

# Overview of indoor air quality problems in Montana homes

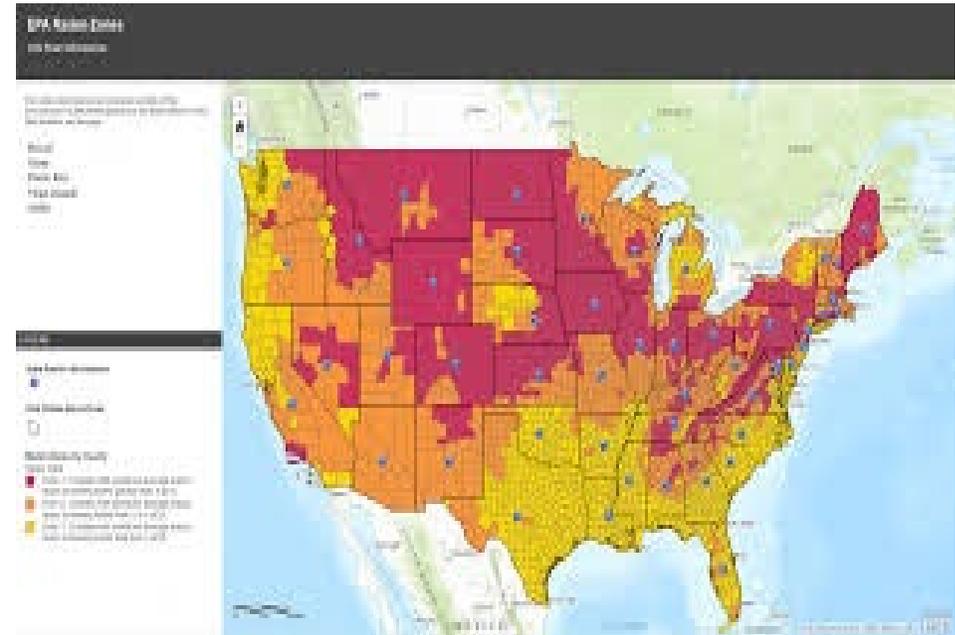
Radon

Carbon Monoxide

Mold

# What is Radon?

- A naturally occurring, radioactive gas released from rock, soil, and water
- Accumulates inside homes and buildings
- We can't see, smell, or taste radon
- Can be a problem in any home, school, or building across the country

