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THE IMPACT OF SCIENTIFIC AND TECHNOLOGICAL PROGRESS ON LIFE AND THE ENVIRONMENT

The development of technology and the achievement of the industrialization of civilization created a persistent myth about the domination of man over the forces of nature. The technical capabilities of man to change the natural environment increased rapidly, reaching its highest point in the era of the scientific and technological revolution. Now people are able to implement such projects of transformation of the natural environment, which until relatively recently did not dare to dream of. The level of development of technology and technology began to be considered in the twentieth century as an important criterion of social progress.

Technological progress is the progress of science and technology, the evolutionary development of all elements of the productive forces of social production on the basis of broad knowledge and the development of the external forces of nature; it is an objective, permanent pattern of development of material production, which is resulting in consistently improving techniques, technologies and organization of production, improving efficiency. However, we must remember that all human activities are carried out in nature and with nature. In the future, this process tends to expand. So far, only 60-70% of all scientific developments are not implemented in production at all. That is, the research process covers a much larger amount of knowledge than the part of it that is the output of scientific and technological development in practice. But the situation is such that over time, these developments are realized, which leads to even greater interaction between humans and their environment [1, p.60-62].

It turned out that scientific and technological progress also has an anthropological dimension. There have been two important shifts in human culture over the past hundred years. First, the world's population has increased dramatically. Now it is gradually approaching 8 billion. Second, industrial production, energy production, and agricultural production increased even more sharply. These two factors led to the fact that humanity began to have a noticeable impact on the functioning of the entire biosphere on an unprecedented scale. [3, p.629-631]. It is known that technological progress is carried out in two forms: evolutionary and revolutionary.

The evolutionary form takes place when the technique and technology used in production is improved on the basis of already known scientific knowledge. An example of this form is the development and improvement of steam, electric power, or nuclear energy.

The revolutionary form means the transition to technology and technology based on fundamentally new scientific ideas. An example of this form is the transition from manual to machine tools, the replacement of steam energy in electric or atomic, the use of laser and other modern technologies.

The negative impacts inherent in the environment exist as long as the universe exists. But in the twentieth century, these impacts have become a matter of concern for humanity. The development of scientific and technological progress has led to the emergence of nuclear facilities. Their appearance and the high concentration of nuclear and chemical products in the habitat of living creatures have made humans capable of having a devastating impact on ecosystems.

Nuclear and chemical weapons tests have had a huge destructive impact on the biosphere. An illustration of the negative impact of modern local wars is the results of the war in the Persian Gulf, the Balkans, and Syria.

Society, being a part of the global system, has a significant impact on the quality side of the system as a whole. Today, it is important to recognize the inextricable link between nature and society, which is mutual. Here it is appropriate to recall the words of A. I. Herzen that «nature cannot contradict a person if a person does not contradict its laws».

Scientific and technological progress has brought a lot of positive things to people's lives: the human mind has discovered new types of energy, improved working conditions, and increased its productivity in heavy and labor-intensive extractive industries (mining, forestry, ocean fishing, etc.), increased the pace of construction, increased agricultural productivity, invented highly efficient technologies, new materials, medicines, reduced child mortality and increased life expectancy, increased the speed of obtaining and processing information, and much more.

Despite the efforts and huge costs aimed at preventing the negative consequences of anthropogenic impact on nature, the general trend of adverse changes continues.

What did the rapid development of the economy and human activity lead to? Pollution of the entire earth's space - the ocean, air and water, the "greenhouse effect", deforestation, the disappearance of many species of plants and animals-these are just some of the main forms of anthropogenic impact on the environment.

Only during the last 4 decades on Earth produced as much production as during the entire period of the existence of civilization before 1950. Since the reserves of coal, oil, gas, iron and other minerals are not renewable, they will be exhausted, according to scientists, in a few decades. But even if the resources that are constantly renewed, in fact, quickly decrease. Deforestation on a global scale is 18 times higher than its growth. The area of forests that provide the Earth with oxygen is decreasing every year. The forest area was occupied in 1950. 15% of the land, now-7%; more than 11 million hectares of forest are destroyed annually. Every year, 20 sq. km of rainforest is burned (half of France). The planet may lose its main source of oxygen in the next decade [2, p.64-66].

Degraded vital for people of the fertile layer of soil - and this is happening all over the world. While the Earth accumulates one centimeter of black earth in 300 years, and one centimeter of soil dies in 3 years. According to the UN World Commission on Environment and Development, 6 million hectares of cultivated land, 20 billion hectares of land, are now turned into a desert every year. loses its productivity. Desert areas are also expanding, with the Sahara moving 30 miles (48 km) south each year.

No less dangerous than the rampant exploitation of the Earth's resources is the increased pollution of the planet - both the world's oceans and the atmospheric air-over the past decades. The world's oceans are constantly polluted, mainly due to the expansion of oil production in offshore fisheries. Huge oil slicks are detrimental to ocean life. According to the UN, 30 billion tons of petroleum products, 50,000 tons of pesticides, and 5,000 tons of mercury enter the world's oceans every year. Millions of tons of phosphorus and lead are also dumped into the ocean, and the United States alone discharges up to 50 million tons of waste into the ocean. For every square kilometer of ocean space, there are now 17 tons of various harmful waste from land.

