

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

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Radiological characterization of a calcarenite quarry used as raw material for construction materials.

The objective of this work was to carry out a radiological characterization of a calcarenite deposit used in the production of sand as a construction material. The deposit is divided into two sectors (east and west) and is generally made up of calcareous sandstone sequences. The mining works in the quarry consist of the removal, transfer and storage of the material. For the radiological characterization, a monitoring of the gamma dose rate was carried out along the site of the deposit, with a portable equipment brand STEP OD 02. Samples of the process were also taken for laboratory analysis: uncrushed rock, crushed rock, washed sand (end product), water used in the process and sludge produced from sand washing. All samples were analyzed at the Environmental Radiological Surveillance Laboratory of the Center for Radiation Protection and Hygiene, using a high-resolution gamma spectrometry system to determine the environmental radionuclides of interest. Measurements of radon gas in air and water were also carried out, using Alpha Guard DF2000 continuous measurement equipment. The monitored dose rate values ranged between 0.28 and 0.97 $\mu\text{Sv/h}$. The concentrations of Ra-226, Pb-210 and Th-234 and of K-40 found in the analyzed samples are below the internationally recommended values from which remedial measures must be taken or some type of regulatory control must be established the presence of natural occurring radioactive materials. On the other hand, the values of Rn-222 determined in air are well below the levels recommended for members of the public in the Basic Radiological Safety Standards of the International Atomic Energy Agency.

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