

## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

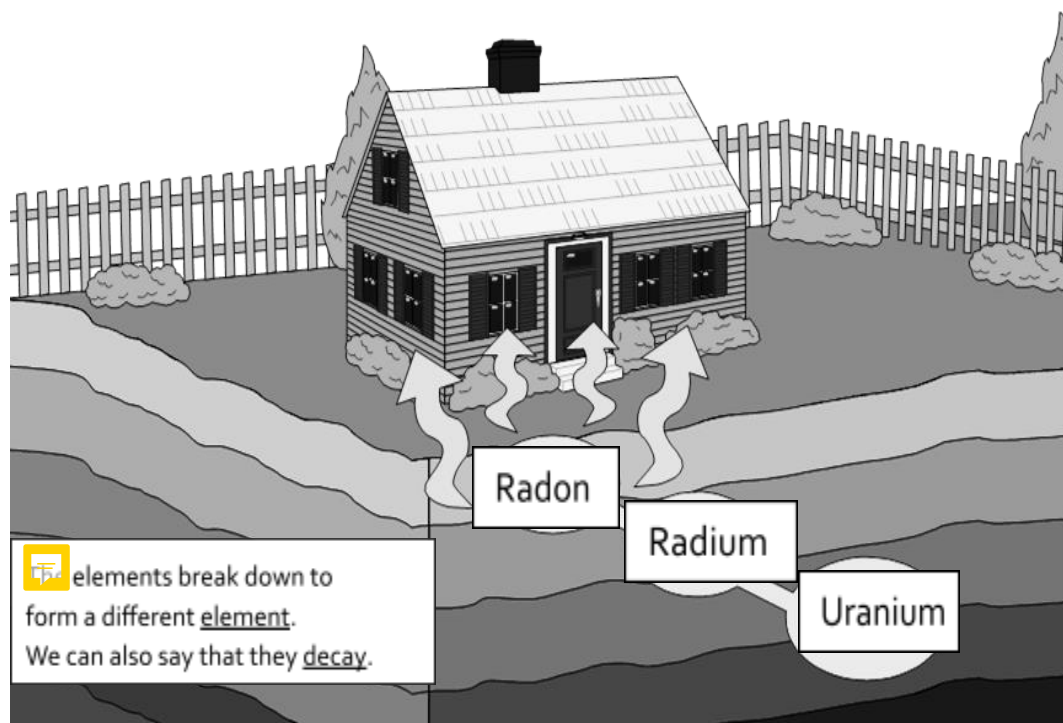
### PART 1: RADON IN YOUR LUNGS

1) What are 8 properties of radon?

- a) Odorless
- b) Invisible
- c) Tasteless
- d) Radioactive
- e) Gas
- f) Emits Alpha radiation
- g) Short half-life
- h) Decays

2) a) Label the picture below to show where radon comes from.

b) Complete the sentence in the picture to explain what happens to each element.

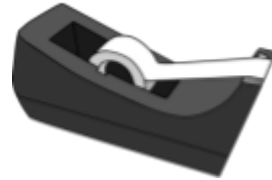


## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

### ACTIVITY 1: "STATIC CLING" DEMONSTRATION

- 1) The clear tape represents dust.
- 2) The paper hole punch pieces represent radon decay products.
- 3) How does the static cling in this demonstration simulate the attraction of radon decay products and dust particles?

