

TEACHER'S NOTES 4**WHAT IS THE RELATIONSHIP BETWEEN RADON AND BREATHING?****BACKGROUND**

In this exercise, students will explore the topic of human respiration and the exchange of oxygen and carbon dioxide within the alveoli of the lungs. It would be desirable to review basic lung anatomy and physiology with the students prior to completing this exercise. Figures 1 and 2 may be helpful in introducing these topics.

Caution: This investigation involves students running in place for a period of three minutes. Students under medical supervision or presently excused from physical education classes due to health reasons should not participate in the exercise component of Investigation #4.

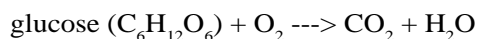
MINIMUM RECOMMENDED TIME ALLOCATION

One class period.

STUDENT RESPONSES

Question 8: Carbon dioxide was formed in the muscles throughout your body.

Glucose combines with oxygen to form carbon dioxide and water.



Question 11: Results may vary, but typically fewer breaths will be required to turn the solution yellow after exercise because of the larger amounts of CO₂ exhaled.

Question 12: The students should notice a fair amount of variability both for a given student and among students. This is attributable to variation in the rate of respiration and volume of exhaled air. The variability will be greater after exercise because students will become more tired after each successive trial. Physical condition will influence these differences.

EXTENDED ACTIVITIES

1. Have students describe in detail the path of an oxygen molecule (O₂) from the atmosphere, into the lungs, through the body, and back out to the atmosphere. You will need to remind them that an oxygen atom is part of carbon dioxide (i.e., the O's in CO₂).
2. Have students investigate the respiration rates before and after exercise (and change in rates) for individuals of different sex, weight, and height, and smokers versus non-smokers.

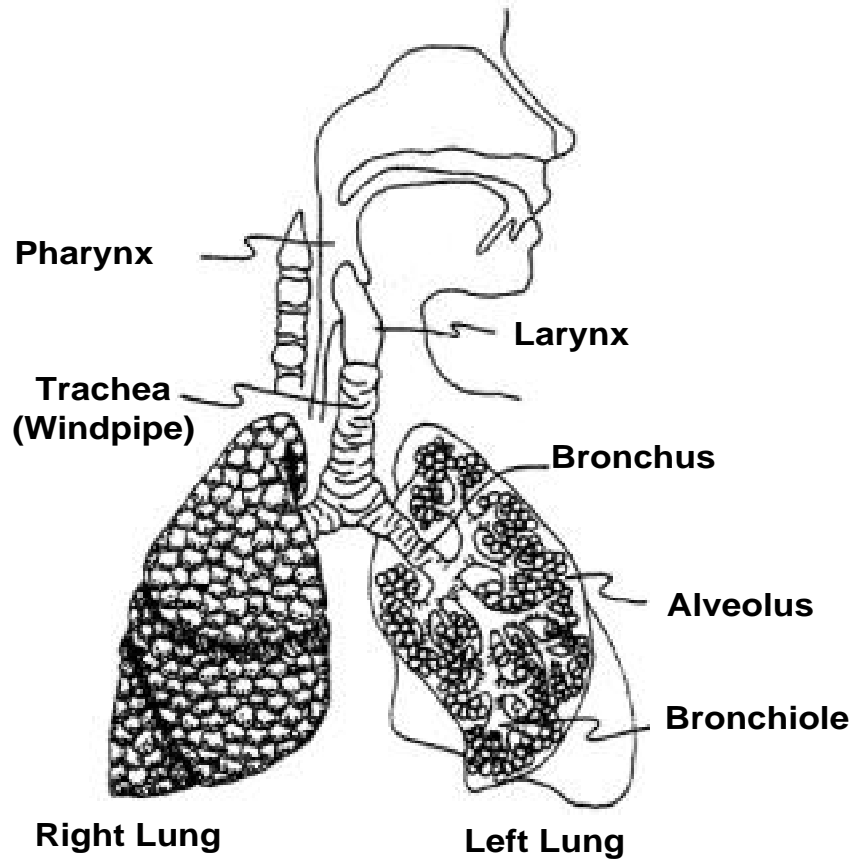


Figure 1. Human Respiratory System

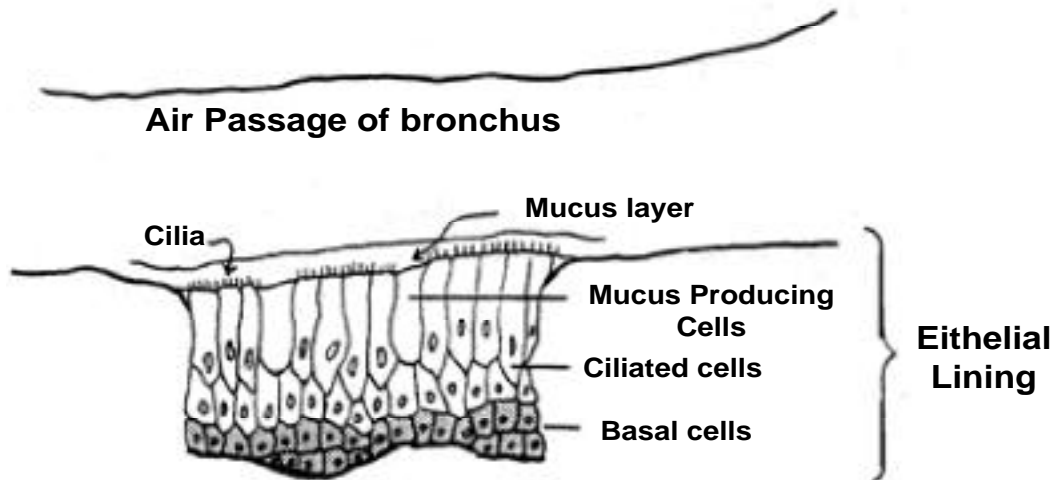
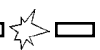


Figure 2. Cells lining the bronchi inside the lungs.





Radon Alert

Lesson Plan Evaluation Sheet

and FREE POSTER AND STORYBOOK offer

The New Jersey Department of Environmental Protection is happy to provide these lesson plans for use by teachers. In order to evaluate the use of the lesson plans, we would greatly appreciate your response to the following questions. All teachers who return these forms will receive a FREE RADON POSTER depicting information about radon in a colorful format and a STORYBOOK about a Native American child and his experience with radon in his home.

1. Which Radon Alert lesson plan(s) did you use?

2. How useful did you find it/them (check one) ?

- Not useful
- Slightly useful
- Moderately useful
- Very useful
- Extremely useful

3. Do you plan to use them again in the future? Yes No

4. In your view, what would make the lesson plans MORE useful:

Your name: _____ **Phone Number:** _____

Subject area: _____ **Grade:** _____

Mailing address:

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