however, we could not find clear evidence for a strong interaction between superconductivity and magnetism.

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OVERVIEW OF LONG-TERM OBSERVATIONS OF RADIOACTIVITY IN THE AREA AROUND INSTITUTE OF NUCLEAR PHYSICS OF UZBEKISTAN ACADEMY OF SCIENCES

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The radiation protection problem is mainly important with its relation with potential radioactivity threat to society and environment. Therefore, development of nuclear science in Uzbekistan since foundation of the Institute of Nuclear Physic (INP) is directly related to radiation protection of the personnel, population and environment.

One of the major tasks highlighted in this report, importance of complex approach to the radiation protection and security, is worth of mentioning. Development of such an approach allows creation of a concept to predict the radiation situation and transition to radiation monitoring around the research nuclear centre. The aim of this complex approach to the solution of the radiation protection task is to find the methods for making predictions and managing the radiation situation around the nuclear centre. Complex approach to this research implies integration of theoretical and experimental activities. Theoretical studies involve primarily radiation prediction models. Experimental works are, on one hand, the data to approve the theoretical models, the obtained empirical parameters, and, on the other hand, information on the radiation situation for its forecasting. Lack of reliable information on the radioactivity level creates various rumours and is the major reason for radiophobia.

The aim of this report is to present realistic information on the radioactivity level at the INP AS RU site and at the surrounding area, which is based on long-term measurements provided by the radiation protection department. In this work the following results of the research are presented:

- total beta and gamma-activity of herbs and soil;
- specific activity of waters (waste, underground, and surface);
- activity of the air aerosols;
- activity of the atmospheric precipitations;
- background at the site of the INP, at the sanitary-protection area and observation area.

What has been accomplished for these years?

Firstly, the model for cobalt and caesium radionuclides migration in soils was elaborated. Here, the sorption of these radionuclides in the soil, and their form in the soil were studied as well as the convective transition rate and diffusion coefficients were calculated for their migration in the bulk of the soil. The spatial-temporal distributions of cobalt and caesium radionuclides in soils and their vertical distribution in soil were studied.

The proposed mathematical description of the abovementioned radionuclides migration allows prediction of the migration processes in case of unexpected emergency situations caused by discharge radioactive materials to the environment.

Secondly, based on large experimental material, the model was proposed aimed at prediction of the radiation situation around the nuclear centre by means of calculation of the human collective radiation dose caused by the discharge and waste from the nuclear reactor.

The proposed method of dose calculation for human irradiation with the artificial radionuclides in the environment was concurred with the Health Ministry of the Republic of Uzbekistan, and is continuously used at evaluation of the radiation situation of the Institute.

Systematic control over the air aerosols allowed detection of consequences of nuclear weapon testing in China, India and Pakistan.

All environmental radioactivity information is entered to the database.

Based on the long-term observations one can draw the following conclusion: environmental radioactivity at the site of the nuclear research centre stays constant and is conditioned by the natural radioactivity and global precipitations. Compared to those, the contribution from the nuclear-physical facilities is not discovered.

TRANSMUTATION OF ^{129}I, ^{237}Np, ^{238}Pu, ^{239}Pu AND ^{241}Am USING NEUTRONS PRODUCED IN TARGET-BLANKET SYSTEM "ENERGY+TRANSMUTATION" BY RELATIVISTIC PROTONS

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Target-blanket facility "Energy+Transmutation" was irradiated by proton beam extracted from the Nuclotron Accelerator in Laboratory of High Energies of Joint Institute for Nuclear Research in Dubna, Russia. Neutrons generated by the spallation reactions of 0.7, 1.0, 1.5 and 2 GeV protons on lead target interact with subcritical uranium blanket. In the neutron field outside the blanket radioactive iodine, neptunium, plutonium and americium samples were irradiated and transmutation reaction yields (residual nuclei production yields) have been determined using methods of gamma-spectrometry. Neutron field's energy distribution has also