



**RadoNorm**  
Managing risks from radon and NORM

***Remediators versus non-remediators:  
Exploratory focus groups with residents  
of dwellings in high radon prone area in  
Ireland***

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Exploring  
a better tomorrow



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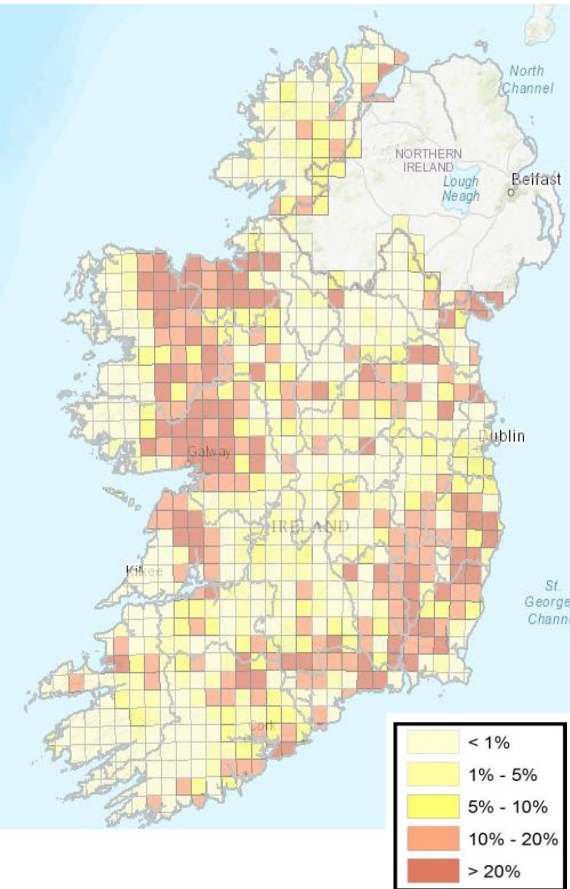
WHO HANDBOOK ON  
INDOOR RADON

A PUBLIC HEALTH PERSPECTIVE



- Individuals can be exposed to indoor radon in public spaces (i.e., schools), workplaces, and dwellings (i.e., households).
- The failure to remediate known high levels of indoor radon is a serious problem given radon's classification as a known carcinogen, which can lead to lung cancer.
- The longer individuals are exposed to high indoor radon levels, the greater the risk of developing lung cancer.
- Radon causes about 300 cases of lung cancer in Ireland each year.

# Background, Ireland

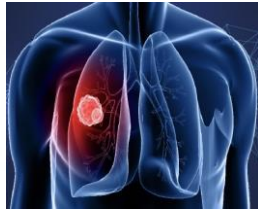
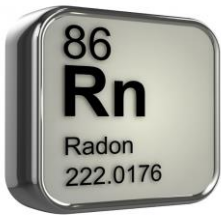


Estimated % of homes above the Reference Level, 200 Bq/m<sup>3</sup> (advisory)



- There are requirements for indoor radon testing and mitigation in public spaces and workplaces in radon prone areas (RPA) in Ireland and advice to measure workplaces in all territory (regardless of radon risk). All dwellings built after 1998 on RPA should be fitted with radon membranes.
- Activities carried out by state to accelerate testing and remediation of dwellings: e.g. awareness campaigns, financial support for householders in a particular areas was given, radon data included in conveyancing process, rental regulations, free post remediation testing provided by EPA, dedicated [Website radon.ie](http://radon.ie) for householders with information for remediation ...
- Even so, there are many challenges to motivate people to voluntarily test and remediate dwellings in Ireland.

