Abstract

Radiological hazards associated with naturally occurring radionuclides in materials from Rosterman gold mine were assessed by analysis of 30 samples. The gamma-ray spectrometric analysis of tailing samples reported an average activity concentration of 263 ± 13, 123 ± 6 and 84 ± 4 Bq kg−1 for 40K, 232Th and 226Ra, respectively. The average absorbed dose rate was 124 ± 6 nGy h−1, while the annual effective dose of 0.4 ± 0.02 mSv y−1 for indoor and 0.3 ± 0.01 mSv y−1 for outdoor were reported. The mean and range of radiological parameters (external and radium equivalent) calculated from the tailing samples were within the permissible limits and hence mining of gold at Rosterman has no significant radiological health implication on the miners and the surrounding population.