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BIOSPHERE COMPATIBILITY: HUMAN, REGION, TECHNOLOGIES

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N.A. POPKOVA

SOCIO-ECOLOGICAL "CONSTRUCTION GAMES" AS A METHOD OF IMPROVING ENVIRONMENTAL AWARENESS

Most measures designed to improve the environmental condition of cities become powerless without encouraging people's environmental awareness. An approach inspiring people to participate in this improvement based on a sense of solidarity and social cohesion is necessary. The article explores an unusual approach for collective working with natural plants — socio-ecological "construction games".

The practice of international social movement "tactical urbanism" were analyzed. Most significant international and domestic examples of "tactical urbanism", such as Park(ing) Day, guerilla gardening, socio-ecological experiment "Green Lantern", were described and evaluated. These activities are usually aimed to draw attention of government and citizens to the problem of environmental sustainability and livability. It also helps to encourage people to participate in improving their own living conditions, promote environment friendly lifestyle.

Based on reviewed examples, several general factors of "construction games" effectivity were determined: sociability, informative value, inspirational ability, "on-your-eyes" effect, engaging in the process of co-creation along with the nature.

The results show that "construction games" could play a significant role in promoting environmental awareness. The personal experience of socially and environmentally valuable activity helps to establish a strong feeling of responsibility for the future of our planet.

Key words: *sustainable development, tactical urbanism, guerilla gardening, environmental awareness, construction using live plants.*

P.S. FEDOROVA, V.I. KOLCHUNOV

QUALITATIVE FORMATION - THE FUTURE OF AN ECOLOGICAL SECURITY

From a position of a paradigm of biosphere compatibility of cities and settlements questions of quality of modern formation – as the future of an ecological security are considered. Leaning on principles of transformation of the environment of ability to live in safe and developing the person, the analysis of the state educational standards of last generations as the tool of maintenance of tomorrow of an ecological security is given. It is shown, that operating educational standards insufficiently full reflect a modern technological level of an ecological security and are not correlated with professional standards. The professional component in educational standards defined competences should be strengthened various, depending on a direction of the future activity of the young expert.

Key words: *formation, an ecological security, biosphere compatibility, the environment of ability to live, professionalism.*

V.N. ALEKSEENKO, Y.L. MIKHEYEVA

EFFECTS OF CLIMATIC FACTORS ON THE TEMPERATURE AND HUMIDITY CONDITIONS FENCING STRUCTURES ORTHODOX CHURCHES XVIII-XIX CENTURIES

The article discusses the influence of the main factors of the environment, such as temperature and humidity of the outside air, solar radiation, temperature and wind speed through the formation of a microclimate temperature and humidity conditions walling in operating the Orthodox churches built in 18-19 centuries on the territory of the Crimean Peninsula . Currently, this topic is still relevant, because the problem of creating a favorable climate in the church that promotes the preservation of historical and cultural values practically considered and the potential opportunities and features of the natural conditions of the area are not used to the full.

In the course of research on the basis of the newly made measurements and extensive material existing meteorological process has been studied the impact of complex climatic parameters on the heat-humidity properties and walling. This approach stems from the fact that construction sites are not under the influence of individual factors and interconnected in complex components which can strengthen or weaken the effect of each other. It is noted that these studies will determine the dynamics of microclimate at different seasonal variations that will allow to evaluate and to use the positive aspects of climate each side separately horizon for warm and cold periods.

Due to the nature of each of the Russian church and the natural environment to create a design solution conditioning systems require an individual approach. In this regard, these studies can be called the starting point in the study of temperature and humidity regime structures and the internal environment of the Crimea Orthodox churches not only in the restoration and reconstruction of existing facilities, and new construction.