# Background

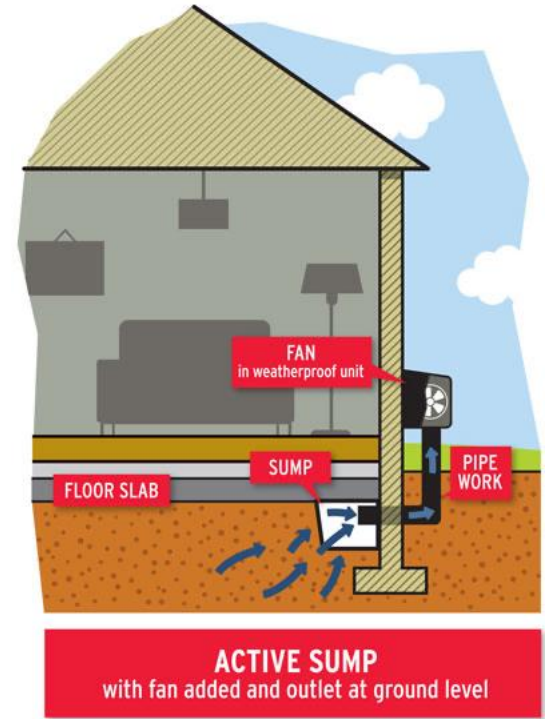


**Aware**

GAP



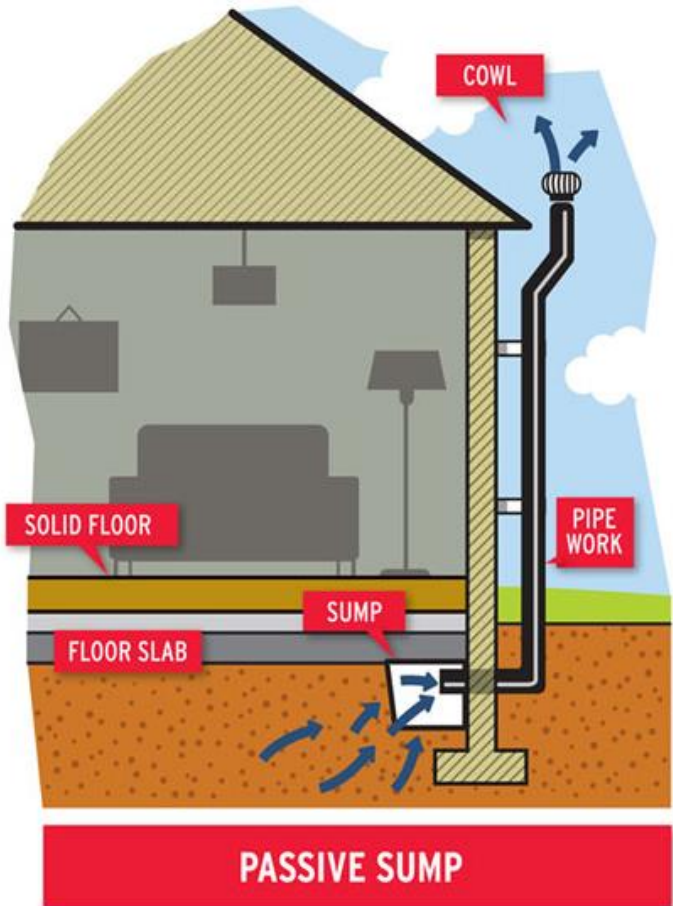
**Testing**



GAP

**Remediation**

For steps that an individual must take before they have remediated see: Hevey, D., 2017. Radon risk and remediation: a psychological perspective. *Front. Public Health* 5 (63), 1–5.



- Qualitative research study with the purpose of understanding:  
**Why householders with high radon test in Ireland do not remediate high indoor radon levels?**
- Examine barriers / facilitators of action from
  - Individual (micro-level)
  - Community (meso-level)
  - Societal (macro-level)

Source: EPA,  
<https://www.epa.ie/environment-and-you/radon/fixing-a-radon-problem/>



- Two on-line focus groups were conducted in January and February 2022 with ten members of households who received indoor radon test levels above 200 Bq/m<sup>3</sup>.



- All participants were from Wexford or Cork, which are high radon prone areas in Ireland.
- FG 1: 6 people who didn't remediate their dwelling
- FG 2: 4 people who remediated

- **Remediators** perceive radon as a high risk (the threat may affect them or their family members) that may have negative health consequences;
  - *“This is the second biggest killer after lung cancer, after smoking kind of thing. And it's not being taken seriously.”*
  - *“one of my children has health issues and that was the final thing (to remediate)”*
- **Non-remediators** think that lung cancer is a complex issue, which cannot be explained solely by radon.
  - *“I'm not totally convinced of the of the need for it (remediation). I'm not convinced about the dangers of it (radon). I don't think I've ever come across anybody with lung cancer as a result of radon.”*
  - *“...we're in a house that was built in the 1940s. So..there would have been no radon barriers and no one who lived here before had cancer”.*

