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Canada

National Radon Awareness Survey 2023

Final Report

Prepared for Health Canada

Supplier Name: Environics Research
Contract Number: HT372-22-5581
Contract Value: \$119,511.51 (including HST)
Award Date: 2022-12-08
Delivery Date: 2023-03-20

Registration Number: POR 094-22

For more information on this report, please contact Health Canada at: hc.cpab.por-rop.dgcap.sc@canada.ca

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Canada

National Radon Awareness Survey 2023 - Final report

Prepared for Health Canada by Environics Research

March 2023

This public opinion research report presents the results of a dual-mode telephone and online survey conducted by Environics Research. The online survey was open from January 31-February 9 and the telephone survey was open from January 24-February 19, 2023.

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PDF:

Cat. No. H14-436/2023E-PDF

ISBN 978-0-660-43164-2

Cette publication est aussi disponible en français sous le titre *Enquête nationale sur les connaissances liées au radon 2023 - Rapport final*

PDF:

Cat. No. H14-436/2023F-PDF

ISBN 978-0-660-43165-9

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Executive summary

Background and objectives

Radon is the second leading cause of lung cancer after smoking and the leading cause among people who do not smoke. Health Canada (HC) leads an ongoing National Radon Program (NRP) with the goal of reducing the health risks associated with radon exposure.

Public opinion research was previously conducted in 2007, 2013 and 2018 to understand knowledge and awareness of radon, and its associated risks among Canadians. Health Canada identified the need to conduct follow-on research, to help evaluate and measure the effectiveness of the efforts of the NRP over the last five years. The purpose of this research was to obtain insights into the knowledge, awareness, attitudes and behaviours of Canadians regarding radon. More specifically, the objectives of the research were:

- To collect data that can be compared to the most recent (2018) wave of telephone research for radon awareness, attitude and behaviour levels
- To set a baseline using an online survey methodology, so the survey can be fully transitioned to an online format going forward and allowing for an understanding of modal differences
- Measure knowledge levels of Canadians in terms of what radon is and where it is found
- Measure knowledge levels of how radon can be detected/measured, and what can be done to effectively reduce radon levels (prevention and remediation)
- Determine levels of actions/behaviours taken to reduce radon exposure in the home
- Determine levels of future actions/behaviours to be taken to reduce radon exposure in the home (sources of information/assistance; type of information/assistance required to take action; would they test or mitigate if they found high levels); review approaches to encourage radon action among homeowners and combat apathy
- Determine the proportion of respondents who have tested and or remediated their home for radon; and,
- Determine perceptions of the different level of government's responsibilities (federal, provincial/territorial, municipal) regarding education, remediation, and current sources of radon information for Canadians.

Methodology

The survey was conducted by Environics Research Group using a dual mode approach. An online survey of 1,200 was conducted from January 31 - February 9, 2023, and a telephone survey of 805 was conducted from January 24 - February 19, 2023. The sampling method was designed to complete 1,200 online and 800 telephone interviews with the target audience of Canadians 18 years of age and over living in private households, in the 10 provinces and, for the telephone survey, the three territories. Respondents were screened to ensure they were household decision-makers and residents of single-family dwellings with ground floor or basement living space, as these are the primary audience for radon messaging. The base samples were stratified across five designated regions to ensure meaningful data and analysis at the regional level. Unlike previous telephone surveys, these surveys did not oversample in identified radon-prone areas.

The following completions were achieved:

Region	Total	Atlantic	Quebec	Ontario	MB/SK	Alberta	BC	Territories
# of online interviews*	1,200	100	225	450	99	125	197	4
% of online interviews*	100%	8%	19%	38%	8%	10%	16%	<1%
# of telephone interviews	805	81	181	303	67	67	86	20
% of telephone interviews	100%	10%	22%	38%	8%	8%	11%	2%
Margin of error at 95% CI	±3.4	±10.8	±7.2	±5.6	±11.9	±11.9	±10.5	±21.8

*Online surveys with opt-in panels use non-probability samples and thus a margin of sampling error is not cited.

The data are statistically weighted to ensure the sample is as representative of this population as possible (region, gender and age of primary household maintainer for private owned and rented households in Canada) according to the most recently available Census information. A more detailed description of the methodology is presented at the back of the report, along with a copy of the questionnaire (see Appendix).

Cost of research

The cost of this research was \$119,511.51 (HST included).

Key findings

Radon knowledge and awareness

Note: The following findings relate to the new online baseline survey; telephone tracking results are provided throughout the report.

- A majority of six in ten (60%) Canadian householders say they are at least somewhat aware of radon. They are most likely to have heard radon is toxic (24%), a gas (23%) or that it can enter the home (16%).
- Among those aware of radon, the media is the most cited source (45%) for hearing or seeing something about radon. The Internet is a notable source of awareness, mentioned by around one in ten (13%) respondents.
- Canadian householders were asked to self-assess their level of radon knowledge; one-third (32%) say they know at least a little about it and five percent say they know a lot. Three in ten (30%) Canadian householders rate themselves as knowing almost nothing about radon.
- Notable proportions know most true statements about radon are true and that false statements are false but are split on whether it is difficult to remove radon from a home. When it comes to answering correctly, most householders are likely to know it is true that exposure to radon is the leading cause of lung cancer among people who do not smoke and that it can be found in most homes; they are also likely to know it is false that radon is off gassed from carpets, furniture and paints.

- When asked where to purchase a DIY radon testing kit, householders are most likely to mention a home improvement store (60%), followed by a specialty retailer (38%), government agency (32%) or online retailer (30%).
- When asked to indicate how long a testing kit needs to be kept in the home to accurately detect the level of radon, a notable proportion of half (51%) are unsure. Just under four in ten (37%) indicate a period under three months, while 14 percent say the correct answer of three months or longer.
- When asked how to reduce radon levels at home, common answers include increasing ventilation (45%) sealing cracks or other openings (44%), installing a radon reduction system (34%), and covering exposed soil in crawlspaces (33%).

Experience with radon

- Close to one in ten (8%) Canadian householders have heard or seen something about radon levels in their community; a strong majority (83%) have not heard anything about this.
- Over four in ten (44%) who had heard something about radon say they heard about possible health issues linked to radon, and three in ten have either heard their local radon levels are high (31%) or that radon is a public or government concern (30%).
- Almost one in ten (8%) householders say they have had the radon levels in their home tested, and an additional 19 percent have considered doing so.
- DIY testing kits remain the most-cited method of testing for radon, used by four in ten (39%). Many whose tests showed moderate/high levels went on to taken action.
- Canadian householders who have not tested for radon are most likely to say they had simply not thought about it (48%) or do not have enough information to know what to do (35%). There is a notable proportion (18%) of householders who feel their home is well ventilated/aren't worried about radon.
- When hypothetically asked if they would purchase a remediated home, four in ten (42%) would be at least somewhat likely to buy a home where the owner had paid to reduce radon levels. Among this group, less than one in ten (9%) say they would *definitely* purchase this type of home.

Radon information

- The majority (84%) of Canadian householders are unaware of programs or activities to help residents learn about or deal with radon; just under one in ten (8%) have heard of these and the same proportion (8%) are not sure. Those aware are more likely to think it is the provincial government (61%) who sponsors/funds such programs and activities, distantly followed by the federal government (40%) or municipal government (33%).
- Close to two in ten (16%) have taken steps to learn about radon and are most likely to turn to the Internet to get more information about radon. To seek information, three in ten (32%) used either Health Canada or their provincial government/ministry of health (31%) as sources. Around one quarter (23%) asked friends or family and two in ten (21%) checked in the media. Google (17%) or other internet sites (12%) are also notable sources.
- This year, all householders were asked if after the survey they felt motivated to get their home radon levels tested. Half (50%) say yes; two in ten (22%) say no.

- Requiring radon tests for selling or buying a home and being made aware of high levels in the community are considered the most effective ways to encourage remediation. Both statements are considered very effective by almost half (47-48%) of online respondents.

Modal differences

Differences between modes can be summarized with the following:

Differentiating levels of uncertainty: The proportions indicating “not sure” often differ by mode. More specific questions, such as knowing what people can do to reduce the amount of radon in a home, or where to buy a DIY testing kit results in more uncertainty among telephone respondents – who may find it difficult to come up with answer off the top of their head. For online respondents, knowing that “not sure” is a possible option allows them to select it as an answer for yes/no questions such as “do you recall ever hearing or seeing something about radon?”. This is not likely to be the case amongst phone respondents.

Visual of list: Presenting a list to online respondents (vs. telephone respondents responding top-of-mind) increases the number of options selected, resulting in more response dispersion compared to phone results.

Reading out longer statements: The telephone methodology does invite a faster, “gut reaction,” while those responding online have the chance to read the statement thoroughly, impacting how they may rate impact/effectiveness of statements or make decisions on truth/false questions.

Radon knowledge and awareness: Awareness of radon is the same for phone and online respondents. There are a few differences in top-of mind mentions of what was heard/seen about radon: telephone respondents are more likely to spontaneously mention it comes from the earth/ground; online respondents are more likely to say they are not sure where they heard or saw something about radon.

In other questions, some differences can be attributed to online respondents seeing a range of possible answers. Respondents who answered online are more likely than telephone respondents to indicate generally that detectors are available, and less likely to mention purchasing a home testing kit, than are respondents on the phone. And, deepening the theme that it is harder for phone respondents to come up with ideas off the top of their head, they are more likely than online respondents to say they are “not sure” how to find out if there is a high level of radon in the home. Arguably, seeing a list of potential responses is an *aide-mémoire* to actual knowledge, whereas being put on the spot in a telephone survey may result in only being able to remember one or two top-of-mind things, while the person may actually know more.

While about half of phone respondents mention a home improvement store such as Home Depot as a source for radon detection kits, online respondents are likely to spread their choices for how to get the home tested for radon over several more options. For example, while only three percent of phone respondents spontaneously mention specialty retailers (five percent in 2018), four in ten (38%) online respondents select this response from a list. This same pattern is present with purchasing DIY testing kits at government agencies (32% online; 4% phone), online retailers (30% online; 7% phone), public health offices (23% online; 3% phone), as well as other retailers and lung associations.

In this baseline survey, online respondents appear to be less likely than those on the phone to identify false statements. For example, while six in ten phone respondents state it is false that radon is a natural gas in furnaces and water heaters, or that it is found in air conditioners and refrigerators, fewer than half knew the same online. It remains to be seen if this continues in future iterations of the survey.

Experience with radon: When presented with a list of options, almost three times as many online respondents than those interviewed by telephone recall hearing that people in their community should get their radon tested, or have heard about possible health problems caused by radon.

Having tested or considered testing for radon is consistent across modes, though online respondents are still more likely to express uncertainty. When asked for reasons why they have not tested their home's radon level, online respondents, shown a list, validate top-of-mind reasons offered by phone respondents. For example, consistent levels in both modes mention not knowing what to do/not having enough information (38% phone; 35% online). However, almost half of online respondents indicate they just "have not thought about it", compared to two in ten phone respondents, which may be due to social desirability bias in the telephone methodology, or possibly feeling this is the same as "don't know."

Information about radon: Online respondents are more likely (61%) than phone respondents (24%) to indicate the provincial government is the sponsor of programs/activities to help residents learn about radon, when they see a list. Telephone respondents are more likely to mention the federal government as being responsible, but also more likely to be unsure in this question.

When asked to rate how effective householders feel seven possible statements would be in convincing people to have their radon levels reduced, the proportions saying 'effective' are smaller among online respondents than those who answered over the phone. This speaks to the possibility that having longer to read each factor/statement might impact ratings of effectiveness, and also the social desirability bias inherent in the telephone methodology.

Political neutrality statement and contact information

I hereby certify as a Senior Officer of Environics Research that the deliverables fully comply with the Government of Canada political neutrality requirements outlined in the Communications Policy of the Government of Canada and Procedures for Planning and Contracting Public Opinion Research. Specifically, the deliverables do not contain any reference to electoral voting intentions, political party preferences, standings with the electorate, or ratings of the performance of a political party or its leader.

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PWGSC contract number: HT372-22-5581
Original contract date: 2022-12-08

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Introduction

Background

Radon is a colourless, odourless, radioactive gas formed by the natural breakdown of uranium in soil, water and rock. It escapes from the ground into the outdoor air, where it becomes diluted and is not a source of concern. However, radon that enters an enclosed space, such as a home, can accumulate and be present at high levels, to which prolonged exposure can be harmful.

Radon exposure is second only to tobacco smoke as the most important cause of lung cancer and, according to estimates from World Health Organization and Health Canada, it is the leading cause of lung cancer in people who do not smoke.¹ Recent research estimates that 16 percent of lung cancer deaths among Canadians are attributable to indoor radon exposure.² Radon gas, resulting from the natural breakdown of uranium in soil and rock, typically moves up through the ground into a home through cracks and other openings in a building's foundation. All homes have some level of radon, the only way to know how much and to ensure it is below the Canadian Guideline of 200 becquerels per cubic meter is to measure the level in the home.

Health Canada (HC) leads an ongoing National Radon Program (NRP) with the goal of reducing the health risks associated with radon exposure. A key component of the NRP is outreach activities to inform Canadians of the increased risk of developing lung cancer associated with radon exposure and encourage them to take action to reduce those risks at home and in their workplaces.

In 2007, Health Canada updated the Radon Guideline based on evidence of health risk at lower levels in residential homes. Since 2007 the NRP has made significant strides in educating the public and key stakeholders about radon, conducted research to better understand the radon situation in Canada, and established the Canadian infrastructure and required resources to take action, test and mitigate, to reduce indoor radon. Significant challenges remain with respect to convincing Canadians to use the existing resources, adopt radon reduction behaviour change and take action.

Public opinion research was commissioned in 2007 to identify a baseline of knowledge and awareness of radon, and its associated risks among Canadians, and follow-up surveys were conducted in 2013 and 2018. Health Canada identified the need to conduct ongoing follow-on research, to help evaluate the effectiveness of the efforts of the NRP to date and to help inform and guide the program's future objectives, research and outreach activities.

Using the research: The research findings will be used to help guide the future objectives, research and outreach activities of the National Radon Program, to maximize the effectiveness of the program and encourage and enable Canadians to take actions to reduce their radon exposure.

¹ <https://www.who.int/publications-detail-redirect/9789241547673>; <https://www.canada.ca/en/health-canada/services/health-risks-safety/radiation/radon.html>

² Chen, J., D. Moir and J. Whyte, Radiation Protection Bureau, Health Canada. "Canadian population risk of radon induced lung cancer: a reassessment based on the recent cross-Canada radon survey." *Radiation Protection Dosimetry*, November 2012. <http://www.ncbi.nlm.nih.gov/pubmed/22874897>.

