

EFFECTS OF TOBACCO

Teacher Script Day #1

Purpose of Day 1 Lesson

- The relationship between long term use of tobacco and life threatening conditions including heart disease, cardiovascular problems such as strokes, and lung cancer has been clearly demonstrated by medical science. The purpose of this activity is to involve students in an interactive activity that demonstrates the damaging effect that tobacco has on the lungs.

Prep before class:

- Prepare 2 Sample Smokey Bottles approximately **ONE WEEK BEFORE CLASS:**

Supplies:

1. Cotton balls (bag of 150-200 is plenty)
2. Two heavyweight clear plastic bottles (20 oz. Coke or Pepsi bottles work well)
3. 1 package of modeling clay (6 oz. box is plenty)
4. 2 packs of generic cigarettes
5. Lighter

Make TWO Sample Smokey Bottles: 1) One bottle containing smoke inhaled from one cigarette and 2) One bottle containing smoke inhaled from a pack of cigarettes.

- A. << CAUTION >> Make these bottles outside or in a well-ventilated area and be sure to avoid the inhalation of the second hand smoke as it can be very dangerous to your health.
- B. Stuff the bottles loosely with cotton balls until completely full to the top
- C. Flatten the clay into a pancake and cover the opening (seal tightly)
- D. Make a small hole in the clay large enough to insert a cigarette; insert the cigarette (filter side first) into the hole
- E. Mold clay around cigarette to form a tight seal
- F. Light the cigarette and squeeze the bottle to exhale the air from inside the bottle, then un-squeeze the bottle to pull the smoke directly into the bottle. Continue squeezing and releasing the bottle until cigarette is burned out.
- G. For the second bottle “smoke” a whole pack of cigarettes

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→ Supplies for the Lab Experiment:

1. Remaining cotton balls
2. One empty clear plastic bottle (20 oz. Coke or Pepsi bottle)
3. Remaining modeling clay
4. Ball point pen or pencil, drinking straw
5. Smoking Lung Video/DVD
6. Two Sample Smokey Bottles (1 cigarette, 1 pack)

→ Make enough copies of the following items to hand out to all the students:

1. *Smoking Lung Science Report* (Pages 21, 22) or the *Smoking Lung Writing Response Activity worksheets* (Page 23).
2. *A Little Mouse Told Me* story books
3. *What Would You Say? worksheet* (Page 24)
4. *Some of the Many Ingredients Found in Tobacco handout* (Page 25)
5. *C.A.I. Cigarette Additive Investigators Research Activity* (Page 26)

Teacher Tips

- Have students assist with the experiment as much as possible.
- Allow time for students to share personal experiences about family members or friends who smoke or use tobacco.

Lesson Day #1

Tobacco Overview: Background information to know so you can share it with your students at the appropriate teachable moment.

1. Tobacco use is the leading preventable cause of death in the U.S.
2. Cigarette smoking causes approx. 443,000 deaths (about 1 of every 5 deaths) each year; this includes the 49,000 deaths from secondhand smoke exposure. ¹
3. There are approximately 600 ingredients in cigarettes, many are toxic and 69 are carcinogens (agents known to cause cancer). Nicotine is the main ingredient that causes addiction. When burned over 4,000 additional chemicals are produced, 50 of these being carcinogens. ⁷
4. Each day in the U.S. approximately 1,000 youth (under 18 years of age) initiate cigarette smoking on a daily basis. ¹

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5. Cigars contain many of the same addictive, toxic and carcinogenic compounds contained in cigarettes and are dangerous to the body; smoking a single large cigar is comparable to smoking a pack of cigarettes.
6. Smokeless tobacco causes significant health risks and should not be considered a safe alternative to smoking. Smokeless tobacco contains at least 28 carcinogens and increases a persons' risk of developing cancer in the mouth. ⁷
7. Smokeless tobacco users actually take in 3-4 times the amount of nicotine that is delivered by the average cigarette. ⁸
8. 2009 results from the Monitoring the Future national research study show:
 - Of the 8th graders surveyed, 6.7% of males and 6% of females reported smoking cigarettes in the last 30 days. ²
 - Peer pressure often makes students feel like they are the only one not smoking – since smoking is so uncommon, when they see a classmate smoking it stands out and sticks in their memory. They may falsely perceive that more of their friends are smoking than they really are. Again, the statistics show that the majority *do not* smoke.
 - Unfortunately, the number of smokers does increase as students' age:
 - By 10th grade, 13.7% of males and 12.5% of females reported smoking cigarettes in the last 30 days. ³
 - By 12th grade 22.1% of males and 17.6% of females smoked. ⁴

Smokeless Tobacco -

- Of the 8th graders surveyed, 6.3% of males and 1.4% of females had tried smokeless tobacco products in the last 30 days. ⁵
 - Unlike use of cigarettes, smokeless tobacco use tends to decrease as students' age and enter high school.
9. Cigarette smoking is directly responsible for approx. 90% of lung cancer deaths in men and approx. 80% of all lung cancer deaths in women. ⁶
 10. People who smoke cigarettes are much more likely to develop Chronic Obstructive Pulmonary Diseases (COPD) such as emphysema and chronic bronchitis.
 11. Pregnant women who smoke cigarettes or use tobacco products can harm their developing baby. Some research suggests that babies born to smoking parents are at a higher risk for developing lung conditions including asthma, bronchitis and even Sudden Infant Death Syndrome (SIDS). ⁹

