Citizens for Radioactive Radon Reduction (CR3)

Children's Environmental Health Network

RADON REDUCTION TOOLKIT

Preventing and Mitigating Radon Exposure

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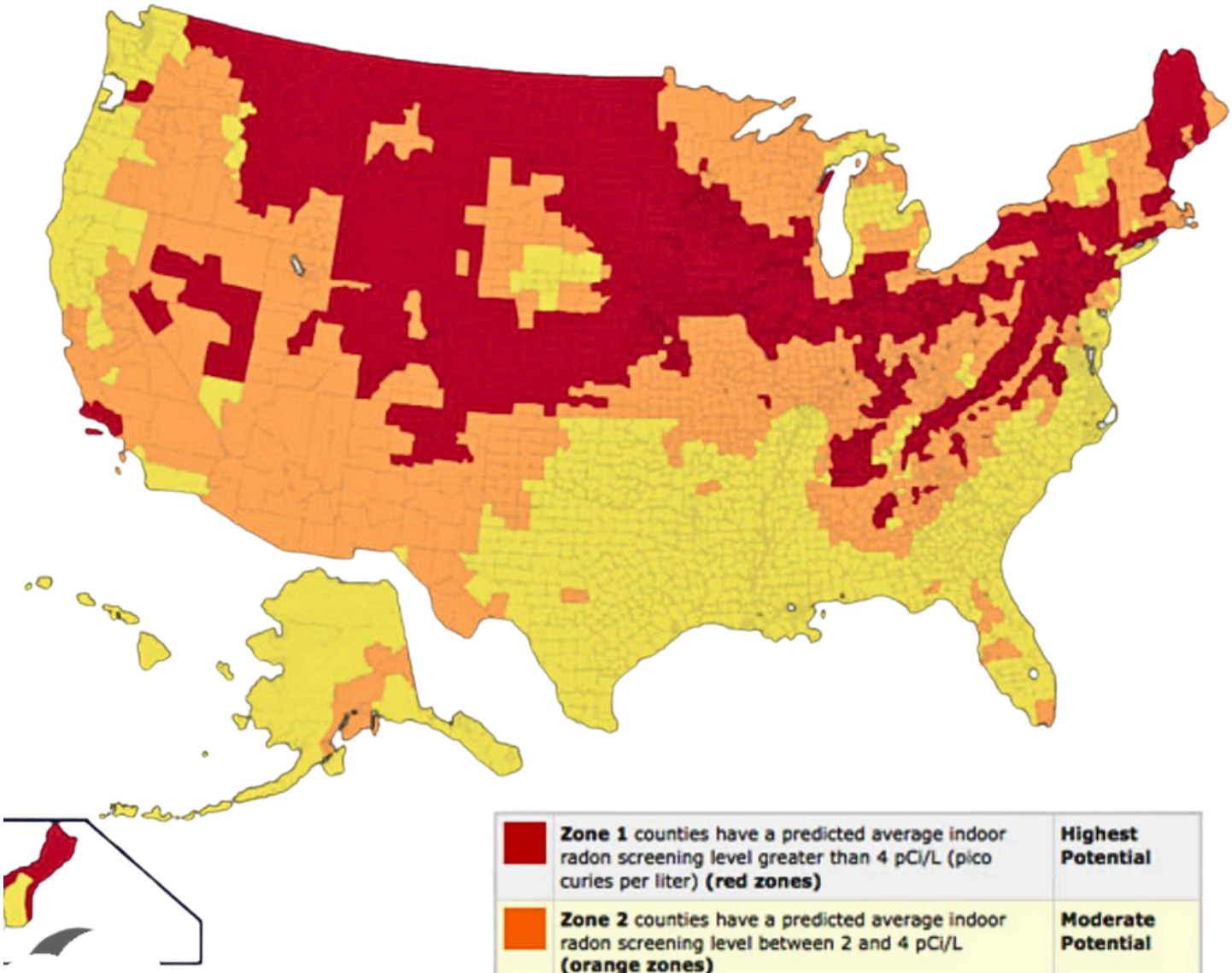
1. WHAT IS RADON?

Radon is an invisible radioactive gas that you can't taste or smell. It can only be detected through testing. It is produced by the natural break-down of uranium in rock, soil, and water. Some areas of the U.S. have higher levels of uranium than others, and thus, there is a greater chance that buildings in those areas may have higher radon levels. Regardless of location, any building can have a radon problem.

Radon enters a building by moving up through the ground and then through cracks and holes in the foundation. Buildings can trap radon, which can lead to harmful indoor levels.

RADON ACROSS THE U.S.



	Zone 1 counties have a predicted average indoor radon screening level greater than 4 pCi/L (pico curies per liter) **(red zones)**	**Highest Potential**
	Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L **(orange zones)**	**Moderate Potential**
	Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L **(yellow zones)**	**Low Potential**

2. RADON AND HEALTH RISKS

Radon exposure can have serious negative health impacts, primarily affecting the lungs. When radon gas is inhaled, its radioactive particles can become trapped in the lungs, where they release radiation that damages lung tissue over time. This damage increases the risk of lung cancer, making radon the second leading cause of lung cancer after smoking.

The risk is especially high for individuals who are exposed to elevated radon levels over long periods, and for smokers, whose lung tissue is already compromised.

Because radon is invisible and odorless, many people are unaware of their exposure, making regular home testing crucial for prevention.

Radon is the second leading cause of lung cancer.
It is estimated to be responsible for more than 21,000 lung cancer deaths each year in the United States.

3. CHILDREN AND RADON

Children are more at risk of radon exposure and its harmful effects because their bodies are still developing, making them more vulnerable to environmental toxicants. They breathe more rapidly than adults, which means they can inhale more radon gas relative to their body size.

