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QUALITATIVE APPRAISAL OF FRESH SUBSURFACE WATER PROTECTABILITY FROM POLLUTION IN THE PROCESS OF WATER INTAKE AREAS OPERATION WITHIN THE WEST SIBERIA SREDNEOBSKAYA PETROLEUM REGION (p. 5)

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The article is devoted to the problem of fresh subsurface water protectability from pollution in the process of technogenesis. The object of research is the productive atlym-novomikhailovskiy water bearing stratum. The authors consider water accumulation conditions of this water bearing stratum. The article deals with the results of fresh subsurface water monitoring within the areas (water intake areas) located at the territory of large oilfields within the Sredneobskaya petroleum region for the period of 2005–2013. Spatial-temporal changes of water quality criterias are shown. Quality appraisal of protectability of waters produced for drinking is given on the basis of oversight of hydrogeochemical situation of subsurface water in productive atlym-novomikhailovskiy stratum in conditions being disturbed by way of operation.

Key words: monitoring; fresh subsurface waters; productive; chemical composition; formation; rise; quality; technogenic impact; protectability; forecast.
Oil and petroleum products are the common factors of environment pollution. Different representatives of the herbaceous plants are sensitive to soil contamination by oil to different extent. Thus, the development of methods that would allow quick and accurate analysis of plants condition becomes highly important. In this paper consideration is being given to the application of the proposed method in various conditions.

**Key words:** delayed fluorescence of chlorophyll; plants; oil; gasoline; diesel fuel; Poaceae; Fabaceae.

**INVESTIGATION OF HYDROCARBON GASES ADSORPTION ON POLYPROPYLENE STEREO-ISOMERS (p. 17)**

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Polymer compositions produced by special method of incorporation of atactic stereopolymer (SP-5, SP-18 and SP-40, respectively) into the molecular crystal lattice of isotactic polypropylene are investigated in the course of adsorption of mixtures of aliphatic, aromatic, and unsaturated hydrocarbons from a gaseous phase delayed fluorescence for diagnostics of plants condition at the contamination of soil by oil and oil products. It was found that this method adequately depicts the accumulation of plants biomass and their linear increase. Species differences in functioning of the photosynthetic apparatus are successfully mitigated by introducing the relative coefficient that allows for application of the proposed method in various conditions.

**Key words:** hydrocarbon adsorption; kinetics of cyclic adsorption–desorption; surfaces; adsorbent capacity; kinetic parameters; equilibrium constant; Gibbs energy.

**INDICES OF PUBLIC COMPANY «TATNEFT» NATURE PROTECTION ACTIVITY EFFICIENCY AND TRENDS OF ITS FURTHER INCREASE (p. 22)**

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At present the state of main components of ecosystems of Public Company «Tatneft» production activity region corresponds to nature protection and sanitary norms which is provided by developed and realized in the company nature protection technologies, and to the system of production waste use. In connection with the beginning of the development of high viscosity oil, laying in near-surface intervals of sedimentary section the study of modern geodynamics of endogenic and exogenic process has been started, thus the environment of hydrocarbons fields development regions is controlled by proper methods, that provides complex approach of environmental analysis and monitoring (atmospheric air, surface and subsurface waters, soils, endogenic and exogenic processes) as the part of the region geographical envelope.

**Key words:** current state of ecosystems; ecological monitoring; waste processing; geographical medium; safety of fresh water-bearing complexes; aero- and space images; conservation of mineral resources.

**ASSESSMENT OF STABILITY OF NATURAL AND ECONOMIC SYSTEMS ON THE EXAMPLE OF LINEAR INDUSTRIAL OBJECTS LOCATION (p. 26)**

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This article discusses the problems of current state of natural complexes, the level of stability of the ecosystem as a whole, the study of which will allow to identify territories where the technogenic load on the natural and natural-technogenic systems is approaching critical levels. This will allow to forecast an environmental situation, consequences of technogenic impacts and ecological damage to the environment.

Anthropogenic impact on natural complexes reduces their self-regulatory capabilities that may cause degradation of the ecosystem as a whole, thus depriving the mankind of natural resources and the environment.
The evaluation of stability and variability of natural ecosystems and geosystems of various levels of hierarchy is explained by the necessity of obtaining quantitative estimates of loads on ecosystems—nms of the state of natural ecosystem, norm of an environmental impact and a response of ecosystems to an external impact.

This work demonstrates the research of ecosystems stability, clarification of the criteria and methods for assessing the sustainability of natural and natural-anthropogenic landscapes to the loads associated with the operation of the main gas pipeline in the Tobolsk district in the southern part of Tyumen region.

In this research resistance of soils and landscapes to anthropogenic impacts is determined. The main factors determining the integral resistance to contamination are defined.

The evaluation involves the development of measures to ensure the stability of natural-economic system and definition of environmental damage parameters.

Key words: stability of natural and economic system; anthropogenic processes; physical-geographical division into districts; natural landscape complexes; resistance of natural complexes to technogenic impacts; stability of soils, landscapes to technogenic impacts; ecological damage.

THE CHOICE OF HIGH ENERGY EFFICIENCY TECHNOLOGIES FOR WELLS WORKOVER TO INCREASE WELLS YIELD (p. 32)

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This article describes the problems of energy efficiency improvement in natural gas production at the expense of repair and renewal operations at JSC «Gazprom» wells through the implementation of energy-saving technologies. Currently legislative and corporative requirements determine the directions of solving the issues of increasing the efficiency of energy resources consumption. The majority of natural gas fields belonging to JSC «Gazprom» operate with declining production leading to the increase of expense of energy resources for technological needs. The most promising technological solutions providing the greatest potential for energy saving include: the bottom water inflow integrated isolation; technologies and technological fluids for wells killing and washing out; the bottom-hole formation zone reinforcement; technologies of hydrocarbonous fluids inflow stimulation. The process of making the most promising managerial decisions should take into account the energy-saving solutions providing the maximum efficiency, including optimized costs.

Key words: energy saving; energy consumption; energy saving potential; energy-saving solutions; energy-efficiency technologies; workover.

DEVELOPMENT OF ECOLOGICALLY SAFE COMPLEX REAGENT ON THE BASIS OF NATURAL RAW MATERIAL TO INTENSIFY OIL PRODUCTION PROCESSES (p. 42)

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In XX century there was a sharp increase in the level of energy resources consumption, the bulk of which are oil and gas. However outstripping production from active stocks leads to the fact that main volume of world production in the near future will be provided at the expense of hard recoverable oil reserves from oil fields which came in the late stage of development. In this regard, one of the main methods of increasing oil production is the use of tertiary methods of oil fields development namely widespread application of chemical reagents, including surface-active reagents. Taking into consideration volumes of injection displacing agents into the reservoir, the problem of their environmental safety at all the stages from production becomes pressing. From the above reasoning, the authors developed a complex reagent on the basis of vegetative raw materials and created innovative and non-waste technology of the reagent production according to scientific trend «Green chemistry» for a wide range of issues solution with the aim of intensification of processes of fossil raw materials extraction.

Key words: innovative technologies; green chemistry; oil production industry; oil recovery; oil-bearing strata; surface-active reagents; ecologically safe composition.