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**МОЛОДЕЖЬ XXI ВЕКА
В НАУЧНОМ, КУЛЬТУРНОМ
И ОБРАЗОВАТЕЛЬНОМ ПРОСТРАНСТВЕ:
НОВЫЕ ЦЕННОСТИ, ВЫЗОВЫ, ПЕРСПЕКТИВЫ**

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Международной молодежной научно-практической
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1. HUMAN ECOLOGY

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THE INFLUENCE OF PROFESSION ON PERSONALITY

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Abstract: The article describes the impact of the profession on the psychological state of a person. Changes in the behavior of the individual are highlighted.

Key words: profession, psychological state, behavior.

Every person on Earth spends about two-thirds of his life at work. And every day profession has a good or bad influence on the person. Profession has a strong effect on those people whose work is connected with communication with different people, including people with deviant and delinquency behavior. In modern society, the perception of others depends more on the person's profession.

The positive influence of the profession may be the appearance of such qualities as: punctuality, cleanliness, attentiveness, concentration. But there is always a negative element, such as professional deformation as a consequence of the intensive (long-term) impact of factors related to professional activities on personality. It includes a high degree of responsibility, mental and emotional stress, the need for self-control in all situations related to work – all this has a distorting and disorienting impact on the person.

The pressure of external and internal factors leads to the formation of specific changes that directly depend on the professional personality type. All professions connected with communication, one way or another experience this deforming pressure. Leaders, law enforcement officers, psychologists, social workers, teachers – all these professions can be included in a kind of "risk".

The mechanisms of deformational influence and distortion of that kind are studied by many scientists – psychologists, sociologists, physicistst. For example, professionally deformed leaders become more assertive, aggressive, social workers often show indifference;

psychologists are prone to excessive manipulation with or without it; teachers to excessive authoritarianism.

The more people focus on work, the stronger and more powerful is the influence of professional deformation. As a result of deformation, people do not see the negative changes happening to them. Moreover, as a result of professional deformation, changes occur in the emotional sphere of the person, besides, it also affects thinking. T.A. Metallica [5, 132] believes that the thinking of professional functions has three levels – the demonstrative, methodical and methodological. The vast majority of people reach the first two levels, however, not developing to the third stage. However, subsequent changes [6, 77] in the course of professional activities relate not only to the impossibility of access to the third, more complex and productive methodological level, the changes tend to decrease the number of qualities, for example. For example, the problem can refer to the ability to timely perceive and understand the existing problems of the team when many of the really existing problems are not perceived as such.

On the other hand, according to A. Batalov [1, 26], the main difference between a professional from an amateur is that the professional "lives" within his profession, and the novice keeps the border of his own "I", not plunging fully into his work. Therefore, on the one hand, not to dive into the work, means not to know its essence, on the other hand, plunging into it without a remainder, there is a risk of losing yourself. No wonder, some employers still prefer employees with families, that is, those about whom the employee can care, not surprising everyone by extreme and excessive devotion to their profession.

In this regard, the following can be noted. The lack of family (let it be elderly parents, brothers, sisters, nephews, that is not a classic family, "the mom-dad-children") makes the specialist more vulnerable to adverse changes in personality. Such people begin to substitute family for work transferring all their energy and emotions on set objectives. Sometimes unspent warmth is useful, but it is important to remember that any specialist has functional duties, they need to follow, preserving personal integrity. Many therapists know it's important to remember that you have certain rights and responsibilities, sources of joys and concerns. One needs to leave one's "functionality" in an imaginary closet, and going back to work, to forget about household chores and take on direct professional duties.

To save one's "I" (personality) from the deformation one should adopt a harmonious lifestyle, engaging in reflection, removing factors that make professional activity dull, and life devoid of conscious meaning. It is important to start this not tomorrow but today.

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FORECASTING OF AIR POLLUTION

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Abstract: Interest in forecasting atmospheric air pollution arose in the middle of the 20th century, when in a number of cities in foreign countries there were cases of catastrophic growth in the concentration of a number of air pollutants (London, Tokyo, New York).

Keywords: oceans, pollution, household waste, plastic, environmental problem.

Introduction. The study of the issue of air pollution forecasting was initiated by the scientific representatives of the United States of America, who conducted an experimental, then operational forecast, using the simplest criteria. It is appropriate to mention the work of Boatter and Smith, Miller, Cowper and Hopper [6 - 8]. In the 60's - 70's of 20th century, based on the work of Boatter and Smith, Gross, Holzwarth, Moon, Niemeyer, performed in various parts of America, a short-term forecast of the potential for atmospheric pollution (PHA) was created across the country.

The main position of the system was the situation of air stagnation as a necessary condition for the occurrence of relatively high concentrations of a number of air pollutants. Most often, such situations are observed in stationary anticyclones, with a combination of stable stratification, a weak wind and no precipitation. In addition, the concept of a mixing layer was introduced to assess the state of stability of the atmospheric boundary layer, taking into account the urban "heat island". However, in this case, there was no possibility of forecasting a high level of urban air pollution outside the stagnation situation, since certain regularities of the influence of meteorological conditions on pollution were not taken into account [1].

Methodology

Methods for forecasting air pollution in the city as a whole are based on the results of an analysis of the effect of meteorological and synoptic conditions on impurity concentrations. At the same time, an important problem in solving the problem of forecasting air pollution in the city is the consideration of the complex nature of the relationship between concentrations and meteorological factors. Therefore, in the development of predictive schemes, it is of great importance to choose a method that would allow maximum consideration of the actual form of the above-mentioned links [2].

In conclusion The study of the processes of the distribution of anthropogenic impurities in the atmospheric air of large cities is an integral part of the development of a life strategy in megacities within the framework of the concept of sustainable development. The history of research is about 60 years, during which a number of theoretical and practical problems were solved.

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Golovachova I.V.

ENVIRONMENTAL ASPECTS OF THE DEVELOPMENT OF FUNERAL BUSINESS IN MOSCOW

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Abstract: Parting with the deceased and the subsequent disposal procedure body distinguishes humans from animals. Over the millennia, little has changed in the rites of funeral business. But the natural process of mineralization of bodies is still not fully understood, and the impact of cemeteries and crematoria on the environment and human few people think.

Key words: ecology of the city, the cemetery, the development of mortuary science, the history of the spread of cemeteries, trends in the development of the cemetery culture and technology utilization in the body.

Introduction

The process of disposing of a dead body, whatever it was, accompanied by the development of humanity because it is what distinguishes us from the animals: only the person says goodbye to the deceased, and escorted on his last journey on subsequent disposal of the body [2]. Specific locations are assigned specially for the departed: the cemetery, the towers of silence, the columbarium, etc. Types of disposal of bodies, with some technical improvement, remain unchanged throughout the existence of mankind [3].

In temperate latitudes, particularly in Russia, Moscow decided to bury bodies in the ground, that is common in most cemeteries. Currently, insufficient attention is paid to consideration of the environmental consequences of disposing of bodies in a metropolis [1]. Few research works devoted to the study of the influence of cemeteries on the environment and on man himself. Meanwhile, the concentration of the urban population continues to grow every year, the city boundary

expands and informed country cemeteries are within the residence. And the man has transformed nature around ourselves that we left natural so that it is necessary to revise the millennial tradition of disposing of bodies.

My work examines the different trends in the funeral business in Moscow and their analysis from an ecological point of view [4-6]. In the first phase of the study, I have examined the historical burial place in Moscow over the past 250 years. [7]. Compiled an interactive map of cemeteries (Fig.1 and Fig 2):

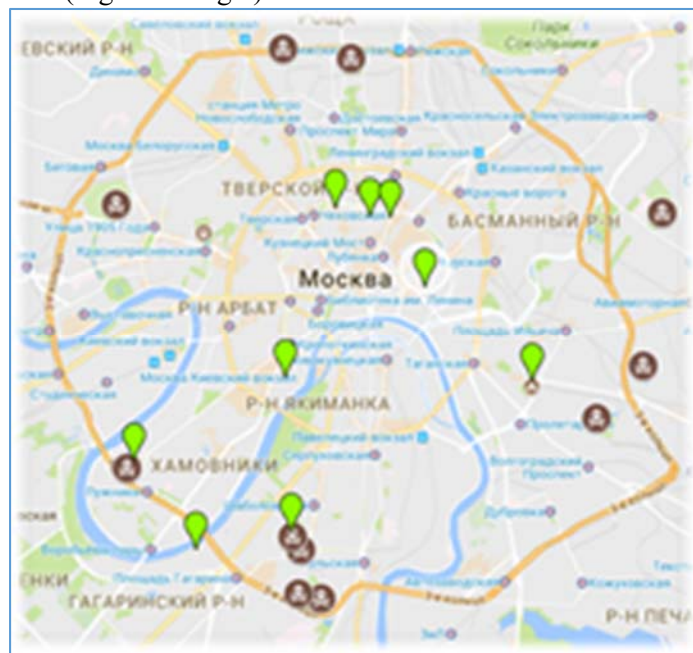


Figure 1. «Map of cemeteries of Moscow 1»
green drops mark the spot where allegedly there could be burial,
brown circles show the location of cemeteries.

As soon as Moscow expanded old graves (graveyards) were either buried or simply destroyed. Some burials XVIII-XIX centuries, found during the restoration of old streets or the basements of houses.

The following map shows the location of the destroyed cemeteries (blue circle) and the cemetery (brown circle):

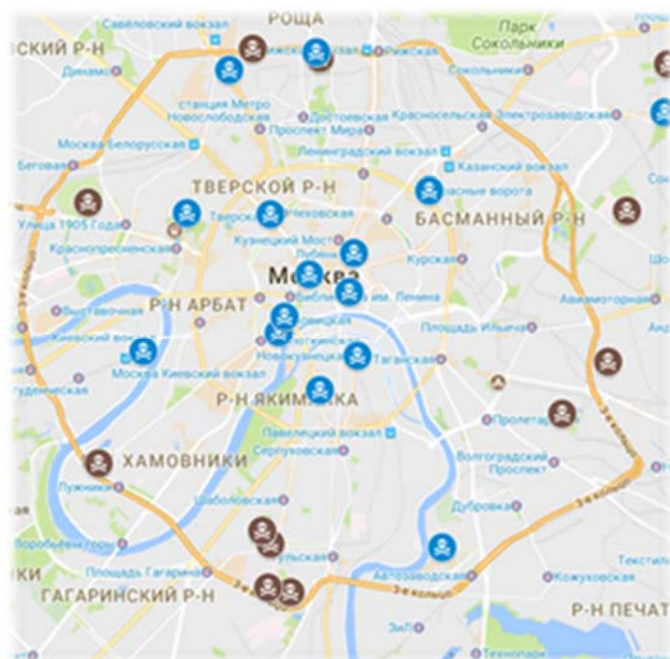


Figure 2. «Map of cemeteries of Moscow 2»

Looking at the map of Moscow, various years, you notice how and when the city was growing: the cemetery as if ringed new living stretch from the outer side. Today, the situation has deteriorated significantly, because the concentration of the population is very large. Cemeteries haven't enough stretch and perhaps this issue will push to alternative methods of disposal of bodies.

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PROTEINS AND THEIR FUNCTIONS IN THE LIVING BODY

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Abstract: The paper presents an overview of chemical composition and functions of proteins as well as their role in a human body. It explains the importance of protein intake in human and animal life. Recommendations for healthy nutrition are presented in this paper.

Key words: Proteins, healthy nutrition, biochemistry.

Proteins are high molecular weight natural polymers, the molecules of which are constructed from amino acid residues connected by amide bond [1].

Proteins are appertaining of all living organisms, but they are important for animal organisms, which consist of certain forms of proteins (muscles, integumentary tissues, internal organs, cartilage, blood).

Hundreds of biochemical reactions occur in every living cell. Biological catalysts or accelerators of reactions provide the rapid progress of these reactions.

For example, fats in the digestive tract are split by a special enzyme, which does not act on polysaccharides or proteins. Each molecule of the enzyme is capable of carrying out from several thousand to several million of the same operations in minute.

Enzymes perform work the best way only at the optimum temperature (for example, in humans and warm-blooded animals at 37 ° C) and a certain concentration of hydrogen ions in the medium [1].

Hormones are regulators of physiological processes. Part of the hormones of animals and humans are proteins. So, the protein hormone insulin (hormone of the pancreas) activates the capture of glucose molecules by cells and the splitting or the storage of them inside the cell. If there is not enough insulin, then glucose accumulates in the blood in excess. Cells without the help of insulin are unable to capture it - they are starving. This is the reason for development of diabetes - disease caused by lack of insulin in the organism. Hormones perform the most important function in the organism, controlling the activity of enzymes. Insulin activates enzyme in the liver cells, which synthesizes another organic substance-glycogen from glucose, and numbers of other enzymes.

The organism reacts to the ingress of bacteria or viruses in blood of animals and humans by production of special protective proteins-antibodies. These proteins bind with foreign proteins of the pathogens of diseases, then their vital activity is suppressed. For each foreign protein organism produces special "anti-protein" - antibodies. The mechanism of resistance to pathogens of diseases is called immunity. There are antibodies on the surface of special cells, which capture foreign cells. This cellular immunity, which provides and destroys emerging cancer cells. People and animals are injected with weakened bacteria, which don't cause disease, but cause special cells of the body to produce antibodies against these pathogens, to prevent the disease. If after some time, unhealthy disease bacterium or virus enters such an organism, they meet a strong protective barrier of antibodies [1].

Proteins are a source of energy as well as carbohydrates and fats. The energy obtained by the breakdown of proteins can be compensated without any damage to the body by the energy of decay of fats and

carbohydrates. However, it is very important that the human and animal organism can't do without regular intake of proteins from outside.

Experience shows that even a fairly long turn off of fats or carbohydrates from animal sources doesn't cause serious health disorders. But taking a few days, not before protein, leads to serious disorders, and prolonged protein-free nutrition inevitably results in the death of the animal.

How much protein is needed in human nutrition to ensure its health and performance? "Wear coefficient" in an adult is about 23 grams of protein. But nitrogen equilibrium with the intake of higher amounts of protein in the food than required "wear ratio". On average, nitrogen balance in humans when consuming 30-45 grams of protein per day. This minimum of protein, necessary to maintain a nitrogen balance on the diet, completely covering the energy requirement of the body, was called the "physiological minimum protein". Nitrogen balance in humans and animals can be obtained by taking with the protein in an amount about twice as large as is necessary for the "wear coefficient".

Scientists came to the conclusion that an adult should consume at least 1500 grams of energy daily, at least 1500 grams of energy, and at least 120 grams of protein in a hot climate. These norms correspond to mental labor or to physical labor, fully mechanized. When spending more energy, that is, in physical labor, it is necessary to add 10 grams of protein for every 500 kcal. Thus, in physical labor with an energy expenditure of 4000 kcal, 130-150 grams of protein per day is required.

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Ulubabov A.A.

ON HUMAN ECOLOGY AND SUSTAINABLE DEVELOPMENT

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Abstract: Human ecology is a systematic approach to understanding human-environmental system as a whole. It is able to make a valuable contribution to improving situations that are labeled as sustainability problems. In proper time

drawing-up necessary and effective decisions, human ecology will be well placed to make its contribution to sustainability challenges.

Key Words: human ecology, sustainable development, environment, ecological problems, systematic approach.



HUMAN ECOLOGY

Humans must understand the effects of their actions on the complex earth system [9].

Human ecology and sustainable development

For centuries man lived in harmony with nature until industrialization brought human society into the strong conflict with environment. Today, the contradictions between man and nature have acquired a very dramatic character.

With the development of civilization human interference in nature has increased excessively. Every year the world industry pollutes the atmosphere with millions of tons of dust and other harmful substances. The seas and rivers are poisoned with industrial waste, chemical and sewage discharge. People who live in big cities are badly affected by harmful wastes from plants and city transport system and by the increasing noise level. So, for humanity, it is very important to solve these ecological problems reasonably and comprehensively [5, p. 416]. Besides the main objective of the policy on environmental safety of man - is to overcome the negative effects of de-ecologization of his thinking [1, p.301].

Now, only sustainable development is an environmentally friendly model of modern society development [4, p. 350]. In the broadest sense of the term sustainable development strategy is aimed at achieving harmony between society and nature [4, p.350]. In particular, environmental activities focus on conservation of globally important biodiversity, climate change and energy efficiency, water resources management and others [8]. In this context, the development of human ecology led to the increasing its role in the management of modern society all over the world. It also seems necessary to combine understanding of the biophysical realities of human existence with the social and psychological dimensions of its health and well-being [6].

Recently, human activity based only on economic interests, has involved negative change of the face of our planet such as climate change, chemical composition of the air and water, etc. [2, p. 217]. While the human–environment system is changing in ways that cause problems for people, human ecology focuses on what is ultimately driving that change, and the consequences. Its task will be to identify interventions that will result in improved environmental outcomes and that are fair and acceptable to the people who are affected [7, p. 184].

The concern of human ecology for sustainability problems is coupled with the recognition that ecosystems have a finite capacity to meet the demands man places on them. If human demands on environmental resources exceed the rate at which those resources are naturally replenished, then the resource will inevitably be exhausted. At best, for very large stocks, this point of exhaustion may be far off into the future, which might allow postponing the inevitable requirement for man behavioral change.

The presence of humans in almost all terrestrial ecosystems, and their impact on the planet is largely the product of the evolution of human capacity for culture. If success is measured by sheer numbers and ability to colonize nearly every environment on the planet, then culture was an evolutionary advantage.

The need to take culture and its effects seriously makes the study of the ecology of humans different from the ecology of other living things. Other species exhibit behavioral adaption to their surroundings, but for humans' sociocultural adaption is the prime mechanism for responding to environmental change. Humans can learn and adapt their behavior based on information provided by other humans, in stories passed from generation to generation and enshrined in enduring social institutions.

Human ecology developed out of ecology and the natural sciences. Today the study of human ecology may be defined by the interests, methods, and intellectual domain of particular disciplines [3, p. 5]. Versions of human ecology also developed within other disciplines, such as geography, anthropology, and ethnology, but these versions of human ecology have little in common [7, p. 186]. Nevertheless, systematic approach must be practiced by those who place a premium on maintaining forums in which different disciplines can share their insights. Only in proper time drawing-up necessary and effective

decisions, human ecology will be well placed to make its contribution to sustainability challenges.

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2. ECOLOGY AND BIOSYSTEMS

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ECOLOGY OF A WOLF

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Abstract: This article analyzes data on the ecology of predatory animals. The author considers various opinions about the role of the wolf in ecosystem.

Key words: Wolf, an origin, ecology, morphology, relations between person and wolf, destruction, nutrition, hunting, a rule of a wolf in biocoenosis.

Introduction. Wolf (*Canis Lupus*) representative of the order of the predators, in historical times, when wolf occupied the second place among terrestrial animals before humans. Modern wolves have occurred from carnivorous mammals, who was living about 200 million years ago and about 20 million years ago from the wolf occurred dogs. Genus of the wolves one of the most current, but the smallest. This genus has only seven species: wolf (*Canis lupus*); jackal (*Canis aureus*); Coyote (*Canis latrans*); red wolf (*Canis rufus*); black cape (*Canis mesomelas*); striped jackal (*Canis adistus*); Ethiopian jackal (*Canis simensis*); wild and domestic dogs, as well as all foxes, arctic foxes, raccoon dogs and mangy wolves^[1].

Morphology. Wolf have a body type, which is adapted to long-term pursuit of production over long distances. It is a predator with a highly developed psyche and strong communication abilities. He is able to analyze the situation, draw certain conclusions, predict events, adapt to the changed conditions quite easily.

An origin. The word "wolf" in Indo-European languages appeared about 7 thousand years B.C. The beast lived with people, in general ecological conditions and it was union for people, but also is competitor. Wolves and primitive people, at first, had much in common in behavior, the same problems, but after a time the wolf became enemy to humans. People realized that the wolf isn't able to domestication, as they aren't able of living in a living nature and people began destroy the beast.

Nutrition. Wolf is typical major mammals with a large set of feeds. Basically, he consumes large prey, but can catch a fish, fogs, mice

also eat blackberry, dog rose, silver fir, fruits of wild fruit trees ^[2]. Wolves have cannibalism also carrion its one most important source of nutrition for it.

Population control. All species have a right to live, but this mammal bring a lot of damage to the economy and also human health, and this requires constant monitoring by humans. Knowledge about the wolf in our country is a result of hunting experience, which explain many features of a behavior and biology of the beast. Hunting for a wolf is one of the most intense, most fascinating sports hunts. The whole history of Russia testifies that it has always been the traditional Russian object of hunting ^[3]. This knowledge have a big value for hunting practice, but isn't always suitable for controlling the number of wolves in modern conditions. People don't know enough about the ecology of this species and it's restrict the maintenance of the population at a safe level. Opinions of zoologists in control of this species are disagree. One says that it is necessary to catch and destroy it, others that we need to study this species well. The wolf is the cause of extinction of herbivorous animals, but it also regulates the ecological and physiological well-being of populations.

The role of wolf in ecosystem. Identify the role of a predatory animal in a territory that is little has changed by a person, for example, in a nature reserve is an important task. These beasts have a central role in the functioning of nature reserve and they have the main link of the trophic chain. The presence of a wolf in the reserve can be considered as the possibility of preserving this species and as an element of the necessary functioning of the protected ecosystem. In summer and early spring, wolves live throughout the reserve, and in winter they have access to places of large-scale extraction and the most heated areas of the slope. Wolves don't pose a threat to others wild animals in the reserve. It can be assumed that the presence of wolf families frightens off the saiga, and he rarely began to visit the site of the reserve. Consequently, consider it an absolutely destructive element, there are no special reasons. Still, it should be noted and the negative facts of the presence of predators in the reserve. In November 2004, on the territory of the reserve, wolves gnawed a cow, and in 2005, a forced firing of a single wolf^[2].

In conclusion. The wolf deserves serious attention and study. Its worth to say. It is worth saying that no one species has disappeared due

to the wolf's fault. The entry of wild ungulates into the Red Book is the result of human activity, poaching. Only on the basis of this results obtained we can prove the negative role of the predator in the existing population.

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Unaeva N.M.

ANALYSIS OF THE IMPORTANCE OF GLACIERS

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Abstract: Presently, 10 percent of land area on Earth is covered with glacial ice, including glaciers, ice caps, and the ice sheets of Greenland and Antarctica. Glacier areas cover over 15 million square kilometers (5.8 million square miles).

Key words: glacier, solar energy, hard rock, glaciology

Introduction.

What is a glacier? Do glaciers affect people? How are glaciers formed? Now this questions are interesting for many scientist, who want to understand this unusual phenomenon. Today, glaciers often are tourist attractions in mountainous areas. But glaciers are also a natural resource, and people all over the world use the meltwater that glaciers produce.

Main part.

Glaciers are made up of fallen snow that, over many years, compresses into large, thickened ice masses, which moves under the influence of gravity. The formation of glaciers is connected with lack of solar energy. More than 99% of the total area of the glaciers of the Earth belongs to the polar regions. However, glaciers can be seen even near the equator, but they are located on the tops of high mountains.

Glaciers store about 75 percent of the world's fresh water. During the maximum point of the last ice age, glaciers covered about 32 percent of the total land area. In the United States, glaciers cover over 75,000 square kilometers. If all land ice melted, sea level would rise to 70 meters. Glacier ice crystals can grow to be as large as baseballs. North America's longest glacier is the Bering Glacier in Alaska, measuring 190 kilometers long. In Washington State, the state with the largest area of glaciers in the contiguous United States, melting glaciers provide 1.8 trillion liters of water each summer. The largest glacier in the world is the Lambert-Fisher Glacier in Antarctica. At 400 kilometers long and to 100 kilometers wide. Antarctic ice is to 4.7 kilometers thick in some areas. The Antarctic continent has been at least partially covered by an ice sheet for the past 40 million years.

The Earth receives from the Sun 49 thousand calories of heat every year on each square centimeter. Over time, this value should decrease because the Sun very slowly, but still wasted their energy resources. But nowadays the annual growth of worldwide energy production is 10%. It is not hard to imagine that not much time will be needed to ensure that the amount of energy generated by human will be more than the amount of heat coming from the Sun. The Earth will overheat, and glaciers will be like "natural refrigerators". [1, 25]

In some regions, glaciers play a significant role in feeding the rivers, this is especially important in the countries of Central Asia. Also the positive way it is large proportion of glacial melt water in the rivers, which is necessary for Hydroelectric Power Station.

Glaciers do a great job of destroying and transporting. When the glacier met on its way hard rock, it processed them, smoothed, rounded, polished. So formed curly rocks and mutton foreheads rocks and creating characteristic forms of glacial relief. [2, 106]

Glaciology studies the glaciers. Dozens of scientists-glaciologists annually travel to the mountainous regions and to the far north for the

study of glaciers. They measure their speed, power, length, describe the composition of firn, moraines, streaks and scratches on boulders, glacial valleys, etc. Glaciologists should be not only scientists, but also climbers. Currently, the study of the glaciers of the Pamir and the Tien Shan is particularly important in connection with the large irrigation works that are carried out in the sand deserts of Central Asia.

In conclusion

Thus, the study of glaciers has great practical importance. Besides the influence of glaciers, which I noticed before, the main idea it is the glacier can show how and why climate changed, and how it might change in the future. Ice cores are continuous records providing scientists with year-by-year information about past climate, so that is why we have to discover glaciers more attentively.

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3. ESSENTIAL ENVIRONMENTAL PROBLEMS IN THE REGIONS OF RUSSIA AND IN THE WORLD

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ECOLOGICAL PROJECT IN THE RUSSIAN TUNDRA “PLEISTOCENE PARK”

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Abstract: This experiment is an attempt to recreate the arctic dry meadows that have disappeared thousands of years ago - the tundra steppe or mammoth steppe.

Key words: Tundra, mammoth, prairie, tundra-steppe, biocenosis, Arctic climate, tundra large herbivores

In 1980 in the north of Yakutia, scientists began to carry out an experiment - the group began work in the wildlife sanctuary to restore the arctic dry meadows that had disappeared thousands of years ago - the tundra steppe or mammoth prairie. The reserve is located near the town of Chersky. This landscape consists of cold and dry arctic steppes and forest-steppes and in the past occupied territories corresponding to the modern tundra in terms of climate. [1, p. 1337; 2, p. 216]

Tundro-steppes had high productivity, there were many large animals on this territory, these properties distinguish the tundra-steppe from the tundra. just here during a short summer period the plants grew very quickly, and this mass of plants was enough to feed large herds of bison, horses, mammoths and other herbivores (the number of these animals was very high) [3, p. 147]

The causes of death of the tundra-steppe biocenosis are debatable.

