



Minnesota, USA

Radon Prevention in New Home Construction

Indoor Air Unit | Radon Program

February 26, 2019

Basic Components of Radon Prevention

Air permeable layer (10 cm thick)

Perforated pipe connected to
Radon Vent Pipe (70 mm or larger)

Soil gas barrier/membrane

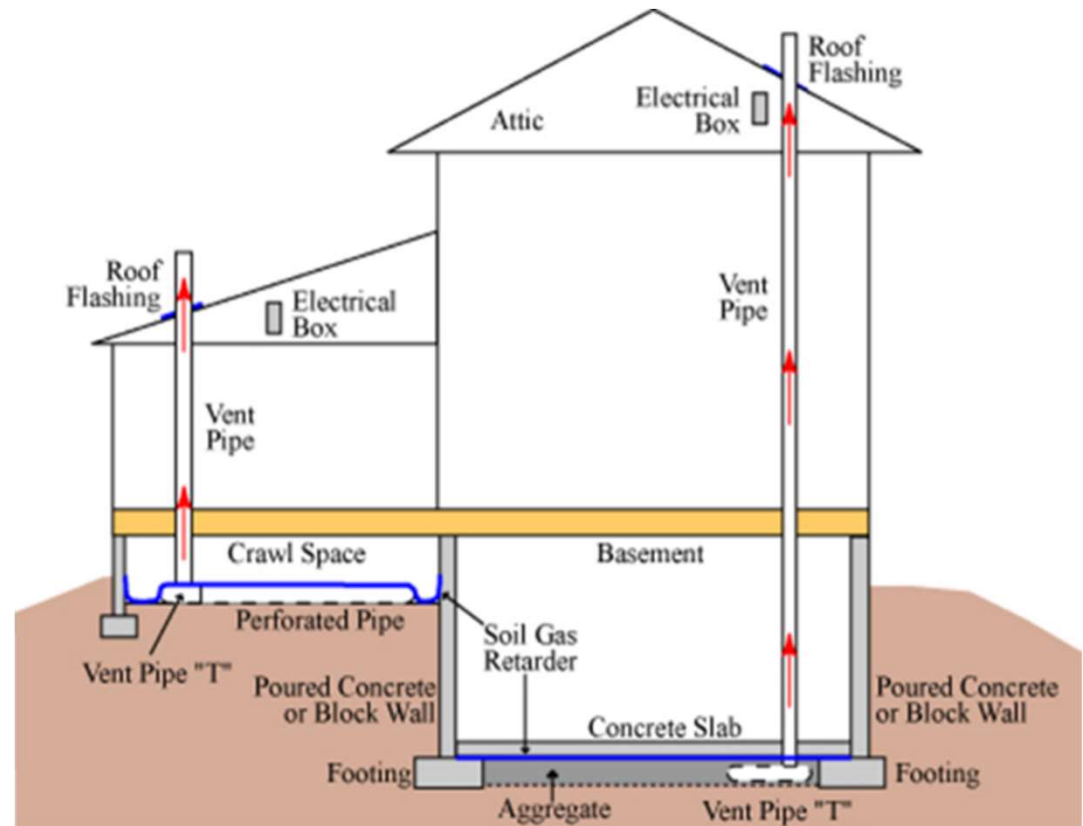
Sealed if crawlspace

Vent pipe routed through roof

In conditioned space of building

Electrical circuit in attic

Sealed gaps and cracks



Aggregate Under the Slab



Gravel Layer and Footing Sleeves



Vent Pipe and Soil Gas Retarder



Membranes in Crawlspaces



Sealed Cold Joint and Other Openings



2/27/2019

MDH Indoor Air | mn.gov/radon

Sealing Floor Cracks



Sump and Plumbing Knock Out



Sealants



Adhesive caulk.



Kitchen and bath caulk.



Mortar and concrete caulk.



Window and door caulk.



Gutter and flashing sealant.



Blacktop and roof sealant.

Roof Flashing & Electrical Socket



What's Next?

