

Atmospheric Pollution

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India is a big country with dense population facing the problems in agricultural produce and industrial production. In order to overcome these the country has launched upon a programme to increase productions in fertilizers, steel and in many consumer goods. Atmospheric and water pollutions are a consequence of industrialisation and urbanisation.

Clean air is essential for man's survival. The air is required not only for breathing, but also for the survival of all types of lives in the world. All human activities relating to production, transport, recreation and cooking require huge quantities of air which in turn discharge the used air into the atmosphere. Like other natural resources the supply of air is also limited and fixed whereas its use is enormous. It is said that about one ton of mineral coals will require 12 ton of air and 5 litres of fuel will require about 45 kg. of air. Nature has provided sufficient ventilation for most of the time during favourable climate and large volumes of air are swept away and get diluted. But even then the natural mechanism of dilution fails quite often. This results in heavy accumulation of the pollutants in the air affecting man, animal, plants and property.

DEFINITION. What are pollutants? Pollutants are air borne waste put into the atmosphere by

various activities of man. WHO has defined air pollution as "substances put into the air by the activity of man in concentration sufficient enough to cause harmful effect to his health, vegetation property or to interfere with the enjoyment of his property."

SOURCES. The sources of contamination in the atmosphere are: industrial activities and raw materials like agricultural products. Minerals, chemicals conversion into finished goods which release waste substances like soot, ash, dust of various types as particulates of sulphur, nitrogen, any process gases and chemicals, hydrocarbons, as fumes or vapours. A considerable part of it goes into the surrounding air as pollution. The application of highly toxic pesticides and fertilizers to protect crops add to this. New additions to atmosphere pollution are the contaminants from the nuclear energy utilization, where various concentration of radioactive materials are released into the air.

Effects of Pollution on Health

Acute exposures : Death has occurred due to general atmospheric pollution e.g. Belgium disaster in December 1930. In Belgium valley pollution was caused by the accumulation of fog, smoke and industrial wastes. Sixty three persons and some cattle died on the fourth and fifth day after only a few hours of illness. The symptoms

were like acute respiratory irritation.

Other effects are : chronic exposures, respiratory infections as bronchitis and asthma ; eye infections as trachoma due to dust, irritation and discomfort, increased susceptibility of some persons as a result of age, illness or allergies, spotting and burning of the leaves of plants, seedling and crops, trees and pollution of soil and cancer lung.

Prevention

Atmospheric pollution can be prevented by the complete elimination of all atmospheric pollution by industrial wastes. Production of waste materials, whenever possible, be avoided by changing the plant process. For example in burning of fuels the output of smoke can be reduced by the use of low volatile fuels. Smokeless domestic stoves can be used and waste materials can be suppressed at the source. Acid gases and vapours must be removed by scrubbing and absorption. Dusts and fumes must be caught in filters, collectors. Some organic contaminants can be burned, and some can be recovered by chemical reaction such as oxidation. Plants must be located at a place where the character of meteorologic conditions and topography are favourable to discharge purposes. Industries can be limited to areas at adequate distance from residential districts. The use of blow-by devices returns the fumes back into the engine.

In India central Public Health Engineering Research Institute, Nagpur, carried out a survey to assess the air quality and to determine the level of pollution in four major cities (Calcutta, Bombay, Delhi and Kanpur). Parameters such as Sulphur dioxide, Nitrogen dioxide, Hydrogen sulphide, oxidants and suspended particulates were studied. Surveys revealed peculiar characteristics of air pollution with reference to particular matters. Dust concentration and Sulphur dioxide was found to be higher. □