

Updated Radon Risk Maps for Ireland

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National Radon Forum
26rd May 2022**

What am I going to talk about?

- What is radon properties /characteristics/ health effects?
- How the new radon risk maps was developed and why
- The new maps

What is radon?

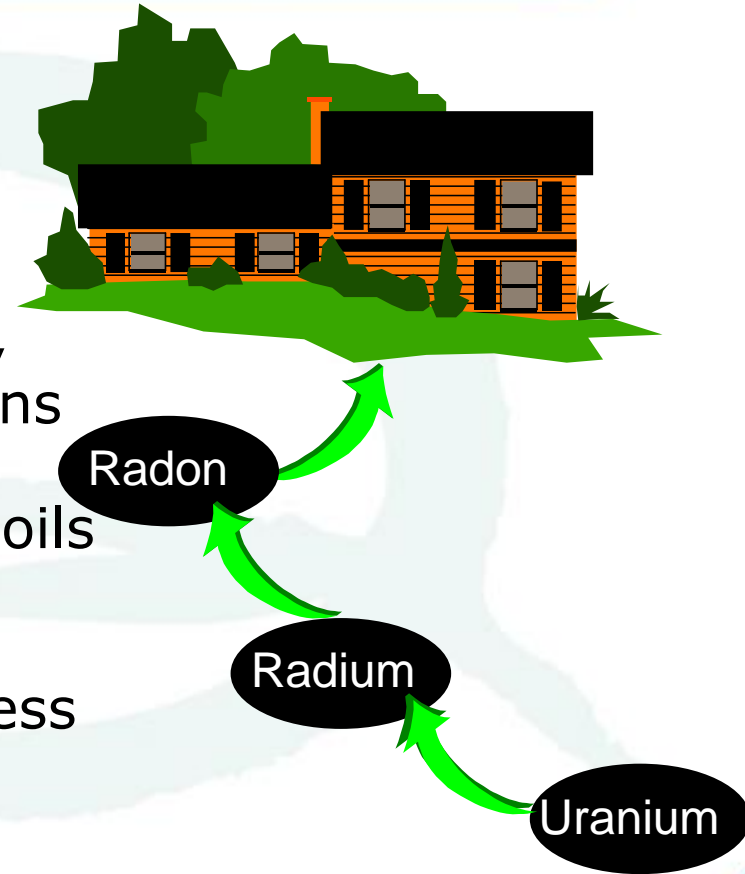
Radioactive gas

Accumulates in enclosed spaces, frequently to high concentrations

Decay of uranium in rocks and soils

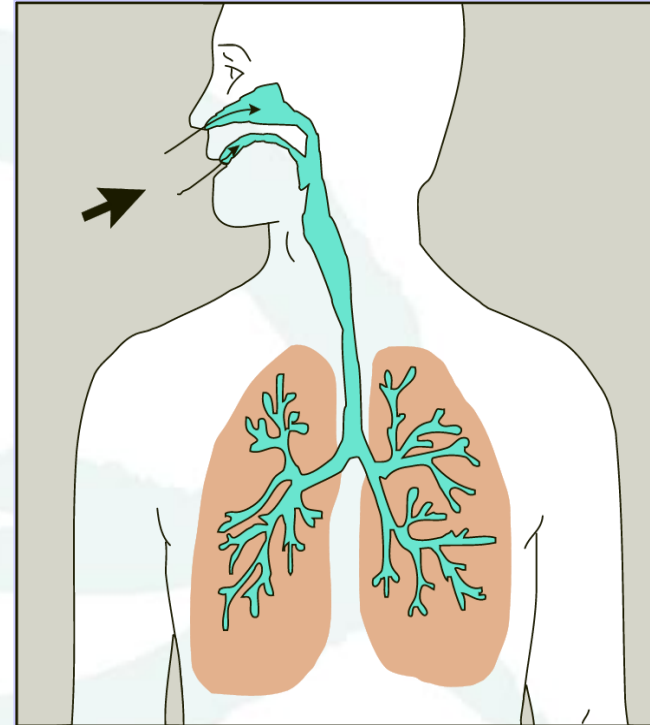
Odorless, colourless and tasteless

Naturally occurring



Why is radon harmful?

