

# Housing Health

And the aboriginal peoples of Canada

**Successes and challenges in mitigation of radon**

in urban aboriginal housing, prince george, BC



# Overview

- Introduction
- Collaboration Committee
- Testing
- Results
  - Challenges
  - Successes
- Implementing mitigation
  - Challenges
  - Successes
- Final Comments



# Introduction

- Traditional territory of the Lheidli T'enneh
- 8 dedicated Board members and 7 hard working staff
- 161 urban units
- 108 rural units
- House over 1,000 people
- Average age of units is 50 years
- One of 41 urban Aboriginal housing providers in BC



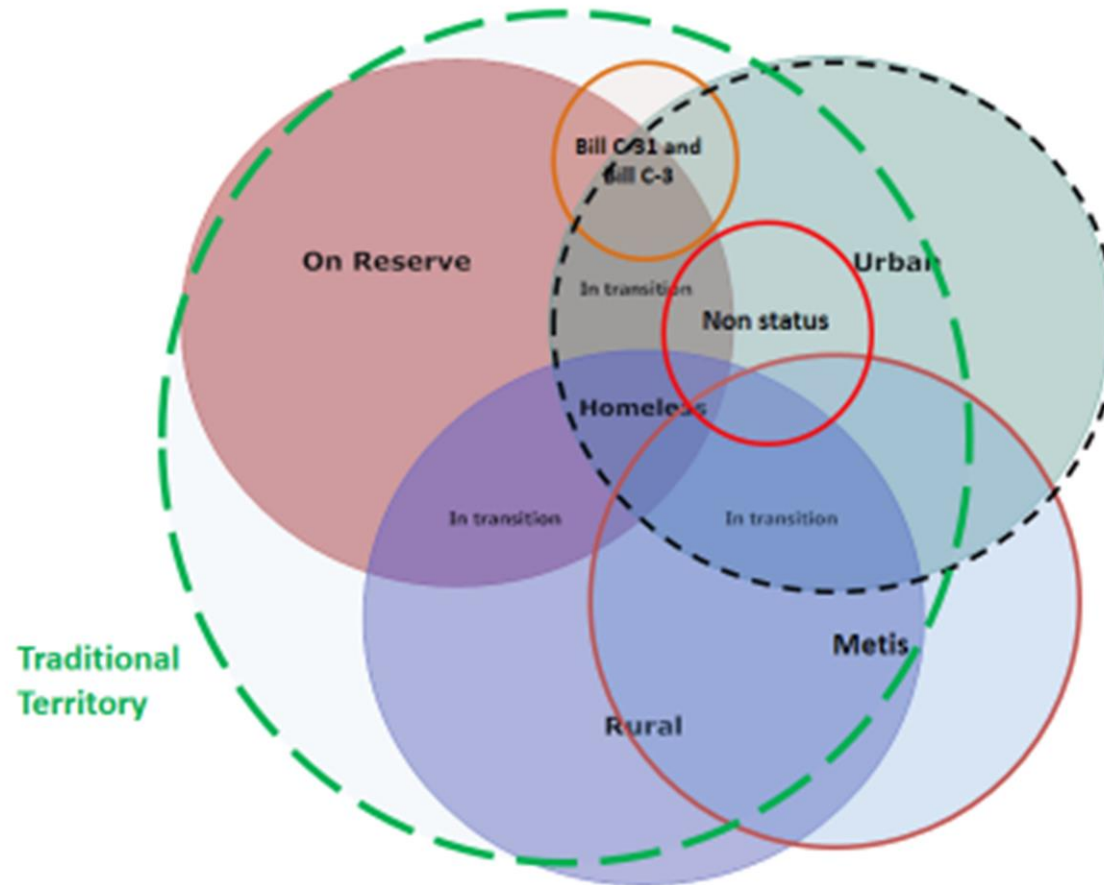
**Our logo; First Nations, Metis, Inuit, and mainstream society working together.....**



## Need and Demand

|                             |
|-----------------------------|
| Elders                      |
| Students                    |
| Youth Aging out             |
| Teen mothers                |
| Families                    |
| Leaving Corrections         |
| Moving to Urban             |
| Medical                     |
| Single parents              |
| Youth                       |
| Recovery                    |
| HIV and AIDs                |
| Working singles and couples |
| Multi generational families |

## Context



- Jurisdiction
- Protocols
- Roles
- Responsibility
- Authority
- Values
- Culture
- Need and demand
- Priorities



# Indoor Radon Study Collaboration Committee

- BC Lung Association
- Fraser Basin Council
- Canadian Cancer Society
- Northern Health
- Central Interior Radon Testing
- Prince George Metis Housing Society
- Canadian Home Builders Association Northern BC



