



# RADON REDUCTION SWEEPSTAKES REPORT

September 2019

Take Action on Radon Team

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## Context and Purpose

The Radon Reduction Sweepstakes is a Canada-wide contest run by Take Action on Radon (TAOR) in conjunction with the Canadian Association of Radon Scientists and Technologists (CARST). The contest provides 10 prizes of up to \$1,000 each to homeowners who have tested their home for radon and used a C-NRPP professional to reduce levels to below Canada's recommended guideline of 200 Bq/m<sup>3</sup>. A key part of TAOR's mandate is to encourage Canadians to *take action* on radon, and the Sweepstakes does just that with the possibility of a cash reward.

## History

The Sweepstakes began in 2017 with the first year's prizes awarded in November 2018. In the first year, the prizes were distributed by region across Canada with 2 prizes per region. The TAOR team at the time decided not to apply for a contest license in Quebec, so Quebec was not included in the first year. The regions were therefore defined as: BC and Yukon; Alberta and North West Territories; Manitoba and Saskatchewan; Ontario; and Atlantic and Nunavut.

## 2017-2018 Contest

The 2017-2018 contest winners were drawn at random and announced online in September 2018. Each contest winner was notified, and informed that the cheques would be presented in November 2018. Whenever possible, photos were taken of the cheque presentations. During many of the cheque presentations, TAOR was able to further engage with regional radon stakeholders by having them present the winning cheques.

The 2018 winners were:

- Dave Dobson from Kanata, ON (cheque presented at National Radon Action Month launch in Ottawa)
- Mark Knettig from Edmonton, AB (cheque presented at Edmonton CARST Workshop)
- Brett Seidler from Regina, SK (cheque presented by SK Lung Association)
- Tanya Graham from Calgary, AB (cheque presented by CARST Board member)
- Darryl Jonah from Studholm, NB (Cheque presented at Moncton CARST Workshop)
- Robert Edwards from Hardwicke, NB (Cheque presented by C-NRPP Professional)
- Roy Stock from Gorham, ON (cheque presented by EcoSuperior, radon stakeholder in Thunder Bay)
- Glenn Schneider from Trail, BC (Cheque presented by C-NRPP professional, no photo)
- Jo-Anne Stoltz from Castlegar, BC
- Suzanne Marit from Willow Bunch, SK

## Quotes from 2017-2018 Winners

Each of the winners was interviewed over the phone, and excerpts from these interviews were used to draft regional press releases that were distributed to news outlets across Canada leading up to Radon Action Month in November 2018.

A general lack of radon awareness persists across most regions of Canada. The stories collected from Sweepstakes winners are the best possible Canadian radon stories – these are Canadians from all walks of life who became aware of the health risks posed by radon, tested their homes, and then mitigated their homes when they discovered the levels were high. The stories come from all regions of Canada and, as personal stories, are more compelling than any generic public health messaging can hope to be.

Excerpts from those interviews are as follows:

### **Dave Dobson, Kanata, Ontario**

Dave Dobson of Kanata, Ontario thinks more people need to understand the risks of radon. He's one of ten Take Action on Radon Sweepstakes winners to win \$1000 toward the testing and mitigation of his home.

### **Jo-Anne Stoltz, Castlegar, BC**

For Castlegar resident Jo-Anne Stoltz, learning that radon causes lung cancer in non-smokers hit close to home. "It did impact my decision to test my home, because my mother passed away from lung cancer at the age of 60—and she had never smoked."

This awareness prompted Jo-Anne to have her newly-purchased home tested...even though it had a radon extraction system already installed. "I decided to have it tested to make sure everything was working properly. And, unfortunately it wasn't."

Jo-Anne took action and was able to reduce the radon in her home to minimal levels with the help of a mitigation professional. "I enjoy my work as a counsellor, travelling, and my children and grandchildren," says Jo-Anne. "Radon testing is part of my plan to be here for many more years and to live a full and healthy life."

### **Mark Knettig, Edmonton, AB**

"To be honest, I was incredulous," Mark admits. "We couldn't believe that we'd have a radon problem here in Alberta." He's not alone. In fact, Mark says most of the friends and co-workers he talks to aren't aware of the risk. "I asked my neighbors if they'd tested for radon but they hadn't even heard of it."

