

**RADON EMISSION FROM URANIUM MINING WASTE ROCK DUMPS
AND RESULTING RADON IMMISSION**

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Abstract

Since more than 20 years, Wismut GmbH has been investigating the radon situation at uranium mining waste rock dumps. In the present paper the results of 19 complex studies at uranium mining dumps in the Erzgebirge (Ore Mountains) are reported. Although the mean specific activity of Ra-226 of the waste rock material was on a rather low level of about 0.5 Bq/g, the mean radon concentration in free atmosphere at the public exposure sites in the immediate vicinity of the dumps reached a value of about 1000 Bq/m³ for a half-year exposition and of about 600 Bq/m³ for a one-year exposition. Certain geometries and structures of waste rock dumps and the occurrence of convective airflows in the dumps are main reasons for the high radon emission despite of the relatively low specific Ra-226 activity. A case study for two buildings directly on the top of a waste rock dump in the town Johanngeorgenstadt is presented. The hypothetical interpolation of the results for Ra-226-activity to a value below the German threshold value for radioactive material of 0.2 Bq/g leads to the assumption that problematic radon situations may also occur outside the areas of legacies of uranium mining. Considering the aspects mentioned, a clearance level for NORM of 1 Bq/g is questionable.