

Dear Participant,

This research seeks to chart the attitudes, beliefs and perception in society related to health behaviour in the context of the European research project RadoNorm.

The survey is anonymous and voluntary. Your name will not appear or be used in any stage of data collection or analysis. You may refuse to answer any question or withdraw at any stage. The information you provide will be used only for this survey and will be held anonymously and confidentially. In keeping with the General Data Protection Regulation (GDPR) all participant data will be destroyed as soon as analysis of the data is complete.

Please read the following statements before consenting to participate in the survey.

- I have read and understood the information above.
- I understand what the project is about, and what the results will be used for.
- I know that my participation is voluntary and that I can withdraw from the project at any stage without giving any reason.
- I am aware that my information and answers will be kept confidential.

Having read the information above, do you consent to participate in this survey?

- Yes I consent
- No I do not consent → Stop interview

VIDEO TEST:

VIDEO1

In this research one or more sound and / or video fragments are shown. We would like to show you a short video. Please, turn on your sound and watch it.

Show test-video (respondent to start the video, no autoplay), after video auto continue

VIDEO2

Can you indicate what applies to you?

- I heard the sound and watched the video play → go to INTRO
- I only heard sound → go to next question
- I just saw the video playing → go to next question
- I did not hear any sound and did not see the video playing → go to next question

VIDEO3

Please check and make sure you can both see and hear videos on your device, and try again.

Show test-video (respondent to start the video, no autoplay), after video auto continue

VIDEO4

Can you indicate what applies to you?

- I heard the sound and watched the video play → go to INTRO
- I only heard sound → stop interview
- I just saw the video playing → stop interview
- I did not hear any sound and did not see the video playing → stop interview

INTRO:

First we want to ask some questions about you.

S2	What best describes your gender?	1. Male 2. Female 3. Other 4. I prefer not to say
S3	What is your place of residence? Please provide the first three characters of your EIRCODE and make a selection. In case you do not know your EIRCODE, please start by typing the name of your municipality. If you cannot find your Eircode or do not know it, please select "Other" and provide your Eircode (first 3 characters only) or your place of residence. [Eircode] Allow both numbers and letters Use list (to be provided)
S4	What year were you born in? [year]
S5	What is the highest level of education/training you have obtained?	1. less than a second level certificate such as leaving certificate 2. A second level certificate such as a Leaving Certificate or equivalent 3. Bachelor degree 4. Master degree 5. Doctorate 9. NA
S7	How many people are currently living in your household (including yourself)? Children living in student accommodation who come home during the weekend also count as a household member.	

S8	And how many of those are children younger than 18?	
S10	Is the dwelling that you spend most of your time a property of yours or your family, or does it belong to someone else?	1. I am owner or co-owner 2. It is the property of another family member 3. It is the property of someone else 9. Don't know/ NA
S11	For how long have you been living in this dwelling?	1. 1 year or less 2. More than one year : (Indicate in years)
DWEL1	In approximately which year was the dwelling you live in built? Max. answer depends on S11: $\text{max} = 2023 - (\text{S11})$ where S11 = 1 for code 1	... [year] 9. I don't know
DWEL2	For surveys conducted in 2023: filter on DWL1=2012 or less (DWEL1 is older than 10 years): Was the dwelling renovated for energy-saving purposes (e.g. insulation, windows, ...)?	1. Yes 2. No 9. I don't know/NA
DWEL3	In what type of dwelling do you live?	1. Studio/Apartment 2. Detached House 3. Semi-detached House 4. Terraced House 5. Other
DWEL4	Is the ground floor or basement in your dwelling used as a living space?	1. Yes 2. No 9. I don't know/ NA
PA1	My home is a really special place to me	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA

PA2	There are other places which I can compare to my home	
PA3	I don't identify strongly with my home	
PA4	I am ready to invest my heart and soul into my home	
SMOKE	Do you or does someone else in your house smoke indoors?	1. Yes
		2. No
		9. NA

INTRO:

Now we will continue with some general questions.

To what extent do you agree or disagree with the following statements?

