

# Monitoring and rehabilitation of the environment

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In accordance with the Schedule of Meetings and Conferences of the Siberian Branch of RAS for 2004, on July 21–23 2004 the Institute of Monitoring of Climatic and Ecological Systems (IMCES SB RAS) held the IV International Symposium on Monitoring and Rehabilitation of the Environment devoted to the discussion of the results obtained by scientists of Russia, CIS countries, and some foreign countries in the investigation into various problems concerning the monitoring of environmental pollution due to the anthropogenic impact. A particular attention was paid to the effect of polluted air and water on the human health. The anthropogenic impact from industrial emissions, sewages, and wastes upon the quality of the environment was evaluated taking into account hydrometeorological conditions in different geographical regions. In addition, new efficient methods for assessing the health hazard of the technogenic impact were discussed.

The discussion of issues devoted both to the minimization of the anthropogenic impact upon the human health and to the rehabilitation of already polluted environmental components proved to be a practical application from the viewpoint of the socio-economic development of the society.

The Symposium involved 86 participants, including one scientist from Germany, one from France, one from Belarus, two from Kazakhstan, one from Moscow, one from St. Petersburg, two from Ulan-Ude, four from Novosibirsk, two from Seversk, three from Krasnoyarsk, two from Khanty-Mansiisk, one from Gorno-Altaiisk, and two from Barnaul.

By the beginning of the Symposium, its proceedings entitled *IV International Symposium "Monitoring and Rehabilitation of the Environment"* edited by M.V. Kabanov (Corresponding Member of RAS) and Dr. A.A. Tikhomirov were published. This book includes 134 papers.

At the Plenary Session held jointly with the International Conference on Environmental Observations, Modeling and Information Systems ENVIROMIS-2004, four oral reports concerning the general problems according to the Symposium subjects were presented; four topical sessions were open as well.

A.P. Ivanov in his report concerned the problems of lidar and radiometric monitoring of

atmospheric pollution in Belarus and reported a new practical technique for retrieval of the concentration of coarse and fine aerosol fractions.

V.I. Shidlovskii told about the measures taken at the Siberian Chemical Plant on the rehabilitation of the Industrial Site No. 2. These measures are urgent, because SCP reactors are to be decommissioned in accordance with the plan of on-site disposal. The report of M.V. Kabanov and A.A. Tikhomirov was devoted to the combined works carried out in IMCES SB RAS within the Project "Development of New Methods, Technologies, and Instruments Based on Optical, Radio-Wave, and Acoustic Effects for Monitoring of Natural and Technogenic Systems." A.G. Dyukarev considered the problems of organization of regional biospheric–geospheric monitoring. It was established that when selecting objects for monitoring, it is a promising way to assess the state of biosystems in the zones of unstable equilibrium – ecotones.

The Session "New Methods and Devices for Environmental Monitoring" incorporated 13 oral reports devoted to analysis of the methods applied for environmental monitoring, including both the traditional (remote and contact) methods, taking into account their modifications, and new methods, such as physical and mathematical simulation, as well as GIS technologies. Considerable interest was generated by the report by I.V. Samokhvalov with colleagues, who presented the results of experimental investigations of the backscattering phase matrix of cirrus clouds with a polarization lidar. The reports by G.A. Ivlev with co-authors were devoted both to technical problems of the AKV-2 mobile station developed at the IAO SB RAS and to measurements of the air composition in industrial centers of Siberia carried out with the aid of this station.

The Session "Technologies of Environmental and Climatic Monitoring" involved 25 oral reports, which analyzed the results of investigation of industrial regions and towns in different physical–geographic areas taking into account the hydrometeorological conditions, including the assessment of the anthropogenic impact from industrial emissions, sewages, and wastes on the air quality and the environment in general. The studies aimed at the development of new-generation facilities for environmental monitoring were discussed. To be noted are the reports by Yu.M. Polishchuk with

colleagues, devoted to the combined monitoring of the environment.

At the Session on "Technologies of the Environmental Protection and Rehabilitation" 17 oral reports were presented. This session was devoted to discussion of the problems associated with the pollution of soil, water objects, forests, and crops under the anthropogenic impact. A particular attention was paid to the programs of organization and methods of treatment of wastes and consumption residue, methods of increasing the ecological safety in petroleum production and recycling of pollutants. A series of reports presented by V.V. Chizhikov with co-authors and devoted to disposal and recovery of wastes attracted much interest.

The Session "Health Hazard of Climate and Ecosystem Changes" discussed the effect of the atmospheric pollution on the human health and the role of the quality of drinking water in various diseases. Some reports concerned the methods for evaluating the integral technogenic pollution of the environment.

The urgency of the problem on the health hazard of environmental pollution (role of the quality of drinking water in various diseases, methods for assessing the integral pollution) was debated when discussing the reports presented by medical scientists (L.P. Volkotrub and others). The main causes for appearance of selenium-deficient diseases were discussed, the ways for their prophylaxis were

determined, and the problems of early diagnostics were concerned (O.V. Safonova and others). The effect of magnetic storms and high-frequency electromagnetic fields on the human health were considered (L.G. Vishnevskaya et al., L.P. Volkotrub et al.)

The poster sessions incorporated 65 reports. A competition was held between reports presented by young scientists and postgraduate students.

In general, the main issues of the Symposium were: *environment, human, and health*.

In conclusion, it should be noted that this Symposium, joining the specialists in different fields of knowledge, allowed the participants to evaluate the current status of the problems discussed, to carry out wide exchange of ideas, to discuss the results of investigations in methodology of environmental monitoring and rehabilitation.

In the Summary of the Symposium, it was decided that the most important activity is conducting combined experiments, joining the efforts of different research institutions of Russia and CIS countries in cooperation with foreign specialists. It was recommended to reinforce the relations between research teams and mass media for promotion of scientific results, being of primary importance for environmental protection and rehabilitation, as well as to undertake measures for more active participation of rescue and environmental protection services in the future symposia.