Thanks to mitigation, the radon levels in Mark's home have dropped dramatically, but he continues to keep a close eye on the situation with the help of a continuous home monitoring system.

"We just had our third child so we have three kids under six. I definitely plan to be here for them to support and watch them grow. It gives me a sense of security knowing that the radon levels have been, and are continuously being mitigated."

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## **Roy Stock, Gorham, ON**

Roy Stock of Gorham, Ontario decided to test his home as a precaution after learning about radon's link to lung cancer but didn't really believe it would be an issue in his newer, 2005 home. He was shocked by the results. The test indicated radon levels in the family's home were significantly higher than the 'acceptable' limit of 200 Bq/m<sup>3</sup> recommended by Health Canada.

"We didn't believe the results," Roy admits. "Being a relatively new house we found it hard to believe that it had a radon problem. We decided to re-test. The second test confirmed the results of the first. We decided that the house needed mitigation for the health and safety of our family."

With the help of a mitigation professional, radon levels in the home were soon reduced dramatically. Roy found the testing and mitigation process to be a very worthwhile and eye-opening experience. "My wife and I are very active. We value good health and we want to be active in our golden years, too. Anything that helps us get there is worth the effort."

## **Robert Edwards, Hardwicke, NB**

Hardwicke, New Brunswick resident, Robert Edwards thinks that radon should be on everyone's radar.

"Once you start researching radon you wonder why it's not front page news," he says. "The more we began researching, the more we realized this was a threat that needed to be prioritized."

Robert took action and had his home tested. The results were disturbing. "We had set up a home gym in our basement. Ironically that room was ultimately discovered to have the highest levels of radon. Had we continued exercising we would have unwittingly been exposing ourselves to a health threat while trying to do the right thing."

A mitigation professional assessed the home and made some recommendations. Robert, who admits he was initially skeptical about the impact the install would have, calls the results of the mitigation process 'amazing.'

"Levels throughout our house now range from zero to extremely low," he says. "Everyone, and I mean absolutely everyone, should do the test."

## **Darryll Jonah, Studholm, NB**

For Darryll Jonah of Studholm, New Brunswick, learning about radon's link to lung cancer was a key factor in his decision to test for radon. Knowing that radon often finds entry through the foundation was also a concern. "Our basement is finished and includes a home office, therefore we spend a fair amount of time in this area of the house."

Darryll describes the testing process as "easy and uncomplicated" but admits he was surprised by the results. "According to Canadian standards the safe level is 200 Bq/m<sup>3</sup>. Ours was 973 Bq/m<sup>3</sup>."

With the help of a radon mitigation professional, Darryll was able to reduce the radon in his home to safe levels. The installation of a continuous home monitoring system provides added peace of mind for Darryll and his family. His advice to other homeowners: “Have your home tested. You could save your children or loved one from developing cancer later in life.”

“Our hopes for the future are to be as active and healthy as possible,” Darryll adds. “The radon mitigation just reduces a possible cancer cause from our lives.”

### **Shawn and Brett Seidler, Regina, SK**

For Shawn and Brett Seidler of Regina, SK, learning about radon’s link to lung cancer was a deciding factor in their decision to test their home. “Given in our family we’ve had instances of lung cancer, this hit a bit closer to home,” says Shawn.

Testing revealed high levels of radon in both the basement and on the main level of the family’s home. Shawn admits he was surprised by the results. “Our home was quite new. I didn’t think it would be an issue. We now realize the age of the home really doesn’t have a lot of effect on levels of radon.”

With mitigation, radon levels in the couple’s home dropped dramatically. Shawn says the process was well worth the peace of mind and the knowledge that he and his family are now protected from the effects of the cancer-causing gas. “We have two young daughters and a large supporting family. Our plan is to be here for as long as we can for them.”

### **Suzanne Marit, Willow Bunch, SK**

Suzanne Marit of Willow Bunch, Saskatchewan, says she was surprised to learn that radon was a leading cause of lung cancer. “It really did make a huge impact in our decision to test our home.”

When the test detected high levels of radon in the family’s home, Suzanne was shocked. “We had a radon reduction system installed and are very pleased with our levels, which range but are below the safe point. We still test occasionally.”