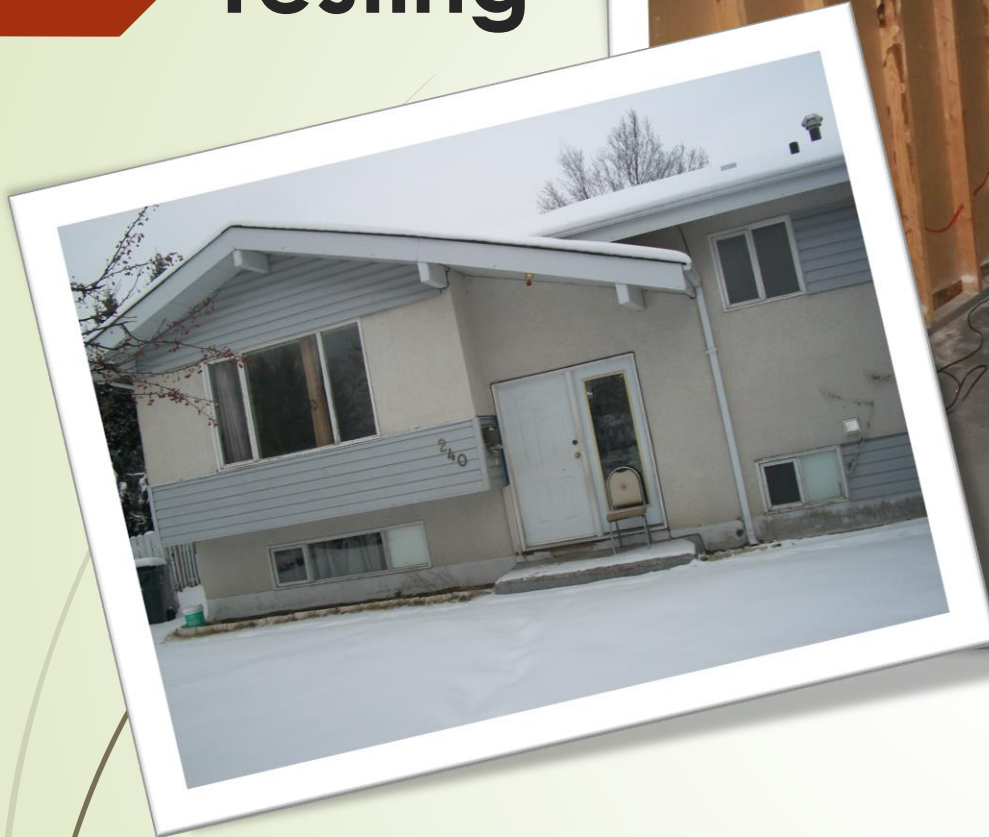


# What is Radon?

- Radon is a colourless, odourless gas that is found in soil, rocks and water. Radon has been identified as the second leading cause of lung cancer in Canada. Health Canada estimates as many as 16% of lung cancer deaths can be attributed to radon exposure. Most of the lung cancer risk posed by radon happens in homes

Prince George Community Wide Radon Testing Results – October 2014  
Study #2 in a series of reports on radon in bc homes

# Testing

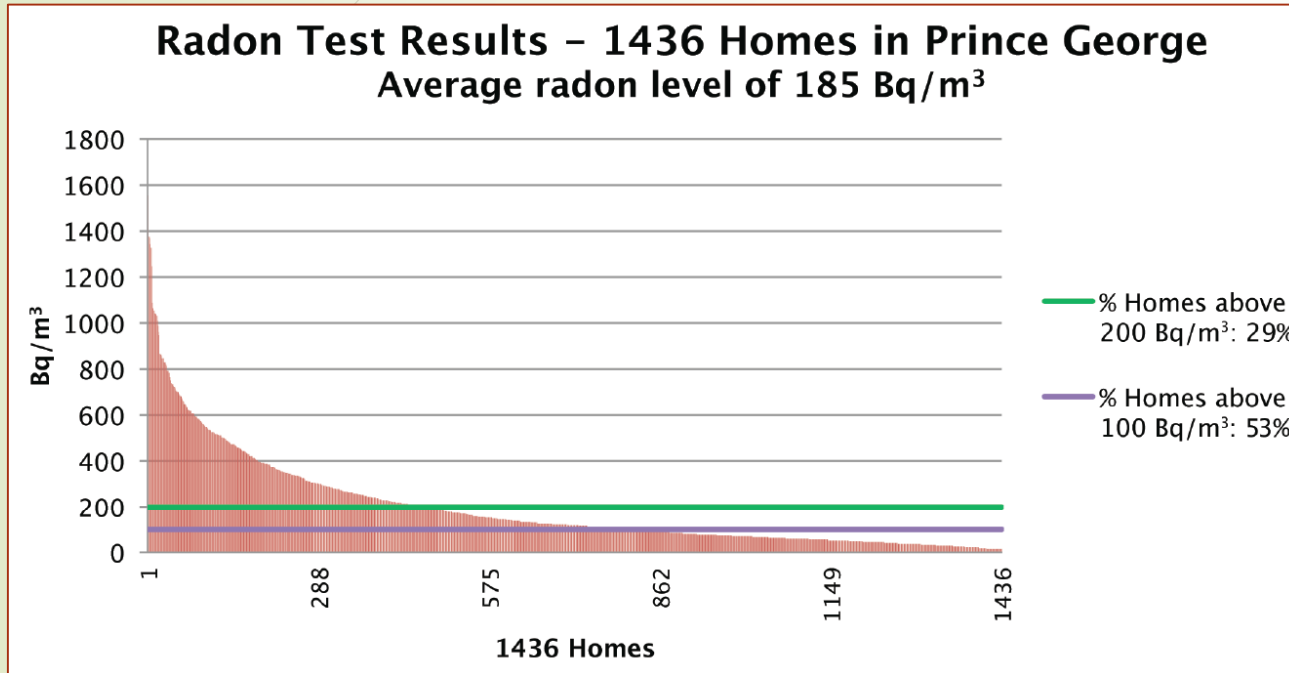
A photograph of a large sheet of paper with a detailed data table, likely a testing log. The table has many columns and rows, with some cells containing text and others containing numbers. The table is titled "PGMHS Testing Log" and includes columns for "Unit", "Test Date", "Test Time", "Test Results", and "Notes".

