

## Environmental problems of forests

**A. Zhidkov** – candidate of biological sciences, Deputy Head and Team Leader of the Department of forest ecology, Russian Scientific Research Institute for silviculture and mechanization of forestry

**L. Kozhenkov** – candidate of agricultural sciences, head of Department of forest ecology, Russian Scientific Research Institute for silviculture and mechanization of forestry

*Forest ecology research at Russian research Institute for Silviculture and Mechanization of Forestry has been going on since its establishment.*

*Under the order of USSR State Forest Committee of 1984 the Institute became a leading organization coordinating studies of industrial pollution impacts on forest biocoenoses and development of operations to improve their resistance. For the first time in our nation forest applicable maximum allowable concentrations of toxic substances were defined. Since 90-es of the last century environmental area at the Institute is led by Alexander Martynyuk. Prominent scientists Yuri Boronin, Valentin Kasimov, Leonid Kozhenkov, Andrei Zhidkov, Tatiana Rykova contributed new data to the department's agenda.*

*Key forest damage centers affected by industrial emissions in Russia have been studied, their classification developed as well as a set of operations to promote forest resistance to man-made pollutions. These studies have been supplemented by development of gas toxicant maximum allowable concentration rates in the atmosphere for coniferous species, allowable acid fallout loads for forest stands, heavy metal forest contamination rating. Issues of various tree species condition diagnostics exposed to industrial pollution have been studied and forest monitoring scientific background in environmental chemical contamination conditions.*

*The department takes part in engineering-environmental surveys in project developments for forest management and plantation regeneration in particular some work has been done in natural-historical parks in Moscow and Moscow region.*

*Research findings resulted in development of principles for man-made forest impact rating, «Record procedures for forests exposed to industrial pollution impacts», «Key guidelines on forest management in forests affected by man-made pollution», «Guidelines on forest management in plantations of the Lev Tolstoy «Yasnaya Polyana» museum reserve and its roTECTED zone».*

*Monographs «Pine ecosystems exposed to air, man-made impacts», «Yasnay Polyana woods», «Organic waste applications in forestry» have been published. The Institute officers are patent holders and winners of the best environmental projects contest sponsored by the Moscow region Government. Department's agenda is evaluated in terms of world scientific developments and is filled with practical implications.*

*The paper shows forest indicative role in atmospheric air cleanliness and updating of environmental quality standards, which take into account the condition and features of areas of economic entities on the environment.*

**Key words:** forest ecosystems, negative anthropogenic impacts, air quality, pollutants, environmental regulations, environmental safety