Some scientists believe [4, pp. 796-798] that the reason is warming and moistening the climate, other scientists believe that the reason is the destruction of primitive hunters of large animals: The presence of grass-eating animals is a prerequisite for the conservation of steppe landscapes, in the Arctic climate, only herbivores can transform grass and return nutrients in the ground in the form of manure.

With the disappearance of many herbivores at the end of the Pleistocene, the land remained without fertilizers, and under such

conditions rapidly growing grasses were replaced by less capricious plants of the modern tundra.

Such vegetation (mosses, lichens, shrubs) does not require rich soils, grows slowly and consumes little water at the same time. This is the reason for the waterlogging of the tundra. However, the plant communities of the mammoth prairies have not completely disappeared because the relict areas of the tundra-steppe have been preserved in the polar latitudes on the southern slopes where the soil is better heated by the sun.

Scientists assumed that by returning to the tundra large herbivores (bison, wild horses, red deer, musk oxen), it is possible to restore the rich vegetation of mammoth prairies in vast areas. [3,4]

To test this hypothesis near the city of Cherskiy, on the basis of the Northeastern Scientific Station, an experiment was launched, known as the Pleistocene Park. The idea of the experiment was to populate the territory with a large number of wild herbivores, and artificial restoration of the vegetation of mammoth prairies. So, there was to be a replacement of the tundra for the arctic steppe. First, a herd of Yakut horses was placed on a fenced plot of land (50 hectares). The horses turned the tundra into a kind of dry lawn, there were only fast-growing grass and willow bushes.

The next step was to create a herd of several species of herbivores. In 2005, a new fence covering an area of 160 square kilometers was completed - on this territory deer, musk oxen and forest bison were to be resettled. A special role was assigned to Canadian forest buffalo, which is the largest mammal in the Arctic. By the beginning of the twentieth century, these animals were almost destroyed, but timely measures allowed animals to be preserved in several reserves in northern Canada. The Canadian government has allocated a small group of bison to restore the bison population in Eastern Siberia.

In 2010, the "Pleistocene Park" brought musk oxen, and in the spring of 2011 - bison. Perhaps the bison will be able to occupy the ecological niche of the ancient bison. If the bison still can not adapt, they will be replaced by forest nonsense. Currently, the Pleistocene Park already has many large herbivorous animals inhabiting Yakutia in Pleistocene. These animals have survived to our time. In the future it is planned to gradually increase the number of herbivores, and add wolves and bears, a large cat - an analog of the cave lion.

This experiment of Russian scientists aroused great interest of foreign scientists. Based on the results of the work of the North-Eastern Scientific Station, a number of articles have been published in the journals Science and Nature.

To date, the North-East Scientific Station is equipped with modern equipment including two newest laboratories, which allows conducting research in the field of biology, geophysics and atmospheric physics. Its prestige is very high, graduate students from the United States come to Chersky to work on their theses. The presence of a scientific station allowed Russian and American scientists to conduct a number of interesting studies - for example, the search for the seeds of ancient plants preserved in the permafrost conditions.

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THE ENVIRONMENTAL SITUATION IN NIZHNY NOVGOROD REGION

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Abstract: Nizhny Novgorod region is one of the most industrialized regions of Russia. Environmental problems are associated with the development of industry, agriculture, transport, energy and urban growth. The most powerful

contaminants in the environment is the industry. It wastes apply to all components of nature.

Key words: Nizhny Novgorod region, environmental situation, air pollution in Nizhny Novgorod region, burial and disposal of waste in Nizhny Novgorod region, pollution of water resources in Nizhny Novgorod region.

Introduction. By the end of 2016 Nizhny Novgorod oblast was ranked 72 out of 85 possible in the environmental rating of subjects of the Russian Federation. In the region is the most polluted Russian city of Dzerzhinsk, and one of the four dirtiest places on the planet Igumnovsky landfill. The most pressing environmental problems of the Nizhny Novgorod region are air pollution, the disposal and storage of solid waste, increase of level of the Cheboksary reservoir.

Air pollution in the Nizhny Novgorod region. Most of the air in the region is polluted by car exhaust fumes. Annually vehicles emit about 345 000 tons of harmful substances into the atmosphere of the region. In Nizhny Novgorod alone, the share of exhaust gases accounts for 83% of the total volume of air pollutants.

As for the industrial pollution of the atmosphere in the region, the main contribution to it is made by the enterprises of the electric power industry, machine building, metallurgical, oil refining and chemical industries. Annually from stationary sources in the air of Nizhny Novgorod region about 142 000 tons of harmful substances are emitted.

The main air pollutants in the Nizhny Novgorod region are benzpyrene and formaldehyde. The strongest pollution of the atmosphere is noted in Dzerzhinsk. In the industrial zone of this city, the phenol content in some places is 700 times higher than the MPC. In addition, Dzerzhinsk air above all permissible standards is contaminated with ammonia, nitrogen dioxide and suspended substances.

Lack of green spaces in the Nizhny Novgorod region. The problem of air pollution in the Nizhny Novgorod region is aggravated by a low level of gardening. Each inhabitant of the region has 5-10 square meters of green space, while the norm is 16 square meters.

The level of landscaping meets the requirements only in the cities of Semenov, Uren, Vetluga, Gorodets, Pavlovo, Navashino, Gorbatov. Nizhny Novgorod is also included in the list of cities in the region with

insufficient level of gardening. On average, 4.5 square meters of green plantations are accounted for every inhabitant here, which is only 28% of the norm.

Pollution of water resources of Nizhny Novgorod region. About 88% of water bodies in the Nizhny Novgorod region are classified as "moderately polluted" and 12% are classified as "highly polluted". Some of the dirtiest are the waters of the main sources of water intake - the Oka and the Volga - in the vicinity of Dzerzhinsk and Nizhny Novgorod. The harmful effect of sewage from the chemical center of Russia is so great that a high bacterial contamination is observed in the Volga.

Most of all, the ecology of the water resources of the Nizhny Novgorod region suffers from the utilities sector of Nizhny Novgorod. In addition, the aquifers in operation in most of the region are susceptible to pollution from the landfills of domestic and industrial waste.

Additional water pollution in the Oka and the Volga threatens to raise the level of the Cheboksary reservoir. If this happens, 13 settlements of the Nizhny Novgorod region will be flooded and the burial of chemical wastes in the territory of Dzerzhinsk is blurred.

The problem of waste disposal and utilization in the Nizhny Novgorod region. Burial and disposal of solid domestic and industrial waste is one of the most serious environmental problems in the Nizhny Novgorod region. Annually in the region over 1.3 million tons of domestic waste are generated, which are located in 250 dumps. To date, more than 12 million tonnes of production and consumption wastes have been accumulated in the Nizhny Novgorod region.

As for solid household waste in the region, almost all of them are placed on unbuilt and, for the most part, already overcrowded landfills.

In conclusion. The Nizhny Novgorod region is constantly monitoring the state of the environment. To industries that pollute nature, strict measures are taken: from fines to closing shops, plots, individual technological processes. Old plants are being reconstructed that are not capable of cleaning production wastes, while designing new ones, a system of measures aimed at preserving the environment is envisaged.

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WILDFIRES AND THEIR CONSEQUENCES

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Abstract: The fire is one of the most terrible and uncontrollable natural disasters. The forest fire is a spread of fire on the forest area. Wildfires destroy trees and bushes; the habitat is destroyed. Besides, wildfire constitutes serious danger to people and farm animals.

Key words: natural disasters, spread of fire, danger, habitat, farm animal.

The reasons of wildfires are divided into two big groups, these are natural and anthropogenic. Refer lightning strokes to the natural reasons. Statistically, annually up to 8% of wildfires arises because of lightning strokes in trees. Forests in which a large number of dry trees - the age woods are most subject to risk.

Any activity of the person is the anthropogenic reason. For this reason, there are 92% of ignitions. The main reason – careless handling of fire, most often is not extinguished fires or stubs of cigarettes. It is the main reason of wildfires around the world.

Peat self-ignition belongs to the anthropogenic reasons. Up to 10% of the peat fires happens because of self-ignition. Also it is possible to refer emergence of wildfires because of eruptions of volcanoes to the natural reasons, however it happens extremely seldom. Also such reasons as meet:

1. Self-ignition of the thrown oil objects;
2. Conscious firing of the wood;

There are two types of the forest fires - local and riding. In the first case all forest laying, lichens, small trees, mosses, but fire don't touch high trees. At the riding fire the top part of trees burns out. He is very dangerous as fire spreads on tops of trees wind. Such whirlwind can transfer even trunks of the burning trees to long distances. [1]

The local and riding fires are divided by the speed of spread of fire on steady and fluent. Distribution speed:

- the weak local fire doesn't exceed 1 m/min (Height of the weak local fire to 0,5 m)
- an average from 1 m/min to 3 m/min (Average height — up to 1,5 m)
- strong over 3 m/min. (Height of strong — over 1,5 m)

Riding fire, distribution speed:

- weak up to 3 m/min,
- average up to 100 m/min,
- strong over 100 m/min.

Assessment on the area:

- fire
- fire is captured 0,1-2 hectares
- small — 2-20 hectares
- average — 20-200 hectares
- large — 200 — 2000 hectares
- catastrophic — more than 2000 hectares

The average duration of forest major fire of 10-15 days at the burning-out area — 450 — 500 hectares [2].

Extremely high temperatures, oxygen burning out, increase in air of concentration of products of burning, smoke, destruction of vegetation

— all this affects stability of a natural biocenosis. The fires cause violation in an ecosystem because of the following factors:

1. A lot of animals and plants are killed in fire;
2. There is a release of carbon dioxide, soot, oxides of nitrogen and other products of burning in a layer of the atmosphere, it changes composition of the air;
3. Winds affect the soil stronger. It can lead to her erosion and desertification of lands;
4. Disappearance of trees and other plants changes the water mode of the soil after the fire;
5. The mineral composition of soils are changed.

As the forest and peat fires extend across the huge territory, after detection of fire it is necessary to call urgently about special services. You can't to extinguish elements usual means.

Wildfire is often stopped by means of artificial barriers – ditches, trenches, cuttings.

The local population must be ready to evacuation – a behavior measuring is necessary for protection of their life as many have died, refusing to move to the safe area in time. Each inhabitant must consider that it is desirable to take care of the safety most and in advance to leave the dangerous settlement [3].

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Kakovkina A.G.
**THE PROBLEM OF AIR POLLUTION
AND THE RELATIONSHIP OF HUMANITY TO THIS
PROBLEM**

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Abstract: The pollution with carbon dioxide interferes with humanity, then the planet. First of all, people need to understand that it is not only saving the planet, but themselves. Then humanity will begin to take care of the air and the environment.

Key words: air pollution, humanity, combustion, human activity, carbon dioxide, carbon monoxide, sulfur oxide, fossil fuel, solids, hydrocarbons, nitrogen, emission, quantity, composition, oxygen, concentration.

Introduction. The problem of air pollution is one of the most serious global problems which is faced by humanity. The danger of atmospheric pollution isn't only the fact that substances harmful for living organisms get into clean air, but also in the climate change of the Earth caused by pollution.

The pollution of the atmosphere as a result of human activities has led to the fact that over the past 200 years, the concentration of carbon dioxide has increased by almost 30%. However, humanity continues to actively burn fossil fuels and destroy forests. The process is so large that it leads to global environmental problems. Air pollution also occurs as a result of other types of human activity. Combustion of fuel in thermal power plants is accompanied by the emission of sulfur dioxide. Oxides of nitrogen enter the atmosphere with exhaust gases of cars. Carbon monoxide is formed because of incomplete combustion of fuel. In addition, we shouldn't forget fine dispersed solid pollutants, such as soot and dust [1].

The main sources of air pollution are enterprises of the fuel and energy complex, manufacturing industry and transport. More than 80% of all pollutants in the atmosphere are emissions of carbon oxides, sulfur dioxide, nitrogen, hydrocarbons and solids. The gaseous pollutants are carbon oxides, carbon dioxide, and carbon monoxide, produced in the greatest quantities, which are formed mainly when fuel is burned. In large quantities, sulfur oxides are also emitted into the atmosphere: sulfur dioxide, sulfur dioxide, carbon disulfide, hydrogen sulfide, etc.

The most numerous class of substances polluting the air of large cities is hydrocarbons.

The amount of oxygen in the atmosphere has been constantly changing, since the appearance of green plants on the planet. This directly influenced the evolution. In various geological epochs, due to natural disasters, there was a change in level of the oxygen, and this led to destroying of ecosystems. For example, about 300 million years ago, the oxygen concentration in the atmosphere was about 35%, and these conditions were suitable for the life of giant insects. So now, the current concentration of oxygen is 20.95%. This concentration is suitable for the existence of modern humanity, and its changes will lead to disastrous consequences in the case of an increase in concentration, and in the case of a decrease in the concentration of oxygen. That is why pollution of the atmosphere is very dangerous for all humanity [2].

I would like to note that the planet during its existence suffered tremendous changes in the composition of the atmosphere, and the planet coped with such changes. It is impossible to say that about its inhabitants. With each sharp increase in the concentration of carbon dioxide or oxygen, a huge number of species that lived at that time on the Earth died out. But even after these extinctions, new species of animals and plants appeared, and life continued to exist.

That's why a human should think first of all about himself. We are one of the most vulnerable species, and in case of sharp increase in carbon dioxide concentration, humanity will first experience the consequences of this problem.

To avoid the problem of atmospheric pollution with carbon dioxide, humanity will have to make great efforts to replace current energy sources with alternative sources of energy. It will take a lot of time and money, but if humanity doesn't act now, then most likely it just runs the risk of extinction as a species.

There are also natural sources of pollution, such as volcanic eruptions, natural gas escape points and, oddly enough, cows. All of them are the causes of the greenhouse effect, the level of which grows faster every year. With these problems humanity is unlikely to be able to cope, so first of all, people should eliminate the sources of the greenhouse effect that they created themselves.

First of all, a human should replace coal as a source of energy for enterprises. We also need to replace gasoline with an alternative source

of energy for mechanical transport. By taking, at a minimum, these actions, we can reduce the emissions into the atmosphere by about 48% of the current level.

In conclusion, I would like to say that at the moment the humanity has only two enemies, they are time and the people themselves. While humanity doesn't realize that it is on the verge of destroying the world and that maintaining a good ecological situation is our interest, we won't be able to advance.

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ON ENVIRONMENTAL PROBLEMS OF THE MOSCOW REGION IN THE FIELD OF WASTE MANAGEMENT

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Abstract: This article provides information on the introduction of priority waste management methods for the Moscow region. The problem can't be solved without participation of the population – international experience testifies to it.

Key words: waste; nature protection activity; solid municipal waste; territorial scheme of waste management; objects of neutralization; processing and disposal of waste; sanitary norms and rules; social tension; minimization of waste disposal; landfill; waste processing plant; separate collection of waste; greenhouse gases; electronic scrap; scrap paper.

The total population of the Moscow region is about 18 million people. Such record concentration of the population is the main reason for a difficult ecological situation. Nearly 20% of garbage of the Russian Federation is the share of the Moscow region. Landfills, where all this

waste is brought are overfilled and don't cope with such quantity. More than half of this waste is garbage from Moscow. In the capital there is no place for its burial [1].

In December 2016, in the Moscow region, a new Territorial scheme for waste management was approved, it takes into account all problems related to garbage. By 2025, it is planned to reduce burial volumes from 95% to 50%.

One of the important conditions for the implementation of the project is the input of separate collection of garbage. This requires a two-container system: for "dry" waste and for "wet". "Dry" waste is something that can be reused. It is both polymers, and paper, and metal, and glass. The "wet" boxing is intended for food and vegetable waste [1].

In 2017 in 12 cities of the Moscow region two-container collection of garbage will be launched.

The new scheme means closing of the old landfills, the modernization of the remaining ones, and the construction of new waste-processing facilities. Four thermal waste neutralization facilities will be built by Swiss-Japanese company Hitachi Zosen. Emissions of facilities for the thermal treatment of solid municipal waste are more than 8000 times lower than emissions from fires on landfills [1]. After the thermal disposal of waste there is a minimum quantity of the waste demanding burial, such unpleasant properties as a smell, release of toxic liquids, bacteria and appeal to rodents and birds are eliminated [2]. New enterprises due to incineration of garbage will produce electric power. A decision about creating in the Moscow region a State Information System for Automating the Process of Accounting for and Controlling Waste Management was taken. Today in the Moscow region 39 rubbish polygons officially continue to work. Half of them has already developed the resource [3].

In five years, the 11 most problematic ranges will be closed. In the places of landfills and garbage mountains, modern and highly technological complexes for waste utilization and sorting, processing enterprises will appear. The complexes will be protected by modern filtrate and landfill gas collection systems. They will be subjected to further cleaning. In the Moscow region in 2019 there will be 11 modern hi-tech complexes which will pass the state environmental expertise and will receive a license to handle waste of I-V classes of danger [6]. Incineration plants are plants for thermal disposal of waste. Equipped

with the most modern equipment, they will not make problems for the environment, but will help to solve them. The population of the Moscow region suffers from the proximity of landfills. The increasing number of such diseases as asthma, allergy, cardiovascular and even oncological diseases is the result of the neighborhood with polygons of solid municipal waste. Flowing down in the underground water-bearing horizons the landfill filtrate gets to pools of the reservoirs providing drinking water to inhabitants of the Moscow region [2].

The regional program and the Territorial scheme of the Moscow region has provided a complex of the actions allowing to involve waste in repeated economic circulation as secondary raw materials. The Ministry of Ecology and Nature Management has carried out work on introduction of separate collecting dangerous waste (batteries, thermometers and fluorescent lamps) which is forbidden to burial on the landfills. Specialized containers for the collection of hazardous wastes are established in the territories of municipalities [4]. The Ministry of Ecology and Nature Management created an interactive map showing the location of specialized containers for collecting hazardous waste in the Moscow region. Information will be supplemented as the number of facilities increases, including containers for separate collection of solid municipal waste [5].

In order to fundamentally change the attitude of all population groups to the solution of the waste problem, it is necessary to form ecological awareness and ecological culture among the population.

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ADDRESSING THE ISSUE OF SPACE DEBRIS: CHALLENGES AND PERSPECTIVES

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Abstract: Space debris are a global environmental problem that is yet challenging. They pose threat not only to space objects and satellites on the Earth orbit, to the planet itself.

Key words: space, space debris, the destruction of satellites, contamination from fuel, the elimination of space debris.

Introduction. The problem of pollution by space debris acquires a large scale due to the increased load on the Earth's orbit.

The purpose of this article is to study the quantitative and qualitative composition of space debris and its impact on environmental security of our planet.

According to a definition by the Inter-Agency Debris Coordination Committee (IADC) “space debris are all man-made objects including fragments and elements thereof, in Earth orbit or re-entering the atmosphere that are non-functional” [2]. The number of these objects is constantly growing due to the increased number of satellites and space technology and the lack of means of disposal. According to NASA in 2017 space debris in earth orbit increased by 471 object. The total number is 18347, 13913 objects are rocket stages, fragments of space

technology and boosters. 4434 object – a satellite. The biggest amount of rubbish belongs to Russia (6501), then USA (6017) and China (3801). The amount of rubbish produced by other countries are small: the object 532, Japan – 256, India – 192 and other countries – 1048 objects. [4]

Basically, the space garbage is at an altitude of 850 - 1500 km above the Earth's surface, but it also presents on the altitude of the spacecraft.

In addition to the large debris there are microscopic part resulting from the collision of objects with each other.

According to the article Space Debris by Heiner Klinkrad data were obtained on particles of space debris. The first type is fragments of the explosion and collision. This is the most important part, because by May 2005 it accounted for 40% of all observation objects. 30% of them formed due to intentional explosions [2].

Most space debris are solid particle emissions from engines of rockets (particles of dust, slag and aluminum oxide Al_2O_3). Dust is emitted mainly within a diameter of $1 \mu m \leq d \leq 50 \mu m$. By May 2005 there was only 1 ton of Al_2O_3 and dust and 3 tons of SRM slag particles in orbit. Due to the action of atomic oxygen and UV radiation on the surface of space technology was weathering its surface and turning the separated particles in space debris. Basically, they leave traces of craters on the surface of spacecraft and satellites. [1]

Currently, tracking and registration of space debris, and provides accounting of particles formed by the collision of particles. However, there have been no successful attempts to regulate this process.

Space debris disrupt the work of artificial satellites and technology when confronted with large particles there is an explosion of the object. Debris also threaten the ecological security of our planet. The wreckage of parts of space equipment is mostly burned in the atmosphere. However, they emit large amounts of dangerous chemical elements. Sometimes pieces of wreckage with fuel reach the earth's surface. They contaminate the soil particles of the heavy metals polluting the soil with aluminum compounds, which reduce its fertility. Rocket fuel quickly penetrates the soil and spreads into the ground water and absorbed by vegetation. Some larger debris can fall directly on the earth's surface. In 1978, the Soviet satellite "cosmos-594" fell on the territory of Canada, and the wreckage of the American space station, fell to the territory of Australia.

To prevent negative effects of space debris on human activities require tracking of objects. Currently under observation are only large particles. The scientists also are developing projects for cleaning debris from near-earth space. For example, a scientist from the Space center NASA's Johnson mark Matni has developed a means of waste disposal, source of energy which are sparse layers of Earth's atmosphere.

Space debris cause a number of problems: chemical pollution resulting from the operation of jet engines, thermal pollution, and radioactive pollution from nuclear power plants on satellites, ozone depletion. In this regard, the question arises about new methods of environmental monitoring. We should pay attention to control measures, precluding the formation of debris in near-earth space, as well as to develop effective measures for elimination of space debris in orbit.

To overcome this problem, global efforts have to be joined.

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**ESSENTIAL ENVIROMENTAL PROBLEMS IN VYSHNY
VOLOCHYOK**

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Abstract: The modern world, new technologies and etc degrade the environment. In many regions there is a different ecological situation. This report will address the environmental problems of one small city called Vyshny Volochyok. In this city there are several different types of environmental problems.

Key words: Vyshny Volochyok, environmental problems, ecological situation, small Venice.

Introduction. Vyshny Volochyok is a town in Tver region. The city is located in the northwest of Tver, on the Valdai hills, between the rivers Tverskaya and Tsna, on the watershed between the Volga basins and the Baltic Sea. [1] The town's name is translated from Russian as "Upper Portage". This city has the unofficial name of small Venice. This name was due to the fact that Vyshny Volochyok is a city of rivers and canals, the first artificial canals created by human hands. [2] In the 1740, the road connecting Moscow and Saint Petersburg was built in this city. [3] There is also a railway station. In the city there is a furniture-woodworking combine.

Methodology The main road of Russia (Moscow - St. Petersburg), the railway, furniture wood processing plant (MDOK), other factories, fires of landfills, the human factor all this negatively affects the state of the environment. Let's start with the main road. In the city center is a traffic light. About him, probably, almost all people who travel from Moscow to St. Petersburg and vice versa know. The fact is that this traffic light creates a huge traffic jam. Now there is a bypass road. However, recently it has become paid. That's why traffic jams in this city have not disappeared. While the cars are in a traffic jam, exhaust fumes are released into the air, inhabited by local residents. It's terrible to imagine how much air is polluted in this area. Let pass to the discussion of the railway. Any railroad is a strip alienated from the natural environment, artificially adapted to the movement of trains with specified technical and environmental indicators. For an ecological system, for a natural

landscape, a railway is an alien element. Despite the fact that railway transport has the least influence, especially in comparison with automobile transport, its share in environmental pollution remains high. This occurs as a result of the emission of hazardous substances of the rolling stock. At the same time, there is a significant contamination of atmospheric air, water and soil. In addition, rail transport creates noise and heat pollution. Focal unofficial garbage dumps are another big problem of Vyshny Volochyok. This problem is closely related to the human factor. It all starts with the fact that one person will throw the garbage in the wrong place, then the other will do the same. All this is reaching a large scale; a large garbage dump is growing. In the conclusion of the main part, we discuss the furniture wood processing combine. During the audit, with the involvement of specialists from the control bodies and a specialized laboratory, it was established that "Vyshnevolotsky MDOK" carries out production activities in violation of the law. Emission of harmful substances into the atmosphere and discharge of pollutants into the water body is carried out. Officials of the enterprise control in terms of ambient air protection is carried out in an incomplete volume, the order of production control in the field of waste management has not been developed and approved, contrary to the requirements of the law, persons who do not have a professional training, etc. [4] All of the above problems have a negative impact on the health of people living in this city. For example, according to unofficial data, for many years the number of oncology patients has increased on the territory next to the furniture wood processing plant.

In conclusion

The modern world has big problems with the environment. Many factors affect the environment negatively. Many have already addressed the global problems of the world several times, but one can consider various problems on a smaller scale. Everything begins with small things. To eliminate problems all over the world you need to start with regions and cities. In this report, the main environmental problems of one city in Vyshny Volochok were considered. These problems are very often encountered in other cities, but here they are in the aggregate in one place. It can be concluded that this city is a good example for the consideration of modern environmental problems. The identification of the problem is the beginning of its solution. The main thing at the time

is to realize the danger of all these problems and begin to act immediately.

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THE DECLINING NUMBER OF POLAR BEARS

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Abstract: Nowadays we witness global warming on the planet and, as a consequence, the decrease in the population of polar bears. But polar bears are all parts of different ecological systems.

Key words: polar bears, the Arctic, global warming, the IUCN Red List of Threatened Species, the Russian Federation's Red List of Threatened Species.

Humans have known of the existence of polar bears since the time of ancient Rome (the 1st century A.D.). The historical records of Japanese emperors offer evidence that polar bears and their skins were brought to Japan and Manchuria in the 7th century A.D., but the populace of these countries could have become aware of these animals much earlier because even today polar bears sometimes wander as far as Japan with drifting ice [2].

