

New Ecologically Safe Technologies for Sustainable Development of the Regions of Siberia

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All-Russia scientific and practical conference with international participation “New ecologically safe technologies for sustainable development of the regions of Siberia” was held on 21 to 24 June 2005 in the East Siberian State Technological University and at the interdepartmental ecological and educational station of the Baikal Institute of Nature Management at the Baikal.

More than 70 representatives of 25 industrial enterprises, 7 sectoral and 12 academic institutes, 9 higher educational establishments from Moscow, Kemerovo, Novosibirsk, Krasnoyarsk, Irkutsk, Angarsk, Ulan Ude, Chita, Khabarovsk, Ulan Bator (Mongolia) participated in the Conference. Extra-mural participants were the specialists from the Mongolia State University, Institute of Chemistry and Chemical Technology of the Mongolian Academy of Sciences, Mongolian State University of Science and Technology, and Mongolian State Pedagogical University.

More than 79 reports and communications were presented at the Conference. They considered the following topics:

- Management in preservation of the environment.
- Technologies of processing and utilization of wastes, purification of waste water, aerial and industrial emissions, water treatment.
- Conservation and use of mineral resources.
- Ecologically safe technologies of processing raw material and the materials of plant and animal origin.

The majority of reports dealt with the development and improvement of the technologies of integrated ecologically safe processing of the resources of mineral, plant and animal origin, utilization of industrial and domestic wastes with obtaining precious, rare and heavy nonferrous metals, high-strength construction materials, sorbents, fertilizers, ecologically pure food, biologically active food supplements, medical and cosmetic products, development of energy- and resource saving devices for raw processing, purification of waste water and dust-gas emissions, as well as rationing, control and circulation of industrial wastes and resource management on the basis of GIS technologies.

Reports dealing with conservation of Lake Baikal and the use of natural resources of the Baikal natural territory attracted much attention. Thus, A. K. Tulokhonov, Corresponding Member of RAS (BINM, SB RAS, Ulan Ude) stressed in his report that the problem connected with the conservation of the objects like the Baikal for forthcoming generations is a state political and economical problem of priority. This region concentrates many kinds of resources which can equally meet the demands of the existing and future generations of people in full correspondence with the idea of sustainable development; the conditions existing in this region provide a good start for the development of ecologically safe economy aimed to meet the requirements of local population and to rise the standard of living. Reports of V. G. Shiretorova (BINM, SB RAS), A. V. Tsyrenzha-

pov (IGEB, SB RAS, Ulan Ude), B. V. Badmatsyrenov, A. G. Khantur-gaev (ESSTU, Ulan Ude) demonstrated the ecological and economical efficiency of the technology of complex processing of the plant raw material from the Baikal to obtain foodstuffs, biologically active additives, medical products, vegetable and essential oil, sorbents, *etc.* Investigation results providing evidence of high anti-inflammatory activity of the extract of the Siberian pine seed shells were reported.

Attention was also attracted to the report of V. G. Kulebakin (ICCT, SB RAS, Krasnoyarsk) about the effect of mechanochemical activation of minerals on their physicochemical and technological properties and the use of mechanical activation to obtain unmolded refractories from the wastes of refractory plants and diopside from one of the deposits in Transbaikalia, to the report of Prof. G. F. Khansakhaev (ESSTU) about the development of new ecologically safe vortex devices for thermal treatment of plant raw material. A.V. Demidenko (SSTU, Krasnoyarsk) reported on obtaining a new highly efficient sorbing material poroplast (immobilized with lignin and biomass) allowing efficient sorption of heavy metal ions. Yu. M. Khankhunova and O. V. Skorik (ESSTU) presented a report about rationing and control of the emission of pollutants into the atmosphere by some plants in Buryatia.

Encouragement of the participants of the Conference was caused by the report of N. I. Podlesnykh (ChitSU, Chita) about the problem connected with the conservation of paleontologic objects of Transbaikalia – fragments of animals and plants constituting valuable scientific and cognitive matter. It was stressed in the report that these unique samples are thrown onto the surface during mining minerals and fossils; there these samples are destroyed or become the matter of sale and export. It was stressed that it is necessary to oblige the users of the Earth's interior to gather, conserve and collect the paleontologic material when mining at the deposits.

The participants of the conference noted that, in spite of scarce budget financing of research in the scientific institutions of RAS, in higher educational establishments, sectoral institutions, positive changes are observed

toward integration of research and collective use of the equipment, both for physicochemical analysis and for technological developments. This allowed one within the recent 4–5 years to fulfill a large amount of research in the area of new ecologically safe technologies of processing raw resources and industry-related wastes, design and development of the devices of the new generation for technological purposes, purification of dust gas emissions and waste waters of plants, investigation, processing and cultivation of the plant raw material of Siberia. It was also noted that a number of enterprises in the Siberian region are in stable operation mastering and introducing modern technological processes based on new scientific and technological achievements; new technologies are developed and the existing ones are improved to process the raw materials of Siberia and industrial wastes; new devices and instruments for implementation of the new technologies are being constructed; new enterprises aimed at the introduction of new science intensive technologies of raw processing are created in Siberia. The participants of the conference stressed that the substantial potential of Siberia in raw material can meet the requirements of the national economy and due to the new science intensive technologies it will allow obtaining high-quality, ecologically safe final products. Export of the latter will in turn allow one to compensate, to a definite extent, the economical and technical backwardness of Siberia and to solve a number of social problems.

Fruitful information interchange and analysis helped the participants of the Conference to outline promising directions of research and its integration in the area of theory and practice of new ecologically safe energy and resource saving technologies and their implementation at the plants, to develop a number of recommendations aimed at mastering the existing technologies of raw processing taking into account the modern ecological and economical requirements.

The recommendations of the Conference were submitted to the executive powers of regions and republics, to organizations and enterprises of the Siberian region.