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Government of Ireland

# Implementation of Ireland's Radon Action Plan

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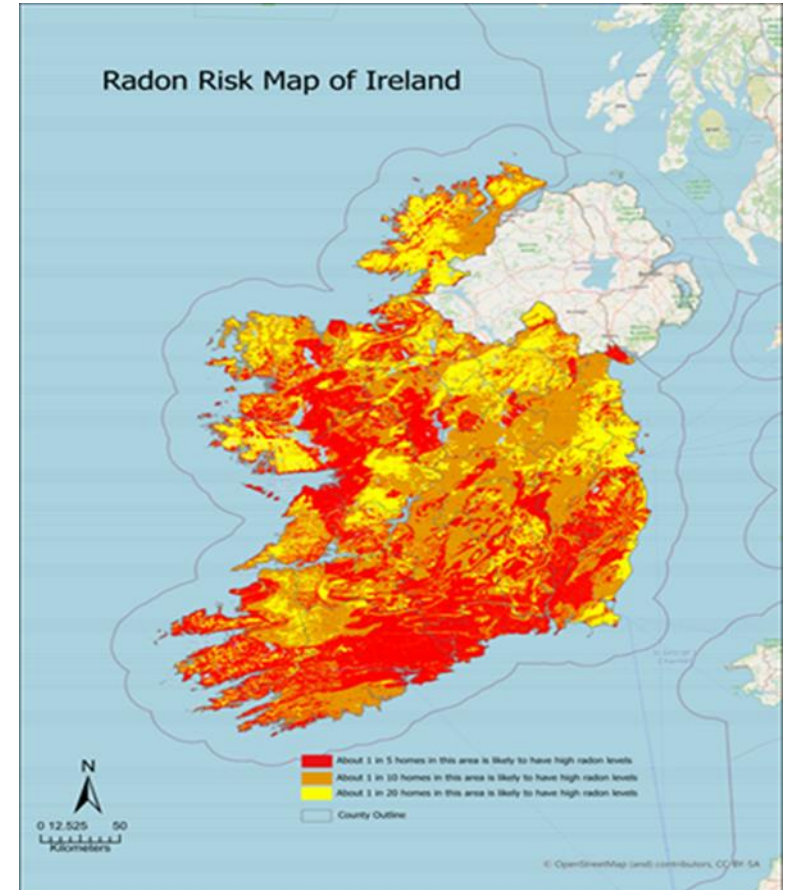
Portuguese Side Event at the 68th Regular  
Session of the IAEA General Conference  
18<sup>th</sup> September 2024

# The Radon Problem in Ireland

About **170,000 (10%)** homes across Ireland have radon levels above the reference level of  $200 \text{ Bq/m}^3$



**350** people contract radon related lung cancer every year



# Ireland's National Radon Control Strategy (NRCS)



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**Aim:** To minimise the exposure to radon gas for people in Ireland and to reduce to the greatest extent practicable the incidence of radon related lung cancers.

- Currently in Phase 2 of the strategy (2019 – 2024)
- Strategy is led by Department of Environment, Climate and Communications
- ✓ Cross government/agency co-ordination group to implement and track strategy actions