Young children typically spend more time indoors than adults. Radon gas can accumulate indoors, especially in buildings with poor ventilation. Children inside these buildings can face prolonged exposure which increases the likelihood of lung tissue damage. Over time, this damage significantly raises their risk of developing lung cancer later in life, particularly if the exposure occurs during early, critical stages of growth.

According to the EPA, 1 in 5 schools has at least one classroom with a radon level that exceeds the EPA guideline of 4pCi/L.

Prevention is the best strategy for ensuring health and wellbeing, therefore, testing and taking mitigating action where appropriate is imperative.

4. RADON DETECTION

Because radon cannot be detected without specialized equipment, testing is the only way to know if your home or building has high levels.

01

CHOOSE HOW YOU'LL TEST

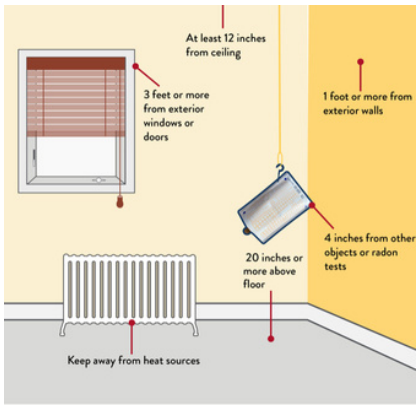
Start by selecting how you will measure radon:

- Digital Radon Detectors: These provide continuous monitoring and immediate results, making it easy to track changes over time.
- Radon Test Kits: Affordable short-term kits (2–7 days) are useful for quick screening, while long-term kits (90+ days) give a more accurate picture of average exposure.
- Professional Testing: Hiring a certified radon measurement specialist ensures expert setup and analysis.

02

SET UP TESTING KIT PROPERLY

Place your detector or test kit in the lowest regularly used level of the building (such as a basement or ground floor). Avoid kitchens, bathrooms, windows, vents, and exterior walls to prevent skewed results. Follow the manufacturer's or professional's instructions carefully.



03

COLLECT AND REVIEW THE RESULTS

For Test Kits: When your test is done, follow the instructions to seal it up and send it to the lab. They'll send the results back to you.
For Digital Detectors: Review readings regularly; most devices log short-term and long-term averages.

If results show radon levels at or above 4.0 picocuries per liter (pCi/L), it's time to take action with a radon mitigation system to reduce levels and help keep your home safe.

RADON DETECTORS

CHARCOAL RADON TEST KITS

Charcoal radon test kits are single-use kits that you can purchase online or at a hardware store. They work by absorbing radon particles over a set period of time—short-term kits measure for 2 to 7 days. Once the testing period is complete, the kit must be sealed and mailed to a laboratory for analysis, and the results are sent back later.

These kits are affordable and effective for screening or for getting an average radon level, but they only provide an average number and cannot capture fluctuations, such as spikes that may occur at night within a single day. The results can also vary significantly depending on the season in which the test is conducted, and results are not available immediately.

DIGITAL RADON DETECTORS

Digital radon monitors are compact, user-friendly devices that deliver continuous, real-time readings of radon levels indoors. Unlike traditional test kits that require mailing samples to a laboratory, these monitors display results instantly and track both short-term fluctuations and long-term averages. Many models also store historical data, allowing homeowners to spot trends over days, seasons, or after renovations and to determine when professional mitigation may be necessary.

5 . RADON MITIGATION

Radon mitigation involves reducing radon gas levels in buildings to minimize health risks, particularly lung cancer. Effective mitigation requires both short-term and long-term strategies to ensure immediate safety and sustained protection over time.

SHORT TERM

Short-term actions focus on quickly lowering radon levels, especially when test results show levels above the recommended safety threshold (typically 4 picocuries per liter, or pCi/L, in the U.S.). Ventilation is a common immediate step—opening windows and using fans to increase airflow can help disperse radon concentrations temporarily. Sealing cracks in floors and walls, especially in basements and foundations, can also reduce radon entry points. Additionally, short-term activated charcoal or electric air purifiers may slightly reduce radon levels in the air. These measures are not permanent solutions but are useful while more comprehensive systems are being planned or installed.

LONG TERM

Long-term actions are essential for permanently reducing radon levels and preventing reaccumulation. The most effective long-term mitigation method is the installation of a sub-slab depressurization system, which uses a vent pipe and fan to draw radon from beneath the building and release it safely above the roofline. Other long-term solutions may include improving the building's overall ventilation, installing a radon-resistant membrane during construction, or incorporating radon barriers in foundations. Long-term monitoring is also crucial—periodic radon testing ensures that mitigation efforts remain effective and can alert homeowners to any resurgence of radon over time.

CHILDCARE FACILITIES

If a child care facility detects high radon levels—typically at or above 4.0 pCi/L (148 Bq/m³)—it should take immediate action to protect the health of the children and staff. First, the facility should confirm the results with a follow-up radon test to ensure accuracy. While awaiting mitigation, temporary measures such as increasing ventilation and limiting time spent in affected areas can help reduce exposure. The facility must then arrange for a qualified radon mitigation professional to assess the building and install a permanent solution, such as a sub-slab depressurization system. Once mitigation is complete, follow-up testing should confirm that radon levels have been reduced to safe limits. Throughout the process, it is important to communicate openly with parents, staff, and local health authorities to maintain transparency and ensure everyone is informed about the steps being taken to ensure a safe environment for children.

6. ACTIVITIES FOR KIDS

RADON RIVALS

Radon Rivals are a group of superheroes with powers that help us fight radon gas and keep us safe!

WHAT IS RADON?

Radon is a gas that can come up from the ground and into buildings. If we breathe in too much radon gas, it can be very bad for our health.

We need to test our houses and schools for radon so that we can stay safe!