| Unit | Test Date | Test Time | Test Results | Notes |
|------|-----------|-----------|--------------|-------|
| 1    | 1/15/14   | 10:00     | Pass         |       |
| 2    | 1/15/14   | 10:15     | Pass         |       |
| 3    | 1/15/14   | 10:30     | Pass         |       |
| 4    | 1/15/14   | 10:45     | Pass         |       |
| 5    | 1/15/14   | 11:00     | Pass         |       |
| 6    | 1/15/14   | 11:15     | Pass         |       |
| 7    | 1/15/14   | 11:30     | Pass         |       |
| 8    | 1/15/14   | 11:45     | Pass         |       |
| 9    | 1/15/14   | 12:00     | Pass         |       |
| 10   | 1/15/14   | 12:15     | Pass         |       |
| 11   | 1/15/14   | 12:30     | Pass         |       |
| 12   | 1/15/14   | 12:45     | Pass         |       |
| 13   | 1/15/14   | 13:00     | Pass         |       |
| 14   | 1/15/14   | 13:15     | Pass         |       |
| 15   | 1/15/14   | 13:30     | Pass         |       |
| 16   | 1/15/14   | 13:45     | Pass         |       |
| 17   | 1/15/14   | 14:00     | Pass         |       |
| 18   | 1/15/14   | 14:15     | Pass         |       |
| 19   | 1/15/14   | 14:30     | Pass         |       |
| 20   | 1/15/14   | 14:45     | Pass         |       |
| 21   | 1/15/14   | 15:00     | Pass         |       |
| 22   | 1/15/14   | 15:15     | Pass         |       |
| 23   | 1/15/14   | 15:30     | Pass         |       |
| 24   | 1/15/14   | 15:45     | Pass         |       |
| 25   | 1/15/14   | 16:00     | Pass         |       |
| 26   | 1/15/14   | 16:15     | Pass         |       |
| 27   | 1/15/14   | 16:30     | Pass         |       |
| 28   | 1/15/14   | 16:45     | Pass         |       |
| 29   | 1/15/14   | 17:00     | Pass         |       |
| 30   | 1/15/14   | 17:15     | Pass         |       |
| 31   | 1/15/14   | 17:30     | Pass         |       |
| 32   | 1/15/14   | 17:45     | Pass         |       |
| 33   | 1/15/14   | 18:00     | Pass         |       |
| 34   | 1/15/14   | 18:15     | Pass         |       |
| 35   | 1/15/14   | 18:30     | Pass         |       |
| 36   | 1/15/14   | 18:45     | Pass         |       |
| 37   | 1/15/14   | 19:00     | Pass         |       |
| 38   | 1/15/14   | 19:15     | Pass         |       |
| 39   | 1/15/14   | 19:30     | Pass         |       |
| 40   | 1/15/14   | 19:45     | Pass         |       |
| 41   | 1/15/14   | 20:00     | Pass         |       |
| 42   | 1/15/14   | 20:15     | Pass         |       |
| 43   | 1/15/14   | 20:30     | Pass         |       |
| 44   | 1/15/14   | 20:45     | Pass         |       |
| 45   | 1/15/14   | 21:00     | Pass         |       |
| 46   | 1/15/14   | 21:15     | Pass         |       |
| 47   | 1/15/14   | 21:30     | Pass         |       |
| 48   | 1/15/14   | 21:45     | Pass         |       |
| 49   | 1/15/14   | 22:00     | Pass         |       |
| 50   | 1/15/14   | 22:15     | Pass         |       |
| 51   | 1/15/14   | 22:30     | Pass         |       |
| 52   | 1/15/14   | 22:45     | Pass         |       |
| 53   | 1/15/14   | 23:00     | Pass         |       |
| 54   | 1/15/14   | 23:15     | Pass         |       |
| 55   | 1/15/14   | 23:30     | Pass         |       |
| 56   | 1/15/14   | 23:45     | Pass         |       |
| 57   | 1/15/14   | 00:00     | Pass         |       |
| 58   | 1/15/14   | 00:15     | Pass         |       |
| 59   | 1/15/14   | 00:30     | Pass         |       |
| 60   | 1/15/14   | 00:45     | Pass         |       |
| 61   | 1/15/14   | 01:00     | Pass         |       |
| 62   | 1/15/14   | 01:15     | Pass         |       |
| 63   | 1/15/14   | 01:30     | Pass         |       |
| 64   | 1/15/14   | 01:45     | Pass         |       |
| 65   | 1/15/14   | 02:00     | Pass         |       |
| 66   | 1/15/14   | 02:15     | Pass         |       |
| 67   | 1/15/14   | 02:30     | Pass         |       |
| 68   | 1/15/14   | 02:45     | Pass         |       |
| 69   | 1/15/14   | 03:00     | Pass         |       |
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| 71   | 1/15/14   | 03:30     | Pass         |       |
| 72   | 1/15/14   | 03:45     | Pass         |       |
| 73   | 1/15/14   | 04:00     | Pass         |       |
| 74   | 1/15/14   | 04:15     | Pass         |       |
| 75   | 1/15/14   | 04:30     | Pass         |       |
| 76   | 1/15/14   | 04:45     | Pass         |       |
| 77   | 1/15/14   | 05:00     | Pass         |       |
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| 79   | 1/15/14   | 05:30     | Pass         |       |
| 80   | 1/15/14   | 05:45     | Pass         |       |
| 81   | 1/15/14   | 06:00     | Pass         |       |
| 82   | 1/15/14   | 06:15     | Pass         |       |
| 83   | 1/15/14   | 06:30     | Pass         |       |
| 84   | 1/15/14   | 06:45     | Pass         |       |
| 85   | 1/15/14   | 07:00     | Pass         |       |
| 86   | 1/15/14   | 07:15     | Pass         |       |
| 87   | 1/15/14   | 07:30     | Pass         |       |
| 88   | 1/15/14   | 07:45     | Pass         |       |
| 89   | 1/15/14   | 08:00     | Pass         |       |
| 90   | 1/15/14   | 08:15     | Pass         |       |
| 91   | 1/15/14   | 08:30     | Pass         |       |
| 92   | 1/15/14   | 08:45     | Pass         |       |
| 93   | 1/15/14   | 09:00     | Pass         |       |
| 94   | 1/15/14   | 09:15     | Pass         |       |
| 95   | 1/15/14   | 09:30     | Pass         |       |
| 96   | 1/15/14   | 09:45     | Pass         |       |