Response Style: Interpersonal Reactivity Index RANDOMISE (don't show this title to respondents)		
E1	I often have tender, concerned feelings for people who are less fortunate than I.	1. Completely disagree 2. Disagree 3. Neutral 4. Agree 5. Completely agree 9. I don't know/NA
E2	I sometimes find it difficult to see things from another person's point of view.	
E3	Sometimes I don't have much compassion for other people when they have problems.	
E4	I try to look at everybody's side of a disagreement before I make a decision.	
E5	Other people's misfortunes do not usually disturb me a great deal.	
E6	I am often quite touched by things that I see happen.	
E7	I believe there are two sides to every question and try to look at them both.	
E8	Before criticizing somebody, I try to imagine how I would feel if I were in their place..	

INTRO:

How do you perceive the potential risk to your health within the next 20 years from each of the following sources?

Risk Perceptions RANDOMISE (don't show this title to respondents)		
RP1	Environmental pollution	1. No risk at all 2. Very low 3. Low 4. Moderate 5. High 6. Very high 9. I don't know/NA
RP2	Radioactive waste	
PA3		
PA4		
RP5	An accident in a nuclear installation	
RP6	Natural radiation (from the soil or from space)	
RP7	The use of ionizing radiation for medical tests or treatments	
RP11	Climate crisis	
RP12a	SPLIT BALLOT (50% or respondents): Indoor air pollution due to radon	
RP12b	SPLIT BALLOT (50% or respondents): The presence of the naturally radioactive gas radon indoors	
RP20	Using recycled building material with low levels of radioactivity	

INTRO:

How much confidence do you have in the authorities for the actions they undertake to protect the population against risks from each of the following sources?

Confidence in Authorities RANDOMISE (don't show this title to respondents)		
RC1	Environmental pollution	1. None 2. Very little 3. Little 4. Moderate 5. Quite a lot 6. Very much 9. I don't know/NA
RC2	Radioactive waste	
RC5	An accident in a nuclear installation	
RC6	Natural radiation (from the soil or from space)	
RC7	The use of ionizing radiation for medical tests or treatments	
RC11	Climate crisis	
RC12a	SPLIT BALLOT (50% of respondents, those that received RP12a): Indoor air pollution due to radon	
RC12b	SPLIT BALLOT (50% of respondents, those that received RP12b): The presence of the naturally radioactive gas radon indoors	
RC20	Using recycled building material with low levels of radioactivity	

INTRO:

Now we are interested to hear what you think about the following issues:

Radon Awareness/ Salience (don't show this title to respondents)		
RA1	Do you know anything about radon?	1. Yes 2. I have heard something about it 3. No 9. I don't know/NA

SALI1	Radon may be a problem, but I haven't paid much attention to it because there are more important things to deal with.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
RA1bis	IF RA1 = 1 or 2: Can you describe in a few words what you have heard about radon?	... [Open]
RA1.a	How confident are you in your knowledge related to radon?	1. Not at all confident 2. Somewhat confident 3. Moderately confident 4. Quite confident 5. Highly confident

INTRO IF RA1 = 1 or 2:

Do you agree or disagree with the following statements?

Radon Knowledge (RANDOMISED) (<i>don't show this title to respondents</i>)		
AW37	Radon causes headaches.	1. Agree 2. Disagree 9. I don't know/NA
AW38	Radon exposure is linked to lung cancer.	
AW39	Radon is a radioactive liquid.	
AW40	Radon has a strong odor.	
AW41	Radon is invisible.	
AW42	Radon levels are usually higher in the attic than the basement.	
AW43	Testing is the only way to determine if a home has an elevated radon level.	1. Agree 2. Disagree 9. I don't know/NA
AW44	Radon can enter homes through cracks in walls and floors.	
AW45	Health effects of radon do not show for years.	

AW46	The risks from radon exposure increase the longer you are exposed to it.	
AW48	Concentrations of indoor radon are expressed in Watt.	
General knowledge (don't show this title to respondents)		
ALL (no filter) RANDOMISE		
INTRO: Do you agree or disagree with the following statements?		
AW47	Exposure to radiation always leads to radioactive contamination.	
AW17	The human body is naturally radioactive.	
AW18	With time, every radioactive substance becomes more and more radioactive.	