- Radon is radioactive, when inhaled it can deliver a high radiation dose to the lung
- Group 1 carcinogen - same as tobacco smoke and asbestos (WHO)
- 350 lung cancers annually, 2nd cause of lung cancer after smoking
- Radon is chemically inert. So not linked to other respiratory disorders such as asthma or bronchitis



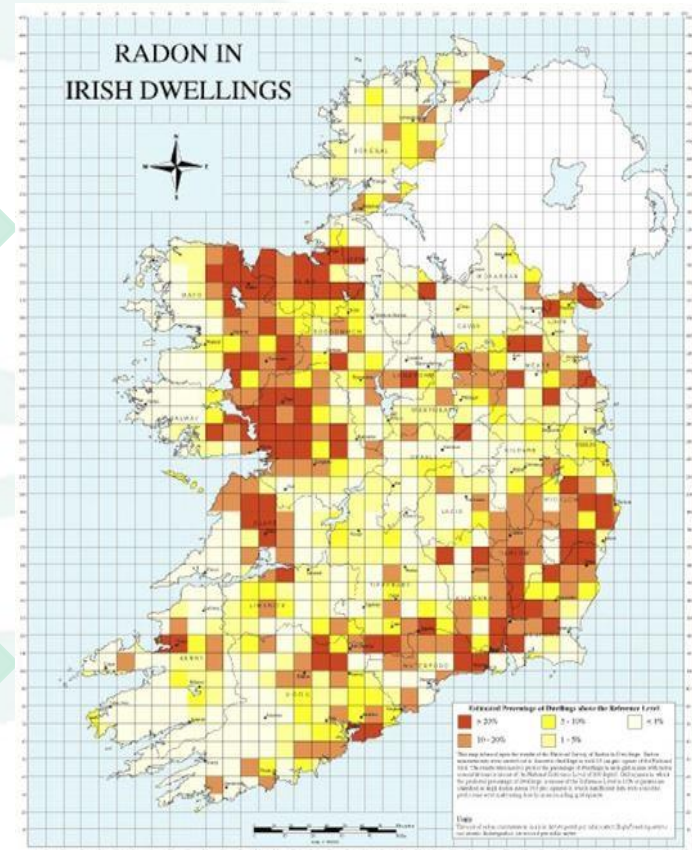
Current Radon Risk Map – National Radon Survey 2002

Logistics

- Carried out between 1992 and 1999
- 10 km grid squares
- 11,319 homes tested

Outcomes

- National average of 89 Bq/m³
- Predictive map with 5 radon risk categories
- Defined High Radon Areas (HRAs)



Current radon risk map for Ireland – Uses

Uses include:

1. Employer's responsibilities under SI No 30 of 2019
2. Technical Guidance supporting Part-C of the Building regulations (TGD-C)
3. Public information tool
4. Targeting EPA radon publicity

RADON
102,441
pageviews of radon related content
on the website

Pageviews of radonmap on EPA.ie (desktop)

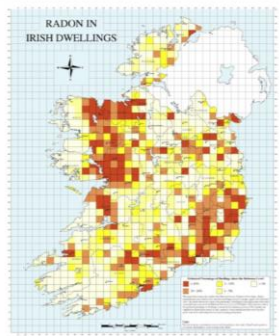


Pageviews of radon related pages on EPA.ie (desktop)

Page	Pageviews	Avg. Time on Page
/radiation/radonmap/	42,411	00:03:58
/radiation/meas/radon/services/apply/	10,483	00:02:27
/radiation/radon/	5,978	00:00:58
/radiation/radonmap/help/	2,360	00:00:45
/radiation/meas/radon/	1,660	00:01:51
/radiation/meas/radon/services/	920	00:00:47

National Radon Control Strategy

Identified the need for a new radon risk map



2012

HSE (Health Intelligence Unit) geocoded and mapped approx. 30,000 EPA indoor radon measurements

2013

GSI developed a model for a new map using airborne uranium (TELLUS) + groundwater recharge + karst terms for border areas @ 1km grid

2014

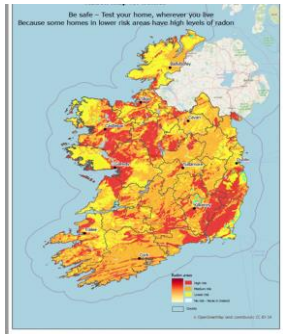
GSI produced a national model using: mean radon per bedrock unit + aquifer type + groundwater recharge and karst terms @ 1 km grid

2016/
2017

TCD & GSI further refined this map using indoor radon measurements + bedrock geology + quaternary geology + soil permeability + aquifer type

2018

TCD published a new map using additional EPA data (approx. 7,000)