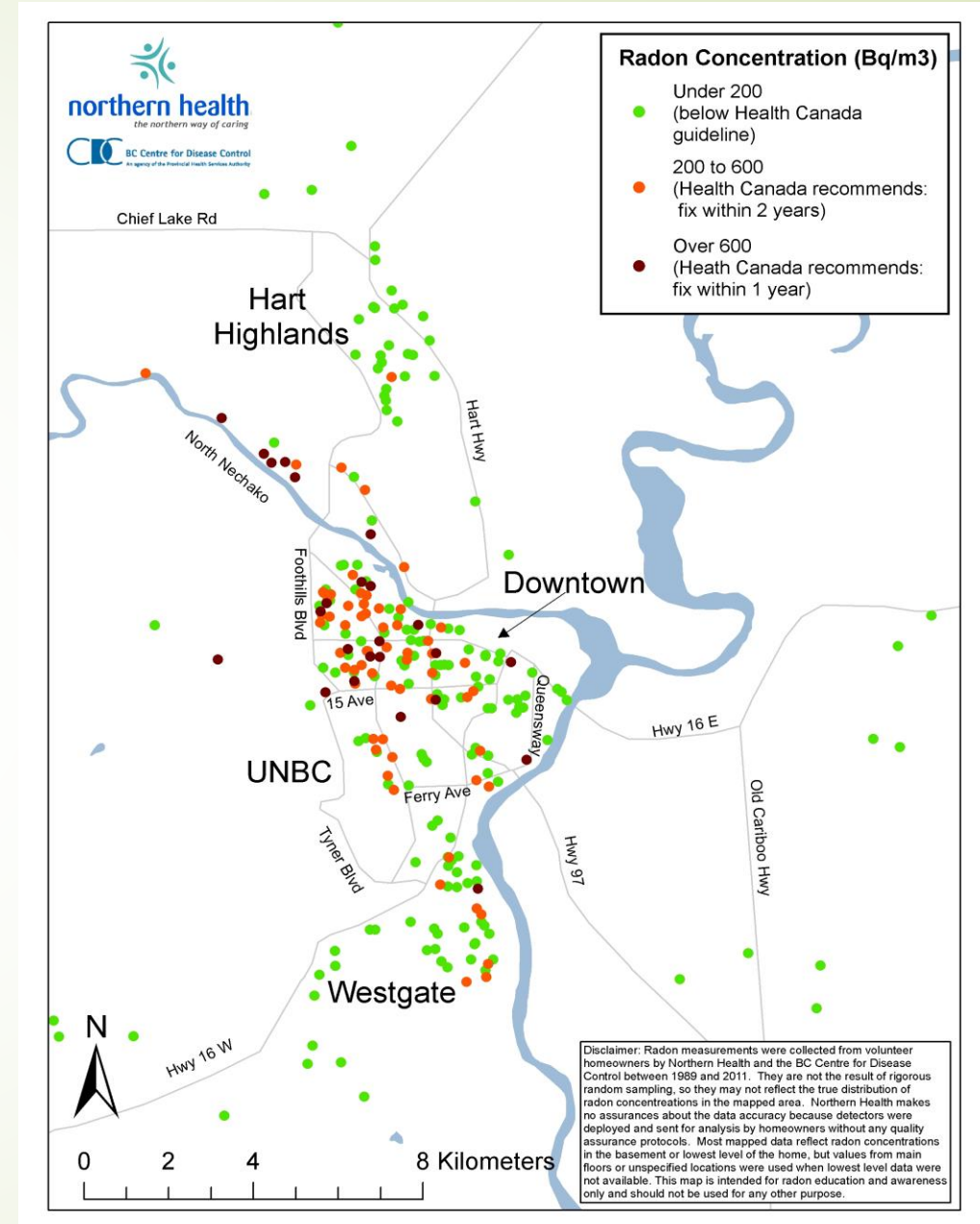
PGMHS tested 96 units (Winter of 2013-14)