The oldest written source found in Northern Europe including information about polar bears dates back to approximately 880 A.D.: at that time two polar bear cubs were delivered from Norway to Iceland. In 1774, British zoologist Constantine John Phipps was the first to depict the polar bear as an individual species [2].

The local ethnic groups of the Arctic have been hunting these animals for as long as anyone can remember. However, as humans have become more active in the North, polar bear numbers have decreased and polar bear hunting is now forbidden with a few exceptions.

The polar bear usually ranges over tightly packed ice, swims well and migrates seasonally. If there are beneficial ice conditions, polar bears can even reach the North Pole during such migrations. However, their habitat is over the continental shelf along the fringes of the Arctic Ocean.

At a meeting held in Copenhagen in the summer of 2009, the IUCN polar bear experts listed the polar bear as a threatened species [1].

The ongoing decrease in the ice cover in the Arctic bodes a bad effect on the polar bear because this means the loss of the most suitable habitat for them. The seasonal disappearance of ice in the Arctic seas forces polar bears to move to land and wait on the shore till the time when the ice returns, and during this time they can neither hunt nor feed in their usual way. These factors expose many polar bear populations to higher stress and render the animal much more vulnerable to negative conditions created by humans. Due to the specifics of drifting ice and the higher rate of retreating ice in the Russian part of the Arctic, polar bears there are exposed to stress, various risks and the threat of a dramatic reduction in their numbers [1].

Although, global warming and the waning ice cover are not the only factors that harm and kill polar bears. Among other negative factors are pollution in the Arctic (particularly the Barents Sea) and poaching [1].

In 1973, Arctic countries signed an agreement on the conservation of polar bears and their habitat, having been implemented in 1976. This agreement has served as an international legal foundation for protecting, researching and managing this species. Polar bear hunting was completely prohibited, except subsistence hunting which is traditionally important for the indigenous population of the Arctic [2].

The World Wildlife Fund (WWF) puts the number of polar bears in the world at 20,000 to 25,000. Although, already by 2050 the polar bear population may be diminished by two-thirds.

The polar bear was placed on the IUCN Red List of Threatened Species and the Russian Federation's Red List of Threatened Species. In Russia, polar bear hunting is completely prohibited. Whereas in the United States, Canada and Greenland it is only restricted. It took only three decades of intensive hunting in the first half of the 20th century to push this species to the brink of extinction. Only the signing of an international five-party agreement on the polar bear in 1973 helped this animal survive. In Soviet times, the ban on polar bear hunting was effectively honoured, and there were only isolated cases of poaching, which did not seriously harm polar bear populations. The situation drastically changed in the early 1990s when poaching became widespread again in some parts of the Arctic [1].

In such situation, it is especially crucial to concentrate on expanding and improving protection of white bears, monitoring the condition of polar bear populations, tracking polar bear migration routes and studying the species responses to climate changes.

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Abstract: The main features of China's geography are due to the variety of its big territory and climate type which is complex and changeable. The climate is one of the most active factors in the natural environment. We show that climate type's formation is produced according to geographical latitude, topography, land and sea distribution, and also with environmental factors such as hydrological characteristics, biological communities, soil types.

Key words: geography, China, ecology

Geography

China has great topography diversity. The eastern plains and southern coasts of the country consists of fertile lowlands and foothills, and is the location of most of China's agricultural output and human population. The southern areas of the country (South of the Yangtze River) consists of hilly and mountainous terrain. The west and north of the country is dominated by sunken basins (such as the Gobi and the Taklamakan), rolling plateaus, and towering massifs. It contains part of the highest tableland on earth, the Tibetan Plateau, and has much lower agricultural potential and population.

Traditionally, the Chinese population centered on the Chinese central plain and oriented itself toward its own enormous inland market, developing as an imperial power whose center lay in the middle and lower reaches of the Yellow River on the northern plains [citation needed]. More recently, the 18,000 km (11,000 mi) coastline has been used extensively for export-oriented trade, causing the coastal provinces to become the leading economic center.

The People's Republic of China has an area of about 9,600,000 km² (3,700,000 sq mi). The exact land area is sometimes challenged by border disputes, most notably about Taiwan, Aksai Chin, the Trans-Karakoram Tract, and South Tibet. The area of the People's Republic of China is 9,596,960 km² (3,705,410 sq mi) according to the CIA's The World Factbook. [1] The People's Republic of China is either the third or fourth largest country in the world, being either slightly larger or slightly smaller than the United States depending on how the area of the United States is measured. Both countries are smaller than Russia and Canada and larger than Brazil.

Climates

China's vast territory, north-south span, with tropical, subtropical and temperate and other calorie. This is the main reason for the complex and diverse climate types in China.

China is located in the world's largest continent - the eastern part of the Eurasian continent, while the brink of the world's largest ocean - the Pacific, sea and land heat differences, the impact of China's climate had a profound impact. From the southeast coast to the northwest inland, the continental characteristics of the climate gradually increased, followed by humid, semi-humid, semi arid and arid climate zone, which

is one of the root causes of the special drought and sparse vegetation in northwest China.

At the same time, China is one of the world's most developed monsoon climate. Winter by the Asian high pressure control, prevailing cold, dry north from the land breeze, summer by the Northwest Pacific subtropical high control, prevailing from the sea to the wet, warm south air, warm and rainy.

The above factors constitute the general trend of climate in China, and the complex terrain effect makes the local climate has its own characteristics. On the one hand, the terrain has a barrier to low-level airflow, blocking the redistribution of moisture and heat, and changing the distribution of water and heat. On the other hand, the hydrothermal condition changes with the elevation of the terrain, forming a vertical change in the climate, so that the climate at the top of the mountain and the foothills are significantly different. China's series of things to the mountains, has become the level of climate boundaries. For example, the Qinling Mountains is an important dividing line in China's climate, in winter, it weakened the north of the cold air south, so that the Qinling Mountains and the south side of the climate was significantly different. Another example, Nanling is also an important boundary of our climate, cold winter south of the cold blocked in the north slope.

The Qinghai-Tibet Plateau has a very profound impact on China's climate, its blocking effect on the atmospheric circulation of our climate has a great impact. The average elevation of the Qinghai-Tibet Plateau 4000 meters, has been in the high-altitude westerly belt, in the winter, because of its existence, the west wind is divided into two north and south, the north branch of the formation of high pressure ridge. Two westerly air around the plateau after the convergence in the east, thus affecting the eastern part of China's weather and climate. On the other hand, the Qinghai-Tibet Plateau also affects the atmospheric circulation in East Asia through cold and heat sources, increasing the intensity of the monsoon and thus affecting the climatic conditions in eastern China.

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**APPLICATION OF REMOTE SENSING AND GEOGRAPHIC
INFORMATION SYSTEM IN REGIONAL LOCATION
AND REGIONAL PLANNING**

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Abstract. With the development of economic and technology. Human beings have entered the era of "big data". The strategic significance of the big data technology is not only to grasp the huge data information, but also rather to carry out the professional processing of these data with meaning. In other words, if the data is compared to industry, so the industry to achieve profitability is the key to improve the data processing capacity, through processing of data to achieve value-added. In this background, the application and development of GIS technology is very important. GIS not only get benefit from "big data", but also feedback from it. Focusing on the significance and value of combination of these two technologies in the contemporary.

Key words. GIS, Raster data, Geo-information system layer, Zone Evaluate.

Research purposes. With the growth of economy, the increase of population and the acceleration of urbanization, the trend of environmental pollution in China become more and more serious. For example, the layout of the city is not reasonable, disaster awareness is not high. These effects have become an important factor restricting local economic development and threatening people's health. And in the management is complex and dynamic, involving multi-sectoral, multi-regional and multi-domain, requires a lot of data. In traditional information systems, due to the development of computer hardware and software technology, the data is mainly stored in the database, and only in the form of boring monotonous text to show us in computers. If so, it will only hide some important information, but also makes the system lack of accurate statistical analysis, visual analysis and so on.

Regional location. A city wants to find a suitable location to build a factory, the space should meet two conditions: ①The ground is flat ;

②1km away from the river (or less than 1 km) . In picture 1, “Spatial data”-The spatial distribution of terrain and river in the city, each small square represents 1km²; “Attribute data”-Describe the categories of terrain and river.

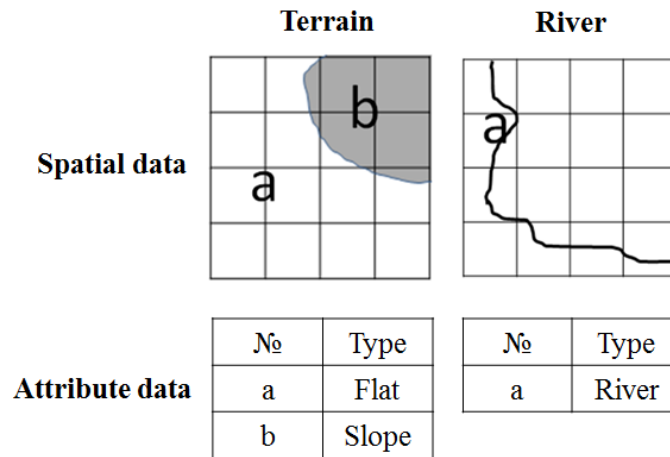


Figure 1. Spatial data and attribute data

Because of the characteristics of remote sensing itself, information is not only timely, accurate, objective, but also can provide different bands, different time dynamic information. So, remote sensing can provide different field of view, multi-directional, multi-level, multi-way information for geographic information system. Information, which remote sensing provide has become an important source for geographic information systems to obtain data. Using the data, which obtain from , then considering the environmental and economic factors for spatial analysis and computing, get the results. In this way, we can obviously realize which area is the most suitable to build the factory.

First, we should evaluate the river, according to site conditions, then contrast “Spatial data” and “Attribute data” : meet the condition – “1” , does not meet the conditions - “0” , For the sake of simplification, if there are two different attribute categories in the same small square, the attribute of the larger area occupies as the evaluation object. We will obtain “River’ data” , According to the terrain and the river, we can see that **a** and **b** can be the choice of the site in picture 3.

1	b	0	0
1	1	c	0
a	1	d	0
1	1	1	1

Figure 2. River data.

1	1	0	0
1	1	0	0
1	1	0	0
1	1	1	1

Figure 3. Regional location.

Regional planning. Remote sensing images in pixels, the computer cannot identify the object; but the computer can identify the object, because the object is vector. Therefore, before GIS analysis, we must map the images, which acquired by remote sensing, into graphics firstly. The working principle is to deal with the information source, add attributes, spatial analysis, and finally record the information source. In this way, when the user clicks on the building, the computer will be able to analyze or query its various information. This technique is often used in urban planning, select the corresponding graphical shape can show its attributes and information.



Figure 4. RS (Information Source)



Figure 5. Electronic map (expression)

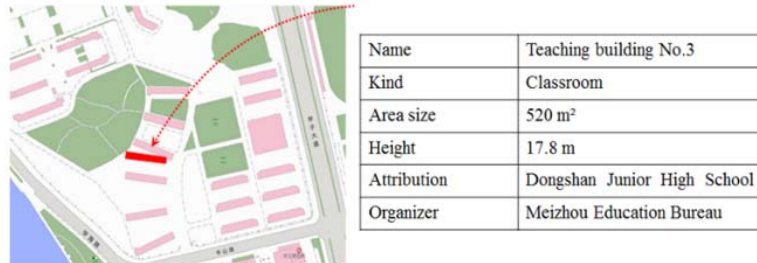


Figure 6. Attribute (Teaching building No.3 in Dongshan school)

GIS technology has obvious advantages in quantity, quality and participation in remote sensing analysis and application. In this way undoubtedly provides a way for further integration of remote sensing and geographic information systems, providing an excellent opportunity for the development of remote sensing. The data can be processed by GIS due to remote sensing technology. With the help of GIS, it accelerates the pace of development of remote sensing.

Conclusion. This chapter mainly illustrates the application of RS and GIS in the contemporary regional selection and regional planning, environmental management and disaster assessment. If combines the functions of remote sensing and geographic information system technology into one, which constitutes a highly automated, real-time and intelligent geographic information system. It is a timely analysis of spatial information collection, processing, updating and dynamic geographic process. Provide a powerful means of decision-making support information.

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AIR POLLUTION IN MEGALOPOLISES

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Abstract: In many megalopolises atmospheric air experiences the strongest pollution. Vehicles, enterprises, and other things are the sources of it. High levels of influence of harmful substances can cause various diseases in people.

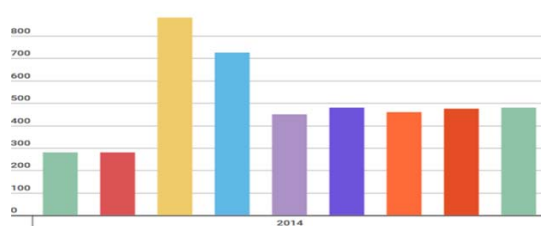
Key words: atmospheric air, megalopolis, harmful substances.

Introduction. Air pollution in the large cities annually is a hot topic for discussions as it becomes more difficult to live there: people even more often die of different cardiovascular diseases and diseases of lungs.

Besides, the industry of megalopolises adversely influences the general ecological condition of our planet, annually promoting small temperature increase of air. The most part of the population of Earth is threatened by a short life full of diseases and inconveniences if not take measures for normalization of the ecological situation of megalopolises soon.

Main part. As the main reason of air pollution in megalopolises serves motor transport which is producer of formaldehyde, dioxide of sulfur, nitrogen dioxide. Its influence can promote deterioration in health.

The concentration of dioxide of sulfur in Berlin, Prague, New York, Moscow steadily low — 2–4 mkg/m³. The average annual concentration in London, Istanbul and Tokyo is 4,5–5 mkg/m³. The highest concentration of dioxide of sulfur was observed in Beijing in 2014— 22 mkg/m³, Hong Kong and Mexico City have about 11 mkg/m³, the least air pollution is recorded in Stockholm and Paris — only 1 mkg/m³ (Schedule № 1).



Schedule № 1. Average annual concentration of carbon oxide in atmospheric air of the large cities of the world, micron/m³ [3]

Pollution give also thermal power plants. They emit sulphurous and carbonic gases in the atmosphere. Steel works of nonferrous metallurgy release into the atmosphere nitrogen oxides, hydrogen sulfide and other harmful substances which are also nature pollutants.

According to the World Health Organization (WHO) the city of Mexico. City has the most polluted atmosphere. The gas contamination in the megalopolis can be so high that children aren't let outside.

The second one among the dirtiest megalopolises of the world according to WHO is Los Angeles. Close the five of the dirtiest cities of the world Athens, Mumbai and Cairo [5].

So, for example, it seems to residents of Cairo as though the megalopolis constantly is in the dense cloud reminding dense fog, and visibility in it doesn't exceed 100-300 meters. The citizens constantly cough because of the suffocating smell of smoke and foreigners can quite often be seen in respirators [3].

Tropospheric ozone pollutes air too, it is the main element of a city smog and it is considered harmful to breath. Inhalation of ozone is hazardous to health. It can cause irritation of airways, cough, short wind.

Russia treats the countries with a bad ecological situation. Megalopolises belong to the dirtiest cities of Russia: Moscow, St. Petersburg, Yekaterinburg, Novosibirsk, Omsk, Tomsk, Chelyabinsk.

In the cities, where there is the highest concentration of the industrial plants air pollution which badly affects health of the citizens is observed.

For instance, predisposition to pulmonary diseases big within the Garden Ring in Moscow. Therefore, it is necessary to regulate transport loadings on routes of the city [1].

The city authorities to reduce gas contamination level have begun to solve this problem. The number of emissions from motor transport has decreased recently in Moscow, for the last three years more than by 100 thousand tons. It is connected with the measures for the ban of the entrance of freight vehicles in city boundaries in the afternoon, on introduction of paid parkings which have instantly unloaded the center, and traffic jams in the center became less now. There was still gardening of many streets and highways that affects the condition air as well.

China has planned to reduce pollution level in Shanghai, due to closing of coal power plants. Thousands of trees have disappeared from the streets because of the vehicles. The city authorities have decided to toughen the punishment for non-compliance with the measures for the protection of the environment.

London has created a plan for reduction of pollution of the nature. This project will appear to the city almost in one billion pounds. Public transport is expected to change petrol for hydrogen fuel elements [4].

The authorities of the European megalopolises allocate privileges to the enterprises using safer substances by production, plant with plants each free corner of the earth and not only, inhabitants have begun to plant trees and shrubs even in roofs of houses.

Conclusion. Environmental problems of megalopolises enlarge every year. Air becomes soiled because of big emissions of vehicles and the enterprises. But after all, it is possible to fight against ecological pollution of megalopolises. And, of course, the solution of environmental problems is impossible without activity of representatives of the government. They have to control the ecological situation in the city and in the country. The government has to pass certain laws regulating emissions of harmful substances in the atmosphere. If not do it in the megalopolis, there will be nothing to breathe with soon.

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**PLASTICS, THE ENVIRONMENT AND HUMAN HEALTH:
CURRENT CONSENSUS AND FUTURE TRENDS**

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Abstract: Plastics bring many societal benefits and offer future technological and medical advances. However, concerns about usage and disposal are diverse.

Key words: plastic, polymer, debris, endocrine disruption, phthalates, waste management.

Introduction We use plastic in innumerable ways in our daily life such as food storage containers, water and milk bottles and other several thousands of items.

But plastic is one of the major toxic pollutants today. Plastic is a non- biodegradable substance, composed of toxic chemicals, plastic pollutes earth, air and water. Plastic causes serious damage to environment both during its production and disposal. The major chemicals that go into the making of plastic as ethylene oxide, benzene and xylenes are highly toxic and pose serious threat to living beings of all species on earth. These chemicals can cause an array of maladies ranging from birth defects to cancer, damage the nervous system and the immune system and also adversely affect the blood and the kidneys.

Effects of plastic debris in the environment and on wildlife

The vast majority of work describing environmental consequences of plastic debris is from marine settings and more work on terrestrial and freshwater habitats is needed. Plastic debris causes aesthetic problems, and it also presents a hazard to maritime activities including fishing and tourism [2].

However, the problems attracting most public and media attention are those resulting in ingestion and entanglement by wildlife. Over 260 species, including invertebrates, turtles, fish, seabirds and mammals, have been reported to ingest or become entangled in plastic debris, resulting in impaired movement and feeding, reduced reproductive output, lacerations, ulcers and death [1].

Effects on humans: epidemiological and experimental evidence

Turning to adverse effects of plastic on the human population, there is a growing body of literature on potential health risks. A range of chemicals that are used in the manufacture of plastics are known to be toxic [4]

Examining the relationship between plastic additives and adverse human effects presents a number of challenges.

We should consider strategies to reduce the use of these chemicals in plastic manufacture and/or develop and test alternatives (for example citrates are being developed as substitute plasticizers) [2]. This is the goal of the new field of green chemistry, which is based on the premise that development of chemicals for use in commerce should involve an interaction between biologists and chemists.

Production, usage, disposal and waste management solutions

Accumulation of plastic debris in the environment and the associated consequences are largely avoidable.

Perhaps increasing the capacity to recycle will help to reverse this trend such that we start to regard end-of-life materials as valuable feedstocks for new production rather than waste. To achieve this will require better education, engagement, enforcement and recycling capacity (figure 1*a–f*). Conservation organizations such as the UK Marine Conservation Society play an important role in education, and the annual beach cleans they organize can be a good way to raise public awareness and to collect data on trends in the abundance of debris on shorelines. There is a pressing need for education to reduce littering at source (figure 1*d* and *e*). This is especially important in urban settings where increased consumption of on-the-go/fast food coupled, in some

locations, with a reduction in the availability of bins as a consequence of concerns about terrorism is likely to result in increased littering [3]. Where plastic debris enters watercourses as a consequence of dumping or littering a range of strategies including catch basin inserts, booms and separators can be used to facilitate removal (figure 1).



Figure 1. Solutions include: (a) measures to reduce the production of new plastics from oil, here an example showing how small changes in product packing reduced the weight of packaging required by 70%, while (b) re-useable plastic packing crates have reduced the packaging consumption of the same retailer by an estimated 30,000 tonnes per annum; and (c) recycling; here, bales of used plastic bottles have been sorted prior to recycling into new items, such as plastic packaging or textiles. Measures to reduce the quantity of plastic debris in the natural environment include: (d) educational signage to reduce contamination via storm drains and (e) via industrial spillage, together with (f) booms to intercept and facilitate the removal of riverine debris. [3]

In conclusion

In conclusion, plastics offer considerable benefits for the future, but it is evident that our current approaches to production, use and disposal are not sustainable and present concerns for wildlife and human health. We have considerable knowledge about many of the environmental hazards, and information on human health effects is growing, but many concerns and uncertainties remain. There are solutions, but these can only be achieved by combined actions.

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4. WATER RESOURCES AND ECOLOGY: MONITORING, POLLUTION AND RESTORATION

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MODERN PROBLEMS OF THE BAIKAL AND WAYS TO SOLVE THEM

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Abstract: The impact of industrialization on the ecosystem of Lake Baikal, associated problems and ways of solving them are discussed in the article. The need to preserve the world's freshwater storage and a wide variety of endemics is emphasized.

Key words: lake Baikal, freshwater, pollutants, deforestation, endemics.

In every corner of the globe, we are polluting, diverting, pumping, and wasting our limited supplies of fresh water at an exponential rate [4]. The Baikal is a unique place on our planet, which is located in the center of Asia, in Russia. This is the deepest and largest freshwater lake on the Earth. It is a UNESCO heritage and the lake needs constant protection from the harmful effects of humans [5].

There are several problems, which are the most dangerous for the Baikal ecosystem.

1. The Selenga. The Selenga brings with its waters 60% of the total amount of pollutants because it is the largest river that flows into Lake Baikal [2]. There are the largest industrial centers that throw their waste into the river. Gold mining enterprises, which pollute the tributaries flowing into the Selenga with heavy metals, for example, the hydrargyrum. During rainfalls, chemical fertilizers used in agriculture are washed into the Baikal.

2. The Baikal pulp and paper mill is located on the southern shore of Lake Baikal, which by its discharges and emissions led to the complete disappearance of endemics. Sewage raises the temperature of the water and disturbs the living conditions of organisms that filter and purify the lake's waters [3].

3. Another problem is that the enterprises were constructed without taking into account the landscape. In windless weather, gas discharges are trapped between the numerous ridges of the Baikal Canyon, which leads to the accumulation of pollutants over the water area.
4. The construction of the Angara cascade began in the 1950s. As a result, fertile soils were flooded and flora and fauna damaged.
5. Unmeasured deforestation loses the soil of waterproofing. It leads to waterlogging of the plain.
6. Illegal fishing and destruction of spawning grounds leads to a decrease in fish populations. For example, over the past 10 years, the number of the sturgeon and the grayling has decreased by 5 times.
7. In connection with the current situation in the world, interest in tourism in the country has increased. Unfavorable tourists cause heavy damage to the nature of the lake. The economic activity of tourists caused the spread of poisonous algae - sporogiri, because it got a large amount of phosphorus into the water contained in cleaning agents. The whole bottom was covered with a layer of dark filamentous inferior alga that filled the shore all around the perimeter, especially in those places where there are many tourists and where waste water is discharged [1].

Ways of solving problems:

1. In order to reduce the discharges and emissions of pollutants, it is necessary to replace old treatment facilities with modern ones.
2. To solve the problem of accumulation of pollutants over the water area, the emission time should be normalized. For complete dispersion of substances, it is necessary to observe parameters such as wind speed and direction.
3. It is necessary to create protected areas and national parks, to restore and maintain the number of representatives of flora and fauna.
4. During deforestation it is necessary to compensate for the damage, for example, in the coefficient of 1 to 3.
5. State has to support the farms to restore the number of species of fish.
6. It is necessary to comply with the already adopted laws and the mass struggle against corruption should be conducted.
7. Local department should consider recycling garbage in the area. Waste management can be carried out in one of three main ways: incineration of waste, recycling of waste for subsequent use as secondary raw materials and disposal of waste [4].

We must begin to manage our water more efficiently and keep our limited freshwater supply pure. Achieving a more sustainable use of urban public water supplies requires not only the implementation of certain measures, but also raising public average on water conservation issues. The Baikal is the only open source of fresh water in the world. Humanity must preserve this unique natural object.

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PROBLÈMES ÉCOLOGIQUES DU LAC BAÏKAL

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Résumé: Cet article présente des informations sur un certain nombre de problèmes écologiques du lac Baïkal (à savoir, la déforestation, la pollution du lac due à l'usine de pâtes et papiers de Baïkal, la rivière Selenga et la centrale hydroélectrique mongole).

Mots clés: lac, Baïkal, usine de pâte à papier, pollution, centrale hydroélectrique mongole, eau propre, eau, Selenga, déforestation

Introduction. Le grand lac sibérien, source mondiale d'eau potable, don sacré de la nature, la fierté des Sibériens, qui est inscrit sur la liste du patrimoine mondial de l'UNESCO depuis 1996, perd

rapidement son attrait. Malheureusement, la destruction de l'environnement naturel de ce lac est visible à l'œil nu [1]. Aujourd'hui le lac Baïkal a beaucoup de sources de problèmes environnementaux. Parmi ceux-ci figurent les constructions hydrotechniques, l'usine de pâtes à papier de Baïkal située sur la rive du lac, les eaux polluées de l'affluent de Selenga et la déforestation [2].

Le lac Baïkal fait partie d'un grand système hydraulique construit par l'homme. Cela affecte de manière significative son écosystème. En 1956, le lac est devenu une partie du réservoir Irkoutsk, alors le niveau d'eau de ce lac est augmenté de 1 mètre. En raison de l'augmentation importante de niveau d'eau beaucoup de régions ont été inondées.

De plus, il y avait une menace de la Mongolie, où la construction de centrales hydroélectriques est prévu. Si la centrale hydroélectrique mongole est mis en service, c'est entraînera l'assèchement de lac. Sur la question de la construction sont les négociations entre les gouvernements de la Russie et de la Mongolie. Cependant, le ministère de l'Énergie de la Mongolie peut commencer la construction sans coordination avec la Russie. Mongolie veut construire une centrale hydroélectrique pour se débarrasser de l'énergie russe et de réduire son prix.