EPA validation of updated radon map

Before adopting a new map, a full assessment of the analytical methodologies and data used was required

EPA Analytics Team (expertise in spatial validation & statistics) with external peer review from a spatial solutions company & a data science company

During 2020/21: more detailed assessment was carried out in partnership with GSI and TCD

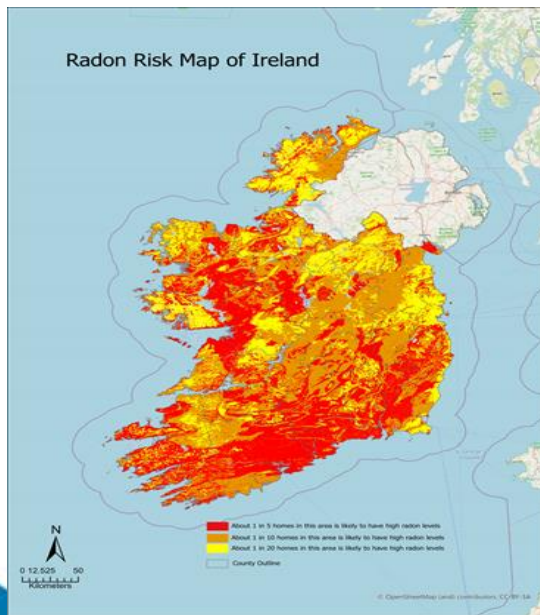
It was concluded that the TCD modelling approach (logistic regression) remained the most appropriate modelling option to proceed with

ESRI/EPA User testing of radon maps

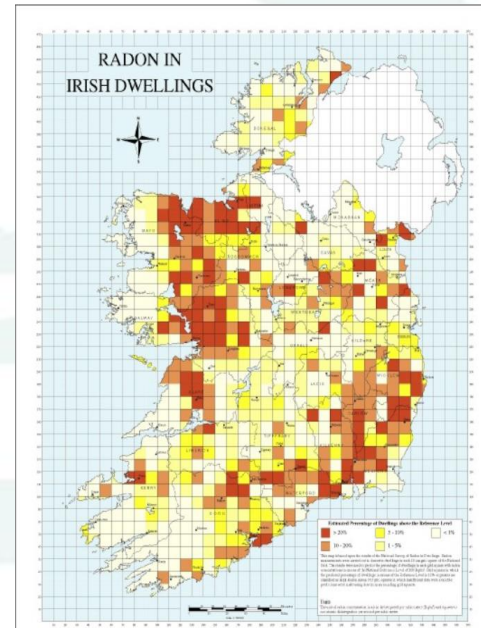
- User testing of the updated map by ESRI and EPA complete
- 16 versions of the map tested and the current map
- 100 people saw each map
- Best performing map increases householder willingness to test by 72%
- Best performing features:
 - Extensive search functionality
 - Three risk categories
 - A simple frequency statement
 - A yellow-to-red colour scheme