Research rationale and objectives

As a follow-up to previous public opinion research conducted on the subject of radon, Health Canada identified the need to conduct research into Canadians' knowledge, awareness, attitudes and behaviours surrounding radon, to assess the progress made by the NRP to date and to help guide future efforts.

For this wave Health Canada expressed a desire to transition this research to an online methodology. The original research was conducted by telephone to allow for precise targeting of residents in radon-prone communities. As this is no longer a requirement of the research, an online methodology allows for additional respondents, a quicker data collection period, and more manageable costs. A dual-mode survey allows Health Canada to obtain tracking information, establish a new baseline for online data collection, and allow for understanding mode impacts.

Specific objectives for this research included:

- To collect data that can be compared to the most recent (2018) wave of telephone research for radon awareness, attitude and behaviour levels
- To set a baseline using an online survey methodology, so the survey can be fully transitioned to an online format going forward and allowing for an understanding of modal differences
- Measure knowledge levels of Canadians in terms of what radon is and where it is found
- Measure knowledge levels of how radon can be detected/measured, and what can be done to effectively reduce radon levels (prevention and remediation)
- Determine levels of actions/behaviours taken to reduce radon exposure in the home
- Determine levels of future actions/behaviours to be taken to reduce radon exposure in the home (sources of information/assistance; type of information/assistance required to take action; would they test or mitigate if they found high levels); review approaches to encourage radon action among homeowners and combat apathy
- Determine the proportion of respondents who have tested and or remediated their home for radon; and,
- Determine perceptions of the different level of government's responsibilities (federal, provincial/territorial, municipal) regarding education, remediation, and current sources of radon information for Canadians.

The survey was conducted by Environics Research Group using a dual mode approach. An online survey of 1,200 was conducted from January 31-February 9, 2023, and a telephone survey of 805 was conducted from January 24-February 19, 2023. The sampling method was designed to complete 1,200 online and 800 telephone interviews with the target audience of Canadians 18 years of age and over living in private households, in the 10 provinces and, for the telephone survey, the three territories. Respondents were screened to ensure they were household decision-makers and residents of single-family dwellings with ground floor or basement living space, as these are the primary audience for radon messaging. The base samples were stratified across five designated regions to ensure meaningful data and analysis at the regional level. Unlike previous telephone surveys, these surveys did not oversample identified radon-prone areas.

More details about the methodology can be found in Appendix A.

Report

This report begins with an executive summary outlining key findings and conclusions, followed by a detailed analysis of the survey data. Provided under a separate cover is a detailed set of “banner tables” presenting the results for all questions by population segments as defined by region and demographics. These tables are referenced by the survey question in the detailed analysis.

To facilitate the transition to an online methodology, subgroup differences in this report reflect the online survey findings unless otherwise specified.

In this report, results are expressed as percentages unless otherwise noted. Results may not add to 100% due to rounding or multiple responses. Net results cited in the text may not exactly match individual results shown in the charts due to rounding.

Note on modal differences

In the past, Health Canada has used a Computer-Assisted Telephone Interviewing (CATI) methodology for its surveys of Canadians. For the current research, the Department expressed an interest in transitioning its periodic radon awareness tracking research to an online data collection methodology. Environics proposed a dual-mode telephone/online survey, composed of 800 telephone and 1,200 online surveys with Canadian householders aged 18 and over. The telephone portion allows for tracking data, and this year’s hybrid approach points to what modal effects, if any, are present in response to various questions.

When reviewing the results of online and telephone surveys presented in this report, the following should be kept in mind:

- Respondents often answer differently by mode. This may be attributed to the way respondents process information when questions are interview-administered (phone) versus self-administered (online, visual). When responding to a phone interview, respondents must hear and remember the questions as well as any provided answer categories. When answering top of mind/unprompted questions, especially with knowledge-based questions, telephone respondents may provide a higher proportion of "don't know" responses than online respondents. Wherever applicable, there are notes on questions where online respondents viewed a list, while phone respondents answered top of mind.
- Respondents who answer over the phone have been demonstrated in Environics' experience with dual-mode surveys to be more likely to give positive responses to attitudinal questions and more socially desirable responses than those who answered behind a screen.

Detailed findings

Radon knowledge and awareness

As in previous waves, questions were asked about awareness of radon, what had been seen or heard about it, and where this information was obtained. Respondents indicating any awareness of radon were then asked to rate their level of knowledge and tested about their awareness through a series of true and false statements about radon exposure and general understanding. Questions related to detection and remediation of radon in the home, and methods to reduce radon provided information about current knowledge levels among Canadians, aid in the ongoing development of effective policies and communications messages around radon.

General awareness of radon

Six in ten Canadians say they have heard of radon; what they mainly know is that it is a gas, comes from the ground, and is a toxic health hazard.

Awareness of radon. Six in ten Canadian householders (60%) indicate they had heard of radon, steady since 2018. One-third have not. Online and telephone methodologies have similar results. It is noteworthy that in 2007, the first year Health Canada surveyed Canadians about radon awareness, half (52%) had heard of radon³.

Have heard of radon

Awareness of Radon	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Yes	60%	62%	64%
No	40%	38%	35%

Q.1 Have you ever heard of radon?

Have heard of radon – by Region

Base: Online respondents

Awareness of Radon	Online 2023 TOTAL (n=1,200)	Region					
		BC (n=197)	Alberta (n=125)	MB/SK (n=99)	ON (n=450)	QC (n=225)	ATL (n=100)
Yes	60%	64%	64%	70%	56%	61%	54%
No	40%	36%	36%	30%	44%	39%	46%

Q.1 Have you ever heard of radon?

*Note: small sample size

³ In 2007, this was asked slightly differently: *Before this survey, had you ever heard of radon?*

Have heard of radon – by Region
Base: Telephone respondents

Awareness of Radon	Telephone 2023 TOTAL (n=805)	Region						
		BC (n=86)	Alberta (n=67)	MB/SK (n=67)	ON (n=303)	QC (n=181)	ATL (n=81)	North (n=20)* #
Yes	62%	67%	51%	77%	60%	65%	54%	(17)
No	38%	32%	48%	23%	39%	35%	46%	(3)

Q.1 Have you ever heard of radon? (2007: Before this survey, had you ever heard of radon?)
 *Note: very small sample size; actual numbers are shown

To facilitate the transition to an online methodology, subgroup differences in this report will reflect the online survey findings, unless otherwise specified.

In the online survey having heard of radon is fairly similar across the country, ranging from a low of 54 percent in the Atlantic to a high of 70 percent in Manitoba and Saskatchewan. There is an age difference, with those who are 34 or younger being least aware (36%), and with awareness increasing as age increases, up to 76 percent of those aged 65 or older.

There is a difference between gender identities, with reported awareness higher among men (70%) than women (51%). Awareness is higher among homeowners (65%) than renters (43%). These patterns also appear in the telephone survey and in previous telephone surveys.

What was seen or heard about radon. Among Canadians with any awareness of radon, a range of things have been seen or heard. One-quarter (24%) recall (unprompted) that it is toxic, poisonous or hazardous to health and that it is a gas (29% by telephone). About two in ten telephone respondents mention it comes from the ground; this answer is less common online (13), as and online respondents do not spontaneously mention there are radon detectors.

Householders’ recall of radon information in the telephone survey is quite similar to 2018, however, knowledge that radon is toxic/poisonous and that it is a gas both are higher in 2023 than in 2018.

Recall about radon

Recall about radon	Online 2023 (n=704)	Telephone	
		2023 (n=567)	2018 (n=1,333)
Radon is toxic/poisonous/hazardous to health (including cancer)	24%	29%	24%
Radon is a gas (general)	23%	29%	24%
Radon is harmful/ dangerous (general)	22%	16%	21%
Radon can enter the home (general)	16%	13%	9%
Radon comes from the ground/ earth/ soil	13%	21%	19%
Radon can enter the home through the basement/ foundation	11%	10%	10%
Recall ad medium (general)	9%	4%	4%
Radon is a radioactive gas	9%	8%	7%
Radon is difficult to detect/ sense	9%	7%	6%
Recognize the name/ word/ heard of it (unspecified)	8%	5%	3%
Radon is a naturally occurring gas	5%	5%	4%
Detectors/testing exist for radon	-	14%	10%
Other	7%	4%	16%
Not sure	6%	10%	7%

Q.2 What do you recall hearing or seeing about radon?

SUBSAMPLE: Those who have heard of radon

Though comments are generally similar across the country, those in Quebec are more likely (39%) than most regions to mention radon is a toxic/poisonous and hazardous to health. Those in Ontario (14%) are more likely to recall radon is a radioactive gas.

People who do not smoke are more likely (13%) than those who smoke or live with people who smoke (5%) to mention that radon can enter the home through the basement or foundation. Responses are quite similar by other demographic factors.

Later in the survey, Canadians were asked to self-rate their level of knowledge about radon. As in previous waves, those who say they have a lot/some knowledge of radon are more likely to recall more specific information about radon, including that it is toxic (32% vs. 14% with less knowledge), comes from the ground/earth/soil (18% vs. 9%), and that it can enter the home through the basement/foundation (17% vs. 6%).

Sources of information about radon

Though the media remains the most commonly cited source of information about radon, the internet has notably risen as a source since 2018.

Those aware of radon were asked where they saw or heard something about it, without prompting. Multiple mentions were permitted. Media (TV, newspapers, magazines) remains the most frequently cited source for information about radon, with around half (54% by phone, 45% online) indicating this. In the last five years, however, the internet has increased as a source of radon awareness, with over one in ten online respondents (7% by phone) saying they heard or saw something about radon on the web. One in ten or fewer mention any other single source, such as friends or family, school or inspection/construction professionals. Aside from higher proportions indicating the internet as a source, these results are generally similar to the 2018 wave. Almost two in ten online respondents say they are unsure where they heard or saw something about radon, compared to one in ten on the telephone; the lower proportion in the telephone survey may be an indication of social desirability, wanting to come up with a response to appear cooperative.

Source of radon awareness

Source	Online 2023 (n=704)	Telephone	
		2023 (n=516)	2018 (n=1,234)
Media (TV, newspaper, magazines)	45%	54%	55%
Internet (unspecified)	13%	7%	<1%
Friends/family/word of mouth	7%	10%	11%
Through school	6%	5%	7%
Media (radio)	5%	1%	<1%
Home construction/ inspection professionals (including hardware stores)	4%	5%	5%
Through work	3%	6%	8%
Other	10%	18%	12%
Not sure	18%	11%	11%

Q.3 Where did you hear or see something about radon?
 SUBSAMPLE: Those who heard or saw something about radon

Though sources for radon information are generally similar by subgroup, mentions of the media are slightly higher in Quebec (57%) and Manitoba/Saskatchewan (59%). Men (49%) are more likely than women (39%) to have heard or seen something about radon through media sources. This is also true of the older age cohorts: Those age 45 or older (46%-53%) are more likely than those who are younger (28%-30%) to mention the media as a source for radon information.

Rating of personal knowledge level

Around three in ten say they know at least a little about radon, an increase since 2018; a similar proportion admit they know almost nothing about it.

Those who indicated having some awareness of radon were asked to rate their knowledge, using a four-point scale⁴. Compared to 2018, Canadians rate their personal knowledge of radon somewhat higher (in both the telephone and online modes), with three in ten now saying they know something about radon. Among this group, fewer than one in ten say they know a lot, and around one-quarter say they know something (27% online, 23% telephone). In the telephone survey, more indicate knowing more and fewer indicate they know almost nothing about radon than in 2018.

In the 2007 baseline telephone survey, half of respondents (50%) reported knowing ‘almost nothing’ about radon, notably higher than the three in ten saying this in 2023.

Level of radon knowledge

Level of knowledge	Online 2023 (n=704)	Telephone	
		2023 (n=567)	2018 (n=1,333)
<i>NET: A lot/Something</i>	32%	31%	21%
A lot	5%	8%	4%
Something	27%	23%	17%
A little	38%	39%	45%
Almost nothing	30%	29%	34%

Q.5 Would you say you know a lot, know something, know a little, or know almost nothing at all about radon?
 SUBSAMPLE: Those who have heard of radon

How Canadians rate their own knowledge of radon is similar across the country but knowing a little/almost nothing is higher in BC (79%) than elsewhere. Owning or renting a home is not a factor in self-assessed level of knowledge about radon.

Men are more likely (40%) than women (23%) to say they know at least something about radon. There is also a link to level of education, as those with a university degree (41%) are more likely than those less educated to say they have at least some knowledge of radon.

Experience with radon testing also plays a part in how knowledgeable people feel about radon. Later in the report, householders were asked if they had ever tested their radon levels at home. Those who have (74%) are almost three times more likely than those who have not (27%) to say they have at least some knowledge about radon.

⁴ Those who said “don’t know” when asked “what is radon” were skipped over the self-knowledge rating question, but have been included as “know almost nothing” in this analysis.

Knowledge about radon

Notable proportions know true statements about radon are true and false statements are false, but Canadians are divided about whether or not it is easy to remove radon from a home.

Canadians who have awareness of radon were shown or read seven statements. For each of these statements, they were asked if they thought each statement was true or false, and to indicate their certainty (i.e., definitely true/false or might be true/false); the statements were randomized to prevent order bias.

When it comes to answering correctly, householders are most likely to know it is true radon can be found in most homes (66% online, 62% telephone) or that exposure to radon is the leading cause of lung cancer among people who do not smoke (64% online 58% telephone); around half also know reducing radon in a home is less expensive than installing a new furnace (47% online, 50% telephone).

Around one-third (35%,) of online respondents know radon is easy to remove, but a similar proportion (37%) think this is false and three in ten (28%) are unsure; a similar pattern is also seen in the telephone survey (37% true, 42% false, 21% not sure). Telephone responses are comparable to 2018.

Around half of online respondents think each of three incorrect statements about radon are false (the correct answer): that it is a gas found in air conditioners and refrigerators (46% online, 59% telephone); that it comes from natural gas in furnaces and water heaters (46% online, 59% telephone); or that it is off-gassed from carpets, furniture and paints (53% online, 63% telephone).

In terms of modal differences, respondents online are less likely than those interviewed by telephone to catch all three false statements. For example, while six in ten phone respondents know it is false that radon is a natural gas in furnaces and water heaters, or that it is found in air conditioners and refrigerators, less than half indicate the same online.

