This issue is sponsored by:

Unmasking the Reality of Lung Cancer
PURCHASE GALA TICKETS HERE

CR3 News Magazine

Citizens For Radioactive Radon Reduction

2023 November

$f(eD) \gg f(C,R,M)$

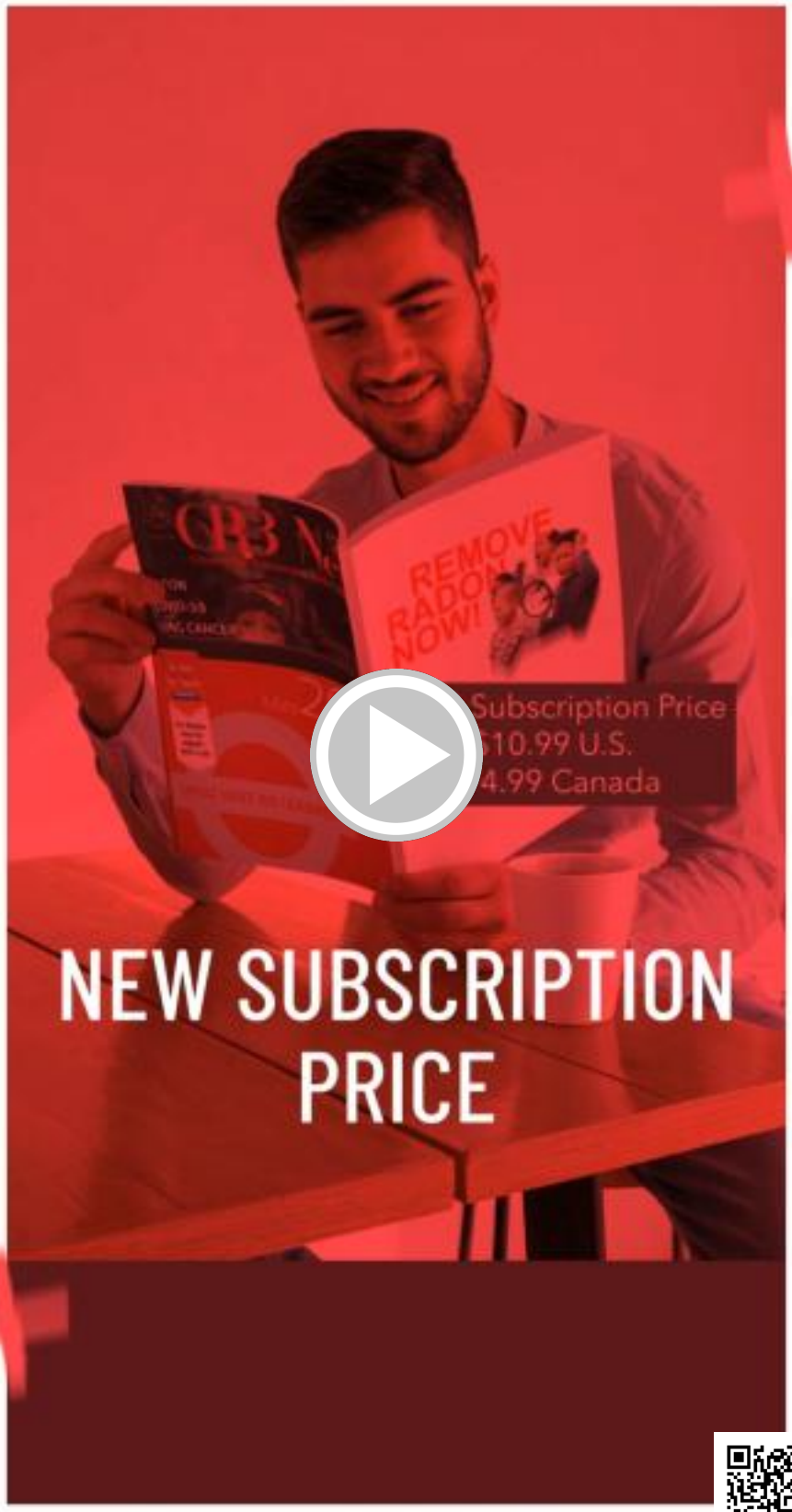
Our first Gala last year was a success! From that first step, we created a better event. We doubled the attendance, doubled the funds raised. We brought together people from all walks of life to become part of growing awareness for lung cancer. We will continue to build on each new foundation to bring more to people. It is lung cancers time.

https://unmaskingtherealityoflungcancer.ca 2024 **TICKETS:**

CONTENTS

November 2023

ANNOUNCEMENT



CR3 News Magazine

Citizens For Radioactive Radon Reduction

November 2023

National Lung Cancer Awareness Month

You're listening to RADON STREAM

Dr. Aaron Goodarzi and Diane Colton:
Radon and Other Lung Cancer Risk Factors

SURGEON GENERAL'S WARNING:
Radon causes lung cancer.

CR3 Membership

Volunteers and Sponsors

We are looking for people and organizations who want to make a difference. Talk to your friends, family and local organizations about getting a radon test. Put brochures everywhere you know!
info@citizens4radonreduction.org

JOIN US!
Click Here
https://citizensforradioactiveradonreduction.org/join-us

Membership packages:
- State Representative
- Member
- Sponsor

When searching for the reason of our being, more often than not we find that we are here to care for each other and our home— the Earth. This statement from former U.S. President Jimmy Carter sums up the above statement. "I have one life and one chance to make it count for something . . .. My faith demands that I do whatever I can, wherever I am, whenever I can, for as long as I can, with whatever I have to try to make a difference."

"Just Faith"(www.JustFaith.com) is a group of programs which stress the need for equality for all individuals and the protection for our earthly environment. Discovering methods and avenues to fulfill our reason for existence and ensuring our continuing survival is of magnitude importance. With education and involvement of our youth, legislation, industry leaders, and communities; we can sustain our existence.

Recognizing and taking action with early

Recognizing and taking action with early detection for all cancers (especially lung cancer),cancer research, prevention, and awareness can change future outcomes as we journey through our lives.

Working together for zero carbon farming, electrifying and decarbonizing the world with solar, geothermal, wind, ocean, and hydropower energy are all ways to make a difference. Awareness, action and achievement of these initiatives will help relieve the consequences of a "live for now attitude."

Continued on page 9 ...

> "We can't let this mastery of science and experience disappear."

Gloria J. Linnertz
Founding Director of
Citizens for Radioactive Radon Reduction Inc.

CITIZENS FOR RADIOACTIVE RADON REDUCTION

Managing Editor
Jacquelyn E. Nixon
Co-Editor
Gloria J. Linnertz

Contributors
Jan Fisher, CERTI
Dusty Donaldson, LungCan
Maryann Bradley, Lung Cancer Canada
Diane MA Colton, Chair,
Unmasking the Reality of Lung Cancer,
Calgary, Alberta CA, Lung Cancer Survivor
Ecosense, Inc., Silicon Valley, California
Alexandria Potter & Priyanka Sentil
American Lung Cancer Screening Initiative
Aaron Fisher, AARST
Government Affairs Committee
Blessing Abai Sunday, Pharmacist Nigeria

Marketing Director & Designer
Jacquelyn E. Nixon

Editorial & Advertising Inquires
info@citizens4radonreduction.org

PREMIER YOUTH AMBASSADORS For Radon Reduction

"Building Youth Today To Fight Radon Tomorrow"

JOIN THE PYA

BECOME A MENTOR

WWW.RADONREIMAGINED.ORG

GO2 FOR LUNG CANCER — Confronting Lung Cancer Starts Here

As we come together to observe November Lung Cancer Awareness Month, GO2 is pleased to have worked directly with the White House in securing a statement proclaiming November 2023 as National Lung Cancer Awareness Month. We appreciate the message in the President's Proclamation "honoring the resilient people who have faced this diagnosis, the loved ones who rally to their side, and the medical professionals who do all they can to help patients survive and heal." President Biden and First Lady Biden are recommitting to ending cancer as we know it by investing in new, affordable ways to prevent, detect, and treat lung cancer, the nation's leading cause of cancer deaths.

Here's the link to share the proclamation: A Proclamation on National Lung Cancer Awareness Month, 2023 | The White House

ACTIVE BOARD OF DIRECTORS

Founder & President	Gloria J. Linnertz IL
Vice President	Jan Fisher NJ
Treasurer	Daryl Festa PA
Secretary	Thomas Selgrade IA
Dir of Marketing	Jacquelyn E. Nixon PA
Membership	Tyson Brauneis AK
AARST Advisor	Nate Burden PA
Grant Research	Aaron Fisher PA
PYA Senior Youth	Daryl Festa PA
PYA Youth Liasion	Joshua L. Keyes PA
Strategic Planning	Dallas Jones GA

CONTACTS
618 Evansville Ave., Waterloo IL 62298
info@citizens4radonreduction.org
www.citizens4radonreduction.org
TEL: + 1 (618) 830-4660

... continued from page 7 [From the Director]

Our future generations deserve all of our efforts to bring to light the dangers of radioactive radon exposure, radioactive waste sites, and toxic indoor and outdoor pollutants.

November is the month of Thanksgiving in the U.S. so it is very appropriate to express gratitude and thankfulness for all of the advancements in all cancer treatments especially lung cancer. Without the funding, research, and clinical trials, contacts and influences by lung cancer patients and cancer organizations, we would still be in the days when it was common to hear, "There is nothing that can be done."

Much appreciation also goes to Jacquelyn Nixon, the publisher of this magazine for reaching out to others through podcasts, videos, and speeches, and personal appearances to share her story and facts about the danger of radioactive radon gas exposure for the past seven years. Jackie's time and effort involved with creating the Premier Youth Ambassadors for Radioactive Radon Reduction is certainly an achievement which brings together young people throughout the country for education, training, and recognition for radon exposure prevention.

Last but not least, grateful sentiments to all those who work to test and install radon mitigation systems in structures to help prevent lung cancer deaths from radon exposure. The scientists, technologists and state radon programs in our country are such essential elements in making a difference!

Gloria Linnertz, Founder, October 8, 2023

National Lung Health Alliance in Canada

Together for a Cause

By: Diane Colton

Unmasking the Reality of Lung Cancer.
October 2023

Our lungs are the environmental organ! They are the largest organ to contact the environment and if spread out would be the size of a tennis court. Our lungs are the caretakers and oxygen is critical to the survival of all human beings, animals, fish and plants. Without them we would not exist. Damage them and life becomes harder or impossible. To give you a quick idea, the average person breaths around 11,000 liters (2420 imperial gallons) of air every day.

Yet we continue to disregard the health issues and environmental causation that leads to the various lung diseases which include (but not limited to) Asthma, COPD and Lung Cancer. In Canada approximately 7,000,000 people are diagnosed with some form of lung disease which sadly cuts short the life of many but so many more must deal with diminished living experiences. Whether it is loss of mobility, lowered quality of daily living, economic hardship, they feel the effect deeply or the loss of someone close to them.

That is starting to change and enter: THE NATIONAL LUNG HEALTH ALLIANCE

Below is a segment of the press release Oct 17th, 2023, from the Lung Health Foundation as they go to Ottawa to lobby on parliament hill, speaking with Canadian politicians!

The National Lung Health Alliance:

The National Lung Health Alliance (NLHA) represents a remarkable intersection of provincial associations and like-minded organizations, united by a common purpose—to champion vital issues in lung health and drive positive change. Through the strength of collective action and a united alliance of voices, we collaborate to promote easier breathing for all Canadians. Together, we bring to light the urgency and significance of our cause, demonstrating that when communities unite, transformative progress is not only possible but inevitable. Our shared commitment to advancing lung health in Canada resonates as a powerful movement that cannot be ignored!

Continued on next page ...

The Lung Health Foundation has spearheaded the formation of the National Lung Health Alliance (NLHA), a groundbreaking coalition of organizations committed to the urgent improvement of lung health across Canada. On October 17, 2023, this powerful alliance will descend upon Parliament Hill, pressing the government to prioritize the long-neglected issue of lung health, which has suffered from chronic underfunding and insufficient attention.

The National Lung Health Alliance stands as a testament to the unity and shared purpose of various provincial and national associations. Members of NLHA include Alberta Lung, BC Lung Foundation, Lung Health Foundation, Lung NSPEI, Lung Sask, NB Lung and Association pulmonaire du Québec and national members Lung Cancer Canada, Asthma Canada and COPD Canada.

Environmental factors can include many areas, air pollution, genetic environment, wildfire smoke. Smoking and vaping! Radon is on their radar as a major concern, as science is continuing to peel back the effects and cross effects radon can and is having. In their messaging bringing to the forefront how radon is an easy fix and can through policy and education be eliminated from the board of what causes and aggravates lung disease. We applaud and commend them on this alliance; the first of its kind and we look forward to seeing more of this in the future.

To follow this initiative and their progress following the hashtag #TakingAction4LungHealth

The RADON RIVALS are back!!

NATIONAL Radon School Calendar

ORDER HERE

https://www.conquestgraphics.com/crrr/national-calendar

The minimum order quantity is 5 calendars.

U.S. and CANADA

Questions?
Contact Jackie Nixon (412) 961-1980
info@citizens4radonreduction.org

CUSTOM ORDERS ARE AVAILABLE.

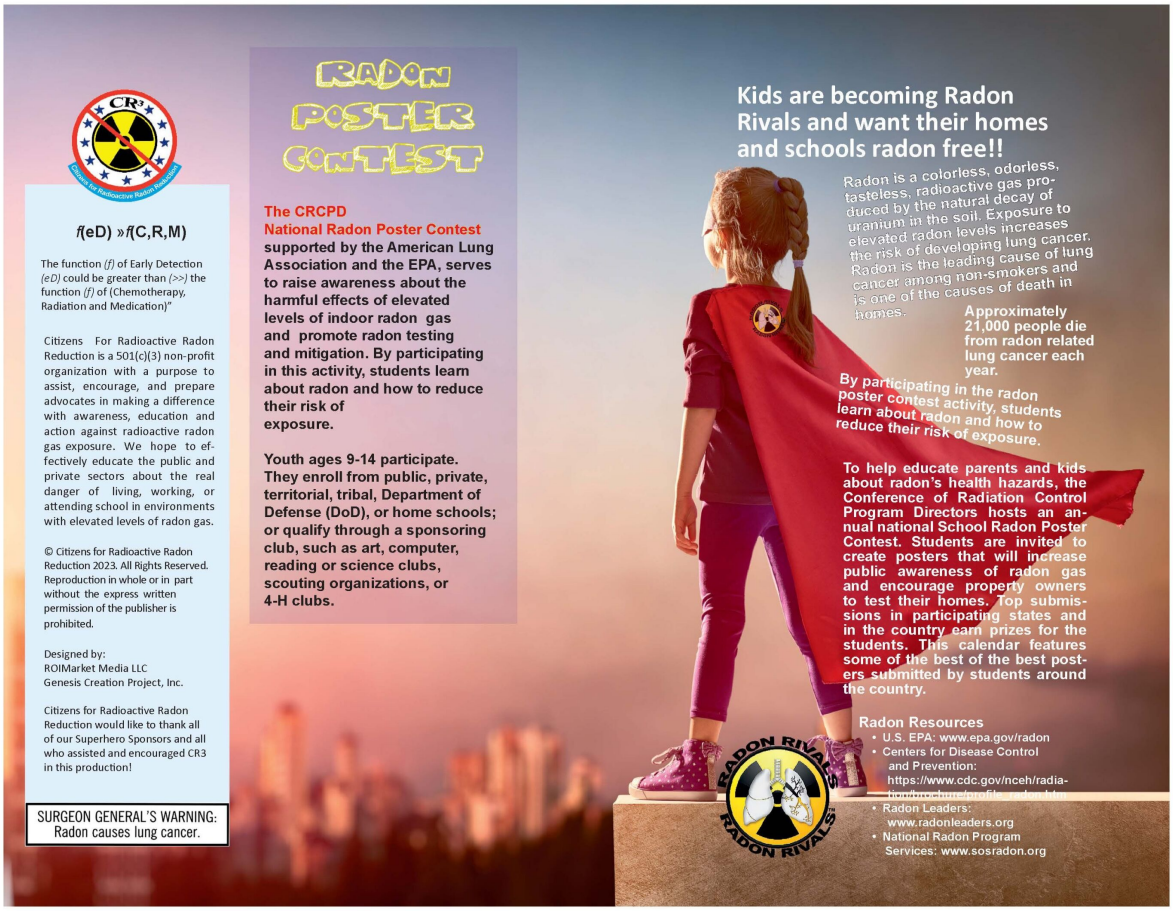
Citizens for Radioactive Radon Reduction

Order 30 for a science classroom in your local school district !!

- Full Color Calendar
- Fall 2023 - Summer 2024
- High-Quality Paper Options
- Quick Turnarounds Available

ORDER YOUR CALENDARS HERE!

https://www.conquestgraphics.com/crrr/national-calendar



Helping Future Generations

Dr Silvana Mema
Leading advocate for radon testing and mitigation

Originally from Argentina where she received her medical degree from the University of Buenos Aires Dr. Mema specialized in ophthalmology. After coming to Canada Dr. Mema switched gears and specialized in Public Health and Preventive Medicine. Dr. Mema is currently the Deputy Chief Medical Officer Interior Health Authority in British Columbia Canada.

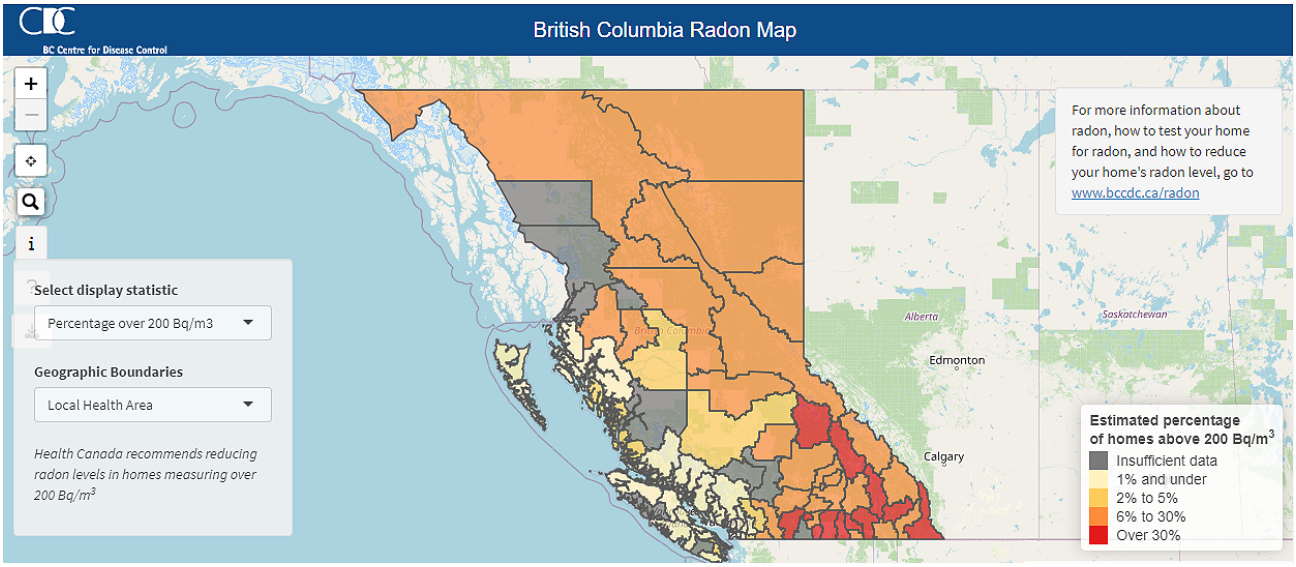
Practicing medicine in Canada and specifically in British Columbia is one of the most rewarding experiences of my career. Our Universal, publicly funded healthcare system does not differentiate among people based on their ability to pay. For this reason, we need to focus on prevention activities that can spare healthcare from incurring costs for preventable diseases like lung cancer.