Radon risk maps

1. Radon Risk Map of Ireland

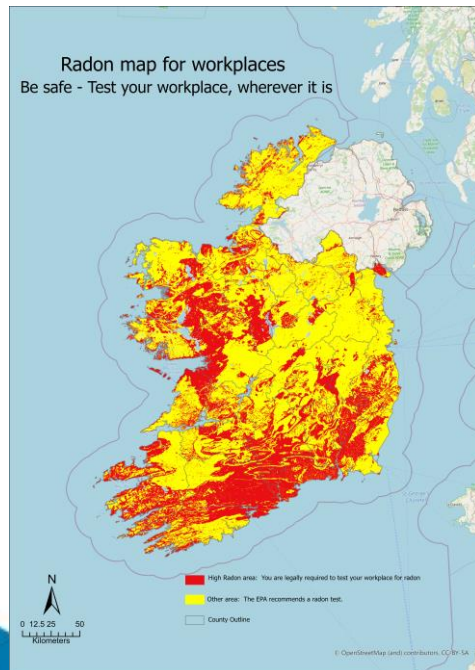


Replaces the existing map

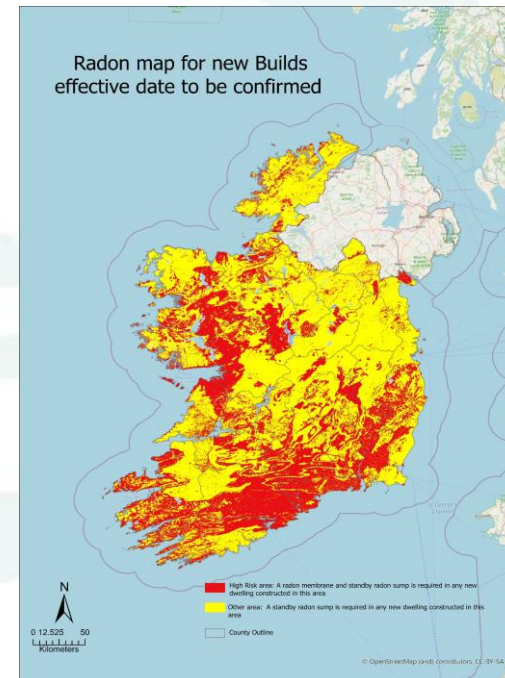


Binary radon risk maps for two stakeholder groups

1. Employers who are legally required to test workplaces in High Radon Areas



2. For new builds to identify radon preventive measures required

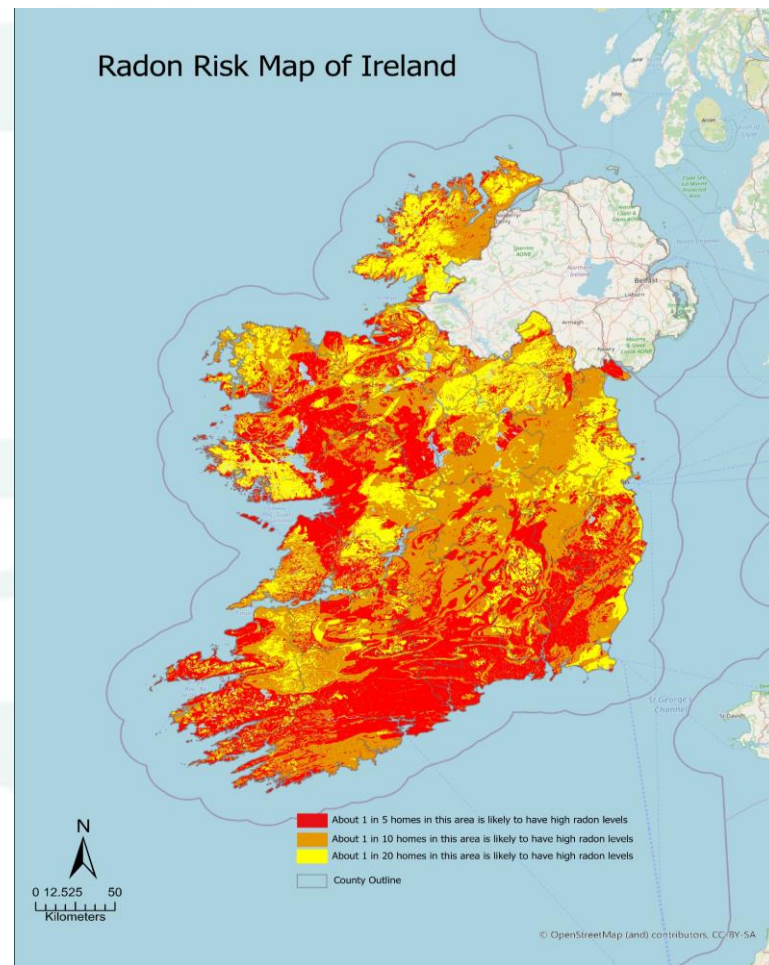




16th NATIONAL RADON FORUM

Thursday 26th May 2022, Camden Court Hotel, Dublin City Centre

- Radon Risk Map of Ireland comes into effect from today

