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Research of radium needles processing for recycling of Ra-226

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This theme is the first step to research and develop novel technologies and procedures for recycling and valorisation of historical radiation sources containing Ra-226. Recycling would include their reprocessing to a form suitable for irradiation in a nuclear reactor, production and separation of Ac-227 from Ra-226 and its use for the construction of Ac-227 /Ra-223 radionuclide generator. Ra-226 would be recycled and reused in next irradiations. Ra-223 would then be used for the preparation of radiolabeled biologically active compounds and verification of their properties in model in vitro and in vivo systems (cell cultures, small laboratory animals, plants).

In the first step, a method for opening and processing the radium needle under adequate radiation protection was proposed. For the handling with Ra-226 a procedure and equipment for its processing was designed. Source of Ra-226 (radium needle) with required documentation was obtained and semi-hot cell for opening radium needle with research of radium needle was prepared.

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