Suzanne thinks that all homeowners should consider testing for radon. “We can’t control the natural decomposition that happens in the soil beneath our homes, but we can control the quality of the air we breathe in it.”

### **Tanya Graham, Calgary, AB**

Calgary homeowner Tanya Graham didn’t realize how dangerous radon gas could be. “We lost a friend to lung cancer---he had never smoked. I couldn’t understand how he got lung cancer. Then I heard about radon.”

Tanya bought a radon test kit and was shocked by the results. “I was troubled by the readings going high and staying high. I had a professional come out and he explained the benefits of radon mitigation. The install was easy and non-obtrusive.”



Since learning about radon and going through the mitigation process, Tanya has some words of advice for other homeowners: “Get your home tested. Put your mind at ease. Mitigation is easy and affordable - a small price to pay for the health of your family.”

### Data Benefits of the Contest

One of the unexpected advantages of the Radon Reduction Sweepstakes was the data collected from participants. The cost of mitigation systems was collected from all entries, as shown in the table below:

**Table 1: Average Costs 2017-2018**

Stats	#of entries	Mitigation Costs			Number of different Mitigation Professionals
		Highest Cost	Lowest Cost	Average Cost	
<b>Alberta/Northwest Territories</b>	13	\$ 4,777.50	\$ 1,609.50	\$ 2,658.39	5
<b>British Columbia/Yukon</b>	30	\$ 8,319.15	\$ 1,113.00	\$ 2,956.43	7
<b>Saskatchewan/Manitoba</b>	100	\$ 6,171.60	\$ 777.00	\$ 3,035.41	9
<b>Ontario</b>	10	\$ 3,712.05	\$ 1,186.50	\$ 2,310.64	4
<b>Maritimes/Nunavut</b>	15	\$ 3,892.75	\$ 1,200.00	\$ 2,530.17	7
<b>Total Entries</b>	168				

The cost of a radon mitigation system is one of the most frequently sought pieces of information by those considering radon testing or mitigation. Thanks to the data collected during the contest, the Take Action on Radon team has been able to provide a reference for the average cost of a mitigation system per province and across the country.

### 2018-2019 Contest

In 2018, the Take Action on Radon program was awarded to a new group of partners. For this contest year, a permit was obtained that allowed Quebec to be included in the Radon Reduction Sweepstakes. The new contest regions were defined as BC and Yukon; Alberta and North West Territories; Manitoba and Saskatchewan; Ontario; Quebec; and Atlantic and Nunavut. The prize money was maintained at \$10,000 so the distribution of prizes was therefore defined as 1 prize drawn per region with the remaining 4 prizes drawn from all entries.

### Data Collected in 2018-2019

The contest application form was altered slightly for the 2018/2019 version of the contest in order to collect the pre- and post- mitigation radon levels in addition to the data previously collected. This

additional data provides an important tool in allowing us to evaluate the effectiveness of mitigation systems and how much C-NRPP radon professionals can reduce radon levels.

Health Canada recommends that radon levels should be reduced to as low as possible, and research is ongoing into the effects of radon exposure at levels below current Canadian guidelines. The radon reduction data collected from the Sweepstakes entries helps us to monitor what radon levels C-NRPP professionals are attaining in the field, and whether compliance with a potential lower radon guideline would be feasible in the future.

Finally, this data provides feedback to C-NRPP on the performance of their radon professionals, allowing them to target additional training or programs as required.

**Table 2: Average Costs 2018-2019**

Region	# of Entries	Average Cost	Highest Cost	Lowest Cost	# of Different Mitigation Professionals
<i>BC and Yukon</i>	26	\$ 2,663.93	\$ 4,128.98	\$ 1,381.80	4
<i>Alberta and NWT</i>	165	\$ 2,574.55	\$ 6,720.00	\$ 630.00	8
<i>Manitoba/Saskatchewan</i>	94	\$ 3,072.10	\$ 4,107.00	\$ 1,400.07	9
<i>ON</i>	24	\$ 3,166.19	\$ 9,098.76	\$ 1,412.50	3
<i>QC</i>	25	\$ 2,579.68	\$ 3,766.07	\$ 1,695.88	4
<i>Atlantic and Nunavut</i>	23	\$ 2,988.12	\$ 5,175.00	\$ 1,495.00	4
	357	\$ 2,794.64	\$ 9,098.76	\$ 630.00	

Analyzing the cost data in table 2, it is apparent that although there is a large disparity between the highest and lowest cost of radon mitigation systems installed, there is good consistency among the average cost of systems between provinces. When compared to the average cost of mitigation systems as collected during the 2017-2018 Radon Mitigation Sweepstakes, it appears that prices have not changed significantly between the two contest periods.

