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BIOSPHERE COMPATIBILITY: HUMAN, REGION, TECHNOLOGIES

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O. V. ASTAFIEVA, S.E. DERYAGINA

MODERN ASPECTS OF SETTING OF NORMS OF NEGATIVE IMPACT ON THE ENVIRONMENT

The article substantiates the need to improve the state regulation of the environment in the Russian Federation. The goals, objectives and main innovations of the perspective mechanism of regulation – the system of technological setting of norms of negative impact on the environment (NIE) on the basis of the best available technologies (BAT) are defined. It is shown that in accordance with the basic principle of modern management systems - the principle of consistent improvement, there is a need for continuous monitoring of new technological and technical developments, first of all Russian. It's given a brief socio-economic and environmental assessment of the situation in the Ural Federal district (UrFD), on the territory of which there are almost 24 percent of the objects of economic activity, exerting significant NIE (objects I category) and related to the fields of application of BAT. Marked by the activity of economic entities of the UrFD, as in the development of information and technical reference book (ITRB) on the BAT and in the testing of new ecological legislation. It was defined that more than 50 percent of the NIE facilities, which will primarily begin to introduce a new system of regulation in the district, are oil and gas production facilities that are part of companies whose environmental policy already includes the use of BAT for consistently reducing of the negative impact on the environment and environmental risks. It is accented attention on the difficultie of transition to automated accounting of emissions into the atmosphere, which is a prerequisite for obtaining an integrated environmental permit (IEP). Analysis of the available information on the content of the Federal project "Introduction of the best available technologies" allowed to formulate the positive aspects and disadvantages of the proposed for realisation of project.

Key words: negative impact, environment, setting of norms, best available technologie.

O.P. SIDELNIKOVA

MONITORING OF RADIATION AND ENVIRONMENTAL CHARACTERISTICS OF BUILDINGS

Human economic activity leads to a significant redistribution of natural radionuclides in the environment. Radiation background in buildings is considered as one of the main types of radiation exposure on the population, since a person spends most of his time indoors. Currently, with the adoption of federal laws: "On the radiation safety of the population" No. 3-FZ 09.01.1996, "On the Sanitary and Epidemiological Welfare of the Population" No. 52-FZ 30.03.1999, and also on the "Radiation Safety Standards "(NRB-99/2009)," Basic Sanitary Rules for Ensuring Radiation Safety "(OSPORB-99/2009), approaches to the organization of radiation control in the construction industry and, consequently, to the organization of radiation safety control of the population, have changed in many ways. The article deals with the problems of ensuring radiation and environmental safety in the construction of buildings. The need for research on the radiation-ecological characteristics of buildings is shown. An important problem for the construction industry is the radiation and hygienic support of technological processes and construction. In many ways, the solution of the problems related to improving of the radiation safety of building complexes depends on the implementation of legislation connected with population restrictions from exposure of natural radionuclides. The results of large-scale studies of the effective specific activity of natural radionuclides in building materials and industrial waste produced and used in the Volgograd region are presented in this article. It has been established that construction materials produced in the Volgograd region, in accordance with national legislative and regulatory requirements, belong to class 1 and can be used for the construction of residential and public buildings. There have been presented the results of the survey on the radon content in the air of residential buildings from various building materials, as well as the density of radon fluxes from the soil. Radiation monitoring of construction sites is necessary to ensure the radiation safety of the population.

Keywords: radiation and environmental safety, natural radionuclides, effective specific activity, equivalent volumetric activity.

T. E. KHETSURIANI, E. V. CHAPLYGINA, T. V. ZHUKOVA , E. D. KHETSURIANI

THE VALUE OF ORGANOLEPTIC INDICATORS OF DRINKING WATER THE ROSTOV REGION, AS FACTORS OF THE EPIDEMIC SAFETY OF POPULATION HEALTH

The article presents an overview of the mass development of cyanobacteria (blue-green algae) in the don river of the Rostov region, which leads to the phenomenon, received in the literature the name of harmful "flowering" of water. The harmfulness of the mass development of cyanobacteria is changes in organoleptic characteristics of drinking water, which lead to the production of a large number of dangerous to human health and animal toxins, to reduce water quality, violation of the aesthetic appearance of the reservoir, the loss of useful human properties of the aquatic ecosystem and are factors of epidemic safety of public health. Experimental studies of the properties of cyanobacteria and toxins produced by blue-green algae are presented. The first studies were carried out at the pilot plant on the technology of purification of flowering don water to ensure environmental safety of drinking water and public health.