VIDEO	<p>IF RA1 = 3 or 9 and if 1 or 2 less than 6 statements correct from AW37 to AW48 correct: Show video related to Radon:</p> <p>INTRO:</p> <p><i>We would like to show you a short video. Please, turn on your sound and watch it.</i></p> <p>https://www.youtube.com/watch?v=50fX56kZiww&feature=youtu.be</p>
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INTRO	<p>INTRO for all</p> <p><i>Before we continue with the questionnaire we point out that a building can be tested for radon; it can be remediated if there is radon detected; or there can be preliminary protective measures installed when the building is built. We would like to ask you to share your opinion on this matter.</i></p>
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Behavior (<i>don't show this title to respondents</i>)		
RA2.1	Have you or has someone else ever tested your current residence for radon?	1. Yes 2. No 9. I don't know/NA

RA2.2	FILTER: IF RA2. 1 = 1: Did the test result indicate there is a need to take further action?	1. Yes 2. No 9. I don't know/NA
RA2.4	Have you or has someone else done something to remediate indoor radon in your current residence?	1. Yes, building was remediated after discovering a radon problem 2. Yes, preliminary protective measures were installed when the building was constructed 3. No 9. I don't know/NA
Type of remediation (don't show this title to respondents)		
RA2.5	FILTER: IF RA2.4 = 1 OR 2 : (multiple answers) Please, indicate all measures that have been applied in your current residence. (multiple answers possible)	1. Natural ventilation (e.g. open windows, vents etc.) 2. Ventilation system (forced ventilation system, heat recovery, air-to-air exchange) 3. Air suction installation (drain pipe, wall, sub-slab) 4. Sealing of existing cracks in the walls 5. Radon Membrane 6. Fixing cracks in foundations 7. Other 9. I don't know/NA RANDOMISE ANSWERING CATEGORIES except 7 and 9

Behavior intention (don't show this title to respondents)

RA5	(IF RA2.1=2 or 9 and IF RA2.4 = 3 or 9 = don't ask people that already remediated and/or tested) I intend to test radon concentrations in my home if advised.	1. Strongly Disagree 2. Disagree
RA5.1	(IF RA2.1=2 or 9 and IF RA2.4 = 3 or 9) I intend to measure radon in my home as a precaution.	3. Neither agree, nor disagree 4. Agree
RA6	(IF RA2.4 = 3 or 9) I intend to start the remediation of my home if advised.	5. Strongly Agree 9. I don't know/NA
RA8	(IF RA2.4 = 3 or 9 = only showing to people that have not remediated yet) I would do the necessary to remove radon if I am advised so.	

Can you tell us: Whether you know the following actors from the field of radon?

In your opinion: Are the following actors telling the truth about radon risks?

In your opinion: Are the following actors technically competent with regard to radon mitigation?

Not knowing an actor is a filter for "telling the truth" and "being technically competent"

"x" in first column = don't ask respondents if they know them RANDOMISE

	<i>NSTK</i> <i>Know them</i>	<i>NST</i> <i>Telling truth</i>	<i>NSC</i> <i>Technically competent</i>	
1. Public health authorities	x			Knowledge: 1. Yes 2. No Truth & competence: 1. Strongly disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly agree 9. I don't know/NA
2. Environmental organisations such as Irish Environmental Network				
3. Department of Environment, Climate and Communications				
4. Medical doctors (family doctor, general practitioners ...)	x			
12. Companies measuring radioactivity				
13. Environmental Protection Agency				
14. Contractors for remediation				
15. Scientists from Universities				

INTRO:

You are now approximately halfway the questionnaire.

To what extent do you agree or disagree with the following statements?

Severity for self (don't show this title to respondents)		
RA12	Not acting when there is a high radon concentration in my house would be a severe threat to my health.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
CHECK1	For this statement please indicate "I agree". This is a control question.	
RA12.1	Not undertaking any action against high radon concentration in my house would be life-threatening.	
Severity for others (don't show this title to respondents)		
RA12.2	If my neighbours had high radon concentrations and don't remediate their health would be in severe danger.	
RA12.3	If people in my community address the radon risk then they can avoid serious health issues due to radon.	