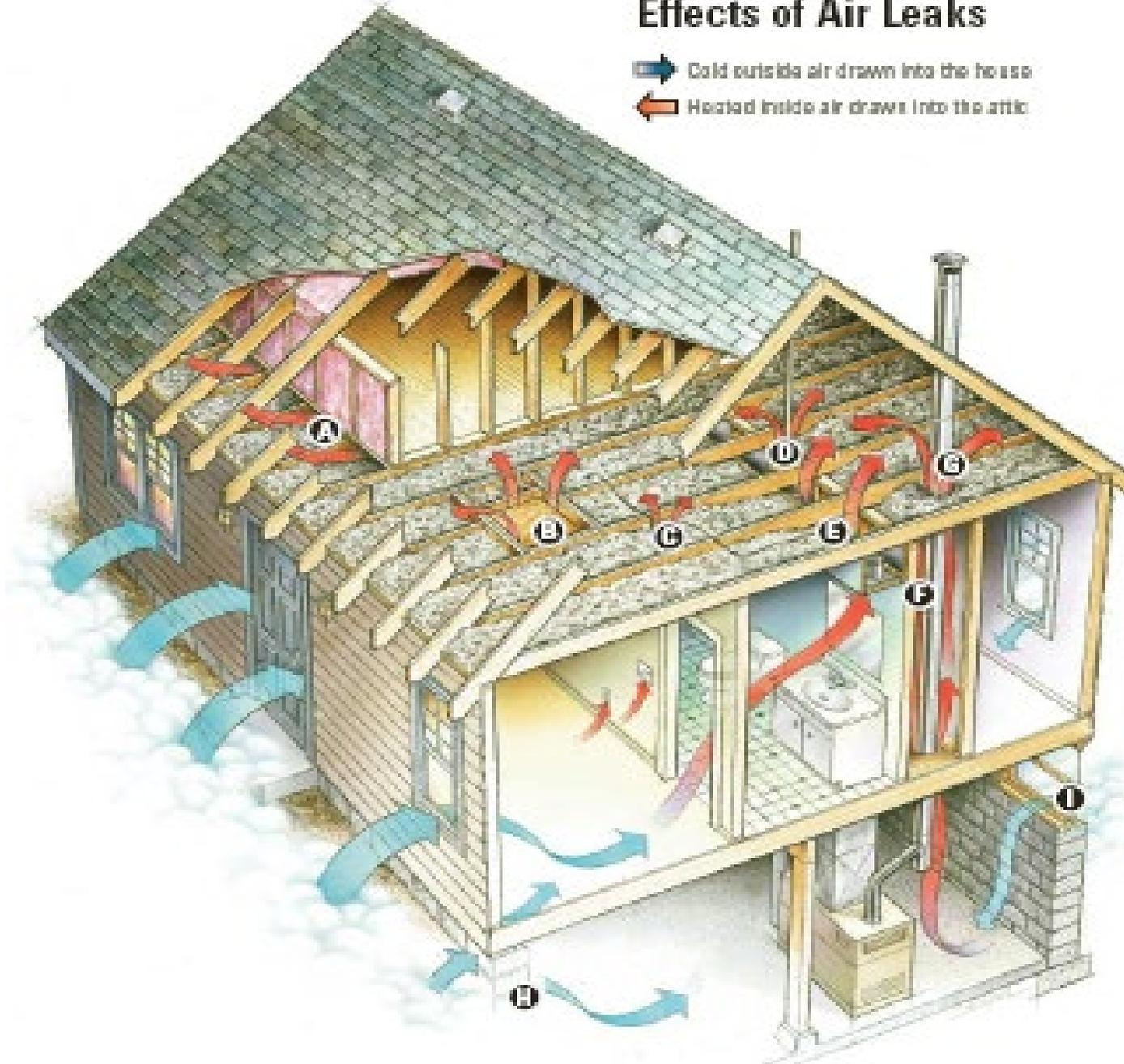


