

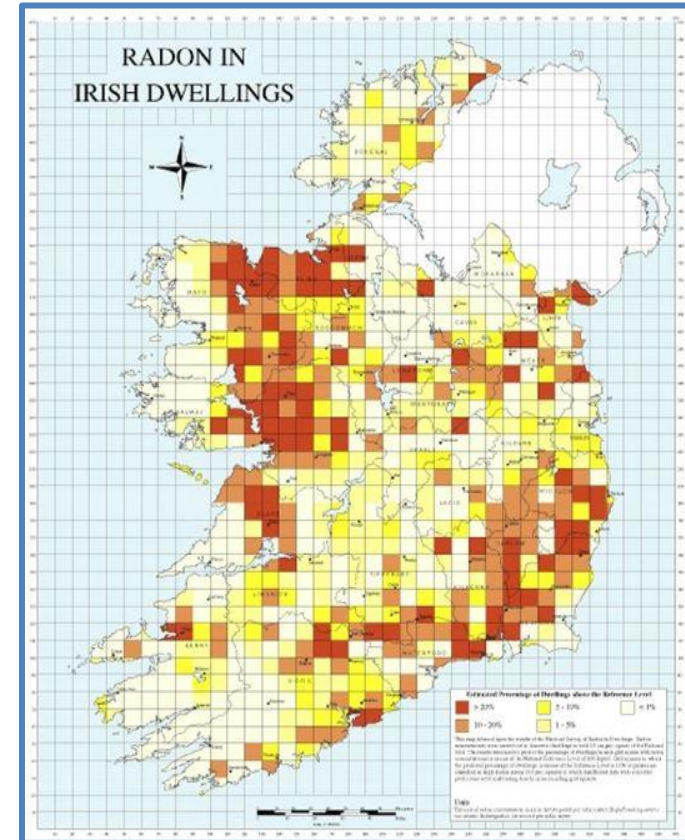
Can Citizen Science Improve Radon Testing & Remediation Rates

Stephanie Long

HERCA pre-NRAP Workshop Event
23rd March 2021

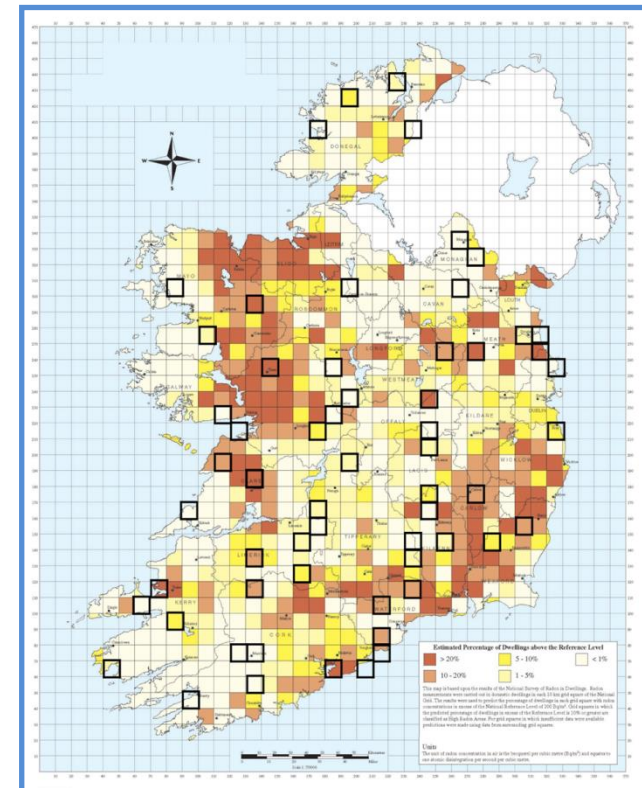
National Radon Survey (1992 – 1999)

- Invitations sent to approx. 53,000 householders offering a **free test** & requesting completion of a questionnaire
- **Lots of publicity:** press releases, radio interviews & local newspaper articles
- **21% tested homes (17 - 36%)**



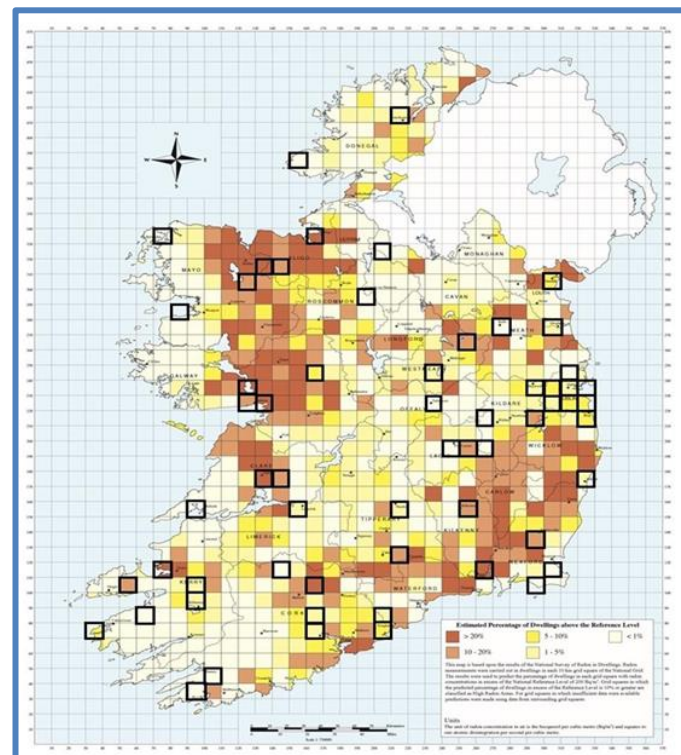
Survey to update the national average concentration (2017)

