

## **Principles of Development of Engineering Ecology**

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**Abstract:** Nowadays, the population of the earth has increased several times from the beginning of the last century to the present day of the new century. This in turn led to the construction of many factories, construction of roads, construction of houses, increase of motor vehicles and many similar activities in the countries in order to provide them with vital products. . As a result, nature has been used and is being used mercilessly, and it itself is overflowing with various wastes. If the situation continues at this level, the existence of humanity on earth will be in danger in the near future. Therefore, regardless of the class of the industrial network, every enterprise should pay serious attention to the complete decontamination and cleaning of the wastes released from it.

It is no secret that the development of production, science and technology causes many different wastes to be thrown into the environment. At this point, the student may have a question, what should be done, what should be done? Of course, it is natural for any thinking person to have such questions. First of all, a person should take a deeper look at nature with the eyes of his "mind" and see that all the creatures, plants, all natural resources above and below the ground were created for him and that they all serve him, and then they should realize that those who are left here - on our motherland - should also live. The earth is a place of residence for all living things and plants, it nourishes and clothes us. The earth and the surrounding air - water and soil layer create comfortable conditions for us to live [1;2]. All minerals, waters and creatures living in them serve for man, for his living in this world. Realizing this, people should try to increase their love for nature, preserve it and live in harmony with the laws of nature. But unfortunately, in response to this, many people do not value nature and do not protect it. They think that the Earth will lift all their "unsuitability", "masculinity". Today, severe pollution of the environment, derailment of the ecological balance, occurrence of various climatic changes and disasters are a clear evidence of our "unacceptable" pollution, its practical manifestation [3;4]. Nature itself is a system in balance, connected by various energy connections, which leads to the violation of these connections, its derailment, disruption of existing natural processes on earth, and as a result of this, various ecological disasters occur on the surface of the earth. About 5,500 years ago, the following inscription was left on the Cheops pyramid in Egypt: "Man is condemned to death because he ignores the forces of nature and does not understand the real world." A lot can be said and given examples about this.



**Figure 1. Impact of industrial enterprises on the environment**

Therefore, today the problem of environmental protection has become one of the main issues of every country. Because the population of the planet has grown from 1.5 billion to 8 billion since the beginning of the last century. This in turn led to the intensive use of land, natural resources, and energy in order to provide them based on the needs of living. These days, more than 100 billion tons of natural resources are being extracted from the earth, 800 billion tons of metal are being melted, 60 million tons [5]. various synthetic materials are produced, 500 mln.t. mineral fertilizers, 3 mln.t. toxic chemicals are being added. 700 billion of industrial and domestic wastewater is discharged into natural water bodies.

SO, SO<sub>2</sub>, NO<sub>2</sub>, C<sub>2</sub>N and dust occupy the most important places among the toxic gases released into the environment. 250 mln.t annually into the atmosphere. more than 200 million tons of dust. SO, 150 mln.t. SO<sub>2</sub>, 50 million tons. nitrogen oxides, 50 million tons. more than 20 million tons of hydrocarbons. more than SO<sub>2</sub> gas is discharged [6].

Currently, there are more than 200 million cars on earth (this number is increasing day by day), each of them emits more than 200 types of toxic substances into the environment. They contain various hydrocarbons and lead compounds with highly carcinogenic properties. The presence of tetra-ethyl lead substance in gasoline - after their use in automobile transport, causes the spread of various toxic substances of lead substance with oxide, nitrate, sulfate, chloride compounds into the environment [8]. These substances are constantly found on city roads due to vehicles. When burning coal, together with smoke and ash, more substances are released into the environment compared to the amount of its extraction, for example, magnesium 1.5, molybdenum Z, arsenic 7, uranium, titanium 10, aluminum, iodine, cobalt 15, mercury 50, lithium, boron, strontium, beryllium, zirconium spread 100 times more.

Therefore, they are always present in plants, water, and soil, through which these substances are transferred to the human body through products (water, air, by eating vegetables and fruits). Extremely dangerous radioactive substances are spread through nuclear power plants (NPPs). These substances are constantly collected in the atmospheric air, they can combine in the air and form extremely dangerous substances, and nitrogen oxides and freons cause the destruction of the ozone gas layer located in the stratospheric layer of the atmospheric air. Let's not go too far, today's climate changes, the increase in natural disasters (floods, hurricanes, storms, forest fires, etc.) are caused by the increase in the amount of "greenhouse" gases in the atmosphere. can be shown to have arrived. At the same time, it is no secret that as a result of the accumulation of waste gases in the atmosphere, "acid rain" and smog are formed, and they fall to the ground, damaging water bodies and fertile lands.

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