The above-mentioned disparity between the highest and lowest costs of mitigation is not unexpected. The cost of mitigating a home depends on numerous factors related to the home itself: location, isolation, size, age of construction, type of construction, whether any additions have been made, type of soil beneath the home, and many more. Given the broad range of housing available in Canada, and the enormous size of the country itself, a correlating range in mitigations costs makes perfect sense.



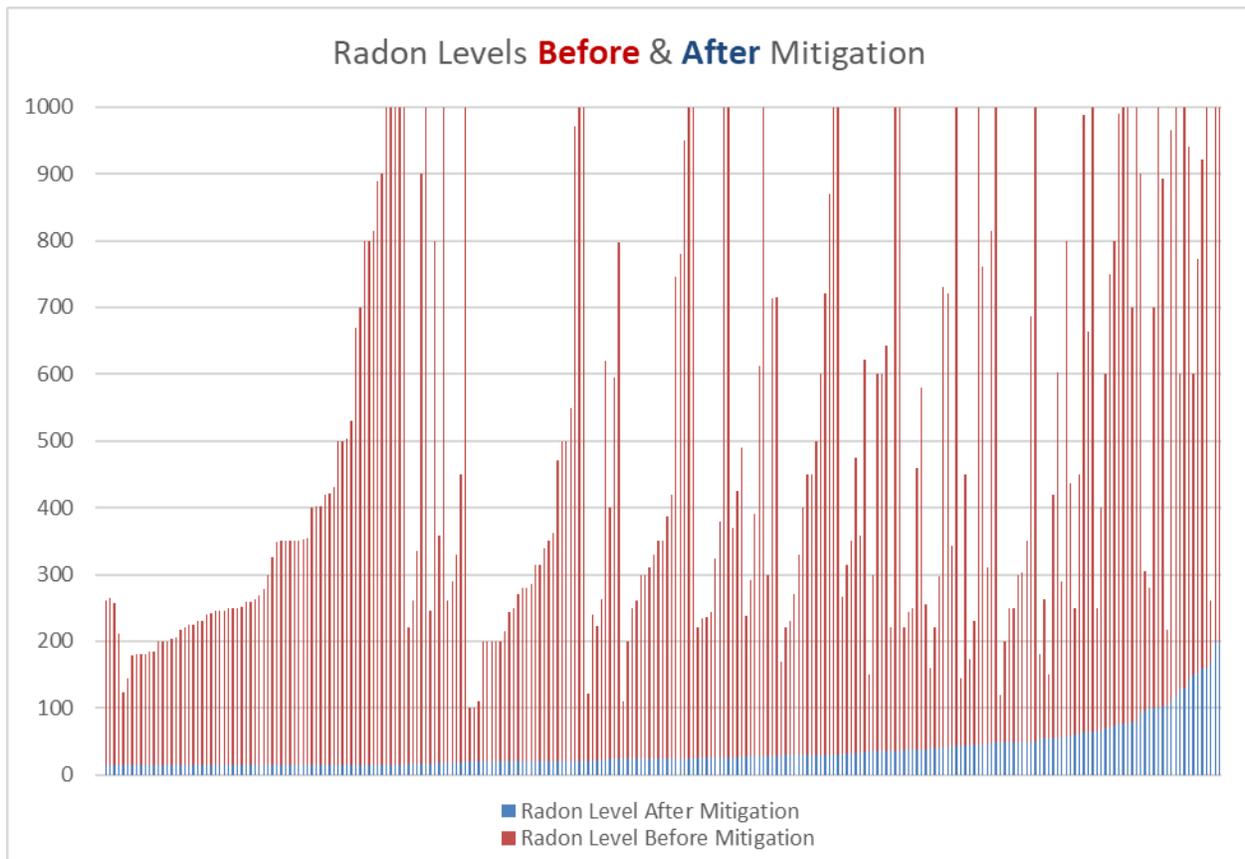
**Table 3: Achieved Reduction in Radon Levels 2018-2019**