Key words: organoleptic factors, "flowering" of water, epidemic safety, toxins, ecosystem, cyanobacteria.

V. Z. ABDRAKHIMOV

IMPROVING ENVIRONMENTAL SAFETY THROUGH THE USE OF SLAG MATERIAL AND SPENT CATALYST IN THE PRODUCTION OF CERAMIC BRICKS ON THE BASIS OF BEIDELLITE CLAY

The efficiency of all industries should be assessed from the point of view of the balance between the weight of the main product and the volume of generated industrial waste, therefore, the aim of the present work is — to the receiving using the tonnage of waste fuel and energy complex of ash and slag material and waste chemistry, spent catalyst, one of the most material-intensive products of the national economy — a ceramic brick on the basis of beidellite clay. Fuel and energy complex is one of the main "pollutants" of the environment. These are emissions into the atmosphere (48% of all emissions into the atmosphere), wastewater discharges (36% of all discharges), as well as the formation of solid waste (30% of all solid pollutants). The basic technical properties of ash and slag material used as autosites and burnable additive and spent catalyst, is used as aluminum-containing autosites to increase marochetti brick. Studies have shown that the spent catalyst IM-2201 Novokuibyshevsk petrochemical plant refers to nanotechnology raw materials. The effect of the introduction of nanoscale particles is fundamentally expressed in the fact that not only an additional interface appears in the system, but also a carrier of quantum mechanical manifestations. The presence of nanoscale particles in the system increases the volume of adsorption and chemisorption bound water and reduces the volume of capillary-bound and free water, which leads to an increase in the plasticity of the ceramic mass and strength parameters. Ceramic brick with high physical and mechanical properties is obtained on the basis of beidellite clay with the use of ash-slag material and spent catalyst. Innovative proposals for the use of waste fuel and energy complex and petrochemical industry in the production of ceramic bricks, the novelty of which is confirmed by two Patents of the Russian Federation.

Key words: ash-slag material, spent catalyst, beidellite clay, ceramic brick.

O. E. SADKOVSKAYA

METHODS OF RENOVATION OF LOW-RISE RESIDENTIAL DEVELOPMENTS IN CONNECTION WITH LANDSCAPE RECULTIVATION (ON THE EXAMPLE OF ROSTOV REGION)

One of major factors of deterioration in a microclimate of urban development in the conditions of the Rostov region, is degradation of landscapes owing to violation of water balance of the territory. In article the main reasons for violation of water balance which included natural features of the region, a consequence of anthropogenic influence, climatic changes, etc. are considered. Examples from the world practice of urban planning, which show the relevance and effectiveness of compensation for the effects of anthropogenic impacts and climate change using planning methods, are given. The experience of the United States, the Netherlands, Canada and other countries that use water-saving technologies in planning is considered. The relationship of urban planning and the formation of sustainable urban landscapes is shown. The integration of water-saving technologies into the urban environment can be a means of optimizing landscapes and a means of creating unique urban spaces. Reclamation of the urban landscape of low-rise buildings is a necessary step in creating a modern and comfortable urban environment in the conditions of the Rostov region. Methods are proposed to compensate for negative changes in urban landscapes that can be applied at the stage of urban planning. As well as the proposed methods can be applied in the reconstruction of urban low-rise buildings. The considered methods concern not only urban landscapes, but also agricultural landscapes that surround small and medium-sized cities of the Rostov region. In article the author's concept of the organization of the low housing estate on a basis Urban- facies is submitted. Planning methods of regulation of water balance of the territory on the basis of models the ecological protective of landscapes are offered: an ecological core, an ecological corridor and an ecological barrier and also analogs from town-planning practice are considered. The reclamation of urban landscapes based on urban planning methods for regulating the water balance of the territory will allow creating unique urban spaces that are resistant to local climatic conditions and the possible consequences of climate change.

Keywords: Rostov region, water balance of the territory, stability of the urban environment, landscape, microclimate, ecological framework, low building.