Outsmart Lung Cancer! Invite Purrfessionals to check for Radon

Credo

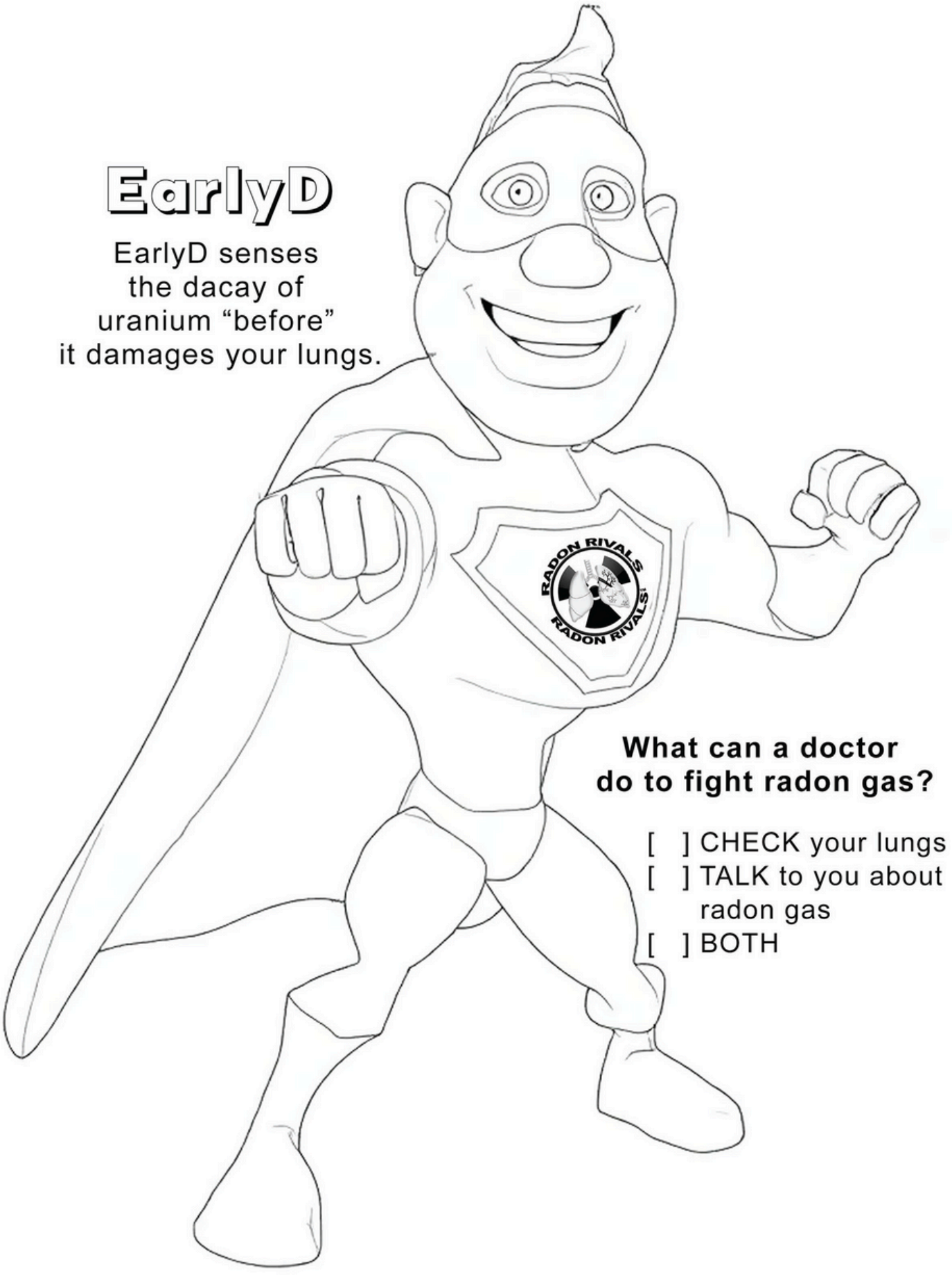
Credo is the protector who holds up the earth through the science of radon awareness

What can you do to protect the earth?

