



## RADIOCHEMICAL TECHNOLOGY OF EXTRACTION OF CYCLOTRON RADIOISOTOPE CD-109 AND MAKING X-RAYS SOURCES ON ITS BASIS

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In the submitted report the results of researches on development of technology of radiochemical extraction of cyclotron radioisotope Cd-109 from silver targets, irradiated with a proton beam with isochronous cyclotron U-150M are presented.

The Cd-109 nuclide is produced from the  $^{109}\text{Ag} (p, n) ^{109}\text{Cd}$  reaction with a low yield of Cd-109 (2,6 mCi/mA-h for "natural" silver). A complex of operations on development of internal high-current silver target allowing one to reach activity of the Cd-109 radioisotope to the order of 50 mCi on the targets is described.

In the report, in a general view the technological plan of extraction of Cd-109 is submitted:

- making internal silver target;
- irradiation of the target;
- radiochemical extraction of the nuclide from the target.

The basic performances (the volume of radionuclide and stable impurities) the final product of Cd-109 and methods of their check are specified.

The technology of making X-rays sources on the basis of a received solution Cd-109 by an electrolytic method is submitted additionally, since just in this view the radionuclide Cd-109 finds technical application. Some experimental X-rays sources were made and then tested in INP NNC RK, and they are expected be used in the fluorescent X-rays analysis.

The final purpose of the carried out operations is organization of half-industrial production of a radionuclide Cd-109 and X-rays sources based on this radionuclide.



## APPLICATION OF NAA AND (n, f)-RADIOGRAPHY FOR ASSESSMENT OF ENVIRONMENT POLLUTION DUE TO INDUSTRIAL ACTIVITY

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Neutron Activation Analysis (NAA) and (n, f)-radiography have been used for assessment of environmental pollution by heavy metals and other elements caused by Industrial Estate activities. The objects analyzed were tree leaves which can serve as the natural seasonal microelement collectors. Sampling was made in the Industrial Estate area with several operating plants, among them a mine processing enterprise, chemical and cotton processing plants. A neutron induced (n, f)-radiography was used for the study of uranium distribution in a leaf surface. A detector foil (LEXAN) in a tied contact with a sample surface