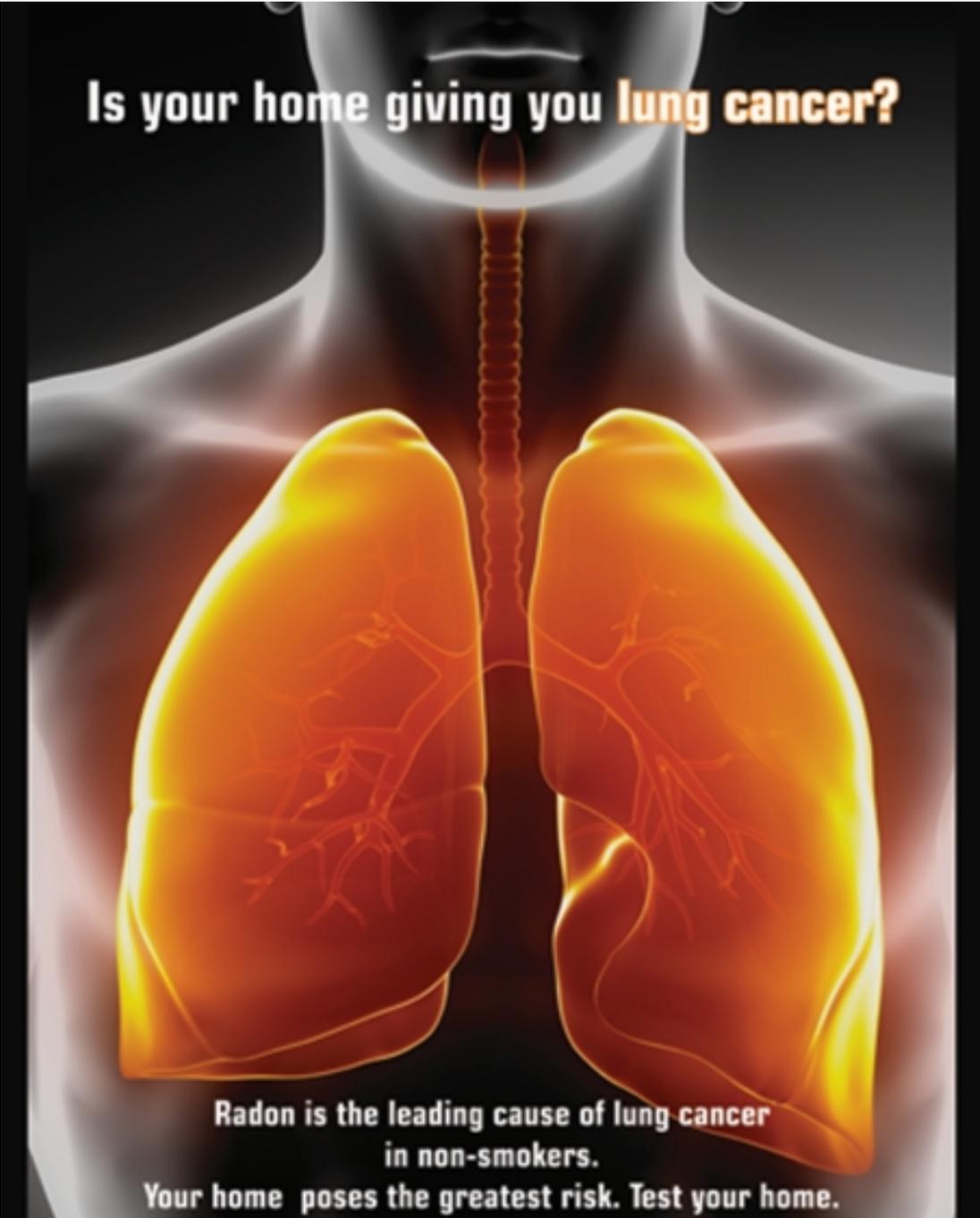
# So, what's the problem with radon?