Radon knowledge
Base: Those who have heard of radon

Knowledge	Online 2023 (n=704)	Telephone	
		2023 (n=567)	2018 (n=1,333)
True statements – % saying True (definitely or somewhat)			
Radon can be found in most homes. (TRUE)	66%	62%	60%
Exposure to radon is the leading cause of lung cancer among non-smokers. (TRUE)	64%	58%	55%
Reducing radon levels in a home is less expensive than having a new furnace installed. (TRUE)**	47%	50%	-
It is easy to remove radon from a home. (TRUE)*	35%	37%	36%
False statements – % saying False (definitely or somewhat)			
Radon is off-gassed from carpets, furniture and paints. (FALSE)	53%	63%	66%
Radon comes from natural gas in furnaces and water heaters. (FALSE)	46%	59%	62%
Radon is a gas found in air conditioners and refrigerators. (FALSE)	46%	59%	62%

Q.6 Now I am going to read some statements. For each statement, please tell me if you think it is definitely true, might be true, might be false or is definitely false.

SUBSAMPLE: Those who have heard of radon

* In 2018, the opposite was asked: It is difficult to remove radon from a home; data has been adjusted in order to be compared accurately; ** Wording of category has been revised since 2018

The following are subgroups with higher proportions saying it is *true* (the correct answer) that exposure to radon is the leading cause of lung cancer among people who do not smoke:

- Residents of SK/MB (74%), Quebec (70%) and Atlantic provinces (70%)
- Those with a university degree (69%)
- Those with at least some knowledge of radon (79%)
- People who smoke (76%).

Believing it is *false* that radon is easy to remove from a home (the incorrect answer) is higher among:

- Men (40% vs. 32% women)
- Those who believe they know at a little/something/a lot about radon (41%).

The following are more likely to say it is *false* (the correct answer) that radon comes from natural gas in furnaces and water heaters:

- Residents of Quebec (56%)
- Men (55% vs 34% women)
- Those 65 or older (58%).

Home radon testing and remediation

Three-quarters of online respondents are able to mention something when asked how people can tell if their home has a high level of radon, mainly that there are detectors available in general, that it can be tested (generally) or that a professional can test for it. Ventilation remains the most cited remediation method.

How radon can be detected. Following the radon knowledge questions and before asking householders how they could find out if there is a high level of radon in their home, all respondents were read the following statement:

Here are some facts about radon. Radon is a radioactive gas that is colourless, odorless and tasteless. It is formed by the natural breakdown of uranium in soil, rock and water. Radon gas comes up from the ground. When radon escapes outdoors, it is not a concern. However, radon that enters an enclosed space, like a home, can accumulate and become a health hazard. All homes have some level of radon. Long term exposure to high levels of radon is the second leading cause of lung cancer after smoking, and the number one cause for non-smokers.

Canadians were then asked how people can find out if there is a high level of radon in their home, without prompting in both telephone and online modes. Seven in ten in the telephone survey and three-quarters in the online survey provide at least one answer to this question (that is, they did not say they don't know), both higher than six in ten in 2018.

There has been an increase in the proportion who say it can be tested by a professional, mentioned by two in ten respondents in both modes (up from 14% in 2018). The percentage of those who mention some form of radon testing being available has remained steady since 2018 (21% online, 23% telephone).

Respondents who answered online are more likely than respondents over the phone to mention generally that detectors are available (26% vs. 18%), but less likely to mention purchasing a home testing kit (6% vs, 17%). Phone respondents are more likely than online respondents to say they are not sure how to find out if there is a high level of radon in the home.

In 2007, half of respondents (50%) were unsure about how to find out if there is a high level of radon in their home. Among those who offered an answer, the most common method (23%) was that people can get it tested (method unspecified), a comparable proportion to this year's telephone survey.

How to find out if there is a high level of radon in the home

How to find out	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Detectors available (general)	26%	18%	17%
Can get it tested (method unspecified)	21%	23%	22%
Can be tested by a professional	21%	22%	14%
Can purchase home testing kit	6%	17%	10%
Physical effects (general)	3%	1%	-
Other	4%	2%	3%
Not sure	23%	30%	40%

Q.7 Based what you know or have heard, how can people find out if there is a high level of radon in their home?

Responses are generally similar across the country. There is some variance among age groups: someone who is 65 or older is more likely than younger people to indicate you can get radon tested in general (30% vs. 18%), and, more specifically, that it can be tested by a professional (25% vs. 19%).

Knowing you can get radon tested by a professional is, somewhat ironically, mentioned more by those who know little or almost nothing about radon (28%) than those with more knowledge (20%).

Not being sure of how to find out is higher among those with a household income of \$40,000 or less (35%), women (26%), those with a high school diploma or less education (31%), and those who are not aware of radon generally (41%).

Where DIY radon testing kits can be purchased. Householders were told DIY radon testing kits are available, and asked where they would go to purchase one (multiple responses were permitted; online respondents were presented with a list of possible responses). Multiple responses were permitted.

While about half of phone respondents continue to mention a home improvement store, such as Home Depot, online respondents spread their choices over several more of the presented options. For example, while only three percent of phone respondents mention specialty retailers top of mind (comparable to 5 percent in 2018), four in ten (38%) online respondents say the same. This same pattern is observed when it comes to purchasing DIY testing kits at government agencies (32% online; 4% phone), online retailers (30% online; 7% phone), public health offices (23% online; 3% phone), as well as other retailers and lung associations. Respondents over the phone are much more likely not to be able to indicate a place to buy kits (34%, vs. 3% online), which is a factor of having to come up with a top-of-mind response.

Where DIY radon testing kits can be purchased

Place of purchase	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Home improvement store (e.g. Home Depot, Rona)	60%	47%	53%
Specialty retailer/services (e.g. gas company, HVAC)	38%	3%	5%
Government agency (e.g. Health Canada, Environment Canada)	32%	4%	3%
Online retailer	30%	7%	8%
Public health office	23%	3%	1%
Other retailer (e.g. Walmart)	22%	5%	4%
Lung association	10%	1%	<1%
Other	1%	6%	7%
Not sure	3%	34%	25%

Q.8 Do-it-yourself radon testing kits are available for purchase. Where would you go to purchase one?

That DIY radon tests can be found in home improvement stores is the dominant response across the country and across population subgroups, ranging from a low of 47 percent in the Atlantic to a high of 67 percent in B.C. Mentions of home improvement stores are also higher among those with an annual household income of \$40,000 or greater (62%) than those with lower incomes. Residents of Ontario are more likely to mention a public health office (27%) or other retailers, such as Walmart (26%). Owners are more likely (62%) to point out a home improvement store than renters (53%). However, renters are more likely (27%) to point out other retailers than owners (21%).

There are a few notable demographic differences in response. Men are more likely (33%) than women (27%) to mention online retailers as a place to purchase a DIY radon testing kit. Those aged 65 or older are more likely (45%) than others to mention specialty retailers/services. Householders who are 34 or younger are the most likely (30%) to mention a public health office.

Mentions of home improvement stores are higher among those who say they know almost nothing about radon (74%) than those who know more (64%). Those who say they know something/a lot about radon are more likely to mention a government agency (40%) or the lung association (18%) as testing kit sources.

Period of time for radon testing. Respondents were asked to indicate how long a testing kit needs to be kept in the home to accurately detect the level of radon. Online respondents were presented a list, while phone respondents were read categories when necessary. Multiple responses were permitted.

Between both modes, a notable proportion (half) are unsure. In the online survey, just under four in ten (37%) indicate a period under three months, while 14 percent say the correct answer of three months or longer.

Decreasing sharply since 2018, just under four in ten (36%) in the telephone survey cite some period less than three months. Increasing slightly since 2018, just under two in ten (16%) say three months or longer.

How long radon testing kits should be kept in the home

Length of time	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
<i>NET: Under three months</i>	37%	36%	57%
A couple of days	16%	12%	-
Between one week and three months	23%	22%	-
Three months or longer	14%	16%	10%
Not sure	51%	49%	34%

*Q.9 How long should a radon test kit be kept in the home to accurately detect the level of radon (not including any shipping or analysis time before the results become available)?**

**Question wording, as well as categories revised since 2018*

Among those giving a time frame, indicating that a radon test kit should be kept in the home for under three months to accurately detect level is still the likeliest response across Canada, but more common among those living in an urban community (38%) compared to a rural community (29%). And while householders earning less than \$40k are more likely to be unsure (63%), those making more are likely to choose under three months as the accurate duration for a radon test kit (between 38-47%). This is also true among age groups: While those 55 or older are more likely to be unsure (60%), those who are younger are more likely to say under three months (between 43-48%). This same pattern is evident in education levels: While those with a high school or less education are more likely to be unsure (60%), those with more education are likely to indicate under three months (39%).

Saying ‘three months or longer’ is the duration for an accurate radon test kit is higher among:

- University degree (16%) or community college/some university (15%)
- Those who say they know a lot/something about radon (25%)
- Those who have tested radon levels at home (37%).

Remediating radon in a home. Residents were asked what, if anything, people can do to reduce the amount of radon in a home, with multiple mentioned permitted. Online respondents were presented a randomized list. Similar to other results, online respondents are more likely to provide an answer than those interviewed by telephone, who gave responses top of mind, and less likely to not know. For example, while only nine percent of phone respondents mention sealing cracks or other openings, more than four in ten (44%) online respondents say the same. This pattern is consistent with methods such as installing a radon reduction system (34% online; 4% phone), covering exposed soil in crawlspaces with sealed barriers (33% online; 2% phone) and covering/sealing sump holes (25% online; 1% phone).

While around half of phone respondents remain unsure, other answers provided are consistent with 2018, such as the two in ten who mention increasing ventilation in some form.

In the 2007 baseline telephone survey, a majority of seven in ten (69%) were unsure what people can do to reduce the amount of radon in a home, notably higher than in 2023. Among those who provided an answer, 12 percent mentioned increasing ventilation in some way.

Methods to reduce amount of radon in home

To reduce amount of radon	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Increase ventilation/use mechanical or heat recovery/HRV ventilator/exchanger	45%	21%	20%
Seal cracks or other openings in foundations	44%	9%	9%
Install a radon reduction system/sub-slab depressurization system	34%	4%	3%
Cover exposed soil in crawlspaces with sealed barriers	33%	2%	2%
Cover or seal sump holes	25%	1%	2%
Open a window	<1%	4%	2%
Other	<1%	12%	16%
Not sure	32%	54%	55%

Q.10 Do you know what people can do to reduce the amount of radon in a home?*

*Question wording revised since 2018

While mentions are generally similar across the country and subgroups, there are a few differences. Mentions of increased ventilation are highest among men (49%), those earning a household income of \$40k or more (48%), those with a university degree (52%), have children under 16 (53%). Also higher among those with a lot/some knowledge of radon (63%) and those who have tested for radon before (56%).

Homeowners are more likely than renters to mention sealing cracks or other openings (46% vs. 37%), cover exposed soil in crawlspaces (35% vs. 26%) and cover or seal sump holes (27% vs. 20%). This may have to do with the experience that comes with owning a home/understanding the innerworkings.

Compared to men, women are more likely (37% vs. 27%) to be unsure how to reduce the amount of radon in a home. Men are more likely to mention sealing cracks or other openings (48% vs. 40%), covering exposed soil in crawlspaces (37% vs. 29%) and covering or sealing sump holes (28% vs. 23%).

Previous experience with radon

An important objective of this research is to identify the sort of experience Canadians have had with radon awareness, testing or remediation, and to understand the extent to which messages about radon testing have been heard. All respondents were asked about whether they have heard about radon levels in their community, and if they have had their home tested or ever considered testing – and, if they have not, why not. Those without experience with radon testing were then skipped to the next section, while those who have had testing done were asked more about this experience.

Awareness of radon levels in their community

One in ten Canadians have heard or seen something about radon levels in their community. Half in this group have heard people should get their radon tested, over four in ten have heard something about radon-associated health problems, and over three in ten have heard their community’s radon levels are high.

Community radon level. Canadians were asked if they recall ever seeing or hearing anything about radon levels in their community. Only around one in ten (9% phone; 8% online) have heard or seen something, unchanged since 2018; the vast majority (over eight in ten online, and nine in ten on the telephone) have not heard anything about this.

While recall of awareness has remained steady since 2018, Canadian householders are more likely today to recall hearing or something about indoor radon levels in their community than they were in the 2007 baseline telephone survey. At that time, four percent recalled seeing or hearing something about radon⁵.

Heard or saw something about community radon levels

Awareness of community radon levels	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Yes	8%	9%	9%
No	83%	90%	90%
Not sure	9%	1%	<1%

Q.11 Do you recall ever seeing or hearing anything about indoor radon levels in your community?

Having heard something about community radon levels is statistically similar across Canada, although slightly higher in Manitoba/Saskatchewan (15%). Having heard or saw something about indoor radon levels in their community is higher among those with a household income of \$40k or more (9%).

There is little notable differentiation between age and gender. In addition, those who have experienced lung cancer (themselves or another they live with) are more likely to be aware – pointing to the possibility that householders with this kind of experience stay aware of radon levels around them. Having heard something is also slightly higher among those who have children under 16 as well as those who have tested for radon before.

⁵ In 2007 this was asked slightly differently: “Do you recall ever seeing or hearing anything about radon levels in your community?”

What was seen or heard about community radon level. Those who say they have heard or seen something about the level of radon in their community (8-9% of householders) were asked what they recall; multiple responses were permitted. In the online survey, where respondents were shown a list of possible responses, half (49%) have heard people in their community should get their radon tested, over four in ten (44%) have heard about possible health issues linked to radon, and three in ten have heard local radon levels are high (31%) or that radon is a public or government concern (30%).

Phone respondents continue to most often mention that local radon levels are high, to a greater extent than they did in 2018 (34%, up from 22%). Compared to 2018, the proportions giving most responses have increased each time, including hearing/seeing that people in the community should get their radon tested (14%, up from 7% in 2018) and possible health problems caused by radon (17%, up from 6%). Slightly fewer in this wave mention where they heard or saw a mention of radon.

Presenting an answer list to online respondents increased the proportions indicating most responses; almost three times as many as in the telephone survey recall hearing people in this community should get their radon tested, or about possible health problems caused by radon.

Canadian householders surveyed by telephone in 2023 are twice as likely as in the baseline telephone survey in 2008 (14%, up from 7%) to recall hearing or seeing people in the community should get their radon tested, and almost three times as likely to have heard about possible health effects from radon.

What was heard or seen about community radon levels

Recall	Online 2023 (n=107)	Telephone	
		2023 (n=85)	2018 (n=220)
People in this community should get their radon tested	49%	14%	7%
Heard about possible health problems caused by radon	44%	17%	6%
Local radon levels are high	31%	34%	22%
Radon is a public/government concern (e.g. found in a school)	30%	13%	2%
Local radon levels are moderate	-	7%	5%
Mention of where seen/ad medium	-	5%	9%
Local radon levels are low	19%	2%	9%
Existence of radon in the community (general)	2%	35%	22%
Other	-	3%	15%
Not sure	1%	6%	12%

Q.12 What it was that you recall hearing or seeing (about radon levels in your community)?*

SUBSAMPLE: Those who have heard or seen something about community radon levels

*Question wording revised since 2018

Most subgroup bases are too small to allow for deeper analysis.

