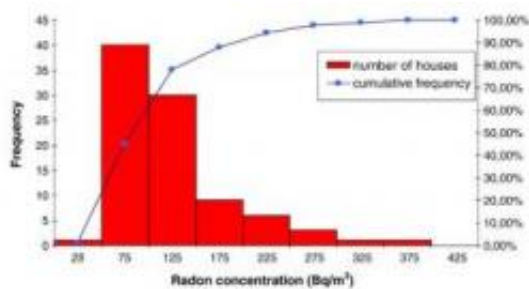


Study in Spain and Romania confirms radon as second leading cause of lung cancer

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This represents the concentrations of radon in Torrelodones houses. WHO recommends no more than 100 Bq/m³. Credit: Sainz et al./ SINC

Exposure to radon gas in homes is the second leading cause of lung cancer after smoking, according to a study carried out by researchers from the University of Cantabria and the Babes-Bolyai University in Romania. The team has studied data on exposure to this element in a uranium mining area in Transylvania and in an area of granite in Torrelodones, Madrid.

Numerous studies worldwide have shown that radon, a natural radioactive gas that seeps into homes in some regions, is the second leading factor (after smoking) in causing people to develop [lung cancer](#). This has now also been confirmed by a study carried out in Torrelodones, Madrid, and Stei, in Romania, by researchers from the University of Cantabria and the Romanian Babes-Bolyai University, and

which has been published recently in the journal *Science of the Total Environment*.

The authors estimated the death rate due to lung cancer attributable to radon and smoking in the areas studied between 1994 and 2006, using population data from the National Statistics Institute (INE), and data on radon exposure conditions and related risks taken from European epidemiological studies. The result was double that which would have been expected based on a relative risk report produced in 2006 for the whole of Europe on cancer incidence and mortality.

"The study shows that radon is the second leading cause of lung cancer, after smoking, as has also been shown by many other studies carried out over the years in various parts of the world", Carlos Sainz, co-author of the study and a researcher for the Ionizing Radiation Group at the University of Cantabria, tells SINC.

In order to carry out their study, the authors used detectors to measure radon levels in 91 homes in the town over several months, as well as asking residents about their habits, such as whether or not they were smokers. The data were processed using a complex IT programme (European Community Radon Software), and the lung cancer death rate expectancy based estimated were made based on the INE data and various European reports.



This is a Torrelodones watchtower. Credit: Jesús Sánchez Tena /SINC

WHO reduces recommended radon limits

The World Health Organisation (WHO) had previously recommended not exceeding 1.000 becquerels (Bq - the unit used to measure radioactive activity) of radon per cubic metre inside homes. However, last week, the WHO released a guide on this subject, in which it sets a new limit of 100 Bq/m³. The Torrelodones study shows that radon in more than half of the homes there is in excess of this amount.

Sainz points out that radon is a colourless, odourless and tasteless gas generated by the decay of uranium-238 (a natural radioactive element present in all rocks and soil in varying degrees). "It is much more abundant in granite areas, such as Torrelodones and other areas in the west of the Iberian Peninsula, such as parts of Galicia, Salamanca and Cáceres", explains the expert.

The study also analysed radon levels in Stei, an area in Transylvania, Romania, where there are old uranium mines, and where the incidence of lung cancer has been shown to be 116.82% higher than estimates. Radon levels of up to 2,650 Bq/m³ have been recorded in some homes.

Ventilation and barriers against radon

Radon gas is emitted by the subsoil and seeps into houses - to a greater or lesser degree depending upon the permeability of the ground - through the pores and cracks in garages and basements. This radioactive element accumulates to a greater extent in single family homes and ground floor flats than in those located higher up in apartment blocks.

In order to address the problem, in addition to regularly checking levels of this gas, the experts suggest ventilating cellars and basements with extractor fans (opening windows alone may not be sufficient, depending on the levels of the gas). The construction of architectural barriers that are impermeable to radon is also recommended, above all in newly-built houses.

More information: C. Sainz, A. Dinu, T. Dicu, K. Szacsvai, C. Cosma, L.S. Quindós. "Comparative risk assessment of residential [radon](#) exposures in two radon-prone areas, Stei (Romania) and Torrelodones (Spain)". *Science of the Total Environment* 407(15): 4452-4460, 2009

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