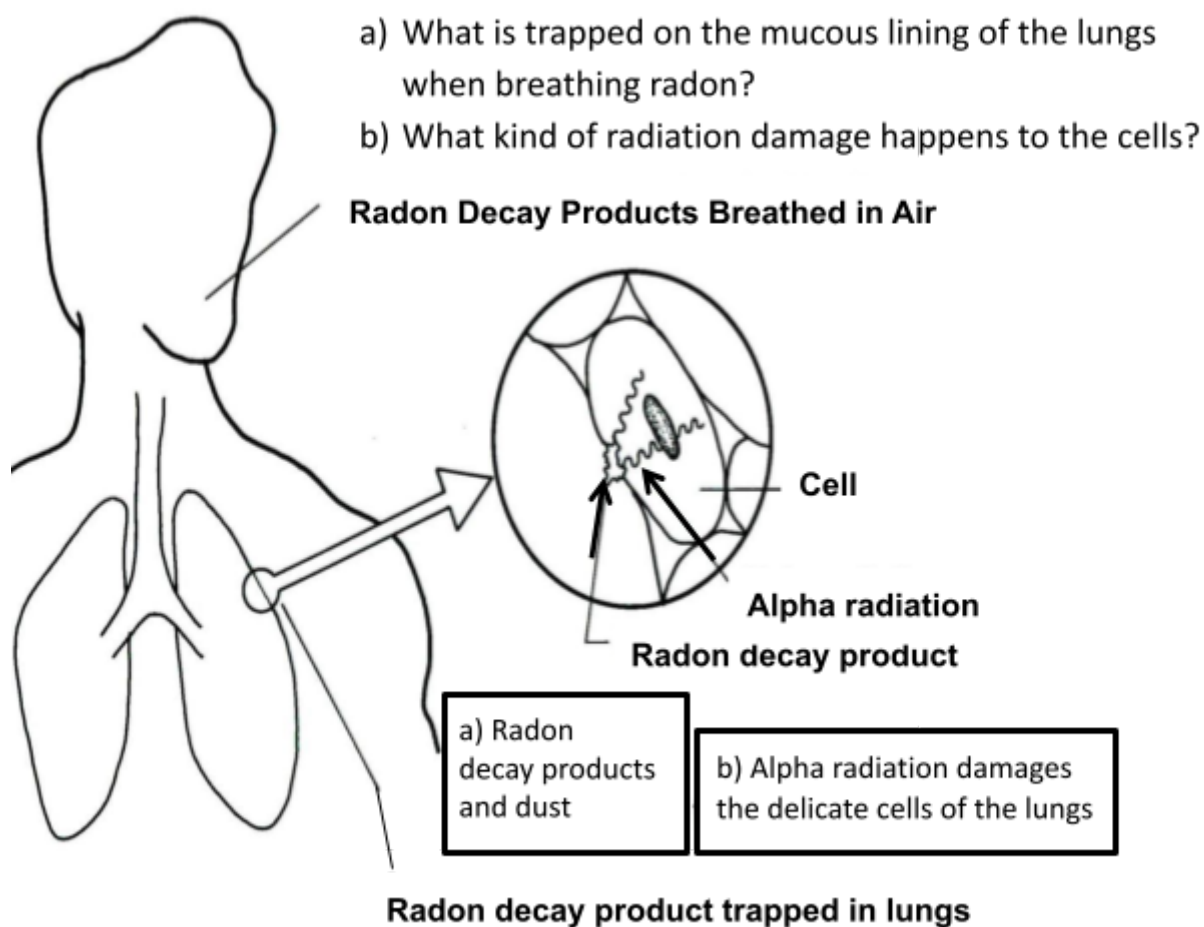


When the tape is pulled off quickly it is charged from friction, and the oppositely charged paper pieces are attracted to the tape. Radon decay products and dust are attracted to each other because they are oppositely charged.

## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Label the diagram below to identify how exposure to radon affects health.



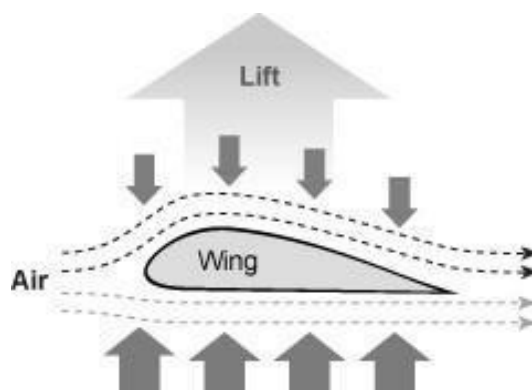
## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

### PART 2: RADON IN THE HOME & BERNOULLI'S PRINCIPLE

2) Label the diagram to the right to indicate

- a) Low pressure
- b) High pressure
- c) Fast-moving air
- d) Slow-moving air



3) Complete the sentences to accurately apply Bernoulli's Principle.

- a) When airflow speed is slower, there is higher air pressure.
- b) When airflow speed is faster, there is lower air pressure.
- c) When fast moving air moves across a surface, it creates a low pressure area which will cause lift.
- d) Radon moves from a high pressure area to a low pressure area.