Radon testing

Ten percent of Canadians have had the radon level in their home tested and an additional two in ten of those who have not say they have considered testing.

Canadian householders were asked if they have ever had the radon levels in their home tested. Eight percent in the online survey have. The proportion saying yes when surveyed by telephone has increased somewhat since 2018, with one in ten now saying they have, comparable to the online survey.

In the baseline telephone survey in 2007, the proportion of Canadian householders who said they have had the radon levels tested in their home was two percent, notably fewer than 2023’s 10 percent.

Have had radon levels in home tested

Radon levels tested	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Yes	8%	10%	6%
No	87%	87%	92%
Not sure	6%	3%	2%

Q.13 Have you ever had the radon levels in your home tested?

Having tested radon levels in their home is higher among the following subgroups:

- Those who earn a household income of \$80k or more (10%)
- Men (11% vs. 5% women) and those who are younger than 45 (12%)
- Have a university degree (11%) and children under 16 (14%)
- Is themselves a person who smokes (12%)
- Consider themselves to know a lot/something about radon (26%)

Considered having radon levels in home tested

Radon testing consideration	Online 2023 (n=1,100)	Telephone	
		2023 (n=711)	2018 (n=1,743)
Yes	19%	19%	16%
No	70%	78%	82%
Not sure	11%	3%	1%

Q.14 Have you ever considered having the radon levels in your home tested?
 SUBSAMPLE: Those who have not had the radon levels in their home tested

Having considered getting the radon levels in their home tested is similar across Canada, but there are some demographic differences to note. Men (22%) are more likely than women (16%) to have considered this, as are those with a university degree (24%, vs. 15% of those with less education). The proportion having considered getting their home’s radon tested was significantly lower during the 2007 telephone survey (6%) than is the case today (19%).

Considering testing their home’s radon levels is higher among those with children under 16 (26%) and householders who say they know a lot/something (50%) about radon.

Why radon has not been tested

An overall lack of concern is the most frequently mentioned reason for not having a home tested for radon.

Those who have not had their radon levels at home tested are most likely to point to not having thought about it or lack of information as main reasons why, consistent with 2018. Multiple responses were permitted. Not being worried (feeling their home is well ventilated or that radon is not enough of a risk) has climbed notably since 2018. While only one percent expressed this in 2018, two in ten (21% telephone, 18% online) indicate it this year.

Online respondents, shown a list of reasons for not getting their radon tested, basically echo the top-of-mind reasons offered by phone respondents. For example, almost half of online respondents (48%) say they just have not thought about it. Consistent proportions in both modes mention not knowing what to do/not having enough information (38% phone; 35% online). Though this proportion has slightly decreased since last wave, it speaks to a continual issue pertaining to a need for clarity to ease decision-making.

Other personal reasons for not testing yet include presumed unaffordability (3% phone; 10% online), low local radon levels (8% phone and online), being lazy/unmotivated (6% phone; 7% online), as well as lack of time (5% phone; 6% online).

Why home has not been tested

Reasons	Online 2023 (n=1,100)	Telephone	
		2023 (n=711)	2018 (n=1,743)
Have not thought about it	48%	21%	17%
Don't know what to do/don't have enough information	35%	38%	42%
Not worried about radon/not enough of a risk/home is well ventilated	18%	21%	1%
Too expensive/cannot afford it	10%	3%	2%
Local radon levels are low/not a problem	8%	8%	6%
Not motivated	7%	6%	3%
Lack of time/too busy	6%	5%	5%
Cannot make changes to my living space	6%	2%	2%
Other	5%	4%	5%
Not sure	6%	5%	4%

Q.15 Why have you not had the radon levels in your home tested?
 SUBSAMPLE: Those who have not had radon tested

Reasons for not having the radon levels tested are similar from region to region, however those living in Alberta (56%) or Ontario (52%) are slightly more likely to say they hadn’t thought about it. Canadians living in BC (21%), Alberta (23%) and Quebec (21%) are more likely than other regions to say they are not worried about

radon/that it isn't enough of a risk. Not feeling they have enough information is highest among those living in Atlantic provinces (45%).

Those aged 65 or older are much more likely (28%) than those who are younger to say they are not worried about radon, or that it isn't enough of a risk. In line with this, Canadians who are 65 or older are also more likely (12%) than their younger counterparts to say that local radon levels are low/not a problem.

Men are more likely than women to be less worried about radon (22% vs 14%), to say local radon levels are low (12% vs 6%) or that they are unmotivated (9% vs. 5%). Women are more likely to feel they do not know what to do/don't have enough information (39% vs. 29% of men).

Experience with radon testing

Three-quarters report having had their home tested for radon in the past five years. DIY testing kits remain the most-cited method of testing, used by four in ten. Almost three in ten of the few who tested say the level was high. A slim majority of those whose tests resulted in moderate/high levels took action to have their radon levels lowered.

Canadians who have had the radon level in their home tested (n=94 phone; n=100 online) were asked a series of questions about their experiences. Note that, because base sizes remain small, detailed analysis of these results by subgroup is not presented.

If radon was tested in the past five years. A steady proportion of two thirds who have tested for radon indicate having tested in the past five years. Among online respondents, three quarters (76%) say they have tested in the past five years; this is lower among telephone respondents (68%, comparable to 2018).

Radon levels tested in past five years

Past five years	Online 2023 (n=100)	Telephone	
		2023 (n=94)	2018 (n=160)
Yes	76%	68%	66%
No	22%	32%	32%
Not sure	3%	-	2%

Q.16 Have you had your home tested for radon in the past five years?
SUBSAMPLE: Those who had their home radon tested

Results are fairly consistent across subgroups; base sizes for subgroups are low, but householders with children under 16 are among the likeliest to have tested their home for radon in the past five years.

How radon was tested. Householders who said the radon level of their home has been tested were asked how this testing was done. A plurality of four in ten (39%) say they tested it with a kit they purchased (50% telephone, comparable to 2018). Smaller proportions say the test was conducted by either a home inspector (12% phone; 21% online) or a private contractor (13% phone; 14% online). Around one in ten in each mode say it was tested with a kit provided by the government/Health Canada, compared to 2018.

In this wave, a new response - borrowed library monitors - was included in the list of answers. Online respondents were able to view this list of possible options, resulting in seven percent who indicated a borrowed library monitor, compared to one percent of phone respondents who indicate this.

In the 2007 baseline telephone survey, using a home inspector was the most common way of testing radon levels among the small proportion of Canadian householders who had tested (29%); only one in ten (11%) used a home test kit, the top method in recent years.

Method used to test radon levels at home

Method	Online 2023 (n=100)	Telephone	
		2023 (n=94)	2018 (n=160)
Tested it myself using a kit I purchased	39%	50%	49%
Home inspector	21%	12%	15%
Private contractor	14%	13%	16%
Government/Health Canada provided a kit	12%	9%	14%
Library monitor I borrowed*	7%	1%	-
Other	3%	7%	6%
Not sure	4%	8%	5%

Q.17 How did you have the radon level in your home tested (IF TESTED MORE THAN ONCE: the most recent time it was tested);

SUBSAMPLE: Those who had their home radon tested

*Response option not provided in 2018

Duration of radon test. After indicating which method of testing they used, those who have tested for radon were asked about the duration of the test. Online respondents were presented a list of options.

A third (33%) of online respondents and a quarter (26%) of phone respondents mention a duration of three months or longer. Around one-quarter of phone respondents (27%) and one in ten online (11%) are unable to indicate the length of the radon test. Among telephone respondents, fewer than in 2018 indicate only testing for a couple of days (7%, vs. 20% in 2018).

Duration of home radon test

Duration	Online 2023 (n=100)	Telephone	
		2023 (n=94)	2018 (n=160)
A couple of days	23%	7%	20%
Between one week and three months	32%	33%	15%
Three months or longer	33%	26%	35%
Other	1%	7%	3%
Not sure	11%	27%	27%

Q.18 For how long a time period was the radon level tested in your home (not including any shipping or analysis time before the results become available)?

SUBSAMPLE: Those who had their home radon tested

Subgroup base sizes are too low for this question to allow for deeper analysis.

Reported radon levels. Those reporting radon testing were asked to recall if the level was high, moderate or low. In addition to seeing the possible answers, online respondents were also provided a qualifying sentence about high radon levels. Compared to levels reported in 2018, more Canadian householders recall the level was high (close to three in ten online and two in ten by telephone), and fewer say it was low.

Result of home radon test

Result	Online 2023 (n=100)	Telephone	
		2023 (n=94)	2018 (n=160)
High	28%	19%	1%
Low	61%	46%	75%
Moderate (telephone only)	n/a	21%	15%
Not sure/don't remember	11%	13%	9%

Q.19 Would you say the level of radon was...?*

SUBSAMPLE: Those who had their home radon tested

*Question wording revised since 2018

Most subgroup bases are too low in this question to allow for deeper analysis.

If remediation action was taken. The small number who reported the result of their home test as high or moderate were asked if they took any action. Over half (55%) of those responding online say they took action, one third say they did not (32%), and 13 percent say the testing was done recently. Over a third (34%) of phone respondents say they took action, six in ten (61%) say they did not, and four percent say the testing was done recently.

Took action to reduce radon level

Took action	Online 2023 (n=42)*	Phone 2023 (n=41)*
Yes	55%	34%
No	32%	61%
Tested recently – not yet acted	13%	4%

Q.20. Did you take any action to reduce the radon level?
 SUBSAMPLE: Those who had high/moderate radon levels
 *Caution: small sample size
 Note: In 2018, this follow up question was asked of all who did testing, therefore is not directly comparable.

Remediation actions taken or planned. Those who took/plan to take action to reduce the radon level in their home were asked what they will do, with multiple mentions permitted. Proportions are somewhat higher for online respondents, who were able to see the list of options. The most common answers for both online and telephone modes include increasing ventilation in some way, sealing cracks or other openings, installing a radon reduction system as well as covering/sealing sump pumps.

Action to reduce radon level

Action	Online 2023 (n=29)* #	Telephone 2023 (n=16)* #
Seal cracks or other openings in foundations	(17)	(2)
Install a radon reduction system/sub-slab depressurization system	(16)	(4)
Cover/seal sump pumps	(15)	-
Cover exposed soil in crawlspaces with sealed barriers	(11)	-
Increased ventilation/use mechanical or heat recovery/HRV ventilator	(8)	(10)
Not planning to remediate home	-	(1)
Not sure	(1)	(1)

Q.22 [What will you do/What was done] to reduce the radon level in your home?
 SUBSAMPLE: Those who took/will take action to reduce radon levels
 * Caution: extremely small sample sizes, actual counts are shown
 Note: In 2018, this follow up question was asked of all who did testing, therefore is not directly comparable.

Reason to take action to reduce radon level. This year a new question was added; those who took action to reduce the radon level were asked *why*, speaking to the reasons for addressing radon Canadians consider to be important. Online respondents were presented a list; multiple responses were permitted. The base sizes are small and caution is advised in interpreting these results.

Main reasons for taking action to reduce radon are wanting to protect their or their family’s health, and generally being worried about the potential health risks of radon, or that the level was high enough that reducing it was recommended.

Reason to take action to reduce radon level

Reason	Online 2023 (n=24)* #	Telephone 2023 (n=12)* #
Wanted to protect my health/the health of my family	(9)	(7)
Was worried about potential health risks of radon	(7)	(8)
Had a friend/family member with cancer/lung cancer; wanted to reduce my risk	(6)	-
The radon level was high enough that reducing it was recommended	(6)	(2)
It was easy to fix	(4)	(1)
Other	-	(3)

Q.21B What were the main reasons you decided to take action and reduce the radon level in your home?

SUBSAMPLE: Those who took action to reduce the radon level

* Caution: extremely small sample size, actual counts are shown

Why radon remediation action has not been taken. The small subgroup of those who do not plan to remediate were asked why not. The main reason is that the levels were low or moderate and do not pose a problem. Other mentions include the presumed expense/unaffordability, inconvenience, and lack of motivation.

Use of certified radon professionals. Among the small subgroup of householders who took/will take action to reduce radon levels, those online mainly say they anticipate hiring a certified radon professional. Phone respondents are more likely to not use a professional than to use one.

Results of radon remediation. The small number who have undertaken radon remediation (phone: n=12; online: n=24) were asked if they have had the levels retested. Most of online respondents say they have tested again, and most of this small group were successful in reducing the radon to an acceptable level. Telephone respondents are divided about whether they have retested; almost all who did report success in lowering the radon level in their home.

Hypothetical experience with radon

To gauge attitudes and expectations related to radon, survey respondents were asked a hypothetical question about buying a home if they had learned that the radon levels had been high, but the owner had paid to have the radon reduced.

Willingness to buy remediated radon home

Four in ten would definitely or likely buy a home where the owner had paid for radon remediation.

When asked how likely they would be to buy a home they really liked if they learned the radon levels had been high, but the owner had paid to have it reduced, there is some uncertainty among Canadian householders. Four in ten online and just under half surveyed by telephone would; one-third online and four in ten telephone respondents are unlikely to buy a remediated home. For telephone respondents, likelihood has remained the same as in 2018.

Willingness to purchase a remediated home

Willingness	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
<i>NET: Likely to buy (Definitely/likely)</i>	42%	46%	50%
Definitely	9%	13%	14%
Likely	34%	33%	36%
Likely not	24%	26%	19%
Definitely not	12%	17%	19%
Depends	-	5%	9%
Not sure	22%	7%	2%

Q.33 How likely would you be to buy a home you really liked if you learned that the radon levels had been high, but the owner had paid to have the radon reduced? Would you definitely, likely, likely not or definitely not buy such a home?

Being definitely or likely willing to purchase a remediated home is similar across the country. Men are somewhat more likely (46% vs. 40% women) to say they would purchase a remediated home. Being willing to buy is also higher among those who are less than 55 years old (50%), those who have more than a high school education (45%), and those with children under 16 in the home (51%). People who smoke or who live with people who smoke (49%) are also more likely than people who do not smoke to purchase a remediated home.

Being *definitely* likely to purchase a remediated home is highest among Canadians younger than 45 (13%), those who believe they know a lot/something about radon (15%), and those who have had their radon levels tested before (24%).

Radon information provided

The following section looks at the public’s awareness of the various sources of radon information available. The survey also asked about where householders would be likely to seek information on radon if they desired it.

Awareness of radon programs or activities

Just under one in ten are aware of any radon programs or activities; of those aware the most mentioned sponsors are the provincial and federal governments. Canadians are most likely to turn to the internet to get more information about radon.