En 1966, sur la rive du lac Baïkal, l'usine de pâtes et papiers de Baïkal a été construite et a produit les premiers produits. La construction de l'usine de pâtes et papiers de Baïkal a suscité de nombreux discours de la part des scientifiques et du public. L'usine de pâtes et papiers de Baïkal pousse les eaux usées à travers les installations de traitement vers le lac, et avec ces eaux usées, un volume critique de polluants dangereux pénètre dans Baïkal. 67% des habitants de Baikalsk pensent qu'usine de pâtes et papiers est préjudiciable à la santé des personnes travaillant dans l'usine. 57,5% des travailleurs sont d'accord avec cela. Pour 22 ans de travail d'usine de pâtes et papiers, la biomasse de zooplancton a diminué 2 fois. De 1966 à 1967, les caractéristiques physiologiques du poisson Baïkal se sont détériorées et et leur taux de croissance a fortement diminué. En 2013, l'usine de pâtes et papiers de Baïkal a été fermée, mais n'a pas été liquidée [3].

Le principal et le plus grand affluent du lac Baïkal est la rivière Selenga. Avec ses eaux, le lac reçoit beaucoup de déchets (environ 30 km³ d'eau par an), déversés en amont. L'eau est polluée par de grandes villes comme Oulan-Bator, Oulan-Oude, Selenginsk, Kabansk et bien d'autres. Dans la plupart des entreprises, les usines de traitement sont

obsolètes et n'exécutent pas leur travail, de sorte que divers produits chimiques et produits pétroliers entrent dans l'eau. Le long de la rivière, il y a aussi des terres agricoles qui utilisent des engrais minéraux et des pesticides qui pénètrent dans le lac.

En République de Bouriatie est pratiqué la déforestation à grande échelle, y compris dans le bassin du lac, en particulier au nord de la Selenga. Dans le bassin versant de la région d'Irkoutsk, tous les types de boutures sont interdits, à l'exception des boutures sanitaires. Les autorités de la Bouriatie affirment que seule boutures sanitaires sont pratiqué sur le territoire du bassin versant du lac Baïkal. Cependant, les images satellites et les données locales confirment que la déforestation du lac continue à ce jour, même après son obtention du statut de patrimoine mondial. Plus de 3 millions de mètres cubes de forêt sont extraits chaque année dans le bassin versant du lac. Les pénalités pour l'exploitation illégale sont extrêmement faibles ou ne s'appliquent pas du tout. Presque toute la forêt de Bouriatie est exportée en Chine [4].

Conclusion. La plupart des problèmes environnementaux du lac Baïkal sont créés par des personnes. C'est nous qui polluons le lac sacré, détruisons la végétation, grâce à quoi le lac est rempli d'eau. Une personne est encline à faire des erreurs, mais une personne peut également corriger ses erreurs. L'avenir de ce lac unique ne dépend que de nous. Avec l'approche systématique et l'interaction des scientifiques, des organisations environnementales et de l'État, "la perle de notre planète" peut rester la fierté de notre pays.

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**ENVIRONMENTAL PROBLEM OF OCEAN POLLUTION
HOUSEHOLD WASTE**

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Abstract: The oceans are a reservoir of garbage. Due to the fact that water shell of the Earth occupies most of the surface of the planet, there is a spread of waste around the globe. Increases the threat of extinction of organisms and changes the chemical composition of the aqueous solution. Because of the rot the plastic in the ocean appear the island of debris.

Keywords: oceans, pollution, household waste, plastic, environmental problem.

Introduction. The world's oceans are a basic component of water shell of the Earth-Hydrosphere. Water shell of the Earth is continuous, but not continuous, and surrounds the objects in the oceanic space: continents, Islands, archipelagos. The world ocean is about 70% of the Earth's surface. Ocean water covers $\frac{3}{4}$ of the earth's surface. Objects in the ocean space (continents, archipelago), divide it into several large parts: the Atlantic ocean, Indian ocean, Pacific ocean and Arctic ocean. We all know that water is the basis of life on our planet, therefore, the World ocean has an enormous value on the existence of organisms and the Earth as a whole. Huge masses of water of the World ocean contribute to the formation of climate, precipitation and water cycle on the planet. From the ocean in the Earth's atmosphere gets oxygen is the source of life for aerobic organisms, as the ocean regulates the amount of carbon dioxide, absorbing it. In the oceans, the accumulation and formation of mineral and organic resources of the planet, the flow of various geological, geochemical, biochemical, and other processes. The global ocean plays a huge role in the existence of life: it is the source and reserve of food, raw materials, and of life itself. But despite all this, the ocean dumped a huge amount of wastes of harmful substances, which contributes to the pollution of huge volumes of clean water. Therefore, the World ocean plays another feature is the provision of a waste. Due to the fact that the ocean is "sewage pit," violated many of the global processes on the Earth, for example, disturbance of water cycle. And, unfortunately, the culprit is man and his activities.

The main part. Contamination of water bodies is expressed in the reduction of their environmental roles and functions of biosphere under

influence of harmful elements. In water in large proportions contain: petroleum products; nitrates; sulfates; chlorides; heavy metals; radioactive components; pathogenic bacteria, etc. In Addition, greatly reduced water-dissolved oxygen [2].

Plastic is one of the most famous and one of the worst inventions of mankind. He contributed to the industrial progress and proved their usefulness. Without the participation it costs almost nothing in today's society (look around and you will notice that almost without exception, produced using plastics). On the other hand, it is very durable, which makes it highly significant as a building material, however, due to the strength he has become an environmental monster is eternal and reliable material, which is very poorly biodegradable, the materials to be broken down into environmentally friendly elements. Our dependence on polymers very bad effect on the ocean. With the increasing use of plastic increases and the number of discarded plastic waste [3].

In the seas and oceans through rivers, directly from the land and from ships and barges receives liquid and solid household waste. The proportion of these pollutants deposited in the coastal region, and part under the influence of sea currents and the wind scatters in different directions. In the surface layer of the sea in very large quantities are formed of bacteria - useful, playing a significant role in the life of the neuston and in the whole of the sea, pathogenic, pathogens of the gastrointestinal and other diseases. Household dregs threat not only to those that are vectors of human diseases, however, and that contain an impressive number of oxygen-absorbing substances. Oxygen supports life in the sea, it is a necessary component of the process of decomposition of organic elements entering the aquatic environment. In the past decades, a special kind of solid waste polluting the oceans, plastic steel products. These materials are lighter than water, and for this reason, a long time float on the surface, clog the coast. Famous episodes of the death of large marine mammals due to mechanical blockage of the lungs with fragments of synthetic packaging. Pollute the sea, and especially their coastal parts, sewer and domestic waste water of ships. Their number increases regularly as it increases the intensity of navigation and vessels are becoming more comfortable. In the North sea there was a real threat of destruction of fauna and flora due to the clogging of the sewage emanating from the continent rivers. Coastal regions of the North Sea are very shallow; the tides in this minor,

which also contributes to the purification of the sea. In addition to his banks are located in countries with large population density and highly industrialized, and pollution of the region have reached a very high level. Aggravates the ecological situation that in recent years in the North Sea is intensively developed oil production.

Mismanagement, predatory attitude to the wealth of the oceans leads to the violation of natural balance, destruction in some parts of the oceanic flora and fauna, poisoning of people infected with the products of the sea [1].

Conclusion. Consumer attitude to resources, and the deliberate pollution and the creation of a "cesspool" of waste leads to disastrous consequences. The ocean becomes not only a reservoir but also a source of garbage. All this leads to the destruction of organisms and change of the composition of waters, the violation of global laws on the planet.

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LAKE BAIKAL AS A UNIQUE NATURAL COMPLEX

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Abstract: This article provides information on the general characteristics of Lake Baikal and on the main features of the nature of Lake Baikal (the hydrology of Lake Baikal, as well as features of the flora and fauna of this lake).

Key words: lake, Baikal, unique natural complex, hydrology, flora, fauna, nerpa, pure water, water.

Introduction. There is no lake in the world, the glory of which would be as loud as of the great Siberian lake Baikal. Its enormous size and depth, the amazing purity and transparency of emerald green waters,

the harsh, the fabulous beauty of the coasts make an indelible impression to everyone. It is not for nothing that the people composed legends about it, endowed it with mysterious properties.

The main part. Baikal is located almost in the central part of Asia, between 55 ° 46 'and 51 ° 29' north latitude. Its length is 636 km, the largest width is 79.4 km, and the smallest - 25 km. The area of the lake is 31500 km². The depth of the Baikal is 1741 m. Baikal is partially elevated above the level of the world ocean. The absolute height of the average surface level of its water is 454 m. Lake Baikal is located in a tectonic fault, in a rift zone. This is a seismic region. Its earthquakes, which are not uncommon, continue to change its coastline. There is also an order of twenty islands on the lake. The largest of them is Olkhon [2].

According to the Limnological Institute of the Siberian Branch of the Russian Academy of Sciences, Baikal has 2,630 species and varieties of plants and animals, two thirds of which are endemic. Such an abundance of living organisms is explained by the large amount of oxygen in the Baikal water [4].

The crustacean epishura, one of the endemics of Lake Baikal, is up to 80% of the zooplankton biomass of the lake and is the most important link in the food chain of Baikal. It performs the function of a filter: it passes water through itself, cleaning it.

The only mammal in Baikal is nerpa - one of the three freshwater species of the seal in the world, the endemic of Lake Baikal. Weight from 50 to 130 kg, females are by weight larger than males. They live up to 55 years.

In the northern part of Peschanaya bay grow famous "walking" trees, that have long become a symbol of Lake Baikal. Their roots and trunks rise above the soil at a height of 2-3 m, so these trees stand on the roots

Baikal is the deepest and oldest lake in the world, the age of which varies from 20 to 30 million years. This fact also speaks about the uniqueness of Lake Baikal, since lakes, especially of glacial origin, live no more than 10-15 thousand years, and then become swamps. But Lake Baikal does not age. The shores of Lake Baikal continue to diverge by 2 centimeters per year. Geophysicists consider this lake a nascent ocean. The origin of Baikal is still a scientific controversy.

Baikal is considered to be the largest repository of pure water on the planet. Baikal has many tributaries, and only one river flows out of

it-the Angara. The catchment area is 588 thousand km², 53% of them are coming from Russia and 47% are from Mongolia [1].

It is known that the waters of Lake Baikal are formed thanks to tributaries and atmospheric precipitation.

Waters of atmospheric precipitation are low-mineralized. Their annual production rate is only 13% of the total annual flow into the lake. The rest is provided by the tributaries of Lake Baikal.

The acidity of water (Ph) from the lake is 7.5, this figure is as close as possible to the acidity of the internal environment of the human organism. Due to this level of acidity, water is ideal for preparing children's and dietary food. The unique purity of Lake Baikal water is explained by the minimum content of dissolved substances, suspended particles and organic inclusions. In addition, its composition is almost free of mineral salts, which allows you to compare it with distilled water [3].

Conclusion. Baikal is really a unique natural complex. Anton Chekhov, passing through Lake Baikal on the way to Sakhalin in 1890, wrote: "Baikal is an amazing lake, and it's not for nothing that Siberians call it not a lake, but a sea." Baikal is extremely beautiful, there are still a lot of mysterious places, that man have never seen yet. However, experienced travelers say that Baikal is attracted them to not only by amazing places - the beauty and exoticism has in many other parts of the world. This "sacred sea" has special strong energy, which people will never find and never feel anywhere else. This energy is inexplicable, but people intuitively go there for recharging, for a long time are stay "charged", and then they return with great pleasure to Baikal again.

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UMWELTPROBLEME DES FLUSSBECKENS WOLGA
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Absrtact: The aim of the work is to show the problems in the river basin of the Volga and to find ways out of the situation.

Abstrakt: Ziel der Arbeit ist die Probleme im Flussbecken der Wolga zu zeigen und Auswege aus der Situation zu finden.

Stichwörter: ökologische Situation des Flusses Wolga, Anzahl von Abflüssen, giftige Reiseragenzien, blaugrünen Wasseralgen, Wasserkraftwerk.

Der Artikel ist dem Umweltprobleme von Flussbecken Wolga gewidmet.

Das Ziel der Arbeit, ist die ökologische Situation des Flusses Wolga zu verstehen, den Grund zu erkennen und die möglichen Wege der Lösung zu finden.

Die Länge des Flusses beträgt 3530 Kilometer. Laut der Forschung von Gelehrten der Kalifornischen Universität in Santa Barbara (die USA) ist die Mündung der Wolga in der ersten Linie wegen der verschmutzten Uferzonen eingegangen.

Im Flussbecken der Wolga ist gegen 45 % industrieller und etwa 50 % landwirtschaftlicher Produktion Russlands konzentriert. Aus 100 Städten des Landes befinden sich die schmutzigsten 65 Städte im Flussbecken der Wolga. Die Anzahl von Abflüssen beträgt 38 % vom Allrussischen.

Laut Angaben der Experten ist die Belastung auf die Wasserressourcen von der Wolga in acht Male höher, als die durchschnittliche Belastung auf die Wasserressourcen in ganzem Russland. Es wirkt sich bestimmt negativ auf den ökologischen Zustand der Hauptwasseradern des Landes.

Im Frühling 2009 erklärten die Vertreter der Organisation "Grüne Streife" die mögliche ökologische Drohung des Flussbecken der Wolga im Gebiet Saratow wegen der Gefahr der Landung von giftigen Reiseragenzien ins Wasser des Flusses in der Zeit des Frühlingshochwassers.

Die ökologische Situation wird auch davon erschwert, dass sich nach dem Bau der Wasserbecken auf der Wolga das natürliche Regime des Flusses und die Ökologie der Flussbecken heftig geändert haben. Acht Dämme der Kaskade von Wasserkraftwerken der Wolga verwandelten den Fluss in eine Reihe von stehenden Seen-Wasserbecken, indem der gewohnheitsmäßige Lauf des Flusses für immer verletzt wurde. Nach Expertenschätzungen wurde die Selbstreinigung der Wolga in die Dutzende Male gesunken, obwohl ihr Wasser als trinkbar in 50er Jahren des vorigen Jahrhunderts galt, und sie wurde auf der großen Ausdehnung zu einem unhygienischen Wasserbecken.

Noch ein Problem von Wolga sind die blaugrünen Wasseralgen, die im Sommer, gewöhnlich im Juli, entlang den Küsten wuchern. Sie decken bis zum 20-30 % der Flussbecken ab und wurden zu der gegenwärtigen Not für die Wolga. Diese Algen stoßen bis zu 300 Arten der organischen Stoffe aus, der große Teil aus denen giftig ist.

Die abgestorbenen Wasseralgen landen zum Grundboden des Flusses und erhöhen den Gehalt des Phosphors und des Stickstoffes und schaffen eine ideale Umgebung für die eigene Selbstwiedergabe. Daraufhin geschieht die nochmalige Verschmutzung.

Das Flussbecken der Wolga wird noch laut der Einschätzungen im Jahr 2005 durch 2,4 Tausend untergegangenen und geworfen Boote verschmutzt darunter sind der Öl-, Personen-, Lastschiffe. Die kritischste Situation, laut Angaben der Experten ist im Moment in Astrachan. Dort befinden sich etwa 800 von solchen Schiffen.

Die Wege der Lösung der Probleme

Die Rekonstruktion der Flussbecken und die Veränderung des Regimes ihrer Arbeit durchzuführen;

Das Wasserkraftwerk Wolga auf den maximal günstigen Rhythmus für Störarten der Fische zu übersetzen;

Natürliche Laichplätze wiederherzustellen und den sicheren Durchgang der Jungtiere durch alle Dämme zu gewährleisten;

Das Wasser von Wolga zu sparen;

Anstatt des Wasserkraftwerkes die Kraftwerke von erneubaren Energien zu bauen;

Die Zonen zu organisieren, wo die Anwendung von giftigen Stoffen und ihren Lagerungen, die spontanen Müllhaufen und so weiter und so fort verboten würde;

Den Wald nach allen Küsten der Wolga und ihrer Nebenflüsse abzusetzen.

Zum Schluss muss man sagen, dass in letzter Zeit die ökologischen Probleme im Flussbecken von Wolga immer mehr werden. Um diese Probleme zu vermeiden, muss man aktiv die neuen Projekte realisieren, die notwendigen Maßnahmen beachten und die Ressourcen unserer natürlichen Objekte bewahren.

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**GLOBAL WATER RESOURCES-CURRENT ISSUES
AND PERSPECTIVES**

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Abstract: Fresh water resources are decreasing. It is expected that already in the third decade of the 21st century, humanity may be faced the problem of a global deficit of fresh water, that will lead to social tension and to military conflicts. In recent years, projects are being developed to increase fresh water supplies and to conserve existing reserves. The article is focused on the problem of the deficit of water resources.

Key words: natural resources / water resources / water / fresh water / water supplies/ the deficit of water resources/ a global water crisis.

Introduction. Life and activities of people depends on water. Humanity use water in industry, agriculture and in the communal sphere. Water resources are classified as renewable, but it is still unknown how quickly they are recovering.

Fresh water is the most valuable water resource. In the world the water reserve of the seas and oceans is 97%, 2% of fresh water is contained in glaciers and only 1% is fresh water in lakes and rivers. But only 0.3% of the total volume of the hydrosphere is available for fresh water.

At the end of the 20th century, there was a threat of a global water crisis caused by population growth, environmental pollution and climate

change [3, 1109-1185]. The consumption of water increased in the last fifty years. About 2 million tons of waste are dumped daily into rivers, lakes and seas. About a third of the world's population lives in countries suffering from a deficit of fresh water. There water consumption exceeds 10% of renewable water resources. By the mid-1990s, about 80 states, which account for 40% of the world's population, experienced significant shortages of water. More than 2 billion people lack access to clean water. And this indicator will only grow as the population grows. This means that more and more water resources will be used for the growing needs of agriculture, industry and public utilities, which will lead to a global water crisis.

In the future, unless people take steps, there is a risk of "wars over water", because many of the world's largest rivers flow through several countries that will fight for their rights to rivers and water in them.

Social consequences are in a progressing crisis in the social and economic sphere: increasing child and maternal mortality, spread of the disease.

The radical reconstruction of the entire world economy is inevitable in three directions. The first is water saving. The second is the protection of hydro resources. And the third direction is connected with the water-intensive industries, which will move to the places, where there are large sources of fresh water [2].

Today the most effective measure is the method of wastewater treatment. However, even after the most qualitative treatment, 10-20% of the contamination remains in the water, including the salts dissolved in it.

The construction of reservoirs is a method by which it is possible to increase the steady flow of fresh water to an additional 20% of the existing level.

An increase the price of a resource is an incentive to save it and increase its efficiency of use. The effectiveness of this incentive is determined by the dependence of consumption on the price. This applies not only to domestic water use, but also to industrial and agricultural use [1, p. 41].

Transportation of water by tankers or by pipelines is more attractive than digging huge channels, but on average these projects are 100 times more expensive than desalination.

The colossal resources of clean fresh water are enclosed in icebergs. There are a lot of engineering and economic projects for transporting icebergs to areas where there is a deficit of fresh water.

For desalinating water, the possible environmental consequences have to be kept in mind. Saline desalination waste that is stored on land or dumped into the sea in the form of brines adversely affects the ecosystem. All methods of converting salt water into fresh water require a large expenditure of energy. The cost of desalinated water depends mainly on the cost of electricity.

Water is the most important natural resource used by people. Its resources on Earth are huge, but only a small part of them is available for operation. Water consumption in the world continues to grow, and now the world is coming close to the problem *of the deficit of water resources* with the increased technogenic demand for its use. World water consumption is significantly ahead of natural renewal of fresh water. But we have the enough necessary knowledge and technology to prevent a crisis or to reduce the scale. It is necessary to recognize the seriousness of the situation and take responsibility for all of our actions and their consequences.

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Oziev M.A.
**THE ROLE OF WATER IN THE FUNCTIONING OF
BIOLOGICAL SYSTEMS**

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Abstract: The purpose of this article is to demonstrate the role of water, which is the main component in any biosystem.

Key words: water, biosystems, cell, role, functions.

The role of water in biological systems is determined primarily by its physico-chemical properties [1]. Also the fact that quantitatively the water occupies the first place among chemical compounds of any cell is very important. The presence of water is indispensable for the activity of organisms. What functions are carried out in biological systems by the most common substance on earth? There are several of the most basic functions of water [2]:

1. Water is a universal solvent for many chemical compounds. It provides a flow of many chemical reactions, transport of substances into the cell and out of it.
2. Water is an obligatory reagent, with the participation of which hydrolysis and hydration reactions, oxidation-reduction and acid-base reactions take place in the cells.
3. Water is a heat regulator. Due to the high heat capacity it maintains optimum thermal regime organisms and provides steady heat distribution in living systems.
4. Water is an osmoregulator, which determines the shape of cells and the transfer of inorganic substances.
5. Water provides an elastic state of cells, softens the mechanical effect on the body, performs the function of a hydroskeleton in many animals.
6. Water is a transport, it provides bond in cells, tissues and organs, ensures homeostasis and the functioning of the body as a whole.
7. Water is the habitat for aquatic organisms, it processes such processes as passive movement, external fertilization, seed propagation, gametes, and also pass certain stages of the life cycle in some organisms.
8. Water as a factor of relief formation, manifested in the form of various forms of erosion.

9. Water as a barrier to the movement of animals. It may cause separation of the population or its death.

10. Water as a transmitter of information in the biosystem [3].

As it is seen from the above, water is an essential part of biosystems. At the same time, the physical and chemical properties that are unique to the water made it such an important component of biological systems. Water plays an important role at all levels of the organization of living matter. Also, an important role was played by the fact that water on our planet is contained in huge quantities and occupies 70% of the planet's surface. But the amount of fresh water is only 3 % of the total number of water, and the distribution of this water among the countries is not the same. Nowadays, we can see that some regions on the planet do not have water resources, especially in Africa. That is why some experts predict wars for fresh water. Of course, modern society should not allow this to happen and need to solve this problem [4].

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Spirin M.I.
**WATER RESOURCES OF THE WORLD OCEAN AND THEIR
USE**

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Abstract: Water resources are sources of water that are potentially useful. At the moment, 4 types of water resources are made: biological, chemical, mineral, power.

Key words: water resources, ocean.

Introduction.

Water resources are one of the most important resources on earth. At the moment, mankind makes extensive use of water resources, both for food and energy purposes. And I find this topic interesting for consideration, in connection with the wide application of the resources of the world's oceans.

Main part.

As we know, most of all the world's waters are occupied by the ocean, and specifically 96%, and as a consequence, the ocean contains all four types of water resources.

Biological resources of the ocean. In the ocean all three major complexes of the animal and vegetable world of the oceans are concentrated: nekton, benthos, plankton. In terms of significance and scale of use the leading place is occupied by nekton. In its biomass fish predominate. Nekton is actively used for food purposes. In a relatively small volume, benthos is used. Among zoobenthos, some species of bivalve mollusks (mussels, oysters, scallops) are of economic value. Crustaceans (crabs, lobsters, lobsters) and echinoderms (sea urchins) are widely used. Of the phytobenthos, some representatives of brown, red and green algae and higher flowering aquatic plants. Plankton includes diatoms, some mollusks and crustaceans. Recently, one of the species of crustaceans – krill [2].

Chemical resources of the ocean. The ocean is a huge natural reservoir filled with water, which is a complex solution of various chemical elements and their compounds. Some of them are extracted from water and used in human production activities. Of the diverse and vast reserves of the chemical resources of the oceans and seas, a very

small part of them is currently produced, although in many of them there is an acute shortage. This is explained by the fact that effective technical methods for extracting many useful components from sea water have not yet been created. Currently, only those chemical resources of the World Ocean are used, extraction of which from ocean waters is more economical than obtaining them from analogs on land.

Mineral resources of the ocean. Mineral resources are divided into resources the shelf zone, deep-sea bottom. Resources of the shelf zone are: ores (iron, copper, nickel, tin, mercury) and oil and gas. The number of oil and gas basins on the shelf is more than 30. Some basins are purely marine, but the majority is a continuation of the basins of the land. Deep-water resources are: iron-manganese concretions, discovered 100 years ago. The ores are at a depth of 1-3 km, and at a depth of 4 km form a continuous layer. The total ore reserves are trillions of tons [1].

Energetic resources. Since the middle of this century, the study of the ocean's energy resources related to "renewable energy sources" began. To the energy resources of the world ocean can be attributed the energy of oceanic (marine) currents, which have a huge energy potential. Suffice it to recall that the flow of the Gulf Stream even in the area of the Florida Strait is 25 million m³ / s, which is 20 times higher than that of all the rivers of the globe. And after the Gulf Stream is already connected to the Antilles in the ocean, its consumption increases to 82 million m³ / s. In addition to the energy of currents, the energetic resources of the ocean include tidal energy. The energy resources of the ocean are of great value as renewable and practically inexhaustible. The experience of operating already existing systems of ocean energy shows that they do not bring any tangible damage to the ocean environment. When designing future systems of ocean energy, their impact on the environment is carefully investigated.

In conclusion

Based on my work, it can be concluded that water resources are very diverse and this allows them to be used in various spheres of life and economy. But do not forget that this resource is natural and should be used rationally and think about its security in a way close to the original form.

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Volkova N.D.

WATER: ITS IMPORTANCE, CAUSES OF WATER POLLUTION, METHODS OF CLEANING OF WATER

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Abstract: The article is devoted to water, its importance, causes of water pollution, methods of cleaning of water.

Key words: water, causes of water pollution, monitoring, the third cleaning, the specialized cleaning, the primary or mechanical cleaning.

Introduction

It is difficult to overestimate the meaning of water in our life, because it is not less important than oxygen needed for breathing. There are some well-known facts about water:

- It covers about 70% of our planet, it is the most common combination. Its formula is H₂O known by children. Also I can say, that only 3% of all water is fresh (in general, glaciers are sources of it) and only 1% of it is good for drinking.

- Human body consists of water by 70 % and, as I've said, life on Earth is impossible without water. On average, human can stay alive only 3 or 4 days without water then he will die because of dehydration.

- Besides, no one living organism can exist without water. Plants and animals also need water.

- It is known that life started in water and in primordial soup actually.