Public Health is a fascinating specialty and covers all aspects of health care not directly related to healthcare system. Dr Mema views the population as her patient. With the majority of factors that influence health care are outside the system,case in point, the physical environment in which we live can make us sick. An important example is exposure to radon which can significantly increase the risk of lung cancer and become a public health concern.

We work closely with the healthcare system, advocacy groups and community leaders who can influence and champion initiatives towards creating awareness about radon.

A cancer diagnosis can have a devastating impact on individuals and families, testing for radon is a relatively low effort, low-cost initiative that empowers individuals to prevent their risk of cancer.

Lung cancer is the most common type of cancer in Canada, and 86% of cases are attributable to a modifiable risk factor with approximately 16% of all lung cancer deaths attributable to radon exposure Health Canada recommends homeowners test for radon and if levels are above 200Bq/m3 they should take remedial action to lower the radon levels as low as possible. Smoking and radon form a nasty mix per increased exposure to each, with smoking imparting a greater than 8x



As tobacco prevention activities and cessation programs expand, we have seen rates of lung cancer decline as well, particularly among males. This is why it is important to focus on other risk factors, such as physical inactivity, residential radon, and air pollution, which contribute to 11, 7 and 6 per cent of lung cancer cases respectively.

There is no safe level of radon, and I look to credible agencies like the World Health Organization Reference Level of 100 Bq/m³, and the USA EPA Action Level of 4 pCi/L (148 Bq/m³), each bestowing less exposure than
the 200 Bq/m³ Canadian Guideline, each recommending getting radon to as low as reasonably achievable below their guidance. These guidance levels were established prior to the 2017 Publication 137 by the International Commission on Radiological Protection revised Effective Dose Coefficient that realizes a doubling to quadruple (depending upon physical breathing activity) negative impact to lung tissue from alpha radiation exposure.

The British Columbia Centre for Disease Control, our surveillance hub for public health, estimates 30% of homes in the Southern Interior have radon levels that exceed guide- lines with levels above recommended levels which can lead to lung cancer for those living within.

At Interior Health we understand that efforts towards creating awareness and mitigating the impact of radon are important. Our licensing program requires childcare facilities to test for radon as a condition of licence. This is because many childcare centres are located in base- ments, where radon tends to accumulate, but importantly children can be more susceptible to the impacts of radon as their lungs are developing and they breathe faster, leading to an increased exposure relative to adults.

In 2022, we launched an initiative to reach out to schools across our region, the Southern Interior of BC. We distributed approximately 4,000 radon test kits and are currently collecting, and analyzing the results. This initiative was well received, most school districts participated and we are now working toward reaching the remaining schools that did notparticipate last


VETERANS DAY
WE SALUTE OUR
VETERANS

In Flanders Fields

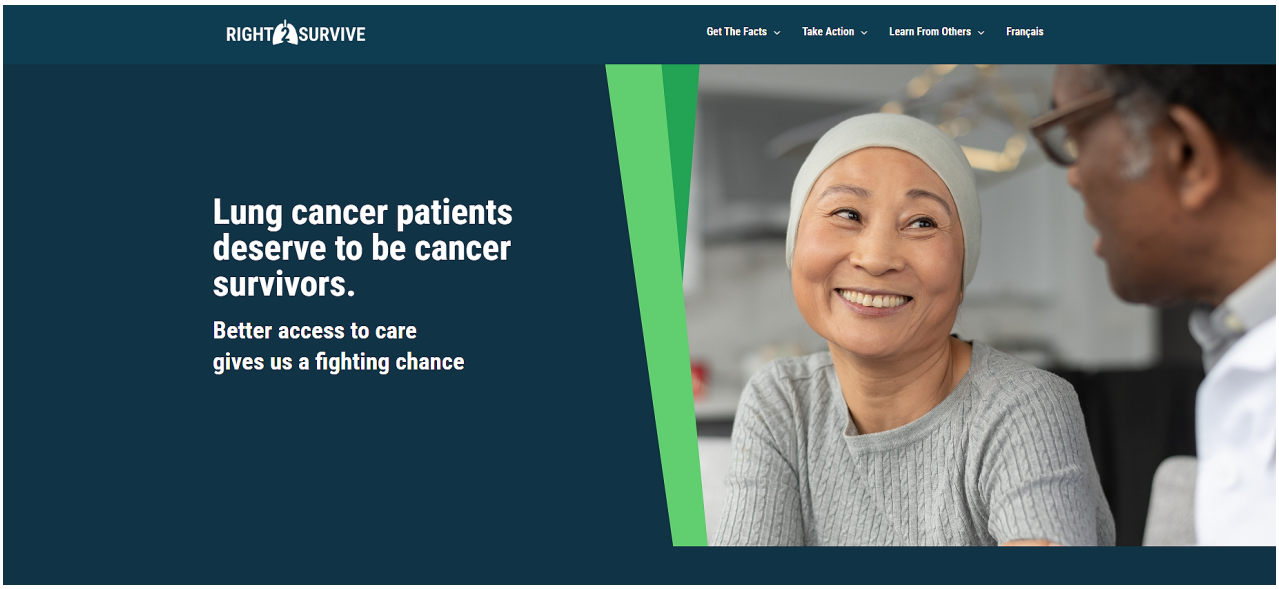
John McCrae
1872 – 1918

In Flanders fields the poppies blow
Between the crosses, row on row,
That mark our place; and in the sky
The larks, still bravely singing, fly
Scarce heard amid the guns below.

We are the Dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders fields.

Take up our quarrel with the foe:
To you from failing hands we throw
The torch; be yours to hold it high.
If ye break faith with us who die
We shall not sleep, though poppies grow
In Flanders fields.

" In Flanders Fields " is a war poem in the form of a rondeau, written during the First World War by Canadian physician Lieutenant-Colonel John McCrae.



Right2Survive is a coalition of patient organizations that have come together with one goal in mind: to ensure lung cancer patients can become lung cancer survivors. Our leadership includes representatives from the Canadian Cancer Survivor Network, the Lung Health Foundation, and Lung Cancer Canada as well as patient advocates from Alberta and Ontario. We pool our skills and resources because it is critical that governments across our country understand the importance of taking action to support the lung cancer community.

Lung cancer is the leading cause of cancer deaths in Canada. Despite the publicity that other cancer types receive, it is a diagnosis of lung cancer that has too often been a death sentence. It doesn't have to be this way. With new technologies, innovative medicines, and most importantly, earlier diagnoses, modern medicine has allowed us to significantly improve the likelihood that lung cancer patients can continue to thrive.

Our challenge in Canada, however, is the lack of one central lung cancer care system. The level of access to screening you have, the level of care you receive and much more is partly determined by where you live. With only three provinces currently running permanent organized lung cancer screening programs, it is clear that there is more work to do. We need to turn pilots into permanent screening programs. And we need to ensure that provinces without organized screening for lung cancer recognize its value and act accordingly.

Together, we can make that happen. By working with every provincial government, centering the experience and voices of patients in our work, and helping the community of patients, caregivers, friends, families and health care professionals to find their place in our advocacy work we will reach our goal, to ensure that lung cancer patients can become lung cancer survivors.

Canadian Cancer Survivor Network

Lung Cancer Canada

Lung Health Foundation

Unmasking the Reality of Lung Cancer

Breathe Hope

Continued on next page ...

Jess Lung Health Foundation

I truly enjoy being a part of Right2Survive. It means a great deal to me to be able to ensure lung cancer patients are having their voices heard and being a part of improving access to screening programs across the country. Witnessing the screening programs be put into place in Ontario, New Brunswick and British Columbia has been extremely rewarding. Being able to see our hard work come to life is amazing. I continue to be inspired daily and have learned much from the other members and the patients we interact with. Through their inspiration I continue to raise my voice and advocate for patients across Canada.

Michelle Lung Cancer Canada

Supporting lung cancer patients across Canada is the goal of Lung Cancer Canada and something that I'm personally proud of. Right2Survive gives us all the opportunity to bring to life, our message together with a diverse set of experiences and skills supporting lung cancer patients while urging governments to grasp the needs of lung cancer patients. Seeing the amazing work that all the groups are doing within the Right2Survive coalition always reminds me how important our work at Lung Cancer Canada is to support the lung cancer community. Realizing how governments have listened to our recommendations and heard the lung cancer community has been my proudest moment. Allowing patients voices to be heard and recognized across the country will never get old.

Jackie CCSN

Being a part of Right2Survive means being able to support lung cancer patients to become advocates for the community and I know how important patient advocacy is. This group comes together and supports the lung cancer community by helping to build skills and community, and I am extremely proud of that. Seeing the excellent work that has come out of this group, reminds me that it is possible to make change.

I am inspired to be persistent in my work and never give up when it comes to fighting for the rights of cancer patients across the country. Working together with our patient partners is extremely inspiring to me. Hearing directly from lung cancer patients and getting their input on the work we do is especially meaningful. Without their support, we wouldn't be able to do the amazing work we do with Right2Survive.

By: Diane Colton, Unmasking the Reality of Lung Cancer October 2023

###

Get the Facts

Knowledge is power. Lung cancer is the most diagnosed cancer in Canada. Take control of your health and get informed today.

Take Action

We have the tools to help you get started, from what questions to ask your doctor to resources to access needed services and treatments.

Learn from Others

Join our community of lung cancer fighters and survivors who are changing statistics every day. Read empowering stories and share yours with us.

MDLinx

Specialties & Diseases > Oncology & Hematology

Why do the deadliest cancers get the least attention?

By John Murphy
Published July 28, 2020

https://www.mdlinx.com/article/why-do-the-deadliest-cancers-get-the-least-attention/5DdSCjkdHA1omjcdxfuy8b

Research to understand, diagnose, and manage the deadliest cancers, like lung, colorectal, and pancreatic cancers, receives significantly less funding than that for other cancers, such as breast and pediatric cancers. What's behind this discrepancy?

Lung cancer, for instance, has the highest mortality of all cancers: an estimated 142,670 US deaths in 2019 alone, according to the National Cancer Institute. But the amount of funding raised for lung cancer was only $92 million in 2015.

At the same time, breast cancer caused an estimated 42,260 deaths—about one-third of the number of those who died from lung cancer. But the amount of money raised for breast cancer—$460 million in 2015 alone—dwarfs the amount raised for lung cancer by five-fold.

Why do deadlier cancers get less funding? Are lung, colorectal, and pancreatic cancers less important or less deserving than breast or pediatric cancers? Do the latter merit more attention or urgency? Does comparing one cancer to another even make sense? Or is there more to this than first meets the eye?

Funding doesn't match 'burden'

In a 2019 study published in the *Journal of the National Comprehensive Cancer Network*, researchers at Northwestern University looked at funds raised by nonprofit cancer organizations and compared these with the incidence, mortality, and years of life lost (YLL) for different cancer types. They found only a weak association between higher incidence of a particular cancer and the funding for that cancer. Furthermore, they found "essentially no correlation" between mortality or YLL and the amount of nonprofit funding for any cancer.

"Many common or highly lethal diseases, including lung, colorectal, pancreatic, ovarian, and endometrial cancers, are underfunded relative to their burdens on society," the authors wrote. "Underfunding may have negative downstream effects on research, novel drug development, and number of FDA drug approvals for poorly funded cancers."

Indeed, cancers that have less research funding are less likely to have innovative cures. Likewise, cancers that are highly funded are more likely to spur new treatments.

Continued on next page …

The authors speculated that stigmatized behaviors that are strongly associated with certain underfunded cancers—like smoking and lung cancer or alcohol and liver cancer—make raising money for those cancers more difficult. On the flip side, some of the most well-funded cancer types (breast cancer, leukemia, lymphoma, and pediatric cancers) have no association with stigmatized behaviors.

“The goal of our study was not to divert funding away from any disease but rather to educate the public and augment charitable funding for diseases that do not receive proportionate support. Well-funded [nonprofit organizations] should be applauded for their successes and could collaborate with other organizations to improve funding,” the authors concluded.

‘A considerable mismatch’

Nonprofits aren’t the only source of funds for cancer research, though. The federal government contributes quite a bit, too. (Your tax dollars at work!) But as with nonprofits, government funding favors some cancers over others when death or other factors are taken into account.

A study that compared amounts of research funding from the National Cancer Institute to different metrics of “cancer burden”—including incidence, mortality, and YLL—also revealed “a considerable mismatch between funding levels and burden,” the authors wrote.

“Some cancers are funded at levels far higher than their relative burden suggests (breast cancer, prostate cancer, and leukemia) while other cancers appear underfunded (bladder, esophageal, liver, oral, pancreatic, stomach, and uterine cancers),” they concluded.

These researchers looked at ratios of cancer funding relative to the different metrics of cancer burden. Looking at mortality alone, brain/CNS, breast, cervical, leukemia, and testicular cancers appeared to be overfunded. At the same time, bladder, esophageal, lung, oral, stomach, and uterine cancers were the most consistently underfunded across the different metrics.

Of course, there are different ways to evaluate cancer burden. When looking at incidence, breast cancer has the greatest burden, with an estimated 271,270 new cases in 2019, according to NCI data. When looking at YLL, lung cancer is far and away the greatest with 2,372,000 YLL (even when compared with the second highest: colorectal cancer with 800,000 YLL). In terms of mortality, lung cancer has the greatest burden with 142,670 deaths last year, as we’ve discussed.

“In absolute terms, lung cancer accounts for 32% of cancer deaths while receiving 10% of cancer research funding,” the researchers noted. But why might this be?

“Funding for lung cancer is quite low given its cost, mainly due to a ‘blame the victim’ attitude in which the personal choice to smoke is seen as the direct cause,” they contended. “The levels of funding for liver cancer (2.6% of funding compared to 3.8% of deaths and 3.8% of YLL) and oral cancer (0.5% of funding compared to 1.6% of deaths and 1.8% of YLL) may also be influenced by this ‘blame the victim’ prejudice (Hepatitis B infection and alcoholism contribute to liver cancer risk and chewing tobacco contributes to oral cancer risk).”

How do we fix these discrepancies? “We recommend redistribution from overfunded cancers to underfunded cancers to improve the effectiveness of cancer research funding,” the researchers stated.

Intuitively, that makes sense. Overfunded cancers could apportion some of their research dollars to the underfunded and more deadly cancers. But, is this really the best way to fairly allocate cancer funding?

Continued on page 23 …

NATIONAL EVICT RADON STUDY

Radon **RESEARCH** Series

TO LEARN MORE, VISIT: **evictradon.org**

Understanding radon as a function of **building air dynamics**

Inhalation of radioactive radon gas within the built environment is a leading cause of lung cancer, with Canadian exposures being amongst the highest globally. All areas of Canada have proven to have the risk of long term lung irradiation with cancer-causing doses (100 Bq/m³ or higher) of radon.

Differences within the built environment are a primary driver of radon level differences between properties, with newer and larger residential homes with fewer storeys containing even higher levels than older, smaller, and multi-storey equivalents. Largely, the way a given residential property 'breathes' – meaning the dynamic manner in which fresh and stale air is exchanged and moves within a home – is a critical factor in why some homes have high radon and others (perhaps right next door) have low radon.

Over the past five years, we have identified nearly a dozen separate property metrics that work together to influence building air dynamics and radon levels. These include the status of windows, chimneys, the roof, insulation, heating type, and more. By understanding this in detail, we are working towards a more effective way of risk prediction and (potentially) points of modification to 'radon-proof' future properties.

THIS WORK IS BEING FUNDED BY: ALBERTA REAL ESTATE FOUNDATION, Health Canada

… continued from page 21 [MedLinx]

The ‘utilitarian answer’ may not be the answer

“Although it is plausible that disease funding and donations should be proportionate to some measure of the harm or damage done by a particular disease or specific tumor type, it is not certain that this will in turn result in the greatest benefit. Making this assumption is a straightforward logical error,” argued hematologist-oncologist Vinay Prasad, MD, MPH, in a commentary article in the *Journal of the National Comprehensive Cancer Network*.

“Research funding ought to maximize the potential absolute risk reduction from research gains, and need not be strictly proportionate to measures of the severity of disease,” added Dr. Prasad, who is an associate professor of medicine at the University of California San Francisco.

If one approached cancer funding in “the most logical and ethical way,” then the best strategy would not be to save the most lives, but to save the most years of life lost as possible. “This is what philosophers call the *utilitarian answer*. All things being equal, we should fund projects that will give us the most years of quality life back,” he wrote.

But even the “utilitarian answer” isn’t a perfect one, Dr. Prasad noted. Who can guess which research projects will return the greatest dividends in increasing the years of life for patients?

Also, the “utilitarian answer” would require some authority in place to make decisions for distributing research funds more equitably. But then “the most logical and ethical way” to fund cancer research would be one that takes away, or at least oversees, how individuals choose to make charitable contributions.

“Many donors choose a cause they are affected by, either personally or through family or friends,” wrote the Northwestern University researchers.

And that’s as it should be. So, ideally, appropriate funding of cancer research would somehow balance the personal preferences of donors with getting the most “bang for the buck” in terms of patient life years.

As Dr. Prasad concluded: “Appreciation of this fact may lead to more constructive debates about equitable cancer research funding and donation by tumor type.”

###

REGISTER HERE

TEDxNorthampton Community College | TED

PREMIER YOUTH AMBASSADORS For Radon Reduction

https://radonreimagined.org

Brian Yang

Environmental Health Advocate, Sociology Student, Communicator

Describes radon exposure as a model to illustrate the responsibility we have to one another to address environmental and other hazards

November 10, 2023
9:00am - 6:30pm EST
(UTC -5hrs)

REGISTER HERE

TEDx Northampton Community College

x = independently organized TED event

November 10, 2023
9:00am - 6:30pm EST
(UTC -5hrs)

Bethlehem, Pennsylvania
United States

TEDx Northampton Community College

In the spirit of ideas worth spreading, TED has created a program called TEDx. TEDx is a program of local, self-organized events that bring people together to share a TED-like experience. Our event is called TEDxNorthampton Community College, where x= independently organized TED event. At our TEDxNorthampton Community College event, TED Talks video and live speakers will combine to spark deep discussion and connection in a small group. The TED Conference provides general guidelines for the TEDx program, but individual TEDx events, including ours, are self-organized.

BRIAN YANG

Brian Yang

TEDx Talk: When the Air You Breathe is Dangerous

Brian is a dual enrollment student at Northampton Community College studying sociology, and a junior at Moravian Academy. Brian is interested in the intersection between the environment, behavioral science and public heath. Brian is also interested in promoting mental health and addressing the epidemic of loneliness as public health crisis among high school students. Brian has been conducing research to uncover the relationship between the unique geology of the Lehigh Valley to the extraordinarily high levels of the carcinogenic gas, radon, in our area. His research is being presented at this year's American Association of Radon Scientists and Technologists (AARST) national meeting in Nashville, TN. In this talk, he describes radon exposure as a model to illustrate the responsibility we have to one another to address environmental and other hazards.

This independent TEDx event is operated under license from TED.

TEDx
Northampton
Community College

What is TEDx?

In the spirit of ideas worth spreading, TED has created a program called TEDx. TEDx is a program of local, self-organized events that bring people together to share a TED-like experience. Our event is called TEDxNorthampton Community College, where x= independently organized TED event. At our TEDxNorthampton Community College event, TED Talks video and live speakers will combine to spark deep discussion and connection in a small group. The TED Conference provides general guidelines for the TEDx program, but individual TEDx events, including ours, are self-organized.

