxin (TCDD) and benzopyrene BP) and the toxicity of dioxin is very high, as a percentage of it

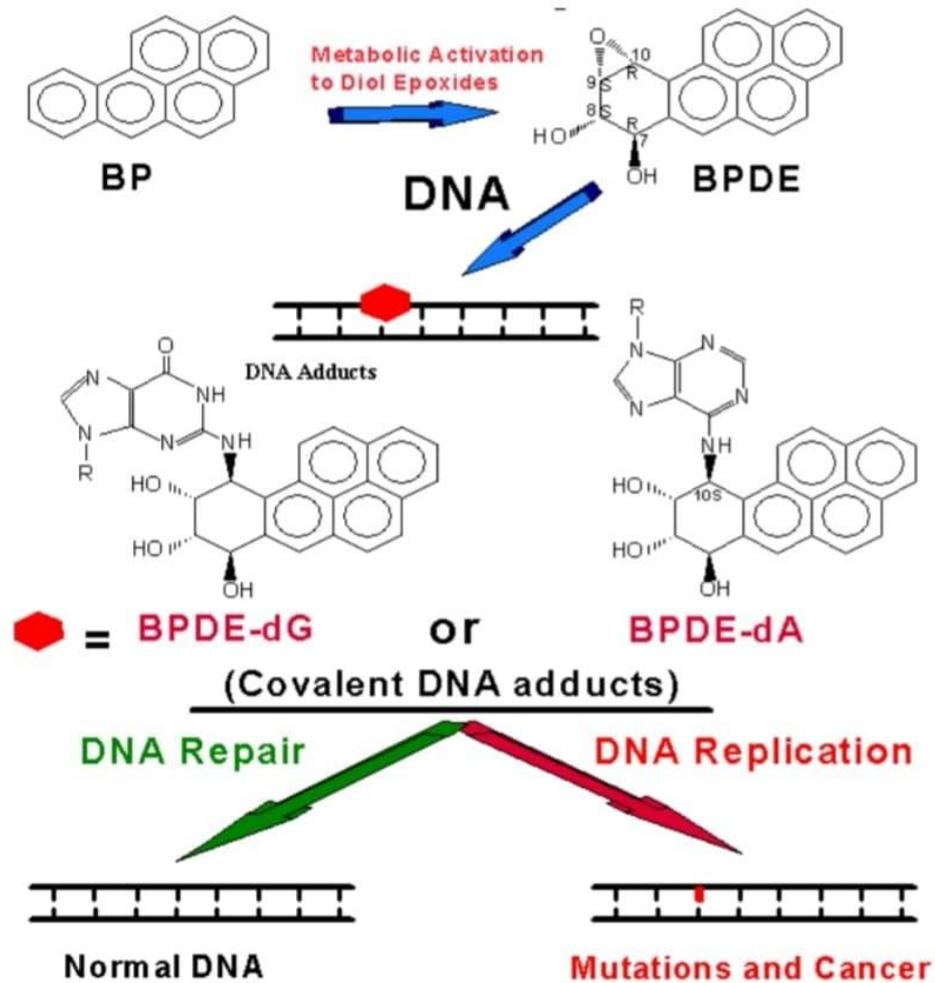
does not exceed 0.8 micrograms, which is sufficient to kill an experimental animal such as an adult rabbit. Dioxin is considered a difficult substance to decompose under natural conditions, and this stability increases its toxicity, as it has been proven that the half-life of dioxin is approximately 20 years.



The potential of TCDD to cause toxicity is represented by its binding to the hydrocarbon receptor (AhR) Aryl hydrocarbon receptor inside the cell. Which leads to increased gene expression (Gene Expression) for some important enzymes in the incidence of cancer, such as the cytochrome enzyme (CYP1A1).



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## 2. Asbestos:

It is a natural silicate mineral consisting of long, thin fibrous crystals that can be inhaled by humans and animals. Its uses include the manufacture of fabrics and mats, gloves, brakes and gears of cars, electric wires and hair dryers

Asbestos causes poisoning to humans, and its symptoms can be summarized as follows:

- breathing difficulties.
- Cough.
- pain in chest.
- weight Losing
- Deformation of the fingers.
- General asthenia and decreased physical activity.

Continuous exposure to asbestos causes lung cancer, as when this substance infiltrates the lungs specifically to the lining layer of the lung known as the mesothelium, it is deposited there, which leads to stimulation of the immune system and the occurrence of frequent infections in the body and genetic and chromosomal changes, which leads to lung cancer.

## 3. Heavy metals:

They are substances with high atomic masses greater than 50 Daltons, such as (lead, cadmium, mercury, and arsenic). They are found in the environment in small quantities, and pollution with them causes bioaccumulation. They can pollute the soil - water - air and food because they are transmitted through food chains. Biomagnification causes heavy metals to be industrial materials that are used in many industries, such as batteries, dyes, alloys, fuels, paints, hair dyes, tires, or even pesticides such as arsenic. These metals have toxicity because they accumulate in the tissues of living organisms such as the liver, brain, and kidneys, and cause a decrease in hemoglobin, and most cases of heavy metal poisoning occur in children.

#### 4. Pesticides:

They are chemical compounds used to eliminate fungi, bacteria, and different types of insects. Although humans benefit from pesticides, pesticides are considered substances accumulated in the tissues of living organisms, causing tissue destruction in terms of anatomy and function.

Among the most common types of pesticides are (D.D.T) and Aldrin. Because the toxicity of pesticides is not optional (only for insects), so it has a toxic effect on humans and other living organisms. The rate of dissolution of pesticides is very slow (10-15) years, which makes them toxic for long periods, and their toxicity symptoms include

- Headache.
- Pain in the stomach.
- Nausea and a feeling of fear.
- Tachycardia may lead to death

#### CONCLUSION

About two million children under the age of five die every year as a result of respiratory infections, and about 50,000 children die every year as a result of poisoning, especially with carbon monoxide gas emitted from stoves, other pollutants found in pesticides and household cleaners, and exposure to some industrial chemicals.

Air, soil, and water are all exposed to pollution with industrial chemicals. Polluted air causes severe pneumonia, and stagnant water kills about one million children annually, all because of industrial pollutants and their problems.

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