

**International Conference on Occupational Radiation Protection:
Strengthening Radiation Protection of Workers –Twenty Years of Progress
and the Way Forward**

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Identify and quantify the exposure of the general public to radon gas and the gamma dose rate in “Café Bahia” ornamental rocks

Radon is a radioactive gas that emanates from rocks and soils and tends to be concentrated in closed spaces such as underground mines, underground parking and dwellings. Infiltration of soil gases is recognized as the most important source of residential radon.

Radon is one of the main contributors to the dose of ionizing radiation received by the general population, hence the need to identify and quantify the levels of radioactivity and the various contributions in the various construction materials.

This work was developed to evaluate the news published in 2008 in the USA relating Brazilian ornamental rocks with high radon concentrations and also high gamma exposure rates.

Therefore, the theme became a reason for mobilization of institutions such as the IRD, as Brazil at that time and until today is a great exporter of ornamental rocks, in value and physical volume for several countries.

This work was developed with the main objective of identifying and quantifying the exposure of the public to radon gas and the gamma dose rate in “Café Bahia” type ornamental rocks due to its wide use in homes in the national and international markets.

The technique used to develop this work is easy to use and manipulate.

Eighteen samples of “Café Bahia” type ornamental rocks from three different mine fronts were analyzed. For this analysis, the GENITRON AlphaGUARD - PQ2000 PRO equipment was used with measurement cycles adjusted to 60 minutes, for the simulation of a closed environment we used a Container for Emanation and Calibration of 50 liters from SHAPHYMO. The samples were packaged together with AlphaGUARD inside Container for Emanation and Calibration and it was closed/sealed for 25 days. This time was determined for the ^{222}Rn to reach radioactive equilibrium with the daughters, the AlphaGUARD was connected inside the container through external connectors to supply power to the batteries, connection with the notebook in order to view the results of the measurement that was being carried out and a “FAN - Mains Supply” to circulate the air inside the Container. With the sealed Container, we guarantee that there was no interference from the external environment. The results for all samples were as expected, clearly identifying the behavior of Radon Gas in closed environments.

Speakers email

ferreira@ird.gov.br

Speakers affiliation

Instituto de Radioproteção e Dosimetria

Name of Member State/Organization

Brazil

Primary author: Ms ROCHA FERREIRA, Paulo Roberto (Instituto de Radioproteção e Dosimetria)

Presenter: Ms ROCHA FERREIRA, Paulo Roberto (Instituto de Radioproteção e Dosimetria)

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