

Pollutants

the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Pollution is often classed as point source or nonpoint source pollution.

Primary pollutant: Is an air pollutant emitted directly from a source.

Secondary pollutant: Is not directly emitted as such, but forms when other pollutants (primary pollutants) react in the atmosphere.

Examples of a secondary pollutant include ozone, which is formed when hydrocarbons (HC) and nitrogen oxides (NO_x) combine in the presence of sunlight; NO₂, which is formed as NO combines with oxygen in the air; and acid rain, which is formed when sulfur dioxide or nitrogen oxides react with water.

Point and nonpoint source pollution

1-Point source pollution

A point source of pollution :is a single identifiable source of air, water, thermal, noise or light pollution. point sources Pollution are identical to other physics, engineering, optics, and chemistry point sources and include:

Air pollution .

1-from an industrial source, rather than an airport or a road, considered a line source or a forest fire which is considered an area source, or volume source.

Water pollution .

1-from an oil refinery wastewater discharge outlet from a jet engine^[1] .

Noise pollution .

2-from an industrial process outfallThermal pollution .

2-Nonpoint source (NPS) pollution •

Nonpoint source (NPS) pollution :is a term used to •
describe pollution resulting from many diffuse
sources, in direct contrast to **point source pollution**
which results from a single source. Nonpoint source
pollution generally results from land runoff,
precipitation, atmospheric deposition, drainage,
seepage, or hydrological modification (rainfall or
snowmelt) where tracing the pollution back to a
single source is difficult.

1-Non-point source water pollution affects a **water** body from sources such as polluted **runoff** from **agricultural** areas draining into a river, or wind-borne **debris** blowing out to sea.

Non-point source **air** pollution affects air quality from sources such as **smokestacks** or car **tailpipes**.

Although these pollutants have originated from a point source, the long-range transport ability and multiple sources of the pollutant make it a non-point source of pollution. Non-point source pollution can be contrasted with **point source pollution**, where discharges occur to a body of water or into the atmosphere at a single location

2-NPS may derive from many different .
sources with no specific solution may
change to rectify the problem, making it
difficult to regulate.

Non point source water pollution is .
difficult to control because it comes from
the everyday activities of many different
people, such as fertilizing a lawn, using a
pesticide, or constructing a road or
building.^[2]

1-The balance of nature: is a theory that proposes that ecological systems are usually in a stable equilibrium ([homeostasis](#)), which is to say that a small change in some particular parameter (the size of a particular population, for example) will be corrected by some [negative feedback](#) that will bring the parameter back to its original "point of balance" with the rest of the system. It may apply where populations depend on each other, for example in predator/prey systems, or relationships between herbivores and their food source. It is also sometimes applied to the relationship between the Earth's ecosystem, the composition of the atmosphere, and the world's weather.

2-The hypothesis: is a balance of nature-based theory that suggests that the Earth and its ecology may act as co-ordinated systems in order to maintain the balance of nature.

The theory that nature is permanently in balance has been largely **discredited(fallen)**, as it has been found that chaotic changes in population levels are common, but nevertheless the idea continues to be popular.^[1]

During the latter half of the twentieth century the theory was superseded(replaced) by catastrophe theory and chaos theory.

Pollution sources effects

Pollution has been found to be present widely in the environment. There are a number of effects of this:

1-Biomagnification .

describes situations where toxins (such as heavy metals) may pass through trophic levels, becoming exponentially more concentrated in the process.

2-Carbon dioxide .

emissions cause ocean acidification, the ongoing decrease in the pH of the Earth's oceans as CO₂ becomes dissolved.

The emission of greenhouse gases leads to global warming which affects ecosystems in many ways.

3-Nitrogen oxides .

are removed from the air by rain and fertilise land .
which can change the species composition of
ecosystems.

4- Smog and haze can reduce the amount of sunlight
received by plants to carry out photosynthesis and leads
to the production of tropospheric ozone which damages
plants.

Soil can become infertile and unsuitable for plants. .
This will affect other organisms in the food web.

5-Sulfur dioxide and nitrogen dioxide .

can cause acid rain which lowers the pH value of soil. .

Air pollution

Air pollution: the air pollution is atmospheric exposure to chemicals, particulate matter, or biological cause harm to humans and other living organisms, or damages the natural environment.

Pollution can take the form of chemical substances or energy, such as noise, heat or light.

Air pollution comes from both natural and human-made (anthropogenic) sources. However, globally human-made pollutants from **combustion**, , **mining**, **agriculture** and **warfare** are increasingly significant in the air pollution equation.

Principal stationary pollution sources

Principal stationary pollution sources include :

- 1- [chemical plants](#).
- 2- coal-fired [power plants](#).
- 3- [oil refineries](#).
- 4- [petrochemical](#) plants.
- 5- [nuclear waste](#) disposal activity.
- 6- incinerators.
- 7- large livestock farms (dairy cows, pigs, poultry, etc.).
- 8- [PVC](#) factories, metals production factories, plastics factories, and other [heavy industry](#).

Agricultural air pollution comes from contemporary practices which include clear felling and burning of natural vegetation as well as spraying of pesticides and herbicides.

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