

Environmental Degradation: Sources and Dimensions

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Entire biosphere, particularly the organic world, is subjected to constant change due to the result of human economic activity. These changes include reduction in areas of vegetation, acidification and alkalization of soil and water, industrial wastes including high toxic substances, pollution of air, soil and water of the ocean due to combustion of large quantities of fossil fuels leading to increasing carbon-dioxide concentration which is capable to change the heat regime of the globe (Laskorin, 1983). Consequences of such changes are already having a marked effect throughout the world. This is the obvious result of our technological advancement in which there is no place for conservation measures. Moreover, it is extremely difficult to assess accurately the long-term consequences of man's activities on nature because of the inter-connectivity of various systems of natures. Noticeable change in any one of them is sufficient to disrupt the ecological equilibrium and alter the structure of other systems. As a result of anthropogenic activities, the chemical composition and physical state of atmosphere and oceans have begun to change. It will gradually influence the other components of biosphere.

Anthropogenic activities throughout the world are responsible for the release into the environment vast quantities of industrial and domestic waste. Over 4000 to 6000 million tonnes of rock are extracted annually throughout the world. During the processing their waste materials find its way into atmosphere, lithosphere and hydrosphere. In the decade of 1970, about two million types of various chemical compounds, excluding fertilizers, found their way into the biosphere. About 4000 types of different chemicals used in industrial processing are harmful for man. Over 250,000 types of new chemicals are synthesized every year in the laboratories throughout the world. Over 300 of them are used in production which finally find way to the environment. There are 6000,000 types of different chemical substances in the waste released into biosphere and many of them accumulated in it (Vinogradov, 1977).

Every year, over 200 million tonnes of carbon-monoxide, over 50 million tonnes of hydrocarbons, about 146 million tonnes of sulphure dioxide and 53 million tonnes of nitrozen oxides are released into the atmosphere. Power plants alone discharge over 200 million tonnes of ash and about 60 million tonnes of sulphur dioxide. About 15 million tonnes of oil get into the World ocean every year from various sources. Pollution of Arctic waters, where petroleum products do not break down owing to the climatic conditions, is very dangerous.

U.S.A. alone account for about half of the total pollutants discharged into the biosphere, consumes billions of tonnes of various kinds of raw materials. This tremendous additional load can not be absorbed by the natural environment without serious and at times highly unfavourable changes in the geochemical cycle (Fedorov, 1980). In the U.S. transport account for 66% of the pollutants entering in the biosphere every year, industries for 17%, power industries for 14%, while the remaining 9% is accounted for by heating and waste disposal. The share of transport in pollution of air in other countries is much smaller than in U.S. In the U.S alone, the account of substances released on to the surface of the earth, into water bodies and atmosphere has now reached over 50 billion tonnes per year, (Shah, 1988).

The growing application of fertilizers and other chemicals (insecticides, pesticides, biological stimulators, etc.) has together with the positive results—increased productivity in agriculture, forestry and other sectors of the economy, disturbed the natural cycles of matter and energy, produce phenomena of an anthropogenic nature in bodies of water (silting, algae overgrowth and other processes of similar types) and thereby affects the ability of the environment to preserve and maintain its natural properties and renew the used resources (Gerasimov, 1975). About one-third of the fertilizers and chemicals applied to soil is washed away into shallow water and eventually finds its way into seas and oceans, most notably in coastal waters.

The unexpectedly high level of atmospheric pollution in urban industrial areas create serious health hazards which is resulting in aggravation of the existing diseases, causing new-ones, increasing the mortality rate and psycho- emotional disorders. In Western Europe and America atmospheric pollution is caused 50% by the automobiles and 50% by waste produced by the industrial heating system. Pollutants from the Western Europe are spread over the Eastern Europe and Scandinavian countries by the air currents while local pollution in these areas is comparatively small. Thus the areas with small pollution suffer from the waste produced in the factories of distant neighbours (Fedorov, 1980).

Environmental deterioration can be attributed to industrialization and urbanisation, the depletion of traditional (comparatively easily extractable) sources of energy and raw materials, constant population growth, disruption of natural ecological balance the internal self-regulation mechanisms of the biosphere, destruction for economic ends of various animal and plant species and negative genetic consequences of the industrial and other pollutants, which include the danger of man's genetic degeneration (Frolow, 1983). Environmental pollution results in tremendous economic loss in various spheres of the economy. Service life of industrial equipments and plants is drastically reduced under polluted conditions and agrarian yields are equally influenced as outputs are experienced badly lowered. It all makes it very difficult to eliminate the damage caused due to pollution than to prevent it. Economically, the amelioration and improvement measures in the field of ecology cost less than the damage caused due to pollutants discharge all the more so, as absolutely all, pollutants can be valuable raw materials.

A formidable danger is posed by contamination of the atmosphere with radio active fall-out resulting from the thermonuclear explosions and carried by air currents over long distances, level of radio activity in atmosphere is far above the normal. Radio active elements are the most dangerous pollutants of the environment. Problem of utilizing or hurrying atomic fission waste still remains unresolved. Most dangerous source of radio active contamination of environment is testing of nuclear weapons and devices in atmosphere, under-water and under ground. Most formidable danger is posed by two radio active isotopes—Strontium-90 and Cesium-137 which settled on the surface of the Earth and enters through grass into the food of animals and man. After an atomic explosion, the proportion of radio active fall-out remains the same in its area, while rest of it slowly spreads throughout the World. In this process, the concentration of radio active fall out grows with an increase in altitude. At an elevation of about 5000 metres, it is twenty times that in the air near the ground. There is still little information on the combined action of several pollutants on human health.

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