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Anthropogenic Causes of Environmental Pollution and their Regulation

Shyukurov SKH*, Aliyev ZH

Institute of Agrochemistry and Soil Science of ANAS, Baku

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***Corresponding author:** Shyukurov SKH, Institute of Agrochemistry and Soil Science of ANAS, Baku

ABSTRACT/ANNOTATION

With the increase in the use of natural resources, directly related to the industrial revolution, the impact on the biosphere and its components increases. Pollutants are chemical, biological and physical. As a result of our scientific research, it was proved that the biosphere was deformed at all stages, being subjected to endogenous, exogenous and anthropogenic influences. This is one of the main factors hindering the development of modern agriculture.

Keywords: Environmental pollution, Raw soil, Erosion, Soil salinization, Biological diversity, Anthropogenic pollution, Oil and oil products, etc

INTRODUCTION

As it is known, the anthropogenic impact on the biosphere and its components objectively increases as the scale of natural resource use increases.

Deforestation, use of raw land, new mechanical and physico-chemical factors have been added to the erosion and salinization of the soil, the reduction of biological diversity, deepening the environmental threat and constantly affecting it [1].

According to various data, people use up to 55% of land and 13% of river water, deforestation rate is 18 thousand/ha per year.

As a result of mining and construction works, desertification and salinization, 50-70 thousand/km2 of land is lost every year. During construction and mining activities, 4 thousand/km^2 of rock is mixed per year.

Every year, 100 billion tons of ore are extracted from the ground, 7 billion tons of fossil fuels are burned, more than 800 million tons of various metals are smelted, 500 million tons of mineral fertilizers and more than 4 million tons of plant protection chemicals are applied to the soil, 1/3 of which are in the atmosphere. remains or falls into the sewers with surface water[2].

Changes in energy distribution, levels of radiation, physical and chemical properties of the environment caused by direct or indirect anthropogenic activities of people in whole or in part cause environmental pollution. The changes that occur can affect humans directly or through agricultural products, water or other biological products.

Pollution is the cause of irreversible destruction of ecological systems, affects the global physico-chemical indicators of the environment; as a result of pollution, fertile lands are lost, the productivity of ecological systems and the biosphere as a whole decreases; as a result of pollution, the physical and moral condition of a person directly deteriorates.

RESEARCH PROGRESS AND DISCUSSION OF MATERIALS

From an ecological point of view, all products of the technosphere that are not involved in the biotic cycle are considered polluting. Even those that are chemically inert are considered pollutants because they take up space and become an overburden of ecotopes. Manufacturing products also turn into pollutants like waste that settles over time.

Currently, anthropogenic pollution of the hydrosphere has become global and has significantly reduced the availability of potable water resources on the planet.

According to some data, the total volume of industrial, agricultural, and household sewage flows reaches 1,800 km2, of which approximately 8,500 km2 is needed for cleaning - rinsing, purification, that is, 20% of the world's rivers are full, 60% are the water of stable streams is required. The anthropogenic load on individual water basins is much higher than the average global values.

The total mass of hydrosphere pollutants is 15 billion tons.

A relatively new direction in monitoring the pollution of freshwater ecosystems is determining the pollution of bottom sediments. Bottom sediments are an integral part of aquatic ecosystems.

When pollutants enter, bottom sediments become a kind of peculiar sediment collection.

Pollutants undergo various chemical transformations and interact with each other and with the components of the ecosystem. As a result, bottom sediments can become a secondary source of pollution and pose a potential threat.

Anthropogenic pollution is the main reason for the drastic reduction of the planet's natural waters.

It has been determined that more than 400 types of substances can cause water pollution.

Water is considered polluted when the permitted norm is violated for at least one of the sanitary - toxtological, general sanitary or organoleptic harmfulness indicators.

Contaminants are chemical, biological and physical.

Chemical pollutants include oil and oil products, synthetic surfactants, pesticides, heavy metals, and dioxins. In particular, biological pollutants, for example, viruses and other disease-causing microorganisms, as well as physical pollutants - radioactive substances, heat, etc. they pollute the water dangerously.

It is very dangerous to have radioactive substances in the water, which cause radioactive pollution, even in the smallest amount.

Long-lived radioactive elements in water (strontium - 90, uranium, radium - 226, etc.) are more harmful.

Discharge of untreated sewage into sewers, washing of harmful chemicals with rainwater, gas-smoke waste, leakage of oil products are the factors that cause pollution of surface water.

Industrial wastewater pollutes ecosystems with various components. Currently, the volume of industrial wastewater discharged into many aquatic ecosystems is not only not decreasing, but also increasing. Thus, the deliberate pollution of the Araz River, which is used as irrigation water in agriculture, by the neighboring states,

The coastal shallows of the Caspian Sea are exposed to anthropogenic influences, and direct domestic, industrial and economic wastewater discharges into rivers throughout the basin without treatment. Various organic substances in this type of wastewater, e as well as, pathogenic microorganisms prevail, which causes bacterial and chemical pollution.