← TEDxNorthampton Community College

- About TEDx
- TEDx Schedule
- TEDx Speakers
- Meet the TEDx Team

Time and Location

Date of Event: November 10, 2023
Time: 9AM to 6PM
Location: Lipkin Theatre, Kopecek

Ticket Information

In-Person Tickets for NCC Students
Our event is licensed to hold up to 100 individuals in-person and seats are reserved for NCC students. Three ticket types for students: TEDx All-Day Conference Pass, TEDx Morning Pass: 9AM to 2PM, TEDx Afternoon Pass: 2PM to 6PM.

Livestreaming Information
In addition to in-person attendees, the conference will also be livestreamed to the campus and broader Lehigh Valley Community.

Purchase Tickets Here: Get Tickets
Tickets are free for current NCC students.

Questions?
Please contact Nykolai Blichar at **nblichar@northampton.edu**.

https://www.northampton.edu/ncc-tedx.htm

Successful Lung Cancer Screening Programs Must Consider Unique Needs of Region, Population

DRS. CLAUDIA HENSCHKE AND PAN-CHY YANG TO CHAIR AN EDUCATION SESSION DESIGNED TO HELP THORACIC ONCOLOGISTS TRANSLATE RESEARCH INTO SUCCESSFUL LUNG CANCER SCREENING EFFORTS.

By: Fred Gebhart, Contributing Author
on: September 11, 2023In: MEETING NEWS, WCLC NEWS
https://www.ilcn.org/successful-lung-cancer-screening-programs-must-consider-unique-needs-of-region-population

There is no universal key to implementing lung cancer screening. The steps to success vary from country to country and population to population. Guidelines in the US, for example, rely on smoking history to evaluate risk and eligibility for low dose CT screening. In Taiwan—where lung cancer is often diagnosed in people who never smoked—includes family history and other risk factors to increase the diagnostic yield.

The one universal element for success is low-dose CT, which has proven effective in diagnosing more lung cancers at earlier stages when the disease is more responsive to treatment. And it is cost-effective as well. So said Claudia Henschke, PhD, MD, Professor of Diagnostic, Molecular and Interventional Radiology at the Icahn School of Medicine at Mount Sinai in New York


Claudia Henschke, PhD, MD

“If you can find it early enough, you can save 90% to 95% of people with lung cancer,” Dr. Henschke said. “If we had a drug that could boost survival from 10% to 90% or more, it would be a wonder drug. That’s what low dose CT screening can do for lung cancer.”

Dr. Henschke will co-chair an educational session titled “Implementing Lung Cancer Screening in Your Country: Taking Screening from the Trials to the Public” from 10:45– 11:45 on Tuesday, September 12, in room 406 at the Suntec Singapore Convention & Exhibition Center. She will share the podium with Pan-Chy Yang, MD, PhD, Professor of Internal Medicine at the National Taiwan University College of Medicine, Taipei.

Continued on next page …

“Lung cancer is the number one cause of cancer mortality for both men and women,” Dr. Yang said. “And more than two-thirds of our lung cancer patients do not have a history of smoking. If we only used smoking history in our lung cancer screening guidelines, we would miss much of the benefit.”

Pan-Chyr Yang, MD, PhD

Turning clinical trials into successful screening programs is a complex process. Different populations have different prevalence patterns and risk factors, which affects screening criteria and priorities.

Different countries have distinct health systems and implementation policies. Screening institutions have their own priorities and needs. So do the different providers who order, perform, and interpret CT scans. Barriers can exist at many levels, and it is important to understand the unique barriers in different settings in order to develop a plan to mitigate the challenges.

“The devil is in the details,” Dr. Henschke said. “To get a whole screening system going takes a lot of coordination. It takes a key person at each institution who really wants to coordinate all the people that are needed to make it work because screening is at the intersection of so many disciplines. You have to have quality assurance for the screening to assure its benefit, and you need to have outreach out to the target population.”

Countries need to identify who is most likely to benefit from screening. Many of the foundational lung cancer screening studies were done in countries where smoking was the primary risk factor. Other populations may have different risk factors.

“Non-smoking lung cancer is worldwide, particularly in East Asia,” Dr. Yang said. “And non-smoking lung cancer is increasing, including in the US and in Europe. We have started looking to find out why.”

Population studies identified specific genetic risk factors for lung cancer, even in patients who never smoked, Dr. Yang said. Passive smoking and chronic lung disease play roles. Environmental exposures, especially air pollution and cooking fumes, increase risk. A family history of lung cancer has emerged as the leading risk factor in people who smoked as well as those who didn’t.

Taiwan launched a national low dose CT screening program focused on two groups; those who smoke, beginning at age 50, and those who don’t with a family history of lung cancer, beginning at age 45. Most of the lung cancers detected the first year (85%) were stage 0 or stage 1.

“Smoking cessation is the most important part of lung cancer prevention,” Dr. Yang said. “In countries that have the resources, start screening with heavy smokers. But if more than one-third of your lung cancer prevalence is in patients who never smoked, consider screening based on family history. Your screening program should take into account your own population epidemiology, genetics, and environmental factors, which can be quite different between countries. You cannot just focus on heavy smokers.”

The emphasis on non-tobacco risk factors is not unique to East Asia. As smoking rates decline in the US and elsewhere, people who never smoked are emerging as a growing population at risk for lung cancer.

“I agree with Dr. Yang that you cannot focus just on heavy smokers,” Dr. Henschke said.

###

NATIONAL EVICT RADON STUDY

Radon **RESEARCH** Series

TO LEARN MORE, VISIT: **evictradon.org**

Understanding radon disparities across **urban to rural communities**

Not all communities are equivalent in their radon exposure. Across the world, it has been documented that houses in more rural (less populated) areas have innately higher radon. The reasons for this have remained relatively unclear.

Over the past three years, we have examined differences in Canadian residential radon gas exposure between different community types (city versus large town versus small town versus village-hamlet-isolated properties) across the urban-to-rural paradigm, classified by Statistics Canada (based on population density). **We find substantial differences between community types, with people in rural communities in any Canadian province or territory experiencing >30% greater levels of residential radon exposure relative to urban populations.**

A detailed analysis established that these differences were not explained simply by housing features but rather the combination of two key factors: (1) rural communities are more likely to contain single-storey, single-detached houses of a larger floorplan (relative to urban areas), and (2) rural community houses are more likely to have a high density of drilled groundwater wells nearby the property, which operate as an (unintentional) migration pathway for deep-underground radon levels to reach the upper layers of soil. This work highlights a community-based disparity in Canadian residential radon exposure and a clear need for targeted radon awareness and reduction services in these areas.

THIS WORK IS BEING FUNDED BY: ALBERTA REAL ESTATE FOUNDATION; CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

What is *All of Us?*

Part of the National Institutes of Health, *All of Us* is changing how health research is done.

We're building one of the largest and most diverse health databases of its kind.

Researchers are already using this data to learn more about why people get sick or stay healthy, and what makes each of us unique.

They're using this information to find better ways to prevent and treat illnesses and to care for all of us.

But there's more to do.

Learn more

What *All of Us* can do for you

- If you join *All of Us* and provide biosamples, like blood or saliva, you may choose to learn more about your DNA:
    1. Your genetic ancestry
    2. Your risk for certain hereditary diseases
    3. Your body's reaction to certain medicines
- **There is no cost to participate** other than some of your time. Most people will spend no more than a few hours a year taking part in the program's activities.
- You can **find out about research powered by the data** you've shared.
- You will **join a community of people** who are already making a difference.

Discover what you receive

NIH's All of Us Research Program Awards $1.5 Million to Institutions Collaborating with Tribal Communities to Advance Precision Medicine

01 THE IRISH NEWS

Alison Torrens from Portstewart has left a gift in her will to Queen's University Belfast (Liam McBurney/PA)

A former art teacher with terminal cancer has said donating her biological samples for medical research and leaving a gift in her will is the "best legacy" she can leave.

Alison Torrens, from Portstewart, has given consent to donate her own surgical samples to a new research project she is funding via the Northern Ireland Biobank.

Continued on next page ...

Woman donating cells for cancer research wants to ‘make the incurable, curable’

13 October, 2023

Ms Torrens has also left a gift in her will to Queen’s University Belfast to help fund the project into adenoid cystic carcinoma (ACC), the cancer type that she has.

She came across the Patrick G Johnson Centre for Cancer Research (PGJCCR) at Queen’s when she was first undergoing cancer treatment in 2016.

“When you’re sitting on the cancer conveyor belt every day, waiting for the little red light to buzz for your radiation, I found it more interesting to look at leaflets and pick up things, and then I saw the Queen’s Research Centre, and I thought ‘I wonder what they do there’,” she said.

After being asked whether she would be interested in donating her own cells taken in biopsies as part of her treatment, Ms Torrens said it was a “no-brainer”.

“I said, sure, you already have my cells and if it’s going to help somebody else later down the line then, yes,” she said.

“And he (Ms Torrens doctor) said ‘you’re ok about signing the form?’ That’s all I had to do it wasn’t costing me anything.

“And that’s the other thing is why I’m compelled to do what I’m doing today, is we get free treatment.

“I have battled three tumours since 2016.

“The treatment I have received from my consultants, and the nursing staff and all of the hospitals I have attended, of which there are three, has been exemplary.

“And the least I can do is just sign to have my cells taken and used for research.

“You know, it’s very little to give back.”

Continued on page 32 ...

… continued from page 31 [Allison Torrens].

Alison Torrens has adenoid cystic carcinoma (ACC) (Liam McBurney/PA)

Adenoid cystic carcinomas are slow growing but highly infiltrative malignant tumours arising from secretory glands, typically the salivary glands of the head and neck.

ACC can be aggressive and hard to treat due to its tendency to infiltrate along nerves.

Ms Torrens became emotional as she said another motivating factor in her choosing to donate to Queen's in her will, was discovering that two women who lived near her also had ACC.

"They weren't much younger than me. They were mothers. They're not here now," she said.

She added: "It's treatable if it's caught in time, but I would like the incurable to become curable.

"So by just giving my permission to the NI bank for cells, and to give a bit of money towards the research, and some PhD student, can actually discover something that can prolong somebody's life and even better, save someone's life – then I will pass away a very happy woman because that will be the best legacy I could give to anybody in this life, is life."

Alison Torrens from Portstewart during an interview with the PA news agency (Liam McBurney/PA)

Despite her terminal diagnosis, Ms Torrens has an overwhelmingly positive outlook, an attitude she says she learned from her father.

"My father broke his leg in 17 places when he was 17 and they said he'd never walk again. And my mother always said you're so like your father.

Continued on next page …

... continued from previous page.

"Because my father, not only did he walk again but he could nearly beat me at cross country because he was so determined," she said.

She added: "I got that from my dad because there was no such a thing as giving up. I never have time for whiners.

"Whining doesn't make anything better, it just makes you feel bad and everybody around you worse."

Alison Torrens has left a gift in her will to Queen's University Belfast (Liam McBurney/PA)

Ms Torrens said she "truly believes" that the research will outlive her once she dies, and encouraged others in her position to donate their biological samples for research.

"I think it would be a proud moment too, that somebody from the Queen's Research Centre could maybe discover something that would be mammoth in the fight for cancer in general, not just my rare cancer but any cancer.

"So as you sit there and you've been given really bad news that your time's up, think about the person whose time isn't up yet and offer your cells and sign on that little piece of paper."

Alison Torrens wants to help fund a research project into adenoid cystic carcinoma (ACC) (Liam McBurney/PA)

The research project will be carried out at PGJCCR at Queen's, and will explore why ACC can become resistant to treatment and identify characteristics of the cancer cells that may allow for more targeted and effective treatment.

Continued on page 34 ...

... continued from page 33 [Allison Torrens].

Helen Carrick, assistant director of philanthropy, at Queen's said 100% of all gifts left to Queen's will go towards the donor's chosen cause, with the majority of donations to Queen's being left for medical research.

"Eighty-five per cent of the income we receive through legacies is left by donors to support medical causes," Ms Carrick said.

"This includes funding life-changing research into cancer, diabetes and multiple sclerosis, to develop better treatments and ultimately deliver better outcomes for patients.

"Regardless of size, each and every legacy gift is an investment in the future of education and research in Northern Ireland and beyond. We would like to sincerely thank all our supporters for their generous gifts and for their belief in what Queen's can achieve with their support."

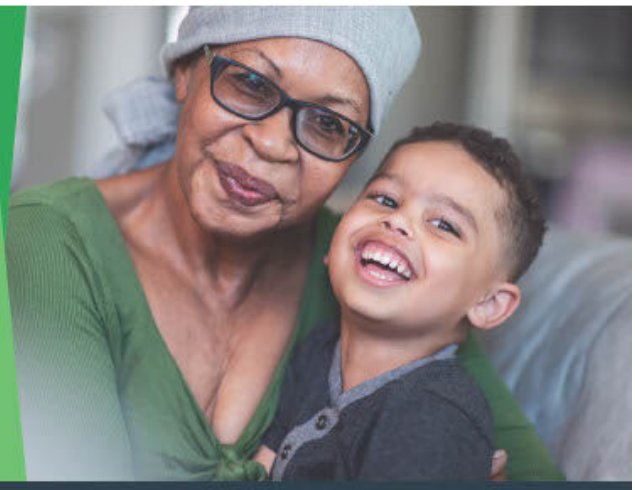
https://www.indy100.com/news/woman-donating-cells-for-cancer-research-wants-to-make-the-incurable-curable

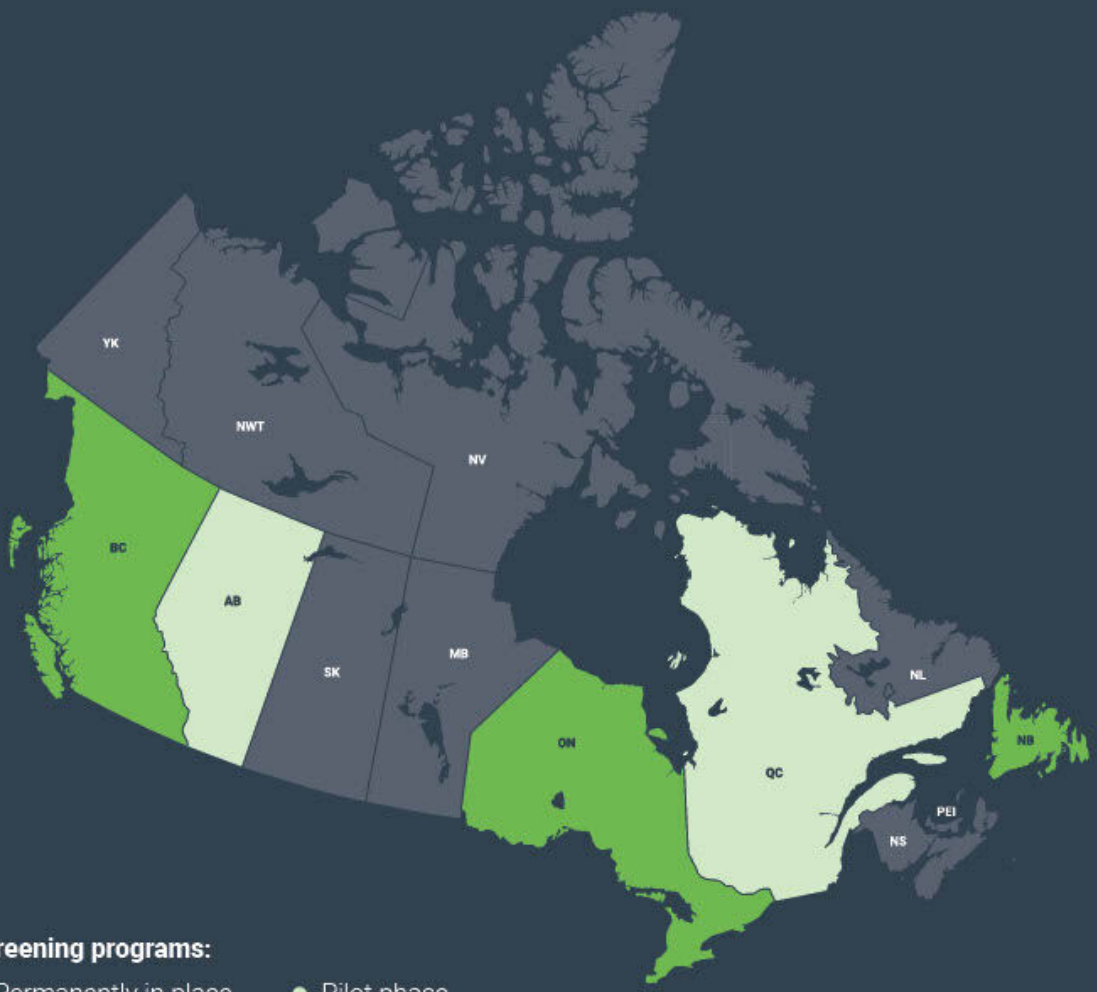
###

RIGHT 2 SURVIVE

ONTARIO, BC AND NEW BRUNSWICK

are the only provinces offering permanent lung cancer screening programs despite the evidence that screening significantly improves survival rates.





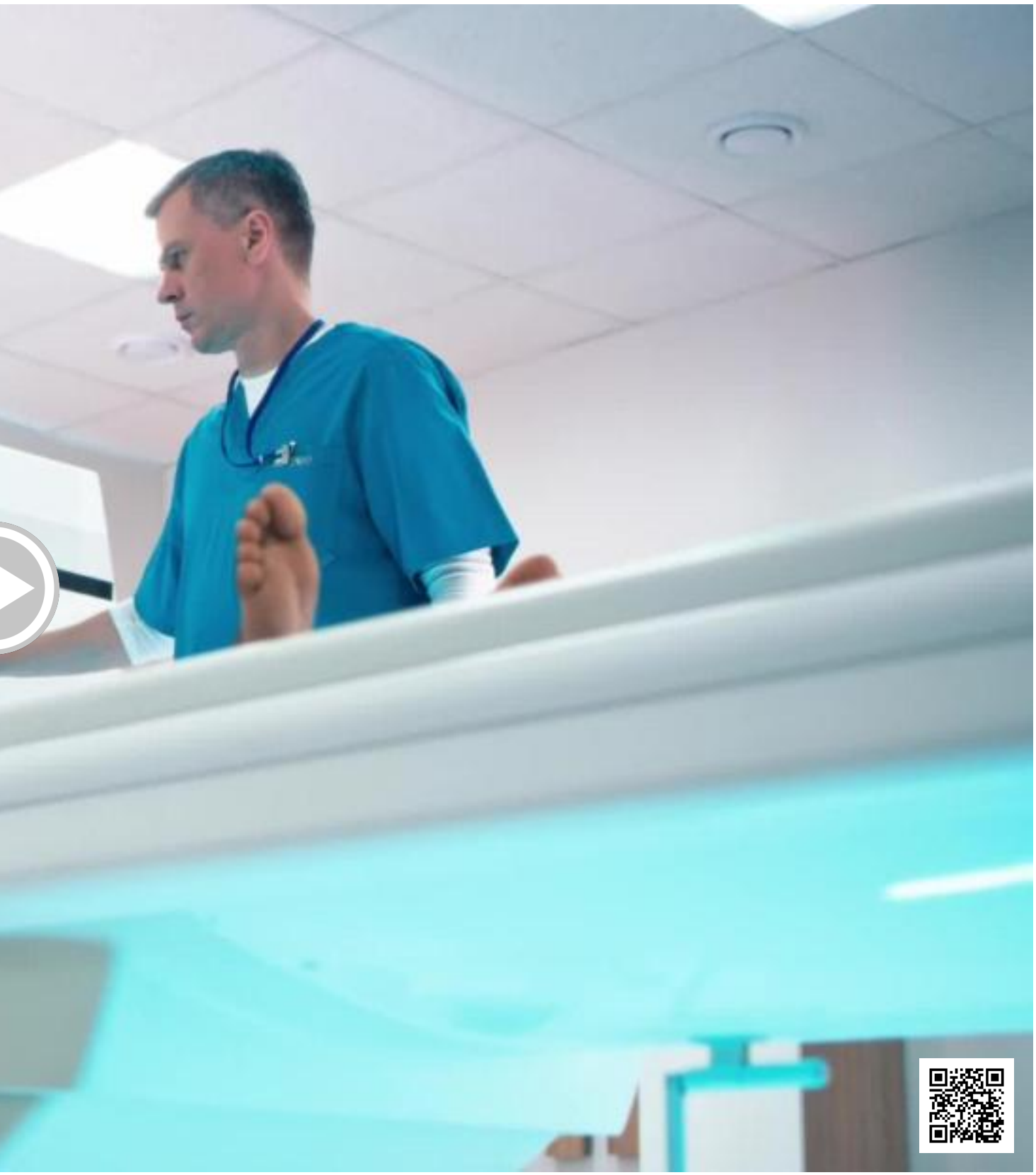
Screening programs:

- Permanently in place
- Pilot phase

www.right2survive.ca

Get involved today to help expand access across Canada!