Key words: *climatic parameters, microclimate Orthodox churches, temperature and humidity conditions, solar radiation, temperature and wind regime.*

V.I. LEDENEV, I.V. MATVEEVA, O.O. FEDOROVA

ELECTROMAGNETIC RADIATION. PRESENT SITUATION OF ITS EVALUATION AND REGULATION IN URBAN ENVIRONMENT

The development and introduction of new technologies and devices that generate electromagnetic radiation led to the formation in the urban environment of powerful artificial electromagnetic fields that affect the human body in terms of everyday living. Electromagnetic radiation impact on living organisms, including the human as well as process equipment employed. This requires conducting extensive research in the field of evaluation of the characteristics of the electromagnetic fields generated in the urban environment, their standardization and the development of measures to protect the population from electromagnetic influences. This article gives an analysis of the current condition assessment and valuation of electromagnetic fields in the urban environment and are given suggestions for improvement. It is shown that the requirements to ensure the environmentally safe electromagnetic environment in the urban environment should be carried out of its regular monitoring of the development of the necessary documents for this purpose. At present, electromagnetic monitoring, the concept itself and its tasks are greatly simplified or distorted. Major problems currently arise in the characteristics of normalization of electromagnetic fields. Most of the existing Russian regulatory documents related to professional use documents. Sanitary-hygienic documents necessary for the assessment and protection of residential areas and population from the effects of external sources of electromagnetic radiation, is not enough, questions of regulation and the development of methods of protection against electromagnetic effects are poorly understood, there is no method of an integrated approach to address these challenges within the construction industry, regulatory documents for certain types of buildings according to their destination.

Key words: *electromagnetic radiation, rationing electromagnetic radiation, protection against electromagnetic influences, urban environment.*

N.V. BAKAEVA, O.V. BUNINA, A.Yu.NATAROVA, A.Yu. IGIN

METHODOLOGY OF ASSESSMENT OF HOUSING STOCK FROM THE POSITION OF ITS COMFORT

Providing the population with housing that meets modern requirements of comfort and safety, is one of the most important socio-economic problems of the society and the state. Today, two-thirds of Russians would like to improve their living conditions, about half a million waiting for housing in order to discharge the state's obligations, and another 4.5 million people stand in line for decades to receive social housing. Of particular relevance and greatest significance of this problem is in major cities of the country due to their high population. The article considers the problems of the housing sector in terms of socio-economic problems of the society and the state. Studied the concept of "comfort" in the aspect of urban planning and architectural Sciences. The factors of comfort of the home. Taking into account the authoritative opinions of experts proposed evaluation scale for determining the level of comfort of residential premises. A technique is developed that contains ten of the most important criteria of comfort of the home, the significance of which is revealed in the survey population, and the algorithm of estimation of the level of comfort of the housing stock to improve the quality of premises, based on the integral index – ratio level of comfort. For interpretation of scores of the developed scale reflecting levels of comfort of residential premises. The conducted research allows to highlight some essential features of the living environment of buildings, the combination of which determines its perception and assessment of how comfortable or uncomfortable. The fundamental task of architecture and construction science in the future is, first of all, quantitative characteristics of the concept of "comfort". This characterization needs to be transformed into the system of town-planning regulations and meet social standards.

Key words: waste coal, lightweight brick, the fuel and energy complex urban farming.

B.I. SHILIN, A.A. ULIANOV

EXPERIMENTAL AND THEORETICAL STUDY OF THE DISPERSE COMPOSITION OF WATER-OIL EMULSIONS

The article presents the results of experimental and theoretical studies aimed at improved utilization of the coalescence filter systems for cleaning industrial and domestic wastewater as sources of natural water polluted by industrial waste, lose the ability to cleanse itself. One of the types of pollution man-made disasters, making the water unfit for drinking and use in industry are admixtures of petroleum products.

All of these compounds have a high toxicity that determines a great danger to the environment. Impurity of petroleum products together with the effluent into the soil, in natural and artificial reservoirs that supply water in civil and industrial water supply.

In connection with the foregoing, the study on the effectiveness of delay droplets of water emulsified in the oil, the fibrous filter materials is of great interest for energy systems of urban settlements.

The efficiency of fibrous filter material is largely determined by the quality of the emulsion, i.e., the degree of dispersion phase, its distribution in the environment and concentration. The objective of our studies was to identify the distribution of drops in size.

To compare the results of the experiment conducted with the data obtained for physico-mathematical stochastic model describing the mechanism of dehydration of organic oils by filtration, was conducted a computational experiment in the investigated points in the factor space. The comparison of experimental and calculated data shows that the simulation results overestimated compared to the real.

However, despite these shortcomings, the error of the model does not exceed 20%. It correctly reproduces the physical basis of the mechanism of dehydration of motor oils.

Key words: coalescence, dispersion, sedimentation, mathematical model., the active experiment.