- 3,900 invitations sent offering a **free test** & requesting completion of a questionnaire
- **No public awareness work** but comprehensive information provided to those invited to test
- **22% tested homes (7-50%)**



Survey to update the population weighted average (2018)

- 5,900 invitations delivered offering a **free test** & requesting completion of a questionnaire
- **No public awareness work** but comprehensive information provided to those invited to test
- **21% tested homes (12-25%)**



Testing & remediation rates

- Testing rates are about 20% where a free test is offered
- Testing rates are about 1% following public information campaigns where a testing kit must be purchased (about €50)
- Remediation rates are also typically 20%, where a householder receives a result above 200 Bq/m³

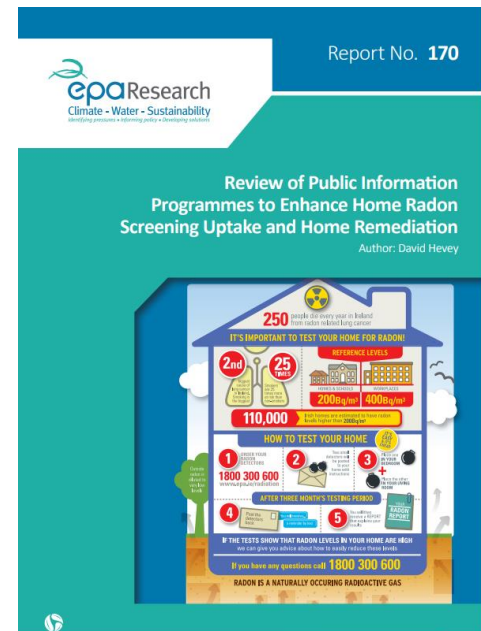
Is 20% as good as it gets or can we do better?

Review of information campaigns recommended:

- Financial incentives to support remediation
- Information campaigns that target individuals at different points on their radon testing/ remediation journey

Combined with

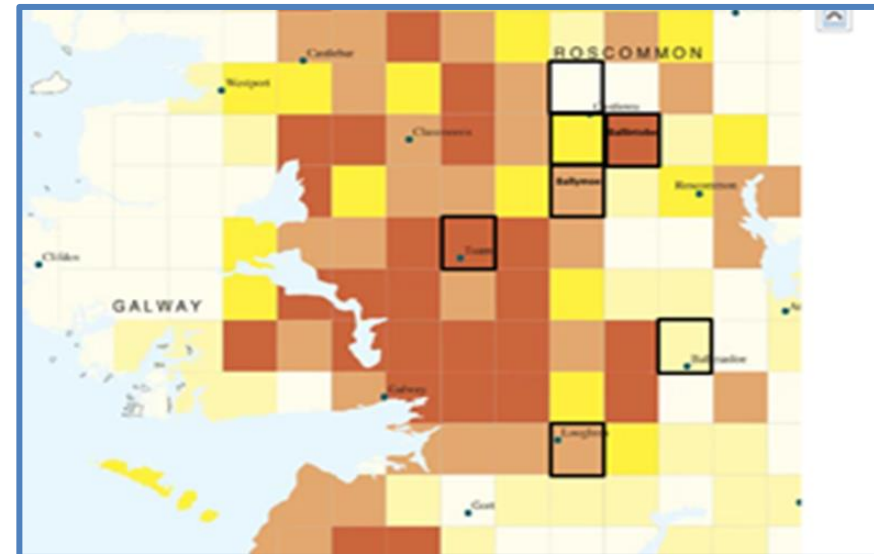
- Increased regulation. For example: homes in radon prone areas must be tested (and remediated) before sale



Financial incentives + information

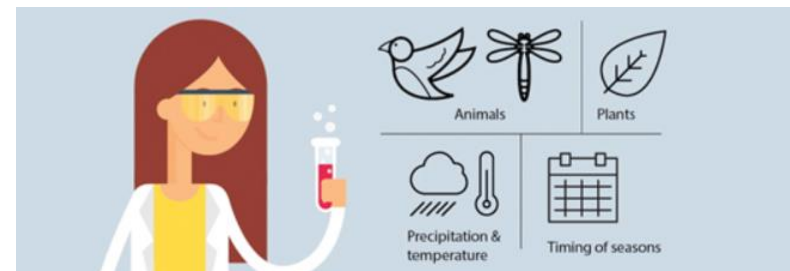
- 1,400 invitations delivered offering
 - a **free test**
 - up to **€500 towards remediation**
 - questionnaire
- No **public awareness work** but comprehensive information provided to those invited to test
- **20% tested homes**
- **3% remediated** (3 of 9 homes identified $>200 \text{ Bq/m}^3$)

Survey: impact of financial incentives (2018)



Can Citizen Science Help?