Lung Cancer and lung cancer screening disparities in medically underserved communities.
Author(s): Jessica Balbin, Laisha Martinez-Reyes
Video Date: 10/01/2023



Katherine Pruitt, National Senior Director of Policy at the American Lung Association: Why Outreach about Radon is Important

Katherine Pruitt has been working in radon risk reduction for over 30 years.
Many people have never heard of radon. Yet, virtually any member of the public can unknowingly be exposed to lung cancer-causing levels of radon for years if they do not know how to take preventive actions.


Katherine Pruitt has been working in radon risk reduction for over 30 years.

According to the Environmental Protection Agency (EPA), radon is estimated to cause about 21,000 lung-cancer related deaths per year. Radon-associated deaths can be prevented — but only if people keep radon at lower levels in homes and buildings through testing and mitigation.

If people are not aware of radon and its risks or do not know how to take preventive actions, they will miss the opportunity to protect themselves and others from lung cancer. Effective public outreach and education is the foundation for reducing the number of deaths from long-term radon exposure.

30 Years of Radon Outreach

For almost 30 years, Katherine Pruitt of the American Lung Association has been part of building this foundation at the national level. Katherine is the National Senior Director of Policy at the Lung Association and convenor of the National Radon Action Plan (NRAP) Leadership Council. The NRAP Council is a private-public partnership with representation from experts on health, housing, radiation, energy, cancer, and building science under the leadership of the Lung Association.

Continued on next page ...

Katherine says, "*After nearly three decades, it still surprises me how many people have never heard of radon, let alone understand the risks and how to protect themselves.*" Katherine's long history of working on radon risk reduction, and her experience as a health educator, give her a unique perspective on how and why to communicate about radon.

When Katherine Pruitt started working at the Lung Association on the Radon Public Outreach program in 1993, indoor air pollution was just emerging as a topic in environmental health. In the last few decades, the number of buildings tested for radon nationally has increased.

Still, radon awareness lags behind other environmental health issues in the public sphere. It's a challenging topic to engage the public in. Even when people have heard of radon, it's easy to forget about. It cannot be seen or smelled and does not cause any immediate health effects. And while testing and mitigation may not seem like laborious tasks, they do require people to go a little out of their way to protect themselves from a threat that doesn't seem to impact their daily lives. This is in contrast to easily followed public health interventions like avoiding certain foods or substances or taking actions to protect from an immediate threat, like washing your hands during flu season.

Katherine has also observed another challenge in raising awareness, "*There's no 'enemy' for radon. There's no industry or corporation to blame for the deaths that can occur from radon exposure. People tend to notice and rally behind issues that have an 'enemy'. Yet many of those issues are less pervasive or deadly.*" Just like an eye-catching news headline, a public health threat that triggers emotional responses like anger and blame or shock and fear are the ones people are most likely to notice, remember, and act upon.

Refreshing the Approach to Outreach

About 2 years ago, Katherine Pruitt was appointed to her current position as National Senior Director of Policy and convener of the NRAP Leadership Council. Under her leadership, the NRAP Council published the National Radon Action Plan, 2021-2025 in January 2022. The 5-year plan sets a goal for the nation to find, fix, and prevent high indoor radon levels in 8 million buildings by 2025 and prevent 3,500 lung cancer deaths per year. Like previous versions of the national strategy, the newest plan includes four main pillars: build in risk reduction, provide incentives and support for radon risk reduction, test and mitigate using professional radon services, and increase visibility. This last pillar aims to expand public awareness about the risk of radon and the importance of radon risk reduction.

Continued on page 40 ...

... continued from page 39 [kpruitt].

Outreach efforts in the previous version of the action plan were focused primarily on single-family homeowners. The 2021-2025 plan takes a health equity approach with communication objectives, products, and plans to educate and empower previously underrepresented populations such as people with low incomes, renters, people living in multifamily homes, American Indians, non-English speakers, and people with low literacy.

One way of reaching these populations is by targeting outreach to people who are trusted and in direct contact with them to motivate them, such as leaders of cultural or ethnic groups, government and local public health officials, faith leaders, and healthcare providers. Katherine describes the importance of this new approach, "*We need to communicate to reach people where they are, to spread the word to everyone; virtually everyone could be at risk.*"

The new edition of the NRAP also shifts the focus of outreach to intermediaries, people in positions to control or influence radon prevention measures in places people can be exposed to radon beyond single-family homes. These include school health organizations, government officials, employers, real estate agents, and rental owners or landlords. This approach in the newest NRAP aligns and supports a goal of the newest edition of NRAP — working toward health equity by filling previous gaps in awareness and resources.

Why spread the word about radon?

You don't need to have a 30-year career in radon outreach efforts to have an impact and help save lives. Your direct conversation with someone may be more impactful and memorable for that person than public outreach efforts from organizations and agencies. As Katherine states, "*We all have a role to play in protecting our communities from preventable lung cancer deaths from radon. Education and outreach can make a difference. Talk to your loved ones, friends and neighbors today about testing for radon.*"

You can share information with your landlord, if you rent, and with building managers of your and your family members' workplaces and schools; ask your healthcare provider about any concerns; and reach out to policymakers about ways they can help expand radon prevention at the public level.

Last Reviewed: January 17, 2023

Source: Centers for Disease Control and Prevention, National Center for Environmental Health

View Online: https://www.cdc.gov/radon/raise-awareness-about-radon.html

###

NATIONAL EVICT RADON STUDY

Radon **RESEARCH** Series

TO LEARN MORE, VISIT: **evictradon.org**

Understanding radon dose exposure as a function of **activity patterns, behaviour and lifestyles**

Human behaviour can profoundly impact exposure to environmental toxins that increase cancer risk, and radon gas within residential properties is no exception.

At the most straightforward level, behaviours such as window opening habits and time spent outdoors can drastically alter individuals' radon exposure (and thus lung cancer risk) over a lifetime, irrespective of the latent radon levels in a given property or region. From a radon-induced lung cancer risk reduction perspective, understanding behaviour is as important as understanding radon levels within buildings. However, the impact of inter-individual psychology on different health-seeking behaviours (that modify radon exposure) needs to be better understood. As part of the Evict Radon National Study, we are studying how different behaviours concerning radon awareness, testing and mitigation work together to significantly alter residential radon exposure for individuals.

Among people reporting unsafe radon exposure, 35% mitigated quickly, 31% displayed delaying behaviour, 28% reported economic impediments, and 6% declined action. Radon testing or mitigation-delaying behaviour(s) corresponded to significantly increased total excess lung irradiation, which differed by demographics. **Those who desired to mitigate their high radon levels but could not do so for economic reasons were generally younger, often with young families**. This project has identified a clear need for helping younger individuals (or anyone of lower socioeconomic status) to reduce radon, as it is at these younger ages that radon exposure prevention is the most critical.

THIS WORK IS BEING FUNDED BY: CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

Smoke, Fire & Radon

November

by Dusty Donaldson

A dear friend of mine lost her only son and his wife this weekend in a house fire.

It was so unexpected, of course. The family and everyone who knew them are still in shock. The fire started in the kitchen, perhaps a forgotten skillet on the stove. Who knows? The fire department said there were smoke detectors in the home, but for some reason, they were not working as the couple slept.

It was smoke inhalation that killed them. There is some comfort in the knowledge that it wasn't the actual flames from the fire that caused their death.

Apparently, the fire smoldered throughout the night, as they peacefully slept. A neighbor saw the flames and called 911. Firefighters extinguished the fire and searched the home for occupants. The couple was rushed to the hospital but there was not much that could be done for either of them except put them on life support. Tragically, the smoke had already done its damage to their respiratory systems and organs.

In a bitter-sweet end to their lives, each of their hearts stopped beating at the exact same second.

I was there as support to my friend and her family.

Losing them both at one time is profoundly devastating. Compounding the grief, are practical matters their children and loved ones are struggling with. For example, there is no one alive who knows the combination of the safe containing important documents. Also, they both listed the other as their insurance beneficiary.

You may wonder why I am sharing this story with you. Please, bear with me. And, please, take heed.

Home fires kill approximately 3,800 people in the U.S, according to the National Fire Protection Association. We know fire is deadly. However, oftentimes, it's not the flames from the fire that kill the people in a home. What kills them is what they breathe into their lungs.

Continued on next page ...

If you are awake, you see smoke. You smell smoke. Smoke detectors, if they are working properly, will warn us — whether we are awake or sleeping.

You cannot see radon. You cannot smell radon. Radon does not trigger alarms to wake us up. Nor does radon have an immediate impact on a person's life, as smoke inhalation does.

But radon is every bit as deadly—in fact—it's deadlier.

Radon kills 21,000 people in the U.S. each year—which is more than five times the number of people killed by fires, according to the Environmental Protection Agency.

Please. Test your home for radon. And, if a problem is discovered, mitigate it. Radon mitigation is relatively inexpensive and can save real lives.

Yes, install a smoke detector in your home or test the batteries on your smoke detector. But, also, test your home for radon.
You may not be recognized for the heroics of saving the lives of loved ones.

But you will be a hero, nevertheless.

Dusty Donaldson is executive director of the Dusty Joy Foundation (LiveLung), a 501(c)(3) nonprofit with a focus of advancing lung cancer awareness, early detection and compassion for people impacted by lung cancer. Dusty co-authored the book "The ABCs of Lung Cancer for Patients and Advocates." She is President of the Lung Cancer Action Network (LungCAN) and serves as a reviewer

Lung cancer is the leading cause of cancer mortality in the United States, accounting for 21% of all deaths.[1] This year, more than 238,340 U.S. men and women will be diagnosed with lung cancer, and over 127,000 will die from the disease. Lung cancer is generally diagnosed at an advanced, incurable stage because patients often lack signs and symptoms in the early stages of the disease. Several factors have been shown to contribute to the development of lung cancer, smoking and exposure to environmental carcinogens being the most prevalent; however, 10-15% of lung cancers occur in people who are non-smokers.[2] Lung cancer risk for our military is significant, with 24% to as high as 38% of Service Members smoking compared to 14% of civliians.[3] Deployments also worsen smoking rates by about 50%. Among military Veterans, lung cancer is a leading cause of cancer-related deaths, with about 15 Veterans dying of lung cancer each day.[4] An estimated 900,000 Veterans remain at risk due to age, smoking, and other environmental exposures during and after military service.[5] Despite improved screening methods for lung cancer and advances in treatment, the 5-year survival rate remains low at 28% for non-small cell lung cancer and only 7% for small cell lung cancer.[1]

1 https://seer.cancer.gov/statfacts/html/common.html.
2 https://www.cancer.org/cancer/latest-news/why-lung-cancer-strikes-nonsmokers.html
3 US Secretary of Defense. 2016. Memorandum for Secretaries of the Military Departments. Washington, DC: US Secretary of Defense.
4 https://www.research.va.gov/programs/pop/lpop.cfm.
5 Moghanaki, D and Hagan M. 2020. Strategic Initiatives for Veterans with Lung Cancer. Federal Practitioner, S76.

###

The Guardian

Cancer cases in under-50s worldwide up nearly 80% in three decades, study finds

Andrew Gregory *Health editor*
@andrewgregory
Tue 5 Sep 2023 18.30 EDT

More than a million under-50s a year dying of cancer and figure projected to rise by another 21% by 2030

An MRI scan for lung cancer. The researchers say poor diets, alcohol and tobacco use, physical inactivity and obesity are likely to be among the factors in the rise. Photograph: da-kuk/Getty Images

Continued on next page ...

... continued from page 45.

https://www.theguardian.com/society/2023/sep/05/cancer-cases-in-under-50s-worldwide-up-nearly-80-in-three-decades-study-finds

The number of under-50s worldwide being diagnosed with cancer has risen by nearly 80% in three decades, according to the largest study of its kind.

Global cases of early onset cancer increased from 1.82 million in 1990 to 3.26 million in 2019, while cancer deaths of adults in their 40s, 30s or younger grew by 27%. More than a million under-50s a year are now dying of cancer, the research reveals.

Experts are still in the early stages of understanding the reasons behind the rise in cases. The authors of the study, published in BMJ Oncology, say poor diets, alcohol and tobacco use, physical inactivity and obesity are likely to be among the factors.

"Since 1990, the incidence and deaths of early onset cancers have substantially increased globally," the report says. "Encouraging a healthy lifestyle, including a healthy diet, the restriction of tobacco and alcohol consumption and appropriate outdoor activity, could reduce the burden of early onset cancer."

Previous studies have suggested that the incidence of cancer in adults under the age of 50 has been rising in various parts of the world over the last few decades. The latest study, led by the University of Edinburgh in Scotland and Zhejiang University School of Medicine in Hangzhou, China, was the first of its kind to examine the issue on a global scale and the risk factors for younger adults.
Most of the previous studies focused on regional and national differences. In this global study, researchers analysed data from 204 countries covering 29 types of cancer.

They looked at new cases, deaths,
health consequences and contributory
risk factors for all those aged 14 to 49
to estimate changes between 1990 and 2019.

In 2019, new cancer diagnoses among under-50s totalled 3.26 million, an increase of 79% on the 1990 figure. Breast cancer accounted for the largest number of cases and associated deaths,
at 13.7 and 3.5 for every 100,000 of the global population respectively.

Cases of early onset windpipe and prostate cancers rose the fastest between 1990 and 2019, with estimated annual percentage changes of 2.28% and 2.23% respectively. At the other end of the spectrum, cases of early onset liver cancer fell by an estimated 2.88% a year.

Continued on page 47 ...

... continued from page 46 [Cancer under 50].

countries were also affected, and the highest death rates among under-50s were in Oceania, eastern Europe and central Asia.

In low- and middle-income countries, early onset cancer had a much greater impact on women than on men, in terms of poor health and deaths.

Based on the observed trends for the past three decades, the researchers estimate that the global number of new early onset cancer cases and associated deaths will rise by a further 31% and 21% respectively by 2030, with people in their 40s the most at risk.

Genetic factors are likely to have a role, the researchers said. But diets high in red meat and salt and low in fruit and milk, along with alcohol and tobacco use, are the main risk factors underlying the most common cancers among under-50s, with physical inactivity, excess weight and high blood sugar contributory factors, the data indicates.

Dr Claire Knight, a senior health information manager at Cancer Research UK, which was not involved in the study, said it was not yet clear what was driving the trend and urged caution.

"However alarming this might seem, cancer
is primarily a disease of older age, with the majority of new cancer cases worldwide being diagnosed in those aged 50 and above," she said. "We need more research to examine the causes of early onset cancer for specific cancer types, like our BCAN-RAY study that is looking at new ways to identify younger women at higher risk of breast cancer.

nature reviews clinical oncology

The global burden of lung cancer: current status and future trends

Amanda Leiter, Rajwanth R. Veluswamy & Juan P. Wisnivesky

Nature Reviews Clinical Oncology **volume 20**, pages624–639 (2023)
Published: 21 July 2023

Abstract

Lung cancer is the leading cause of cancer-related death worldwide. However, lung cancer incidence and mortality rates differ substantially across the world, reflecting varying patterns of tobacco smoking, exposure to environmental risk factors and genetics. Tobacco smoking is the leading risk factor for lung cancer. Lung cancer incidence largely reflects trends in smoking patterns, which generally vary by sex and economic development. For this reason, tobacco control campaigns are a central part of global strategies designed to reduce lung cancer mortality. Environmental and occupational lung cancer risk factors, such as unprocessed biomass fuels, asbestos, arsenic and **radon**, can also contribute to lung cancer incidence in certain parts of the world. Over the past decade, large-cohort clinical studies have established that low-dose CT screening reduces lung cancer mortality, largely owing to increased diagnosis and treatment at earlier disease stages. These data have led to recommend- ations that individuals with a high risk of lung cancer undergo screening in several economically developed countries and increased implementation of screening worldwide. In this Review, we provide an overview of the global epidemiology of lung cancer. Lung cancer risk factors and global risk reduction efforts are also discussed. Finally, we summarize lung cancer screening policies and their implementation worldwide.

Key points

- Lung cancer is the leading cause of cancer death globally, with incidence and mortality trends varying greatly by country and largely reflecting differences in tobacco smoking trends.
- Cigarette smoking is the most prevalent lung cancer risk factor, although environmental exposures, such as biomass fuels, asbestos, arsenic and radon, are all important lung factor risk factors with levels of exposure that vary widely across the globe.
- Lung cancer incidence and mortality rates are highest in economically developed countries in which tobacco smoking peaked several decades ago, although these rates have mostly now peaked and are declining.

Continued on page 54 ...

... continued from page 15 [Leading Advocate].

Test results from the alpha track puck tests is relayed from the laboratory to school management and Interior Health. The data is shared with the British Columbia Centre for Disease Control for entry into the central provincial database that contributes to a provincial mapping process underway. Although maps should not be used on a micro level (2 houses side-by-side can test far different), mapping can help educate local government officials about radon hot spots and assist decision-making around building code rough-in amendments.

The impact will be that all schools in our region will have radon levels below the Canadian guideline.Students and staff working in school buildings will be better protected from radon exposure. As long-term inhalation of alpha particle radiation increases the lifetime relative risk of lung cancer, the goal is to bring radon into the overall portfolio of school indoor air quality maintenance under the As Low as Reasonably Achievable principle (below the Canadian Guideline).

A secondary but very important impact is that our initiative is increasing awareness about radon. Staff and students from schools will now know about radon and may decide to test their homes, or other workplaces. We are planning a Student Radon Skill Testing Contest associated with the school initiative to further incentivize knowledge spread.

The last word:

It is important that individuals be aware of the risks of radon and be motivated to test their homes, workplaces and indoor leisure spaces. Public health efforts should make it easier for individuals to access information and obtain test kits so people can have the tools they need to be healthy.

###

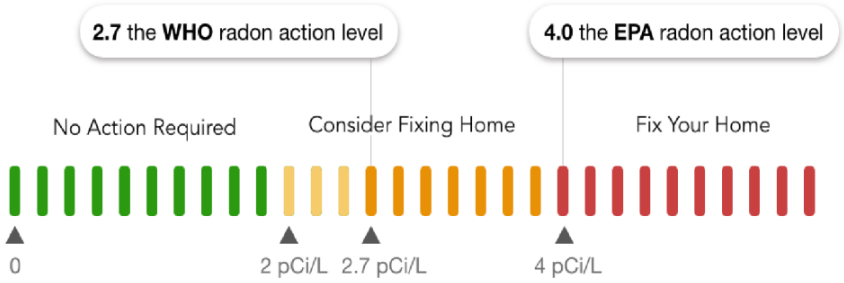
ecosense

View GUIDE ON RADON LEVELS

Youtube: https://www.youtube.com/watch?v=eirX_tVMppg

ecosense
Build a radon-free lifestyle

Guide On Radon Levels



Test result is 4.0 pCi/L or greater: YOUR RADON IS HIGH

- FIX THE BUILDING. Test results indicate occupants may be exposed to radon concentrations that meet or exceed the EPA action level of 4 pCi/L or greater.
- Efforts to reduce radon concentrations are not complete until a retest provides evidence of mitigation effectiveness.
  - Complete a short-term test between 24 hours and 30 days after installation of a mitigation system.
  - Retest every 2 years or install a continuous radon monitor to ensure the system remains effective.