A.V. GORODKOV, I.V. KOZONOGINA

RESEARCH AND ASSESSMENT OF ENVIRONMENTAL NEAR TRUNK ROAD AREAS OF THE CITY BY THE FACTOR OF POLLUTION OF AUTOMOBILE TRANSPORT

The state of the environment of residential areas of large cities which are most vulnerable to a number of environmental factors, including - physical and chemical impacts of traffic flows. Relevance of the research state of the atmosphere in these areas due to the proximity to the highways of the red lines of residential development and the presence of pedestrian areas. The paper analyzes the values of concentrations in ambient air and the most common toxic ingredients: carbon dioxide (CO₂), nitrogen dioxide (NO₂), lead (Pb). Use a standard method of assessment of pollution concentrations using automatic analyzer continuous monitoring (GANK-4). Sampling and analysis of air samples was carried out at a distance of 7.5 m from the axis of the strip nearest the roadway. The relationship of air pollution concentrations with the parameters of the intensity of traffic flow. On an example of Bryansk, it found that levels of nitrogen dioxide concentrations exceed the maximum allowable concentration of 1.06 ... 2.69 times. The concentrations of pollution in urban areas with carbon dioxide and lead are characterized as subthreshold, especially in the case of adverse aeration mode, which prevents dispersal of atmospheric pollutants. Depending on the ingredients revealed concentrations primagistralnyh zones of the city on the intensity of traffic. Overall, the total level of pollution pedestrian areas, depending on the intensity of traffic and the meteorological regime, indicates the formation of dangerous environmental parameters considered areas of a large city.

Key words: air, the concentration of pollutants, automobile transport, carbon dioxide, nitrogen dioxide, plumbum, the maximum permissible concentration.

P.A. SIDYAKIN, E.N. BELAYA

THE IMPACT OF TRANSPORT INFRASTRUCTURE ON THE ECOLOGICAL STATUS OF THE CITY-RESORTS OF THE CAUCASIAN MINERAL WATERS

This article discusses the problem of noise and dust pollution resorts towns. The basic directions of the transport infrastructure interact with the urban environment. Identified adverse environmental factors such as dust and noise pollution, have a detrimental effect on the human body, which is contrary to the principles of the strategic development of the city of Pyatigorsk as a center of sanitary-resort. In order to optimize the ecological state of the urban environment is investigated noise impact of transport infrastructure on the ecological well-being of the territories, for example, childcare facilities in Pyatigorsk, in view of the fact that the body of a child in the most sensitive period of growth and development to adverse environmental conditions.

2017 is announced year of ecology on the basis of the decree of the Russian President to draw an attention of society to an ecological situation in the territory of Russia, to preservation of the existing ecosystem, ensuring variety of flora and fauna. It is important to change the relation of citizens to environmental problems on more responsible, conscious and careful. A number of environmental problems which are not possible for ignoring anymore in many regions of our country is revealed. Urgent need in improvement and maintaining of a safe surrounding medium arose. These issues need to be resolved from federal to the local level because a comprehensive approach will be able to provide and guarantee high-quality execution and suitable control of actions which are directed to preservation of the healthy environment: minimization of noise impact on the population, decrease of dust emissions from transport and the enterprises.

Key words: noise, dust, urban environment, environmental factors, transport, health, population, kindergartens.

T.V. DONTSOVA

THE METHOD OF SELECTION OF ALTERNATIVE SITES AT THE STAGE OF PRE-DESIGN DECISIONS IN CONSTRUCTION BASED ON THE EVALUATION OF AIR POLLUTION

The method of selection of alternative sites based on the balance method, developed for making pre-project decisions at the design stage EIA in the construction industry in large cities. To study background air pollution introduced the criterion of environmental safety – srednebelaya integral criterion of pollution of the atmosphere of the area J for which the calculation is carried out in developed with the participation of the author of the program "Balances 1.0" average pollutant concentration for each group summation polluted area received from contaminating areas and then the sum of the concentrations of each group summation of harmful substances is divided on their MAC. As a measure for determining the smallest impact on the level of pollution acts characteristic of the sample means of the parameters of the differential distribution functions of the nonzero values srednemirovogo integral criterion of pollution of the atmosphere. So how is the single source of pollution, the predominant values srednemirovogo integral criterion of pollution are to 0, so the calculation of the percentage of nonzero values of criterion J. When choosing areas to accommodate the new plant is enough three alternatives with the lowest value of the sample mean. In the article this method on the example of Volgograd through the placement of new industrial enterprises in each district of the city. As a result of calculations was obtained a sample distribution characteristics of srednemirovogo integral criterion of pollution of the atmosphere to all parts of the city, the best of which the new production was Voroshilov. Developed methods of selection of alternative sites can be used in all the large industrial cities of the Russian Federation.