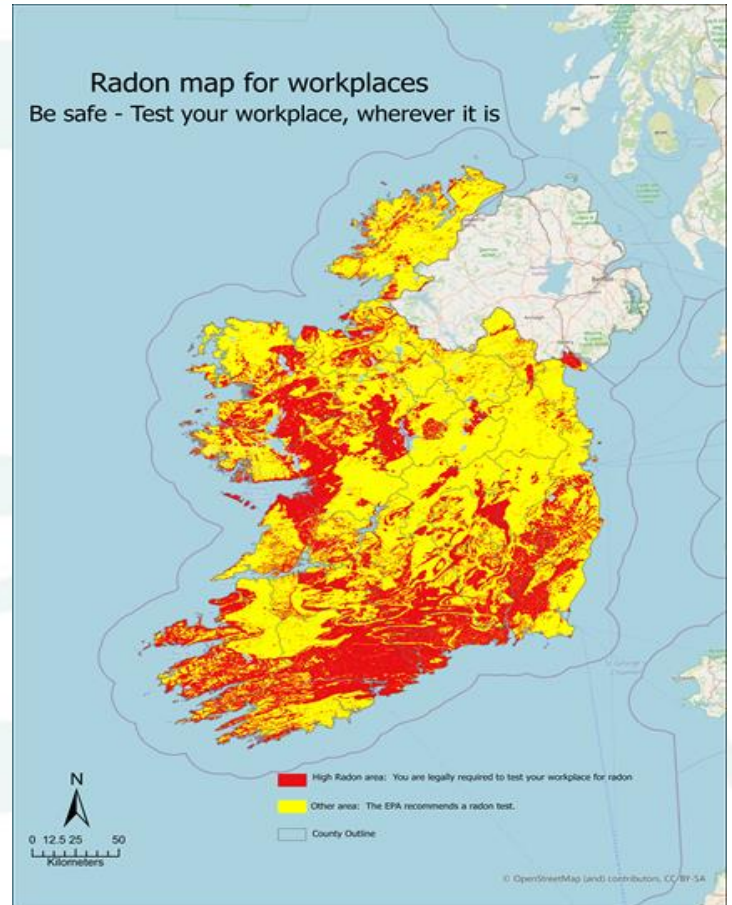




16th NATIONAL RADON FORUM

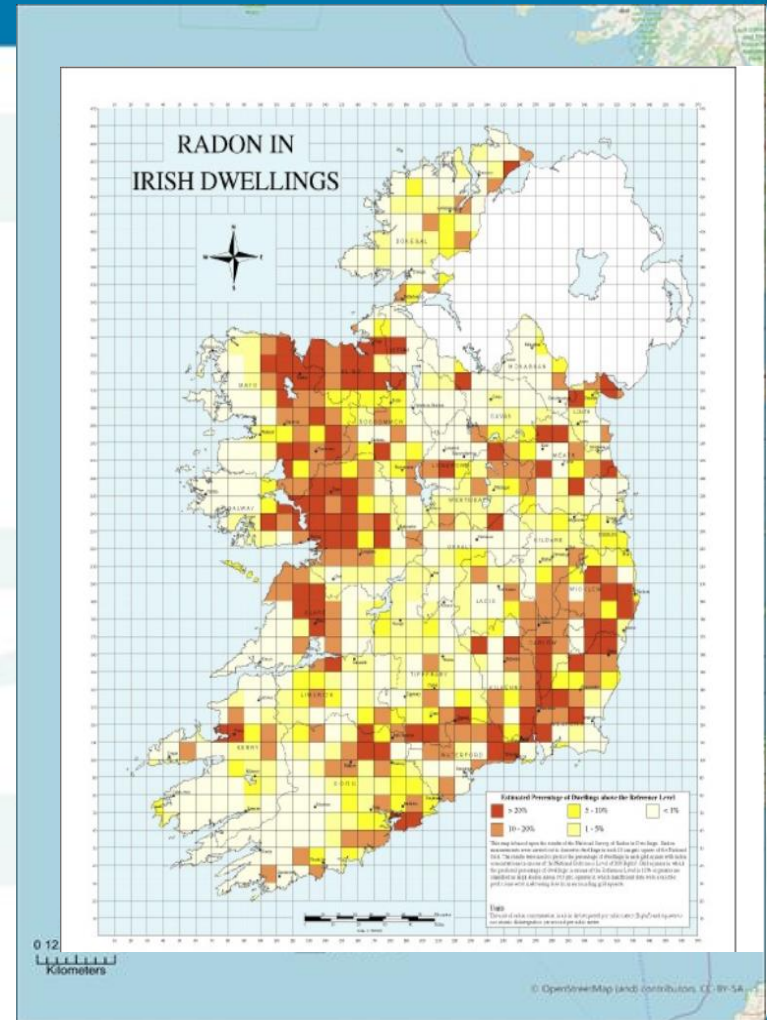
Thursday 26th May 2022, Camden Court Hotel, Dublin City Centre

- Radon map for workplaces comes into effect from today



Building Regulations – new builds

- Radon map for New Builds
 - Effective date to be confirmed
- This is linked to the revision of TGD-C and on the interpretation TGD-C will put on the new map
- In the interim the existing radon map will be maintained



MORE INFORMATION ON RADON ON WWW.RADON.IE



Any questions?