Test result is between 2.0 and 4.0 pCi/L: YOUR RADON IS MODERATELY ELEVATED

- CONSIDER FIXING THE BUILDING. Test results indicate radon levels greater than half the EPA action level.
- The World Health Organization (WHO) recommends mitigation if levels are 2.7 pCi/L (100 Bq/m^3) or higher.
- Continuously monitoring the radon levels, especially when the heating system is active both day and night, is more likely to provide a clear characterization of potential radon hazards.

Test result is less than 2.0 pCi/L: YOUR RADON IS LOW

- NO FURTHER ACTION REQUIRED AT THIS TIME. The average indoor radon level is estimated to be about 1.3 pCi/L; the normal outdoor air radon level is 0.4 pCi/L.
- Radon levels in a building can fluctuate due to weather conditions and other factors, including renovations and alterations, or changes in the HVAC system. For this reason, EPA recommends retesting your home every 5 years and to remediate if levels become elevated.

Times to Retest:

Retest in conjunction with any sale of new or existing buildings. Additionally, it is important to retest or continuously monitor when any of the following circumstances occur:

- A ground contact area not previously tested is occupied, or a home is newly occupied.
- Ventilation systems are significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures.
- A mitigation system is altered, modified, or repaired.
- Significant openings to soil occur due to:
  - Groundwater or slab surface water control systems that are altered or added (e.g., sumps, perimeter drain tile, shower/tub retrofits, etc.).
  - Natural settlement causing major cracks to develop.
  - Earthquakes, construction blasting, or formation of sinkholes nearby.

What Is Radon and Why Is It So Dangerious? Ask Mayo Clinic Health System.

Mayo Clinic Health System [Iowa, Minnesota, Wisconsin]

Mayo Clinic in Arizona [Phoenix & Scottsdale]

... continued from page 48 [Global burden of lung cancer]

- Reductions in lung cancer mortality in economically developed countries reflect decreased incidence (mirroring declines in tobacco smoking) and improvements in treatment of patients with advanced-stage disease, including immunotherapies and targeted therapies.
- In low-income and middle-income countries at the later stages of the tobacco epidemic, both lung cancer incidence and mortality are increasing, thus highlighting the importance of tobacco mitigation policies for reducing the global burden of lung cancer.
- Low-dose CT-based lung cancer screening reduces lung cancer mortality, although adoption of lung cancer screening programmes has been slow, with limited uptake compared with other cancer screening programmes.

https://www.nature.com/articles/s41571-023-00798-3

###

NATIONAL EVICT RADON STUDY

Radon **RESEARCH** Series

TO LEARN MORE, VISIT: **evictradon.org**

Understanding radon dose exposures as a function of **occupation and work trends**

The COVID-19 pandemic produced widespread behaviour changes that shifted how people split their time between different environments, altering health risks including lung cancer.

Since 2020, we have been studying North American activity patterns before and after the pandemic onset and the implications this has had (and continues to have) on radioactive radon gas exposure, a leading cause of lung cancer. We have surveyed >6,000 Canadian households home to >12,000 adults and children of varied ages, gender, employment, community, and income. **While overall time spent indoors remained unchanged during the height of the pandemic response between 2020-2021, the amount of time spent in the primary residence increased from 66.4 to 77% of life (+1062h/y) after pandemic onset, increasing annual radiation doses from residential radon by 19.2% (+0.97mSv/y).**

Disproportionately greater changes were experienced by younger people in newer urban or suburban properties with more occupants and/or those employed in managerial, administrative, or professional roles, excluding medicine. A large proportion of the effect was driven by telecommuting (working from home), now recognized as an increasingly normalized habit across many sectors. In the latter pandemic stages and response exit periods between 2022-2023, activity patterns changed further, adjusting to a “new normal” which is unlikely to return to pre-pandemic levels of time split between different environments. Our work on this is ongoing, and we are currently exploring the relationship between disability status, activity patterns, and radon exposure. This work supports re-evaluating environmental health risks modified by still-changing activity patterns.

THIS WORK IS BEING FUNDED BY: ALBERTA REAL ESTATE FOUNDATION; CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

Canadian Cancer Society

Lung and bronchus cancer statistics

Last medical review: May 2022

Lung and bronchus cancer is the most commonly diagnosed cancer in Canada (excluding non-melanoma skin cancers). It is the leading cause of death from cancer for both men and women in Canada.

To provide the most current cancer statistics, statistical methods are used to estimate the number of new cancer cases and deaths until actual data become available.

Incidence and mortality

Incidence is the total number of new cases of cancer. Mortality is the number of deaths due to cancer.

It is estimated that in 2022:

- 30,000 Canadians will be diagnosed with lung and bronchus cancer. This represents 13% of all new cancer cases in 2022.
- 20,700 Canadians will die from lung and bronchus cancer. This represents 24% of all cancer deaths in 2022.
- 15,000 men will be diagnosed with lung and bronchus cancer and 10,600 will die from it.
- 15,000 women will be diagnosed with lung and bronchus cancer and 10,100 will die from it.
- On average, 82 Canadians will be diagnosed with lung and bronchus cancer every day.
- On average, 57 Canadians will die from lung and bronchus cancer every day.

Estimated Canadian lung and bronchus cancer statistics (2022)

Category	Males	Females
New cases	15,000	15,000
Deaths	10,600	10,100
5-year net survival (estimates for 2015 to 2017)	19%	26%

Continued on next page …

... continued from previous page. [Lung and Brochus]

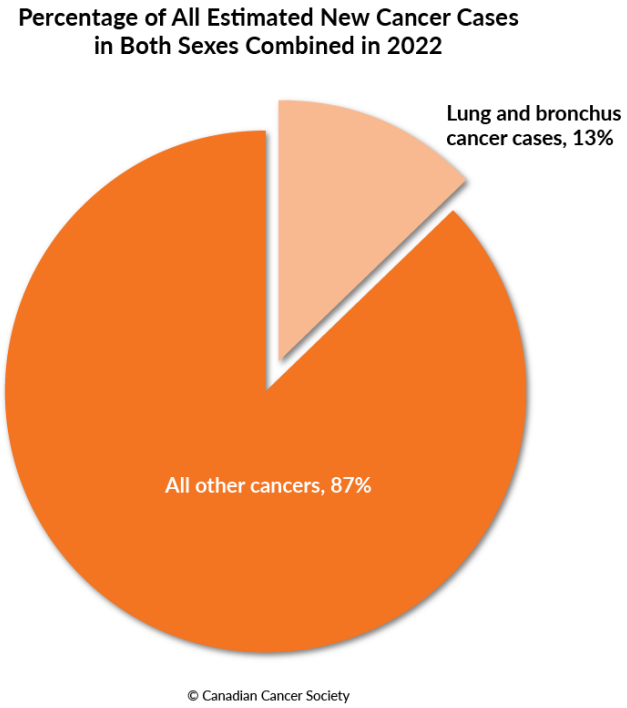


Diagram of percentage of lung and bronchus cancer cases compared to all other cancers, 2022

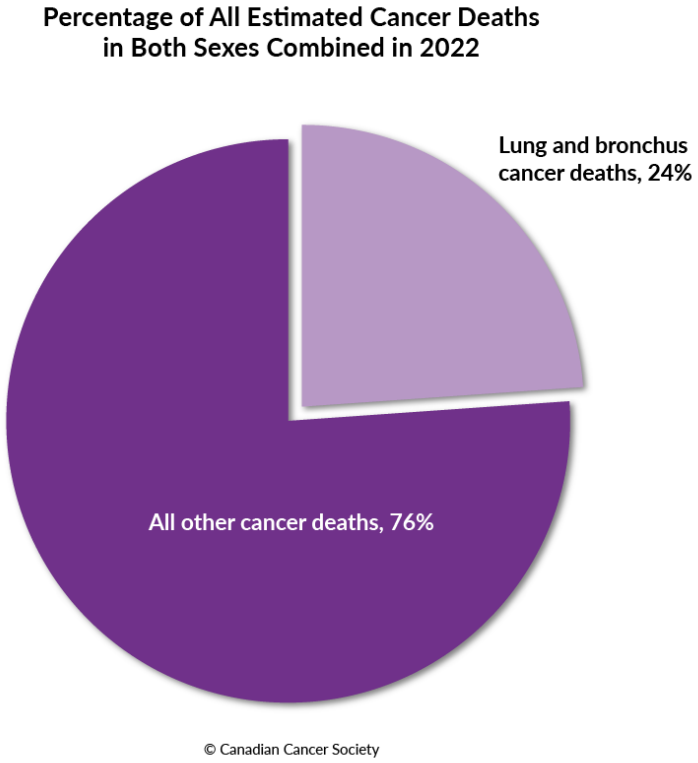


Diagram of percentage of lung and bronchus cancer deaths to all other cancer deaths, 2022

Continued on page 58 ...

... continued from page 57. [Lung and Brochus]

Trends in lung and bronchus cancer

In Canadian men, the rate of new lung and bronchus cancer cases began decreasing in 1990. In women, the lung and bronchus cancer rate began decreasing in 2013.

The difference in the rates and trends between the sexes is likely because of differences in tobacco use. More men smoked than women, and men's smoking rates began to decline earlier than women's smoking rates.

In men, the death rate from lung and bronchus cancer began to level off in the late 1980s and has been declining ever since. The death rate for women increased until 2006 but is now decreasing. The rate of decline in mortality is now comparable between men and women for the first time since 1984.

Chances (probability) of developing or dying from lung and bronchus cancer

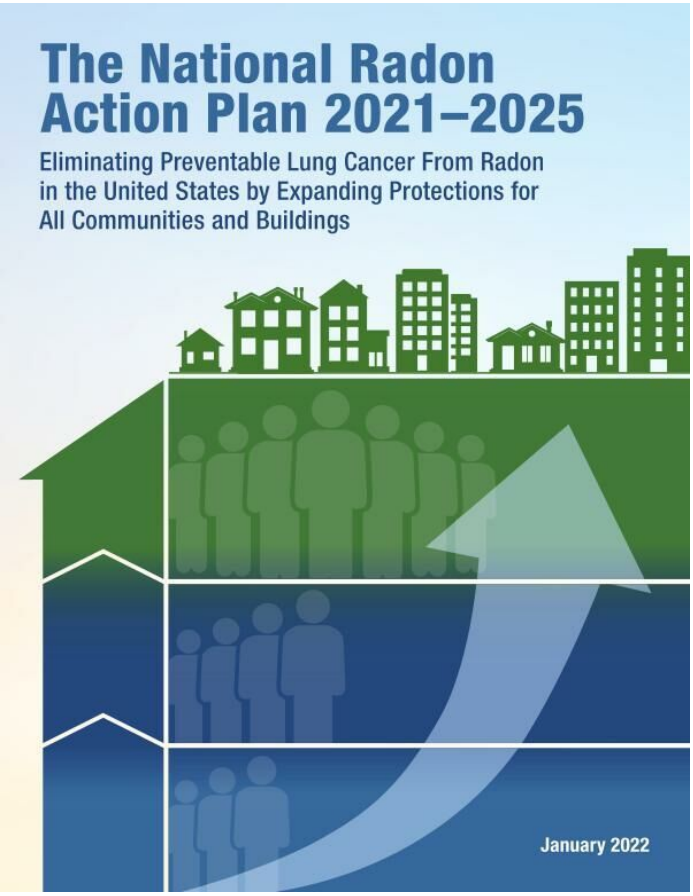
It is estimated that about 1 in 15 Canadian men will develop lung and bronchus cancer during their lifetime and 1 in 18 will die from it.

It is estimated that about 1 in 15 Canadian women will develop lung and bronchus cancer during their lifetime and 1 in 20 will die from it.

For more information about cancer statistics, go to Canadian Cancer Statistics.

https://cancer.ca/en/cancer-information/cancer-types/lung/statistics

###



Under the inaugural National Radon Action Plan (NRAP) and this National Radon Action Plan for 2021–2025 **(NRAP | 2021–25)**, leaders from across multiple sectors have worked together for more than a decade to plan, guide and sustain nationwide radon action in an effort to protect every building in every community.

The NRAP|2021–2025 sets a goal for the nation to find, fix and prevent high indoor radon levels in 8 million buildings by 2025 and prevent 3,500 lung cancer deaths per year. Under this Plan, leaders from across multiple sectors are working together to plan, guide and sustain nationwide action to prevent exposure to radon.

For more information and to learn more about the NRAP Leadership Council's goal areas, strategies for action and target outcomes, please visit NRAP|2021-2025 on RadonLeaders.org.

CR3 News Magazine [CR3 News Magazine (Online) ISSN 2691-1116] | [CR3 News Magazine (Print) ISSN 2691-1086]

All volumes are published quarterly by Citizens for Radioactive Radon 618 Evansville Ave. Waterloo, IL 62298, a non-profit organization, with the express purpose to assist, encourage, and prepare the public in making a difference with awareness, education and action against radioactive radon gas exposure. • • SUBSCRIPTION is free to all readers.

Publications of the Citizens for Radioactive Radon Reduction can be obtained from Citizens for Radioactive Radon Reduction, 618 Evansville Ave. Waterloo, IL 62298 (tel.: (618) 830-4660; e-mail: info@citizens4radonreduction.org).

Requests for permission to reproduce or translate CR3 News Magazine publications – whether for sale or for noncommercial distribution – should be addressed to the CR3 News Magazine Publisher, at the above address . The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Citizens for Radioactive Radon Reduction concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the Citizens for Radioactive Radon Reduction in preference to others of a similar nature that are not mentioned. Errors and omissions accepted, the names of proprietary products are distinguished by initial capital letters. All reasonable precautions have been taken by the Citizens for Radioactive Radon Reduction to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the Citizens for Radioactive Radon Reduction be liable for damages arising from its use. Printed in the United States of America.

PHARMACISTS' ROLE IN LUNG CANCER AWARENESS AND MANAGEMENT PROGRAMMES

Written by: Pharm. Blessing Abai Sunday, Uyo, Akwa Ibom State, Nigeria, October 2023

Pharmacists play a crucial role in raising awareness about lung cancer through their involvement in various programs and initiatives. They serve as health consultants and provide patients and their families with valuable information about cancer diagnosis, treatment, and prevention.

One study highlighted the benefit of a pharmacist-led oral anticancer clinic, specifically focused on lung cancer, in an Australian public health service. This demonstrates the potential for pharmacists to play a significant role in lung cancer awareness and management.

How can Pharmacists get involved in Lung Cancer Awareness and Management Programmes?

Let us start with the community Pharmacies. The presence of educational materials in community pharmacies is beneficial in increasing public awareness. In lung cancer, several small-scale pilots have found that pharmacist integration into lung cancer referral pathways is feasible and acceptable, resulting in high-quality referrals. Additionally, community pharmacists can contribute to the early detection and prevention of cancer through their involvement in cancer screening programmes.

In hospitals, lung cancer patients require complex medication regimens. Through collaborative care, Pharmacists can work closely with other healthcare professionals, such as oncologists, to provide comprehensive care to lung cancer patients. They can participate in multidisciplinary teams to ensure optimal treatment and symptom management. Pharmacists are key in ensuring proper medication management, dosage adjustments, and monitoring for potential drug interactions and side effects. They can ensure optimal delivery of pharmaceutical care.

In smoking cessation programmes, Pharmacists can offer counselling on product replacement therapies (e.g., nicotine gum or patches) or prescription medications. They can also assist individuals in developing personalised quit plans.

Pharmacists and Pharmacy students can actively participate in Cancer Awareness Month by organizing or contributing to awareness campaigns, fundraisers, or events. They can help distribute educational materials, wear cancer awareness ribbons, and encourage others to get involved. For example, The Faculty of Pharmacy, University of Uyo, Nigeria, carries out these activities yearly with even a community outreach.

As the last point of contact for patients receiving prescription medications, pharmacists can provide information on the proper use of lung cancer medications, potential side effects, and the importance of adherence to treatment plans.

Despite ongoing efforts to improve cancer care, more work is needed to achieve downstaging of the disease and improve access, awareness, and participation in early detection. Public participants have raised concerns about pharmacists' credentials to discuss lung symptoms and refer them for diagnostic testing. However, previous studies have shown that pharmacists

Continued on next page …

… continued from previous page.

have adequate knowledge, positive attitudes, and willingness to promote awareness of breast cancer and breast cancer screening actively.

The role of oncology pharmacists in cancer care has been expanding over the years. They have been involved in the care of cancer patients for over 50 years and continue to play a vital role in various aspects of cancer management. In the case of lung cancer, the impact of the COVID-19 pandemic has highlighted the need for public awareness campaigns to promote early diagnosis and recovery.

To improve Pharmacists' involvement in lung cancer awareness programs, efforts should be made to improve community pharmacists' knowledge of cancer through continuous education. Aside from continuous learning and offering these awareness services in community Pharmacies, they can also collaborate with governmental and non-governmental organisations to organize outreach programs and educate on a larger scale.

It is worth mentioning that pharmacists have been recognized for their role in early detection, monitoring, management, and prevention of adverse drug reactions following cancer therapy. They also play a crucial role in lung cancer awareness programs. They provide valuable information and education to patients and their families, and participate in cancer screening initiatives. Despite some challenges and the need for continuous education, pharmacists are well-positioned to impact lung cancer awareness and management positively.

References.

Abdel-Razeq, H., Mansour, A., & Jaddan, D. (2020). Breast Cancer Care in Jordan. JCO Global Oncology. https://doi.org/10.1200/jgo.19.00279

Egbewande, O., Abdulwasiu, M., Yusuf, R., Durojaye, A., & Ashimiyu-Abdusalam, Z. (2022). Roles of community pharmacists in cancer management. Innovations in Pharmacy, 13(3), 6. https://doi.org/10.24926/iip.v13i3.4946

Evison, M., Taylor, S., Grundy, S., Perkins, A., & Peake, M. (2021). Promoting early diagnosis and recovering from the COVID-19 pandemic in lung cancer through public awareness campaigns: learning from patient and public insight work. BMJ Open Respiratory Research, 8(1), e001120. https://doi.org/10.1136/bmjresp-2021-001120

Holland-Hart, D., McCutchan, G., Quinn-Scoggins, H., Brain, K., Hill, L., Shanbag, S., … & Collier, G. (2021). Feasibility and acceptability of a community pharmacy referral service for suspected lung cancer symptoms. BMJ Open Respiratory Research, 8(1), e000772. https://doi.org/10.1136/bmjresp-2020-000772

Holle, L., Segal, E., & Jeffers, K. (2020). The expanding role of the oncology pharmacist. Pharmacy, 8(3), 130. https://doi.org/10.3390/pharmacy8030130

New Data Reveal Mismatched Need and Supply of Oncology Physicians and Pharmacists in America. https://jhoponline.com/issue-archive/2021-issues/june-2021-vol-11-no-3/18943-new-data-reveal-mismatched-need-and-supply-of-oncology-physicians-and-pharmacists-in-america

Continued on page 62 …

… continued from page 61. [Pharmacists]

Patel, H., Tan, C., Toh, Y., Danilak, M., & Alexander, M. (2020). Educational needs of oncology pharmacists: a survey by the international society of oncology pharmacy practitioners. Journal of Oncology Pharmacy Practice, 27(3), 623-634. https://doi.org/10.1177/1078155220929754

Saadat, S., Longridge, N., Shaw, R., Walker, A., & McCarthy, C. (2022). Oral cancer awareness and education within the pharmacy profession. Journal of Oncology Pharmacy Practice, 29(4), 826-832. https://doi.org/10.1177/10781552221081387

Soggee, J., Hunt, M., O'Callaghan, B., Lam, W., Cannell, P., Boardman, G., … & Czarniak, P. (2022). Specialist pharmacist consultations with cancer patients in a pharmacist-led anticancer clinic. Asia-Pacific Journal of Clinical Oncology, 19(4), 507-516. https://doi.org/10.1111/ajco.13887

###

Radon Testing Now Tax Deductible in Canada

Good news for Canadians: Radon testing is now tax deductible for the self-employed, or those...