[ ] TEST for Radon [ ] FIX Radon [ ] BOTH

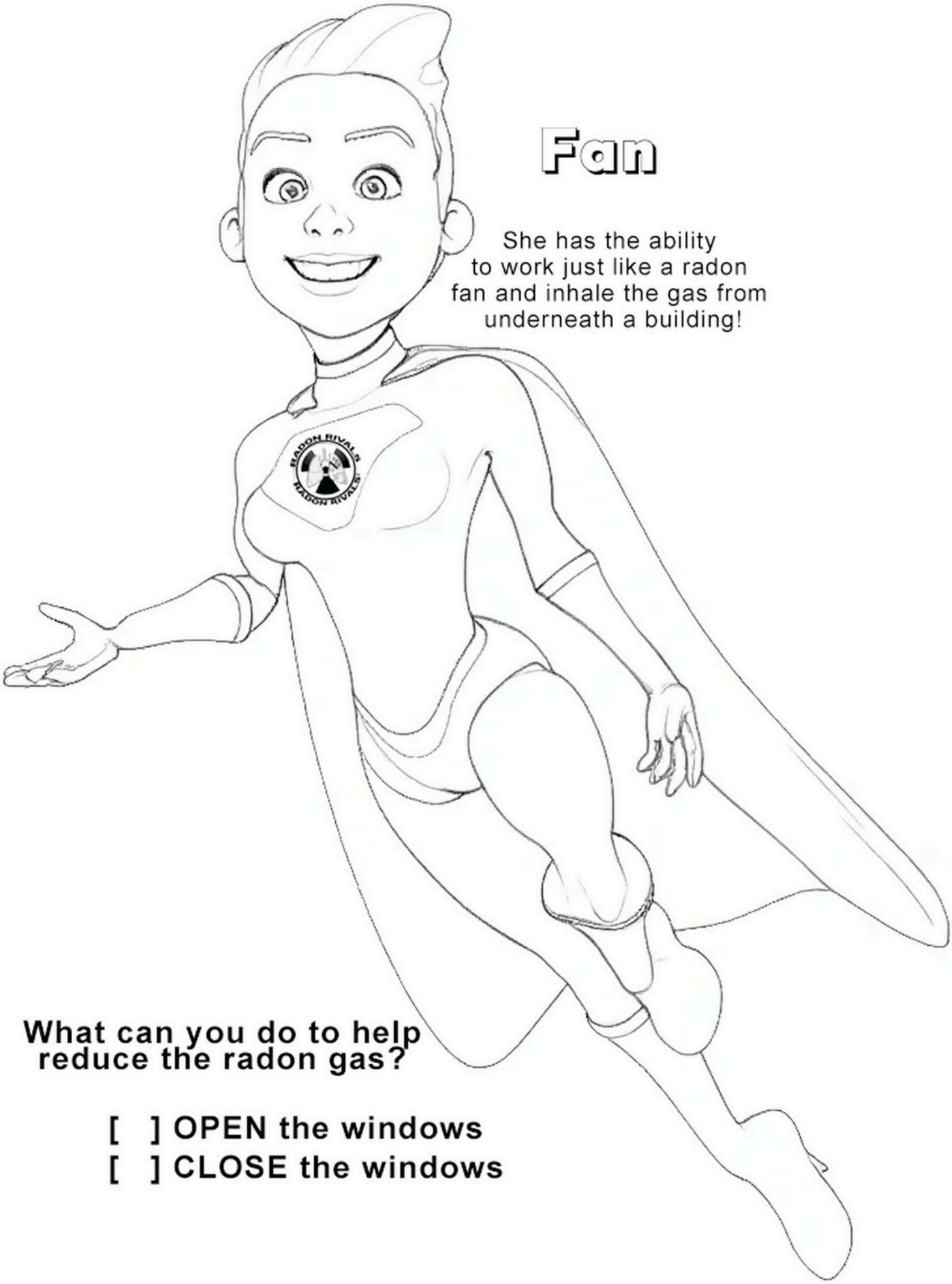
EarlyD

EarlyD senses the dacay of uranium “before” it damages your lungs.



What can a doctor do to fight radon gas?

[ ] CHECK your lungs
[ ] TALK to you about radon gas
[ ] BOTH



Fan

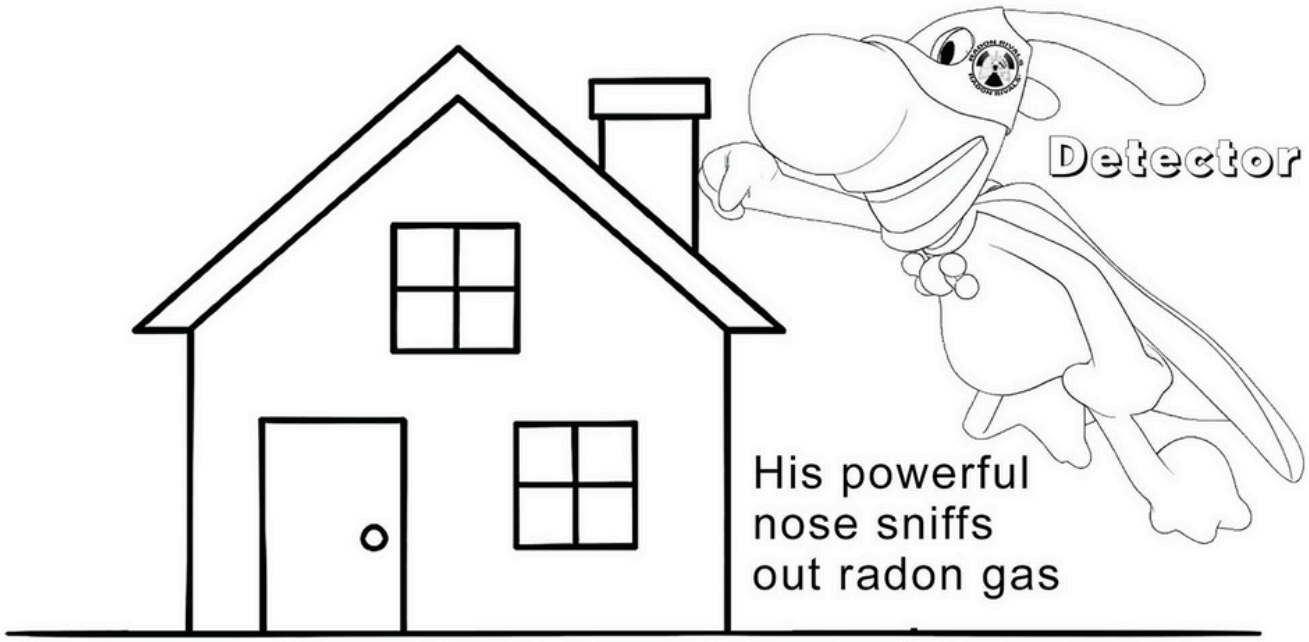
She has the ability to work just like a radon fan and inhale the gas from underneath a building!