Test for radon after occupancy

If elevated, activate the system by adding a radon fan (ventilator)



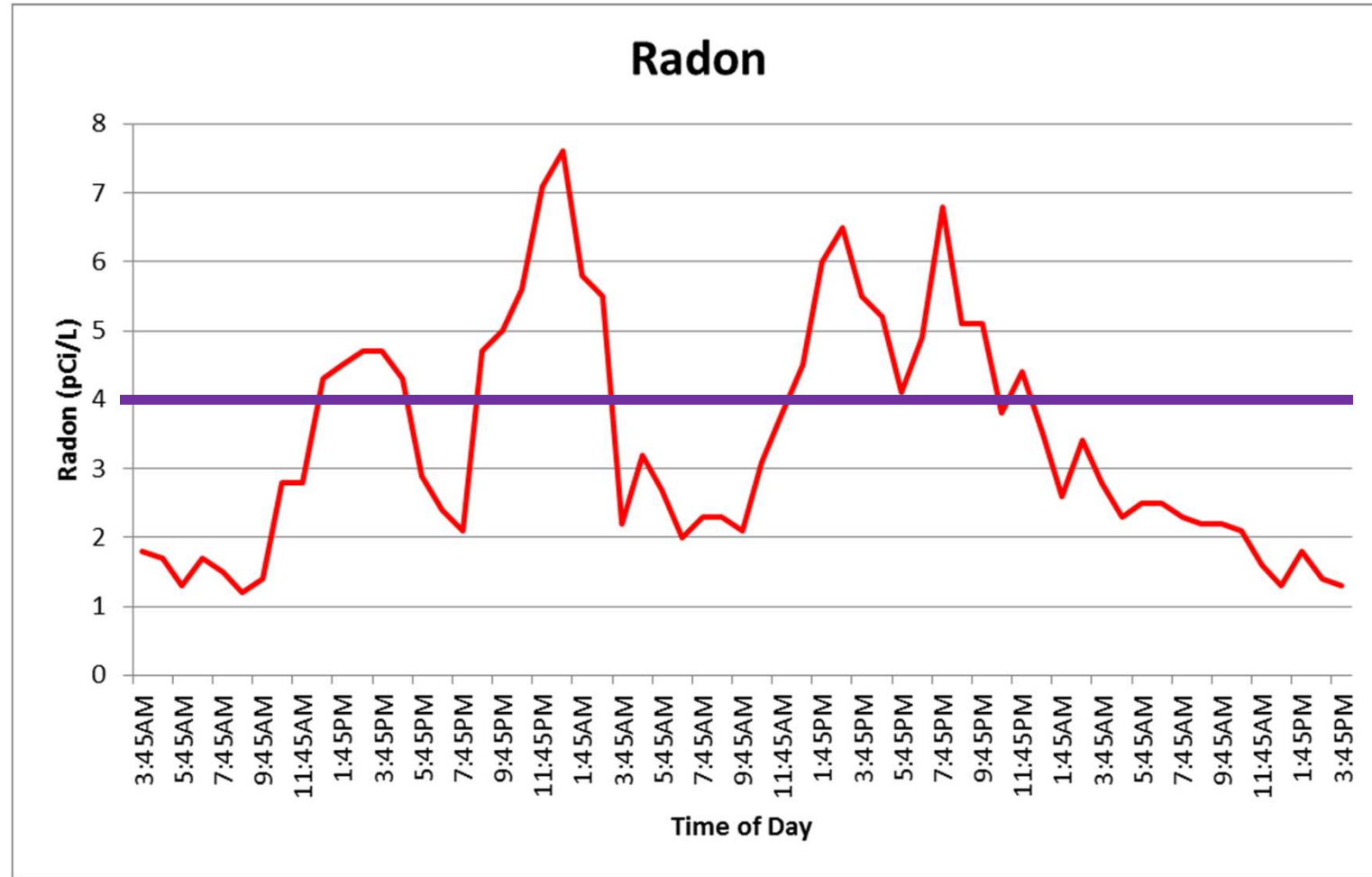
Minnesota USA - Homes with Passive Systems

- 806 homes tested
- 162 homes over 150 Bq/m³ (20%)
- 70 Bq/m³ – average
 - 115 Bq/m³ – average in all housing in these areas
- 1,420 Bq/m³ – highest result

Homes with Fans Added by Homeowner

- 72 homes activated
 - 70 homes under 150 Bq/m³
 - Two homes over 150 Bq/m³
 - Sealing details ignored
 - Once sealed, radon was greatly reduced
 - 10 Bq/m³ – average post mitigation level
 - 94.2% – average reduction

4 pCi/L is about 150 Bq/m³
(which is the USA Action Level)