N.M. VETROVA, T.A. IVANENKO, A.A. GAYSAROVA, E.E. MANNANOV

THE PROBLEM OF ECOLOGICAL RISK ZONES IN THE COASTAL AREAS OF THE CRIMEA

Ensuring environmentally safe conditions for the use and development of coastal areas, which usually have a high level of urbanization, is an important engineering and socio-economic task, since it requires taking into account environmental factors of natural and man-made environments when optimizing planning solutions for development and organization of activities. The work is devoted to the study and identification of areas of environmental risk in the current resort and recreational, residential and industrial areas, complex environmental conditions and prospects for the development of coastal areas of the Crimea (for example, recreational complexes of the southern coast of Crimea). When conducting research of problem areas, the structure of the drainage system, with an emphasis on stormwater, areas of municipal solid waste (MSW) and the impact of highways, has been studied in detail. Conducted researches allowed to establish for all investigated water objects changes of water quality due to the flow of non-canalized domestic sewage, the storm sewers, sewage waters of individual small private enterprises, the unorganized surface drain during rains, a high recreational load on separate beaches. The highest level of pollution, including microbiological, coastal marine waters are observed when they are to several sources of pollution at the same time. Considered possible measures to reduce or overcome negative processes in the environment. In order to improve the ecological condition and recreational value of coastal beaches, it is necessary to redistribute the flow of residents throughout the coastal zone, to solve the problems of water supply, sanitation of territories for the placement of solid waste and other waste, and to take preventive and technical measures for the protection of coastal recreational zones. The research results can be used in the development of projects for the reconstruction of the territory of coastal settlements of the southern coast of Crimea while ensuring environmental safety.

Keywords: environmental risk zone, coastal area, environmental safety, environmental engineering solutions.

D.V. LAPTEVA, M.I. AFONINA

VARIANTS OF THE DEVELOPMENT OF THE DISTURBED TERRITORY OF THE NAGATINSKAYA FLOODPLAIN OF MOSCOW - HISTORY, COMPARISON, ANALYSIS

Modern development contributes to the need to transform inefficiently used spaces that have a promising location in the structure of cities. For the implementation of ambitious projects, the territory of the Nagatinskaya floodplain (about 100 hectares) in the Southern Administrative District of Moscow is considered. The favorable location is near the center with the center of the capital, on the territory of the artificial peninsula, in close proximity to the natural territories of the south of the capital, which are in contact with a part of the former industrial zone of the

I.A. Likhachev (ZIL). It took almost three decades to find solutions related to the arrangement of the territory. The long period of choice of options due to the scale of the proposals, subjective reasons and even a change in the status of the territory. In the implementation of ambitious projects using the Nagatinskaya floodplain took part: Hermann Tilke (project of the route for Formula 1, 2000), Normann Forster (the largest building in the world, 2007), Russian and international companies: Soyuzmultfilm, DreamWorks, GK "Regions" and many others. However, despite the attractiveness of the territory, its size and position in the city, interesting and necessary projects were not implemented. All the proposed options for arranging combine recreational and sports orientation, water use, environmental and social components. The information collected as a result of the work allowed us to obtain data for an objective assessment of the Dream Island project. The authors proposed to use the SWOT-analysis for structuring urban information and assessing the prospects of construction. The weight of the main factors of the method was determined: Strength (strength) -27%, Weakness -10%, Opportunities (possibilities) -37%, Troubles (problem, ie possible threats) - 26%, which fully explains the difficulties with the implementation of this large-scale project of use of disturbed territory. The revealed values explain the relationship between the theoretical justification and the real situation.

Keywords: *Nogatinskaya floodplain, indoor theme park for children, development of the territory, SWOT-analysis, plant them. I.A. Likhachev, disturbed territory.*

D.A. ELISTRATOV

THE DETERMINATION OF THE CONDITIONS OF THE PLANNING DEVELOPMENT SHOPPING CENTERS PARKING SPACES

The article presents the results of determining the necessary conditions for the planning development of shopping centers parking spaces for the sustainable development and functioning of the transport system. The developed method is based on the consideration of the indicator of passenger traffic distribution by modes of transport, as the main indicator which characterizing the degree of balance of development transport system.

The study is based on the analysis of existing methods and approaches to the formation of an effective transport system. The algorithm, which is theoretically based on the solution of the optimization problem of mathematical programming, the use of which in combination with mathematical modeling allows, in the author's opinion, to achieve this goal. The total time of transport correspondence is used as an indicator of optimization. As restrictions, the criteria of transport and planning conditions for the placement of objects of shopping centers, which affect the distribution of passenger traffic by modes of transport, and as a consequence determine the planning development of their Parking spaces, are applied and justified.

On the basis of mathematical modeling of transport flows the area of influence shopping centers appointment depending on their power (volume of floor spaces) is proved. With the help of formulation and finding a solution to the optimization problem of mathematical programming, the required distribution of passenger traffic by modes of transport for sustainable development and functioning of the transport and communication framework of the territory is determined.