Canadians are no more aware of programs or activities to help residents learn about or deal with radon than they were in 2018. When asked if they are aware of such programs or activities, eight percent of Canadians answer yes, online and by phone. The majority (91% phone; 84% online) remain unaware of these. Awareness of such programs, however, has been slowly increasing over the years. In the 2007 telephone survey, only two percent of Canadian householders had awareness of programs or activities to learn about radon.

Awareness of programs/activities to learn about radon

Awareness	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Yes	8%	8%	7%
No	84%	91%	93%
Not sure	8%	1%	<1%

Q.34 Are you aware of any programs or activities to help residents learn about or deal with radon in their homes?

Awareness of programs or activities to learn about radon in their homes is highest among Canadians with household incomes of \$80,000 to under \$100,000 (14%), men (10%, vs. 6% of women), English speakers (9%), people who smoke (14%) and the small proportion who have been diagnosed with lung cancer (57%). Awareness is also higher among those with children under age 16 (15%), those who know a lot/something about radon (24%), those who have tested for radon (49%), and those who would purchase a remediated home (13%).

Who sponsors radon programs? Those who said they are aware of activities to help residents learn about or deal with radon (n=156) were asked who sponsors or funds these programs. Phone respondents were only read options if asked, while those online saw a list. Multiple responses were permitted.

In the online survey, the top selected response is the provincial government (61%), distantly followed by the federal government (40%) or municipal government (33%). One in ten are not sure.

The most mentioned source in the telephone survey is the federal government, by 28 percent, unchanged. One-quarter mention the provincial government (24%, up from 15% in 2018) and over one in ten mention the municipal government (13%, statistically unchanged from 2018). One in ten (12%) make other diverse mentions, and just over one-quarter are unable to say.

Sponsor of radon programs/activities

Awareness	Online 2023 (n=104)	Telephone	
		2023 (n=78)	2018 (n=158)
Provincial government	61%	24%	15%
Federal government	40%	28%	28%
Municipal government	33%	13%	15%
Other	3%	12%	17%
Not sure	12%	28%	25%

Q.35 Can you tell me who sponsors or funds these programs or activities?
 SUBSAMPLE: Those who have heard of radon programs/activities

Most subgroup bases are too small to allow for deeper analysis.

Radon information sources

Under two in ten have taken steps to learn about radon. The internet is the most mentioned source for learning about radon. Three in ten either used Health Canada or their provincial government as their radon information source.

Steps taken to learn about radon. When asked if they have ever taken steps to learn about radon, 16 percent (and 17 percent telephone) say they have done so, a proportion that has increased slightly since 2018. A little over eight in ten have not researched or taken any radon education steps.

Having taken steps to learn about radon has been incrementally increasing, from a low of four percent in the baseline 2007 survey, up to just under two in ten (17%) in 2023.

Taken steps to learn about radon

Taken steps	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Yes	16%	17%	12%
No	84%	82%	88%

Q.37 Have you ever taken steps to learn about radon?

Having taken steps to learn about radon is higher among those living in urban communities (17%), and those with a household income over \$40,000 (19%). Men (21%) are more likely than women (12%) to have taken steps, as are Canadians younger than age 55 (20%) and those with a university degree (23%).

Having taken steps to educate themselves about radon is also higher among those with children under 16, those who were aware of radon prior to the survey, those who know a lot/something about radon, those who have had their home’s radon levels tested before, and those who would be likely to purchase a remediated home.

Sources of radon information. It is useful for Health Canada to be aware of the information sources Canadians have actually used to seek out more information about radon, as well as potential sources that may be consulted in future by those who have not yet done researched this topic. Those who said they have taken steps to learn more about radon were asked to name the source(s) they turned to; multiple responses were permitted. Online respondents could see a list.

Among online respondents, three in ten each used either Health Canada or their provincial government/ministry of health as radon information sources. Around one-quarter asked friends or family, and two in ten checked in the media. Google (17%) or other internet sites (10%) are also notable sources.

Using the internet to search for more information remains the top starting place for phone respondents. Google search, specifically, is a source mentioned by close to two in ten Canadians (both modes). The media (TV, newspapers, magazines, radio) also received notable mentions by both modes, increasing in ranking since 2018.

As for other questions, proportions of the responses shown to online respondents tend to be higher than for the top-of-mind responses on the telephone, especially for sources such as Health Canada (5% phone; 32% online), provincial government (5% phone; 31% online) and friends/family/word of mouth (5% phone; 23% online).

Actual sources of information about radon

Sources of information	Online 2023 (n=207)	Telephone	
		2023 (n=144)	2018 (n=264)
Health Canada	32%	5%	6%
Provincial government/provincial ministry of health	31%	5%	4%
Friends/family/word of mouth	23%	5%	2%
Media (TV, newspaper, magazines)	21%	20%	14%
Google search	17%	18%	22%
Local lung association	13%	6%	1%
Family doctor/general practitioner	12%	1%	<1%
Through work/my job	12%	5%	6%
Other lung association (e.g. national)	11%	4%	<1%
Internet – no specific website	10%	32%	3%
Government website	1%	5%	1%
Real estate agent	6%	-	<1%
Other	6%	21%	39%
Not sure	1%	1%	7%

Q.38 Where did you look for information about radon?
 SUBSAMPLE: Those who have taken steps to learn about radon

If now motivated to get home radon level tested. This year, all householders were asked whether they were motivated to get their home radon levels tested. Half of online respondents say yes, leaving just over two in ten (22%) who say no. One third of phone respondents (34%, up from 26% of those not having tested in 2018) say yes, and an additional 11 percent say they are motivated to learn more. Though this is an increase since last wave, this is largely because of the difference in how it was asked: While this question was asked of all respondents this year, it was only asked of those who have not had their home radon tested in 2018.

Motivated to get home radon level tested

Motivated	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018* (n=1,743)
Yes	50%	34%	26%
No	22%	37%	48%
Maybe	-	16%	13%
Motivated to learn more (telephone volunteered response only)	(n/a)	11%	12%
Not sure	28%	2%	1%

Q.40 Has what you have learned about radon today motivated you to get your home radon levels tested?

*NOTE: In 2018 this was asked of the subsample of those who have not had their home radon tested, while in 2023 it was asked of all.

After learning about radon during their survey, Canadians who are now motivated to get home radon levels tested are more likely among the following:

- Residents of Ontario (57%), SK/MB (52%) or Alberta (49%)
- Living in an urban community (52%)
- Earning a household income of \$40k or more (54%)
- Younger than 55 (59%) and have kids under 16 (64%)
- People who smoke (58%)
- Know a lot/something about radon (60%), have had radon tested (64%), and likely to buy a remediated home (58%).

Effectiveness of radon actions and messaging

Requiring radon tests for selling or buying a home and being made aware of high levels in the community are considered the most effective ways to encourage remediation.

Canadian householders were asked to rate how effective they felt each of seven factors would be in convincing people to have the radon level in their home reduced. Online respondents were able to see each of the statements, while phone respondents were read them aloud. While around seven in ten or more think each would be at least somewhat effective, Canadians are most likely to think it would be very effective if radon testing was required as part of selling or buying a home (48% online, 57% telephone) or if they heard their community had high levels of radon (47% online, 54% telephone). Notable proportions also think it would be very effective if they heard radon is a major cause of lung cancer (43% online, 48%) or that a radon mitigation system will reduce a home’s radon level by more than 90 percent (38% online, 47% telephone). Somewhat fewer think other approaches would be very effective. Telephone results are very similar to 2018.

Proportions saying most are very effective are somewhat lower among online respondents than among their phone counterparts, which may be a result of having been able to see the range of possibilities in a grid.

Effectiveness of radon actions or messages % saying Very effective

Factors	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
If radon testing was required as part of selling or buying a home.	48%	57%	57%
Hearing that your community has high levels of radon.	47%	54%	54%
Being told radon is a major cause of lung cancer, whether or not people smoke.	43%	48%	49%
Being told a radon mitigation system will reduce a home’s radon level by more than 90 percent.	38%	47%	47%
A government rebate of 15 percent of the cost of having the radon level reduced by a certified professional.*	34%	25%	29%
Knowing that a radon mitigation system can be installed in less than a day.	32%	33%	37%
Knowing the cost of reducing radon is comparable to other home maintenance repairs and less expensive than replacing a furnace.*	29%	26%	25%

Q.41 How effective do you think each of the following would be at convincing people to have the radon level in their home reduced?
* Wording of category revised since 2018

Thinking these factors would be very effective is similar across the country. The groups more likely to think it would be very effective if **radon testing was required as part of selling or buying a home** include: living in urban communities (49%), women (51%), English speakers (49%) and those who are aware of radon (51%).

Hearing that your community has high levels of radon is considered a very effective message among higher proportions of the following: English speakers (50%), aged 55 and over (54%), those without children under age 16 (50%), those aware of radon (50%), and those who say they know a lot/something about radon (59%).

Demographics

Smoking in the household

Canadians who answer online are more likely to indicate that they, or someone else in their household, smokes.

Canadians were asked to indicate if they or someone else in their household smokes. Two in ten phone respondents report the presence of a person who smokes; online respondents are marginally more likely to indicate a person who smokes in their household (28%). Nine percent of phone respondents say they themselves smoke, while thirteen percent say the same online. This discrepancy may point to the greater comfort one feels when answering such behavioural questions online, and also the older age skew caused by the household decision-maker qualification.

Smoking status

Status	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
<i>NET: Yes</i>	28%	20%	19%
Yes, self	13%	9%	8%
Yes, someone else in household	10%	7%	6%
Yes, both self and other	5%	4%	5%
No, no one	72%	80%	81%

Q.42 Do you, or someone else in your household, smoke?

Having a person who smokes in the household ranges from a low of 20-22% in BC and Alberta to almost four in ten of those living in Atlantic provinces (38%). Having a person who smokes in the house is also higher among renters (39%), those in households earning less than \$100,000 (33%), and those who do not have a university degree (33%).

Lung cancer in the household

Six percent report they or someone else in the household has had a lung cancer diagnosis.

Six percent indicate they or someone else in their household has ever been diagnosed with lung cancer with three percent saying they have had a personal diagnosis and four percent saying someone else has. In the telephone survey, a slightly lower two percent say their household has been impacted by lung cancer. The telephone results for this question are unchanged from 2018.

If diagnosed with lung cancer

Status	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Yes, self	3%	1%	1%
Yes, other	4%	2%	2%
No	94%	97%	98%

Q.43 Have you or anyone else in your household ever been diagnosed with lung cancer?

Having a lung cancer diagnosis in the household is similar across the country and most subgroups.

The small subgroup (phone: n=18; online: n=44) who indicate someone else in their household had been diagnosed with lung cancer were asked if that other person is or was a person who smokes; about half online say the person formerly smoked, and the rest are divided between saying they are/were a person who smoked or are not a person who smoked.

Ownership of home

Around eight in ten householders surveyed say they own their home.

Around eight in ten Canadians in this survey indicate they own their home and around two in ten rent, in both modes. Telephone respondents are somewhat less likely than in 2018 to own their home, and are more likely to be renting.

Home status

Status	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
Owned	78%	81%	89%
Rented	22%	19%	11%

Q.C Do you own your home, or is it rented?

Home ownership is statistically similar across the country. Renting a home is more likely to be the case for women (25%) than men (19%) and is linked to living in urban communities (23%), those with household incomes of less than \$40,000 (51%), and being aged 34 or younger (42%).

Number of people in household

There is an average of 2.6 people per household.

Canadian household decision-makers were asked how many people, including themselves, live in their household. The average is 2.6 online and 2.8 telephone, which is slightly under the close to 3 in 2018.

Number of individuals living in home

Number	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
1	15%	15%	15%
2	41%	38%	32%
3	18%	17%	18%
4	17%	17%	21%
5 or more	7%	12%	12%
MEAN	2.63	2.79	2.95

Q46. How many individuals, including yourself, currently live in your household?

Having a household size of two people is fairly similar across the country, but slightly higher in BC (51%) and Alberta (50%). This size of household is also linked to rural communities (49%), and those who own their home (44%). This is also more common among those 65 or older (64%) and people who do not smoke (43%). Respondents in two-person households are more likely to be aware of radon (46%) but less likely among those who have tested for radon levels.

The number of occupants in a household increases as income levels increase.

Presence of children in the home

Three in ten report a child under age 16 in the household.

Those with others in their household were asked if that includes a child under age 16. Three in ten of those in multi-person households have a child (30% online 33% telephone), comparable to 2018.

Children living in home Base: those in multiple-person households

Children in home	Online 2023 (n=1,027)	Telephone	
		2023 (n=650)	2018 (n=1,903)
Yes	30%	33%	31%
No	69%	66%	69%

Q47. Does your household currently include any children under 16 years of age?

Reporting a child in the household is generally similar by region, however it is higher in Ontario (34%), and in urban communities (31%, vs 22% rural). Having a child in the household is also higher among women (33%), those with household incomes of at least \$80,000 (37%), those aged 35-44 years old (61%), and those with more than a high school education (33%). The group of Canadians with children are more likely to know a lot/something about radon (36%) or to have had their home’s level of radon tested (54%).

Education level

About four in ten householders have completed college or some university and four in ten and the same proportion have a university degree or more education.

Close to four in ten have a university degree or higher (bachelor’s degree/post-graduate) and the same proportion have completed college/some university. Proportions are similar for telephone respondents and are generally similar to 2018.

Level of education

Level	Online 2023 (n=1,200)	Telephone	
		2023 (n=805)	2018 (n=1,903)
High school or less	24%	20%	24%
Completed college/some university	38%	38%	31%
University degree or more	38%	39%	43%

Q51. What is the highest level of formal education you have completed?

Having a university degree is notably higher in Ontario (47%) than other regions. This level of education is also more likely among those living in urban communities (41%), those in households with incomes of \$100,000 or more (56%), and those who own their home (40%). Having a university degree is also higher among English speakers (40% vs. 29% French) and those 44 years old or younger (48%), and those who do not smoke and who do not live with people who smoke (42%). Canadians with children under 16 (47%) are more likely to have a university degree, which correlates with age group. Awareness, knowledge and testing of radon is also likelier amongst this group.

Household income

One-third report a household income of \$100,000 or more.

One-third of respondents to the online survey and close to four in ten in the telephone survey report household incomes of \$100,000 or more. Telephone respondents are more likely than those responding online to not state their income.