March 8, 2022

NATIONAL EVICT RADON STUDY

Radon **RESEARCH** Series

TO LEARN MORE, VISIT: **evictradon.org**

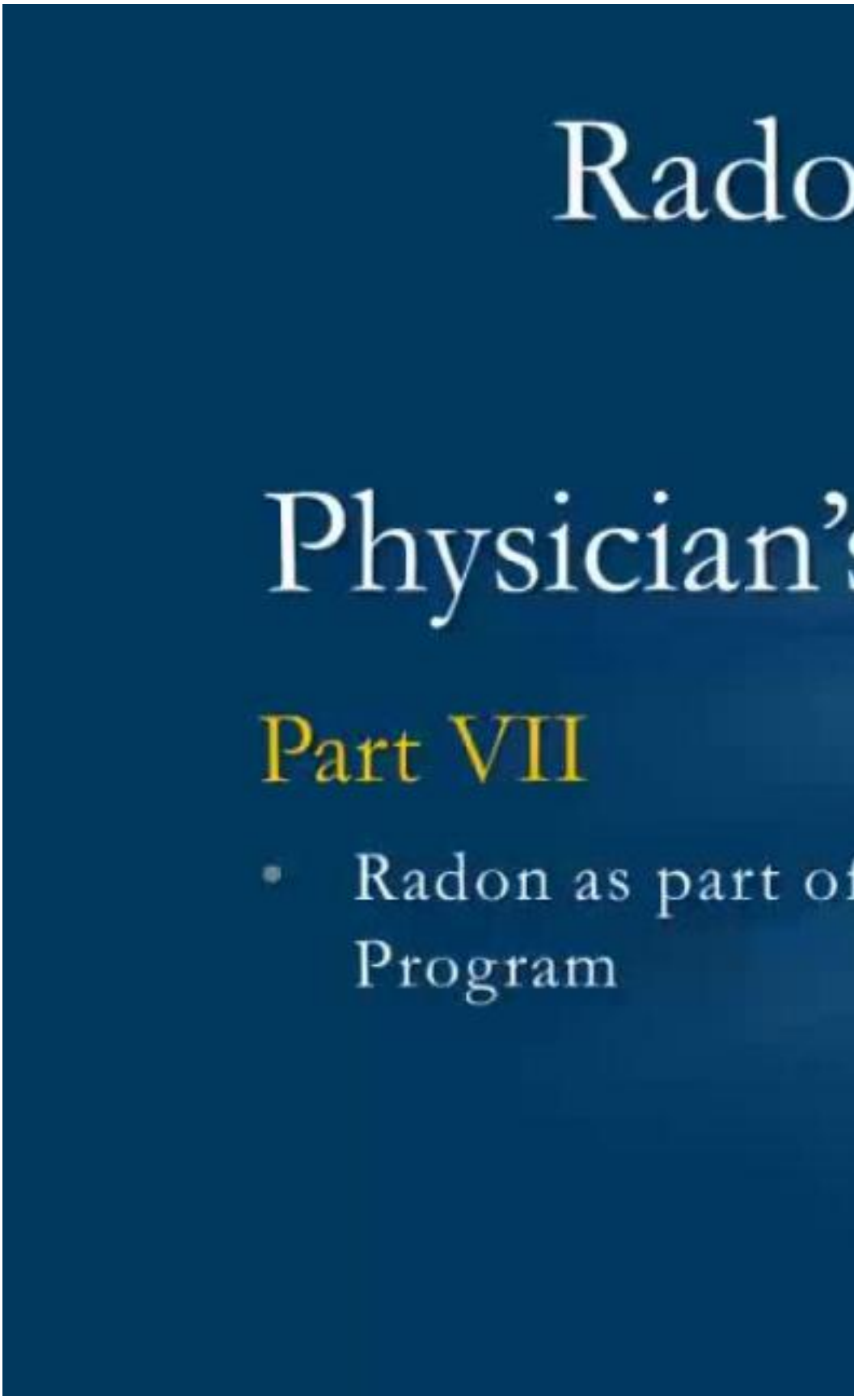
Developing tools to assess lifetime radon exposure for more **inclusive lung cancer screening**

Lung cancer screening is an important tool for improving health outcomes, as it enables earlier cancer diagnosis and therefore more effective treatment that can substantially prolong life, or even be curative.

While historically, this has been available for breast, prostate and colorectal cancers, only recently has the technology, health system funding, approvals, and infrastructure come together to enable lung cancer screening to be piloted in Canada. However, while lung cancer screening programs are being made available in some provinces, only people with a significant history of tobacco use will be eligible, excluding light- and never-smokers based on insufficient evidence of PERSONAL lung cancer risk to warrant inclusion. An outcome from a standard, high radon test is not, at this time, going to confer lung cancer screening eligibility, and this is an acknowledged health (in)equity concern.

New technological approaches to determining lifetime radon exposure are required to establish personal risk; this is being developed by a coalition of cancer researchers across Canada with $5.1M in funding from the Canadian Cancer Society. Over the next five years, this team will be recruiting thousands of Canadians willing to participate in research to examine tell-tale amounts of radon decay products in their toenails, exploring whether measurements of these signs of radon exposure could be used to meaningfully assess a person's risk of lung cancer to the point that lung cancer screening is justified.

THIS WORK IS BEING FUNDED BY: Canadian Cancer Society | CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada


Rado
Physician'
Part VII
Radon as part o
Program


on From
A
s Perspective
f a Preventative and Wellness

Radon and lung cancer risk

Silvina C. Mema MD MSc, Greg Baytalan BSc

■ Cite as: *CMAJ* 2023 June 19;195:E850. doi: 10.1503/cmaj.230110

1 Radon is responsible for 16% of lung cancer deaths in Canada, or more than 3000 deaths per year[1]

Long-term inhalation of α particle radiation increases the lifetime relative risk of lung cancer by 16% for every 100 Bq/m^3 and has a synergistic effect with other risk factors for lung cancer.[2] At the 200 Bq/m^3 upper limit in the Canadian guideline, the lifetime risk of lung cancer is 17% for people who smoke tobacco and 2% for people who do not.[3]

2 There are no "radon-free" areas in Canada[4]

Radon is drawn from soil into buildings owing to pressure differences between the ground and the foundation. Indoor accumulation varies widely, depending on location, building characteristics, and human and mechanical actions within the building. About 20% of homes across Canada exceed the 200 Bq/m^3 guideline, and 47.5% exceed the World Health Organization–recommended reference level of 100 Bq/m^3.[2]

3 Health Canada recommends testing every home for radon over at least 3 months during the cold weather heating season[3]

Testing is easy with the use of a long-term α track detector that can be purchased for $30–$60, which includes laboratory analysis. Community and publicly funded programs offer radon detectors at lower cost, or sometimes for free (Appendix 1, available at www.cmaj.ca/lookup/doi/10.1503/cmaj.230110/tab-related-content).

4 Radon levels can be reduced by more than 80%[4]

Reducing radon levels can save lives. A certified Canadian National Radon Proficiency Program provider can determine the best radon reduction method. However, mitigation costs of $3000–$5000 can be prohibitive for many Canadians. Increasing ventilation can achieve modest reductions of radon when levels are at or slightly above 200 Bq/m^3.

5 Physicians should suggest that patients test their home and workplace for radon

Physicians can play an important role in the prevention of radon-related lung cancer by increasing awareness and motivating action.[5] Discussions with young adults may be most valuable as they make long-term plans to settle into a home and job. Further resources for physician and patients are provided in Appendix 1.

References

1. Radon — what you need to know. Ottawa: Health Canada; 2021. Available: https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radon-what-you-need-to-know.html (accessed 2023 Mar. 23).
2. Khan SM, Pearson DD, Ronnqvist T, et al. Rising Canadian and falling Swedish radon gas exposure as a consequence of 20th to 21st century residential build practices. *Sci Rep* 2021;11:17551. doi: 10.1038/s41598-021-96928-x.
3. Radon — Is it in your home? Information for health professionals. Ottawa: Health Canada; 2019. Available: https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radiation/radon-is-it-in-you-home-information-health-professionals.html (accessed 2023 Mar. 23).
4. Radon — Reduction Guide for Canadians. Ottawa: Health Canada; 2013. Available: https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radiation/radon-reduction-guide-canadians-health-canada-2013.html (accessed 2023 Mar. 23).
5. Garcia-Rodriguez JA. Radon gas — the hidden killer: What is the role of family doctors? *Can Fam Physician* 2018;64:496-501.a

Competing interests: None declared.

This article has been peer reviewed.

Affiliation: Interior Health Authority, Kelowna, BC

Correspondence to: Silvina Mema, silvina.mema@interiorhealth.ca

ALCSI
American Lung Cancer Screening Initiative

Lung Cancer Screening in IOWA

Lung cancer, a deadly disease, casts a long shadow over countless lives around the world. Despite all the advancements being made to reduce the incidence of lung cancer, the stigma and lack of education surrounding lung cancer persists. But, there is hope. The American Lung Cancer Screening Initiative (ALCSI) is a nationwide organization that aims to prevent lung cancer deaths through outreach, advocacy, and education. ALSCI is unique because it focuses on early prevention and screening as the best preventative measure, something not many organizations focus on.

Lung cancer often progresses silently and often remains undetected until it is too late. The national screening rate is less than 6% annually, and even as low as 1% in states like California. Thus, one of ALCSI's primary focuses is to educate the public about lung cancer screening and who may be eligible to get screened. High-risk individuals may include, but are not limited to, people with a smoking history, that are 50+ years old, who have a family history of lung cancer, or are part of a certain socioeconomic group that has the potential to raise exposure to lung cancer. While all of these risk factors are within our control, early intervention is all the more crucial.

Although phenomenal strides are being made to combat lung cancer, this disease still wreaks havoc on people around the world. From 2016-2019, there was an average of 269,134 new lung cases and 178,121 deaths from lung cancer per year in the United States. This makes lung cancer the second leading cause of death after heart disease in the US and the leading cause of cancer death in the world overall. However, with the help of medical advancements and organizations like ALCSI, there is hope. In 2020, there were only 197,453 new lung cancer cases and 136,084 deaths from lung cancer were reported in the United States alone by the Center for Disease Control. More specifically, in Iowa, the rate of new lung cancer cases in 2020 was 63 cases, which falls in the average rate of diagnosis amongst all states in the US. Additionally, Iowa has a 5-year survival rate of 23%, which is the proportion of people with lung cancer that will be alive after five years. This places it below the national average of 25%; furthermore, 23% of lung cancer cases in Iowa are diagnosed at an early stage.

Although there are a variety of factors that have led to these improvements, the work of the American Lung Cancer Screening Initiative plays a major role in reducing deaths from lung cancer both in Iowa and nationwide. ALSCI has passed proclamations in every state. In Iowa alone, ALCSI has received six proclamations to declare November as Lung Cancer Awareness month in Marshalltown (two), West Des Moines (one), Waterloo (one), Fort Dodge (one), and Ames (one). Additionally, ALCSI has launched national programs focused on government initiatives, education campaigns, and support for smoking cessation and lung cancer screening, which has proven to be incredibly effective in lung cancer prevention. For example, ALCSI hosts podcasts with lung cancer survivors, presentations with government health boards and healthcare organizations, and events to advocate for lung cancer prevention.

In the war against lung cancer, ALCSI stands as a brushstroke of hope. As research has shown, early detection is essential to combat lung cancer, and it all starts with you. For more information about how you can be part of the solution, visit alcsi.org or contact info@alcsi.org.

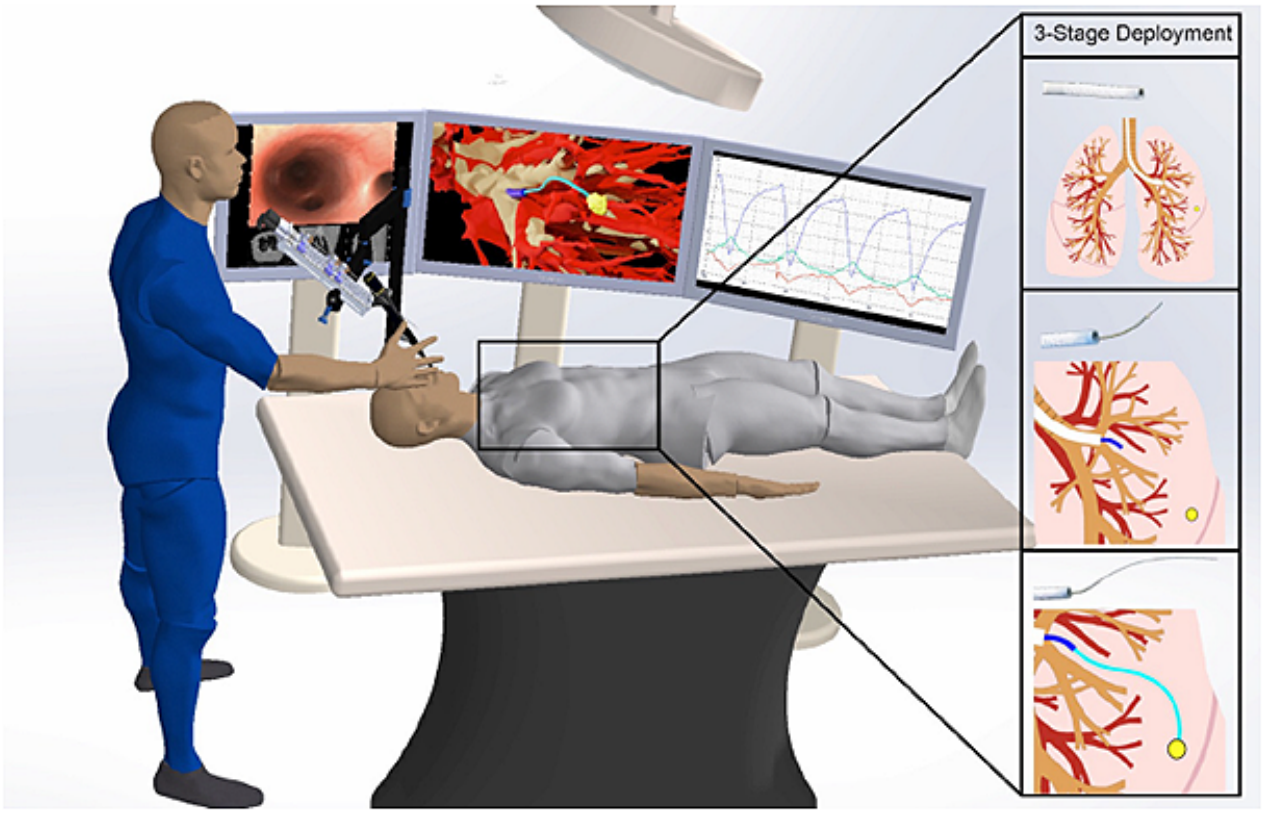
###

WRAL TechWire

NEWS

Tiny robot capable of navigating live tissue could boost fight against lung cancer, UNC researchers report

CANCER RESEARCH | LUNG CANCER | ROBOTICS | UNC-CH



Overview of the semiautonomous medical robot's three stages in the lungs. (UNC image)

by Kendall Daniels — September 25, 2023 .

CHAPEL HILL – Lung cancer is the leading cause of cancer-related deaths in the United States. Some tumors are extremely small and hide deep within lung tissue, making it difficult for surgeons to reach them. To address this challenge, UNC –Chapel

Continued on next page …

Hill and Vanderbilt University researchers have been working on an extremely bendy but sturdy robot capable of traversing lung tissue.

Their research has reached a new milestone. In a new paper, published in *Science Robotics*, Ron Alterovitz, PhD, in the UNC Department of Computer Science, and Jason Akulian, MD MPH, in the UNC Department of Medicine, have proven that their robot can autonomously go from "Point A" to "Point B" while avoiding important structures, such as tiny airways and blood vessels, in a living laboratory model.

"This technology allows us to reach targets we can't otherwise reach with a standard or even robotic bronchoscope," said Dr. Akulian, co-author on the paper and Section Chief of Interventional Pulmonology and Pulmonary Oncology in the UNC Division of Pulmonary Disease and Critical Care Medicine. "It gives you that extra few centimeters or few millimeters even, which would help immensely with pursuing small targets in the lungs."

The development of the autonomous steerable needle robot leveraged UNC's highly collaborative culture by blending medicine, computer science, and engineering expertise. In addition to Alterovitz and Akulian, the development effort included Yueh Z. Lee, MD, PhD, at the UNC Department of Radiology, as well as Robert J. Webster III at Vanderbilt University and Alan Kuntz at the University of Utah.


Jason Akulian, MD, MPH

The robot is made of several separate components. A mechanical control provides controlled thrust of the needle to go forward and backward and the needle design allows for steering along curved paths. The needle is made from a nickel-titanium alloy and has been laser etched to increase its flexibility, allowing it to move effortlessly through tissue.

Continued on page 72 ...

REPORTING FROM

APTS
America's Public Television Stations

INDIANA PUBLIC BROADCASTING STATIONS

THE OHIO CHANNEL®

... continued from page 69. [robot]

As it moves forward, the etching on the needle allows it to steer around obstacles with ease. Other attachments, such as catheters, could be used together with the needle to perform procedures such as lung biopsies.

To drive through tissue, the needle needs to know where it is going. The research team used CT scans of the subject's thoracic cavity and artificial intelligence to create three-dimensional models of the lung, including the airways, blood vessels, and the chosen target. Using this 3-D model and once the needle has been positioned for launch, their AI-driven software instructs it to automatically travel from "Point A" to "Point B" while avoiding important structures.

"The autonomous steerable needle we've developed is highly compact, but the system is packed with a suite of technologies that allow the needle to navigate autonomously in real-time," said Alterovitz, the principal investigator on the project and senior author on the paper. "It's akin to a self-driving car, but it navigates through lung tissue, avoiding obstacles like significant blood vessels as it travels to its destination."

The needle can also account for respiratory motion. Unlike other organs, the lungs are constantly expanding and contracting in the chest cavity. This can make targeting especially difficult in a living, breathing subject. According to Akulian, it's like shooting at a moving target.


Ron Alterovitz, PhD

The researchers tested their robot while the laboratory model performed intermittent breath holding. Every time the subject's breath is held, the robot is programmed to move forward.

"There remain some nuances in terms of the robot's ability to acquire targets and then actually get to them effectively," said

Continued on next page ...