# National Radon Control Strategy

## Thematic areas



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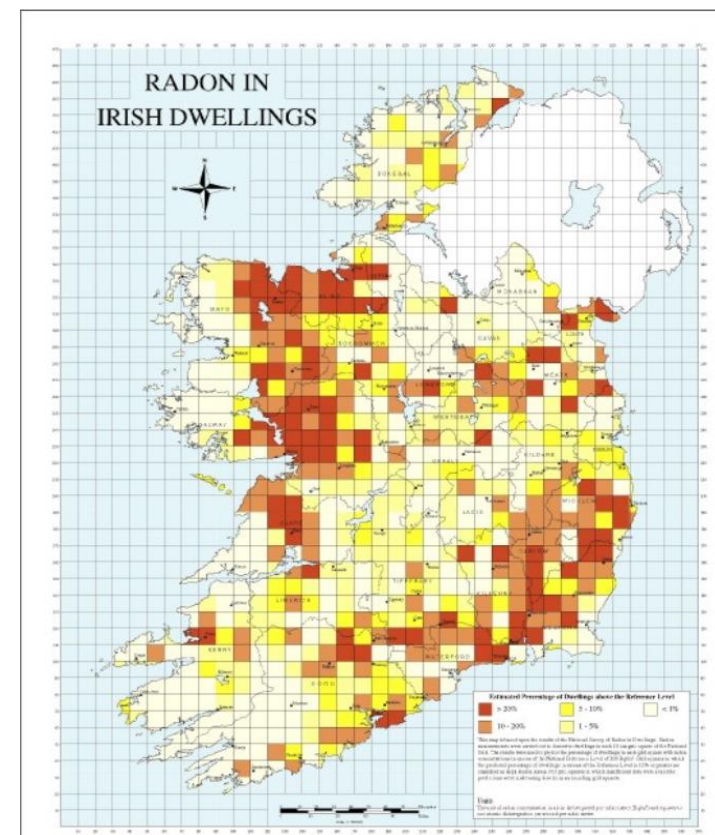
- 33 Actions in current phase
  - (1) Radon prevention in new buildings
  - (2) Use of property transactions to drive action on radon
  - (3) Communications and advocacy
  - (4) Promoting confidence in radon services
  - (5) Radon in workplaces and public buildings
- Environmental Protection Agency is the **lead** for 25 of the 33 actions
- ✓ Strategy is accompanied by a knowledge gaps paper identifying research needed to support the strategy.

# Phase 2 Highlight: Updating the radon risk map



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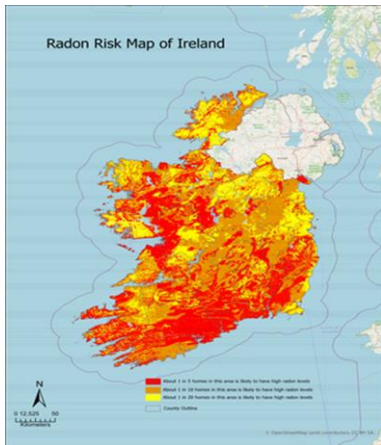
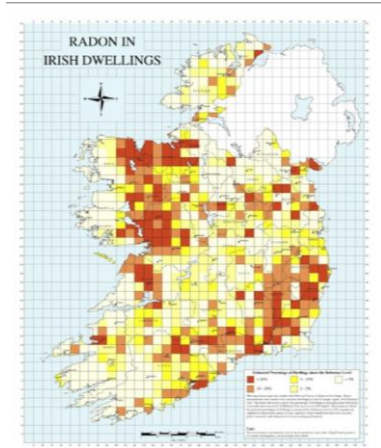
- First radon map based on radon measurements only and from over 20 years ago
- 5 risk categories and 10 km grid squares
- Risk assessment tool to identify high risk areas and inform:
  1. Building regulation requirements
  2. Employer's legal responsibility
  3. Awareness campaigns
  4. Public information



# Development of Updated Radon Risk Map



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2012

Geocoding and mapping approx. 30,000 EPA indoor radon measurements

2013

Geological Survey of Ireland developed a model for a new map using geological parameters @ 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

Further research produced a map with indoor radon measurements + bedrock geology + quaternary geology + soil permeability + aquifer type (Elio et al., 2017)