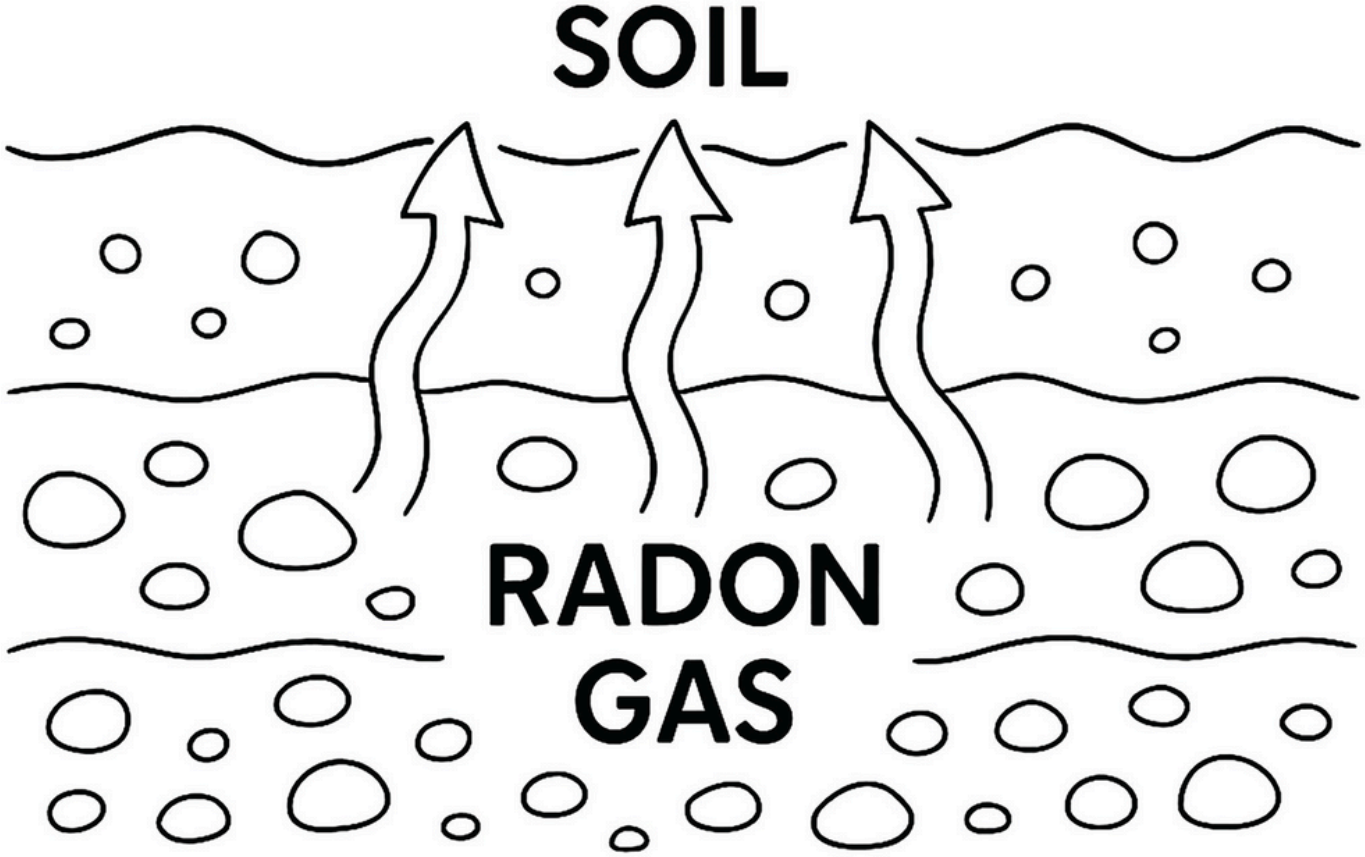
What can you do to help reduce the radon gas?

[ ] OPEN the windows
[ ] CLOSE the windows

Where Does Radon Come From ?

Radon comes from rocks and soil under the ground.