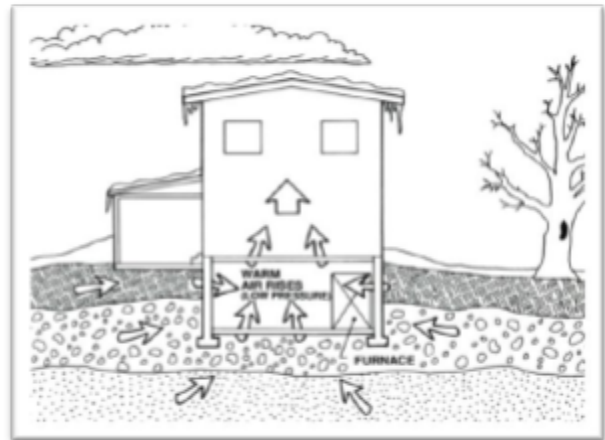
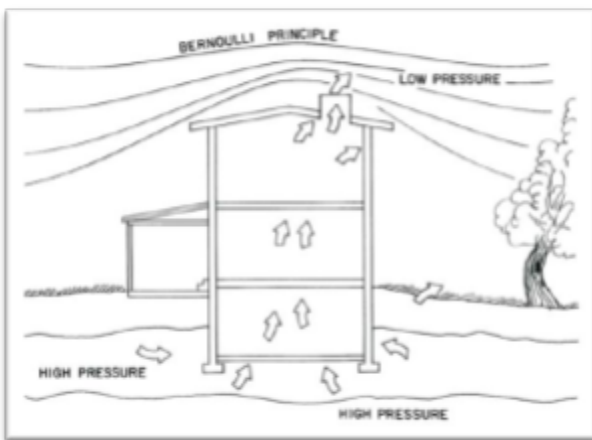
4) Name 3 weather factors that will force more radon into a home:

- a) high winds
- b) heavy rain or snow
- c) warmer temperatures inside than outside

## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

- 5) Name 3 examples of building designs or activities within a building that will force more radon into a home:
- a) airflow through chimneys and/or vents
  - b) forced air systems and exhaust fans
  - c) combustion appliances (stoves, dryer, etc.)
- 6) Below are two diagrams showing a home exposed to different weather factors. In your own words, explain how both situations can have similar outcomes for radon entry.

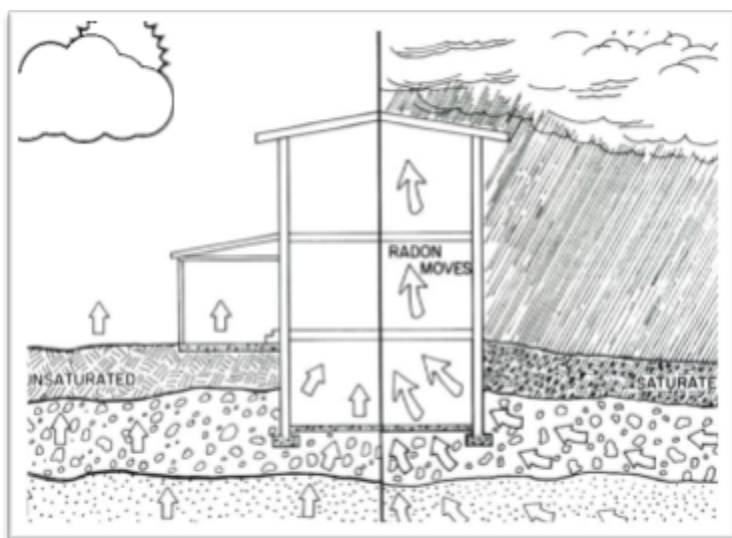


Radon moves from an area of high pressure to an area of lower pressure. High winds create a low pressure area above the house that draws the radon from the ground, through the cracks and pores of floors and walls, to the top of the house. During winter, heating systems raise indoor temperatures. As the warm air rises, the air pressure becomes lower in the lowest level of the house, allowing more radon to enter.

## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

- 7) Below is a diagram showing a home exposed to different weather factors. In your own words, explain how the situations can have different outcomes for radon entry.



Rain fills the spaces and "caps" the radon from escaping saturated soil, but the radon will be drawn to move to dry spaces underneath the home. The lower pressure area above will draw more radon up. Radon can escape from unsaturated soil so it will not be as concentrated as it is during heavy rain or snow.