2018

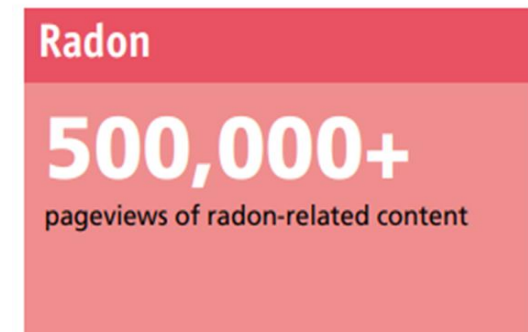
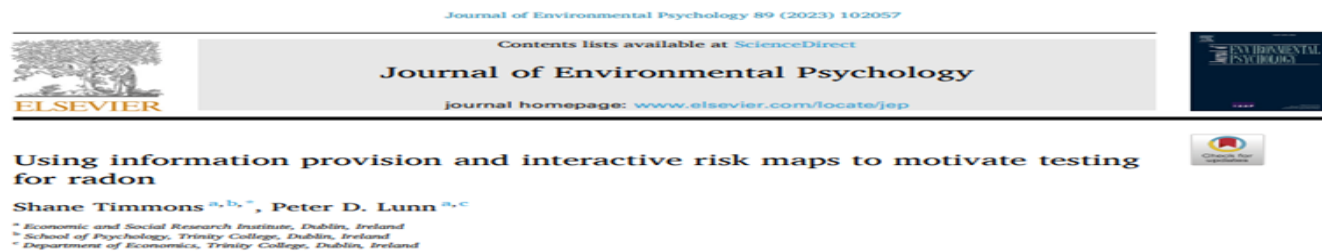
TCD validated new map using additional EPA data (approx. 7,000)

# Communicating the updated radon risk map



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- ✓ Behavioural scientists carried out online user testing of the updated map
- 16 versions of the updated map along with the old map tested, each by a group of 100 randomly selected people
- Best performing new map increases householder highly willing to test by over 50%
- Best performing features:
  - Extensive search functionality
  - Three levels of risk with a yellow to red colour scheme
  - A simple frequency statement (1 in X)

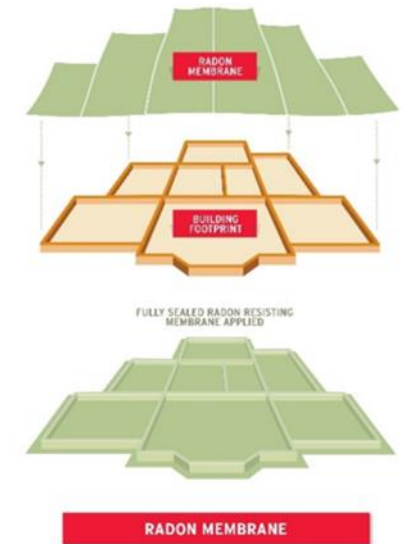
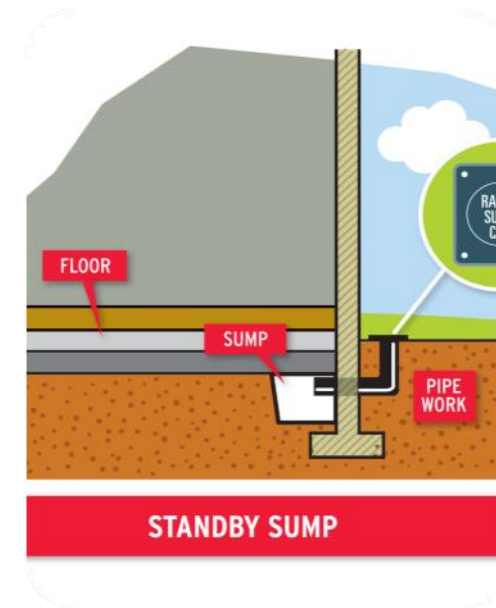


# Radon prevention in new buildings

## Irish Building Regulations (Technical Guidance Document C)

Since 1998, Irish Building Regulations require:

1. All new buildings in all areas are fitted with a standby radon sump
2. Sealing: all new buildings in High Radon Areas are fitted with a sealed radon membrane



- ✓ EPA research found a 13% reduction in the average indoor radon level from 89 Bq/m<sup>3</sup> (2002) to 77 Bq/m<sup>3</sup> (2017)
- ✓ Survey currently underway to track this NRCS metric



Contents lists available at ScienceDirect

Journal of Environmental Radioactivity

journal homepage: [www.elsevier.com/locate/jenvrad](http://www.elsevier.com/locate/jenvrad)

