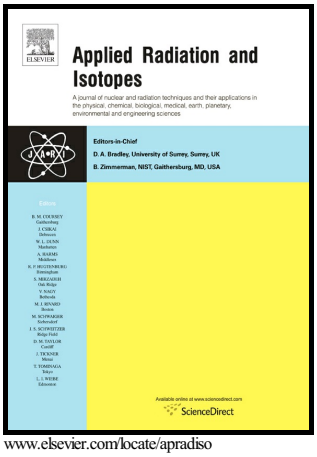

www.elsevier.com/locate/apradiso

Radon levels in drinking water of Fatehabad district of Haryana, India

Vikas Duggal, Samriti Sharma, Rohit Mehra

PII: S0969-8043(16)30865-X
DOI: http://dx.doi.org/10.1016/j.apradiso.2017.02.028
Reference: ARI7799

To appear in: *Applied Radiation and Isotopes*

Received date: 23 October 2016
Revised date: 31 January 2017
Accepted date: 16 February 2017

Cite this article as: Vikas Duggal, Samriti Sharma and Rohit Mehra, Radon levels in drinking water of Fatehabad district of Haryana, India, *Applied Radiation and Isotopes,* http://dx.doi.org/10.1016/j.apradiso.2017.02.028

Radon levels in drinking water of Fatehabad district of Haryana, India

Vikas Duggal[a*], Samriti Sharma[a], Rohit Mehra[b]

[a]Department of Applied Sciences, Guru Kashi University, Talwandi Sabo-151302, Bathinda, Punjab, India

[b]Department of Physics, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar-144011, Punjab, India

vikasduggal86@gmail.com

samritisharma2223@gmail.com

mehrar@nitj.ac.in

[*]Corresponding author. Postal Address: #28464, St. No. 3A, S.A.S. Nagar, Bathinda-151001, Punjab, India, Telephone Number: +91-8872087587

ABSTRACT

Radon concentrations were measured in 59 groundwater samples collected from Fatehabad district of Haryana, India. The measurements were performed by RAD7 an electronic radon detector manufactured by Durridge Company Inc. The measured radon concentration ranged from 1.4 to 22.6 Bq l^{-1}. 14% of the groundwater samples were above the United States Environmental Protection Agency recommended value for radon in water. The annual effective dose for ingestion and inhalation was also evaluated in this research. The total annual effective dose due to ingestion and inhalation of radon in drinking water varied from 14.1 to 221.8 µSv y^{-1}.

Keywords:

Radon concentration; Groundwater; RAD7; Ingestion; Inhalation; Annual effective dose

1. Introduction

Radon is a naturally occurring odorless, colorless and tasteless inert gas, produced continuously from the decay of naturally occurring radionuclide such as ^{238}U, ^{235}U and ^{232}Th. Radon has three natural isotopes: ^{222}Rn (radon) in the ^{238}U series, ^{220}Rn (thoron) in the ^{232}Th series and ^{219}Rn (actinon) in the ^{235}U series. ^{219}Rn is not important for human exposure, because of the low-activity concentrations of ^{235}U and the short half-life of it. Also, the half-life of ^{220}Rn (55.6 s) is much shorter