- Radon exposure is the leading cause of lung cancer among non-smokers
- Radon exposure causes about 21,000 lung cancer deaths annually in the United States
- 48% of Montana radon tests are above action level of 4 pCi/L
- L&C County - High test result of 1200 pCi/L
- Levels can fluctuate - based usually weather factors

## Effects of Air Leaks

-  Cold outside air drawn into the house
-  Heated inside air draws into the attic





Is your home giving you **lung cancer**?

Radon is the leading cause of lung cancer  
in non-smokers.  
Your home poses the greatest risk. Test your home.

# RADON RISK IF YOU'VE NEVER SMOKED

<i>Radon Level</i>	<i>If 1,000 people who never smoked were exposed to this level over a lifetime* . . .</i>	<i>The risk of cancer from radon exposure compares to** . . .</i>	<i>WHAT TO DO:</i>
<i>20 pCi/L</i>	<i>About 36 people could get lung cancer</i>	<i>◀ 35 times the risk of drowning</i>	<i>Fix your home</i>
<i>10 pCi/L</i>	<i>About 18 people could get lung cancer</i>	<i>◀ 20 times the risk of dying in a home fire</i>	<i>Fix your home</i>
<i>8 pCi/L</i>	<i>About 15 people could get lung cancer</i>	<i>◀ 4 times the risk of dying in a fall</i>	<i>Fix your home</i>
<i>4 pCi/L</i>	<i>About 7 people could get lung cancer</i>	<i>◀ The risk of dying in a car crash</i>	<i>Fix your home</i>
<i>2 pCi/L</i>	<i>About 4 people could get lung cancer</i>	<i>◀ The risk of dying from poison</i>	<i>Consider fixing between 2 and 4 pCi/L</i>
<i>1.3 pCi/L</i>	<i>About 2 people could get lung cancer</i>	<i>(Average indoor radon level)</i>	<i>(Reducing radon levels below</i>
<i>0.4 pCi/L</i>		<i>(Average outdoor radon level)</i>	<i>2 pCi/L is difficult)</i>



<b>Radon Level</b>	<b>If 1,000 people who smoked were exposed to this level over a lifetime*...</b>	<b>The risk of cancer from radon exposure compares to**...</b>	<b>WHAT TO DO: Stop smoking and...</b>
<b>20 pCi/L</b>	About 260 people could get lung cancer	250 times the risk of drowning	Fix your home
<b>10 pCi/L</b>	About 150 people could get lung cancer	200 times the risk of dying in a home fire	Fix your home
<b>8 pCi/L</b>	About 120 people could get lung cancer	30 times the risk of dying in a fall	Fix your home
<b>4 pCi/L</b>	About 62 people could get lung cancer	5 times the risk of dying in a car crash	Fix your home
<b>2 pCi/L</b>	About 32 people could get lung cancer	6 times the risk of dying from poison	Consider fixing between 2 and 4 pCi/L



# What to do

- Test your home or building for radon
  - It's the only way to know if you have a radon problem
  - Short and long term tests
- You can fix a radon problem - mitigation
  - Most homes can be fixed for about the same cost as other common home repairs
  - \$1200 to \$1500 average repair cost

