

ABSTRACT

Introduction: Environmental pollution is a major human problem since the mid-19th century. This situation is improving in the second half of the 20th century when human recognizes the consequences of industrialization. The issue of air pollution and for example, the negative effects of ionizing radiation, or the release of radon from the geological subsoil and its influence on the diseases as lung carcinoma, all these issues get more important. **Purposes:** The aim of the work is to find out whether there is an association between elevated radon concentration in buildings and some health indicators (incidence and standardized mortality rate). Using statistical analysis, it is examined if there is a statistically significant relationship among the variables and if these variables should be correlated together. The partial aims of the thesis are also to bring a qualitative view in the form of a professional interview and to visualize the acquired data into maps. **Methods:** The sources of data were the demographic yearbooks of the Czech Statistical Office, the database on the incidence of lung carcinoma from the National Health Information System and the measured values of the volume activity of radon (OAR) provided by the State Office for Radiation Protection. The data was processed by basic statistical analysis (calculation of some parameters) and used for creating maps in ArcGIS and calculating of correlation analysis in SPSS. The interview was processed in the form of questioning, where 16 questions were addressed to the expert on radon and lung carcinoma. **Results:** Map visualization of the data showed spatial differentiation of volume activity of radon and mortality index. Unfortunately, the correlation analysis did not show a closer relation between volume activity of radon and the incidence or mortality rate of lung cancer. On the contrary, a slight negative association occurred, but without a statistically significant relation. The results were similar for both sexes. Professional interview with Dr. Drábová confirmed the problematic evaluation of the influence of radon on the development of lung carcinoma. Smoking is a major factor for its inception. **Conclusion:** All the questions that were set at the beginning of the work were answered. There was not found any direct association between volume activity of radon and incidence or standardized mortality rate. Despite these results, the effects of radon on lung cancer are demonstrated in other studies. However, by basic prevention it is possible to effectively defend against radon and its impact on health. Possible next studies would have to be adjusted for the effects of smoking.

Keywords: radon, radon risk, lung cancer, human environment, health, ionizing radiation.