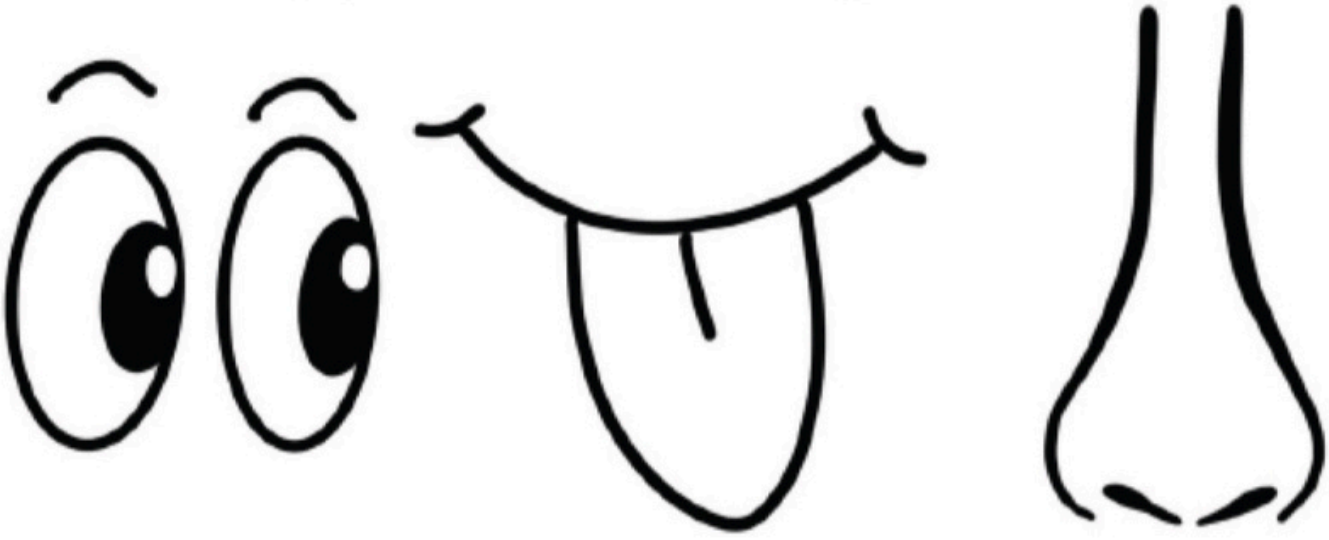
Radon Wordsearch

N	L	D	U	K	B	I	E	O	I	T	N	S	S
G	R	A	D	I	O	A	C	T	I	V	E	C	H
G	G	T	A	Y	M	T	E	G	A	S	E	N	E
N	A	T	U	B	I	A	N	T	U	R	Y	D	A
I	H	K	A	I	A	I	L	A	R	O	N	E	L
D	S	N	T	L	B	S	K	N	A	S	R	T	T
L	H	I	Y	U	A	O	D	Y	N	L	N	E	H
I	S	L	I	E	I	I	I	T	I	A	D	C	Y
U	L	T	U	R	H	L	M	D	U	C	U	T	G
B	G	U	U	N	O	U	B	O	M	B	N	O	O
I	T	R	A	I	G	C	I	L	T	E	C	R	I
U	A	U	R	R	H	S	K	I	I	N	I	G	D
O	I	N	B	R	E	A	T	H	I	N	G	N	N
N	A	I	A	G	A	E	O	H	C	I	U	T	L

SOIL
HEALTHY
URANIUM
GAS
ROCK
RADIOACTIVE
BREATHING
LUNGS
DETECTOR
BUILDING

RADON IS A RADIOACTIVE GAS

THAT YOU CAN'T



SEE, TASTE, OR SMELL!

PROTECT™
ENVIRONMENTAL

REDUCING RADON CAN MAKE MY LUNGS HAPPY AND HEALTHY!

PROTECT™
ENVIRONMENTAL

1. What is radon?

a. Solid
b. Liquid
c. Gas

2. You can see, smell, touch, and taste me when I am nearby.

a. True
b. False

3. Radon is found:

a. In the soil
b. In the water
c. In rocks
d. In the air
e. All of the above

4. Your family can use a radon test kit to find out how much radon is in your house.

a. True
b. False

5. If you get too much radon, where does it get stuck?

a. Lungs
b. Eyes
c. Hair

6. What are ways to get rid of radon?

a. Filling cracks
b. Fans
c. Washing radon away
d. A and B
e. All of the above

KEY: 1-c, 2-b, 3-e, 4-a, 5-a, 6-d

Decode the secret message to find out where you should look for Ray!

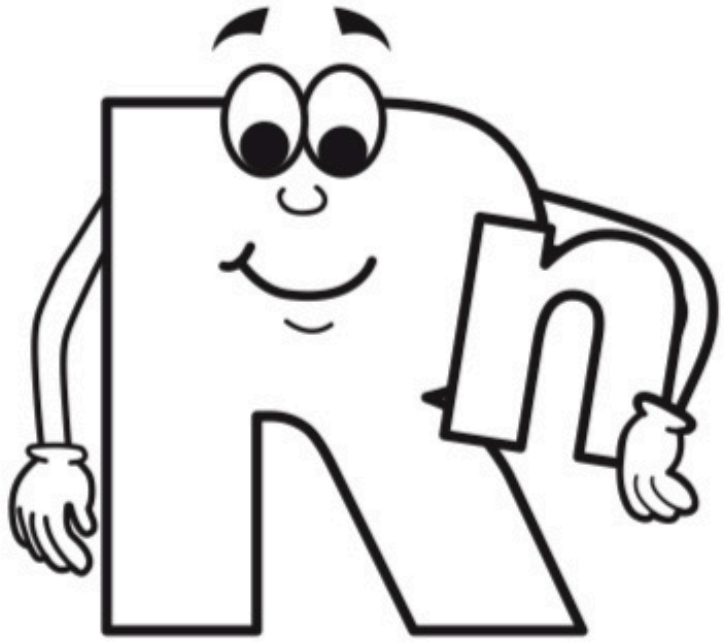
20	5	19	20		25	15	21	18

8	15	13	5		6	15	18

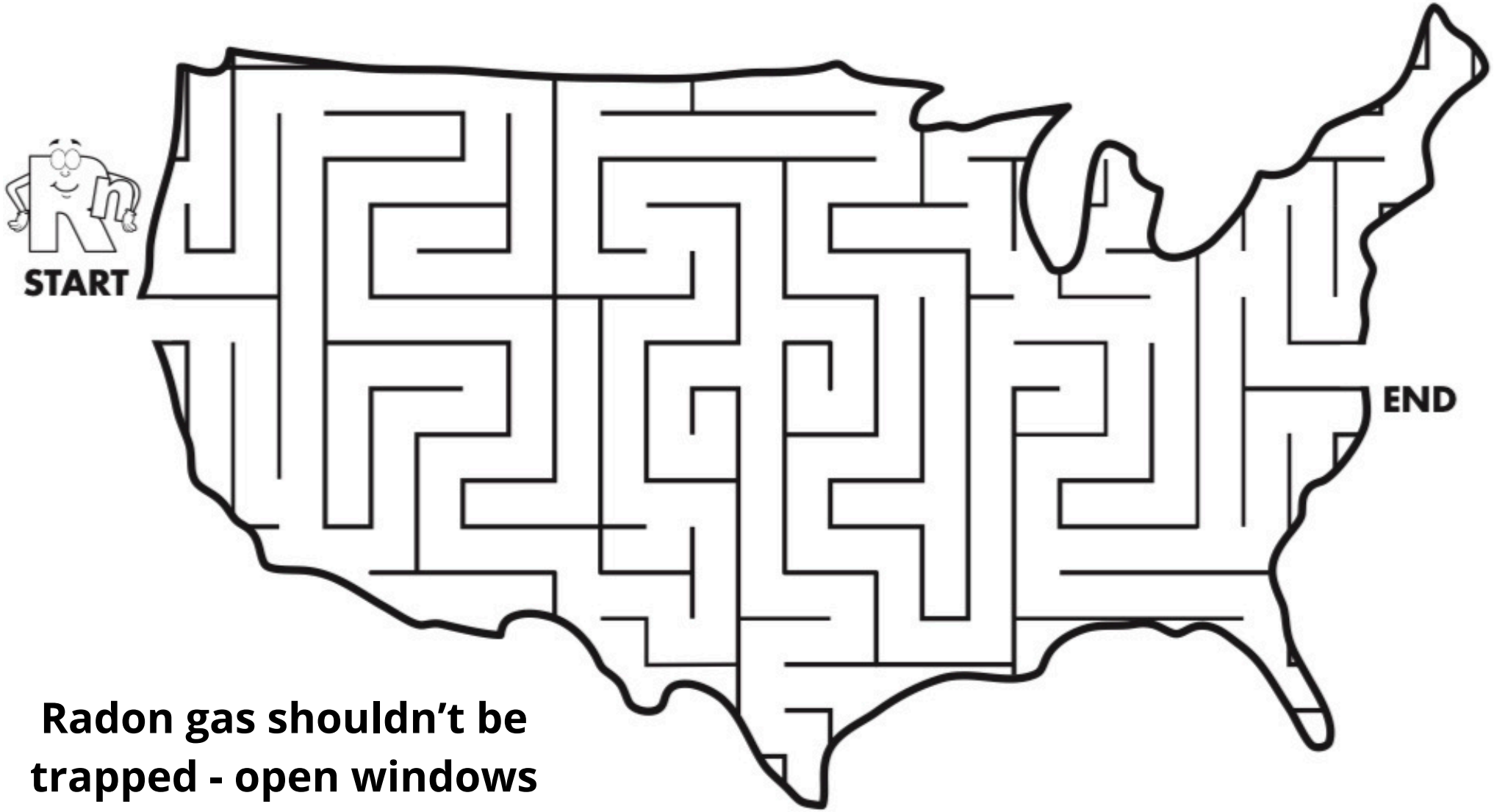
18	1	4	15	14	!