# City wide Results



Indoor Radon Study - coordinated by Fraser Basin Council 2013 - 2014



Northern Health and BC Centre for Disease Control 1989 – 2011



| ADDRESS | Date Moved In | Device # | (Bq/m3) | units | %   |
|---------|---------------|----------|---------|-------|-----|
|         |               | 2661533  | 566     | 7     | 7%  |
|         |               | 2557469  | 548     |       |     |
|         |               | 2557496  | 518     |       |     |
|         |               | 2557409  | 474     |       |     |
|         |               | 2557413  | 418     |       |     |
|         |               | 2557412  | 403     |       |     |
|         |               | 2557464  | 403     |       |     |
|         |               | 2557472  | 355     | 7     | 7%  |
|         |               | 2557445  | 352     |       |     |
|         |               | 2557403  | 352     |       |     |
|         |               | 2557406  | 348     |       |     |
|         |               | 2557474  | 322     |       |     |
|         |               | 2557484  | 303     |       |     |
|         |               | 2557440  | 300     |       |     |
|         |               | 2557405  | 292     |       |     |
|         |               | 2557403  | 292     |       |     |
|         |               | 2557478  | 278     |       |     |
|         |               | 2557404  | 278     |       |     |
|         |               | 2557489  | 255     |       |     |
|         |               | 2661458  | 248     |       |     |
|         |               | 2557411  | 244     |       |     |
|         |               | 2557442  | 240     |       |     |
|         |               | 2660000  | 233     |       |     |
|         |               | 2557415  | 229     |       |     |
|         |               | 2557446  | 229     |       |     |
|         |               | 2557478  | 229     |       |     |
|         |               | 2557416  | 226     |       |     |
|         |               | 2661551  | 222     |       |     |
|         |               | 2557495  | 218     |       |     |
|         |               | 2557414  | 218     |       |     |
|         |               | 2661412  | 207     |       |     |
|         |               | 2557491  | 204     |       |     |
|         |               | 2557465  | 204     |       |     |
|         |               | 2661199  | 200     |       |     |
|         |               | 2661147  | 196     |       |     |
|         |               | 2557473  | 196     | 23    | 24% |
|         |               | 2557407  | 189     |       |     |
|         |               | 2557444  | 185     |       |     |
|         |               | 2557463  | 185     |       |     |
|         |               | 2557480  | 181     |       |     |
| 2557436 | 174           |          |         |       |     |
| 2661543 | 159           |          |         |       |     |
| 2557486 | 155           |          |         |       |     |
| 2557471 | 144           |          |         |       |     |
| 2557402 | 141           |          |         |       |     |
| 2557490 | 133           |          |         |       |     |
| 2557477 | 133           |          |         |       |     |
| 2557461 | 118           |          |         |       |     |
| 2557492 | 118           |          |         |       |     |
| 2557455 | 118           |          |         |       |     |
| 2557481 | 115           |          |         |       |     |
| 2557459 | 111           |          |         |       |     |
| 2557499 | 104           |          |         |       |     |
| 2661564 | 100           |          |         |       |     |
| 2557443 | 100           |          |         |       |     |
| 2557457 | 100           |          |         |       |     |
| 2557454 | 100           |          |         |       |     |
| 2557437 | 96            |          |         |       |     |
| 2557410 | 92            |          |         |       |     |
| 2557453 | 92            |          |         |       |     |
| 2557434 | 89            |          |         |       |     |
| 2557451 | 89            |          |         |       |     |
| 2557482 | 85            |          |         |       |     |
| 2661133 | 78            |          |         |       |     |
| 2557485 | 78            |          |         |       |     |
| 2557452 | 78            |          |         |       |     |
| 2557487 | 78            |          |         |       |     |
| 2557462 | 74            |          |         |       |     |
| 2557475 | 74            |          |         |       |     |
| 2557458 | 74            |          |         |       |     |
| 2557488 | 74            |          |         |       |     |
| 2661157 | 70            |          |         |       |     |
| 2557448 | 70            |          |         |       |     |
| 2557498 | 70            |          |         |       |     |
| 2557483 | 70            |          |         |       |     |
| 2557466 | 67            | 39       | 41%     |       |     |
| 2557433 | 59            |          |         |       |     |
| 2661167 | 56            |          |         |       |     |
| 2557468 | 56            |          |         |       |     |
| 2557447 | 56            |          |         |       |     |
| 2661301 | 52            |          |         |       |     |
| 2557494 | 52            |          |         |       |     |
| 2557435 | 52            |          |         |       |     |
| 2557493 | 52            |          |         |       |     |
| 2557460 | 48            |          |         |       |     |
| 2661568 | 41            |          |         |       |     |
| 2557470 | 41            |          |         |       |     |
| 2661552 | 37            |          |         |       |     |
| 2661445 | 33            |          |         |       |     |
| 2557467 | 33            |          |         |       |     |
| 2557450 | 33            |          |         |       |     |
| 2557479 | 33            |          |         |       |     |
| 2557441 | <15           |          |         |       |     |
| 2557438 | <15           |          |         |       |     |
| 2557439 | <15           |          |         |       |     |
| 2661455 | No reading    |          |         |       |     |
|         |               |          |         | 96    |     |