Results of Calculations

Every year humanity pollutes either atmosphere or hydrosphere more and more. Because of global warming as a result of human activity

melting ice increases the level of the oceans. Let's look at water pollution sources in detail:

- Microorganisms. Their death in aquatic environment is one of the causes of water pollution.

- Industrial sewage. Many factories, industrial companies use different pools as a sewage canal. One cannot use such water for other goals. Besides we can pollute water due to violation of technology of water treatment and some accidents.

- Domestic waste water occurs because of violation of technology of water filtration or accidents. There are some simple reasons. Some people don't think about results and use water reservoirs as waste deposit and unfortunately it is pretty common. Tires, old cans, etc. are a small part at the bottom of lakes and rivers.

- Oil products. Just think how many times we can hear about oil spill after the oil ship has crashed. A huge number of different fish, including endemic, die because of such accidents. Also we have oil pollution due to violation of environmental requirements by oil industry.

- Agricultural fertilizers. Nowadays most farms that grow crops, vegetables and other foodstuff use different fertilizers to protect them from insects and other factors. These fertilizers are absorbed by soil and get into sewage. And of course you know about harmful pesticides used for growing subcultures.

Monitoring of a water object.

Monitoring of a water object is a system of continuous (current) and complex tracking of condition of a water object, control and registration of quantitative and qualitative characteristics in time, interdependent influence and change of consumer properties and also a system of forecast of preservation and development in different usage modes. Some elements of this system have existed in the ministries and departments of the natural and resource complex for a long time. The Ministry of natural resources of Russia and Rushydromet conduct systematic observation of the condition of the subsoil and water fund. There is a system of state monitoring of geologic environment on the territory of Russia, which also controls the block of underground water. The system of state monitoring of geologic environment includes 15 thousand observation posts, which are placed in all regions of the country.

As the problem of pollution of water bodies needs to be solved, different methods of cleaning and regulations of control of working of systems of cleaning have been developed.

There are *four main methods of cleaning of water*:

1) physical and mechanical method

- Oil separator
- Setting
- Groundwater seepage
- Separator cone (pressure head and free-flow)

1) Physical and chemical method

- Sorption purification
- Coagulation
- Membrane method
- Elektrodeemulsation

2) Biological method

3) Thermal method

The primary or mechanical cleaning. The general idea is not to let large objects in a reservoir. The detaining lattices and filters are installed on the sewage. They need timely clearance or it can cause an accident because of the blocking of lattices.

The specialized cleaning. A certain type of pollutant is trapped. There are traps for oil, fats, and flakes. They besiege with using of coagulum.

The chemical method. These systems mean that sewage will be used in the closed (repeated) cycle. The substance, which turns water into its original form is used in exit. It is technical water.

The third cleaning. The water is treated with some powders, special structures. It is filtered destroying harmful organisms and other substances. This water is used for domestic needs of people and for food industry and agriculture.

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5. SOIL CONTAMINATION AND LANDSCAPE RESEARCH

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THE IMPACT OF OIL AND PETROLEUM PRODUCTS ON THE ENVIRONMENT

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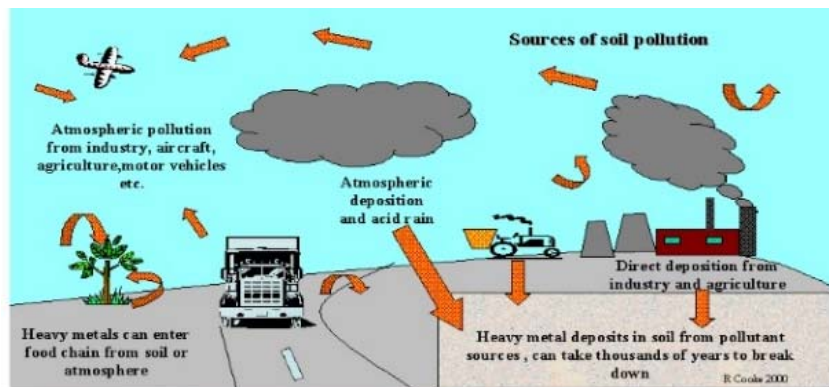
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Abstract: Oil pollution – both on the scale and toxicity is a worldwide danger. Oil and oil products cause poisoning, death of organisms and degradation of soils.

Key words: oil, petroleum products, environment, impact, increase, pollutants, purification.

Oil is a valuable raw material, without which today cannot live. The processes of production, transportation, storage and processing of oil and petroleum products are sources of environmental pollution that can lead to a global and irreversible processes.

Increased spills of oil during transportation by sea, rivers and railways as well as the transport of petrol by road. Environmental disasters occur in accidents of oil pipelines, when any one of the territories polluted with oil soil and water. A significant impact on the ecological situation have fires on pipelines and oil depots, and fires and accidents at refineries and petrochemical plants. Emissions and waste water of oil refineries and power plants, fleets and service stations have a negative impact on the environment. Thus, the environment, namely air, water, soil and vegetation contaminated by oil products, suffering wildlife and polluted with oil water, threatening the health of the population [1].



Picture 1. The scheme of environmental pollution by oil

Oil is a liquid natural fossil consisting of a large number of high molecular weight hydrocarbons (HC) from the enemies. When viewed from ecological and geochemical characteristics, the composition of the oil includes the contents of the light fraction, methane hydrocarbons, cyclic hydrocarbons, resins, asphaltic and sulfur compounds.

The light fraction is the most movable part of the oil. While in the soil, in water and in air, has a toxic effect on living organisms.

At oil pollution changes the morphological features of the soil. For contaminated soils characterized by a dark color, high density, and the presence of oily and iridescent films.

The permeation by oil and oil products of the soil mass leads to changes in the chemical composition, properties and structure of the soil. This primarily affects the humus horizon. This means that the amount of hydrocarbons in it sharply increases, but deteriorates the property of the soil as a nutrient base for plants. Hydrophobic particles of oil and oil products impede the flow of moisture to the plant roots, as a result of physiological changes.

Contamination of soils with oil and oil products leads to a dramatic violation in the soil microbiota. Soil micro-organisms begin to respond to oil pollution after short-term inhibition increase its gross numbers and increased activity [2].

Oil pollution suppresses the photosynthetic activity of plants. This affects the development of soil algae. Depending on the dose of oil trapped in the soil and preservation of soil and vegetation cover observed different response of soil algae.

Oil and oil products is one of the most common pollutants in the oceans. The main sources of oil pollution: maintenance work under normal transportation of oil, accidents during transportation and oil production, industrial and domestic effluents. The greatest losses of oil related to its transportation from the mining areas. Emergency drain overboard by tanker wash and ballast water, causes the presence of contaminants on the routes sea routes [3].

In water oil and oil products can be subjected to some processes such as: assimilation by marine organisms, re-sedimentation, emulsification, formation of oil aggregates, oxidation, dissolution and evaporation [4].

The impact of petroleum products can be divided into 5 classes: poisoning fatalities, serious violations of the physiological activity, the effect of direct wrapping of a living organism with oil products caused by introduction of hydrocarbons in the body pathological changes and changes in biological features of the habitat. Each class affects the changes in the ecosystems of the oceans.

Factors affecting the action of biological destruction of organic contaminants are their chemical nature, which implies the possible ways of biological transformation, concentration, and interactions with other pollutants.

Contamination of soils with oil and oil products is one of the most difficult and serious problems of ecology and environmental protection. Currently, all successful developing technologies for cleaning up soil and water objects from oil and oil products, but unfortunately, technology has not yet reached to the desired level to deal with this problem.

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6. PRIORITY AREAS OF SUSTAINABLE FOREST MANAGEMENT AND GREEN BUILDING

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FOREST ECOSYSTEM

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Abstract: The forest ecosystem is a community of forest vegetation, animals and microorganisms occupying a certain habitat and the associated metabolic and energetic flows.

Key words: forest ecosystem, forest cover, natural area, nature.

The forest is one of the main types of land cover of our planet, represented by numerous life forms of plants, among which the main role is played by trees and shrubs and small herbs, low shrubs, mosses, lichens. The total area of forest land exceeds 4 000 000 000 hectares. In the isolated forest area covered by forest. The latter does not include land beyond the forest edges, roads, hayfields, clearings within forest areas. It is estimated approximately 3 000 000 000 hectares. the proportion of Northern coniferous forests (mainly Russia, Canada and the United States) is 14-15%, of tropical forests – 55-60%. [1]

The structure of the forest ecosystems is divided into tiers. The height of each layer and the composition of living organisms in it, depends on the plant species, the diversity of its formation. Central to the ecosystem as a whole and its food chain, obviously, is plants — producers. Other elements of the food chain — consumers and destroyers of the ecosystem of a forest, play it, although dependent, but important role.

Tropical forest ecosystem is based on warm tropical, subtropical and equatorial climate. They encircle the earth at the equator. The variety of flora and fauna is determined solely by the amount and distribution of seasonal rainfall. Tropical forests have a very diverse flora. It is dominated by trees that can be up to 100 species per hectare. The main types of trees: birch, legumes and palms.

In the deciduous forest ecosystem is characterized by species variety of plants deciduous or summer-green, which shed leaves in the autumn-winter period. Their leaves have a broad leaf plate. These forests grow in moist and humid climate with high temperature. Summer is long, winter is mild. Distribution-Europe, North America, East Asia, New Zealand and southern Chile. Forest base and its upper tiers: basswood, ash, elm, maple, beech, oak and chestnut.

The ecosystem is mixed forest is a mixture of two ecosystems due to the presence in it of wood and coniferous wood. Ecosystems complement and reinforce each other, and the final amount becomes more stable. They are mostly located in climate with warm summers and cold winters. The main tree species are spruce, pine, oak, maple, linden, ash and elm.

The ecosystem of a coniferous forest is formed in a cold climate. They are widely distributed in North America and Eurasia. In the southern hemisphere, these forests do not create a single array. In South America and Australia are found mainly in the mountains. Another name for coniferous forest – the taiga. There are many types of plants, but conifers dominate and take the top tier in the ecosystem. The needle, which in these rocks replace the leaf does not fall, depending on the time of year. The main types are: fir, pine, spruce and larch. [2]

Forests play an important role in developing the economy, improving the environment, improving the welfare of the people. The trees themselves are powerful creators of the biomass is the fuel suppliers, and most importantly – wood for construction, industrial raw materials, tanning, medical, dye and many other nutrients. The influence of forests on the progress of processes in natural complexes is quite diverse. Forest ecosystems are very important for the life of the biosphere; they play an important role in the water cycle. Forest soils filter the water flowing from fields and industrial sites, and clean them from many contaminants. The influence of forests is manifested in the fact that they are the main supplier of oxygen on the planet; absorb and convert a portion of the atmospheric chemical pollution; promote higher yields of agricultural crops; a direct impact on the water regime on the occupied and adjacent territories and regulate the balance of water; reduce the adverse impact of drought constrain the movement of the moving sands; protect soil from water and wind erosion, mudflows,

landslides, destruction of the coast and other adverse geological processes. [3]

Conclusion

Forest ecosystems are built on the basis of domination of the plant world on the animal. Among the plants plays a major role for one or more types of trees. Depending on this system include one-species or mixed. Ecosystem of any kind has tiers. The density of the closure of tree crowns depends on the amount of sunlight and oxygen that penetrate in the lower tiers. Especially in layers inhabited by decomposers – destructive. And this, in turn, affects the number of their synthesized inorganic "food" for themselves as trees. Ecosystems in which there is an imbalance in favor of any living organisms, not stable enough and can be damaged and destroyed. The most stable are the forest ecosystems with a mix of types and their interchangeability. [4]

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Guo Xuan 郭璇

LANDSCAPE ECOLOGY IN CHINA

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Abstract: The article is dedicated to the typical landscape ecology research areas in China, which are divided into three main parts: landscape ecology and its application in the process of urbanization, landscape ecology and its application in agriculture and ecological protection and restoration.

Key words: landscape ecology, urbanization, agriculture, ecological protection and restoration.

1. Landscape ecology and urbanization in China

With the fast development of urbanization, many problems have arisen. Chinese ecologists carry out a series of researches, focusing on relationship between the evolution of city landscape pattern and its environmental and ecological effects, to solve problems like the increase of impervious area, landscape fragmentation and discretization and the decrease of urban water bodies and urban green space.

Chinese ecologists quantitatively studied how landscape affects the heat effect and drew the conclusion that the factors affect heat effect don't only include the earth surface cover, but also the size of greenbelt patches, the shape of water bodies and green space and the adjacency relation of neighbor landscape units [1].

Moreover, Chinese ecologists are combining the ecological and social effects of urban landscape. Yu Kongjian and other researchers studied the accessibility for townspeople of urban space of Zhongshan City, establishing resistance matrix distribution model; Zhou Tinggang and other researchers applied physical concept 'field' into urban landscape study in consideration of population distribution [2]. As time goes by, more and more advanced technologies have been used to complete their work.

2. Landscape ecology and different agriculture systems

Chinese have long and rich experiences in agricultural production and some traditional agricultural thoughts are still very helpful now. For example, the pursuit of harmony between human and nature, adjustment of measures to local conditions and so on. Besides, the length and breadth of land result in abundant agriculture land use classes.

The northern part of China is mainly located in the temperate zone and has four distinct seasons. Greenhouse and the methane tank along with it is a very important part of agricultural production in the north of China, which realized resource recycling use. Meanwhile, crop rotation and fallow system maintains soil fertility in poor lands.

At the same time, farmlands in the south of China are often cut apart by hills and water bodies. To overcome these difficulties, dike pond mode and terraced fields are developed. The dike pond mode creates a unique agricultural landscape, combining crop farming and fish or poultry farming, which improves the use-efficiency of time, space and waste.

3. Ecological protection and restoration

Water loss, soil erosion and desertification cause a series of ecological problems both in the southwest arid region of China and in other vulnerable ecological fragile. Fu Bojie and his research group studied water loss and soil erosion in the Loess Plateau and worked out how land use patterns influence soil wet, soil nutrient and soil erosion and on this basis made their suggestions [3; 4].

What's more, landscape ecology is closely correlated with natural protection. Method of ecological corridor is widely used to connect natural preservation zones, oasis and other broken ecological landscape, which significantly reduces biodiversity loss vegetation degeneration and other ecological problems.

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URBAN FORESTS OWNERSHIP IN PERM CITY

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Abstract: The article addresses urban forests ownership issues which are not entirely regulated by current Russian Legislation and therefore naturally occurring concerns, connected with their management, protection, preservation and restoration.

Key words: urban forests, non- delineated state ownership.

Introduction. In modern legislation management of city forests is regulated by several codes: Land, Forest and Urban ones. Selected issues are ensured by the norms(laws) of the Civil code and Federal Law «Concerning the General Principles of the Organization of Local Government in the Russian Federation»_of October 6, 2003 № 131-FZ. It is possible to identify a number of concerns on the management of forests, which are emerging in many urban settlements of Russia.

-Complex legal context in formulation of regulations and in managerial decision-making, because they are simultaneously governed by all laws listed above.

-Some issues connected with forests management and control are not legally fixed or held in abeyance

- Urban forests are defined in accordance with norms(regulations) pertaining to state forest fund

-The majority of unresolved concerns are now under the purview of government, there are still a lot of collisions thus it is impossible to interpret particular situations

Methodology.

Statistical, historical, comparative methods of research are used in this article.

The definition of urban forests appears in OST 56-108-98 -Urban forests located within the city boundary are intended to preserve favourable environment, as well as for recreational activities and for sports events

According to Article 102 of the Forest Code urban forests are regarded as protective forests. In the regulation 5 of this article it is mentioned that in protective forests and special protective forest blocks it is forbidden to exercise activities which are not compatible with the purpose and useful functions thereof.

Under article 6 of Forest Code of Russian Federation № 200 –FZ from 04.12.2006 all forests are located on forest fund land and land belonging to other categories. The bounds of forest fund land and the bounds of land belonging to other categories are determined in compliance with the land legislation, the forest legislation and the town planning legislation. In terms of articles 85, 98 of the Land Code (RF), urban forests belong to the territories of human settlements having recreational value, thus they cannot be assigned to Forest Fund.

In accordance with article 8 of Forest Code – Forest blocks within the composition of the forest fund land are under federal ownership,

however the forms of ownership of forest blocks within the composition of land belonging to other categories (including urban forests) are determined in compliance with the Land Legislation.

Land Legislation says that these territories can be attributed to:

- 1) Federal property
- 2) The property of constituent entities
- 3) Municipal property

However, the property of constituent entities should be accepted by Federal Law, and municipal property must be recognized by both: Federal Law and the Law of constituent entities, adopted in accordance with Federal Law. To date, laws of ownership distribution are still not adopted and these territories can be attributed to not-delineated state property.

Article 10 of Federal Law of 04.12.2006 on the implementation of the Forest Code says, that the management of forest blocks with not-delineated property fall within the remit of executive authority of constituent entities and local self-government Bodies pursuant to Land legislation.

If the ownership is not delineated by local self-government, the possibility to dispose these forest areas is determined in accordance with the article 3 (part 2, sub-section 10) of Federal Law of 25.10.2001 № 137-FZ on the implementation of the Land Code.

The Civil code of Russian Federation contains an exhaustive list of grounds for the Cessation of the Right of Ownership , thus nothing herein contained cannot be attributed to the property rights of Russian Federation to the lands, occupied by urban forests but on the other hand, the owner bears the burden of maintaining the property in one's ownership, unless otherwise stipulated by the law or by the contract.(Article 210, Land Code of Russian Federation), nevertheless urban forests of Perm city are funded from municipal budget.

In accordance with RF Government Decree of 27.11.2004 № 691 «On Federal Agency for federal Property Management», sub-section 5.10. Federal Agency for State Property Management purchases property for federal ownership under the established procedure, with subsequent transfer of property from federal ownership to state ownership of constituent entities and to the municipal ownership.

On the basis of the order of Federal Agency for State Property Management № 241 of 29.11.2006 year «"On the delegation to the territorial authorities of the Federal Property Management Agency of the

authority to transfer property from federal ownership to the ownership of the constituent entities of the Russian Federation or municipal property and from the ownership of the constituent entities of the Russian Federation and municipal property to federal property, and also to approve the acceptance and transfer of property" the necessary powers were transferred to the subject of the Russian Federation - Perm Krai, and the city forests, in turn, were transferred to the municipal establishment "Perm City Municipal Forestry" under the authority of the Governor of the Perm Region of 05.09.2005 N 400-r" On the transfer of urban forests to municipalities "for use, protection, conservation and reproduction.

Conclusions:

Government of the city of Perm was entrusted with the authority to manage forest areas within the limits delegated by the governor's orders for management, protection, conservation and reforestation.

Municipal administration of Perm city has neither power to dispose plots of land, occupied by urban forests, nor right for logging and managing of forest timber, logged on that territories.

The transformation of powers from the State must be supported by the transferring of funds for their implementation in the form of subventions, however in the field of urban forests it was not done.

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7. ENERGY-SAVING, ENVIRONMENTALLY-FRIENDLY CHEMICAL AND TECHNOLOGICAL PROCESSES

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OPTIMIZATION OF WASTE DISPOSAL AND RECYCLING SYSTEM IN RUSSIA

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Abstract: Waste, which is produced by our society, is a big ecological problem and a great threat for nature. To provide sustainable development of our country we have to optimize the waste disposal system.

Key words: waste recycling, green technologies, sustainable development.

Modern society produces enormous amount of waste. According to statistics, each citizen discharges around 455 kg of waste annually. And only 10-15% of the total mass is being recycled. Everything else is discarded in permanently expanding junkyards and landfill sites, and that contributes to environmental pollution and to degradation of our natural ecosystems. Moreover, by refusing the waste recycling, we miss a significant economic benefit from the re-use of resources.

That is why the problem of waste disposal and a recycling system in our country, as well as all over the world, is very acute.

Nowadays, waste dumps have become a real disaster for the ecology of the environment. The most common way to eliminate them is incineration of waste. However, this method has many side effects. Such as:

- Exhaust emission to the atmosphere, which causes damage to nature, human health, and accelerates global warming.
- It's extremely expensive. Today, burning a kilogram of garbage costs an average 65 cents.

Therefore, in the future this method will be replaced by more effective waste disposal methods. New technologies should not only

reduce costs, but also become self-sufficient because of resources re-use and at the same time causing minimal harm to the environment.

Below there is a number of effective ways of storage and processing of solid domestic waste that are currently in use: pre-sorting, Sanitary landfill, incineration, biothermal composting, low-temperature pyrolysis, high-temperature pyrolysis.

Pre-sorting. With the use of special machine-tools or manually garbage is divided into different fractions and classes, which are then processed separately.

Sanitary landfill. Using this method, biogas is produced from waste. Waste is covered with a layer of soil (up to 0,6-0,8 m thick). In the resulting environment, for natural reasons, the temperature stays stable at 30-40 degrees Celsius, which creates ideal conditions for the development of methane-producing bacteria. Then the process of natural fermentation with the emission of biogas begins.

Biothermal composting. This method is used in the processing of organic waste. Batch of waste is loaded to a special device (drum) where at a constant temperature of 60 degrees Celsius and a high humidity level, the decomposition process proceeds at a very high rate. As a result, we have got a perfect fertilizer.

High-temperature pyrolysis. This is a complex process of solid waste gasification. It consists of several stages:

- Separation of large debris from the total mass
- Waste processing in the gasifier to produce synthesis gas.
- Synthesis gas passes through several stages of purification and enrichment.

- Cooling of synthesis gas and its purification from harmful impurities by alkaline solution.

High-temperature pyrolysis is perhaps the most promising method for processing solid waste both from the point of view of preserving the environment and producing secondary useful products of synthesis-gas, slag, metals and other useful materials.

Low-temperature pyrolysis. Low-temperature pyrolysis proceeds at lower temperatures (<840). Used to produce solid fuel (semi-coke) and raw materials to produce secondary rubber.

Most often several of these processing methods are used simultaneously. For example, at the research and production company "Thermoeology" (Moscow), an interesting recycling technology, that

involves thermal power plants waste with the addition of a part of household waste, was created. This is a multi-stage method that includes: drying-pyrolysis-incineration-electroslag refining. Another example of the development of waste recycling technologies in our country is the environmentally friendly technology of high-temperature (plasma) waste processing developed by «SibecoTherm" (Novosibirsk).

Landfills and dumps nearby cities do not only spoil the landscape, but are a real threat to people's health. Therefore, the following challenges are facing the modern waste disposal systems: not only safely dispose wastes produced by the city's population, but also to make profit from them.

The most effective way to solve this problem today is the use of automatic pre-sorting systems and the separate recycling of various types of waste with the introduction of modern technologies.

Thus, waste can return to us as electricity, heating, and greenhouse vegetables and fruits instead of growing dumps and polluted water.

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**WIND POWER AND ENVIRONMENTAL IMPACTS OF WIND
POWER: ENERGY-SAVING, ENVIRONMENTALLY
FRIENDLY CHEMICAL AND TECHNOLOGICAL
PROCESSES**

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Abstract: Due to thermal power plants, nuclear power plants and hydroelectric plants, a large number of pollutants are emitted into the atmosphere. In order to reduce the

amount of harmful substances in the atmosphere, a new branch of electricity generation has been introduced - wind power.

Key words: wind power, environmental problem, pollutants, electric power.

Wind power is the use of air flow through wind turbines to mechanically power generators for electric power. Wind power, as an alternative to burning fossil fuels, is plentiful, renewable, widely distributed, clean, produces no greenhouse gas emissions during operation, consumes no water, and uses little land. The net effects on the environment are far less problematic than those of nonrenewable power sources. Wind power gives variable power which is very consistent from year to year but which has significant variation over shorter time scales. It is therefore used in conjunction with other electric power sources to give a reliable supply. As the proportion of wind power in a region increases, a need to upgrade the grid, and a lowered ability to supplant conventional production can occur. Power management techniques such as having excess capacity, geographically distributed turbines, dispatchable backing sources, sufficient hydroelectric power, exporting and importing power to neighboring areas, or reducing demand when wind production is low, can in many cases overcome these problems. In addition, weather forecasting permits the electric power network to be readied for the predictable variations in production that occur. [1]

At the current time, a large amount of electricity is produced at thermal power stations, hydroelectric stations, nuclear power plants. Consider their impact on this environment.

Thermal power plants strongly pollute the atmosphere due to the emission of sulfur oxides and nitrogen, fly ash, solid pollutants and combustion products. In addition, water, which serves as a cleaning system and cooling turbines, is saturated with solutions of hydrochloric acid, caustic soda, ammonium salts and petroleum products, and then discharged into a natural body of water.

Hydroelectric power plants undermine much less damage to the environment than other types of power plants. The creation of reservoirs in the construction of a hydroelectric power plant large changes the ecosystem. This affects the ichthyofaunal and the animal world. Ecologists noted that in a few decades it is possible to restore the ecosystem.

The share of nuclear power plants in the total volume of pollutant emissions into the atmospheric air of all enterprises of the country is already at the level of many years - less than 0.012%. In the use of paragraph reactors, radioactive waste is generated that must be stored for more than a thousand years until they become safe for the environment. At any nuclear power plant, a small dose of radioactive material enters the air and water.

Consider the booming industry of energy - wind power. The 1 MW wind generator reduces the annual emissions to the atmosphere of 1800 tons of CO₂, 9 tons of SO₂, 4 tons of nitrogen oxides. According to Global Wind Energy Council estimates, by 2050, global wind energy will reduce annual CO₂ emissions by 1.5 billion tons. If we consider the impact on the climate, then with a large accumulation of wind generators, some influence on climate change is possible. Blades of windmills extinguish some of the kinetic energy of the wind flow passing through them, this leads to a decrease in the speed of movement of air masses. Such an impact can be considered as a negative (undesirable temperature change) or as a positive (decrease in the power of hurricanes).

The only significant minus of wind power is the negative impact on the fauna, namely the death of birds. This is due to the presence of extensive research in countries with developed wind energy, where wind turbines are located mainly in coastal zones (seas, rivers and lakes), which are the natural habitat for birds. Wind installations scare the birds, disrupting their nesting and feeding grounds, and the blades are injured, leading to the death of birds.

