

Publication

A prospective cohort analysis of residential radon and UV exposures and malignant melanoma mortality in the Swiss population

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4651486**Author(s)** Boz, S.; Berlin, C.; Kwiatkowski, M.; Bochud, M.; Bulliard, J. L.; Zwahlen, M.; Rössli, M.; Vienneau, D.**Author(s) at UniBasel** [Boz, Seckin](#) ; [Kwiatkowski, Marek](#) ; [Rössli, Martin](#) ; [Vienneau, Danielle](#) ;**Year** 2022**Title** A prospective cohort analysis of residential radon and UV exposures and malignant melanoma mortality in the Swiss population**Journal** Environment international**Volume** 169**Pages / Article-Number** 107437**Mesh terms** Adult; Environmental Exposure, adverse effects; Humans; Lung Neoplasms, etiology; Melanoma, epidemiology; Middle Aged; Prospective Studies; Radon, analysis; Skin Neoplasms; Switzerland, epidemiology; Young Adult

Background Radon is a radioactive noble gas naturally found in the earth crust that can accumulate in buildings. In addition to lung cancer, alpha particles emitted by radon may contribute to the risk of skin cancer. We evaluated the association between residential radon exposure and skin cancer mortality, over a fifteen year period, taking residential ultra-violet (UV) exposure into account. Methods We included 4.9 million adults from the Swiss National Cohort. Hazard ratios for melanoma mortality were estimated using Cox proportional hazard models (20+ years old; follow-up 2001-2015). Long-term modelled residential radon and ambient UV exposures were assigned at baseline, and included together in the Cox models. With age as a time scale, models were adjusted for calendar time, sex, marital status, education, mother tongue, socioeconomic position, and occupational environment with potential for UV exposure. Age specific hazard ratios were derived. Effect modification, sensitivity analyses and the shape of the exposure response, as well as secondary analysis using other outcome definitions, were investigated. Results After an average follow-up of 13.6 years, 3,979 melanoma deaths were observed. Associations declined with age, with an adjusted hazard ratio per 100 Bq/m³ radon at age 60 of 1.10 (95% CI: 0.99, 1.23). The dose-response showed an approximate linear trend between the minimum and mean radon exposure of 75 Bq/m³. Having outdoor occupation significantly increased the risk of melanoma mortality associated with UV exposure compared to indoor jobs. Analysis restricted to the last five years of follow-up showed similar results compared to the main analysis. Similar associations were found for mortality from melanoma and non-melanoma skin cancer combined. Conclusion With double the follow-up time, this study confirmed the previously observed association between residential radon exposure and melanoma and non-melanoma skin cancer mortality in Switzerland. Accumulation of radon indoors is preventable and of public health importance.

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