# Presence of children

- Having children in a dwelling is a motivator for a **remediation**
  - “...we have children as well, which we want to protect. So that's why we went. We better get it done if there's a chance.”
- **Non-remediators** used the absence of children in the home to justify not remediating
  - “... there's only two with my husband and I in the house now. We're both in our late sixties and all the children are gone through”



- **Non-remediators** have lower trust in the the radon related information shared by authorities and contractors than **remediators**.
  - *“How would you know who to trust?”*
  - *“... they had a vested interest maybe in selling radon barriers or something like that.”*
  - *“... some people will have an issue with regards to a government agency recommending things to get done and people will be concerned.....do they have a genuine reason behind that or are we just trying to meet certain targets to make the country look good?”*

- **Remediators** were able to complete the required paperwork, obtain information, establish a contact with contractors, and understood technical process of remediation.
  - *“I filled in all the necessary forms”*
  - *“[NAME] at the EPA was incredibly helpful and sort of guided me throughout the whole thing.”*
  - *“there the EPA have a list, so there's no barrier. All the information is there”*
  - *“I also had a radon engineer come to the house as well to give an opinion on it.”*
- In contrast, **non-remediators** were not able to manage the administrative and technical procedures for remediation
  - *“How would you know..where to go to”*

- Remediation costs and costs for maintenance/running costs in the group of **non-remediators** were assessed as high
  - *“a constant input of funds regarding ah to keep it [fan] running. And if you don't do that or maintain it or the fan breaks down, you're back to square one and you're back to facing another cost to try and resolve the issue.”*
  - *“I didn't have the money to do it [remediation]”*
- **Remediators:** those costs were assessed as low.
  - “The actual running cost of the fan is about something like £40 a year. That's all it costs, little or nothing.”
- Able to source funding for remediation
  - “ council...paid practically all of it.”

# Role of government

- **Non-remediators** = if radon is a problem, than state should pay for tests and remediation.
- **Remediators** appealed to the State to make radon tests and remediation compulsory, including building code.
  - *“Central policy from government should have some carrots in it to entice people from all incomes to address a radon problem in their house, whether it be financial support, whether it be provision of a monitor, whether it be a certificate for your house before you sell it that it is radon free. Unless it's highlighted from central government as a policy, people will not buy into it.”*

## Discussion

- The differences in risk perception between remediators and non-remediators reflected core aspects of van der Linden (2015) risk perception model
  - Cognitive (consequences and management of radon)
  - Experiential (personal experience; emotion)
  - Socio-cultural (trust)
  - Socio-demographic (age, presence of children)
- Non-remediators minimize risk and lack motivation to act
- Financial issues are barrier..but can be addressed IF you know how to source grants

# Implications

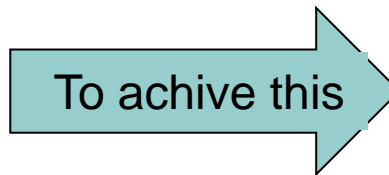
- Governmental policy needs to lead radon remediation
- While there are currently regulations on indoor radon testing and mitigation in schools and workplaces, there is not an equivalent requirement for dwellings in Ireland
  - Building code
- National policy needs to include incentives/behavioural nudges
  - Compulsory radon tests and remediation?
  - Paid for by state
  - Grants to support remediation work

# Implications

- Need ease of access of information not just on radon but on exactly how to remediate
  - Who
  - How
  - What will they do
  - What will I have to do
- Connect with links for grants/ financial support
- Provide testimonies of those who have remediated and their perceptions of risk
- “One stop” shop with customer journeys highlighted

Long terms goals of EPA by end 2029 (Radon action plan):

- The national geographically weighted average domestic indoor radon level will be reduced by 10%
- The remediation rate is increased to 40% for all homes over the reference level.



- Interventions need to focus on: radon risk perception, consider whether is good to focus their communication on children/family, invest in social trust and simplify administrative procedures related to remediation including subventions.
- Households face a range of barriers and facilitators to indoor radon remediation behaviour.
- Micro, meso and macro level
- All three levels need to be addressed