KEY

1 – A	7 – G	14 – N	21 – U
2 – B	8 – H	15 – O	22 – V
3 – C	9 – I	16 – P	23 – W
4 – D	10 – J	17 – Q	24 – X
5 – E	11 – K	18 – R	25 – Y
6 – F	12 – L	19 – S	26 – Z
	13 – M	20 – T	



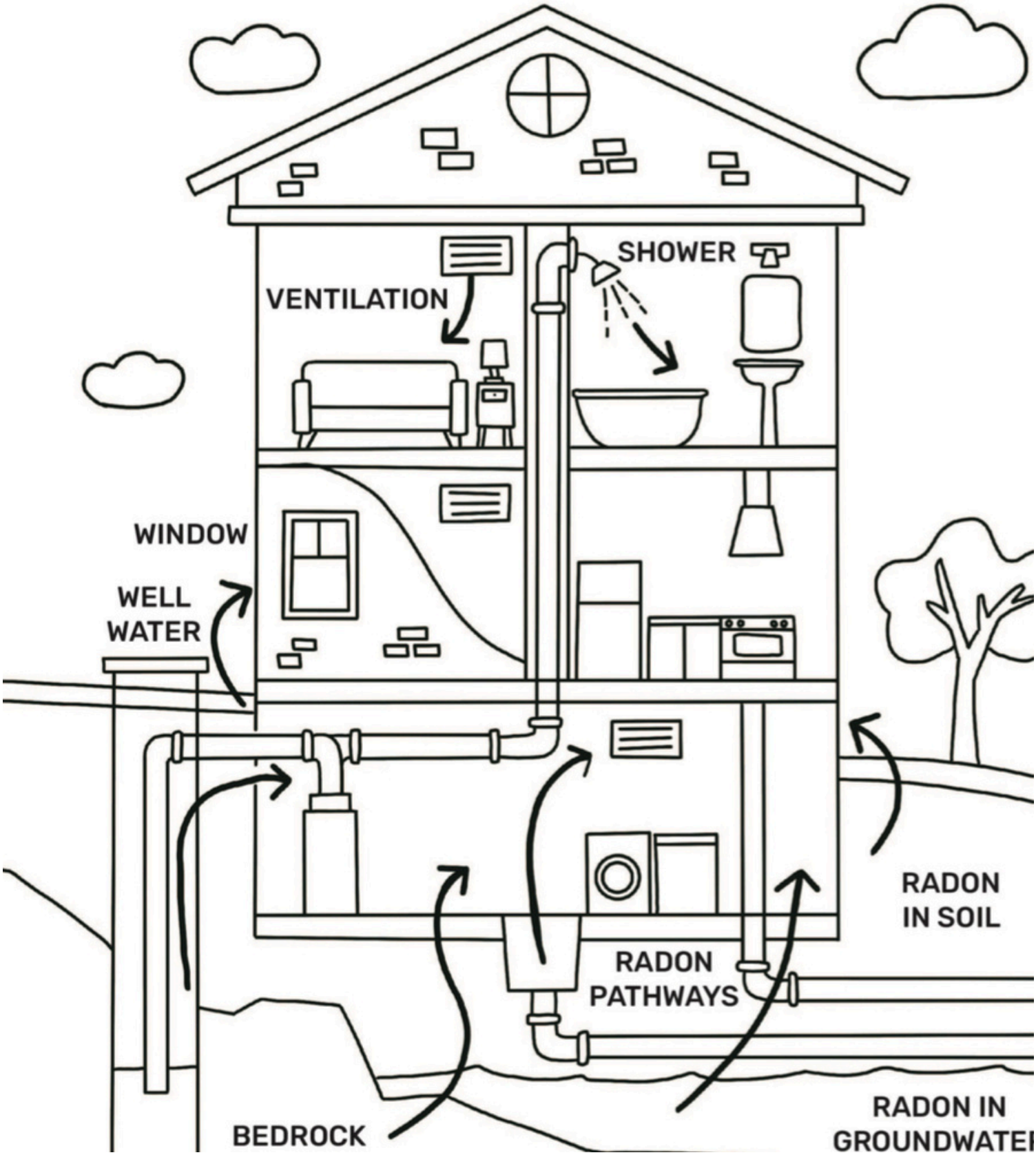
Can you help R get out of the maze?