Household income

Income level	Online 2023 (n=1,200)	Telephone 2023 (n=805)
Under \$40,000	17%	12%
\$40,000 to just under \$80,000	30%	21%
\$80,000 to just under \$100,000	16%	13%
\$100,000 to just under \$150,000	19%	18%
\$150,000 and over	13%	20%
Prefer not to answer	5%	16%

Q52. Which of the following categories best describes your total household income? That is, the total income of all persons in your household combined, before taxes.*

**Question wording and categories revised in 2023 to comply with revised GOC public opinion research standards*

Having a household income of \$100,000 or higher is higher in Ontario (37%), BC (38%) and Alberta (33%), and lower in the Atlantic provinces and Saskatchewan/Manitoba. This level of income is also higher in urban communities (34%), and among homeowners (38%), men (36%), English speakers (34%) and people who do not smoke (36%).

Age

Just under two in ten respondents are under age 35.

A notable proportion of just under two in ten respondents are age 34 or under. The average age of householder decision-makers is 53 years old.

Age

Age level	Online 2023 (n=1,200)	Telephone 2023 (n=805)
<i>Under 35</i>	17%	16%
18 to 24	3%	3%
25 to 34	14%	13%
35 to 44	17%	17%
45 to 54	18%	17%
55 to 64	20%	20%
65 or older	28%	28%
<i>MEAN</i>	52.74	53.69

Q49. In what year were you born? (CONVERTED TO AGE)

Age groups were updated based on GOC POR standards and therefore cannot be compared to 2018.

Sub-group differences

The following are brief, descriptive findings from the survey for specific groups of Canadian householders. To facilitate the transition to an online methodology, subgroup differences in this report reflect the online survey findings, unless otherwise specified.

By region

The survey findings are generally applicable to all regions of the country. Some differences are noted below.

- As a source for hearing or seeing something about radon, the media is mentioned more often in Quebec and Manitoba/Saskatchewan.
- Rating one's own knowledge of radon as a little/almost nothing is higher in BC than in Ontario or Quebec.
- Those living in Quebec and French speakers are the most likely to recall radon is toxic. Those living in Ontario are the most likely to recall radon is a radioactive gas.
- When asked about why their home's radon level hasn't been tested, those living in Alberta or Ontario, are slightly more likely than others to say they just hadn't thought about it. Those living in BC, Alberta or Quebec are more likely than those in other regions to say they are not worried about radon/that it isn't enough of a risk. Not feeling they have enough information to take action is higher among those living in Atlantic provinces.
- Having heard something about radon levels in their community is statistically similar across Canada, but slightly higher in SK/MB.
- That DIY radon tests can be found in home improvement stores is the dominant response across the country and across population subgroups, but somewhat higher in BC, Alberta, SK/MB and Ontario, and lower in Quebec, Atlantic provinces and the North. Residents of Ontario are more likely to mention a public health office or other retailers, such as Walmart.
- After learning about radon during their survey, Canadian householders living in Ontario, SK/MB and Alberta are among the likeliest to feel motivated to get home radon levels tested.

By community size

There are not a lot of urban-rural differences to note in 2023. Urban dwellers are somewhat more likely to say they have taken steps to learn about radon and to feel motivated to get home levels tested after learning more about radon during the survey. Those living in urban communities are also more likely to think it would be effective if radon testing was required as part of selling or buying a home, compared to those living in rural communities. Canadian householders living in rural communities are also more likely to think that it is the provincial government who sponsors or funds radon programs/activities.

Demographically, living in an urban setting is also linked to renting a home, having a child under 16 years old, having a university degree as well as a household income of \$100,000 or greater.

By household and individual characteristics

Home ownership and household composition. Canadian householders with children prove to be an informed group when it comes to radon awareness and knowledge. Linked to household incomes of at least \$80,000, being aged 35-44 and educated after high school, this group is more likely to know a lot/something about radon and to have had their home's level of radon tested (and in the last five years). Householders with a presence of children under 16 in the house are also among the likeliest to mention increasing ventilation to reduce radon levels and to say they would purchase a remediated home. Furthermore, they are among the likeliest to not only have awareness of current program or activities to learn about radon, but to have taken steps to learn about radon.

Renters tend to be younger and have lower incomes than homeowners. They are also more likely to be women and to live in urban communities. These demographic factors also link to overall awareness of radon, as renters are less likely to be aware than those who own their homes. When asked what one can do to reduce levels of radon in their home, owners are more likely to mention sealing cracks or other openings or covering/sealing sump holes – speaking to the experience that likely comes with owning a home and navigating the innerworkings.

By age and gender. Canadian householders who are 34 or younger are less likely to have awareness of radon. This becomes a pattern, with awareness increasing as age increases, where those aged 65 or older are much more likely to be aware of radon. Canadian householders who are 45 or older are more likely than those younger to mention the media as a source for radon information. To purchase a DIY radon testing kit, those in the oldest demographic of 65+ are among the most likely to mention a specialty store/retailer.

In addition to patterns of general awareness, there is also a pattern among older Canadian householders related to being concerned about radon. Those aged 65 or older are much more likely than those who are younger to say they are not worried about radon, or that it isn't enough of a risk. In line with this, Canadians who are 65 or older are also more likely than their younger counterparts to say that local radon levels are low/not a problem when asked why they haven't had their levels tested. Canadian householders who are 55 or older are also less likely to have taken steps to learn about radon and nor feel motivated to get their home radon levels tested after learning about radon during their survey.

As in previous waves, there are some notable gender differences. Men are more likely to say they are aware of radon and are more likely than women to have heard or saw something about radon through media sources. Women are also more likely to feel they don't know what to do/don't have enough information when asked why they haven't had their levels tested. However, while men are more likely to know how to reduce the amount of radon in a home (such as increasing ventilation, sealing cracks, covering exposed soil), they are more likely to believe that radon is difficult to remove from a home.

Similar to older Canadian householders, men are less worried about radon. When asked why they hadn't tested their radon levels, men are more likely than women to say local radon levels were low and generally unmotivated to do so. Despite this lack of worry and motivation, men are more likely than women to have taken steps to learn about radon.

Smoking status. People who smoke are less aware of radon than those who do not smoke. Despite general awareness being low, this group is more likely than people who do not smoke to have tested radon levels in their home and to purchase a remediated home. They are also likely to know that exposure to radon is the leading cause of lung cancer among people who do not smoke. Awareness of programs or activities to learn

about radon is higher among people who smoke. They are also among the likeliest to be motivated to get home levels tested after taking part in the survey.

Appendix A: Methodology

The survey was conducted by Environics Research Group using a dual mode (telephone and online) approach.

This research was designed to complete 1,200 online and 800 telephone interviews with the target audience of Canadians 18 years of age and over living in private households, in the 10 provinces and, for the telephone survey, the three territories. Respondents were screened to ensure they were household decision-makers and residents of single-family dwellings with ground floor or basement living space, as these are the primary audience for radon messaging. The base samples were stratified across five designated regions to ensure meaningful data and analysis at the regional level. Unlike previous telephone surveys, these surveys did not oversample in identified radon-prone areas.

Rationale

The research involved a dual-mode telephone/online survey with 2,000 Canadians. In the past, Health Canada has used CATI methodology for its surveys of Canadians. This year the collection method was a hybrid of telephone and online approaches that will allow for tracking of data from previous years while understanding what modal effects are present. Additionally, Health Canada wishes to shift to using an online methodology in the future, and the online mode this year will serve as a baseline for that transition. Environics reviewed the phone and online data and recommended the data from the two data collection modes not be merged.

The research comprised the following:

- A random probability sample telephone survey with a statistically valid sample of national interviews (n=800). Surveys were conducted with Canadian householders aged 18 and over (homeowners and renters) in dwellings with basement or ground-floor living space. The results of this mode are compared to the most recent telephone tracking survey.
- An online survey with 1,200 Canadian householders aged 18 and over (homeowners and renters) in dwellings with basement or ground-floor living space. The results of this survey are compared to the telephone phase to understand modal differences and are a baseline for future online radon surveys. Note surveys with opt-in online panel respondents are not random probability samples and as such no margin of sampling error is cited. While it is true online surveys cannot cite a margin of error as they are not random probability samples, it should be noted margin of error is not a measure of overall survey reliability. It addresses only sampling error and is an attempt to quantify how much different responses might be if the entire population had been asked the survey, rather than a selected sample. It is a purely theoretical mathematical calculation that does not encompass other potential sources of survey error. Use of this measure is typically misunderstood by the public, and unfortunately it has, incorrectly, become synonymous with survey quality.

Sample design

The sampling method was designed to complete 1,200 online interviews and 800 telephone interviews with the target audience of Canadians 18 years of age and over living in private households in the 10 provinces and, for the telephone survey, the three territories.

For the purposes of this survey, the qualifying population was defined as Canadian residents 18 years and older living in the 10 provinces and three territories, who are residents of single-family dwellings with ground floor or

basement living space.⁶ From within each household contacted, respondents 18 years of age and older were screened for home decision-making status⁷. The following provides the incidence based on the eligibility requirements of the survey.

- 85% (both online and telephone - marginally lower than 92% in 2018) indicated they are involved in decisions about matters relating to their home, such as moving or doing renovations.
- 74% online/77% telephone% (down from 85% in 2018) said their home has living space that is on the ground floor or basement.

The base samples of 1,200 online and 800 telephone surveys were stratified across five designated regions to ensure meaningful data and analysis at the regional level. The following completions were achieved:

Region	Total	Atlantic	Quebec	Ontario	MB/SK	Alberta	BC	Terri-tories
# of online interviews*	1,200	100	225	450	99	125	197	4
% of online interviews*	100%	8%	19%	38%	8%	10%	16%	<1%
# of telephone interviews	805	81	181	303	67	67	86	20
% of telephone interviews	100%	10%	22%	38%	8%	8%	11%	2%
Margin of error at 95% CI	±3.4	±10.8	±7.2	±5.6	±11.9	±11.9	±10.5	±21.8

*Online surveys with opt-in panels use non-probability samples and thus a margin of sampling error is not cited.

Weighting

The completed interview data were weighted by region and gender to reflect proportions found in the general population, and by age to reflect the age groups of the primary household maintainer for private households in Canada (2021 Census information).

⁶ Qualified dwellings include single detached houses, semi-detached houses, lower-floor or duplexes and apartments, basement apartments, townhouses, condominiums, mobile homes.

Questionnaire design and pre-testing

The questionnaire used for this survey was based on the 2018 Health Canada National Radon Awareness survey, with adaptations to allow for delivering the survey using an online methodology as required. Once the questionnaire was finalized and approved by Health Canada, any changes were translated into French using Environics' professional translators. A copy of the English language version of the questionnaire is attached as an appendix. The French questionnaire is appended to the French survey report.

Pre-test. Prior to finalizing the surveys for field, Environics conducted pre-tests of the online and telephone methodologies.

- The telephone pre-test was conducted with 21 qualifying Canadians (11 English, 10 French) on January 24, 2023. The average length of the pre-test survey was 15 minutes. No changes were made to the questionnaire as a result of the pre-test.
- The online pre-test was conducted January 30 and comprised 48 interviews (38 English and 10 French). A minor programming change to Q21 was implemented (code 4 removed) as a result of this pre-test.

Fieldwork

The telephone survey of 805 Canadians was conducted by Elemental Data Collection Inc. of Ottawa, ON, from January 24-February 19, 2023. Field supervisors were present at all times to ensure accurate interviewing and recording of responses. Up to eight call-backs were made to reach each household selected in the sample, and such calls were made at different times of the day and days of the week, to maximize the chances of catching someone at home. The average length of time required to complete an interview was 15 minutes.

The online survey of 1,200 was conducted from January 31-February 9, 2023, according to the following procedures:

- Elemental DCI programmed the questionnaire using survey software hosted on a secure server and ensured the data were stored on Canadian servers located and only accessible in Canada, and physically independent from all other databases, directly or indirectly, that are located outside Canada.
- Elemental provided technical support to survey respondents as required. Steps were taken to assure (and also guarantee) complete confidentiality and anonymity of survey responses.
- Environics kept the project authority advised on the status of data collection on a regular basis throughout the field period.
- Elemental electronically captured all survey responses as they were submitted and created an electronic data file to be coded and analysed.

All respondents in either mode were offered the opportunity to complete the survey in their official language of choice. All research work was conducted in accordance with the Standards for the Conduct of Government of Canada Public Opinion Research for Telephone and Online Surveys, as well as applicable federal legislation (Personal Information Protection and Electronic Documents Act, or PIPEDA). The surveys were registered with the Research Verification Service (RVS) of the Canadian Research Insight Council (CRIC), to allow participants to verify the legitimacy of the survey, register a complaint, get information about the survey industry or ask technical questions about the survey.

Completion results

The effective response rate for the telephone survey is 5.12 percent. The following table presents the final disposition of all numbers dialed.

Telephone completion results

Total numbers attempted	79,769
Out-of-scope - Invalid	55,764
Unresolved (U)	8,165
<i>No answer/Answering machine</i>	8,165
In-scope - Non-responding (IS)	1,219
<i>Language barrier</i>	376
<i>Incapable of completing (ill/deceased)</i>	149
<i>Callback (Respondent not available)</i>	694
<i>Refusal</i>	13,140
<i>Termination</i>	253
In-scope - Responding units (R)	1,228
<i>Completed Interview</i>	805
<i>NQ - Quota Full</i>	10
<i>NQ – Age</i>	24
<i>Not household decision-maker</i>	139
<i>Refused owner/renter</i>	14
<i>Lives in upper-level residence</i>	236
Response Rate	5.12
Incidence	65.6

Online. The online completion results are presented in the following table.

Contact disposition

Total invitations	25,000
Unresolved (U)	22,490
<i>Did not respond</i>	22,490
In-scope - Non-responding (IS)	78
<i>Qualified respondent break-off</i>	78
In-scope - Responding units (R)	2,432
<i>Disqualified</i>	614
<i>Quota filled</i>	618
<i>Completed</i>	1,200
Contact rate [(R+IS) / (U + IS + R)]	10%
Participation rate [R / (U + IS + R)]	9.73%

Non-response bias analysis

The table below presents a profile of the final sample, compared to the actual population of Canada (2021 Census information). The final telephone sample underrepresents younger Canadians, mainly due to the household decision-maker and residence type qualifications. The sample also over-represents those with higher levels of education. Both are typical patterns for telephone and online surveys in Canada (e.g., older people and individuals with more education are more likely to respond to surveys). As well, the survey population is household decision-makers and the majority are homeowners, which is linked to age and to higher household incomes, a demographic factor that is linked to age and education.

