

Nuclear medicine: production and application of radioactive isotopes for health care.

Last decade radioactive isotopes are widely used for the diagnosis and treatment of diseases which are difficult or impossible to detect and cure by traditional methods. Getting the most effective radioisotopes for these purposes is the task for nuclear medicine. For example, the most safe radioisotopes with short-lived - they are, after examination of the patient - less disruptive in terms of its exposure. However radioisotopes with short lifetime cannot be produced in one place and used in the other - far from the place of production - region. This creates the problem of the production of short-lived isotopes in the immediate vicinity of the clinic.

The lecture will reflect the basic principles of scanning patients using radioactive isotopes, the main methods of these isotopes production, their separation and quality control. Examples of technologies in various world centers for the production of isotopes and the experience accumulated in recent years in the Yerevan Physics Institute will be presented too.

During the excursion tour will be presented main units and equipment of the Department of isotopes studying and producing in Yerevan Institute of Physics such as "hot cells", robots, gamma scanner and a semiconductor detector for the quality control, system for the extraction of the isotope from the irradiated target, system of target material recovery for multiple irradiation, laser systems the target surface processing before irradiation. Also a cyclotron C18 will be shown as well as the experimental hall where a trial production of medical isotopes Technetium^{99m} is suggested.

The lecture will be presented by Head of Isotopes Department Dr. Albert AVETISYAN