INTRO:

Now we would like to know your opinion about the health threat due to radon and how likely it is that radon causes health problems.

Susceptibility for self (don't show this title to respondents)			
RA13	I believe that I can develop lung cancer due to radon if I don't tackle high concentration in my home.	1) Very unlikely 2) unlikely 3) somewhat likely 4) likely 5) very likely 9) I don't know/NA	
RA14	How likely do you think it is that you will get sick if you don't remediate high radon concentrations?		
RA14.1	I will remain healthy although I don't remediate high radon concentrations in my home.		
Susceptibility for others (don't show this title to respondents)			
RA15	How likely do you think people in your neighbourhood will get sick if they don't remediate high radon concentrations?		

INTRO:

To what extent do you agree or disagree with the following statements about remediation of the home due to radon?

Response Efficacy Remediation (<i>don't show this title to respondents</i>)		
RA17	Home remediation, if needed, offers effective protection against radon hazards.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
RA18.1	Home remediation, if needed, will fail to protect from high radon concentrations.	
RA19	A special installation would eliminate the radon hazard if needed.	
RA19.1	A special installation can NOT reduce radon to a safe level in homes that have a radon problem.	

INTRO:

To what extent do you agree or disagree with the following statements?

Response Efficacy Testing (<i>don't show this title to respondents</i>)		
RA21	I am confident that I would be able to test the indoor radon concentrations in my home if I wanted to.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
Self Efficacy Remediation (<i>don't show this title to respondents</i>)		
RA21.b	I am NOT confident that I will be able to effectively remediate my home if I wanted to.	
RA22	I am confident I would be able to hire a contractor to decrease the indoor radon concentration if I wanted to.	
Self Efficacy Obtaining Information (<i>don't show this title to respondents</i>)		

RA33	I am confident that in the case of high levels of radon in my home, I will find the information needed to protect myself.	
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INTRO:

To what extent do you agree or disagree with the following statements?

General Self-Efficacy (<i>don't show this title to respondents</i>)		
RA22.c	I can always manage to solve difficult problems if I try hard enough.	1. Strongly Disagree
RA22.d	I can solve most problems if I invest the necessary effort.	2. Disagree
RA22.e	When I am confronted with a problem, I can usually find solutions.	3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA

Perceived Behavioural Control (<i>don't show this title to respondents</i>)		
RA22.a	I am confident that I could afford 50 euros to test for radon if needed.	1. Strongly Disagree
RA22.b	I am confident that I could afford 1000 euros to remediate for radon if needed.	2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA

Perceived Burden (<i>don't show this title to respondents</i>)

RA23.1	I believe reducing radon in my home would require more resources than I have.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer
RA23.2	I believe reducing radon would be burdensome for me.	
Perceived Cost (don't show this title to respondents)		
RA23	I believe that the cost for remediation of my home to reduce the indoor radon concentration is low.	
RA26	I guess I could easily obtain personal advice from a local expert on how to control the radon concentration in my home.	
Perceived Ease (don't show this title to respondents)		
RA24	I believe the procedure for radon testing my home is easy.	
RA25	I believe the procedure for remediating my home due to radon is difficult.	

Esthetic Impact (don't show this title to respondents)		
RA51	Remediation due to exceeded levels of radon would visually destroy my home.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
CHECK2	For this statement please indicate “Strongly disagree”. This is a control question.	
Economic Impact (don't show this title to respondents)		
RA51.b	A radon problem can influence the value of property.	

INTRO:

To what extent do you agree or disagree with the following statements?

Subjective Norm (<i>don't show this title to respondents</i>)		
RA34	Most people who are important to me are NOT in favour of me testing for indoor radon.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
RA34b	Most people who are important to me are in favour of me remediating my home for radon if needed.	
RA34.1	In general, people who are important to me would like me to be informed about radon.	
RA34.2	People who are significant in my life don't care about my actions related to radon in my home.	