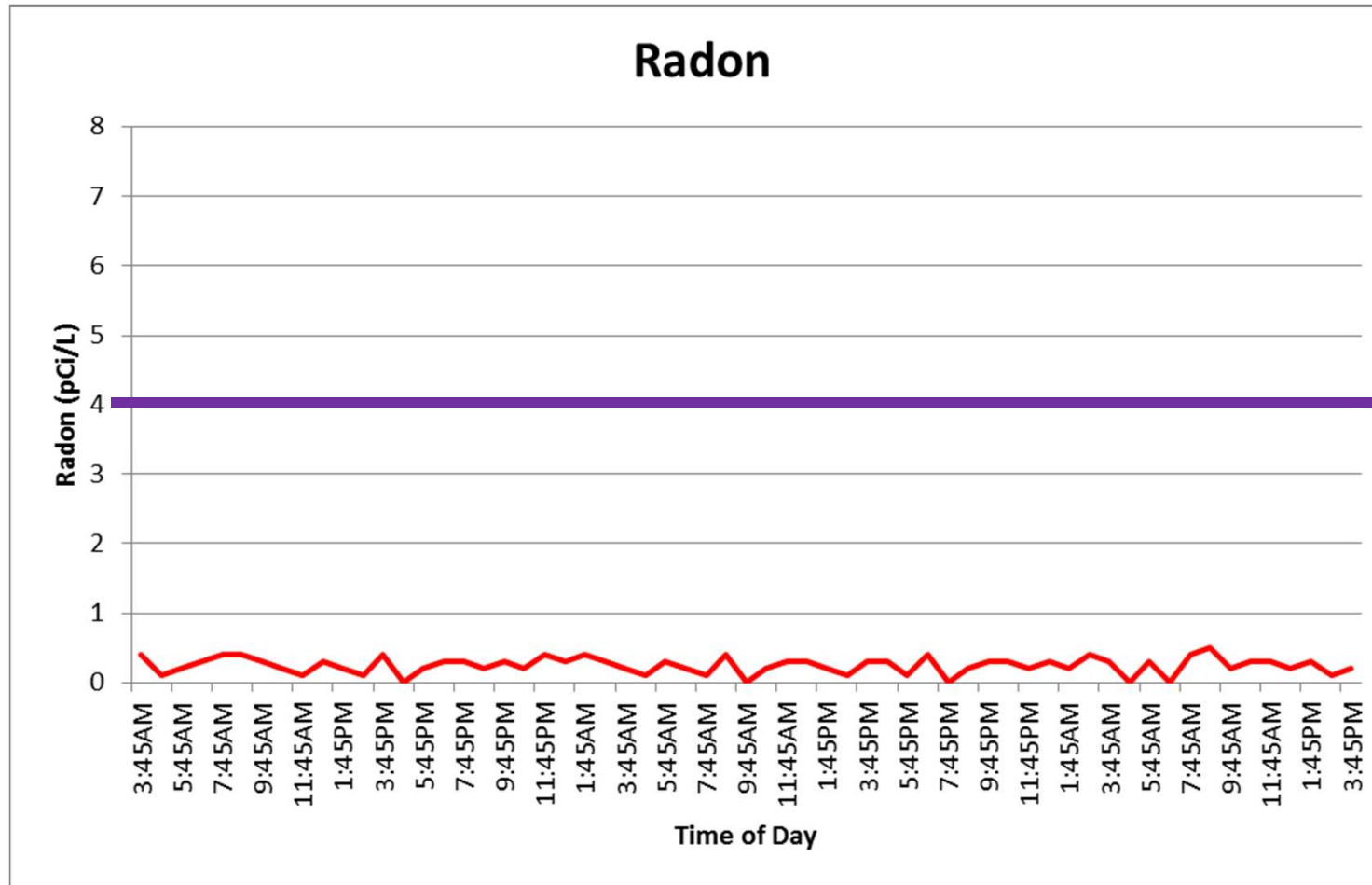


Is Radon Protection Working Here?

System Activation



Radon Levels Post-Activation



Radon Issues in New Construction

- Most common mistakes by builders
 - Overlooked details
 - No sealing of cracks and joints
 - No room to add a fan in attic
 - No suction pit or connection to gas-permeable layer
 - No radon testing being conducted after occupation
 - False sense of security for owner/occupant
 - All buildings should be measured for radon

For More Information

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