Sample profile

Profile	Unweighted online Sample* %	Unweighted telephone Sample* %	Canada (2021 Census) %
Gender (18+) **			
Male	50	49	49
Female	50	51	51
Age [§]			
18-34	21	5	17 [§]
35-54	36	25	35 [§]
55+	43	69	48 [§]
Education level [¶]			
High school diploma or less	24	24	33
Trades/college/post sec no degree	37	37	34
University degree	39	38	33

* Data are unweighted and percentage on those giving a response to each demographic question

** Excludes those who identified as a gender other than male or female (1%)

[§] Statistics Canada comparison age data is of primary household maintainer, not general population

[¶] Actual Census categories differ from those used in this survey and have been recalculated to correspond. Statistics Canada figures for education are for Canadians aged 25 to 64 years.

Appendix B: Survey questionnaire

Environics Research Group

January 2023

Health Canada 2023 Attitudes, Knowledge and Behaviours Related to Risk from Radon Exposure - Survey Questionnaire

TELEPHONE INTRODUCTION

Hello/Bonjour, my name is _____ and I am calling from Environics Research, a public opinion research company, on behalf of the Government of Canada.

Would you prefer that I continue in English or French? Préférez-vous continuer en français ou en anglais? (**IF NEEDED:** Je vous remercie. Quelqu'un vous rappellera bientôt pour mener le sondage en français.)

RECORD Language of interview

- 01 Anglais
- 02 Français

Today we are conducting a survey of homeowners and renters about health issues in the home. The survey is voluntary, and your answers will remain anonymous and the information you provide will be administered according to the requirements of the *Privacy Act*, the *Access to Information Act*, and any other pertinent legislation. Your decision on whether or not to participate will not affect any dealings you may have with the Government of Canada. This study has been registered with the Canadian Research Insights Council's national survey registration system and will take about 15 minutes to complete.

[IF ASKED: The survey is being sponsored by Health Canada]

[IF ASKED: This study has been registered with the Canadian Research Insights Council's Research Verification Service so that you may validate its authenticity. If you would like to enquire about the details of this research, you can visit CRIC's website: www.canadianresearchinsightscouncil.ca. If you choose to verify the authenticity of this research, you can reference project code 20230126-EL754.

[IF ASKED: READ THE ENVIRONICS PRIVACY STATEMENT]

IF ASKED ABOUT WHAT ARE HIGH OR SAFE OR UNSAFE RADON LEVELS AT ANY POINT IN THE SURVEY:
Radon levels in homes are considered high when they exceed the Canadian guideline of 200 Becquerels [PRONOUNCED bek-uh-rel; Fr. bekuh-rel] per cubic metre.

< **PROGRAMMING NOTE: SURVEY TO BE PROGRAMMED IN ACCESSIBLE FORMAT.** >

IF CELLPHONE SAMPLE: Are you at least 18 years old?

IF CELL PHONE SAMPLE ASK A AND B

A Are you in a safe place to talk – for example not operating a motor vehicle?

- 01 - Yes [RE-INTRODUCE YOURSELF, IF NECESSARY]
 02 - No [ARRANGE CALLBACK DATE/TIME]

B At home, do you have a traditional telephone line other than a cell phone?

- 01 - Yes CHECK AGAINST QUOTA
 02 - No CHECK AGAINST QUOTA

IF LANDLINE SAMPLE: We choose telephone numbers at random and then select one person from each household to be interviewed. To do this, we would like to speak to the person in your household, 16 years of age or older, who has had the most recent birthday. Would that be you?" **[IF THAT PERSON IS NOT AVAILABLE ARRANGE CALLBACK]**

SA. May I confirm that you are over 18?

- 01 – Yes CONTINUE
 02 – No This survey must be completed by someone who is over 18. Would there be someone in your household who is over 18 and who is responsible for making decisions regarding your home? **IF YES ASK TO SPEAK TO THAT PERSON AND RE-INTRODUCE THE SURVEY**

SB. Are you involved in making decisions about matters relating to your home, such as moving or doing renovations?

- 01 – Yes CONTINUE
 02 – No Would there be someone else in your household who is over 18 who is involved in making decisions regarding your home? **IF YES ASK TO SPEAK TO THAT PERSON AND RE-INTRODUCE THE SURVEY**

IF PERSON SELECTED IS NOT AVAILABLE, ARRANGE FOR CALL-BACK

CONFIRM WHETHER RESPONDENT WOULD LIKE TO BE INTERVIEWED IN ENGLISH OR FRENCH

WEB INTRODUCTION

Welcome and thank you for your interest in our questionnaire / Bienvenue et merci de l'intérêt que vous portez à ce questionnaire.

Please select your preferred language for completing the survey / SVP choisissez votre langue préférée pour remplir le sondage.

- 01- English / Anglais
 02- Français / French

Welcome to this survey being conducted by Environics Research, an independent research company, on behalf of the Government of Canada. Today we are conducting a survey of homeowners and renters about health issues in the home. The survey will take about 15 minutes of your time.

Note: If you genuinely have no opinion about a question or cannot answer it, please click through to the next question. There are only a few key questions where your answer will be required in order to move forward.

Please be assured that we are not selling or soliciting anything. The survey is voluntary, and your responses will be kept entirely confidential and anonymous and will be administered according to the requirements of the *Privacy Act*, the *Access to Information Act*, and any other pertinent legislation

This study has been registered with the Canadian Research Insights Council's Research Verification Service so that you may validate its authenticity. If you would like to enquire about the details of this research, you can visit CRIC's website www.canadianresearchinsightscouncil.ca. If you choose to verify the authenticity of this research, you can reference project code 20230126-EL754.

Thank you in advance for your participation.

QUALIFICATION

C. Do you own your home, or is it rented?

01 – Owned

02 – Rented

99 – DK/NA **THANK AND TERMINATE**

D. **TELEPHONE:** We are speaking today to people who live in certain types of homes.

TELEPHONE AND ONLINE: Do you live in a home with living space that is on or below the ground floor?

SHOW ONLINE: This can be in an apartment, duplex or condo as long as the unit you live in is on the *ground floor or basement* – that is you have living space that comes in contact with the ground (not just a lobby, service area or exit). A mobile home or trailer is also okay.

INTERVIEWER: RESPONDENT CAN LIVE IN AN APARTMENT, DUPLEX OR CONDO AS LONG AS THE UNIT THEY LIVE IN IS ON THE *GROUND FLOOR OR BASEMENT* – THEY MUST HAVE LIVING SPACE THAT COMES IN CONTACT WITH THE GROUND, NOT JUST A LOBBY, SERVICE AREA OR EXIT. MOBILE HOME/TRAILER IS OKAY.

TELEPHONE: DO NOT READ LIST

01 – Yes, my home has ground floor/basement living space

02 – No, i live in an upper level residence **THANK AND TERMINATE**

TELEPHONE: VOLUNTEERED

03 – DK/NA **THANK AND TERMINATE**

[IF LANDLINE RECORD REGION FROM SAMPLE]

[IF CELL PHONE SAMPLE OR ONLINE ASK E]

- E In which province or territory do you live?
PHONE: DO NOT READ LIST
ONLINE – DROP DOWN LIST: *Select one only.*

- 01 – Newfoundland and Labrador
- 02 – Prince Edward Island
- 03 – Nova Scotia
- 04 – New Brunswick
- 05 – Quebec
- 06 – Ontario
- 07 – Manitoba
- 08 – Saskatchewan
- 09 – Alberta
- 10 – British Columbia
- 11 – Yukon
- 12 – Northwest Territories
- 13 – Nunavut

Main survey

A. Radon knowledge and awareness

2018 Radon-Q1

1. Have you heard of radon?
- 01 – Yes
 - 02 – No **SKIP TO STATEMENT BEFORE Q.7**
 - 99 – DK/NA **SKIP TO STATEMENT BEFORE Q.7**

2018 Radon-Q2

2. What do you recall hearing or seeing about radon?

RECORD VERBATIM

ONLINE: Please type in your response

-
- 97 – Not sure **SKIP TO Q5**
 - 99 – REFUSE/NA **SKIP TO Q5**

2018 Radon-Q3

3. Where did you hear or see something about radon?

ONLINE: Please type in your response

TELEPHONE: DO NOT READ – USE THIS LIST AS POST CODES FOR ONLINE

- 01 – Family doctor/general practitioner
- 02 – Media (TV, newspaper, magazines)
- 03 – Internet – PROBE FOR SPECIFICS
- 04 – Health Canada
- 05 – Provincial government/provincial ministry of health
- 06 – Real estate agent
- 07 – Lung association
- 08 – Friends/family/word of mouth
- 09 – Through school
- 10 – Through work
- 11 – Home construction/ inspection professionals (including hardware stores)
- 98 – Other (Please specify _____)
- 99 – Not sure (SINGLE MENTION)

2018 Radon-Q5

5. **TELEPHONE:** Would you say you know a lot, know something, know a little, or know almost nothing at all about radon?

ONLINE: How much would you say you know about radon?

- 01 – A lot
 - 02 – Something
 - 03 – A little
 - 04 – Almost nothing
- TELEPHONE: **VOLUNTEERED ONLY**
- 99 – Not sure

2018 Radon-Q6 – changes to C, D

6. **TELEPHONE:** Now I am going to read some statements. For each statement, please tell me if you think it is definitely true, might be true, might be false or is definitely false.

ONLINE: For each of the following statements, please indicate if you think it is definitely true, might be true, might be false or is definitely false.

TELEPHONE: READ AND RANDOMIZE A-G

ONLINE: RANDOMIZE A-G

ONLINE: SET UP AS GRID

- a) Exposure to radon is the leading cause of lung cancer among non-smokers.
- b) Radon can be found in most homes.
- c) It is easy to remove radon from a home.
- d) Reducing radon levels in a home is less expensive than having a new furnace installed.
- e) Radon comes from natural gas in furnaces and water heaters.
- f) Radon is off-gassed from carpets, furniture and paints.
- g) Radon is a gas found in air conditioners and refrigerators.

01 – Definitely true

02 – Might be true

03 – Might be false

04 – Definitely false

99 – Not sure

TELEPHONE: READ TO ALL

ONLINE: SHOW

Here are some facts about radon. Radon is a radioactive gas that is colourless and odourless. It is formed by the natural breakdown of uranium in soil, rock and water. Radon gas comes up from the ground. When radon escapes outdoors, it is not a concern. However, radon that enters an enclosed space, like a home, can accumulate and become a health hazard. All homes have some level of radon. Long term exposure to high levels of radon is the leading cause of lung cancer in non-smokers and the second leading cause overall.

2018 Radon-Q7

7. Based what you know or have heard, how can people find out if there is a high level of radon in their home?

ONLINE: Please type in your response

TELEPHONE: DO NOT READ – USE THIS LIST AS POST CODES FOR ONLINE

TELEPHONE: DO NOT PROBE FOR TYPE OF TEST

CODE ALL THAT APPLY

- 01 – Can be tested by a professional
 - 02 – Can purchase home testing kit
 - 03 – Can get it tested (method unspecified)
 - 04 – Detectors available (general)
 - 98 – Other (Please specify _____)
- TELEPHONE **ONLY: VOLUNTEERED**
- 99 – Not sure (**SINGLE MENTION**)

2018 Radon-Q8

8. Do-it-yourself radon testing kits are available for purchase. Where would you go to purchase one?

TELEPHONE: DO NOT READ; MULTIPLE RESPONSES ACCEPTED

ONLINE: SHOW 01-98; RANDOMIZE 01-07

Select any that apply

- 01 – Home improvement store (e.g. Home Depot, Rona)
 - 02 – Public health office
 - 03 – Lung association
 - 04 – Other retailer (e.g. Walmart)
 - 05 – Online retailer
 - 06 – Specialty retailer/services (e.g. gas company, HVAC)
 - 07 – Government agency (e.g. Health Canada, Environment Canada)
 - 98 – Other (Please specify _____)
- TELEPHONE **ONLY: VOLUNTEERED**
- 99 – Not sure (**SINGLE MENTION**)

2018 Radon-Q9 REVISED

9. How long should a radon test kit be kept in the home to accurately detect the level of radon (not including any shipping or analysis time before the results become available)?

TELEPHONE: READ IF NECESSARY

SHOW ONLINE 01-99

Select any that apply

- 01 – A couple of days
- 02 – Between one week and three months
- 03 – Three months or longer
- 98 – Other (Please specify _____)
- 99 – Not sure **(SINGLE MENTION)**

2013 Radon-Q10 REVISED

10. Do you know what people can do to *reduce* the amount of radon in a home?

TELEPHONE: DO NOT READ – PROBE IN DETAIL: Anything else?

ONLINE: SHOW 01-05, 98, 99, RANDOMIZE 01-05

Select any that apply

- 01 – Seal cracks or other openings in foundations
 - 02 – Install a radon reduction system/sub-slab depressurization system
 - 03 – Cover or seal sump holes
 - 04 – Cover exposed soil in crawlspaces with sealed barriers
 - 05 – Increase ventilation/use mechanical or heat recovery/HRV ventilator/exchanger
 - 98 – Other (Please specify _____)
 - 99 – Not sure **(SINGLE MENTION)**
- TELEPHONE **VOLUNTEERED**
- 97 – Something can be done but not sure what

B. Previous experience with radon

2013 Radon-Q11

11. Do you recall ever seeing or hearing anything about indoor radon levels *in your community*?

- 01 – Yes
- 02 – No **SKIP TO Q.13**
- 99 – Not sure **SKIP TO Q.13**

2013 Radon-Q15 REVISED

12. **(IF YES TO Q.11)** What it was that you recall hearing or seeing (about radon levels in your community)?

TELEPHONE: DO NOT READ – PROBE IN DETAIL: Anything else?

ONLINE: SHOW 01-05, 98, 99, RANDOMIZE 01-05

Select any that apply

01 – Local radon levels are *high*

02 – Local radon levels are *low*

03 – People in this community should get their radon tested

04 – Heard about possible health problems caused by radon

05 – Radon is a public/government concern (e.g. found in a school)

98 – Other (SPECIFY _____)

99 – Not sure (**SINGLE MENTION**)

TELEPHONE **ONLY**; POST CODE **ONLINE**:

06 – Local radon levels are *moderate*

07 – How people can reduce exposure/risks of radon **PROBE FOR SPECIFICS**

08 – Public Service Announcement – **PROBE FOR SPECIFICS**

09 – Existence of radon in the community (general)

10 – Mention of where seen/ad medium

2018 Radon-Q13

ASK ALL

13. Have you *ever* had the radon levels in your home tested?

01 – Yes **SKIP TO Q.16**

02 – No

99 – Not sure

2018 Radon-Q14

14. **(IF NO/DK TO Q.13)** Have you ever *considered* having the radon levels in your home tested?