<b>Region</b>	<b># of Entries</b>	<b>Highest Radon Level</b>	<b>Average Reduced Radon Level</b>	<b>Average Percentage of Reduction</b>
<i>BC and Yukon</i>	<i>26</i>	<i>1800</i>	<i>49</i>	<i>92.0</i>
<i>Alberta and NWT</i>	<i>165</i>	<i>2281</i>	<i>26</i>	<i>91.0</i>
<i>Manitoba/Saskatchewan</i>	<i>94</i>	<i>3700</i>	<i>42</i>	<i>91.3</i>
<i>ON</i>	<i>24</i>	<i>1500</i>	<i>57</i>	<i>90.4</i>
<i>QC</i>	<i>25</i>	<i>1200</i>	<i>29</i>	<i>91.9</i>
<i>Atlantic and Nunavut</i>	<i>23</i>	<i>1765</i>	<i>39</i>	<i>91.5</i>
	<b>357</b>	<b>3700</b>	<b>35</b>	<b>91.2</b>

The pre- and post- mitigation radon level data displayed in table 3 confirms that Canada’s approach to radon mitigation is highly effective. All provinces averaged more than a 90% reduction in radon levels. When the correlated data is plotted on a graph as in figure 1, it is evident that C-NRPP professionals are able to lower radon levels to well below Canada’s guideline, regardless of the radon level in the home to begin with.



**Figure 1: Radon Levels before and after mitigation 2018-2019**



Analyzing the data from figure 1 reveals that C-NRPP professionals reduced radon levels to below 100 Bq/m<sup>3</sup> over 93% of the time, and to below 50 Bq/m<sup>3</sup> 80% of the time. These levels are well below Canada’s action level. The remaining 7% of homes were also lowered to below Canada’s action level of 200 Bq/m<sup>3</sup>.

### Quotes from 2018-2019 Winners

The winners for the 2018-2019 contest were drawn in September of 2019. Winners were notified by email and phone and were interviewed whenever possible. Quotes from some of the winners are as follows:

#### **Terry Marshall, Revelstoke BC**

For Terry Marshall and her family, their home was the longstanding bedrock of their lives. Little did they know that a cancer-causing radioactive gas called radon was lurking under areas of Revelstoke, their picturesque mountain town. “It’s so surprising. We’ve lived in our home for almost 40 years and we didn’t know all that time that it had high levels of radon,” says Terry after testing to find they had high levels in their home.



“I’d heard of radon before but I wasn’t really aware that in our area of town in particular, there was a belt of it. Luckily, my workplace held a seminar from Health Canada and I bought a test right away,” remarks Terry. “We did proceed with the mitigation. It’s a little bit messy having it done in an old home, but the way that it was done was very professional and caused us the least amount of inconvenience.”

**Kamla Adams, Revelstoke, BC**

My husband Jack died of lung cancer in 2011 and when a colleague made a passing remark about high radon levels and cancer especially by the Illecillewaet River I became very upset and emotional. I had no knowledge of radon and its effects. Although my husband’s cancer was not attributed to radon exposure I contacted my stepson Jesse who then directed me to Chantal from Little Bear Engineering. She explained everything to me in a professional and knowledgeable manner. After the testing period it showed the levels of radon in my home were extremely high and I decided to have the mitigation done. The process is simple and I have peace of mind.

**Cecelia Bourque, Shediac Bridge NB**

For Cecelia Bourque and her family, moving to a new town meant a new start. But as they looked for the right house to call home, they noticed many of the listings had unfamiliar machines installed in their basements. They would soon find out that a cancer-causing radioactive gas called radon was lurking under areas of Shediac Bridge. “I’d heard that it was common in New Brunswick because of the earth that we have here. I wanted to make sure that we were okay, and if not, rectify it right away,” remarks Cecilia after testing to find they had high levels in their home.

