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Routines of ²¹⁰Po determination in fluvial sediments for dating purpose

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During the last decades, 210Pb and its daughter 210Po have become widely used radionuclides for sediment dating. In environmental sediments, the total amount of 210Pb is given by two components: (a) supported 210Pb, produced by radioactive decay of 222Rn inside the material, and (b) an unsupported 210Pb component derived from 222Rn which diffuses into the atmosphere where decays. Subsequently, 210Pb is removed by atmospheric precipitation or dry deposition, falling on the land or water surfaces.
The dating method often applies determination of 210Po supposing the radioactive equilibrium with 210Pb. Utilized analytical procedures generally consists from several basic parts: (a) isolation of measured radionuclide by leaching or total decomposition of sample matrix or polonium distillation; (b) measurement by alpha spectrometry or by liquid scintillation counting; (c) determination of supported 210Pb. Our contribution will compare several sample preparation techniques and possibilities of measurement with regards to sample matrix, time and instrumentation requests.

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