New home     \$300 - \$500

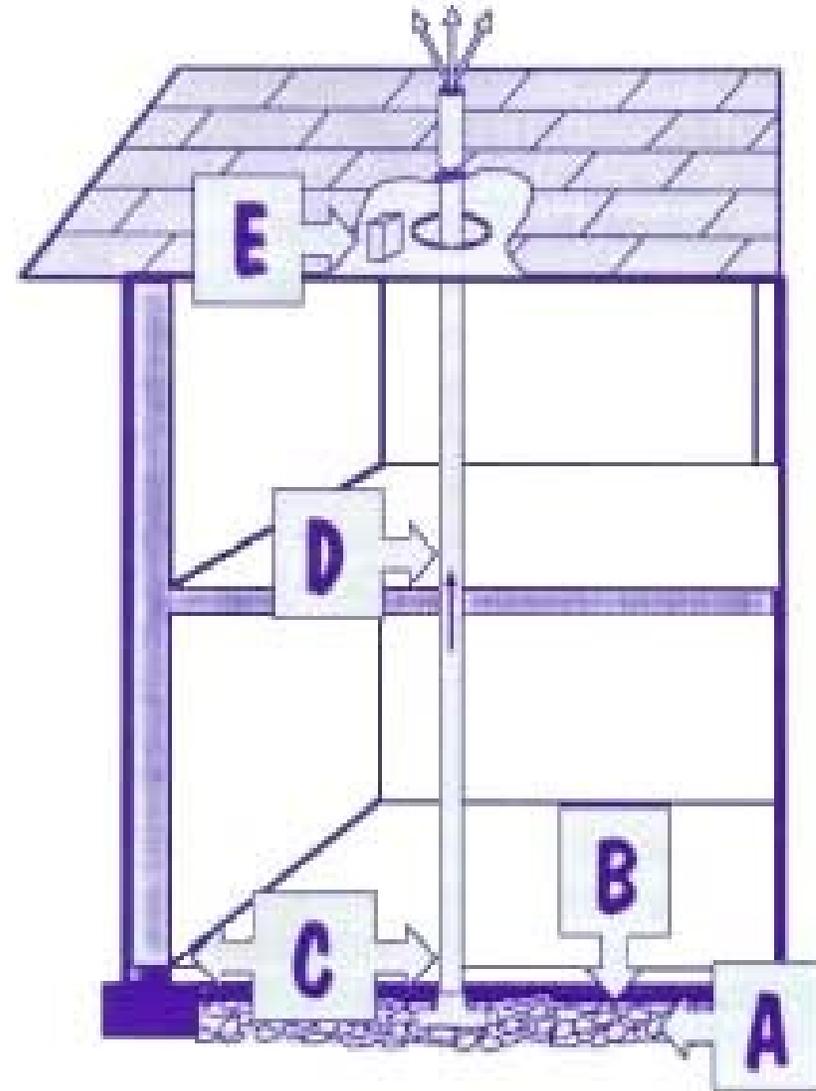
# Radon Monitor

Corentium - \$150

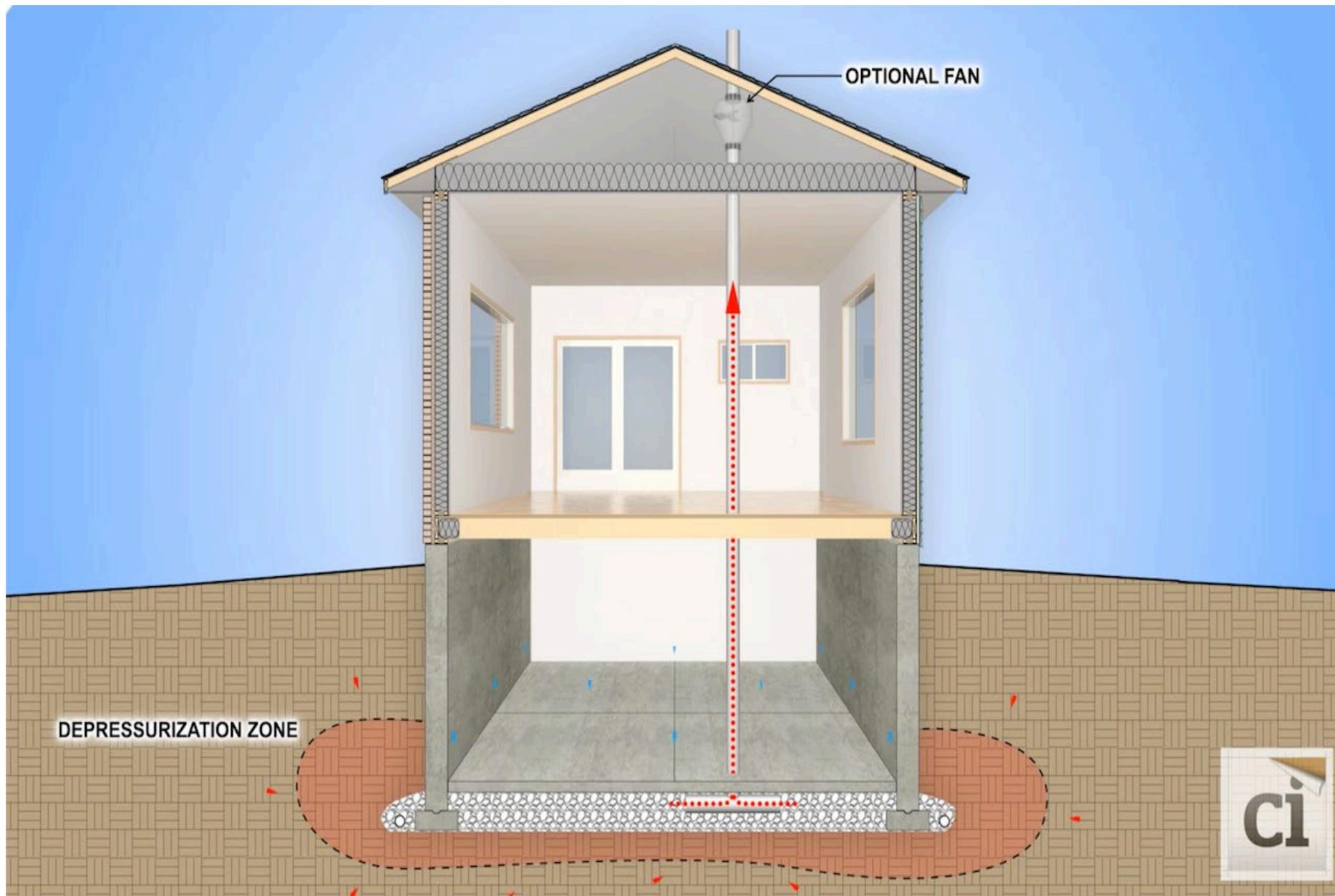


# Mitigation

- Sub-slab depressurization system
- A – gravel/sump
- B – poly sheeting
- C – caulk/seal
- D – vent pipe
- E - fan
- Ventilation
- Radon Resistant New Construction









# Carbon Monoxide - CO

CO is a colorless, odorless, tasteless gas produced by burning gasoline, wood, propane, charcoal, or other fuels.

Silent killer

Montana ranks third highest in carbon monoxide deaths

Carbon monoxide (CO) poisoning occurs when carbon monoxide builds up in your bloodstream. This can lead to serious tissue damage, or even death.

Carbon (CO) monoxide gas is produced by burning gasoline, wood, propane, charcoal or other fuels.

