

*Materials of Conferences***REGIONAL GEO-ECOLOGICAL ATLAS
OF EAST KAZAKHSTAN**

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The environmental conditions of East Kazakhstan are rich, varied and subject to centuries of economic use. Modern development of entrepreneurial activity in the mining and manufacturing industries, agriculture, urban development and transport only accelerated intensive antropogenization of all components of the nature from the geological substrate to biota, which is inevitably led to a change of the virgin image of geosystems disappearance from the face of the earth entire tracts and facies. Satellite imagery is a silent witness of progressive growth and areal development of the technological, agricultural, transport, residential and gerrogene classes of anthropogenic impacts on the surface of natural systems, and sometimes the complete disappearance of the latter.

Wealthy factual material on the natural environment and achieve scientific research in the field of regional geocology, practicality and the need for cartographic regional materials has led to the need to integrate ecological and cartographic research on integrated thematic mapping. It is regional geo-environmental Atlas of East Kazakhstan.

Preparing for the establishment of a regional small-scale geo-ecological atlas has the specificity and it is in our opinion the following:

1. Analysis and systematization of regional factual material;
2. Compliance with the principles and methods of modern theme – geo-environmental mapping;
3. Analysis of experience in creating similar regional maps of adjacent border areas (Altai Region, Russia);
4. Guided by the principles of content and structural features of the National Atlas of the Republic of Kazakhstan.

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On the content the Atlas is regional, small-scale and it is represented by 4 blocks: Introductory, Physical geographic, Economic geographical and Environmental. There are 90 cards, such as “Physical map of East Kazakhstan” (scale 1: 2,000,000).

The process of creating maps implemented in phases:

Step 1: Creating a project based cards structural-genetic principle display the content, purpose and basic requirements for the map: the main traditional elements of its content, thematic basis, the mathematical basis (projection scale), the thematic content, the legend, the auxiliary equipment.

Step 2: Creating a program card: name, scope, purpose, mathematical basis, cartographic representation, thematic content, cartographic design, the legend, the principles of integration, literary and cartographic sources, the description of the thematic content of the map.

Step 3: Creating an instance of copyright of map.

Step 4: Creating an electronic version of the map.

The work is carried out within the geographical approach to environmental mapping: orientation when creating maps of ecological unit on the methodological basis for environmental mapping (landscape basis, territorial and spatial integration of environmental information, the content of geo-environmental maps, geo-ecological zoning hierarchy of units).

There are *maps of human impacts and environmental changes under the influence of human activities* according to the classification of environmental unit maps.

They are classified as inventory as they reflect accounting and descriptive characteristics of contamination. Territorial structure of pollution is given in the complex physical, chemical, biological, short-term and long-term showing the main types of regional pollution: torch, compact, spotted and concentric.

We adhere to a relatively well-established and generally accepted classification of scientific and applied orientation in the matter of classification of ecological maps at all variety of classifications. Create maps are inventory (accounting and descriptive object), evaluation (state of the environment), the content – antropogene impact types of economic activity; on purpose – research and practical environmental activities, inventory and assessment, with the aim of administrative use and environmental education, education and training.

Remoting of sensing data (satellite images, aerial photos), statistics, results of field mapping in key areas, analysis of the literature and library materials are served by the reference point information for mapping.

The main methodological techniques when working on the creation of maps are visual, dimensions on landscape maps, graphics, statistical techniques and elements of geoinformation mapping.

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NEW OIL SORBENTS BASED ON WASTES OF PLANT MATERIALS PROCESSING

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One of the most important aspects of the protection of ecological purity of the hydrosphere of refining industry enterprises is the issue of improving the structure of water consumption and spillway. The main pollutants present in the wastewater are oil refineries, suspended solids, salts, organic compounds, phenols, ammonia nitrogen, dissolved hydrogen sulfide. The rate of accumulation of petroleum products as a result of anthropogenic pollution in water and soil ecosystems is far ahead of their rate of biodegradation in a natural way, and existing technologies do not allow to cope with such contamination quickly and efficiently. Perspective direction of intensification of treatment processes of wastewater containing toxic and difficult-oxidized substances is a biosorbent method that does not require significant capital expenditures. The essence of this method is the use of high concentrations of biomass on the media. In this case, the sorbent has a dual function: firstly, it is the carrier of immobilized microorganisms; secondly, because of its great sorption capacity provides quick adsorp-

tion of toxic substrate. New solution in our research is non-reagent physical-chemical treatment of natural materials (wastes of processing of agricultural products, wood processing enterprises wastes) for getting oil sorbents. The most attractive substances for their production are natural organic raw materials and waste products of plant origin. They usually are an integral part of ecosystems. Therefore, sorbents based on it are most relevant to environmental requirements. Natural sorbents are suitable for the process wastewater treatment from organic and oil products with medium and high molecular weight. Promising oil sorbents are sorbents based on the husk of cereals, rice, barley, wheat. Their action is particularly effective in the collection of the heavy oil fractions. Using microorganisms immobilized on various media during the process of the local sewage treatment allows to achieve a high degree of biodegradation (95-97 wt. %) of pollutants for a relatively short period of time. The proposed method of treatment has several advantages:

- ease of implementation;
- the ability to regenerate the sorbent;
- environmental safety of the cleaning process;
- relatively low cost of obtaining and using the sorbent.

During the regeneration of spent sorbent recovered oil products, which can be sent for recycling, are extracted from it or disposed. The spent sorbent not regenerated cannot be used in production of new materials of functional applications. The uniqueness of project is the development of modern rational technology of sewage treatment in the enterprises of oil industry with the introduction of new solutions in the technological scheme of sewage treatment, which allows to reduce the discharge of pollutants: oil is not more than 0.2 mg/l; phenol not more than 0.09 mg/l; suspended particles not more than 20 mg/l; chlorides (as Cl-) are not more than 600 mg/l; sulfates (as SO₄²⁻) are not more than 450 mg/l; surfactant not more than 0.4 mg/l.

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