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| **Pollution** |
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# Pollution

## Introduction

Pollution is the addition to the ecosystem of something which has a detrimental effect on it. One of the most important causes of pollution is the high rate of energy usage by modern, growing populations.

Different kinds of pollution are found. In this section we will discuss:

Air and Sound Pollution

Noise Pollution

Tobacco Smoke

Exhaust Gases of Vehicles

Combustion of Coal

Acid Rain

Water Pollution

Industrial Effluent

Mining and Agricultural Wastes

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## Air and Sound Pollution

Air pollution is the accumulation in the atmosphere of substances that, in sufficient concentrations, endanger human health or produce other measured effects on living matter and other materials. Among the major sources of pollution are power and heat generation, the burning of solid wastes, industrial processes, and, especially, transportation. The six major types of pollutants are carbon monoxide, hydrocarbons, nitrogen oxides, particulates, sulphur dioxide, and photochemical oxidants.

Examples of Air and Sound Pollution

### Noise Pollution

Noise pollution or unwanted sounds that are carried by the air have an irritating and detrimental effect on humans and other animals. Careful planning of streets and buildings in towns and better control over noisy vehicles may add to the control of noise pollution.

### Tobacco Smoke

Tobacco smoke is one of the major forms of pollution in buildings. It is not only the smoker who is infected, but everyone who inhales the polluted air. There is a very strong connection between smoking and lung cancer. Bronchitis is common among smokers and unborn babies of mothers who smoke also suffer from the harmful effects of smoking.

### Exhaust Gases of Vehicles

Pollution from exhaust gases of vehicles is responsible for 60% of all air pollution and in cities up to 80%. There is a large variety of harmful chemicals present in these gases, with lead being one of the most dangerous.

### Combustion of Coal

The combustion of coal without special precautions can have serious consequences. If winds do not blow away the poisonous gases, they can have fatal effects and may lead to death.

### Acid Rain

Acid rain is the term for pollution caused when sulphur and nitrogen dioxides combine with atmospheric moisture to produce highly acidic rain, snow, hail, or fog. The acid eats into the stone, brick and metal articles and pollutes water sources. Coal in South Africa is rich in sulphur and the power stations in the Mpumalanga Province could be responsible for acid rain over other areas of our country.

Highest average smoke concentrations (1997)

|  |  |  |  |
| --- | --- | --- | --- |
| **Place** | **Highest soiling index detected (S/m3)** | **Annual average** | **Annual guideline soiling index** |
| Sunderland Ridge, Centurion (residential and industrial) | 112 | 56 | 20 |
| Welkom Municipality (industrial) | 272 | 44 | 20 |
| White City, Springs (residential) | 84 | 33 | 20 |
| Fordsburg, Johannesburg (industrial/commercial) | 71 | 25 | 20 |
| Average |  |  |  |

Control Measures

Although individual people can help to combat air pollution in their own immediate environment, efficient control can be best achieved by legislation. Some commonly enforced control measures include the establishment of more smokeless zones; control over the kinds of fuel used in cars, aeroplanes, power stations, etc.

## Water Pollution

Water pollution is the introduction into fresh or ocean waters of chemical, physical, or biological material that degrades the quality of the water and affects the organisms living in it. This process ranges from simple addition of dissolved or suspended solids to discharge of the most insidious and persistent toxic pollutants (such as pesticides, heavy metals, and non-degradable, bio-accumulative, chemical compounds).

Examples of Water Pollution

### Industrial Effluent

Water is discharged from after having been used in production processes. This waste water may contain acids, alkalis, salts, poisons, oils and in some cases harmful bacteria.

### Mining and Agricultural Wastes

Mines, especially gold and coalmines are responsible for large quantities of acid water. Agricultural pesticides, fertilisers and herbicides may wash into rivers and stagnant water bodies.

### Sewage Disposal and Domestic Wastes

Sewage as well as domestic and farm wastes were often allowed to pollute rivers and dams.

Control Measures

The following measures can be used to stop water pollution:

* every person should be wise enough not to pollute water in any way
* by research and legislation the pollution of water bodies, even though not entirely prevented, must be effectively controlled.

## Land Pollution

Land pollution is the degradation of the Earth's land surface through misuse of the soil by poor agricultural practices, mineral exploitation, industrial waste dumping, and indiscriminate disposal of urban wastes. It includes visible waste and litter as well as pollution of the soil itself.

Examples of Land Pollution

### Soil Pollution

Soil pollution is mainly due to chemicals in herbicides (weed killers) and pesticides (poisons which kill insects and other invertebrate pests). Litter is waste material dumped in public places such as streets, parks, picnic areas, at bus stops and near shops.

### Waste Disposal

The accumulation of waste threatens the health of people in residential areas. Waste decays, encourages household pests and turns urban areas into unsightly, dirty and unhealthy places to live in.

Control Measures

The following measures can be used to control land pollution:

* anti-litter campaigns can educate people against littering;
* organic waste can be dumped in places far from residential areas;
* inorganic materials such as metals, glass and plastic, but also paper, can be reclaimed and recycled.

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