Cecilia Bourque is glad she saw radon mitigation machines in many of the homes they viewed when looking to buy their own: “The installation isn’t cheap, it came to \$3,500 total. But the Sweepstakes money definitely helps! And if you think of what you’re investing in the long run, it’s worth every penny.”

**John Torjan, Cap-Pele NB**

John Torjan, a new resident of Cap Pele had the same concerns as the Bourque family when purchasing his new home. “When you’re buying a house, you have a short time frame so it’s imperative that you test for radon,” says John who tested after his realtor strongly recommended the procedure. “I think it should be a standard part of the inspection process here to be honest,” he remarks. “This is a health issue. Why take the chance? We’ve got grandkids that come in and out of here and we want this home to be our last. Our horizon is long-term.”

**Tim Nickerson, Calgary AB**

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For Tim Nickerson and his family, putting an addition on their family home was supposed to be straightforward. Little did they know that a cancer-causing radioactive gas called radon was lurking in the bedrock. “I was diagnosed with cancer a few years ago and went through chemo,” says Tim after testing to find they had higher-than-normal levels in their home. “As a result of the diagnosis, we looked at cleaning up our whole environment—food, chemicals in the house, detergents, etc.”

“My concern is why are we still so ignorant about this in Canada?” asks Tim Nickerson. “It’s astounding that our home could have a completely different reading than our neighbours—I really appreciate that the Province of Alberta has considered radon in the building code. It should be standard across the country. The mitigation was truly a no-brainer. You could be doing everything else right with health and wellness but still get this wrong.”

### **Liz Urbina, Calgary AB**

“It took me a bit to save for the mitigation system, but I needed to do something about it,” says local Calgary resident and single mom Liz Urbina. She heard a news story about radon and googled it: “I wanted to protect my children so I found a test, ordered it and got the results in the mail.”

### **Rebecca Tremblay, Quebec City QC**

Rebecca Tremblay says she heard about the dangers of radon from a family member but since she wasn’t spending a lot of time in the basement of her home, didn’t think testing for it was an urgent matter. However, when she finally did buy a test, to her horror, she discovered the levels of radon in her bedroom were just as high as in her basement. “I really take care of my health—eat right, exercise, don’t smoke, all that—and yet I was sleeping in a room with dangerous levels of lung cancer-causing radon. I was shocked,” says Rebecca. “A colleague of mine told me he was mitigating his house and I thought that it was time to for me to do the test. Testing was very easy, in fact,” says Rebecca. “I would advise Canadians not to wait to test, especially if you have children,” says Rebecca.

Rebecca has some words of advice for Canadian homeowners: “Imagine if you knew radon was an issue but didn’t act? Investing the money is investing in peace of mind. It’s lung cancer! It’s not worth the risk.”

### **Todd Legrand, Regina SK**

“We’d heard from other people that radon is an issue, and decided that since our kids that would be spending more time in the basement, we’d get it tested. Had we not had any plans to have people down there, we may not have done anything. Mitigation was a lot easier than I had anticipated and not as cost prohibitive as I imagined. I would say: Get it tested and get it mitigated! The cost is a lot less than you might think and it’s for your health and the health of your family. It’s one cost effective way to eliminate

cancer risks, something totally within your control. Same cost as putting up a fence or building a deck, or even less, you can have a mitigation system installed. “

## Conclusion and Lessons Learned

Several mitigation professionals have noted that homeowners may have been planning to mitigate their home without the contest, but the deadline provided by the Sweepstakes encouraged them to proceed within a faster time frame to ensure they were able to enter the contest. Combined with the increased participation numbers, it would appear that the Sweepstakes is indeed effective in motivating Canadians to mitigate their homes.

The Sweepstakes is an excellent source of actual mitigation effectiveness and cost data and compelling testimonials from participants. Being able to reference actual numbers when estimating the cost of a radon mitigation system is very helpful, both to homeowners and to policy-makers and the success of radon reduction in homes utilizing certified professionals shows that we are reducing radon levels well below both Health Canada and the World Health Organization's guideline. The data tracked from the entries on pre and post mitigation data shows that the majority of homes are being reduced to below

Although the number of contest entries more than doubled between 2018 and 2019, the number of engaged C-NRPP professionals did not change. Increasing participation numbers amongst professionals will be one of our goals for the 2019-2020 year.

