

1. Air pollution - Definition

Air pollution is a broad term applied to all chemical and biological agents that modify the natural characteristics of the atmosphere.

2. Sources of air pollution

2.1. Stationary and Area Sources

A **stationary source** of air pollution refers to an emission source that does not move, also known as a point source. Stationary sources include factories, power plants, dry cleaners and degreasing operations. The term area source is used to describe many small sources of air pollution located together whose individual emissions may be below thresholds of concern, but whose collective emissions can be significant. Residential wood burners are a good example of a small source, but when combined with many other small sources, they can contribute to local and regional air pollution levels. Area sources can also be thought of as non-point sources, such as construction of housing developments, dry lake beds, and landfills.

2.2. Mobile Sources

A mobile source

A **mobile source** of air pollution refers to a source that is capable of moving under its own power. In general, mobile sources imply “on-road” transportation, which includes vehicles such as cars, sport utility vehicles, and buses. In addition, there is also a “non-road” or “off-road” category that includes gas-powered lawn tools and mowers, farm and construction equipment, recreational vehicles, boats, planes, and trains.

2.3. Agricultural Sources

Agricultural operations, those that raise animals and grow crops, can generate emissions of gases and particulate matter. For example, animals confined to a barn or restricted area (rather than field grazing), produce large amounts of manure. Manure emits various gases, particularly ammonia into the air. This ammonia can be emitted from the animal houses, manure storage areas, or from the land after the manure is applied. In crop production, the misapplication of fertilizers, herbicides, and pesticides can potentially result in aerial drift of these materials and harm may be caused.

2.4. Natural Sources

Although industrialization and the use of motor vehicles are overwhelmingly the most significant contributors to air pollution, there are important natural sources of “pollution” as well. Wild land fires, dust storms, and volcanic activity also contribute gases and particulates to our atmosphere.

Unlike the above mentioned sources of air pollution, natural “air pollution” is not caused by people or their activities. An erupting volcano emits particulate matter and gases; forest and prairie fires can emit large quantities of “pollutants”; plants and trees naturally

emit VOCs which are oxidized and form aerosols that can cause a natural blue haze; and dust storms can create large amounts of particulate matter. Wild animals in their natural habitat are also considered natural sources of “pollution”.

Monoterpenes are known as “essential oils.” There is solid evidence that plants make monoterpenes, which are found in small reservoirs in the leaves or needles of plants, to ward off herbivores. When an insect feeds on the leaf, the monoterpenes are released and can adversely affect the insect’s health. Because the monoterpenes are always present in the leaves, their emission rate depends mostly on the temperature. Higher temperatures will evaporate larger amounts into the atmosphere.

There are a few other important organic compounds emitted by plants. Alcohols are often emitted by damaged vegetation; there is some evidence that these alcohols act as an antiseptic. A few recent studies suggest that alkenes are also emitted by some plants.

3. How does air pollution move?

Air transport is the term used to describe the mechanism by which air pollution moves from an emissions source to a receptor. A source is a location (i.e., smokestack, chimney, exhaust pipe) from which the pollutant emanates and a receptor is the place (i.e., soil, vegetation, water bodies, human lungs) where the pollutant is deposited. The atmosphere itself is the transporter of pollutants from sources to receptors. If the wind carries the plume of pollution high enough in the air, it may travel for hundreds of miles before being brought to earth. This is known as long-range or long-distance transport.

4. Types of Air pollution

4.1. Indoor Air Pollution

4.1.1. In home and school

Many people spend large portion of time indoors - as much as 80-90% of their lives. They work, study, eat, drink and sleep in enclosed environments where air circulation may be restricted. For these reasons, some experts feel that more people suffer from the effects of indoor air pollution than outdoor pollution. There are many sources of indoor air pollution. Tobacco smoke, cooking and heating appliances, and vapors from building materials, paints, furniture, etc. cause pollution inside buildings. Pollution exposure at home and work is often greater than outdoors.

As the children go off to school, the hope that they will learn, play, and have good experiences with other students and their teachers. But there is also cave-- about gangs, violence, and drugs or alcohol. Air-borne pollutants in schools include dirt, dust, lead, asbestos fibers, chemical fumes, carbon monoxide and other gases, pesticides, bacteria, mold, cockroach or pest leavings, tar and diesel fumes, and many other contaminants from machines and people in the building. These pollutants come from surfaces in the building, cleaning products, paints and floor finishes, carpets, other occupants of the building, buses, the outdoor air, and they can be a result of demolition or construction. They can cause a wide range of problems from asthma to flu- like symptoms such as headaches, sore throats, memory problems, joint pain, and nausea.