01 – Yes

02 – No

99 – Not sure

2018 Radon-Q15

15. Why have you not had the radon levels in your home tested (**IF YES IN Q.14: yet**)?

TELEPHONE: DO NOT READ

ONLINE: SHOW 01-99, RANDOMIZE 01-10

Select any that apply

- 01 – Local radon levels are low/not a problem
- 02 – Was tested previously/by previous owner/resident
- 03 – Not worried about radon/not enough of a risk/home is well ventilated
- 04 – Lack of time/too busy
- 05 – Don't know what to do/don't have enough information
- 06 – Have not thought about it
- 07 – Too expensive/cannot afford it
- 08 – It's inconvenient
- 09 – Not motivated
- 10 – Cannot make changes to my living space
- 98 – Other (Please specify _____)
- 99 – Not sure (**SINGLE MENTION**)

ALL NO/DK AT Q.13 (NEVER HAD RADON TESTING) SKIP TO NEXT SECTION

2018 Radon-Q16

16. Have you had your home tested for radon in the *past five years*?

- 01 – Yes
- 02 – No
- 99 – Not sure

2018 Radon-Q17 new item 05

17. How did you have the radon level in your home tested?
If you have tested more than once, think about the most recent time it was tested.

TELEPHONE: DO NOT READ

ONLINE: SHOW 01-99, RANDOMIZE 01-05

Select only one

- 01 – Home inspector
- 02 – Private contractor
- 03 – Government/Health Canada provided a kit
- 04 – Tested it myself using a kit I purchased
- 05 – Library monitor I borrowed
- 98 – Other (Please specify _____)
- 99 – Not sure

2018 Radon-Q18

18. For how long a time period was the radon level tested in your home, (not including any shipping or analysis time before the results become available)?

SHOW ONLINE, TELEPHONE OPTIONAL: *If you have tested more than once, think about the most recent time it was tested.*

TELEPHONE: READ IF NECESSARY

ONLINE: SHOW 01-99

Select only one

- 01 – A couple of days
- 02 – Between one week and three months
- 02 – Three months or longer
- 98 – Other (Please specify _____)
- 99 – Not sure

2018 Radon-Q19 REVISED

19. Was the level of radon...?

SHOW ONLINE, TELEPHONE IF ASKED: Radon levels in homes are considered high when they exceed the Canadian guideline of 200 Becquerels [PRONOUNCED bek-uh-rel; *Fr.* bekuh-rel] per cubic metre.

- 01 – High
- 02 – Low **SKIP TO NEXT SECTION**
- DO NOT SHOW ONLINE/TELEPHONE VOLUNTEERED**
- 03 – Moderate
- SHOW ONLINE/TELEPHONE VOLUNTEERED**
- 99 – Not sure/don't remember

2018 Radon-Q20

20. Did you take any action to reduce the radon level?

- 01 – Yes **SKIP TO Q.21B**
- 02 – No
- 97 – Tested recently – not yet acted **SKIP TO Q.22**
- TELEPHONE: VOLUNTEERED**
- 99 – Not sure

2018 Radon-Q21

21. **(ASK IF 02 OR 99 TO Q20)** Why have you not taken any action to reduce the level of radon?

TELEPHONE: DO NOT READ

ONLINE: SHOW 01-99, RANDOMIZE 01-10

Select any that apply

- 01 – The radon level was low/not a problem
- 02 – Have not had time to fix it **IF ONLY CODE 02 ASK Q22-23**
- 03 – Not worried about radon/not enough of a risk
- 04 – Lack of time/too busy
- 05 – Lack of information/don't know what to do
- 06 – Have not thought about it
- 07 – Too expensive/cannot afford
- 08 – Inconvenient
- 09 – Too lazy/not motivated
- 10 – Cannot make changes
- 98 – Other (Please specify _____)
- 99 – Not sure **(SINGLE MENTION)**

NEW

21B (ASK IF CODE 01 AT Q20) What were the main reasons you decided to take action and reduce the radon level in your home?

TELEPHONE: DO NOT READ

ONLINE: SHOW 01-99, RANDOMIZE 01-05

Select any that apply

- 01 – The radon level was high enough that reducing it was recommended
- 02 – Was worried about potential health risks of radon
- 03 – It was easy to fix
- 04 – Wanted to protect my health the health of my family
- 05 – Had a friend/family member with cancer/lung cancer and wanted to reduce my risk
- 98 – Other (Please specify _____)
- TELEPHONE VOLUNTEERED
- 99 – Not sure **(SINGLE MENTION)**

IF CODE 01 AT Q20 – TOOK ACTION – ASK Q22-23 IN PAST TENSE

IF CODE 97 AT Q20 OR ONLY 02 AT Q21, ASK Q22-23 IN FUTURE TENSE

2018 Radon-Q22

22. **IF CODE 01 AT Q20:** What was done to reduce the radon level in your home?

IF CODE 97 AT Q20 OR ONLY 02 AT Q21: What will you do to reduce the radon level in your home?

TELEPHONE: DO NOT READ; PROBE IN DETAIL: Anything else?

ONLINE: SHOW 01-99

Select any that apply

- 01 – Seal cracks or other openings in foundations
 - 02 – Install a radon reduction system/sub-slab depressurization system
 - 03 – Cover/seal sump pumps
 - 04 – Cover exposed soil in crawlspaces with sealed barriers
 - 05 – Increased ventilation/use mechanical or heat recovery/HRV ventilator
 - 98 – Other (SPECIFY _____)
 - 99 – Not sure (**SINGLE MENTION**)
- TELEPHONE VOLUNTEERED
- 97 – Not planning to remediate home **SKIP TO SECTION D**

2018 Radon-Q23

23. **IF CODE 01 AT Q20:** Did you hire a *certified radon professional* to reduce the radon levels in your home?

IF CODE 97 AT Q20 OR ONLY 02 AT Q21: Will you hire a *certified radon professional* to reduce the radon levels in your home?

- 01 – Yes
- 02 – No
- 99 – Not sure

IF CODE 97 AT Q.20 OR ONLY CODE 02 AT Q21 SKIP TO SECTION D

2018 Radon-Q24

24. **[IF CODE 01 AT Q20]** Have you had the level of radon tested again since this work was completed?

- 01 – Yes
- 02 – No **SKIP TO SECTION D**
- 99 – DK/NA **SKIP TO SECTION D**

2018 Radon-Q25

25. **(IF YES AT Q24)** Were you successful in reducing the radon to an acceptable level?

- 01 – Yes
- 02 – No
- 99 – DK/NA

D. Hypothetical radon remediation impacts**ASK ALL**

2018 Radon-Q33

33. How likely would you be to buy a home you really liked if you learned that the radon levels *had* been high, but the owner had paid to have the radon reduced?

TELEPHONE: Would you definitely, likely, likely not or definitely not buy such a home?

- 01 – Definitely
- 02 – Likely
- 03 – Likely not
- 04 – Definitely not
- 99 – Not sure

TELEPHONE: VOLUNTEERED

- 05 – Depends

E. Information about radon

2018 Radon-Q34

34. Are you aware of any programs or activities to help residents learn about or deal with radon in their homes?

- 01 – Yes
- 02 – No **SKIP TO Q.37**
- 99 – Not sure **SKIP TO Q.37**

2018 Radon-Q35

35. **(IF YES TO Q.34)**

TELEPHONE: Can you tell me who sponsors or funds these programs or activities?

ONLINE: Who sponsors or funds these radon programs or activities?

TELEPHONE: DO NOT READ

ONLINE: SHOW 01-99, RANDOMIZE 01-03

Select any that apply

- 01 – Federal government
- 02 – Provincial government
- 03 – Municipal government
- 98 – Other (**Please specify** _____)
- 99 – Not sure (**SINGLE MENTION**)

2018 Radon-Q37

37. Have you ever taken steps to learn about radon?

- 01 – Yes **ASK Q38**
 - 02 – No **SKIP TO Q40**
- TELEPHONE: VOLUNTEERED**
- 99 – Not sure **SKIP TO Q40**

2018 Radon-Q38

38. (IF YES TO Q.37) Where did you look for information about radon?

TELEPHONE: DO NOT READ

ONLINE: SHOW 01-99, RANDOMIZE 01-10

Select any that apply

- 01 – Family doctor/general practitioner
- 02 – Media (TV, newspaper, magazines)
- 03 – Internet – **TELEPHONE: PROBE FOR SPECIFICS; ONLINE** (Please specify _____)
- 04 – Health Canada
- 05 – Provincial government/provincial ministry of health
- 06 – Real estate agent
- 07 – Local lung association
- 08 – Other lung association (e.g. national)
- 09 – Through work/my job
- 10 – Friends/family/word of mouth
- 98 – Other (Please specify _____)
- 99 – Not sure (**SINGLE MENTION**)

ASK ALL

2018 Radon-Q40

40. Has what you have learned about radon today motivated you to get your home radon levels tested?

- 01 – Yes
- 02 – No
- 99 – Not sure
- TELEPHONE VOLUNTEERED**
- 03 – Maybe
- 04 – Motivated to learn more

2018 Radon-Q41 – items B and E revised

41. How effective do you think each of the following would be at convincing people to have the radon level in their home reduced?

TELEPHONE: READ AND RANDOMIZE A-G

ONLINE: RANDOMIZE A-G

ONLINE: SET UP AS GRID

- a) Being told radon is a major cause of lung cancer, whether or not people smoke.
- b) A government rebate of 15 percent of the cost of having the radon level reduced by a certified professional.
- c) If radon testing was required as part of selling or buying a home.
- d) Hearing that your community has high levels of radon.
- e) Knowing the cost of reducing radon is comparable to other home maintenance repairs and less expensive than replacing a furnace
- f) Knowing that a radon mitigation system can be installed in less than a day.
- g) Being told a radon mitigation system will reduce a home's radon level by more than 90 percent.

01 – Very effective

02 – Somewhat effective

03 – Not very effective

04 – Not at all effective

99 – Not sure

F. Health Status

Next are two questions about your health and the health of others in your household.

2018 Radon-Q42

42. Do you, or does someone else in your household, smoke?

TELEPHONE: IF YES PROBE IF SELF, OTHER OR BOTH

01 – Yes, self

02 – Yes, someone else in household

03 – Yes, both self and other

04 – No, no one

99 – Not sure

2018 Radon-Q43

43. Have you or anyone else in your household ever been diagnosed with lung cancer?
This would also include someone who is now deceased.

01 – Yes – self

02 – Yes – other **ASK Q44**

03 – No

99 – DK/NA

2018 Radon-Q44

44. **[IF YES OTHER IN Q43]** Is (or was) that other person a smoker?

- 01 – Yes, a smoker
- 02 – Former smoker but quit
- 03 – No, not a smoker
- 99 – Not sure

G. Respondent Demographics

Finally, a few questions about yourself to help us analyse the results of this survey.

2018 Radon-Q46

46. How many individuals, including yourself, currently live in your household?

- —
SHOW ONLINE/TELEPHONE VOLUNTEERED
99 – Prefer not to say

IF Q46=1 SKIP TO Q48

2018 Radon-Q47

47. Does your household currently include any children under 16 years of age?

- 01 – Yes
 - 02 – No
- SHOW ONLINE/TELEPHONE VOLUNTEERED**
99 – Prefer not to say

2018 Radon-Q55 VARIATION

48. What is the size of the community where you live? **TELEPHONE READ IF NECESSARY:** Is it a...?

- 01 – City with a population of one million or more
 - 02 – City with a population of between 100,000 up to one million
 - 03 – City/town with a population of between 25,000 to 99,999
 - 04 – Town with a population between 10,000 and 24,999
 - 05 – Town with a population between 5,000 and 9,999
 - 06 – Town/rural area with a population of less than 5,000
- TELEPHONE VOLUNTEERED**
99 – Not sure

2018 Radon-Q49

49. In what year were you born?

- _____ Year born
TELEPHONE VOLUNTEERED
99 – Prefer not to say

Q49B: IF RESPONDENT DECLINES TO PROVIDE A PRECISE BIRTH YEAR: Would you be willing to indicate in which of the following age categories you belong?

PHONE: READ UNTIL CATEGORY REACHED

ONLINE – DROP DOWN LIST

Select one only.

- 01 – 18 to 24
- 02 – 25 to 34
- 03 – 35 to 44
- 04 – 45 to 54
- 05 – 55 to 64
- 06 – 65 or older
- 99 – Prefer not to say

2018 Radon-Q52 VARIATION

50. How do you identify your gender?

PHONE IF NECESSARY/SHOW ONLINE: Gender refers to current gender which may be different from sex assigned at birth and may be different from what is indicated on legal documents.

PHONE: DO NOT READ LIST EXCEPT TO CLARIFY

- 01 – Female
- 02 – Male
- 03 – Other
- 99 – Prefer not to answer

2013 Radon-Q48

51. What is the highest level of formal education you have completed?

READ IF NECESSARY – CODE ONE ONLY

- 01 – Less than a high school diploma or equivalent
- 02 – High school diploma or equivalent
- 03 – Registered Apprenticeship or other trades certificate or diploma
- 04 – College, CEGEP or other non-university certificate or diploma
- 05 – University certificate or diploma below bachelor's level
- 06 – Bachelor's degree
- 07 – Post-graduate degree above bachelor's level
- 99 – Prefer not to answer

2013 Radon-Q50 VARIATION

52. Which of the following categories best describes your total household income? That is, the total income of all persons in your household combined, before taxes.

TELEPHONE: READ – CODE ONE ONLY – STOP AS SOON AS CATEGORY IS IDENTIFIED

- 01 – Under \$40,000
- 02 – \$40,000 to just under \$80,000
- 03 – \$80,000 to just under \$100,000
- 04 – \$100,000 to just under \$150,000
- 05 – \$150,000 and over
- 99 – Prefer not to answer

2013 Radon-Q60 REVISED

53. And finally, to better understand how results vary by region, may I have the first three digits of your postal code?

— — —
99 – DK/NA

ONLINE AND TELEPHONE:

This survey was conducted on behalf of Health Canada, and is subject to the Federal Access to Information Act. Thank you very much for your participation.

TELEPHONE: IF ASKED WHERE TO OBTAIN MORE INFORMATION ABOUT RADON OR RADON TESTING; SHOW ONLINE:

For more information you can go to the Health Canada web site at Canada.ca/radon or you can obtain material about radon by calling 1-833-723-6600.

PRETEST ONLY: ADD PRETEST PROBING QUESTIONS.**ONLINE ENG/FRE END PAGE MESSAGES SHOWN TO RESPONDENTS**

[SHOW TO ALL RESPONDENTS WHO **DO NOT QUALIFY**] We're sorry. You do not meet the qualifications for this survey. We sincerely thank you and appreciate your time, dedication, and continued participation in our online surveys.

[SHOW TO ALL RESPONDENTS WHO RECEIVE **QUOTA FULL**] Unfortunately the quota has been reached for your demographic and/or region. We sincerely thank you and appreciate your time, dedication, and continued participation in our online surveys.