The American Wind Energy Association (AWEA) cites data that indicate a negligible amount of bird death in comparison with other elements of techno genic influence:

Table 1. The causes of the death of birds (per 10 000 / pieces)

Houses / windows	5500
Cats	1000
Other reathons	1000
Pesticides	700
TV power	250
Wind turbines	1

According to ecologists, in order to prevent an increase in the negative impact on nature, it is necessary to carefully select the locations of wind farms and avoid bird migration routes, use wind turbines whose blades rotate more slowly, which reduces the probability of collision with birds. [2]

Conclusion. From an environmental point of view, wind generators are not harmful. Among the advantages of the transition to wind energy can be identified:

1. Transition to wind energy will allow to influence the rate of ozone depletion, and, accordingly, the rate of global warming.

2. Wind power plants, unlike thermal power plants, produce electricity without using water, which makes it possible to reduce the exploitation of water resources.

3. Wind generators produce electricity without burning traditional fuels, this helps reduce demand and fuel prices.

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THE PROSPECTS OF NGV FUEL IN EUROPE

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Abstract: Introduction of gas engine fuel for European transport is an actual topic at present, as this fuel is more economical, environmentally friendly and safe. In connection with the fall in oil and gas prices, unstable political situations and an

increase in the cost of LNG supplies, the introduction of gasoline fuel for transport in Europe is difficult at the moment.

Key words: gas motor fuel, LNG, CNG, Europe, gas filling station, gas fuel, NGV transportation.

Gas engine fuel (GMT) is an alternative to traditionally used gasoline and diesel fuel. This includes natural gas (methane) in compressed (compressed) or liquefied form, as well as liquefied hydrocarbon gases (propane-butane mixtures). The use of natural gas is the most economical, environmentally friendly and safe. LNG is considered to be safer than oil, because with the leakage of the first gas rises up, as it is lighter. In recent years, liquefied natural gas is only beginning to be used as fuel in transport in a limited sector of heavy cargo traffic.

LNG – is a natural gas, cooled to -161°C , which reduces its volume by 600 times. LNG is a clear liquid, odorless, it is non-toxic and doesn't cause corrosion. Three times more compact than GHG, which allows to achieve a reserve of the truck up to 850 km, and soon 1400 km thanks to the second cryogenic tank [1].

From year to year, crude oil reserves are declining, and natural gas reserves are better distributed around the planet, there are more of them and they continue to grow. The prospect of introducing gas fuel in transport is primarily determined by greater environmental friendliness over other fuels and a lower price. Gas-powered engines reduce small particulate emissions by 96%, CO₂ by 20% and N₂O by 70% compared to diesel fuel, and also meet the requirements of Euro-5 and Euro-6. Therefore, owners of such cars in Europe do not have to pay a high environmental tax. Engines running on natural gas also produce less noise, which is a significant plus for nightly use of the machine or for delivering goods around the city, where noise restrictions are stricter. The gas-fired engine spinning 1100 rpm produces a sound less than 72 decibels, which is 3 times less than a diesel engine. Also, this engine does not create any smoke or smell.

Today the total number of cars using gas fuel in 2013 is 1.6% of all vehicles of different classes, both cars and trucks. Natural gas provides a quick and cost-effective way to meet the EU's core criteria, including decarbonization of road transport and improving urban air

quality. Natural gas makes a significant contribution to the diversification of energy supplies to Europe.

Vehicles running on natural gas are quieter and more economical than vehicles that use traditional fuels. In Europe, gasoline transport occupies only 0.4% of the total fleet. In Italy, 77% of all EU gas transport is concentrated (Table 1).

Table 1 [1].

Number of gas-powered vehicles in OECD (Organization of Economic cooperation and development)			
	Number of gas engine vehicles*	% of the amount of gas engine transport in the EU	% of the total vehicle fleet in the territory
Total in the EU	1 098 902	100	0,4
5 leading countries:			
Italy	846 523	77,0	2,1
Germany	96 349	8,8	0,2
Bulgaria	61 270	5,6	1,8
Sweden	44 321	4,0	0,9
France	13 538	1,2	0,04
Other OECD countries			
USA	250 000	1,4	1,0
Japan	42 590	0,2	0,05
* Excluding ships, trains, planes			

At the moment, there are 1433 LNG gas filling stations in the world, 43 of which are located in Europe (Table 2). To use LNG in transport, a new infrastructure is needed. Even in countries with the most developed market, only 6% of filling stations are equipped with the necessary equipment.

Table 2 [2].

LNG gas stations in the world	
Total in the world	1 433
USA	46
Europe	43
United Kingdom	13
Spain	12

Sweden	8
Netherlands	7
Estonia	2
Poland	1
Australia	10
Canada	2
Thailand	1
Russia	1

The EU stations are located quite isolated by country. The Blue Corridor project provides for the creation of a gas transportation infrastructure along four routes (Portugal, Spain, France, the Netherlands, the United Kingdom, Ireland with two branches - from France to Germany, Denmark and Sweden, and from Ireland to the UK, Belgium, Germany and Austria).

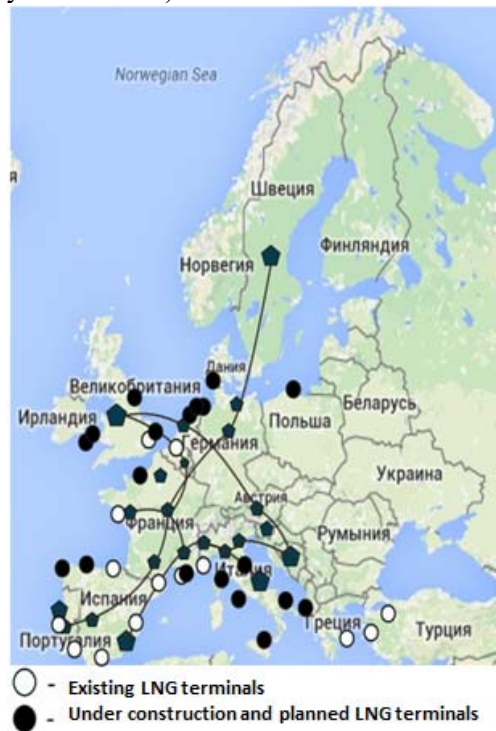


Fig. 1 Map of the Blue Corridor with LNG terminals

The use of LNG as fuel is more commonly used in trucks. To store CNG in the car, cryogenic tanks are required, which take up less space than cylinders for CNG. Another advantage of LNG is the higher energy content per unit volume, this provides a longer mileage.

The first engine, powered by natural gas, was invented in 1883. The first company to produce cars operating on CNG and CNG is Volvo (1980), then Ford and BMW began to work in this direction. One of the first companies that began to produce lorries for LNG in Europe is Scania. Scania P truck models and Scania P tractors are equipped with Euro 6. In 2015, Scania launched the only long distance bus, the Scania OmniExpress 3.20.

In France 13,500 vehicles on gas, 2,500 buses and 900 garbage trucks are used. Iveco is the leader in France for the production of natural gas powered trucks. At the moment, 200 trucks of Iveco company pass through European roads, most of them in Spain, England, Holland [3].

At present, the prospects for gas engine fuel are very problematic, despite the fact that Europe has prepared for this kind to become the main one:

- The necessary gas filling infrastructure is being formed;
- It is planned to transfer a number of transport highways to mainly LNG and CNG transport;
- A regulatory and legal framework is being developed that stimulates the introduction of gas engine fuel in transport;
- Environmental requirements are becoming more severe.

At the same time, EU countries are facing a number of problems of introducing gasoline fuel to Europe's transport:

- Oil and gas prices have fallen, which has reduced the competitiveness of LNG delivered from outside Europe;
- There is the unresolved problem of the secondary use of vehicles used in gas engine fuel;
- Technologies of using transport powered by electricity and biofuel have been developed.

Thus, the prospects for using gas engine fuel as an alternative to traditional fuel in Europe's water and road transport are controversial and require serious additional research.

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**SETTING OF A CONVEYER ON THE MIKHAILOVSKY
MINING AND PROCESSING COMBINE AND
DETERMINATION OF ITS DESCRIPTIONS**

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Abstract: Basic descriptions of the studied object are stated in this article. This object is Mikhailovsky Mining and Processing Combine. The calculation of main descriptions of the band semi-steep conveyer is produced.

The economic indicators of optimality of the use of this conveyer on Mikhailovsky Mining and Processing Combine are identified. The prospects of development of work are specified.

Key words: band semi-steep conveyer, basic descriptions of the conveyer, setting of the conveyer in a quarry, optimality and efficiency of the use of the conveyer at a quarry.

The choice of the conveyer is an important task which any transport engineer has to be able to solve. The correct allocation of costs, including optimum use of transport at the enterprise, can keep a huge number of resources on it.

In my work let's replace automobile and railway with a conveyer view at transportation of ore from pit depth to the surface.

Mikhailovsky Mining and Processing Integrated Combine– the place of development of the steeply inclined conveyer.

To begin with we define the conveyer performance, considering its hourly productivity Q_t equal to:

where k_n - the download of non-uniformity coefficient ($k_n = 1.2$);

Q_t - the annual flow of goods, h;

T - the annual fund operating time of the assembly line, h.

$Q_g = 16$ mln tons of rock.

since the pipeline runs non-stop, year-round, then $T = 365 * 24 = 8760$ hours.

Consequently, $Q_t = 1.2 * 16 \text{ mln} / 8760 = 2192 \text{ t / h}$.

Knowing the performance, we will have speed equal to $2,5 \text{ m / s}$.

According to the calculated theoretical performance the width of the conveyor belt is defined as the cross-sectional area of the load on the belt, the belt speed, bulk density:

$$B = 1,3 * [\sqrt{(Q / (k_p * v * \gamma_r * k_\beta) + 0,1)}], \text{ m},$$

where Q - conveyor productivity t / h; v - conveyor belt speed, m / s; γ_r - density of transported cargo, t / m³; k_p - performance ratio, depending on the type of roller carriages, the angle of its side rollers β and angle of repose of the load in motion φ (using the table "Values of coefficient k_p "); k_β - coefficient taking into account the angle of the conveyor (using the table "Values of coefficient k_β ") [2].

Calculations have been performed:

$$B = 1,3 * [\sqrt{(2192 / (700 * 2,5 * 3,5 * 0,95) + 0,1)}] = 0,898 \text{ (m)} = 898 \text{ (mm)}$$

In accordance with convenient location in height of 200 m and with an average value of transportation the installation angle is 30° . Accordingly, the length of the cargo conveying horizontally is defined by the formula

$$L = H / \tan \alpha$$

where H - height of lifting, m; α - angle of inclination of the conveyor, hail.

$$L = 200 / \tan 30 = 384 \text{ m}.$$

This constructive conveyor length is determined as follows:

$$L = H / \sin \alpha$$

$$L = 200 / \sin 30 = 400 \text{ m}.$$

According to preliminary calculations, the parameters of the steeply inclined conveyor were obtained.

Now you need to give economic justification for the use of the steeply inclined conveyor at the Mikhailovsky GOK.

If we consider that one truck consumes 2900-3000 gallons of fuel per day, then 10 of these trucks consume 30,000 liters of fuel. Given the

cost of one liter of 35 rubles for that amount, this amount will be 1,050,000 rubles per day and 378 million rubles per year. And with the introduction of the steeply inclined conveyor ore is transported from the bottom to the pipeline installation site, a distance of about 300 m, in this regard, fuel costs are reduced by 90%, i.e.

$$T_p = T_s * 10\%$$

where T_p - Fuel costs for the proposed technology, l; T_s - fuel costs for existing technology, l;

$$T_p = 30,000 * 0.1 = 3000 \text{ l}$$

Fuel consumption will be 105,000 rubles., and in this year 38325000 rub.

As a result of the research the following conclusions can be drawn:
the introduction of the conveyor at a quarry will contribute to more efficient operation of the entire enterprise;

reduction of transport costs by 90% of dump trucks, also reduces energy and materials;

improving environmental conditions, thanks to the tightness of transportation;

there is a replacement of human labor to automatic labour;

Using this mode of transport causes reduction of transport time and costs.

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Miteo Yvan

**SYNTHESIS OF 2-FURILPERGIDROAZA HETEROCYCLES
AND THEIR TRANSFORMATION UNDER THE INFLUENCE
OF ANHYRIDES UNSATURATED'S ACIDS**

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Abstract: The reaction of cycloaddition of furan fragment with various dienophiles has been discussed. This work is a continuation of studies of the effect size of the loop on the direction of this interaction if the furan fragment is in the α -position. We synthesized cyclic α -furilsubstituted amines, and the example of their interaction with cinnamoyl chloride and allyl bromide studied intramolecular cycloaddition reaction. The case of disclosure of a saturated cycle α -methoxy carbamate by the excess of acid, resulting in the formation of difuriles derivatives has been studied.

Key words: organic electrochemistry, intramolecular cycloaddition, nucleophilic substitution of the methoxy group, spectral data.

Introduction. The present research is based on the study and analysis of twenty-five articles sources in different languages [1-6] discussing preparation of carbamates, obtaining of α -methoxy carbamate derivatives, preparing α -furyl substituted carbamates, obtaining of the α -furyl substituted amines, different α -furyl substituted amines in the intramolecular reaction Diels-Alder with different dienophiles. The confirmation of obtained substances are based and exposed on spectral data.

The objectives:

1. consider the reaction of intramolecular [4 + 2] cycloaddition of furan fragment with various dienophiles
2. to explore the influence of the size of the cycle on the direction of this interaction if the furan fragment is in the α -position.
3. synthesizing cyclic α -furilsubstituted amines, and the example of their interaction with cinnamoyl chloride and allyl bromide studied intramolecular reaction.

The research question: Does the size of the heterocycle influence the IMDAF reaction?

The hypothesis: The intramolecular reaction cycloaddition of furan fragment is ambiguous with different heterocycles, about what depends the cycloaddition.

The methods of research: a. collection of articles with similar reactions; b. reading various methods; c. selection of the appropriate method.

The methods of data collection: a. selection of materials; b. laboratory experiment; c. analysis of obtaining substances. IR spectra of synthesized compounds were recorded on a UR-20 spectrometer or a Fourier spectrometer Infracum FT-801 in KBr pellets (for crystalline materials) or a film (for oils). Mass spectra were recorded on a mass spectrometer HP 5988 MS or GC-mass spectrometer Finnegan MAT95XL with direct input sample in the ion source of ionizing voltage of 70 eV. ¹H NMR spectra were obtained in CDCl₃ solution on a JEOL 230C Wn-600 (with an operating frequency of 600 MHz on ducts). Chemical shifts in ¹H NMR spectra are measured in p.p.m. (δ-scale) as internal standard the residual solvent signals 7.26 ppm (CHCl₃). ¹³C NMR spectra were obtained in CDCl₃ solution on a Varian instrument Uniti 400+ (operating frequency 100.6 MHz). TLC plates used Sorbfil UV-254 (a manifestation of iodine vapor).

Results

1. The interaction of α-furylamines 8b and 8c with allyl bromide found that the process does not end until the alkylation step. Cyclic derivatives cannot be isolated even in boiling o-xylol.

2. The reaction of a six-membered amine 8c with trans-cynnamoilchloride provides a cyclic product 10c. A similar interaction five-membered amine 8a stops at the stage of preparation are disclosed acyl derivative 9a. Apparently, this is due to the small size of the cycle and as consequence, significant steric hindrance preventing cyclization.

3. Get azacin 13, which will be used for further transformation.

4. It is found that under conditions of an excess amount of p-TSA reaction between α-methoxy carbamate formation does not stop at α-monofuryl transformation and leads to the formation of the difuryl transformation.

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BIOFUEL

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Abstract: People need a lot of energy. Hydrocarbon reserves will soon come to end. People need to think about finding other sources of energy. Biofuels can be a good alternative to hydrocarbons. It is a renewable source of energy and doesn't pollute the atmosphere. In the future biofuel will become widespread.

Key words: Biofuel, renewable fuels, non-renewable fuels, firewood, bioethanol, biodiesel, biogas, greenhouse effect, organic waste.

Nowadays people need a lot of energy for living and economic activity. The most widespread source of energy is oil, gas and coal. But these sources are non-renewable and pollute the atmosphere. The biofuel can be used as an alternative to those resources.

Biofuel is the fuel from plant and animal materials or organic industrial waste. Biofuels can be in solid, liquid and gas form. [1]

Solid biofuel is usually used for heating and kindling fire. It includes the firewood, briquettes, pellets.

The first biofuel that humans have begun to use were firewood. This type of fuel still is widely used. But it has several disadvantages because wood has a low energy value, and the wood has a long recovery period. Another way to produce fuel is to make it from agricultural waste such as husk, straw and sawdust. They are pressed and shaped into pellets. These pellets are cheap enough and convenient to use. [2]

Liquid biofuels are used for engines and is an alternative to petrol. Using of biofuel reduces emissions of carbon dioxide, which causes the greenhouse effect. Also biofuel is cheaper than petrol. Liquid biofuels include bioethanol, biomethanol, biobutanol and biodiesel.

Bioethanol is obtained in the fermentation process from corn, sugar cane, potato, sugar beet, cereals and other crops that contain carbohydrates or starch. Also waste from agriculture and forestry, such as straw and sawdust can become the raw material for bioethanol.

Usually ethanol is mixed with petrol and this mixture is used for refilling cars. Cars with petrol engines can use fuel with ethanol content to 10 percent. Flex-fuel cars can use a mixture of 85 percent ethanol and 15 percent petrol. Now bioethanol is very popular in Brazil, Argentina and the USA.

Biodiesel fuel is produced by mixing the oil with methyl alcohol in a ratio of 10 to 1. The raw material for biodiesel are crops such as canola, soybean, flax, palm oil (first-generation biodiesel). Also, raw material can be waste of plant oil, animal fats, fish oils (second generation biodiesel).

Biodiesel is an environmentally friendly product. If it gets into the environment it is completely decomposed and does not harm the nature. However, it has several disadvantages. Biodiesel cannot be stored for more than three months, and then it begins to decompose. Also, biodiesel cannot be used during the cold season. And the production of first-generation biodiesel takes agricultural land which could be used for growing food crops. [3]

Biogas is gas produced in the process of hydrogen or methane fermentation of biomass. Any organic waste can become raw material for the production of biogas. Methane biomass decomposition occurs due

to the action of bacteria. The biogas is used to produce heat, steam and electricity or as motor fuel. Biogas plants can be installed at treatment facilities on farms, distilleries, sugar mills, meat processing plants. Biogas production can solve the waste disposal problem. Production of biogas helps to prevent methane emissions. Methane has an impact on the greenhouse effect is 21 times greater than carbon dioxide. Capturing methane helps prevent global warming. [4]

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NUCLEAR ENERGY; CHALLENGES AND PERSPECTIVES

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Abstract: Nuclear energy effects many spheres of modern life, such as science, energy production, transport and military sphere as well. In addition, the paper outlines the key issues of current nuclear energy research.

Key words: nuclear energy, nuclear wastes, flammable energy sources, nuclear power plants, inexhaustible source of energy, new methods to recycle wastes.

Introduction: Nuclear energy has always been a controversial issue. One of the biggest problem in nuclear energy sphere is the possibility of an accident. Furthermore, there are a lot of nuclear wastes on our planet. On the other hand, nuclear energy is a very perspective sphere because people can use this practically inexhaustible source of energy to satisfy their needs and it is the way for stop using flammable energy sources.

The objective of the research is to find ways how people can prevent accidents on the nuclear power plants, recycle the nuclear wastes

and how people can phase out oil, coal, gas and other flammable resources.

Methodology: The risk of an accident is not as big as people tend to think. The real threats come from environmental pollution and chemical production. However, stricter requirements are needed for nuclear sphere because people are convinced nuclear is the most dangerous thing. [1] That is why people know a lot of about Chernobyl disaster and Fukusima disaster but they don't know much about air pollution from manufactures and cars. Another big problem is nuclear wastes. This problem affects aspects such as burial of waste close to the ground, experimental tests of the new method of burial wastes and a big radionuclide concentration. [2] These problems inhibit development of nuclear power sphere because nowadays Earth does not have enough place for nuclear wastes. Nuclear power plants have many unquestionable advantages over power plants that use flammable energy sources. Nuclear power plants have a high level of security; they do not emit CO₂ to the atmosphere and nuclear plants do not depend on prices of carbon carriers. [3] This is the best choice for developing countries because they do not have much money to buy carbon carriers. In addition, they also have an old manufacturing, which is not suitable for modern environmental standards, and pollute atmosphere very much.

According to the past research, despite significant amount of wastes from nuclear power energy sphere but nowadays people try to discover new methods to recycle these wastes. In addition, public opinion on nuclear power sphere has evolved and there is common understanding that this is the safest method source energy. Besides, nuclear power plants are most cost-effective than thermal power plants.

There is an increasing demand for new methods to get cheaper and more environmental friendly resources for humanity needs. In the near future, fossil fuels and thermal power plants will be phased out and we will have cars that work on nuclear power or electrical power. If people develop alternative sources of resources, humanity and Earth will live much longer and children will live in better world.

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MUNICIPAL SOLID WASTE RECYCLING INTO FUEL

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Abstract: Resource consumption is constantly growing as well as the amount of waste. Household waste, which is a mixture of organic matter of different origin, can be a high-calorie fuel. Getting energy from waste, we dispose of solid waste and get cheap energy.

Key words: waste recycling, energy from waste, municipal solid waste (MSW), high-calorie fuel.

The road of civilization is paved with mountains of garbage. This is not surprising because consumption is constantly growing, and so is the amount of waste. So, there is an urgent need for developing new ways of waste processing. [2]

Domestic waste, which is a mixture of organic matter of different origin, is a high-calorie fuel comparable with traditional brown coal. We can refer to the experience of Western European countries, where in recent years the problem of solid waste disposal has been solved most successfully. For example, in Copenhagen about 30% of heating energy is produced due to the thermal utilization of waste. [1]

Treating household waste as a renewable source of energy, we consider first the economic interest of the population. Given the steady growth of energy tariffs, and household wastes as a kind of alternative fuel are becoming more relevant than ever.

Getting energy from waste, we simultaneously solve the problem of solid waste disposal and get cheap, practically, free heat energy that can be spent on the provision of communal heat resources. Well, the use of modern technologies of waste disposal in the process of solving the problem of waste disposal will reduce the negative impact of the landfill waste (MSW) on the environment. [1]

What types of fuel can be obtained from ordinary MSW?

The gaseous fuel can be obtained primarily from the waste of organic origin. In developed countries, where biogas technology is well developed, with the help of gas, produced from food and plant waste is heated with entire residential neighborhoods. [2]

However, it should be noted that gaseous fuels are difficult to transport, so it is usually used directly at the place of its production for the production of thermal and electric energy.

Solid fuel from MSW (or RDF) is a high-calorie fraction, consisting of household waste. This fuel type has found wide application as a cheap substitute for fossil fuels. It can replace such resources as:

- brown coal
- coal
- petroleum products
- wood

The replacement of fossil fuel resources, similar solid fuels from waste for many years, is one of the most striking indicators of modern technical level. This trend is most pronounced in the cement industry. [2]

Liquid fuel from MSW have learned to relatively recently, however, the result surpassed all expectations of scientists, because the output is a synthetic diesel fuel that can be used in internal combustion engines. Moreover, it compares favorably with diesel fuel derived from the refining of crude oil, as it has in its composition sulfur, which clogs the engines, which adversely affects their durability. [3]

The fuel use of MSW allows not only significantly extend the life of the engine, but also has a positive effect on the environment, as waste from combustion of these fuels is carbon dioxide, which during the process of photosynthesis converted into oxygen. Well, the fact that the combustibility of this fuel is no worse than conventional diesel, it is not surprising that such a technology was starting to get more and more widespread. [4]

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8. LEGAL AND ECONOMIC FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT

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THE ROLE OF COMPLEX ECOLOGICAL MONITORING IN THE REGULATION OF SUSTAINABLE DEVELOPMENT

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Abstract: The purpose of this article is to demonstrate an important role of complex ecological monitoring as an instrument of sustainable development by the example of World Bank Group (WBG).

Key words: sustainability, WBG, environmental strategy, ecological monitoring, green, clean, resilient.

Environmental monitoring plays an important role in sustainability. It helps to ensure that the industrial projects being implemented abide by policies and practices to decrease their impact on the environment. Also it helps to create a baseline for the impact of industrial pollutants in the air, land and water.

The world faces unprecedented environmental challenges over the coming decades, challenges that will significantly increase the complexity countries face in their work to achieve environmentally sustainable development. The proposed new World Bank Group (WBG) Environment Strategy aims at more effectively supporting countries in their work to achieve sustainable development by helping them devise the means to leverage natural resources for growth and poverty reduction, manage the environmental risks to growth and development, and transform growth paths.

This strategy involves the use of integrated ecological monitoring to maintain sustainable development. The strategy is being implemented by 3 parameters:

1) Green

"Green" refers to a world in which natural resources, including oceans, land, and forests, are sustainably managed and conserved to improve livelihoods and ensure food security.

The Bank Group is supporting efforts to measure the value of countries' natural assets and thereby inform policy choices. The Bank Group is also supporting the Global Partnership for Oceans to help restore the world's oceans to health and optimize their contributions to economic growth and food security. In addition, the World Bank Group will build on its experience in carbon finance to test the market's willingness to encourage the protection of critical habitat areas while also providing carbon storage benefits; continue innovative work on forests and land use linked to the Reducing Emissions from Deforestation and Degradation (REDD) program; and develop methodologies to capture and monetize carbon co-benefits—for example, through wildlife conservation programs. [1]

2) Clean

"Clean" refers to a low-pollution, low-emission world in which cleaner air, water, and oceans enable people to lead healthy, productive lives. Cleaner production standards spur innovation, and industry is encouraged to develop clean technologies that provide jobs and support sustainable growth. Companies and governments are held to account on their low-emission, low-pollution commitments, and innovative financing helps to spur change. [1]

3) Resilient

"Resilient" means being prepared for shocks and adapting effectively to climate change. Healthy and well-managed ecosystems are more resilient and so play a key role in reducing vulnerability to climate change impacts. Climate resilience is integrated into urban planning and infrastructure development. Through effective social inclusion policies, countries and communities are better prepared to protect vulnerable groups and fully involve women in decision-making.

