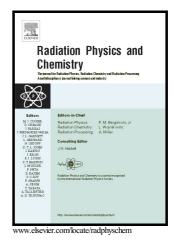
## Author's Accepted Manuscript

Study of radon dispersion in typical dwelling using CFD modeling combined with passive-active measurements

R. Rabi, L Oufni



 PII:
 S0969-806X(16)30806-4

 DOI:
 http://dx.doi.org/10.1016/j.radphyschem.2017.04.012

 Reference:
 RPC7522

To appear in: Radiation Physics and Chemistry

Received date: 22 December 2016 Revised date: 9 March 2017 Accepted date: 17 April 2017

Cite this article as: R. Rabi and L Oufni, Study of radon dispersion in typica dwelling using CFD modeling combined with passive-active measurements *Radiation Physics and Chemistry* http://dx.doi.org/10.1016/j.radphyschem.2017.04.012

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

### Study of radon dispersion in typical dwelling using CFD modeling combined with passive-active measurements

#### R. Rabi, L Oufni\*

Sultan Moulay Sliman University, Faculty of Sciences and Techniques, Department of Physics (LPM), B.P.523, 23000 Beni-Mellal, Morocco.

#### Abstract

Inhalation of radon (<sup>222</sup>Rn) and its decay products are a major source of natural radiation exposure. It is known from recent surveys in many countries that radon and its progeny contribute significantly to total inhalation dose and it is fairly established that radon when inhaled in large quantity causes lung disorder. Indoor air conditions and ventilation systems strongly influence the indoor radon concentration. This study focuses on investigating both numerically and experimentally the influence of environmental conditions on the indoor radon concentration and spatial distribution. The numerical results showed that ventilation rate, temperature and humidity have significant impacts on both radon content and distribution. The variations of radon concentration with the ventilation, temperature and relative humidity are discussed. The measurement results show the diurnal variations of the indoor radon concentration are found to exhibit a positive correlation with relative humidity and negatively correlate with the air temperature. The analytic solution is used to validate the numeric results. The comparison amongst analytical, numerical and measurement results shows close agreement.

**Keywords**: Radon, SSNTD, Exhalation rate, Computational Fluid Dynamics (CFD), Measurement method, Analytical method.

\*Corresponding author.

E-mail address: <u>oufni@usms.ma</u>, <u>loufni@gmail.com</u> (L. Oufni)

Download English Version:

# https://daneshyari.com/en/article/5499143

Download Persian Version:

https://daneshyari.com/article/5499143

Daneshyari.com