Pesticides, ammonium and nitrate nitrogen, phosphorus, potassium, etc. Pollutants are washed into large-scale agricultural areas, including from animal husbandry complexes, and are poured into streams and rivers without treatment, so they have a large concentration of organic matter, biogenic elements and other pollutants.

The extent of pollution of natural waters by oil and oil products is very large. Every year, millions of tons of oil and oil products pollute marine and freshwater ecosystems during accidents on oil tankers, oil fields and coastal areas.

Man-made pollution of rivers and lakes has reached such a level that the excess pollution has exceeded the self-cleaning capacity in many regions.

It is known that since running sewage is not cleaned well, a large part of nutrients - nitrogen, phosphorus - falls into the sewers.

A significant amount of soil, organic matter residues and mineral fertilizers fall from agricultural areas into water bodies after floods and heavy rains.

Over-enrichment of sututars with biogens leads to their eutrophy, i.e. massive reproduction of phytoplankton, primarily blue-green algae, and a sharp increase in bio-productivity.

The coloration of the water and the gradual death of the algae masses lead to secondary pollution, the use of all oxygen reserves and the "gradual death of aquatic organisms". Thus, anthropogenic eutrophication is not caused by toxic pollution, but by soil and fertilizer particles that are always considered harmless.

Regulation of harmful compounds released as a result of unsystematic application of mineral fertilizers and prevention of soil erosion are important in maintaining the balance of ecosystems. A strong change in any natural factor leads to a disturbance in the balance of the ecosystem.

The main pollutants of the soil are pesticides, mineral fertilizers, production waste, gas and smoke emissions of pollutants in the atmosphere, etc.

Millions of tons of pesticides are produced in the world every year.

Until the 1990s, about 25,000-30,000 tons of pesticides were used in agriculture in the Republic of Azerbaijan.

Currently, approximately 8.5 thousand tons of DDT and other pesticide residues are temporarily stored in a special landfill in our republic. The quick elimination and neutralization of these substances are important measures that await their solution.

If mineral fertilizers are not used in the required amount, when they are produced, transported and stored, and when loss is allowed, the soil is polluted with mineral fertilizers.

It has been found that the vast majority of nitrates reduce the amount of oxygen in the soil, which causes a high level of evaporation of two "greenhouse" gases into the atmosphere - nitrous oxide and methane.

Nitrates are also dangerous for humans. Thus, when nitrates enter the human body in a concentration higher than 50 mg/l, their direct general toxic effect is noted.

Excessive use of nitrogenous fertilizers leads to undesirable acidification of soils in some regions, in addition to accumulation in fruits and vegetables produced for food purposes.

As a result of the unsystematic use of mineral fertilizers, various chemical compounds - toxicants accumulate in the soil, which has a lethal effect on the life activity of soil organisms. At this time, the soil cannot rid itself of disease-causing and other undesirable microorganisms, which can have serious consequences for humans, plants and animals.

For example, in heavily polluted soils, the causative agents of the snow bed can remain for up to a year and a half, while in clean soils this period is 2-3 days. At the same time, it is considered impossible to cultivate environmentally friendly products on such lands.

Soil erosion, salinization, swamping, open (quarry) and closed (frost) extraction of minerals, pollution with toxic substances, industrial and construction material waste, discharge of sewage into the terrain, etc., caused by unsystematic irrigation and other reasons. causes the land to become unusable. Areas of such unusable land continue to increase.

As a result of conducting systematic soil surveys, it is necessary to keep records of such soils and strengthen production control. This is also important for the production of ecologically clean agricultural products and their export to foreign markets.

Soil pollution rates

Pollution degree	**Assessment of soil pollution levels**	**Indicator of decrease in quantity and quality of the product obtained from contaminated, but practically uncontaminated soils, in %**
1	It is practically unpolluted	Less than 5
2	It is lightly soiled	6 – 10
3	Moderately soiled	11 – 25
4	Heavily polluted	26 – 50
5	It is heavily polluted	51 – 75
6	Too polluted	Above 75

As can be seen from the table, according to the decrease in soil productivity, according to the amount of biomass produced, they have determined 6 degrees (0-5) of soil pollution, and according to the types of pollution, they divide pollutants into 4 classes: physical, chemical, biological and radioactive.

The list of substances considered to be pollutants and the maximum allowable concentrations determined for them differ greatly from one another in different countries. Norms of permissible limit concentrations can be determined according to the criteria of harmfulness to cultivated plants, livestock or humans.

RESULT

Scientific studies have shown that the biosphere, which is a dynamic planetary ecosystem, has been deformed by endogenous, exogenous and anthropogenic influences at all stages of its evolution. Chemical substances, heavy metals, industrial waste, anthropogenic activity of people, global erosion process, salinization, salinization, ash pit gases, unsystematic cutting of forests, destruction of pastures have caused great damage to the atmosphere, lithosphere,

biosphere in general, and polluted the environment we live in. Prevention of this is one of the main factors in the development of modern agriculture.

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