Recognizing that countries cannot "grow dirty and clean up later," the Bank Group is encouraging low-emission development strategies and innovative financing for renewable energies, climate-smart agriculture, and lower-carbon cities. It is also supporting pollution management through river clean-up and legacy pollution projects, using carbon finance funds to scale up use of cleaner stoves to reduce indoor pollution

for women and children, and developing partnerships with the private sector to spur cleaner production standards and strategies. [2]

The Bank Group is helping countries adapt to climate change through better coastal zone management and climate-smart agriculture; improving disaster risk management by expanding the use of climate risk insurance and other financial instruments to help with recovery after natural disasters; and assisting vulnerable Small Island Developing States to reduce dependence on oil imports, build sound infrastructure, and restore protective coastal ecosystems such as mangroves. [3]

For countries to effectively undertake environmentally sustainable development, they must have the means and capacity to effectively monitor the environment, documenting and analyzing the measurable data detailing the impact of environmental trends on development sectors. This is an essential aspect of governmental decision-making, but data and information on environmental issues at the local and national levels is scarce at best. Governments generally have very little information about the proximity of environmental thresholds for air, water, biodiversity and other natural resources, the extent to which their policies can alter ecologic equilibriums, and the extent to which production and livelihoods depend upon such equilibriums to become sustainable. Compounding the problem, environmental degradation often has transboundary dimensions.

The new environment strategy for the World Bank Group lays out an ambitious action agenda that seeks to respond to calls for a new kind of development path, one that supports growth while focusing more on sustainability and ensuring that the environment is a key enabler for green, more-inclusive growth.

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Tsvetkova A.Y.¹, Ivanova A.V.²
**RELEVANCE OF THE USE OF ECOSYSTEM SERVICES
IN RUSSION FEDERATION**

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Abstract: The use of ecosystem services in various sectors of agriculture has been considered as one of the most promising areas of economic development in Russia.

Key words: Ecosystem services, agriculture, benefits, sustainable development.

One of the most promising and truly significant areas of development of the Russian economy are ecosystem services.

First of all, it should be noted that ecosystem services are the conditions and processes by which the natural ecosystems and species inhabiting them support and fulfill human life [1], providing it with agricultural products, building materials, medicines and many other necessary for habitual life.

But it should also be noted that "ecosystem services are the benefits that people derive from ecosystems" [2], and in order to maintain and increase the benefits, it is also necessary to exert a positive influence on the ecosystem through the mechanism presented in the figure 1, which includes self-assessment, control and restoration of damage caused to the object under study. In other words, ecosystem goods (such as fruit crops) and services (such as controlling the content of chemical elements in soil) represent benefits that people derive directly or indirectly from ecosystem functions [3].



Figure 1. The mechanism of ecosystem services

Ecosystem services, as an actual area for the development of modern society, gained popularity in many UN countries in the year 2000 after the report to the General Assembly. Then the complex of services was much less than now and did not exceed 30 indicators.

The defining concept of the development of this industry was the meeting of G8 environmental ministers in 2007, which defined the following: "This initiative is based on three key principles: 1 - recognition of the value of ecosystems, landscapes, biodiversity, 2 - expression of this value (both market, and non-market) in economic categories, 3 - development of mechanisms for accounting services and benefits provided by ecosystems in the planning of economic activities "[4].

One of the most well-known classifications of ecosystem services [5]:

1) direct provision of services - provision of food, fresh water, timber, fuel and other natural products;

2) regulatory services - ecosystem services related to natural processes, such as climate regulation, control of hurricanes, floods, erosion and others;

3) cultural services - services related to the human perception of nature, i.e. educational, spiritual, aesthetic, etc.;

4) support services - services that have an indirect impact on humans, aimed at supporting the sustainable development of ecosystems.

It should be noted that the development of ecosystem services is of particular importance for Russia, since a large number of undeveloped territories, when properly used, can bring revenue to the state, while

causing minimal damage to the natural environment and, thereby, leaving the next generation the right to a favorable environment.

It is worth noting the importance of the economic evaluation of ecosystem services in Russia. To preserve and maintain the ecosystems' well-being, the regions should regulate their economic activity in the field of nature management and industry, thereby enabling the agricultural sector to develop for future economic growth. "Such mechanisms should allow to take into account and compensate for both the positive environmental contribution of individual constituent entities of the Russian Federation and the negative associated with the depletion of natural wealth" [6]. Thus, the future policy should be aimed at the reasonable satisfaction of human needs and reducing the negative impact on the environment. Without such a radical change in the ecosystem, our demand will not be able to meet in the future.

This area of development of modern society, has gained popularity in many countries of the United Nations in the year 2000, after the report to the General Assembly. Then the complex of services was much less than now and did not exceed 30 indicators. By 2017 the list of services has become much larger, but, nevertheless, not all of them have been widely used in Russia.

In conclusion, it is necessary to add that the functioning of ecosystems in the mode of rendering services is able to benefit not only the person, but also other living organisms, while being the way to the sustainable development of our country.

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**THE YANGTZE RIVER DELTA ECONOMIC GEOGRAPHY
PHENOMENON ANALYSIS**

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Abstract. Yangtze River Delta Region to promote and strengthen the Yangtze River Delta regional economic cooperation and cooperation to promote sustainable economic development Shanghai is described as one of the core of international economic, financial, trade and shipping, driving the development of the Yangtze River Delta region and all the Yangtze River basin.

Key words: regional economics, China, Yangtze River Delta.

Yangtze River Delta Region: Shanghai Jiangsu Province: Nanjing Wuxi Xuzhou Changzhou Suzhou Nantong Lianyungang Huai'an Yancheng Yangzhou Zhenjiang Taizhou Suqian Zhejiang Province: Hangzhou, Ningbo, Wenzhou, Shaoxing, Jiaxing Huzhou Taizhou Lishui Quzhou Zhoushan delta early in the formation of human beings here in fishing and farming. From the 4th to the 6th century, the Eastern Jin Dynasty, the Northern and Southern Dynasties and the 12 ~ 13th century Southern Song Dynasty two large immigrants, and since the 10th century river network construction, the delta gradually developed into China's famous "land of plenty" and "silk village". Shenyang, Changzhou, Zhenjiang, Nanjing, Nantong, Yangzhou, Xuzhou and Hangzhou, Zhejiang, Ningbo, Huzhou, Jiaxing and other places. Shanghai, Jiangsu, Changzhou, Zhenjiang, Nanjing, Nantong, Yangzhou, Xuzhou and Hangzhou, Zhejiang, Ningbo, Huzhou, Jiaxing and other places. Has developed into an industrial city.

To promote and strengthen the Yangtze River Delta regional economic cooperation and cooperation to promote sustainable economic development in the Yangtze River Delta region in 1992 by Shanghai, Wuxi, Ningbo, Zhoushan, Suzhou, Yangzhou, Hangzhou, Shaoxing, Nanjing, Nantong, Changzhou, Huzhou, Jiaxing, Zhenjiang 14 City Council (Office) initiated, organized, set up the Yangtze River Delta 14 City Cooperative Office (Committee) Director of the joint, to 1996 held a total of five meetings. In 1997, the city of 14 cities and the newly

established Taizhou City, a total of 15 cities through equal consultation, voluntary composition of the new economic coordination organization - the Yangtze River Delta Urban Economic Coordination. The coordination committee will have the executive chairman and the executive chairman. The executive chairman is served by the Shanghai Municipal Committee, and the executive chairman is elected by the other members of the city outside of Shanghai. The Coordination Committee holds a formal meeting every two years. The Coordinating Committee will set up a liaison office as a permanent office in the Standing Committee to be responsible for daily work. Members of the city's cooperation (commission) as the coordination of the specific liaison office. In 2008, the State Council promulgated the "State Council on the further promotion of the Yangtze River Delta region reform and opening up and economic and social development guidance", the formal establishment of the Yangtze River Delta in Jiangsu Province, Zhejiang Province and Shanghai provinces and cities throughout the territory, north and southwest of Zhejiang into the Yangtze River Delta.

In 2009, the gross domestic product (GDP) of the two provinces and one city of the Yangtze River Delta reached 724.91 billion yuan, accounting for 21.29% of the total economic output of China. Among them, the output value of the primary industry was 353.876 billion yuan, accounting for 10.05% of the total, the second industry output value of 3647.664 billion yuan, accounting for the proportion of 23.14%, the tertiary industry output value of 324.778 billion yuan, accounting for the proportion of the country 22.00%. From the three industrial structure, the Yangtze River Delta in 2009 three industrial structure of 4.88:50.32:44.80, compared with 2008, the proportion of the tertiary industry increased by 2.49 percentage points, while the primary industry, the proportion of the secondary industry were decreased 0.17 and 2.32 percentage points.

Shanghai will continue to strengthen the support of the tertiary industry, to achieve the international metropolis of the tertiary industry accounted for nearly 60% of GDP average. Hangzhou, Suzhou, Wuxi, Changzhou and other four cities in the next five years, the advantages of export processing industry will also join the WTO by virtue of its own advantages to be further strengthened (see Table 1).

Table 1. Comparison of the four major economic circles in the Pearl River Delta, the Yangtze River Delta, Beijing, Tianjin and Hebei

	the Yangtze River Delta	the Pearl River Delta	Beijing, Tianjin and Hebei	Region of the three northeastern provinces	Accounting for the proportion of the country's gross domestic product
The total economic output in 2003 (trillion yuan)	23 798	11 335	13 094	12 957	61 184
(52.2%) Average growth rate	14.8%	15.5%	12.2%	10.7%	9.1%
The proportion of the three major industrial structures in 2002	6:52.1:41.9	4.9:49.8:45.3	10.0:45.7:44.3	12.8:49.7:37.5	
The proportion of the three major industrial structures in 2003	5.1:54.6:40.3	4.1:52.4:43.5	9.5:47.2:43.3	12.5:50.4:37.1	14.6:52.3:33.

Shanghai is one of the core of international economic, financial, trade and shipping, driving the development of the Yangtze River Delta region and all the Yangtze River basins. Expo 2010 Shanghai, Shanghai, from all aspects of the opportunity to bring Shanghai, Shanghai is trying to become a "world city". Shanghai's strong radiation and its surrounding "near water" the rapid development of the city, has made all the cities of the Soviet Union and Zhejiang provinces are aware of the importance of regional cooperation, other cities are all the same in the best to find their own city positioning, in the capital, Information, talent, the flow of goods to find the opportunity to highlight the city.



Shanghai, to achieve win-win situation, promote the Yangtze River Delta economic integration, centralization. "Yangtze River Delta" around the city coincides with the Shanghai linkage as an important strategy to road and bridge transport network planning and construction as an opportunity, the Yangtze River Delta is building a "3-hour economic circle".

China's accession to the World Trade Organization will accelerate the industrial structure of major cities in the Yangtze River Delta region.

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9. ECOLOGY, POLITICS AND SOCIETY

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ANALYSIS OF FORMATION OF ENVIRONMENTAL CONCIOUSNESS IN RUSSIAN FEDERATION

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Abstract: Although social awareness in certain fundamental environmental issues in Russian Federation has a century-old history, it is a fact that the massive concern of basic laws and principles of systematic ecology has increased in the last decades mainly due to its growing interference with various aspects of people's everyday life. This article attempts to have a look at the rate of this kind of awareness and research the historical aspect of these concerns.

Key words: environmental issues, subject of ecology, history of ecology in Russia, environmental education, environmental consciousness

Humanity's perception of Earth and environment has always, or at least in recent millennia, been based on the ideas of anthropocentrism. Otherwise, *Homo Sapiens* in the image this perception is the core of the entire biosphere, while the environment – both its biotic and abiotic components – is a necessary but in terms of significance – a secondary adjunct. [4] In his apartment a proud human being has his light, his heat, his food and water, later on – his pets and all possible kinds of entertainment. But this established attitude to the environment does not take into account the fact that it took over 4 billion years for Earth's biosphere, or the zone of life to be shaped to the current form, and thus, has all the rights to be supposed scientifically incorrect. And by the end of the XX century the flaws have become as obvious as never – not only the latest few generations have witnessed an increasing number of natural disasters having mainly geophysical, hydrological and atmospherical genesis, but also mankind has to accept itself and its activity as another major factor determining the regulation of biological connections on the planet.[4,8,9] Reminisce at least only the fact that two of the world biggest technogenic catastrophes both happened within the past 50 years. First of them, the infamous Chernobyl accident entailed instant extinction of massive deciduous forests areas in the west of the

Soviet Union, not counting the year-after-year spreading of nuclear fallout. [8,9] The inevitable public response has become a starting point for the massive environmental concern in the world's biggest country.

Historically, natural science in Russia was poorly recognized in the educational system until the second half of the XIX century. It was a famed biologist of French origin – C.F. Rouillier – whose initiative was to rehabilitate natural science as a substantive discipline in higher educational institutions of Russia since its abandonment during the reign of Nicholas I. [5]

Ecology, in its turn, was not commonly recognized as such until 1920-s. Although by that time outstanding Russian scientists like V.L. Komarov and N.A. Severtsov have already been working in the field of environmental protection, this term – even less – the biocentric concept behind it was not familiar to wider masses. Even later in the 1930-s, groundbreaking research of fathers of Soviet biology – V.I. Vernadsky, K.A. Timiryazev and V.N. Vavilov were not used as source for massive enlightenment as the authorities did not consider these works efficient enough for momentary practical use. And even though the Soviet government paid direct attention to the damage inflicted to the environment during the Great Patriotic War and took action on various issues including air pollution and industrial waste, the only major positive aftermath was the rising popularity of biology among the post-war generation. As soon as that generation required time to grow up and gain a foothold in the new and unstable field of science, the major significant investigations on the subject of nature protection had seen the light by late 70-s by virtue of V.M. Senkevich and I.D. Zverev. But the brand new approach to studying the environment – the approach that assumed biocentric point of view and formation of ecological thinking found its place in the secondary education course only in the mid-80-s. [5]

Despite the questionably stable political situation in the region in the beginning of the 90-s and the economically destructive disintegration of the USSR, this decade appeared to hold the rise of the ecological concern at the state level as the most momentous state initiatives were brought to life between 1990 and 1995.

Since 1994 ecology is either a substantial discipline or at least the compulsory section in the discipline of biology in secondary schools of Russian Federation.[5] The eleven-year course attempts to provide two

types of environmental consciousness in the younger generations: the consumer's point of view – where the main goal is reduced to the overall superficial points of nature protection, such as prevention of water and air pollution, and the professional view in an embryonic state – the view that explains the mechanisms of biosphere and the humanity's real place in it.[6]

Due to its short history, environmental education in Russia does not affect social aspects of life as it does in the world's most economically developed countries, but the seed is sown and is yet to bear its fruit in the foreseeable future.

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ECOLOGICAL SAFETY OF RUSSIA
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Abstract: Russia needs to ensure environmental security, because the human impact on the environment is increasing. To do this, it is necessary to change economic priorities to environmental ones, ensure environmental education of the country's population and focus on the experience of other countries. Such as the concept of green growth in OECD countries.

Key words: ecological crisis, environmental safety, ecological culture, environmental education of the country's population, ecology, pollution, "GREEN" growth, environment.

Introduction. The theme of ecological safety is actual in the whole world. Ecological safety is a "process of providing of security of vitally important interests of personality, societies from the real or potential threats created by the anthropogenic or natural affecting environment" [1, p. 251].

This problem began to form in the 60s of the last century. In Russia, the first World Intergovernmental Conference on Education for the Environment was organized in 1977 under the leadership of UNEP and UNESCO.

The reasons for the unfavorable ecological situation in the regions of Russia:

yearly increasing growth of harmful industrial and domestic waste; irrational management of forestry and land use; release into the atmosphere and discharge into the reservoirs of harmful substances; contamination by radiation and chemical waste of land; destruction of chemical weapons, radioactive waste; problems of imperfection of legal normative acts in the field of environmental legislation.

Ensuring Russia's environmental security in the context of sustainable development is possible if economic priorities are changed to environmental ones. For this, it is necessary to educate the public, increase citizens' responsibility for environmental crimes, and introduce non-waste production. All this is a long process. This is necessary to protect the interests of citizens, their rights to live in an environmentally safe environment [2].

Russia is the third largest country in terms of harmful emissions (after the US and China) and the 106th among the world's countries in terms of environmental well-being.

Currently, the legislation of our country provides for many laws and administrative legal acts that ensure the environmental safety of citizens. For example, articles 41 and 42 of the Constitution of the Russian Federation, as well as part 3 of Article 55 and part 2 of Article 74 of the Constitution of the Russian Federation, the document "Fundamentals of State Policy in the Field of Ecological Development of the Russian Federation for the Period to 2030" [3].

One of the concepts developed to ensure environmentally sustainable development and environmental management, and environmental safety is the concept of "green" growth. The concept of "green" growth is developing in OECD countries and in partner countries of the organization. The main objectives of the "green" growth strategy are to improve the management of resources and increase labor productivity, stimulate economic activity, and create new environmentally friendly production technologies.

When developing national legislation in the field of environmental safety, it is necessary to take into account the influence of chemical compounds and genetically modified products on human health [4].

In conclusion, environmental safety is one of the main conditions for sustainable development of the state. This requires the use of environmentally friendly resource-saving technologies, the development of low-waste and non-waste production, recycling, environmental education of the population, the use of the experience of other countries.

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**ECOLOGICAL CHARACTERISTICS OF THE SAKHA
REPUBLIC (YAKUTIA)**

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Abstract. Ecological situation of the Republic of Yakutia has been described as having many environmental advantages despite obvious environmental constraints of the extreme natural and climatic conditions. Environmental policy of Yakutia authorities shows a wise and careful attitude to the nature conservation issues creating specially protected natural areas.

Key words: regional environmental policy, Yakutia, Sakha Republic, pristine purity, wildlife conservation practices.

Introduction. The Sakha Republic (Yakutia) is located in the north-eastern part of the Eurasian mainland and is the largest region of the Russian Federation. Over 40% of the territory of the republic is beyond the Arctic Circle. The length of Yakutia in the latitudinal direction is 2500 km, in the longitudinal one - 2000 km [1]. The Sakha Republic (Yakutia) borders on the west with Krasnoyarsk Territory, in the south-west - with the Irkutsk Region, in the south - with the Amur and Chita Regions, in the southeast - with the Khabarovsk Territory, in the east - with the Magadan Region and the Chukotka Autonomous District. The total length of the sea coastline exceeds 4,500 km [2].

The Sakha Republic (Yakutia) is divided into 34 regions (districts) and 2 city districts by administrative-territorial division. The capital is Yakutsk city. By territorial division is part of the Far Eastern Federal District [1].

The territory of Yakutia is within three time zones, their difference with Moscow time is +6, +7, + 8 hours [1].

Ecological situation of the Republic. Yakutia is characterized by a variety of natural conditions and resources, which is due to the physico-geographical location of its territory. The major part is occupied by mountains and plateaus, which account for more than 2/3 of its surface, and only 1/3 is located on the lowland. The highest point - Mount Pobeda (3147 m) - is located on the ridge of Chersky [1].

Environmental advantages.

1) The territory of Yakutia is within the limits of four geographical zones: taiga forests (almost 80% of the area), tundra, forest-tundra and the arctic desert.

2) Today, the world scientific community recognizes that the nature of Yakutia is a unique property of mankind, a promising reserve of the planet's biosphere. More than 90% of the territory of Yakutia is unaffected or only slightly affected by industrial development.

3) Yakutia is one of the rare places on the planet where the pristine purity of nature is preserved,

4) The Republic of Sakha (Yakutia) has an amazing variety of flora and fauna. It accounts for more than 30% of the wild nature of Russia, or more than 10% of the world [1].

5) Yakutia's ecosystems have a still undisturbed natural course of natural processes.

6) There are 485 glaciers with a total area of 413 sq. km. and with a reserve of fresh water about 2 thousand cubic meters in the mountains of Eastern Yakutia [1].

7) 700 thousand rivers and over 800 thousand lakes embellish Yakutia.

8) Many rivers are navigable, such as Lena (4400 km), Vilyui (2650), Aldan (2273), Kolyma (2129), Indigirka (1726), Olekma (1436), Anabar (939) and Yana (872 km) [2]

Environmental constraints.

1) The natural and climatic conditions of Yakutia in many respects are characterized as extreme. The climate is sharply continental, characterized by a prolonged winter and short summer periods. The maximum amplitude of the average temperatures of the coldest month – January, and the warmest – July – is 70-75° C.

2) Almost the entire continental territory of Yakutia is a zone of continuous permafrost. The average thickness of the frozen layer reaches 300-400 m, and in the Vilyui river basin - 1500 m: this is the maximum freezing of rocks on the globe.

3) On average in the territory of Yakutia the duration of the heating season is 8-9 months per year, in the Arctic zone it is year-round [1].

4) The most acute environmental problems of the republic are the coming air, water and soil pollution

5) The problems of landfills and of the processing of solid domestic and industrial waste (mostly, the extractive industry waste) are to be solved.

Environmental policy of Yakutia.

In accordance with the law of the Sakha Republic "On Specially Protected Natural Territories" about three million hectares of land are classified as specially protected natural areas. Currently, these natural areas (more than 200 units) constitute one-fourth of the territory of the Republic.

The Botanical Garden of the Institute of Biological Problems of the Cryolithozone of the Siberian Branch of the Russian Academy of Sciences should be mentioned as well as the famous "Lena Pillars", which in 2012 was included in the UNESCO World Heritage List, and the State Wildlife preserve "Jansky mammoths". These areas are one of the most amazing places on our planet [3].

But despite the existing environmental problems, the Sakha Republic (Yakutia) has everything necessary for building a prosperous life – richness of natural resources, long-term strategic development plans, a stable social situation, positive dynamics of natural growth, a high educational level of the population and relatively young population.

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**THE IMPORTANCE OF SECURITY OF GEOGRAPHIC
INFORMATION SYSTEM**

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Abstract: The development of the Internet brings convenience to society, but also to bring geographic information security risks, geographic information plays an increasingly important role in the national economy and national defense construction. Based on the importance of geographic information, the state and the army put a lot of manpower, material and financial resources to build the different types of geographic information database to meet the needs of the country, defense, community of geographic information. Geo-strategic position of information has become increasingly prominent. With information technology, digital technology and network the rapid development of geographic information access, access, use, dissemination, copying, storing and so become very convenient, the ensuing geographic information security and regulatory issues are more prominent.

Key words: geographic information, information security.

First, the meaning of geographic information

Geographic Information refers to the spatial geography distribution of information, it represents the surface of the object and the environment inherent in the number, quality, distribution characteristics, contact and regular figures, text, graphics, images and so on. It is an explanation of the geographic data that expresses the relationship between geographical features and geographic phenomena. Geographic data is a symbolic representation of the relationship between geographical features and phenomena, including spatial location, attribute characteristics (attribute) and time domain characteristics. Number of spatial positions

According to the location of the description. Spatial location, attribute and time are the three basic elements of geospatial analysis.

Second, The concept of information security

Information security is a dynamic process of protecting the security attributes, functions and efficiency of information and information systems.

Information security in the connotation contains two meanings, one is the security of information systems, the second is the security of

information, and the protection of information security is the ultimate goal. This includes four aspects: First, physical security, physical security refers to the protection of computer equipment, facilities and other media from earthquakes, fires, floods and other environmental damage. Second, safe operation, operating safety refers to the security system to protect the security time limit, to provide a set of security measures to protect the information during the operation of the security. Third, the information ontology security, information ontology security is to prevent the information resources are deliberately or accidentally to change, destroy or make the information is illegal, unauthorized state tampering and control. That is, to ensure the integrity of information security, confidentiality, availability and controllability. Fourth, the management of security, management security refers to the relevant laws and safety management tools to ensure the safety of information systems operations.

Third, The Importance of Geographic Information Security

Geographic information security is the scope of information security, geographic information security should include the basic content of information security, its fundamental meaning is through a variety of computer, network, cryptography and information security technology to protect geographic information in the public communication network transmission, Exchange, storage and management of information confidentiality, integrity and authenticity, and the dissemination of information and content control, so as to ensure that geographic information flows on the network or static storage is not unauthorized access or destruction of unauthorized users.

Compared with other information security, geographic information security has its particularity: a network of storage and transmission of certain geographical information involved in the country's political, military, economic interests, involving the country's secrets. This geographical information only part of the individual, some units have the right to produce, have and use, other individuals, institutions can not access, use, possession, modify the data. Second, to a certain extent, geographic information security is more complicated than the general information security, because geographic information is mostly massive data, with multi-source isomorphic and distributed in different regions. Third, due to the production and maintenance of geographic information, the human and material resources are huge, so

the copyright protection of geographical information and the security of copyright transactions are very prominent.

Fourth, Geographic Information Security in the Big Data Age

In recent years, the geographic information industry to an average annual rate of more than 25% of the rapid development of a new economic growth point. Geographic information applications have grown from professional applications to the public and government departments. In the military field, geographic information has been widely valued and applied, and become the basis of modern war. In the current network, digital era, digital information digital products access, access, dissemination, replication more convenient, leading to serious violations, repeated violations of violations, security issues become increasingly prominent. Geographic information security involves national security, scientific and technological cooperation and intellectual property protection and other aspects, is to restrict economic science and technology sustainable development of one of the important factors. Therefore, the research on the protection technology of geographic information security is necessary not only to provide strong technical support for the rapid and healthy development of the geographic information industry. At the same time, the development of technology also provides technical basis for the development of scientific and reasonable information security policy and law.

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10. ACTUAL PROBLEMS OF MODERN EDUCATION

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WHAT IS CYBERCHEATING?

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Abstract: The 21st century classroom has nothing in common with its predecessors, equipped with online tools and content that students can access from an ever-evolving range of personal mobile devices. However, the access, that these devices provide to vast web resources, popular social networks, and real-time communication has led to a new kind of cheating.

Key words: cheating, cybercheating, high-tech cheating, problems of modern education, digital natives

Introduction: If you search on the Internet “how to cheat on a test”, you get about 4 940 000 links for 0,67 seconds. More than 361 000 of them are videos with thorough instructions and useful tips. Nearly each article or video contains various techniques of cheating using electronic devices.

A new look of an old problem: During the whole history of education young people have been looking for alternative ways of getting the best results. But why is this problem so serious nowadays? The answer lies in the development of technologies, which affected all spheres of human activity, including the process of getting knowledge.