Anticipated Emotion (<i>don't show this title to respondents</i>)		
RA28	FILTER: IF RA22.b = 3, 4, 5 I would feel regret if I had not remediated my home against radon and ended up getting lung cancer.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
RA29	FILTER: RA22.b = 3, 4, 5 I would be ashamed not to remediate my home if indoor radon levels exceeded the limits.	
RA29.a	FILTER: IF RA22.b = 3, 4, 5 I would feel guilty about living in a home with high radon concentrations because I did not remediate it.	

INTRO:

To what extent do you agree or disagree with the following statements?

Descriptive Norm RANDOMISE (<i>don't show this title to respondents</i>)		
RA35	I believe most people in my neighbourhood tested their houses for indoor radon.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree
RA35a	I believe most people that I know do something related to indoor radon.	

RA36	I believe most people in my neighborhood remediated their houses when indoor radon levels exceeded the limits.	5. Strongly Agree 9. I don't know/NA
RA37	As far as I know, most of my friends living in the same neighbourhood did NOT test their houses.	

Injunctive moral norms (<i>don't show this title to respondents</i>)		1. Strongly Disagree
IMN1	I think people in my community would consider testing for indoor radon a moral obligation.	2. Disagree
IMN2	I think others consider radon testing and remediation as a civic duty.	3. Neither agree, nor disagree
IMN3	I think people in my community regard taking action against radon as morally right.	4. Agree
		5. Strongly Agree
		9. I don't know/NA

Moral values (<i>don't show this title to respondents</i>)		1. Strongly Disagree
RA39	I think it is my moral duty to initiate remediation against indoor radon if advised.	2. Disagree
RA38	It is my responsibility as a household member to test indoor radon levels.	3. Neither agree, nor disagree
RA38.a	It is NOT my responsibility as a household member to get my home remediated if necessary.	4. Agree
RA38.b	Because of my personal values, I believe tackling the indoor radon problem is important.	5. Strongly Agree
		9. I don't know/NA

Health Effect Perception (<i>don't show this title to respondents</i>)		1. Strongly Disagree
RA37.1	I personally know people that may have health problems due to radon.	2. Disagree
		3. Neither agree, nor disagree
		4. Agree

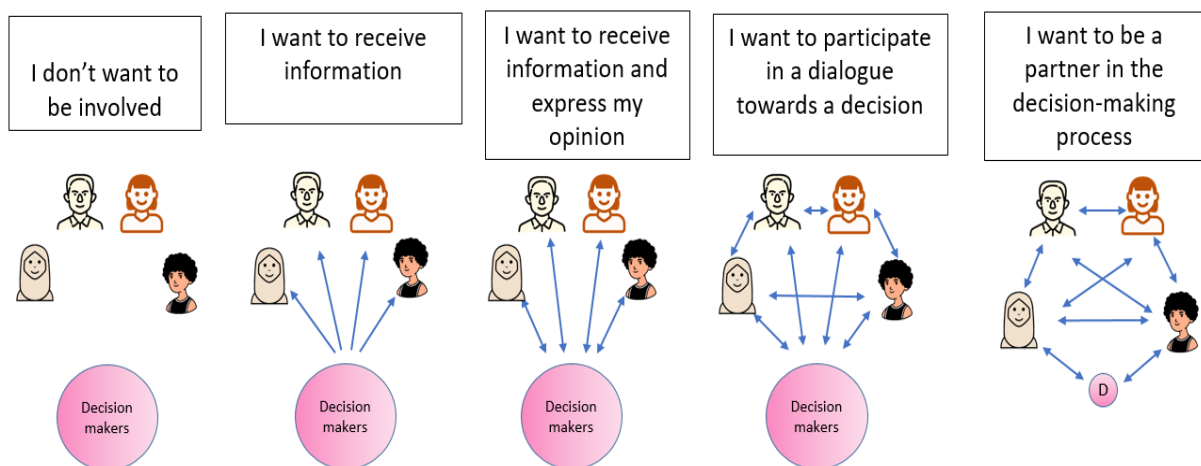
		5. Strongly Agree 9. I don't know/NA
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Stigma (<i>don't show this title to respondents</i>)		1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
ST1	I would feel embarrassed to have radon in my home.	
ST2	I would work hard to keep a radon problem a secret.	
ST3	Having radon in house would make me feel like I'm a bad person.	
ST4	I would be very careful whom I would tell if I had a radon problem in my home.	

