Assessment of natural radionuclides of the $^{238}$U and $^{232}$Th series determined in soil profiles and sediment cores from Taiaçupeba reservoir, São Paulo, Brazil

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OBJECTIVE

The main goal of this work is to present preliminary results of the radionuclides $^{238}\text{U}$, $^{226}\text{Ra}$, $^{210}\text{Pb}$, $^{232}\text{Th}$, $^{228}\text{Ra}$ and $^{228}\text{Th}$, from $^{238}\text{U}$, $^{232}\text{Th}$ and also $^{40}\text{K}$ activity concentrations in two soil profiles and four sediment cores collected in the catchment area of the Taiaçupeba Reservoir.

METHODOLOGY

- Instrumental Neutron Activation Analysis (INAA) - $^{238}\text{U}$ and $^{232}\text{Th}$
- Gamma spectrometry - $^{226}\text{Ra}$, $^{210}\text{Pb}$, $^{228}\text{Ra}$, $^{228}\text{Th}$ and $^{40}\text{K}$

- Grain size analysis
- Water content
RESULTS

Soil samples
- Both soil profiles presented a higher percentage of silt+clay.
- The highest activity concentrations were obtained in both profiles for $^{40}\text{K}$ and $^{228}\text{Th}$; the lowest concentrations were for $^{210}\text{Pb}$ also in both profiles.

Sediment samples
- The radionuclide activity concentrations determined in sediment cores 1, 2 and 3 are in the same order of magnitude.
- Sediment core 4 presented the highest activity concentrations for all radionuclides studied, mainly for $^{232}\text{Th}$ and $^{210}\text{Pb}$. 