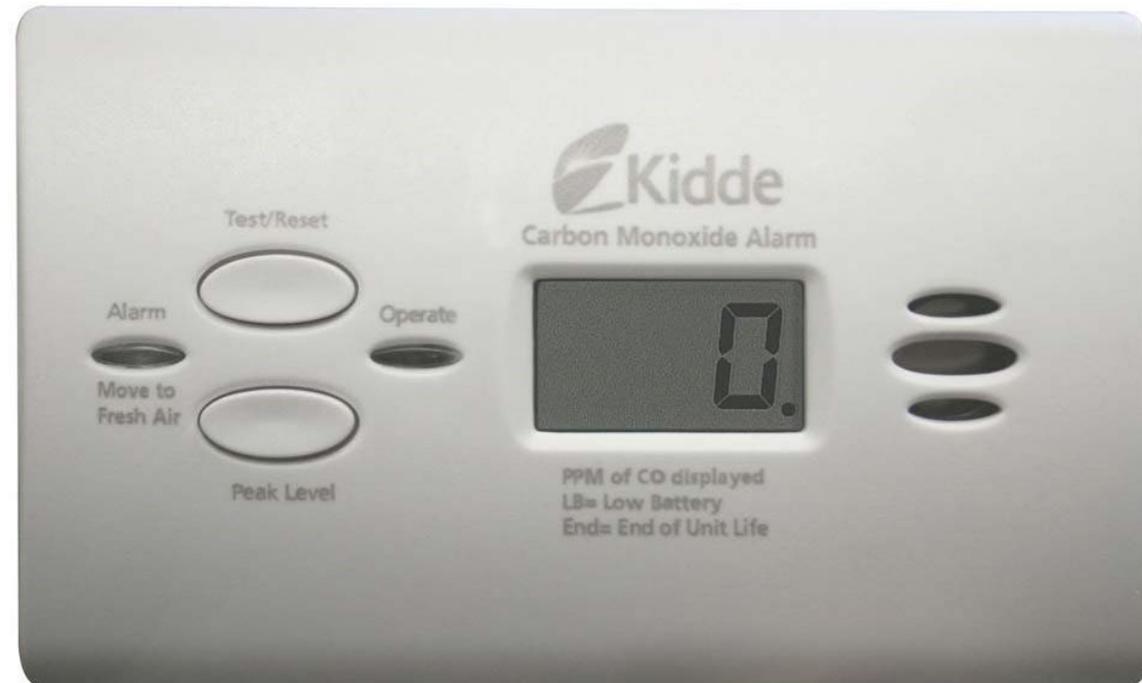
CO cannot be seen or smelled, but it can kill you or make you sick. **All CO poisonings are preventable!**

- Know the symptoms of CO poisoning:
  - Headache
  - Confusion
  - Fatigue
  - Seizures
  - Dizziness or loss of consciousness
  - Nausea
- Get to fresh air and seek medical help immediately if you or a family member has these symptoms!

- Give heating systems an annual check-up from a certified technician. Check for back drafting
- Never use portable gas heaters (grill or camp stove) inside the house.
- Don't use gas oven for heating
- Generators are outdoors-only. Keep them outside and at least twenty feet away from all windows, doors, and vents (that includes the garage!).
- Don't run your vehicle inside an attached garage—even if the door is open. And always open the door of a detached garage before running your car.

CO detector /monitor have a life expectancy of approximately 5 years and should be replaced accordingly.

One on each floor – in or near bedrooms



## If no one is feeling ill:

- Silence the alarm.
- Turn off all appliances and sources of combustion (i.e. furnace and fireplace).
- Ventilate the house with fresh air by opening doors and windows.
- Call a qualified professional to investigate the source of the possible CO buildup.

## If illness is a factor:

- Evacuate all occupants immediately.
- Determine how many occupants are ill and determine their symptoms.
- Call 911 and when relaying information to the dispatcher, include the number of people feeling ill.
- Do not re-enter the home without the approval of a fire department representative.
- Call a qualified professional to repair the source of the CO problem.

# Mold

About 5% of people are allergic to mold spores

- Sneezing
- Runny or stuffy nose
- Cough and postnasal drip
- Itchy eyes, nose and throat
- Watery eyes
- Dry, scaly skin





# Mold Control

If you want to control mold, you must eliminate at least one of the 3 requirements;