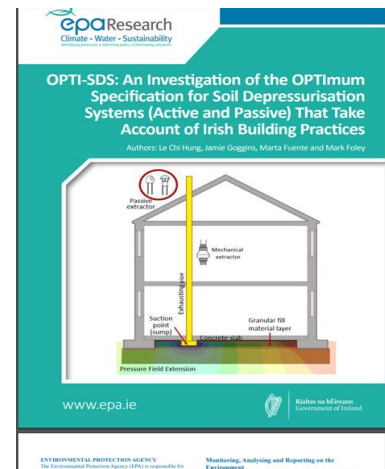
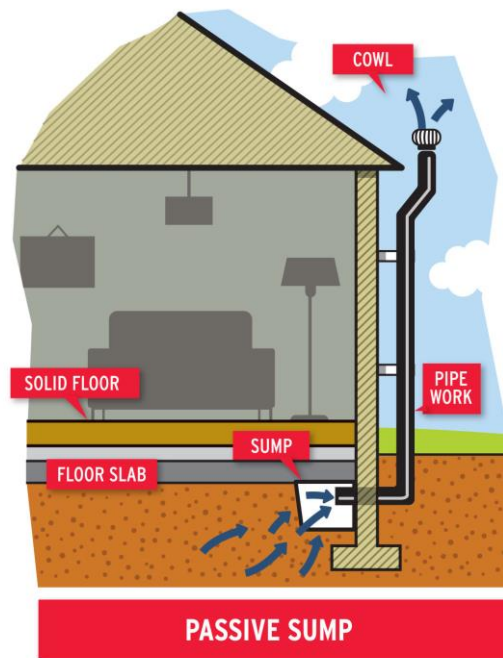
Update of Ireland's national average indoor radon concentration – Application of a new survey protocol

A. Dowdall <sup>a,\*</sup>, P. Murphy <sup>b</sup>, D. Pollard <sup>a</sup>, D. Fenton <sup>a</sup>

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<sup>b</sup> School of Mathematical Sciences, University College Dublin, Belfield, Dublin 4, Ireland



Focus has been on research into the optimum specifications for radon preventive techniques in new buildings.



The effectiveness of passive sumps and static cowls in reducing radon levels in new build Irish dwellings

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✓ Field trials on passive sumps found a 65% reduction in radon levels

## Current focus on engagement on training and continuing professional development

- Engagement with government depts and construction industry to include radon in training and course materials for construction site staff
- Work with architect's professional body to input into Advisory Note for Designers for Radon Protection
- Engagement with Engineers Ireland to develop a radon webinar for members

# Promoting confidence in radon services



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## Provide training course in radon remediation and promote attendance

- Strategy action that EPA maintain a Registration scheme for remediation services.
- Successful completion of course is required for EPA registration.
- Course delivered 4 times in 2023
- Attendance was a mix of private contractors and employers/state bodies with large workplace building stock.
- Focus is now on developing training for retrofit sector.



# Radon in workplaces and public buildings



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Continue co-operation on radon with other State agencies

Targeted information sessions for:

- Health and Safety Authority workplace inspectors
- Environmental Health Association
- Local Authority Safety Officers



## National Radon Forum - October 2023

- Held in Cork, an area where the radon risk was re-categorised to high
- Expand the radon digital monitor loan scheme to libraries in this area
- Local Authority experience of addressing radon in their workplaces
- Inform stakeholders of Radon map update in Building regulations

- ✓ **Opportunity for stakeholder engagement and networking to share knowledge and experience**