# PGMHS Results

➡ 34 units (35%) above 200 bql.

➡ 57 units (59%) above 100 bql.

➡ 39 units (41%) below 100 bql.

# Implementing mitigation

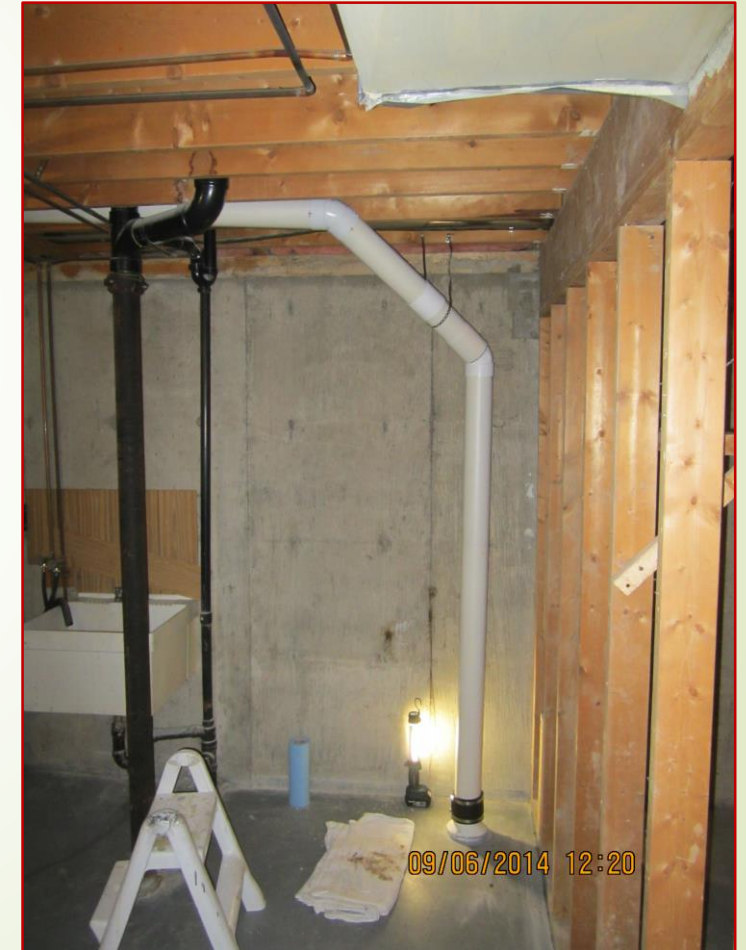
## Challenges

- Lack of knowledge about Radon
- Concern for legal action from tenants
- Coordinating testing of 100 sites
- Unknown cost to mitigate
- No internal funding for Radon Mitigation
- No funding from government
- Contractors and Codes