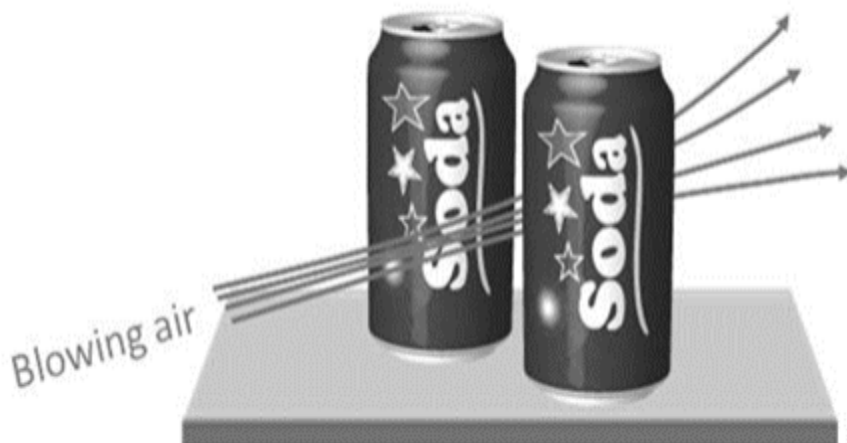
## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

### ACTIVITY: "CHEERS OR NO CHEERS?"

#### Procedures:

- a) Place 2 soda cans approximately 0.5 inch apart



- b) **Predict** what will happen if you blow between the two cans
- c) Record your prediction
- d) Try blowing between the cans
- e) Record observations and inferences

PREDICTION	OBSERVATIONS	INFERENCES
The cans will move together	The cans move together	The faster moving air between the cans creates a low pressure area. The cans are pushed toward the place with the lowest air pressure... cheers!

## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

### PART 3A: RADON TESTING

AT-HOME ACTIVITY: "THE ONLY WAY TO KNOW"

#### "Performing your Test"

**Procedures:** Starting on a Monday evening

1. Record the serial number of the test kit on the table below. (page 8)
2. Review the test instructions on preparing to test.
3. Place the Radon Sampler in a central room on the lowest level of the building suitable for occupancy, whether finished or unfinished.
4. Place the Sampler paper side up on a flat surface.
5. Place the Sampler 2-7 feet above the floor.
6. Place the Sampler at least 3 feet from exterior doors and windows and at least 1 foot away from walls.
7. Make sure the Sampler has at least 6 inches of space between it and any objects above or to the side of it.
8. The test begins immediately once opened, record your test start time.
9. Record your prediction for test result outcome and your reasoning.
10. Record observations of the location such as indoor/outdoor temperature, draft, movement of people, proximity to weather factors (warmer indoor temperature), building design factors (vents, chimneys) and activities within buildings (ovens, exhaust fans) relative to heating or cooling vents, types.
11. Ensure test kit is undisturbed until test end date (Thursday evening).
12. Keep instructions from test kit for end test directions.

#### HOME TEST

Test Kit Serial #	Prediction (Test results Will be above, at or below 4pCi/L action level, and why)	Environmental Observations (external & internal variables over duration of test)	Actual Test Results (pCi/L)	Inferences (Variables that may impact reliability of test)



## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

--	--	--	--	--

### PART 3B: RADON TESTING CONTINUED (4 DAYS LATER)

#### Stopping the Test" Procedures: (Ending Thursday evening)

- 1) Refer to original test kit instructions and carefully review the Successful Radon Test Checklist.
- 2) Update observations in table (see table above, page 8 in the student booklet) during test duration such as indoor/outdoor temperature, draft, movement of people, proximity to weather factors (warmer indoor temperature), building design factors (vents, chimneys) and activities within buildings (ovens, exhaust fans) relative to heating or cooling vents, types.
- 3) Return completely labeled and sealed test kit to your teacher on Friday's class or a designated drop-off location on Friday.

### PART 3C: RADON TESTING CONTINUED (UPON RECEIPT OF TEST RESULTS)

#### Procedures: (See table above, page 8 in the student booklet)

- 1) Record test results.
- 2) Compare results to your prediction.
- 3) Review observations and record your inferences in the table whether there may be any variables that would impact the reliability of the test results.

### PART 4: RADON POSTER CONTEST

The radon poster contest takes place every fall.

#### Identify the focus of your topic:

- ☐ What is radon?
- ☐ Where does radon come from?
- ☐ How does radon get into our homes?
- ☐ Radon can cause lung cancer
- ☐ Test your home for radon

#### Identify the medium will you use:

- ☐ Pencil, crayon or markers
- ☐ Paint (watercolor, tempera, or acrylic)

## 5<sup>th</sup> Grade Science Radon Lesson \_ Teacher Booklet

Teacher name: \_\_\_\_\_ Date: \_\_\_\_\_

- ☐ Collage
- ☐ Photographs
- ☐ Computer graphics

### Brainstorm:

What messaging and visual representation will be effective in making people **stop**, view/read and REMEMBER something important about radon?

