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Abstracts

Scientific basis for analysis and reduction of emergency risks in the regions of Siberia and the North

N. A. Makhmutov, corresponding member of RAS

Working group on analysis of risk and safety problems under the President of the Russian Academy of Sciences

M. P. Lebedev, corresponding member of RAS, A. M. Bolshakov, Doctor of Technical Sciences

Larionov Institute of Physical and Technical Problems of the North of Siberian Division of RAS

M. M. Gadenin, Candidate of Technical Sciences

A. A. Blagonravov Institute of Machines Science of RAS

It is shown that the continuous reduction of strategic risks in development of the technosphere of Siberia and the North as an element of the overall development of the country is being connected, on one hand, with considering the technosphere as an integral element, which affects the sustainability of the region and the potential risks of emergencies at its hazardous facilities, and, on the other hand, — with the need to consider such facilities of the region as individual potential hazard sources, capable of affecting the overall condition of the technosphere. At the same time it is noted that there has not yet been adopted a single regulatory approach to analysis of all categories of facilities, hazards and emergency protection systems. However one should have in mind that the use of risk criteria for these purposes allows considering them as universal parameters for identification of the hazard level of the facilities in technosphere of Siberia and the North and managing the development and implementation of measures aimed at reducing these levels and mitigation of consequences of the relevant events.

Keywords: *technogenic safety, risk, emergency situations, regions of Siberia and the North, climatic conditions, damage, accidents, catastrophes, classification of technosphere facilities, probability, safety management*

Arctic zone of the Russian Federation in the system of national interests of the country

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A wide range of problems related to identification of the role and position of the Arctic zone of Russia in the strategic national interests of the country is considered. The need for a legal definition of the Arctic zone as a separate object of the state policy is justified. A system of target indicators (parameters) is suggested for threshold values of development of the Arctic region and assurance of its economic safety.

Keywords: *strategic national interests, natural resources, transport system, management of social and economic development, administrative and territorial districts, target indicators.*

Human resources — the main problem of the North development

V. N. Polovinkin, Doctor of Technical Sciences

FSUE "Krylov State Scientific Centre"

Role and position of human resources in development of the northern region is covered, as well as the impact of the problem on development of the innovative economics in the North. The historical background of Russian policy regarding the peoples of the North is presented. The problems of indigenous people of the North are described and importance of preservation of their culture is stressed.

Keywords: *human resources, human potential, labour market.*

Rescue equipment for ice conditions: the current situation and potential solutions

K. E. Sazonov, Doctor of Technical Sciences

FSUE "Krylov State Scientific Centre"

Various tools and equipment designed to rescue the crews of ships and sea structures in case of emergency situations in ice conditions are considered. Analysis of main deficiencies of the rescue equipment available and being developed is given. A conclusion is made that development of flying rescue vehicles capable of airborne evacuation is required.

Keywords: *rescue equipment, ice conditions, ice propulsion quality and controllability.*

On the issue of the need to enhance the approaches to implementation of state housing policy at the municipal level

S. Yu. Kutsenko, Candidate of Economical Sciences

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Problems connected with implementation of the housing policy in the Russian Federation at the municipal level are considered. Summarized description of approaches and tools for regulation of the housing market in the developed countries is given. It is demonstrated that the current policy of regulating the housing market cannot be considered as a system approach due to a number of objective and subjective reasons. The studies were performed using statistical data for the northern and arctic regions of the Russian Federation.

Keywords: *housing policy, municipal districts, regulatory basis, support mechanisms, development of territories, infrastructure*

Информация

Features, limitations and directions of development of agricultural economy in the arctic and subarctic territories of the European North-East

V. A. Ivanov, Doctor of Economical Sciences

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The role of the agricultural sector is demonstrated; conditions are considered; analysis of availability of resources is given in terms of arctic and subarctic territories of the European North-East. Conditions in the agricultural sector are shown for 1960-1980 and for the conditions of introduction of market economy. The analytical material allows identification of the contemporary social and economic problems of the industry and suggests directions of its development.

Keywords: *agricultural economy, natural conditions, resource potential, specialization, agricultural reforms, problems, directions of development, arctic subregion.*

The timeliness of the problem of hydrocarbon resources development in the ice-covered waters of the Arctic Ocean

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Provisions are given that illustrate the need to start, under the state aegis, an urgent development of underwater-underice vessels for development of hydrocarbon resources in the conditions of long-term/permanently frozen waters of the Arctic Ocean; advantages of positioning vessels about 100 m below the drift ice are described and an original design of floating oil and gas drilling and production vessels is suggested.

Keywords: *underwater oil and gas structures, wells, ice fields, nuclear power.*

Introduction of the technology for production of gaseous and liquid methane from methane hydrate — the way to develop the power resources of the North

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Methods of producing free methane from methane hydrate are described. Their advantages and disadvantages are discussed. A diagram of a reactor unit for production of gaseous and liquid methane from methane hydrate is given.

Keywords: *methane hydrate, gas hydrate, Arctic, Antarctic.*

Environmental diversity of ichtiofauna of freshwater system of Belomorsko-Kulovsky Peninsula (Archangelsk Region)

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Northern subsidiary of FSUE "Knipovich Polar research and development institute of sea fishery and oceanography"

V. I. Pavlenko, Doctor of Economical Sciences

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Biological diversity, systematic status, attribution to faunistic systems as well as environmental characteristics of freshwater fish of the Belomorsko-Kulovsky Peninsula are considered.

Keywords: *ichtiofauna, biological diversity, taxonomic status, faunistic systems, characteristics of nutrition, natural reproduction, rare species.*

Dependency of sagitta length on the length of White Sea herring body (*Clupea pallasii marisalbi*)

G. V. Fuks

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Results of data processing related to the interdependency of the length of White Sea herring body and length of sagitta are provided. Material gathered in three areas of the White Sea was used. Dependency of the sagitta length and the length of fish body was found mathematically.

Keywords: *sagitta length, body length, dependency, differences, mathematical method, correlation.*

Comprehensive reconstruction of the temperature of the Russian Arctic over the last two millennia

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Quantitative reconstruction of the average annual temperature in the North-East Europe over the past two millennia is presented. The reconstruction is based on indirect climatic data - dendrochronological, palynological and historic information. The reconstruction is intended specially for construction of relative chronology of climatic and historical events in the region. Five variants of the reconstruction depending on different calibration and verification procedures were studied. Comparison of reconstruction of decade values of average annual temperatures in the North-East Europe with regional and hemisphere values shows that major climatic events were manifested both across the Northern hemisphere, and within its separate regions. At the same time the less significant climatic changes at the regional level may be substantially different to the overall climatic picture in the hemisphere. Across the pre-industrial period the average annual temperatures in years 981-990 were in average 1°C higher and minimal temperatures in 1811—1820 were in average 1.3°C lower, than in average in 1951-1980. The reconstructed chronology shows much higher amplitude of variability compared to hemisphere and panarctic reconstructions.

Keywords: *Arctic, average annual temperature, reconstruction*

Technology of explosive works in fragmentation of drums and major equipment in remote regions of the Far North

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Application of explosive technologies to processing of solid waste accumulated in the remote areas of the Far North is discussed.

Keywords: *drums, explosion, explosives, charge, metal scrap, pressing, processing.*

100 years to the biggest land discovery in XX century

L. M. Savatugin, Doctor of Geographical Sciences,

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The article describes the discovery and major stages of research of the Severnaya Zemlya Archipelago. Information on the scientific expeditions and organizations participating in the works on Severnaya Zemlya are provided. Outlook of the future research is presented.

Keywords: *Arctic, Severnaya Zemlya archipelago, history of research.*