According to the results of solving the problem, the classification of shopping centers territories., depending on the transport and planning conditions of placement is proposed. Conclusions about the feasibility of using the results of the study in the next stages of the study.

Keywords: *functional and planning structure, the territorial transport system, steady development of the territory, objects of trade household purpose, planning development, parking space, access conditions, distribution of a passenger traffic on means of transport.*

A. V. POPOV

PSYCHOLOGICAL PECULIARITIES OF THE ARCHITECTURAL FORMATION OF DWELLING FOR STUDENTS

The existing dormitories seem to be excessively communized: they do not have any isolated emotional and psychological spaces that people need physically and psychologically for personal rest and reflection. Such an organization of residential premises of colleges does not meet many vital needs of students, as well as significantly reduces the learning effectiveness, which causes the relevance of this study.

The article considers and summarizes the conclusions of modern psychologists concerning the interaction of students living in student dormitories. We analyzed the need for both communication and development, and solitude to rest from the social and psychological stress and for reflection. The problems of forming zones for various functional processes in an accommodation unit of student dormitories have been considered due to the need to create a comfortable environment, optimally ensuring efficient basic scientific and educational activities of students, taking into account the psychological characteristics of youth development and issues of setting personal space and comfort zones by architectural means. Based on the analysis of the above features, we proposed schemes of functional zoning, recommended for use in student accommodation units.

The objects of the study are buildings and their complexes designed for college students' accommodation. The subject is the formation of comfortable architectural solutions of student dwelling, corresponding to the specifics of students' psychological development and academic work.

The purpose of the study is to develop proposals for the formation of the architecture of objects designed to accommodate students, taking into account their psychological features.

Key words: dormitory, student campus, campus, student, private space, psychological comfort, design of dormitories.

D.M. NEMCHINOV

ENSURING THE PEDESTRIAN'S SAFETY DESIGN OF URBAN STREET CROSSWALKS

The article presents an analysis of positive practices for ensuring the safety of pedestrians at the intersection of the city streets carriageway, as well as a description of some innovations of regulatory and technical documents, including an increased number of cases when a safety island can be arranged at a pedestrian crossing. requirements for providing visibility at a pedestrian crossing to determine the minimum distance of visibility at a pedestrian crossing based on the time required pedestrians for crossing the roadway, recommended options for using ground unregulated pedestrian crossings on trapezoidal artificial irregularities according to GOST R 52605; traffic flow) and Z-shaped (also in the direction of the traffic flow), the requirements for the size of the security island have been established to allow put bicycle inside of safety island, a recommended set of measures to reduce the vehicle speed and describes the types of activities and describes a method of their application, describes methods zones device with reduced travel speed - residential and school zones, set requirements for turboroundabouts and methods of their design.

Keywords: crosswalk, traffic safety, visibility, safety island.

I.P. PRYADKO

THE ROLE OF HIGHWAYS IN CREATING A BIOSPHERE-COMPATIBLE URBAN SPACE: RUSSIAN METROPOLITAN EXPERIENCE

In this research project the author analyzes a most relevant problem, that is, biosphere compatibility of urban space planning in major megalopolises; this problem comprises the launch of a comfortable transport system, convenient transport routes free from any traffic jams in urban streets and highways. The author considers different methods for organization of convenient transport routes in Moscow. The author believes that a comfortable transport network is a main factor for sustainable development of the urban economy that may help the city to restore its main functions. The author has employed the retrospective analysis of the materials produced by the media, namely, news items published in Moscow and Moscow Metropolitan area in respect of the transport organization patterns. The author has also employed the method of historical comparisons, as well as the general scientific methods of deduction, induction, and deduction by analogy. The author collected the source material by launching a questionnaire-based survey among the residents of the capital. The survey served to help the author to find out the main trends in the organization of the urban space and to identify the transport preferences of urban residents. Moscow transport development trends include broadened bus lanes, rent-a-bicycle stations, construction of hubs both on the outskirts of Moscow and in its centre, and liquidation of traffic "bottlenecks". Innovations include replacement of trolley bus and bus routes by electric bus routes. The retrospective analysis of e-transport networks in Europe and North America is offered to identify the current needs of European megalopolises. The survey findings can be invested into the organization of the Moscow transport network.

Keywords: biosphere compatibility city, urban transport, transport network, bus routes, trolley bus routes, hubs, electric buses.