## Successes

- Your Health Your Home Workshop
- Board concern for health of tenants first
- Working together with stakeholders and staff
- Local certified mitigation contractor
- AHMA some M&I dollars
- Funded Collaboration Committee
- Code in place for contractors to follow

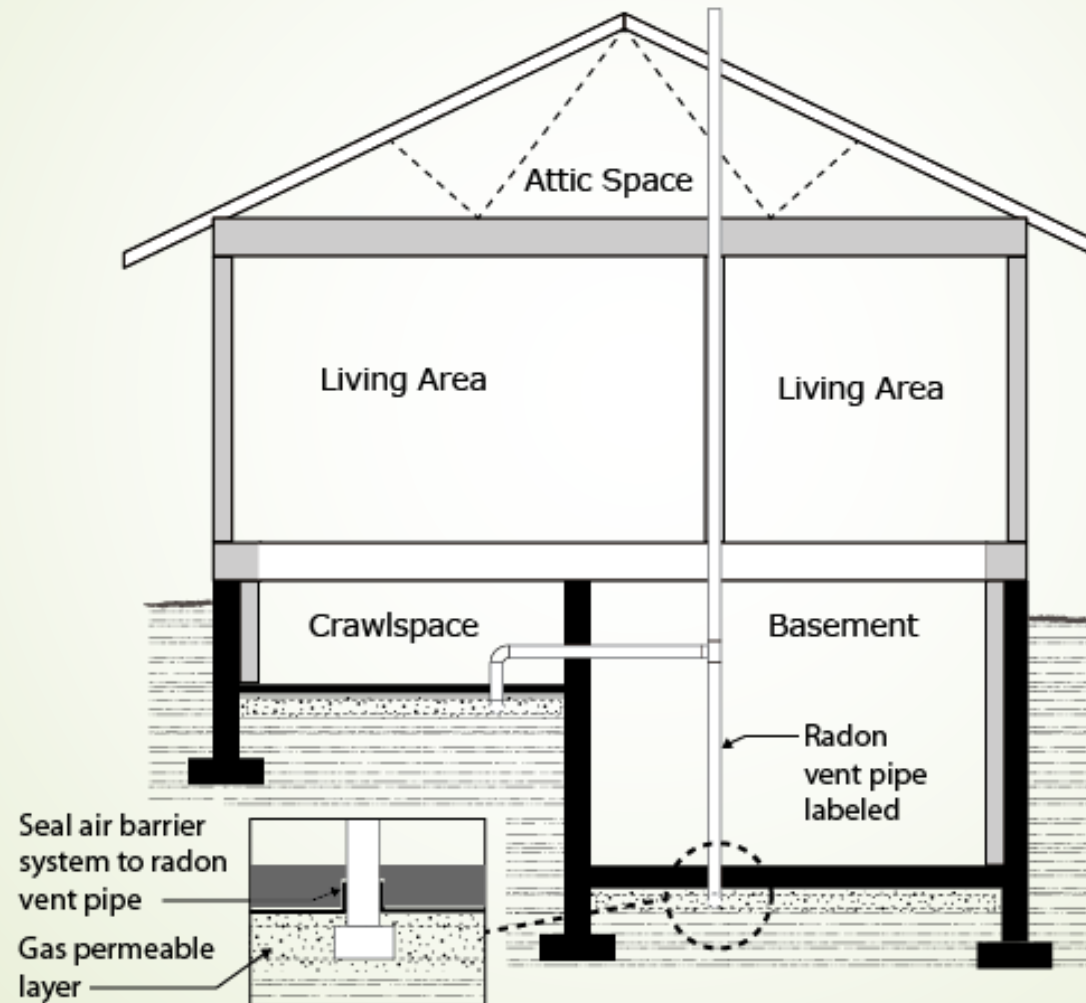
# “Active Sub-slab Depressurization System” (ASD)



