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NEUTRON ACTIVATION ANALYSIS AND LOW BACKGROUND GAMMA SPECTROMETRY IN ECOLOGICAL STUDIES

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Neutron activation analysis (NAA) due to its high accuracy, nondestructive nature and possibility to determine concentrations of more than 40 elements is widely used in the environmental studies, geology, archeology, nanotechnology, medicine, etc. The principle of the method will be discussed. Examples of application of neutron activation analysis at the IBR-2 reactor (Dubna, Russia) will be presented.
The main direction of neutron activation analysis application in Dubna is the assessment of heavy metal atmospheric deposition using moss biomonitoring technique. The first moss survey at the European scale was conducted in 1990 and has been repeated every five years since then. The examples application of moss biomonitoring technique in Kazakhstan and other JINR member states will be presented. Neutron activation analysis at the IBR-2 reactor is widely applied for the assessment of water pollution using biological monitors and efficiency of metal removal from industrial wastewater using different type of biological sorbents. Examples of application of biomonitors for evaluation of water quality and techniques proposed for decrease of anthropogenic load on water pollution will be given. Examples of NAA application for soil analysis and development of phytoremediation approaches will be presented.
Additionally, the examples of the radioecological studies performed in Moscow and on Novaya Zemlya aimed to determine the level of natural radionuclides and 137Cs will be discussed.

Section

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