It cannot be denied, that the age of the Internet has brought into our life fascinating things. A century ago it used to be impossible to imagine being able to make acquaintance with people all over the world, organizing events or working from another country without any difficulties. Unfortunately, some people use it with foul purposes, such as cheating.

Actually, an appropriate name for this process is *high-tech cheating* or *cybercheating*. According to a recent poll 35% of students admit to cheating with cell phones. The technical evolution is extremely powerful, and now adolescents maintain a strong connection with their electronic devices, even when they are not supposed to.

It used to be a time when, children had to be really creative, because it was rather complicated to cheat at examination without getting any attention. That is why students decided:

1. Using ultra-violet pens and invisible ink
2. Writing notes on the inside cover of a water bottle label and sticking it back on
3. Drawing answers on an eraser, which is then flipped over
4. Writing notes on fingernails
5. Hollowing out pens to hide secret notes etc.

As you can see, the list can be endless. And while creating all these types of notes, they are learning at least some basic things due to the fact, that hand writing helps to retain knowledge. During a process of hand writing the brain summarizes and comprehends information. Unfortunately, nowadays, those who have no intention of working hard do not face any problems – all they need is their phone with an access to the Internet. There, they will find anything asked in the test.

Now then, what are the cybercheating techniques in 2010-s? They include:

1. Searching for the information
2. Searching for the tasks, that are already done
3. Consulting via chat groups with classmates or parents
4. Having a photo of the notes and so on.

To solve the problem of cheating online, it appears to be logical to think of reasons of such behavior. Here are the main ones:

- Lack of effort. Many students do not understand why the knowledge of certain subjects is important. They may be sure, that it is more advantageous to concentrate on their social life or other disciplines.

- Pressure. Unfortunately, at the present time our education system is organized so that marks are evaluated more than real talents of students. It is not bad at all, because we are not able to demonstrate our skills to everybody, what is possible speaking of marks. Many parents judge their children only looking at their grades as well.

- Lack of enforcement of rules. As a high school student I can assure you, that if there is even a slight opportunity to cheat, students do it. They do not mind sacrificing their fairness in return for several points allowing them to enter university or get honors diploma. On the other hand, when a teacher has a reputation of being rigorous and equitable there is definitely no will to cheat in his presence.

In conclusion: It should be mentioned, that in order to cope with high-tech cheating teachers take numerous restrictive measures. They may collect cell phones, monitor examinations by means of hidden cameras, establish certain sets of rules. Nevertheless, there is one more idea, which is widely supported within teachers – it is an open dialogue between a tutor and pupils. We are absolutely sure, that if a tutor demonstrates them the difference between research and ‘search’, reminds the significance of learning everything thoroughly, and underlines the value of persistence and hard work, it will definitely prevent so-called “digital-natives” from high-tech cheating.

11. ACTUAL PROBLEMS OF THE HUMANITIES AND SOCIAL SCIENCES

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WHY DO WE CHOOSE RUSSIA?

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Abstract: Personal appreciation of another country – Russia is represented. Through individual look the attempt to penetrate the milieu is done.

Key words: Russian culture, discovering the country, language, customs.

Introduction. My name is Adule Boismoreau, I am 21 years old. I am a French student taking a “Hospitality and Tourism” bachelor degree. It’s my second year at ESTHUA University, in Angers, a beautiful small city in the west of France. In link with my pathways, I had to choose one country, more exactly one city with a university to study at for one semester.

At the moment, I am living in Moscow. I will stay there for 4 months of my study. In this essay, I want to try to explain the reason why I am here and the effects it has on my life.

I. Why have I chosen to travel? Why have I mainly decided to go to Russia?

«One destination is never a place, but a new way of seeing things», said Henri Miller [1]. To my mind, this quote is an evidence because I think travelling is not an easy task for everyone. Indeed, when someone decides to travel, it shows he or she has the desire to take a step in his or her own life, it’s a reflection on oneself and it’s the way to get out of his or her own comfort zone. One trip allows you to change one’s state of mind, try to understand new habits, new customs and of course learn a new language. All these things are the reasons why I have chosen to travel.

Russia was my first choice. First of all, I have been learning Russian since my first year of my bachelor degree and also because I

have always been curious about this country. At the beginning, I was afraid of Moscow: this capital city seemed too large to me, and that's the reason why my first decision was to go to Saint Petersburg, "a human size" city.

Russia is not an area of specialization for French travellers. For example, I am the first person in my family to have ever decided to come to this beautiful place. I think the main problem is due to the very difficult procedure to get a visa. What's more, it's also very expensive. On the other hand, the language is an issue given that it is not widely spread at French high schools or universities. Furthermore, few people unfortunately speak English in Moscow. Actually, I am really surprised by that and I think it is a huge problem for tourism development.

After a few months there, I am able to analyze what I appreciate here. First of all, I think there is an incoherence between what is old and what is new here. Indeed, in Moscow, we can talk with conservative people or with persons who want to discover modern art or foreign food, for example. Another instance that really surprised me was when I was in Serguiev Possad, a small city, in the middle of nowhere... Near the monastery, we found a fast food restaurant... Both conservatism and new constructions create an interesting diversity of people, architecture, like in Arbat Street, for example. Otherwise, what I love in this beautiful city is the fact there is always an activity to do, discover or try. Finally, Russian culture is fascinating. This city is better than what I could have ever thought of it before.

II. Russia and the link with my prospects for the future.

During my first year as a student in the field of "Hospitality and Tourism", we had to choose a new language, either Chinese or Russian. To my mind, my choice was an evidence because I think it's really complicated, even impossible to learn this Asian language in contrast with Russian. That's the reason why I chose this language and I am glad of it.

Therefore, for the last year of my bachelor degree I need to specialize in a subject between Hospitality, Event organization or Tourism. I have decided to select "Hospitality". According to me, it's a great opportunity for me to learn Russian and study Hospitality management. In France, meeting Russian people is common but not anywhere: most of the time, you can only meet some of them in high-

quality places. Indeed, here and in my country, I can see they are attracted by luxury: for example, in the GUM, or TSUM all the brands are French.

In future, I would like to work in a Luxury Hotel, as a receptionist manager. In France, like everywhere, Russians and the inhabitants of the Emirate of Dubai are the most widespread in this kind of places. Most of the time, “The new rich” as they are called in France are able to stay in hotels for long periods of time and can spend a lot of money. That is why I think it is important to know this language. They will indeed feel honoured if the staff can talk with them. Moreover, to understand their desires and satisfy them, I need to know their habits and customs. Now, after three months here, I am able to understand all these points.

Conclusion. I think it is a great opportunity for me to be here. Discovering this country through its history, language and customs is very interesting. All these things are really different from French culture and it’s a self-improvement for my future profession.

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ENVIRONMENTAL EDUCATION

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Abstract: Environmental education is an important and necessary component of modern education, to achieve a better future for humanity and the whole planet. To achieve such goals as the education of people in the eco-consciousness, special measures must be taken in education. Then move on to a more environmentally friendly type of life.

Key words: ecology, ecological education, ecological problems, problems of environmental education.

Introduction

First of all, let's see what environmental education is and why it is necessary in the modern world. Environmental education is a continuous

learning process aimed at assimilating, systematizing knowledge about the environment, acquiring skills and skills in environmental protection activities and developing a common ecological culture.

The system of continuous environmental education, in the context of the existing state policy in the field of environmental education, is a set of successive environmental educational programs that correspond to state educational standards, and educational institutions that implement them, regardless of their organizational and legal forms.

The information ecological educational space of Russia includes specially protected natural territories and historical and cultural complexes, man-made landscapes, production and service objects (spheres of science, culture, art, sports, tourism), other spheres of people's life serving the purposes of forming ecological culture.

Methodology

One of the important problems of our time in the context of the ecological crisis is the problem of finding new approaches in education. The most important the condition at which this problem is solved - this is a change in the paradigm of social development.

In a situation of fracture of history, when on the agenda day raised the issue of human survival planet Earth, we need fundamental changes in the human mind in general and ecological in particular. And, as already noted above, the ways achieve positive results in this two: technological and moral. In the aspect such consideration is important for a person's consciousness is:

- a person's awareness of the need for an early solution of moral problems relation to technological;
- the formation of a single common planetary morality, that is, the approval of the ecological imperative "not to damage the biosphere";
- non-admission of the warrior, violence in conflict resolution;
- the feeling of a "general planetary community".

It happened historically that humanity used everything for itself and in the modern world it needs to be changed with the help of ecological education.

In our study, the concept structure of education can be as a model, including:

1. Training. The quality of education is set by state educational standards and general cultural intellectual and communicative abilities.

2. Production process, which includes educational games, research games laboratories, problem groups, educational projects, etc.

3. Integrated development of promising products and technologies for its production.

4. Organization of leisure and health, implemented through the activities of clubs, sports organizations, etc.

5. Upbringing, i.e., the process of formation of world outlook settings. Globalization of civilizational processes will lead to globalization and environmental education. Development of environmental projects will be possible with their internationalization, and Therefore the Russian educational concept should be integrated into the world. Ultimately, the internationalization of the environmental issues of knowledge should internationalize all social activities on Earth. In this way. Environmental education, in globalization of environmental problems, becomes the basis for the formation of environmental culture, which can significantly affect the mentality and human activity in the plan their noospheric sound. Higher education as an institution for training highly qualified personnel should play a leading role in this process.

Conclusion

Modern environmental problems, exacerbating the relationship of man and nature to the degree of their crisis, require close attention. The ecological paradigm is the result not only of philosophy, but of the whole complex of modern sciences. The fact is that ecology permeates all spheres of human knowledge and activity. There are various conceptual approaches that outline ways to overcome their ecological and spiritual crisis, but all agree that today it is necessary to develop a Strategy that would contribute to human survival and strengthen the sustainable development of society. The formation of a new paradigm of thinking is a complex, contradictory process, but without this a person cannot survive on the planet Earth. It is necessary to make an evolutionary transition from the anthropocentric to the eco-anthropocentric relation in the system "Man - Nature - Society".

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WHY RUSSIA AND WHY MOSCOW?

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Abstract: The passionate look on the city which impressed and forced to be fallen in love with it is intermingled with the rational analysis of pros and cons of being here in Russia while studying within the university exchange programme in Moscow. The feedback of this analysis is the evaluation of this sort of experience as a challenge that the smallest step in the right direction ends up being the biggest step of your life.

Key words: exploration of the world – the culture, history, people, language, special places; the Russian language, the Slovene language.

Russia has always fascinated me with its size, after all it is the largest country in the world. When I was young there was a nice game 'My first wonderful exploration of the world', where you could travel around and get to know with different countries. Russia has stayed in my special memory with the Saint Basil's Cathedral in Moscow. I was wondering how it is on the other side of the world (it is not totally the other side, but I thought so, when I was 7 years old). When I went to the faculty to study the Slovene language I got an insight to the other Slavic languages and I wanted to learn one of them, so I chose Russian, there were just basics, but it was a good thing to start. Four years later I decided to visit Moscow for the first time on the New Year.

Moscow looked like a fairy-tale during the winter, everything was so magical and alive. I didn't want to think that this time will come to an end. It was harder to say goodbye to this beautiful city than to anyone before. When I returned home I was talking about Moscow all the time and everybody said: 'Oh, again Moscow'. They didn't understand that I had just fallen in love with this city. People asked me why Moscow, why Russia, why it is special. It was hard to answer and explain, I just knew that I felt some connection between me and this city. It is like the connection between people, with some you have it and with others you don't. I just made a decision that I needed to return soon. Inside me there was always this energy – I always want something to happen around me. This feeling when you try to reach as much as possible, otherwise you have a feeling that you are missing something.

My ambitions brought me to the Faculty of Economics and my first study exchange. I thought that a little less than half a year in Moscow would be really a great experience. I hadn't forgotten Moscow since the last visit. And suddenly the day came to leave my country and say hello to Russia, I was afraid and excited at the same time, because that time I didn't come like a tourist, but Moscow became my new home for 5 months. It was like meeting an old friend which I hadn't seen for a long time.

Moscow impressed me again. The culture, history, people, language, special places – all this that make it so extraordinary. Getting to know the city is like getting to know the person. At first everything excites you, small special spots, the best places to eat, to have a walk, having fun, ... You try to explore every piece of them. It is like on a date, you have a lot of questions because you want to know something more about this person and the same situation is with the city. The city can't speak for itself, so you must learn it slowly step by step. The beauty is in things that are hidden at first sight, there are secrets about the city that only local people know, good and bad ones.

The interesting thing related to living in a new city is when you aren't a native speaker and you are learning new words and their context. You become like a little child trying to remember all phrases and use them in conversation. The thing that makes this even more interesting is language interference which causes embarrassment and a lot of laughter. In my country, Slovenia, 'ponos' means 'гордость' and in Russia – diarrhea. In Croatia which is on the border with Slovenia, when they say

that they have a better life than someone else it sounds like 'Ja imam bolji život', but in Russia 'У меня большой живот' means 'I have a big belly'. There are a lot of similarly sounding words which mean totally opposite things and that is why learning this language is so funny and it is also interesting. I am living here memorizing new streets, beautifully decorated stores, chatting with barista at my favourite coffee shop, passing by familiar people which work in this area, the thing that makes this place like the second home is new friends which become your new family here. Happy and funny time spent together, retelling stories how we met or what happened to us. Joint lectures and our brilliant ideas when we try to figure out the right answer and just making up some things that pop into our minds.

First months are really hard, you miss your partner, the family. You are not sure if you are capable of that, but they stand by your side and encourage you. Bad time can come, something happens, a bad day or night, a quarrel with your beloved people, a failed trip. At some point your new city scares you and makes you ask yourself whether it was the right decision. But at this very moment you realize how much actually this city has given you. It is about the process of stepping out from your comfort zone. Sometimes the smallest step in the right direction ends up being the biggest step of your life. You become a totally new person and after that you start appreciating this new home even more. And when your family comes to visit you, you become a tour guy, trying to show them beautiful places from the perspective you see it and you say proudly that is my city. It becomes home even if it is thousand kilometers away from your roots and at this very moment you realize that you feel comfortable and settled here.

Azar Nafisi said in her book 'Reading Lolita in Tehran': "You get a strange feeling when you're about to leave a place, like you'll not only miss the people you love but you'll miss the person you are now at this time and this place, because you'll never be this way ever again." [1]. This is related to Katarina in Moscow. No matter if I am about to leave this place, I will always be able to return. Distance makes heart searching for lost loves, in this case love is my Moscow and returning will be remarkable.

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Thibault Fenain

WHY DID I CHOOSE TO COME TO RUSSIA?

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Abstract: The explanation of the choice in favor of the exchange programme in Russia is presented. The author develops the idea from two angles – the professional way and his personal desire and motivation to be here in Russia.

Key words: country with the great past, the Russian language, traditional customs.

Introduction. I'm Fenain Thibault, I'm twenty years old and I come from a city in the West of France, Angers. This city is a city with rich past, there are a lot of castles and historic places. I'm studying Tourism and Hospitality at the University of Angers, ESTHUA (Superior School of Tourism and Hospitality). For my second semester of my second year of bachelor degree, we had the possibility to choose an exchange to study economy and management at another university all around the world. I chose to study abroad, to leave my daily routine and my European comfort to discover new possibilities. I never hesitated about this choice of destination. I decided to study at the State University of Management in Moscow. Why did I choose to come to Moscow? So, this essay will be structured in two parts, first of all, I will develop the professional way and secondly, I'm going to explain my personal desire and motivation to be here.

Professional motivation. As I said in the introduction, I'm a tourism student and I want to be specialized in luxury hospitality. So, when I was accepted in this university, we had to choose between the Chinese language and the Russian language. Most of the students in my promotion decided to take the Chinese language, but to me it was

different, before to be accepted, I knew what I was going to choose, the Russian language. In my opinion this language is promising and underestimated by most of the European population. This emerging country is really important for the future of tourism and to my mind, to be able to speak Russian or to be fluent in this language is more than a tool for my future.

In the future I want to be in charge of an important hotel in a big city. With the entrance of tourists of the emerging country like Russia, they open a new market. To retain these customers, it's important to show them that we are able to speak their languages and to understand all their desires. France is an attractive place for Russian or more for the rich Russian customers, I wanted to work in a five-star hotel, so to speak Russian is more than an obligation. These customers are really in a demand and all is calculated for them, to receive them isn't random.

Learning here in Moscow is a good way to understand the culture of a typical Russian person, living like them allows me to understand their routine and the traditional customs and the way of life. This knowledge should be a strength for me to get a better job. A manager could be really interested by my profile because I could be more reactive, and I could understand quicker the wish of a Russian customer. Due to my experience in hospitality, I know that a Russian person appreciates when a foreign person is interested in his culture and could speak a bit with him.

Personal wish. To come in Russia was first of all to make my dream come true. Most of the population are dreaming about the United States of America, that's normal because in French classes most of our language classes speak on the American dream, etc. But I don't know how to explain but I dreamed of Moscow and this beautiful Red Square. Since I'm young, I'm really fascinated by Eastern countries... So, I had the project to visit Moscow one day. When I knew that I could get the opportunity to make a semester in Russia, I did not hesitate a minute. My choice was made. So, when I came for the first time to Red Square and saw this Saint-Basile Church, I thought that I was dreaming! So, to be in Moscow is my personal desire.

Secondly, I'm a great fan of history and especially war history. This is why I really wanted to be here in Russia, this country has a great past and also has common history with my country. So, since I'm here I understand a lot of things, culture, language, customs.... So, I spent a lot

of my time to discover this beautiful city and I'm going to travel to Saint Petersburg, the second important city in Russia. In my opinion it's luck to be here and to get familiar with all this culture.

Thirdly, my personal wish was to distinguish myself, that's not really common for a French guy to come to Russia for study. As I've said, most of the French students are dreaming about American Universities, but in my opinion they miss something, yes, America must be great, but the American lifestyle is so close to European lifestyle, of course our country is inspired by American culture. I really wanted to discover the new things, to change my mind and to get my own vision of Russia. Probably the center of Moscow isn't a good example of this culture because the center of this city looks like that of other big cities in the world, but we live in Vykhino, that looks more Russian, it's a great experience for me. I'm really glad to say that I've lived here for 3 months and a half.

To conclude my essay, I choose Russia for professional motivation, to get a better future, to do what I want to do. To be happy to work every day, in my opinion is essential in our world where your job is getting more important. Russia is a great experience, I made my dream come true and for sure that won't be my last trip here, I hope to come back here really often, to discover this vast country with this fabulous culture.

Tsybisov D.A.

**CAUSES OF AGGRESSIVE BEHAVIOR OF ADOLESCENTS:
ECOLOGICAL ASPECT**

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Abstract. In recent years, the number of adolescents having a well expressed aggressivity has been considerably increased. Physiologically, the humanity keeps the same parameters; consequently, the reasons should be societal. We have tried to analyze the patterns of society as an ecosystem in order to reveal the triggers of teens' aggression. A pilot experiment results are under discussion.

Key words: aggressive behavior, ecology, adolescence

Adolescents show an aggressive behavior, and sometimes they do not even realize that a feelings of anger leads them to violence [6]; sometimes, on the contrary, they adore this sense of readiness to attack [5]. The peculiarity of the present time is that young people are sure that such behavior is normal, that there are norms of bullying, or more, inhumanity. This may be due to various reasons, and we will try to understand this in more detail from the ecological point of view [1].

The purpose of the study is to identify the causes of the manifestation of aggression in adolescence.

To achieve this goal, the following research tasks were set:

- Define a scientific understanding of "aggression" and "aggressive behavior";
- Consider positive and negative features of an aggressive behavior;
- Conduct a survey among adolescents,

The method chosen for this study is the well-known aggression questionnaire by Arnold Buss [2; 3] in use from 1961.

The author defined three dimensions characterizing aggression:

- 1) Physical / verbal: aggression is expressed by gestures or words;
- 2) Active / passive: it corresponds to a positive action that the individual omits voluntarily to realize;
- 3) Direct / indirect: the victim is physically present or absent.

The combination of these three dimensions makes it possible to define eight different types of aggression. The interest of this classification is essentially to illustrate the diversity of behaviors likely to be identified as aggressive.

The material of this study: 12 people were interviewed, all of them are first-year bachelor students of the Ecological Faculty of the RUDN University.

Results.

Nine people have an average level of aggression, 2 people, above the norm and 1 below the norm of aggression.

As A. Buss' questionnaire has been under discussion during 50 years and is still being used, it should be considered as a good one, but, unfortunately, it has been translated from English into Russian in quite an approximate manner; consequently, the reliability of the obtained results require verification by additional test, or a continuation of the

research or repetition of the above-mentioned test in order to be sure of the contingency of the results.

The basis of empirical research is the concept of aggression and aggressive behavior in psychology. Aggression is a behavior aimed at causing physical or moral harm to another person. David M. Buss [4] proposes an evolutionary psychology research stressing human sex differences, social status, reputation, jealousy. Any conduct that threatens or harms others is aggressive: physical aggression, verbal aggression, anger, and hostility.

On the basis of the conducted research we can formulate a conclusion about the concept of aggression. We think that an aggression is always intentional. A person can hurt (in a moral sense) and be innocent of the consequences if this person did not mention to hurt. If we consider aggression both from the point of view of evolution and from the needs of personal development, it should not be considered negative. Throughout these processes, aggression has helped people survive in adverse natural and social conditions defend one's interests. Aggression is a life force. We do see the difference between a hostile act or a confrontation based on antipathy and a youth deviant behavior that can become a criminal action.

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DIFFERENCES BETWEEN SOUTH AND NORTH
CULTURES IN CHINA

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Abstract: Difference between North and South refers to the difference between South China and North China. Due to the difference of geographical location, climatic characteristics, history and culture, customs and political and economic activities between the two sides in our country, the significant differences between the natural landscape and the cultural landscape in the north and the south of our country have been caused.

Key words: differences, South in China, North in China, cultures.

Cultural boundaries: North-South China culture is roughly based on the Yangtze River. North of the Yangtze River belongs to the northern culture, south of the Yangtze River belongs to the South culture. These two cultures are completely different, the art of Nanya north custom; building Nanqi Beixiong; costumes on the South show north Park; diet on the south sweet north salty, and so on. These are often more poetic in the literati's writing, the south is the misty rain pavilion, spring flowers moon; the north is the long river sunset, the Great Wall extraterrestrial, as well as gold and iron horses, lingering, gentle, slender, Rough, simply ...

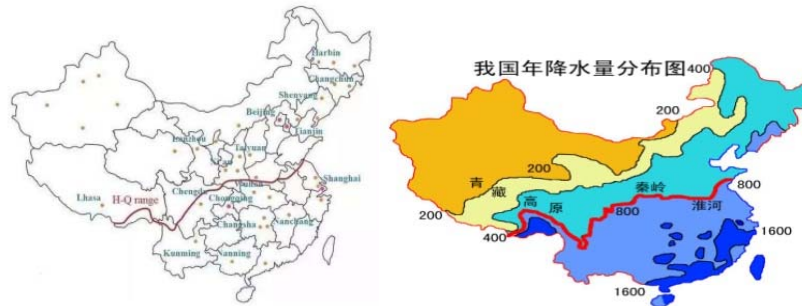


Figure 1. China North-South dividing line.

Humanities differences: South via the northern government. In general, the military and political activities in northern China are active and the economy and culture in the south are developed. The North has always been the political center of China. The Qin, Han and Tang dynasties are all capital cities of Chang'an (now Xi'an). After the founding of new China, Beijing became the capital of the People's Republic of China, National political status. The South has been China's economic center since ancient times. It has developed agriculture and is also the major distribution center for trade ports. In the modern era, as Western science and culture first came from the southeastern China coast, it promoted the economic development in the South and made the South in economic and cultural Advantages continue to strengthen. Therefore, "the two officials in the north, the ones in the south who are engaged in business," these two statements reflect well the different political and economic mentality in North and South China.

Architectural differences: Southern tip Peking. The slope of the roof of the Chinese residents in the north and south of the southern slope gradually slowed from south to north. The roof of the South is high and sharp, because the annual precipitation in the south is large and the climate is hot. The tall and pointed roof is not only conducive to drainage but also conducive to ventilation and heat dissipation. Due to less precipitation in the north, the roof is mostly built flat-roofed, so that building materials can be saved as well as a place for drying the crops. In the meantime, due to the heavy snowfall in northeast China and the snow melting in spring, melted snow can reduce the pressure on the roof. The phenomenon of roof tops and tips is also common. In addition, the garden architecture in

southern China is lightweight, delicate and exquisitely carved. It has a coherent interior and exterior space and is well-structured. The Humble Administrator's Garden in Suzhou is a typical example. The northern garden architecture is gentle and rigorous, simple and simple, with clear boundaries between the interior and exterior spaces. According to Chen Congzhou, a famous Chinese garden scientist, "Southern China is a shelter with many open areas, northwardly litters, and more enclosed." Thus, starting from adapting to the environment and living in comfort, Southern Architecture pays attention to ventilation and heat dissipation.



Figure 2. China North-South architectural differences (left north; right south).

Differences in eating: North of rice, north of noodles, is generally used to describe differences in diet traditionally between northern and southern regions. Southerners love to eat rice and rice noodles, the traditional northerners (North China, Northwest) like pasta, in fact, this is different from the north and south of the agricultural production structure. The climate in southern China is hot and rainy. Most of the cultivated land is mainly paddy fields. Therefore, local farmers planted rice growing in high-temperature and rain-prone areas according to local conditions. In northern China, however, rainfall is lower and temperatures are lower. Most cultivated land is dry land, which is suitable for growing wheat with high-cold and drought resistance. The so-called "what kind of food to eat," the long run, they have developed a traditional north rice diet.



Figure 3. South of rice north of noodles.

Conclusion: The reasons for the two major systems of North and South of Chinese culture, their respective origins, their evolution and development, and their contribution to the overall development of Chinese culture, are further immersed in sweet blood. We hope that we can give our own opinions on these superficial matters in the future and also hope that we can obtain the grasps and correctives of Tibetans.

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**МОЛОДЕЖЬ XXI ВЕКА
В НАУЧНОМ, КУЛЬТУРНОМ И ОБРАЗОВАТЕЛЬНОМ
ПРОСТРАНСТВЕ:
НОВЫЕ ЦЕННОСТИ, ВЫЗОВЫ, ПЕРСПЕКТИВЫ**

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