A huge amount of water is used in industry. For the smelting of 1 ton of steel, 200 m³ of water is needed. For the production of 1 ton of paper, 100 m³ is required, for the production of 1 ton of synthetic fiber - from 2500 to 5000 m³.

The combustion of fuel during the operation of coal-fired thermal power plants and industrial enterprises is accompanied by the formation of sulfur dioxide and nitrogen oxides, reacting with water vapor, they form sulfuric and nitric acids. As a result, precipitation falls in some regions, the acidity of which is 10-1000 times higher than normal. On the territory of Russia in 1996, together with precipitation, more than 4 million tons of sulfur and 1.25 million tons of nitrate nitrogen fell. The situation is particularly alarming in the Central and Central Chernozem Regions, as well as in the Kemerovo Region and the Altai Territory, and in Norilsk. In Moscow and St. Petersburg, with acid rain, up to 1,500 kg of sulfur per 1 km² falls on the ground per year. The acidity of precipitation is noticeably lower in the coastal zone of the northern, Western and Eastern Siberian seas. The Republic of Sakha (Yakutia) is recognized as the most favorable region in this regard.

As a result of burning various fuels, about 20 billion tons of carbon dioxide are released into the atmosphere annually. The carbon dioxide content in the atmosphere is gradually increasing and has increased by more than 10% over the past 100 years. Carbon dioxide prevents thermal radiation into outer space, creating a so-called "greenhouse effect", which leads to a warming climate. According to forecasts of climatologists, it will be 2-5 degrees by the middle of the century. Gas emissions into the atmosphere have already destroyed 9% of the ozone layer, the main protector of the earth from ultraviolet rays. The «ozone hole» covers an area equal to the territory of the United States [4, p.3-11].

The main thing, however, is not in the completeness of the list of problems, but in understanding the causes of their occurrence, the nature and, most importantly, in identifying effective ways and ways to solve them. The real prospect of a way out of the ecological crisis is in changing a person's production activity, his way of life, and his consciousness. Scientific and technological progress creates not only «overload» for nature; in the most advanced technologies, it provides means to prevent negative impacts, creates opportunities for environmentally friendly production. Today, there is not only an urgent need, but also real prerequisites for changing the essence of technological civilization, giving it an environmental character.

One of the directions of such development is the creation of waste-free production facilities. Using the achievements of science, the technological process can be organized so that production waste does not

pollute the environment, but re-enters the production cycle as secondary raw materials. Waste-free production is a production in which all the raw materials are eventually converted into a particular product. If we take into account that 98% of the feedstock is converted into waste by modern industry, then it becomes clear that the task of creating a waste-free production is necessary. Nature itself provides an example: the carbon dioxide released by animals is absorbed by plants, which release the oxygen needed by animals.

In conclusion, I would like to say that the progress of science and technology, in terms of introducing new technologies and the spiritual sphere of life occupy a secondary role, moral values lost, that had a serious impact on morality in societies of most countries. Technological innovations have an impact on the social structure of society. The more he transforms the world, the more it creates an unexpected social factors that begin to form the structures that fundamentally changed the human life and, obviously, that mankind is in a dangerous and difficult situation: the destruction of nature, compounded by inequalities in the human world, expanding consumerism, it exacerbated the conflict between man and technology, it is possible that in the future the machine completely replace humans, and people will not be able to influence its management.

It can be concluded that the development of science and technology is indeed a good thing for humanity, but it is fraught with unforeseen fatal predestinations, affecting all aspects of social life. It is not only the content of work that is changing, but significant changes are also taking place in the entire structure of culture and modern civilization. In essence, a new civilizational order is being born. Man, complicating his world, more and more often brings to life such forces that he no longer controls and that become alien to his nature, all this can lead to irreversible catastrophes — environmental, political, spiritual, which we observe in modern society.

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СИНТЕЗ И ИССЛЕДОВАНИЕ НОВЫХ ПРОИЗВОДНЫХ АМИНОЗАМЕЩЕННЫХ ПИРРОЛОВ

Известно, что пятичленные азотсодержащие гетероциклы имеют широкое практическое применение и продолжают привлекать внимание ученых благодаря широким возможностям химической модификации, в частности, среди производных пиррола, что связано с широким спектром особых свойств, проявляемых соединениями данного класса.

Синтетические аналоги пирролов находят своё применение как катализаторы, жидкие кристаллы, фотосенсибилизаторы для фотодинамической терапии раковых опухолей и фотодезактивации патогенной микрофлоры. Поэтому разработка синтеза таких соединений представляет научный интерес. Однако сам пиррол встречается редко, в частности, он входит в состав каменноугольной смолы и костяного масла.

Значительные успехи в практическом использовании и важная роль, которую выполняют фосфорилированные производные пиррола в процессах жизнедеятельности, являются основой