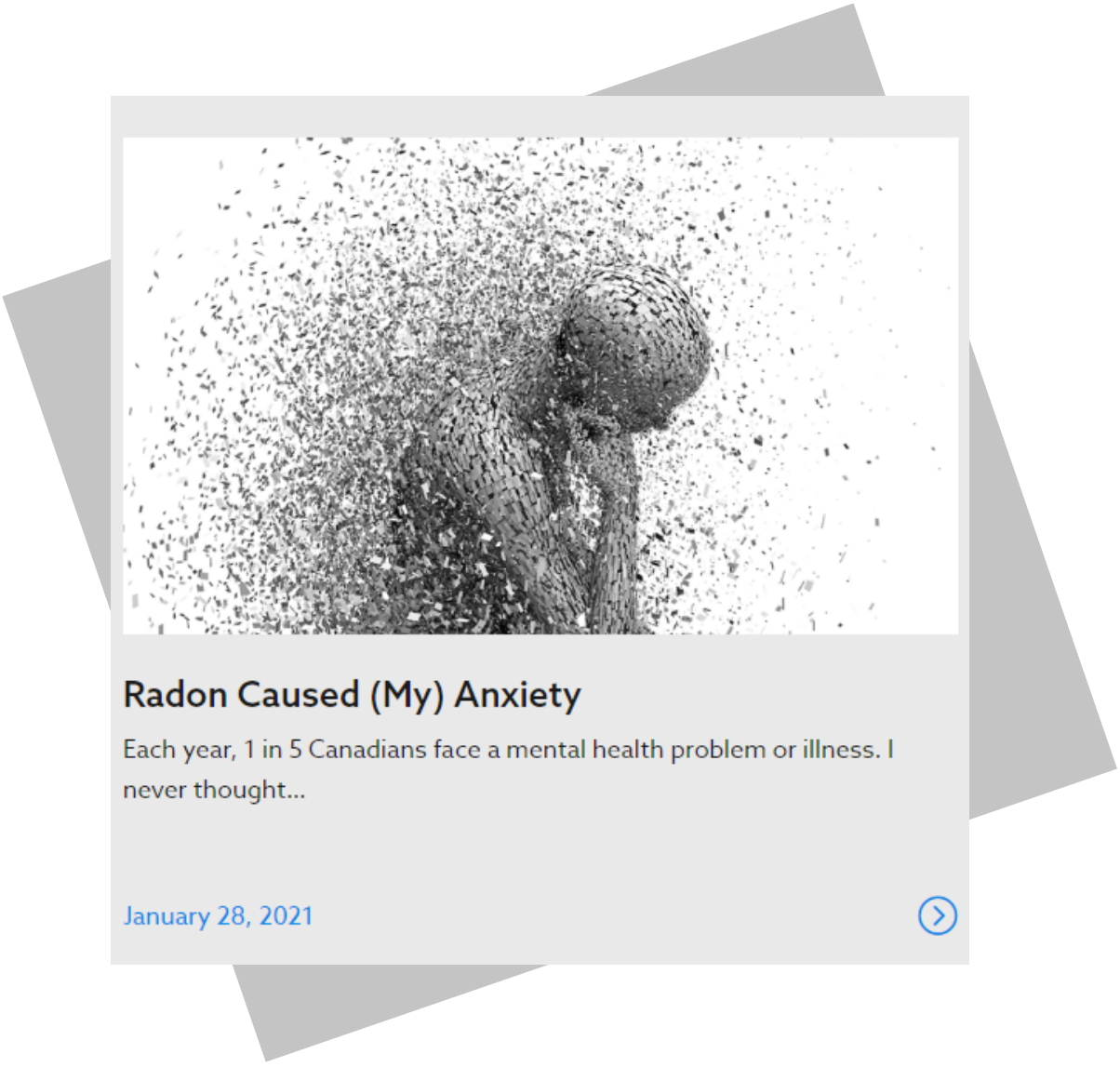
Akulian, who is also a member of the UNC Lineberger Comprehensive Cancer Center, “and while there’s still a lot of work to be done, I’m very excited about continuing to push the boundaries of what we can do for patients with the world-class experts that are here.”

“We plan to continue creating new autonomous medical robots that combine the strengths of robotics and AI to improve medical outcomes for patients facing a variety of health challenges while providing guarantees on patient safety,” added Alterovitz.

(C) UNC-CH

Read online: https://wraltechwire.com/2023/09/25/tiny-robot-capable-of-navigating-live-tissue-could-boost-fight-against-lung-cancer-unc-researchers-report

###



NCI Budget and Appropriations

NCI receives its budget from the United States Congress as part of the federal budget process through appropriations for the Department of Health and Human Services and the National Institutes of Health (NIH). The Office of Budget and Finance supports the NCI director and senior NCI staff on budget-related activities.

Credit: iStock

What is NCI's current fiscal year 2023 (FY23) budget?

The Consolidated Appropriations Act, 2023, allocated $7.3 billion to NCI, a $408 million increase over the FY22 enacted level, including $216 million for the NCI component of the Cancer Moonshot℠. For more details, see the NCI Budget Fact Book – Cancer Moonshot.

Annual Budget Publications and Resources
Each fiscal year, NCI prepares several budget-related publications and resources.

- NCI Professional Judgment Budget Proposal (formerly called the Annual Plan and Budget Proposal): This annual document outlines the optimum funding needed to make the most rapid progress against cancer. It is typically published over a year in advance of the fiscal year it outlines.

- NCI Congressional Justifcation: This document outlines NCI's mission, goals, and objectives for the coming fiscal year and provides comparative data and analysis for the previous, current, and proposed budgets. The Congressional Justifcation is part of the President's annual budget request for all federal agencies.

- NCI Budget Fact Book: This interactive resource summarizes the distribution of the previous fiscal year's budget among the various research programs and funding

- mechanisms. It also includes certain NCI funding policies related to research grant awards.

Continued on next page ...

... continued from previous page.

Where does NCI's funding come from?

As a federal agency, NCI receives its budget from the United States Congress. The President submits a budget request and spending priorities to Congress, but only Congress can actually provide funding—whether mandatory (direct spending typically dictated by statute, not appropriations bills) or discretionary funding, which is provided via the annual appropriations process. Appropriations are decisions made by Congress about how to designate discretionary federal spending. Congress provides the amount of funds that may be spent, along with guidance regarding funds available for certain initiatives (e.g., Childhood Cancer Data Initiative), and the period of time when NCI can use funds. The federal government's fiscal year (FY) runs from October 1 to September 30.

Since 2017, NCI has also received mandatory funding for the Cancer Moonshot through the 21st Century Cures Act. Congress authorized $1.8 billion in funding for the Cancer Moonshot spread over seven fiscal years, and Congress appropriated these funds from FY17 through FY23.

What steps are involved in the budget process?

The graphic below outlines each of the major steps in NCI's funding process.

... continued from page 75. [NCI]

The federal budget process involves the preparation of separate reports and requests that relate to each other in varying degrees.

For NCI, the first step is to prepare and submit the NCI Professional Judgment Budget Proposal (formerly called the Annual Plan and Budget Proposal) directly to the President and Congress for review. The Professional Judgment Budget Proposal is unique to NCI, and this process is required by the National Cancer Act of 1971. The Professional Judgment Budget Proposal identifies NCI's research priorities and provides a high-level overview of optimum funding needed to advance cancer research. It's typically published over a year in advance of the fiscal year it outlines.

The White House's Office of Management and Budget prepares the President's Budget Proposal in coordination with all federal agencies. This annual document requests funding levels for the federal government for the upcoming fiscal year according to the President's priorities. The President submits the budget request for Congress to consider when passing appropriations legislation to fund federal agencies.

NCI also prepares the Congressional Justification, in coordination with NIH, the Department of Health and Human Services, and the Office of Management and Budget. The Congressional Justification provides a detailed budget request that is incorporated into the President's Budget Proposal. It outlines NCI's mission, goals, and objectives for the coming fiscal year and provides comparative data and analysis for the previous, current, and proposed budgets.

If an appropriations bill is not passed by the start of the fiscal year (October 1), Congress may enact a continuing resolution, which provides federal agencies with limited, short-term funding, typically at the pre-existing appropriations level. Congress may pass multiple continuing resolutions until an agreement is reached on a final budget for the full fiscal year.
If a budget agreement is not reached and no continuing resolution is passed, the government faces a shutdown.

CLICK HERE Click here to continue reading ...

https://www.cancer.gov/about-nci/budget

Department of Defense
United States Army Medical Research
and Development Command
Congressionally Directed Medical Research Programs

Fiscal Year 2023 CDMRP Research Funding
The Consolidated Appropriations Act, 2023 provides medical research funding for the following programs managed by the Department of Defense, Congressionally Directed Medical Research Programs (CDMRP):

Alcohol and Substance Use Disorders Research Program - $4.0 million
Amyotrophic Lateral Sclerosis Research Program - $40.0 million
Autism Research Program - $15.0 million
Bone Marrow Failure Disease Research Program - $7.5 million
Breast Cancer Research Program - $150.0 million
Chronic Pain Management Research Program - $15.0 million
Combat Readiness Medical Research Program - $5.0 million
Duchenne Muscular Dystrophy Research Program - $10.0 million
Epilepsy Research Program - $12.0 million
Hearing Restoration Research Program – $5.0 million
Joint Warfighter Medical Research Program - $25.0 million
Kidney Cancer Research Program - $50.0 million
Lung Cancer Research Program – $25.0 million
Lupus Research Program - $10.0 million
Melanoma Research Program - $40.0 million
Military Burn Research Program - $10.0 million
Multiple Sclerosis Research Program - $20.0 million
Neurofibromatosis Research Program - $25.0 million
Orthotics and Prosthetics Outcomes Research Program - $15.0 million
Ovarian Cancer Research Program - $45.0 million
Pancreatic Cancer Research Program - $15.0 million
Parkinson's Research Program - $16.0 million
Peer Reviewed Alzheimer's Research Program - $15.0 million
Peer Reviewed Cancer Research Program (20 topics) - $130.0 million
Peer Reviewed Medical Research Program (50 topics) - $370.0 million
Peer Reviewed Orthopaedic Research Program - $30.0 million
Prostate Cancer Research Program - $110 million
Rare Cancers Research Program - $17.5 million
Reconstructive Transplant Research Program - $12.0 million
Spinal Cord Injury Research Program - $40.0 million
Tick-Borne Disease Research Program - $7.0 million
Toxic Exposures Research Program - $30.0 million
Traumatic Brain Injury and Psychological Health Research Program - $175.0 million
Tuberous Sclerosis Complex Research Program - $8.0 million
Vision Research Program - $20.0 million

NATIONAL EVICT RADON STUDY

Radon **RESEARCH** Series

TO LEARN MORE, VISIT: **evictradon.org**

Hunting down the radon-induced lung cancer **genetic mutation signature**

Alpha particle radiation from radon gas has the ability to ionize (steal electrons from) DNA in a manner that produces complex, highly clustered damage to our DNA that our cells are not able to repair quickly or accurately.

Dose-for-dose alpha particle radiation is a lot more mutation and cancer-causing relative to other types of radiation such as X-rays. A critical molecular question is: why? To study the genetic origins of alpha-particle radiation (radon)-induced lung cancer, our team has developed high throughput technologies to study repetitive alpha-particle radiation effects using human cell systems. By doing this, we can reproduce in a laboratory what happens all the time to people who return each day to a home containing high radon levels.

Using this technology, we are discovering the specific genetic mutation pattern (a 'signature') that arises in cells that become cancer following long-term, repetitive exposure to radon. Once we have this in hand, it will be possible to confidently assign the origin of lung cancer to radon exposure, much as can be done already for tobacco smoking.

THIS WORK IS BEING FUNDED BY: CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

Register

LCRF's 2023 Scientific Symposium, Lung Cancer: New Therapies and Novel Targets, is coming Nov. 1. Register for this free virtual event today!

Date: Tuesday, November 1
Time: 3-6 PM ET

This scientific symposium will provide a forum for patients with lung cancer, along with caregivers, physicians, researchers and healthcare providers from across the country to connect with top lung cancer researchers to discuss the latest in lung cancer research.

The symposium will be chaired by Kathryn O'Donnell, PhD from UT Southwestern Medical Center, and will include an update on the state of lung cancer research by Brendon Stiles, MD, followed by a roundtable discussion. See our website for details – we hope you can join us!

ALCSI
American Lung Cancer Screening Initiative

Lung Cancer Screening in MICHIGAN

Lung cancer remains one of the most pervasive and deadly forms of cancer worldwide, with its devastating impact felt by countless families. With over 100,000 deaths nationwide, lung cancer is the leading cause of cancer-related deaths in the United States, more than colon, breast, and prostate cancer combined. Amidst the grim statistics, a ray of hope for reducing these deaths exists. The American Lung Cancer Screening Initiative (ALCSI), is an international non-profit organization committed to combating lung cancer through education, policy, and advocacy.

While the work being done by the American Lung Cancer Screening Initiative spans from podcasts to events to proclamations and Public Service Announcements, all of this work ultimately contributes to ALCSI's primary mission of promoting lung cancer screening for all high-risk individuals. Individuals are considered to be at a high-risk for developing lung cancer if they have a smoking history (≥20 pack-years), had previous lung radiation therapy, were exposed to radon, live in a location with air pollution, and/or have a family history of lung cancer.

In Michigan alone, the rate of new lung cancer cases each year is 63, five cases higher than the national average of 58 new cases per year. Furthermore, 23% of lung cancer cases are diagnosed at an early stage in Michigan, which shows major improvements from the national average.

While the work being done by the American Lung Cancer Screening Initiative spans all over the world, there are local efforts to prevent lung cancer in Michigan. Since 2021, ALCSI has successfully received eight proclamations throughout the state of Michigan declaring November 2021 and 2022 as Lung Cancer Awareness Month. Additionally, the University of Michigan in Ann Arbor, MI has an ALCSI chapter; members of this chapter not only work on educating a younger demographic about lung cancer but also host events to raise awareness for lung cancer prevention.

ALCSI has hosted events such as podcasts with thoracic oncologists and lung cancer survivors, White Ribbon events to recognize lung cancer patients and survivors, canvassing and tabling events to raise awareness for lung cancer and its prevention, and presentations to educate others about lung cancer. This year, the the University of Michigan's ALCSI chapter hopes to hold more campus pop-up events to educate younger demographics about lung cancer and its prevention.

Whether in Michigan or countries/states around the world, the American Lung Cancer Screening Initiative has put forth immense efforts to reduce mortality from lung cancer through advocacy for lung cancer screening and education. Additionally, this collaborative effort has not only been successful but has also fostered a supportive community for lung cancer patients and survivors, loved ones, policy-makers, and citizens where they are able to learn about lung cancer prevention and join ALCSI is raising awareness for this cause. Despite the high prevalence of lung cancer, incidence has improved in Michigan. The rate of new lung cancer cases has declined by 9% in the past five years, and the early diagnosis rate has improved by 41% in the past five years in Michigan alone.

Research has shown that early detection against lung cancer is vital in the fight against lung cancer, so the American Lung Cancer Screening Initiative urges high risk individuals to get screened today. If you are

Continued on next page …

... continued from previous page.

unsure about whether you are eligible for screening, please complete the Screening Eligibility Assessment located on the ALCSI website under “Get Screened” (alcsi.org).

If you are interested in learning more about the work being done by the American Lung Cancer Screening Initiative, please visit alcsi.org or contact info@alcsi.org.

###

WANT TO LEARN MORE ABOUT RADON'S HEALTH EFFECTS?

Check out these courses!

- C-4-103 - Radon from a Physician's Perspective (CERTI-309)
- C-4-104 - Interviews with Radon Experts (CERTI-310)
- C-8-102 - Health Perspectives in Promoting RRNC (CERTI-501)

Courses are available:

Online
At your Pace!

Available 24/7, 365!

About CERTI

CERTI is the leading educational resource for online Radon Entry Level and Continuing Education nationwide. We understand that all students learn differently; subsequently we employ a wide variety of teaching methods, such as visual, audio, and live-taught course recordings. We regularly collaborate with many Subject Matter Experts to ensure our classes are effective and pertinent.

Our goal is to optimize the student experience and increase comprehension.
With ongoing technical and educational support, unparalleled customer service, and a true desire to see our students reach their greatest potential: CERTI helps you succeed!

Call or sign up online today: 800-513-8332 www.certi.us

Presenting a Radon Program to the Public?

Check out CERTI's Presenting Radon Programs Course (C-16-111)

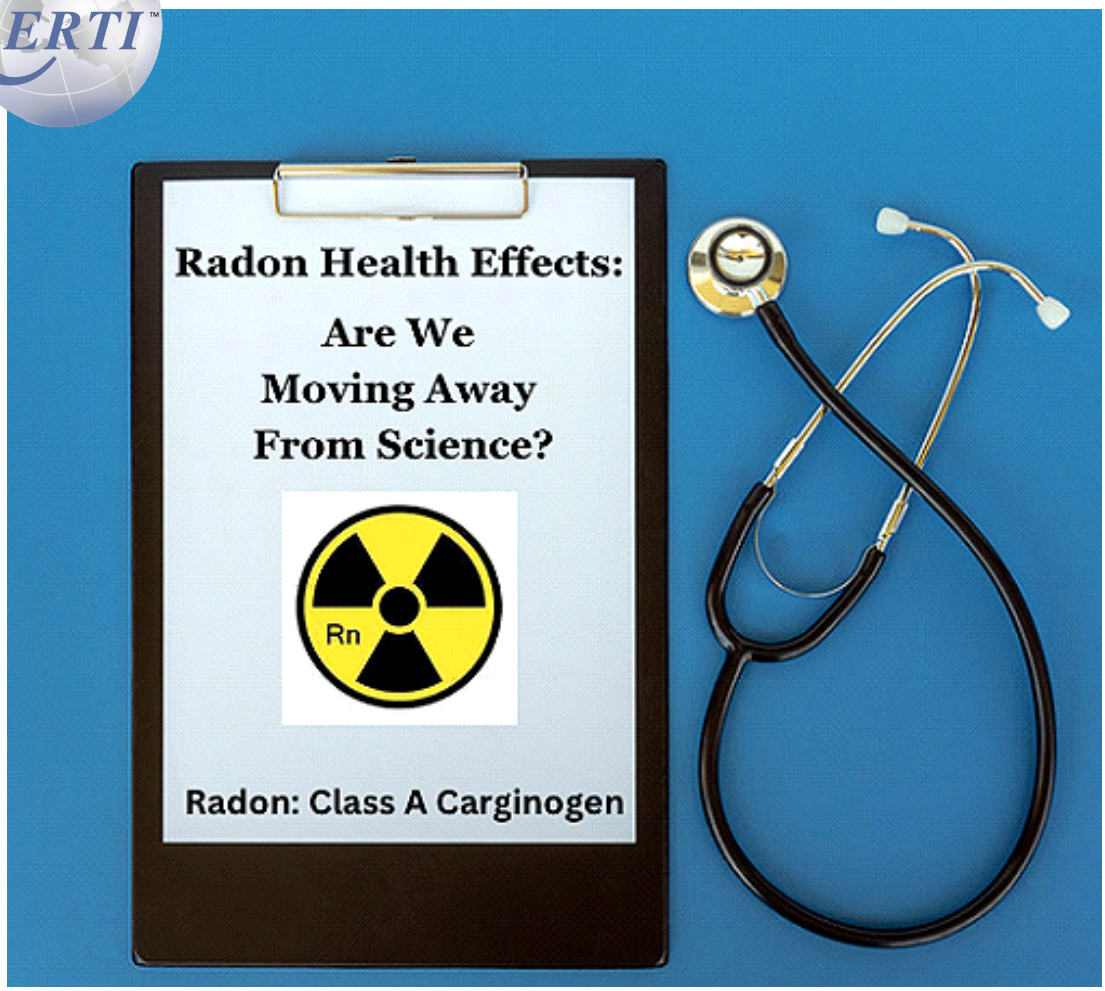
- Tips on how to answer difficult questions during a presentation
- Public speaking techniques to help the presenter and deliver the program
- 53 slide PowerPoint program that can be supplemented with the presenter's information and adapted for locally pertinent conditions

In other words, you will have the tools to be confident as a radon advocate, while presenting or marketing your program in a professional manner.

CERTI™

Premier Radon Training Since 1986

800-513-8332 www.certi.us



Radon Health Effects: Are We Moving Away From Science?

