

## Spatial distribution of the radionuclides in paddy soil of a uranium tailings area

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### Methods

The specific activity of radionuclide  $^{238}\text{U}$ ,  $^{226}\text{Ra}$ ,  $^{232}\text{Th}$  and  $^{40}\text{K}$  in the soil was analyzed by field sampling and laboratory test, taking the paddy soil in the lower reaches of a uranium tailings reservoir in the south of China as the research object. A total number of 8 samples were collected. The specific activity of radionuclide were determined by using HPGe gamma-ray spectrometer. The samples were divided into two groups according to the position (surface and section) of the sample. The change of radionuclide specific activity with the depth in profile S4 were drawn (fig.1).

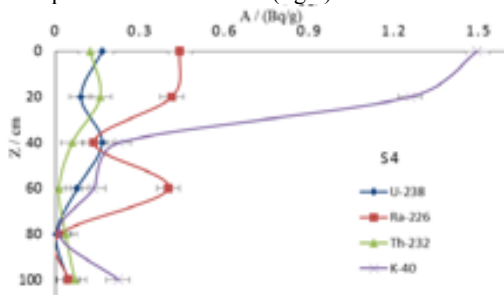


Fig. 1 The change of radionuclide specific activity with the depth in profile S4

### Result and discussion

It was concluded that the specific radioactivity of the four typical nuclides detected in the soil was quite different. There are higher values, maximum specific activities and standard deviations at  $^{226}\text{Ra}$  and  $^{40}\text{K}$  in soil surface and profile, while  $^{232}\text{Th}$  and  $^{238}\text{U}$  are lower in these areas. Besides, the content of  $^{226}\text{Ra}$  was higher than the local background value. Four specific activity of the radionuclides in the profile decreased with the depth, and the high values appeared in the shallow layer of the soil, which may be related to the content of organic matter in the soil. Combined with the vertical and plane distribution characteristics, the migration ability of nuclide  $^{232}\text{Th}$  and  $^{40}\text{K}$  are weaker than that of  $^{238}\text{U}$  and  $^{226}\text{Ra}$ .

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