



## **A study of atmospheric radon gas concentrations in water extraction wells of Hamadan, western Iran.**

Gavin Gillmore (1) and Naghi Jabari Vasal (2)

(1) Kingston University, Geography, Geology and the Environment, Kingston-upon-Thames, United Kingdom (g.gillmore@kingston.ac.uk, 020 8547 7497), (2) Department of Medical Physics, Hamadan University of Medical Sciences and Health Medicine and School of Life Sciences, University of Bradford, West Yorkshire, BD7 1DP, UK.

It is well known that half of the radiation received by humans is due to the presence of radon ( $^{222}\text{Rn}$ ) in the built environment. As part of a project measuring indoor radon in Hamadan, western Iran, a survey was undertaken of atmospheric radon in 28 wells in the region using a Sarad Doseman. Specific geological features of this settlement include highly permeable alluvial fan deposits which result in radon being released to the atmosphere. The observed radon concentrations in well shafts (between 1,000 Bq m<sup>3</sup> and 36,600 Bq m<sup>3</sup>) show considerable variability both in space and time. One aspect of this study was to also assess whether there was a relationship between the depth of a well and the measured atmospheric radon concentration. The importance of such measurements in this region is highlighted by the fact that radon levels in homes in Hamadan are probably greatly influenced by the porous nature of this underlying geology and its use as a water reservoir / conduit through the application of qanat technology.