Doug Kladder

We recently received a solicitation to review a government document regarding radon in multi-family buildings. It is great to see the identification of radon hazards occurring in more and more situations. However, what disturbed me was a preamble explanation as to how radon causes lung cancer. The document contained the following sentence[1]:

"The most common pathway for human exposure to radon is inhalation indoors. When inhaled, some radon gas remains trapped in the lungs, and sensitive lung tissue can be exposed to radiation as it decays".

On the surface this may seem like an okay statement for the general public. However, it is inaccurate and perpetuates a common misconception about the health effects of radon which is contrary to the known mechanism. One may assume this was written by an uninformed staffer, but of greater concern if this was written by a radon professional who does not fully understand the science.

Continued on next page …

… continued from previous page .

So, what is wrong with the statement?

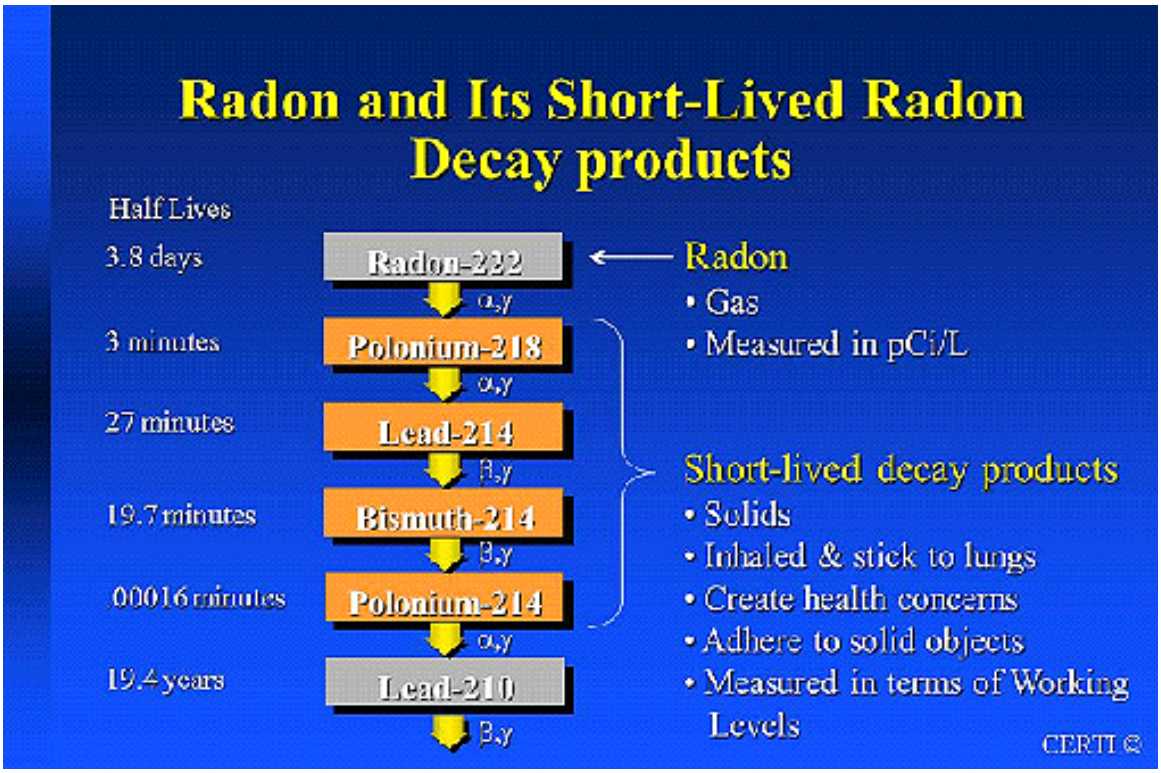
The biological effects of elevated indoor radon are not from radon but rather the short-lived decay products of radon. Most notably Polonium 218 and 214. If there is radon in the air within a home, there will also be the attendant radon decay products which behave as particulates and have strong electrostatic charges.

When one breathes in, air containing both radon and its decay products are inhaled. However, when one breathes out, the radon is exhaled, and because of the electrostatic charges of the radon decay products, they stick to the breathing passage and lungs. Before your lungs have an opportunity to clear themselves through the escalatory function (mucociliary transport), the short-lived Polonium 218 and Po214 can decay, delivering a powerful alpha particle punch to the lung cell to which they are clinging.

It may take several hours for a normal lung to clear particulates. Perhaps you may recall working in a dusty environment like a crawlspace without respiratory protection (not a good idea) and you blow your nose and see the guick on the tissue. It may be several hours before that goes away. Furthermore, you can smell or taste it for even hours more. Within that time frame, a Polonium 218 atom with a 3-minute half-life and a Polonium 214 atom with a half-life of 163 microseconds can surely decay and release an alpha particle while it is still in the lung or air passage.

The Figure below is a slide from the CERTI Entry-Level radon course that shows the relative time frames at which radon and its decay products radioactively decay. Sure, a radon atom might decay while it is in the lung before it is respired, but it is the attachment of the radon decay products, coupled with their short half-lives that make them the actual health risk.

Continued on pg 86 …



… continued from pg 85.

So, the health effect of radon is not because radon is trapped in the lungs as stated in the solicitation, but rather, the decay products of radon that are inhaled. If radon, as well as other gasses were held up in the lung, we would quickly expire from accumulated carbon dioxide.

One can see this mechanism explained in many authoritative works on the health effects of radon, such as:

Biological Effects of Ionizing Radiation (BEIR VI)

"***Alpha particles released by 2 radioisotopes in the radon decay chain, polonium-218 and polonium-214, deliver to target cells in the respiratory epithelium the energy that is considered to cause radon-associated lung cancer"***[2]

Technical Support Document for the 1992 Citizen's Guide to Radon:

"Of the short-lived radon decay products (polonium-218. Lead-214, bismuth 214 and polonium-214), the polonium isotopes contribute most of the radiological dose to the lung. The risk from inhaled radon-222 is small compared to the risk from inhaled radon 222 decay products"[3]

Exposure vs Dose

It comes down to the difference between being exposed to a hazard, versus receiving a body-harming dose. Radon in indoor air represents an exposure much like the sun represents an exposure for potential skin melanoma, but the actual risk is what is absorbed by the body — or if you are indoors or outdoors, or you wear a hat or long-sleeved shirts.

In the case of elevated indoor radon, there are a known amount of radon decay products that will be formed in the air around us. However, that does not mean that is what will enter the lungs as we breathe. A large portion of the radon decay products (50 to 60%) will attach to physical objects within a room and no longer be breathable. This is reduced further with the use of particulate air filters and air circulation as occurs in schools and large buildings. What remains after these reductions is the actual dose that can be imparted to the lungs.

So why do we routinely measure radon rather than radon decay products?

Actually, many of the miner studies linking radon induced lung cancer are based upon direct radon decay product measurements. Even more recent epidemiological studies of lung cancer incidence in residential settings show a much better correlation to radon decay product measurements than radon alone. That is because they are a better measure of dose received rather than an inferred dose from exposure.

Radon measurements are indeed easier to make. They are simple and affordable. But realize a radon measurement is a surrogate or substitute measurement for estimating health risks of the radon decay products. In many situations, quantifying the radon potential is adequate and reducing radon entry via active soil depressurization reduces radon and, in-turn, reduces the attendant radon decay products proportionately.

However, there are cases where an additional quantification of radon decay products is prudent. This certainly would be the case in larger buildings where efforts by EPA to reduce indoor particulates via better HVAC systems and filters can have a significant impact on

Continued on on next page …

… continued from previous page.

reducing the dose from radon. Examples of this are focused reduction in asthma triggers and most recently Covid-19 viruses.

How one would apply these measurements is described within Section 9 of the ANSI/AARST MAH 2019, Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes. In essence, the protocol requires:

- Concurrent radon and radon decay products measurements to allow one to determine the actual percentage of radon decay products rather than to assume a 50% relationship.
- Identify aspects of the building that may be reducing radon decay products or increasing radon decay product doses due to higher particulate air counts.
- Determine if those aspects of the building that reduce radon decay products are likely to be maintained, such as operation of an HVAC system during occupied hours, etc.

So why get upset about inaccurate statements?

Inaccurate statements inhibit innovative approaches. Many of us are members of a trade association called the American Association of Radon Scientists and Technologists. Note the emphasis on the word Scientists. One would assume that, as scientists, we would be seeking out new and innovative ways of solving a problem. However, simplified models or inaccurate statements inhibit growth and innovation.

It has been my experience when students contacted me about a very difficult mitigation, that many of them forget what the real objective is, which is to reduce radon related lung cancer to as low as reasonably achievable. Yes, Active Soil Depressurization is a great tool, but it doesn't have to be the only tool, especially when the tools may already exist within a building for reducing radon decay products, but they are unaware of it because they are either unaware of their significance or do not know how to measure radon decay products.

In closing, I am reminded of several conversations with Dr. William Field regarding the research indicating that 2/3 of the radon induced lung cancers come from exposures less than 4.0 pCi/L and the only way to reduce exposures further is via radon decay product reductions.

For those who would like to learn more about radon decay measurement and reduction as another tool in quantifying and reducing radon risks, we encourage you to take the following course, approved by both NRPP and NRSB:

C-4-110 – Addressing Radon Decay Products – Another Tool in the Tool Box (CERTI-324)

Who says there is nothing new in radon?

Doug Kladder
Technical Consultant to CERTI

[1] US Department of Housing and Urban Development, Departmental Policy for Addressing Radon in the Environmental Review Process, Notice CPD-21-136.

[2] National Research Council, National Academy Press, Health Effects of Exposure to Radon, BEIR VI, 1999

[3] US EPA, Technical Support Document for the 1992 Citizen's Guide to Radon, EPA 400-R-92-011, May 1992.

###

https://cr3.ourproshop.com

Order t-shirts for your workers

CR3 News Magazine

Citizens For Radioactive Radon Reduction

Thank you!

RADON 2023

CR3 Sponsors

Collaborating with Citizens for Radioactive Radon Reduction (CR3) is a great way for organizations to showcase their commitment to their communities and reach new audiences by showing their support of radon testing, mitigation, lung health and lung disease prevention nationwide.

Corporate and foundation giving make a positive impact.
Your organization can help provide more resources.
Make a contribution to support our critical work.

OFFER NOT VALID AFTER JANUARY 1, 2024

Bundle and Save!!

NEW

CR3 News Magazine
$1800 ADVERTISING SPECIAL

BUNDLE
5 issues/yr.
DOUBLE YOUR EXPOSURE !!
CALL: (412) 961-1980

THAT'S $360/issue

- 5 full-page color ads (one/issue)
- 5 videos of your choice (one/issue)
  (ie. commercial about your company)
- 5 audio of your choice
  (ie. commercial or podcast about your company)
- 5 articles of your choice (one/issue)

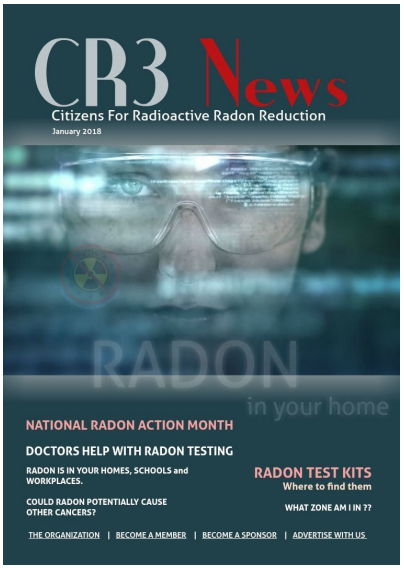
- YOU ARE LISTED AS A SILVER SPONSOR IN THE CLEHR NETWORK which entitles you to:

  * A Customizable Branded Booth in the Exhibit Hall w/ links to your web site and outside pages.

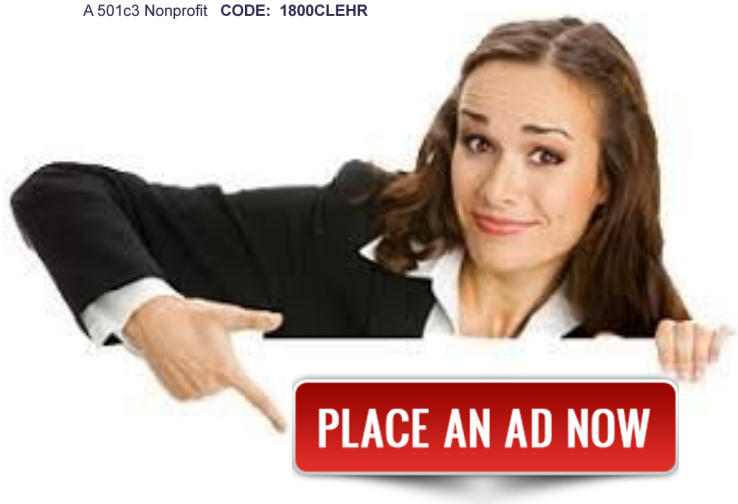
  * Resource & Video Library Deposit

Payable to
Citizens for Radioactive Radon Reduction, Inc.
618 Evansville Ave. Waterloo, IL 62298

A 501c3 Nonprofit **CODE: 1800CLEHR**



MEDIA KIT



$550 full page
$1,800 / 5 full pgs / yr

Includes: Audio, Video, Graphics, and 1 Article

CLICK TO GET MORE INFORMATION

EMAIL: INFO@citizens4radonreduction.org

Just want to donate?

Donate

our Sponsors & Supporters

FESTA RADON Diamond Sponsor

All of Us RESEARCH PROGRAM

ALPHA ENERGY LABORATORIES

ecosense

Radon Environmental

AMERICAN ASSOCIATION OF PENNSYLVANIA AARST RADON SCIENTISTS AND TECHNOLOGISTS, INC.

CERTI

SWAT ENVIRONMENTAL Soil, Water, and Air Technologies

Spruce

COMMERCIAL SELGRADE CONSTRUCTION INC. RADON RESIDENTIAL

Midwest AARST

RADON CONTROL PRODUCTS
Mitigation and Measurement
828.698.4960

VSI Radon Reduction Corp

JOHN A. RABER & ASSOCIATES

ROIMarket Media LLC

RTCA

RADON-EASE, INC. Your One Stop Radon Resource

BECOME A SPONSOR
https://citizensforradioactiveradonreduction.org/Sponsors

CR3 News Magazine

Cr3 News Magazine Interactive App

Designed for iPad, iPhone and Android

Free Offers in - App Purchases

INSTALL OUR NEW APP

on your phone or iPad

GooglePlay

App Store

Explore and read our interactive magazines for free, featuring audio and video, and still being stylish and bringing all the action and excitement of the realistic magazines.

Experience the full effects of the publications with interactive video that plays on demand. Get the full message

"Much better than the browser on your phone!! ..." Josh

INTERESTED? ... Click here

Join Us

www.citizens4radonreduction.org

Legislation

Collaboration

Radon Testing Info

Mitigation Assistance

Health Care Information

Educational Awareness

Community Involvement

International Awareness

JOIN NOW

Donate

info@citizens4radonreduction.org

- **o Useful Webinars**
- **o Event Participation**
- **o Volunteer Opportunities**
- **o Free advertising & promotion**
- **o State and Local Represenation**
- **o Organizational Engagement Opportunities**

Your group can join the RADON RIVALS !

Show your support for Lung Health !

Order Your Masks and T-shirts

https://cr3.ourproshop.com

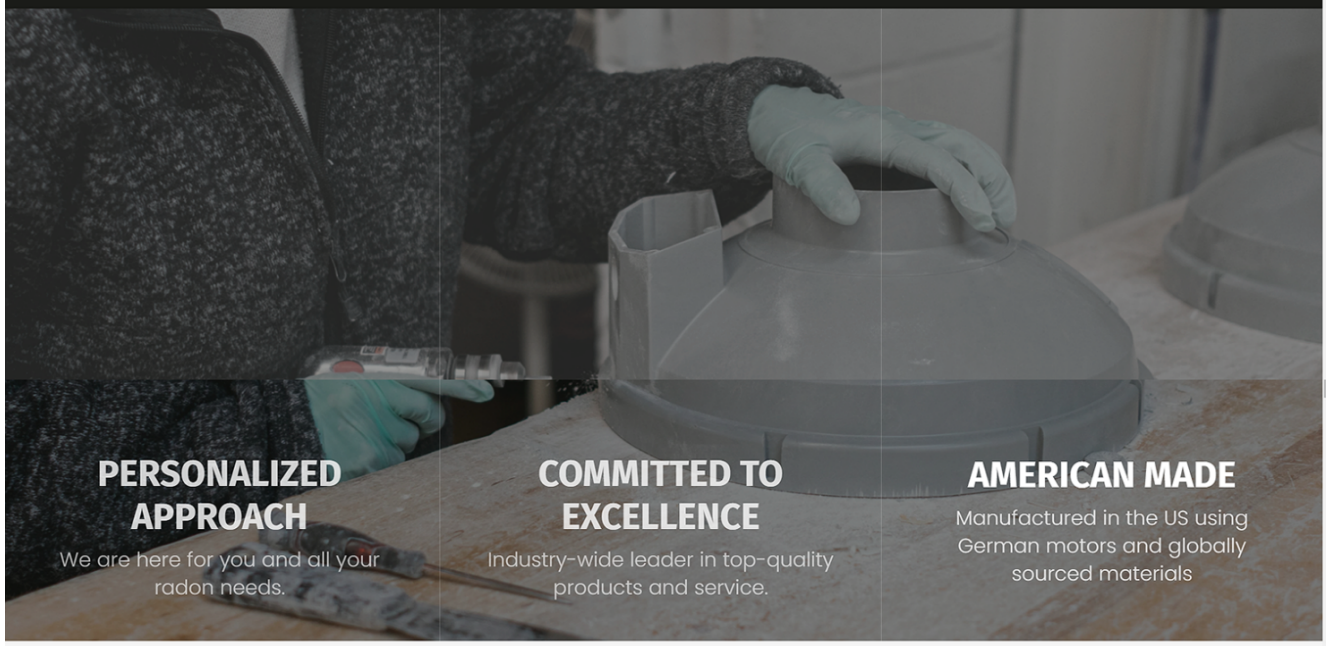
QUESTIONS?
info@citizens4radonreduction.org

SEARCH

FESTA RADON

CONTRACTOR SIGN UP | LOG IN | CART

FANS | ACCESSORIES | TOOLS | ABOUT | RADON RESOURCES | NEWS | SHOWCASE



PERSONALIZED APPROACH

We are here for you and all your radon needs.

COMMITTED TO EXCELLENCE

Industry-wide leader in top-quality products and service.

AMERICAN MADE

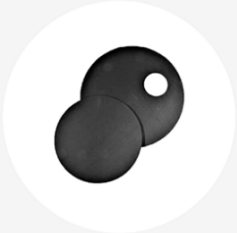
Manufactured in the US using German motors and globally sourced materials

OUR RADON LINE

Proudly protecting your home since 1996.

Fans

Accessories



Sump Sealing

Diagnostic Tools

Crawlspace Encapsulation

PROUDLY MADE IN PENNSYLVANIA

Integrity and quality are behind everything we do. Our highest priority is your safety and satisfaction. Industry-wide we are known to go to great lengths to guarantee the best customer service and the highest quality products.

ABOUT US ›

Masks & Butterflies Gala 2024

MARDI GRAS STYLE
LUNG CANCER FUNDRAISING

Friday, February 9

Location:
Calgary, Alberta

Unmasking the Reality of Lung Cancer

For More information: (403) 801 5000
email: unmaskinglungcancercalgary@gmail.com
210 6111 36 St SE Calgary T2C 3W2, Calgary, Alberta

@unmaskingc
unmasking the reality of lung cancer