

A spatial survey of radioactivity in Brazilian territory

F. C. A. Ribeiro, D. da C. Lauria, M. A. Pires do Rio, J. I. R. Silva, S. de A. Gonzalez,
T. A. de A. Silva and W. de O. Sousa - Instituto de Radioproteção e Dosimetria (IRD)

F. G. da Cunha - Serviço Geológico do Brasil (CPRM)

Objectives



- measure radioactivity in soil and its contribution to the annual effective dose to members of the public;
- provide information for epidemiological and geological studies;
- providing the data to the public as an online and geo-referenced database of the activity concentrations of radionuclides in surface horizons.

Methodology

- ✓ Soil samples (0-20 cm depth) are properly collected and labeled (coordinates, samples n°).
- ✓ Sample preparation lab and storage room.
- ✓ Gamma Spectrometry with HPGe

Quality control: soil CRMs and some samples twofold analyzed. Intercomparison exercises.

Summary of Results



Range of concentrations:

3.1 to 174 Bq/kg for ^{226}Ra ; 2.5 to 333 Bq/kg for ^{228}Ra ; 2.4 to 2377 Bq/kg for ^{40}K .

In most of the soils $^{137}\text{Cs} < \text{MDA}$ (around 0.5 Bq/kg).

- ✓ 2 doctoral theses, 3 papers for conferences presentation
- ✓ 1 article published (another in press) in scientific journals

Implemented

traceability of received soil samples

analytical quality control protocol

Online system for providing data on the web

A soil storage room

Samples from 13 Brazilian states are stored.

A map of radioactivity in Brazilian soil, nonexistent so far, has now begun to be drawn.