1. Food source
2. Suitable temperature around 40 - 100 degrees F
3. Moisture.

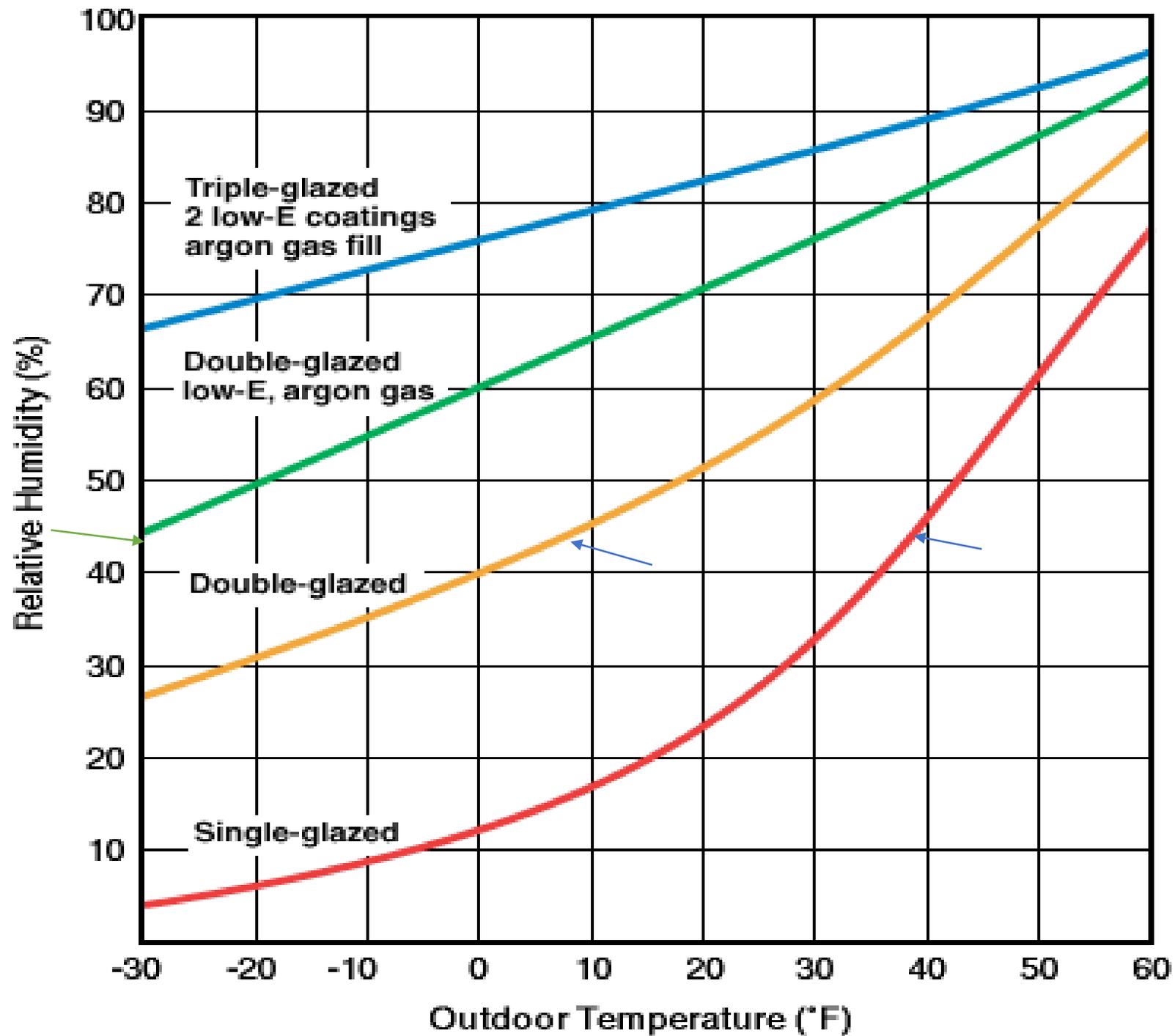
However there is only one that can be reasonably controlled - moisture.

# Moisture sources

- Back drafting gas furnace or water heater - 5 to 10 pints per day
- Firewood stored inside - 20 gallons per cord
- 5 minute shower -  $\frac{1}{2}$  pint
- Clothes dryer - 5 to 6 pints per load
- House plants - 5 to 7 plants - about 1 pint per day
- People - respiration and perspiration - about 1 gallon a day for family of 4
- Cooking dinner - family of 4 - 1.5 pint per day









1.25  
1-3/4  
MADE IN CANADA  
100%

# Mold in 1920 home





**A.O. Smith**

Based on standard U.S. Government specs  
**ENERGYGUIDE**  
Water Heater—NATURAL GAS  
Capacity (first hour rating)  
80 gallons  
Compare the Energy Use of this Water Heater  
with Others Before You Buy  
This Model Uses  
254 Gallons of Natural Gas per Year

## MOLD PREVENTION TIPS

- Keep humidity levels in check, no higher than 30-50%
- Be sure your home has enough ventilation. Use exhaust fans which vent outside your home in the kitchen and bathroom. Make sure your clothes dryer vents outside your home.
- Fix any problems (including air leaks) in your home's roof, walls, or plumbing so mold does not have moisture to grow.
- *Check for back drafting*
- Consider not using carpet in bathrooms or basements that may have a lot of moisture.



VENTILATION FAN



# Homeowner Education

- Why ventilation is needed
  - Remove moisture and odors
- How the controls work
- Simple written instructions

- For additional information and assistance contact the Montana DEQ

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