- **Members of the public** collect data by **carrying out a scientific measurement/ observation**
- **The data that are collected has a purpose** (research project, development of policy, used by the community that collect it)
- The project should meet the **10 principles for Citizen Science** developed by the European Citizen Science Association



Don't remediate as don't believe there is a problem



Radon Measurement Report

Report Date: 25 Nov 19 Report Reference: 37828
Building Reference: A00319 Measurement Period: 20-Apr-05 - 27-Jul-06

Detector Number	Analysis Date	Location	Radon Concentration (Bq/m ³)
170382	17-Aug-06	Living Area	43
170383	17-Aug-06	Bedroom	22

Seasonally adjusted annual average in building 43

Since the seasonally adjusted annual average radon concentration in air in this home is below the national reference level of 200 Bq/m³, the EPA advises that, on the basis of these results, no further action is necessary.

Report issued by:

David Fenton
Manager, Radon & Radiation Measurement Services

Analyst:

Michael Murray

- Notes:
1. Measurement type: CR39 Passive detector.
 2. Results are valid only if the detectors were placed in accordance with the EPA's instructions.
 3. This report shall not be reproduced, except in full, without the approval of the EPA.
 4. Annual average radon concentrations are calculated in accordance with the EPA's standard protocol.
 5. The minimum reporting level is 10 Bq/m³.
 6. The results refer only to the above measurement address for the specified measurement period.
 7. Any opinions and interpretations expressed herein are outside the scope of accreditation.

Page 1 of 1

VS



PUBLIC

LIBRARY

Digital monitors borrowed from local library (2019/20)

- Pilot project with local authority & local contractor to make digital monitors available through libraries
- Library 1 launched November 2019, Library 2 launched November 2020 (virtually)
- Targeted those that had already tested high (3 month test) but not taken any action – 1 month test to confirm original results
- Detectors have been borrowed 59 times (library 1) & 40 times (library 2 + a waiting list of 20))

PUBLIC

LIBRARY

Preliminary feedback

- Easy access to library and information evening (live event)
- Involvement of local contractor & librarians
- Ease of use of monitor
- Free of charge
- Resulting in “peace of mind” following remediation
- Word of mouth was important in spreading the message
- Ten remediations following 59 loans of monitors (Library 1)
- One remediation following 40 loans of monitors (Library 2)

Task 6.3. Establishment of a citizen science (CS) toolkit for radon prone areas & a network of CS projects to address mitigation

merience



Norwegian University
of Life Sciences

CEPN

sck cen

Exploring
a better tomorrow



Health
Canada



This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 900009.

Overview

Review citizen science initiatives

Sept 20 - March 21

Develop a citizen science toolkit for radon mitigation

March – Sept 2021

Test the toolkit in France, Ireland, Romania and Norway

September 2021

Finalise the toolkit

September 2022

Open calls to use the toolkit developing a network of citizen science projects

October 2022 – open calls
January 2023 – close calls

Recommendations for empowering CS initiatives

November 2024

Review - key lessons

1. Radon citizen science initiatives are missing the final & most important steps needed to reduce exposure:

- 17 steps identified from first hearing about radon to confirming that I have reduced my exposure [Hevey, 2016]
- Most radon citizen science initiatives stop at steps 11-13:
 - 11. I test my home
 - 12. I understand my results
 - 13. I know I am at risk
- Toolkit will focus on supporting homeowners to take the final steps:
 - 14. I want to reduce the risk
 - 15. I know how to reduce the risk
 - 16. I reduce the risk: remediate/ mitigate
 - 17. I confirm the risk has been reduced: re-test.

Review - key lessons

2. All projects were initiated by radiation protection authorities and/or research organisations following a top-down approach
- ECSA principle No 4: 'citizen scientists may participate in multiple stages of the process' including developing the research question, designing the method....'
 - A bottom up approach will be taken
 - A call will be made through local networks offering funding, information and professional support to community groups to remediate their homes



Next steps

- Develop the toolkit:
 - Information for householders about remediation options
 - A video explaining remediation options
 - Supported with professional advice where it is needed
- Test the toolkit (France, Ireland, Norway, Romania)
- Evaluate whether this approach results in higher remediation rates than other interventions



Thank you for
your attention!