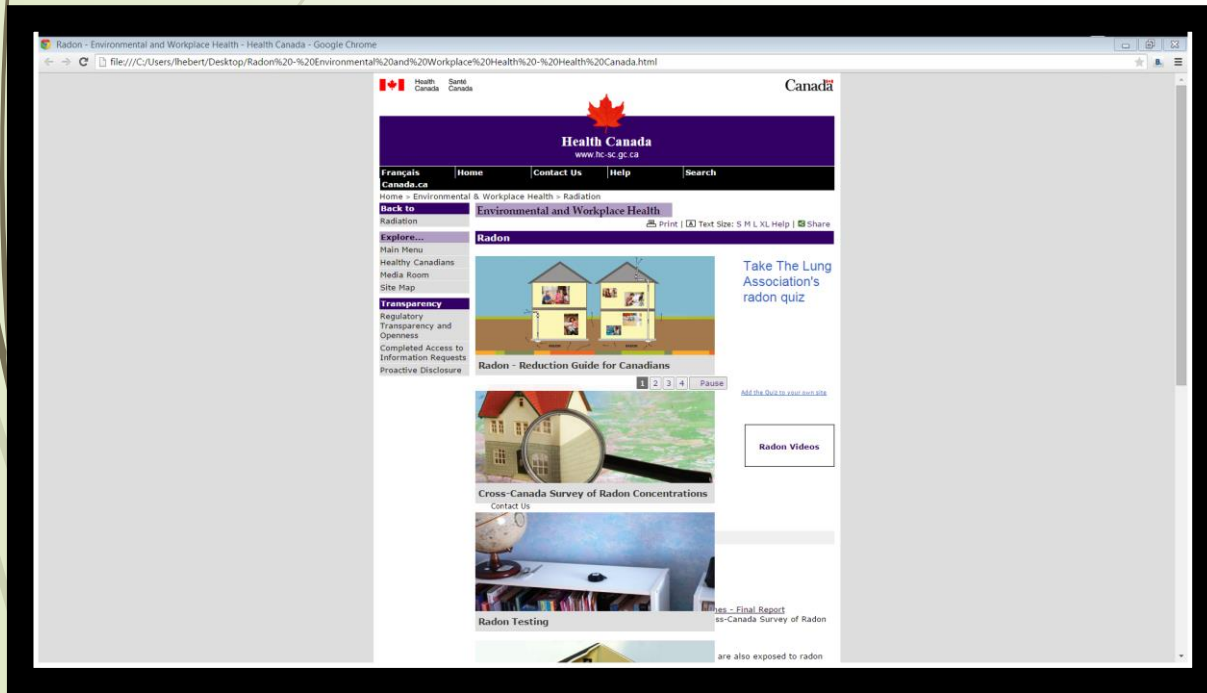
Average cost per house \$ 1,900.00



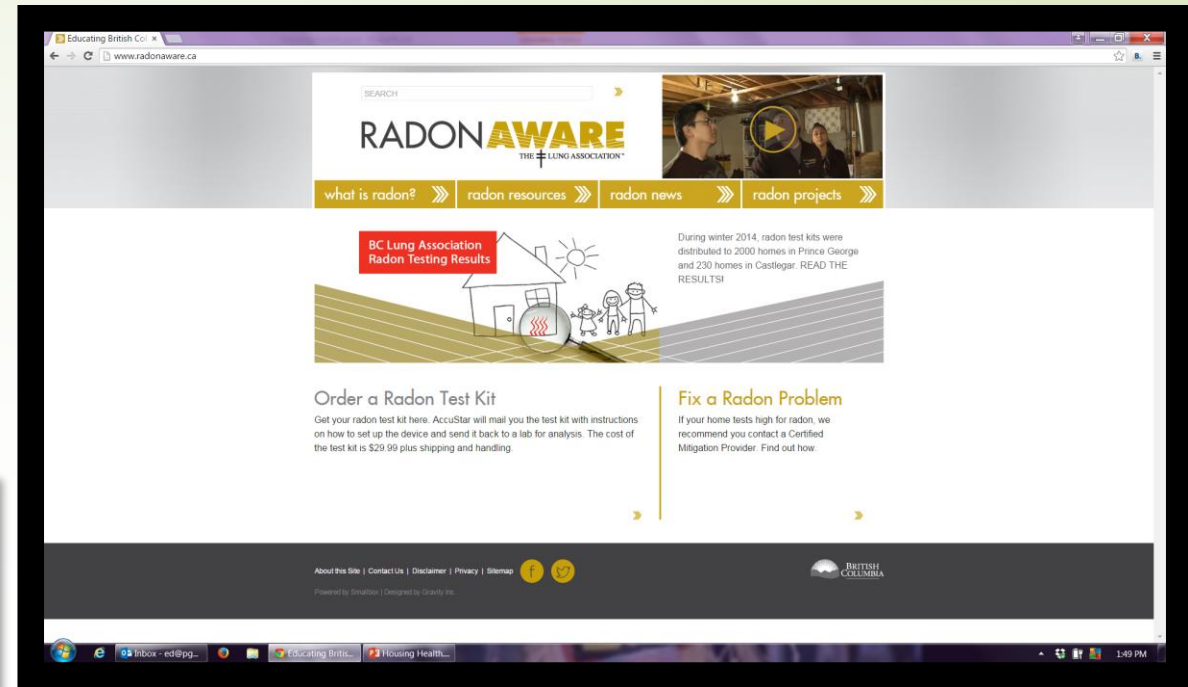
# Passive Sub-slab Depressurization System (PSD)



# Online Resources



<http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/index-eng.php>



<http://www.radonaware.ca/>



# Closing Comments

- Older homes - leaky slabs
- Focus on the health of occupants
- Do the research and test the homes
- Educate staff, board, tenants, and other stakeholders
- Need for funding to mitigate after testing and testing after mitigation
- Ongoing follow up with tenants
- Thank you