Social Influence RANDOMISE (<i>don't show this title to respondents</i>)		1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. I don't know/NA
SIS1	I don't watch others to learn new things	
SIS2	I don't compare myself to other people	
SIS3	I prefer to act the way everyone else is acting	
SIS4	When I realize people are working on something important to me, I also want to start doing it	
SIS5	I don't like to collaborate with people	
SIS6	I don't like to compete with people	
SIS7	I enjoy when my achievements are acknowledged in public	

Willingness to Engage

RA41	<p><i>If there would be an activity asking for input from the general public related to radon concentrations near your home, to what extent would you like to participate?</i></p>	<p>SHOW GRAPHICAL CARD</p> <p><i>1 = I don't want to be involved</i></p> <p><i>2 = I want to receive information</i></p> <p><i>3 = I want to receive information and express my opinion</i></p> <p><i>4 = I want to participate in a dialogue towards a decision</i></p> <p><i>5 = I want to be a partner in the decision-making process</i></p> <p><i>999. I don't know/ no answer</i></p>
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INTRO:

We are in the final part of the questionnaire. To what extent do you agree or disagree with the following statements related to information about radon?

Systematic Processing RANDOMISE (don't show this title to respondents)		
INPR1	In order to be completely informed about home remediation, I think that the more viewpoints I get, the better off I will be.	<p>1. Strongly Disagree</p> <p>2. Disagree</p>
INPR2	I have been very attentive to the information related to radon remediation.	

INPR3	When the topic of radon remediation came up, I tried to learn more about it.	3. Neither agree, nor disagree
INPR4	It was important for me to clarify how I should remediate my home.	4. Agree 5. Strongly Agree
INPR5	When I encountered information about radon remediation of homes, I carefully considered it.	9. I don't know/NA

Heuristic Processing RANDOMISE (don't show this title to respondents)		
INPR6	On issues like radon home remediation I just go with my gut feeling.	1. Strongly Disagree 2. Disagree
INPR7	Past experiences with health related issues have made it easier for me to form an opinion about the need to remediate my home.	3. Neither agree, nor disagree 4. Agree
INPR8	On the matter of remediation I shall simply place my trust in the experts and respect their recommendations.	5. Strongly Agree 9. I don't know/NA
INPR9	Related to decisions concerning radon remediation, I follow the people from my environment, e.g. family, neighbours.	
INPR10	I could easily form an opinion about the need to remediate my home without seeking additional information, based on my existing knowledge.	

Information comprehensiveness (don't show this title to respondents)		
RA30	I don't feel well informed about which actions are needed related to indoor radon levels.	1. Strongly Disagree 2. Disagree
RA31	There is enough information for me to decide whether I should perform a radon test at home.	3. Neither agree, nor disagree 4. Agree
Information uncertainty (don't show this title to respondents)		5. Strongly Agree

RA50	Information about the health effect of radon is still too uncertain to take actions based on it.	9. I don't know/NA
Affective Response to information (<i>don't show this title to respondents</i>)		
RA10	Information about radon makes me worry.	
RA11	Information about radon makes me nervous.	
Preference for Post-Survey Radon Information (<i>don't show this title to respondents</i>)		
MINF1	Which information channels would be the most appropriate for you, to receive more information about radon? (multiple answers possible)	! (multiple options) RANDOMISE 2-11 1. I am not interested in more information about radon 2. Television 3. Radio 4. Newspaper 5. Leaflet 6. Personalized information letter 7. Information from the school 8. Social Media 9. Meeting with the local community 10. Phone 11. Email 12. Other (please specify) 99. I don't know/NA

DEBRIEF:

Thank you for taking part in this survey. This research was conducted by Environmental Protection Agency in the context of the European research project RadoNorm, see <https://www.radonorm.eu>. If you have any questions or concerns about this study and the research procedures used, you may contact Alison Dowdall at A.Dowdall@epa.ie. For more information about radon, testing and mitigation please consult internet page of EPA at <https://www.epa.ie/environment-and-you/radon>.