Key words: *balance method, assessment of the impact on the environment, average balance integral criterion of pollution of the atmosphere, alternative sites.*

S.G. SHEINA, D.V. SHISHKUNOVA

RESEARCH OF SYSTEMS RESETTLEMENT ON THE EXAMPLE OF THE ROSTOV REGION

Tendencies of modern development of system of agglomeration are characterized by development of the certain cities centers (the centers of agglomerations) that is promoted by high financing, increase in level of welfare servicing, improvement of an ecological situation of the territory and quality of life in these cities. Also the provision aggravates excessiveness of sovereignty "in functioning of the large cities of various administrative-territorial educations entering zones of influence. In this regard more and more urgent is a search of opportunities of town-planning and legal resolution of conflicts in relations with the cities centers aiming by all means to expand city line, and the settlements which are persistently resisting any feeble efforts" in their limits, using self-government mechanisms. The small cities turn more and more into a territorial allowance where objects from which the large city, instead of the being outlined social and territorial economic balances is freed are pushed out. Reducing farmlands, the areas of the woods, recreations becomes result of such rash urban policy. An important task is development of the system of management, aimed at the interconnected development of the large cities centers and peripheries.

Only reasonable management of development of agglomerations provides complete use for the benefit of all national economy of their outstanding potential and their reformative role. All management decisions shall be based on the principle of suboptimization (proceeding from interests of all area in general, but not separate parts). Only by development of an agglomerative area there shall be an agglomeration development, and not just the certain cities which are kernels of agglomerations. In this article the analysis which allows to determine belonging of system of resettlement to agglomeration pofaktorno is carried out.

Key words: *agglomeration, settlement system, economic and social development, supporting frame, conurbation, urban area.*

THE FOREST AS AN OBJECT OF LIFE IN THE CITY

*The problem of pollution of the urban environment is considered in the article. Bryansk is a large industrial center with 406 thousand residents and over 1,200 businesses. Air pollutants are formaldehyde and 0.8 of maximum permissible concentration (MPC), carbon monoxide – 0.5 MPC, benzo(a)pyrene – 0.2 MPC, suspended substances – 0,9 MPC, nitrogen dioxide – 1,3 MPC, sulphur dioxide – 0,04 MPC. To ensure the purity of the natural environment to human life must green zones, influencing the evolution of the biosphere, being an integral part of the full functioning of cities and, like any industrial enterprise, require the support of functioning and development. The goal of the research is development of mathematical models for growth of pine stands of natural origin in dry and very dry forests of the Bryansk region taking into account natural environmental factors and inventory indices of the forest Fund. The problems are: 1) identification of natural environmental factors influencing the performance of individual taxonomic characteristics of pine stands in conditions of dry and very dry coniferous forests; 2) development of mathematical models of the dynamics of inventory indices of these stands as a result of these massive forest inventory based on identified relationships of natural environmental factors taxation characteristics of forest stands. The object of the study are stands of Scots Pine (*Pinus sylvestris*) on 647 forest areas with an area of 1736 ha, growing in dry and very dry forests (A0-1), as the most accessible and convenient for people. Using correlation of inventory indices of forest stands to natural and environmental factors involved 34 variables, developed the mathematical model to build a table of growth on a typological basis. The coefficients in the mathematical model is obtained at a significance level of $\alpha < 0,05$. Model validation is performed according to the 57 plots. The error in determination of forest inventory indice is less than $\pm 5\%$. The relationship of natural environmental factors with taxation characteristics of forest stands is identified for the first time. Models and tables of growth are proposed to production. The research extends the knowledge about the growth of pine stands that are directly related to the cultivation of healthy spaces to perform their protective functions in the green zones of the cities.*

Key words: *pollutants, green zone, tree, diameter, height, margin, variables, mathematical modeling, natural environmental factors, the growth of forest stands, urban environment.*