Radon gas shouldn't be trapped - open windows and doors to let it out!

PROTECT™
ENVIRONMENTAL

How Radon Enters A Home



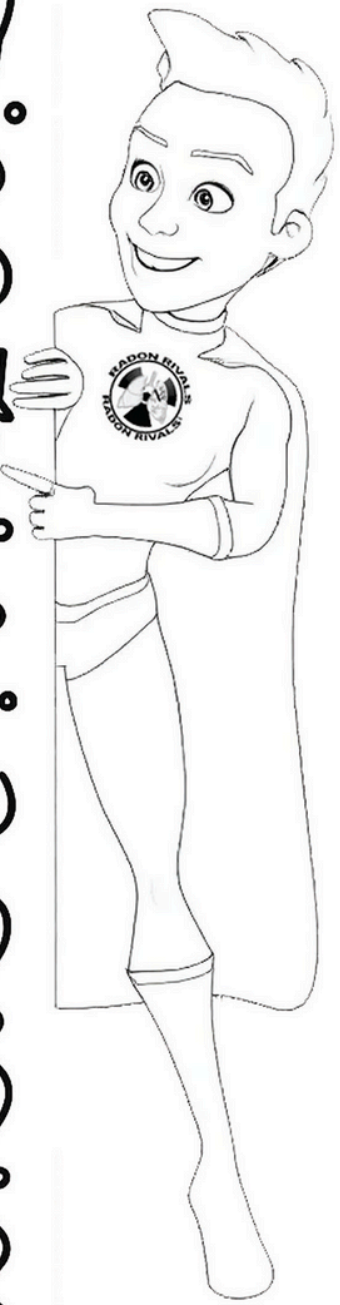
RADON RIVALS™

Color Away RADON!

RADON WORD SEARCH!

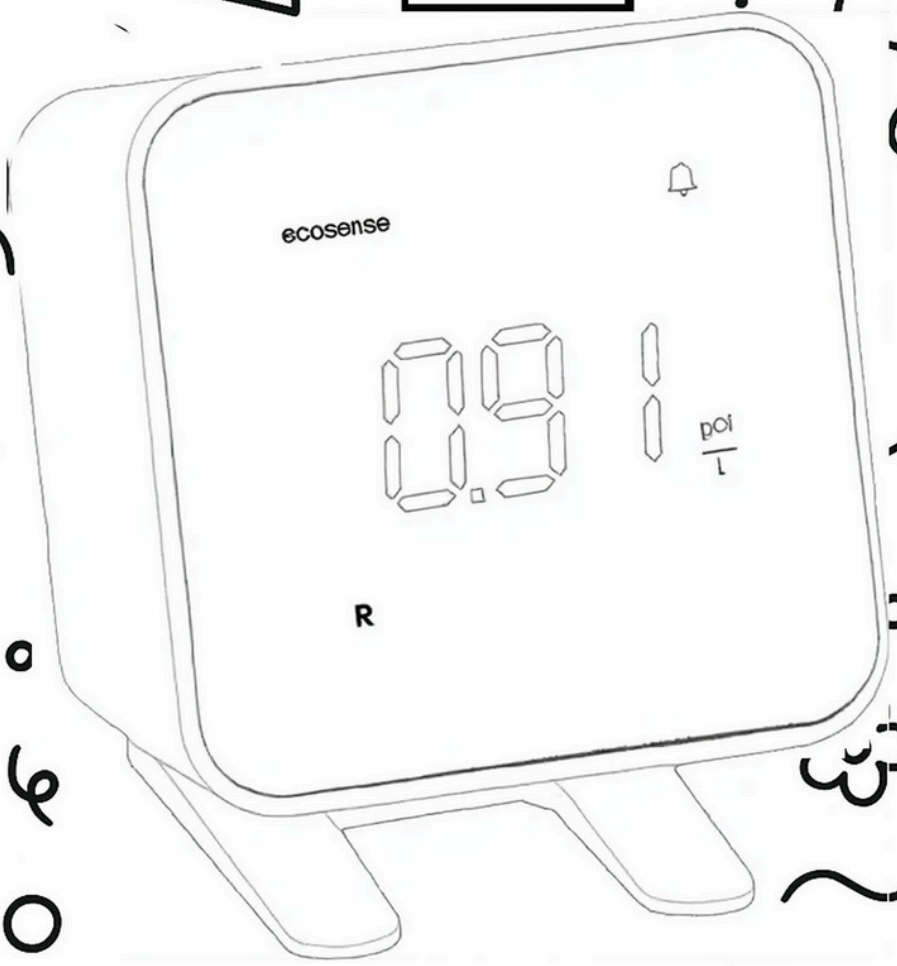
G A S S O I U L
T E S T L U N G
S A F E H O U S
S C H O O L F A
R O C K S F A N
R O C K S A I R
A R O C K S A I

GAS SOIL LUNGS
SAFE SCHOOL FAN
ROCKS AIR



MY RADON NUMBER IS ...

Write the number on the monitor here



6. EXTRA RESOURCES

- CR3 Citizens for Radioactive Radon Reduction Website: https://citizensforradioactiveradonreduction.org/
- CEHN Website: cehn.org
- EPA website: https://www.epa.gov/radon
- https://www.cdc.gov/radon/communication-resources/index.html
- American Lung Association: https://www.lung.org/clean-air/indoor-air/indoor-air-pollutants/radon