P-351

NORM IN COAL, FLY ASH & CEMENT

KANT K[1], UPADHYAY SB[2], SHARMA GS[3]

(1) Department of Physics, K.L.Mehta Dayanand College for Women, Faridaba d-121 001, Haryana (India)., Faridabad, India

(2) Department of Physics, B.S.A. College, Mathura - 281 001 ((U.P.), India, Mathura, India

(3) Department of Physics, B.S.A. College, Mathura - 281 001 ((U.P.), India, Mathura, India

Presentation preference: Poster Only

Major scientific thematic areas: TA4 - Radiation Protection at Workplaces

ABSTRACT

Coal is technologically important materials being used for power generation and its cinder (fly ash) is used in manufacturing of bricks, sheets, cement, land filling etc. ^{222}Rn (radon) and its daughters are the most important radioactive and potentially hazardous elements, which are released in the environment from the naturally occurring radioactive material (NORM) present in coal, fly ash and cement. Thus it is very important to carry out radioactivity measurements in coal, fly ash and cement from the health and hygiene point of view. Samples of coal and fly ash from different thermal power stations in northern India and various fly ash using establishments and commercially available cement samples (OPC & PPC) were collected and analyzed for radon concentration and exhalation rates. For the measurements, alpha sensitive LR-115 type II plastic track detectors were used.

The radon concentration varied from 147 Bq/m^3 to 443 Bq/m^3, the radium concentration varied from 1.5 to 4.5 Bq/kg and radon exhalation rate varied from 11.8 mBq.kg^{-1}.h^{-1} to 35.7 mBq.kg^{-1}.h^{-1} for mass exhalation rate and from 104.5 mBq.m^{-2}.h^{-1} to 314.8 mBq.m^{-2}.h^{-1} for surface exhalation rate in coal samples. The radon concentration varied from 214 Bq/m^3 to 590 Bq/m^3, the radium concentration varied from 1.0 to 2.7 Bq/kg and radon exhalation rate varied from 7.8 mBq.kg^{-1}.h^{-1} to 21.6 mBq.kg^{-1}.h^{-1} for mass exhalation rate and from 138 mBqm^{-2}h^{-1} to 380.6 mBq.m^{-2}.h^{-1} for surface exhalation rate in fly ash samples. The radon concentration varied from 157.62 Bq/m^3 to 1810.48 Bq/m^3, the radium concentration varied from 0.76 Bq/kg to 8.73 Bq/kg and radon exhalation rate varied from 6.07 mBq.kg^{-1}.hr^{-1} to 69.81 mBq.kg^{-1}.hr^{-1} for mass exhalation rate and from 107.10 mBq.m^{-2}.hr^{-1} to 1230.21 mBq.m^{-2}.hr^{-1} for surface exhalation rate in different cement samples. The values were found higher in PPC samples than in OPC samples.

Keywords: radon, radium, health, coal, fly ash, cement, SSNTDs

Corresponding author: Tel. 91-129-2416602(O), E-mail: kkant_67@rediffmail.com