

Contaminazione da radon *indoornelle* abitazioni pugliesi e valutazione della probabilità di insorgenza di tumore polmonare nella popolazione residente

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KEY WORDS

Indoor radon; lung cancer; Apulian population

SUMMARY

«Contamination by indoor radon in houses in the Apulian Region of Italy and evaluation of the probability of lung cancer in the population». Background: Radon-222 is a gaseous radioactive chemical which can be transformed into other radioactive chemicals, defined as "products of decay" or "radon's daughter". The modality of radon penetration into the buildings depends on the convection motion created in the ground, which suck it back, so causing the penetration. The principal effect on human health is the increase risk of lung cancer, in proportion to the concentration and the time people spend indoors with exposure to radon. Objectives: The study proposed to estimate the expected cases of radon-induced lung cancer in the population of Apulia due to contamination by indoor radon. Methods: The study used the data obtained in a national survey made by ANPA (National Environmental Protection Agency) and ISS (High Health Institute), with the collaboration of the Regional Reference Centres for the Control of Environmental Radioactivity (CRR). In the Apulia Region 310 families (5000 nationwide) were involved, which were selected so as to constitute a representative sample both of the region and the country. Appropriate instruments for the measurement of mean concentrations of indoor radon (passive nuclear trace monitors were installed in the homes of the sample families in two different periods of year). We evaluated the variations of indoor radon concentration in the houses during spring-summer and autumn-winter periods, observing a predictable increase in the latter period. We assessed concentrations in relation to: 1. architectural features and location, 2. construction year, 3. building material, 4. presence of windows. Results: We found higher contamination in the oldest non-cement buildings and on the lower floors. In Lecce and Castri di Lecce we found a mean radon concentration higher than the national and the regional mean, which is equivalent to annual exposure of 0.54 and 0.46 WLM respectively. For these levels we estimated that the expected cases of radon-induced lung cancer will be 1.5 in Lecce and 1.3 in Castri per 10,000 inhabitants. Conclusion: The results of our investigations confirm that indoor radon pollution is a significant problem as it is one of the main causes of lung cancer. Hence, precautionary measures to reduce as much as possible exposure to indoor radon are highly recommended.