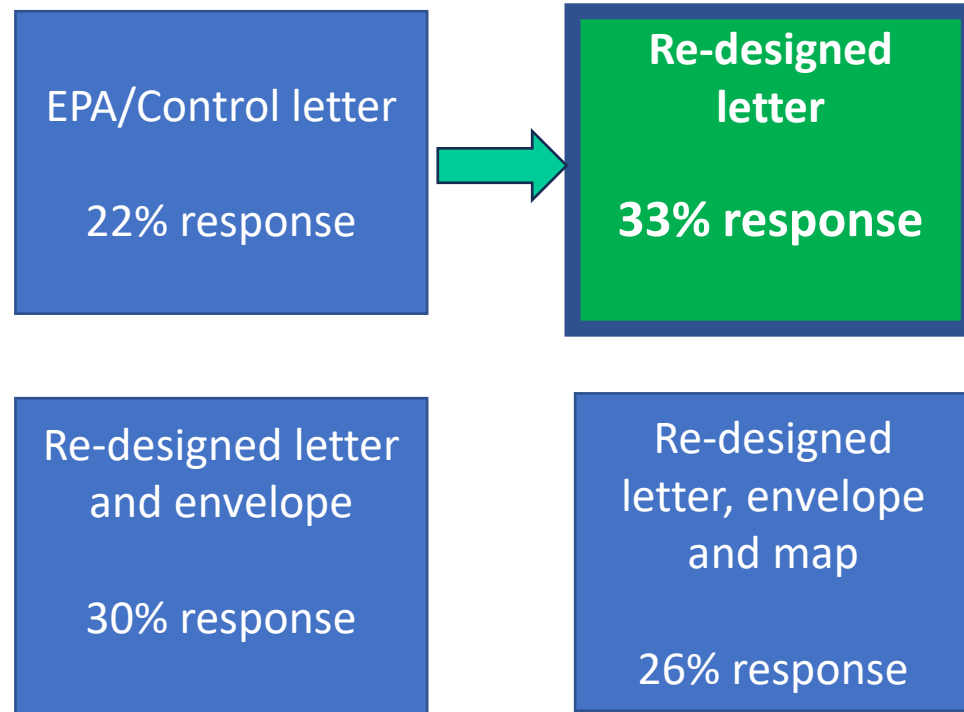
# Communications and Advocacy

- Promote awareness of radon through local and national media in press releases, radio ads and at EPA outreach events
- Normalising radon in the community through public meetings, community newsletters and library loan scheme



## Challenge to translate radon awareness into action

- Response rates are very low:
  - 1% response to awareness campaigns
  - 22% response to offer of free tests
  - Only 1 in 4 people with high radon levels will remediate!
- ✓ Currently working with behavioural scientists to looking at testing communications to increasing response rates to financial incentives



- Behavioural scientists assessed response rates to different communications offering a free radon test
- Almost **50% increase** in response rate to behaviourally informed letter.





# National Radon Control Strategy Metrics



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- Aim: “to minimise the exposure to radon gas for people in Ireland and to reduce to the greatest extent practicable the incidence of radon related lung cancers”.
- ✓ Tracking progress through metrics
  - Geographic weighted national average indoor radon concentration

**2024**



# NRCS Metrics: National Average Radon Concentration timeline



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## Q1– Invitation Phase

11,300 randomly selected houses representative of risk and geography  
Invited to take part in survey and offered a free radon test

## Q2 – Test Phase

2300 participants carrying out a radon test  
Questionnaire on house characteristics to be returned with detectors

## Q3 – Results Phase

Statistical analysis of results to produce updated national average radon  
Updated average will inform Phase 3 of NRCS



# Knowledge gaps



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- ✓ Continue to support research on the effect of emerging construction and retro fit technologies on indoor radon levels

## **EPA funded research project:**

**Investigating the National Implications For Radon Concentrations Following Deep Energy-Efficient Retrofits**

**In parallel, EPA carrying out a pilot survey of radon levels in homes pre and post retrofit in a high radon risk area.**

# Lessons learned and next steps



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- ✓ **Cross-Government support and collaboration from relevant departments agencies and departments critical.**
- ✓ **Good relationships over many years with other agencies/research community has opened doors and provided new insights.**
- **Translating awareness into action is a slow process.**
- **Current focus on training to ensure best practice in new and existing homes.**
- **Knowledge gap around energy efficiency being investigated.**

# Thank you for your attention!



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Further information: [www.radon.ie](http://www.radon.ie)



## NRCS

National Radon Control Strategy  
Straitéis Náisiúnta um Rialú Radóin

## Any questions?