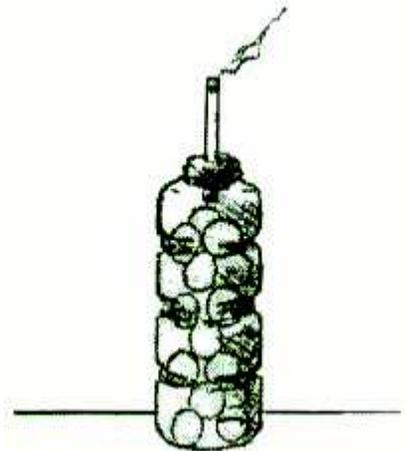
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REFERENCES:

- 1 http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm#use
- 2 <http://monitoringthefuture.org/data/09data/pr09cig6.pdf>
- 3 <http://monitoringthefuture.org/data/09data/pr09cig7.pdf>
- 4 <http://monitoringthefuture.org/data/09data/pr09cig8.pdf>
- 5 <http://monitoringthefuture.org/data/09data/pr09cig9.pdf>
- 6 http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/index.htm
- 7 <http://www.lungusa.org/>
- 8 <http://www.lungusa.org/stop-smoking/about-smoking/facts-figures/smokeless-tobacco-products.html>
- 9 <http://www.jointogether.org/news/research/summaries/2010/nicotine-increases-sids-risk.html?print=t>

Smoking Lung Lab Experiment

1. Discuss the lungs and explain how the lung tissue is very fragile. The lung tissue must be healthy in order for oxygen to pass from the lungs into other parts of the body.
2. Explain how cotton is similar to lung tissue in terms of its texture and consistency and that in this experiment it is going to represent the lung tissue.
3. Give each student a cotton ball and encourage students to feel the texture and examine its properties.
4. **Construct the Homemade Lung Machine** (see diagram).
 - A. Show the students the empty plastic bottle and explain that in this experiment the bottle will represent one of our lungs.
 - B. Let students stuff their cotton ball into the empty water bottle, then have them pass it on to their neighbor; have students fill the bottle completely with cotton. Or if you have students that need to move around, let them walk to the front of the class and put their cotton ball in the bottle.
 - C. Ask one student to come to the front and mold the modeling clay into a flat, circular shape; this will be the “lips” that cover the bottle opening.
 - D. Place the “lips” over the bottle opening and seal it tightly.
 - E. Let another student insert the ballpoint pen into the clay to form a hole.
 - F. Explain that a small straw will be used to simulate a cigarette. Poke the straw into the clay and mold the clay around the straw to form a seal around the straw.
 - G. Explain how the cigarette is to be lit.



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- H. Gently squeeze the bottle to produce the inhaling/exhaling effect.
5. **Discussion:** Ask students “What do you think will happen to the cotton balls once the cigarette is lit and the bottle is squeezed to inhale the smoke?”
 6. **Writing:** Ask students to write down their hypothesis on either the *Smoking Lung Experiment Science Report* (Pages 21, 22) or *Writing Response worksheet* (Page 23).
 7. **Completing the experiment:** Explain to students that it is illegal to have tobacco products on school property and that it is also against the law to light or smoke a cigarette in any public place. Since the school is a public place, you are not allowed to complete the remainder of the experiment in the classroom - - but - - an instructor from the PALS Program has completed this experiment at Wright State so that you can see the results on videotape/DVD.
 8. Show the “Smoking Lung” video/DVD.
 9. **Discussion:** Hold up the bottle the students helped make (clean cotton) and then show the two pre-made Smokey Bottles (the one cigarette and the one pack bottles). Ask to students the following questions:
 - A. “How are these different?” Observe the cloudiness in the bottle, the odor, and discoloration of the cotton balls. Some students may also notice that the Smokey Bottles have a strong and unpleasant odor as a result of the chemicals and smoke being absorbed by the cotton.
 - B. “What do you think caused the differences?” Explain that the tar in the smoke caused the color change. The tar is deposited in the fine fibers of the cotton and makes them heavier and sticky.
 - C. “What do you think the smoke would do to the tissue in your lungs?” The smoke damages the delicate tissue in the lungs and makes them less pliable and unable to work properly.
 10. Pass around all three of the bottles for the students to view closely.
 11. **Writing:** Complete the *Smoking Lung Experiment Science Report* or *Writing Response worksheet*.

A Little Mouse Told Me story

1. Read the story so that students get the basic facts about tobacco. Have the students take turns reading a few pages of the storybook aloud.

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2. Stop and ask questions concerning meanings and/or definitions that you think might give the students a problem.
3. Ask some of the discussion questions at the end of the book.

If you are using a Power Point version, the discussion questions are listed below:

- What did you think of the story?
 - What did you like and what didn't you like?
 - Why were the mice important?
 - What would you do if Ciggy came to your school?
 - Do you know people who smoke?
 - Do people ever try to get you to smoke? If so what do you do?
 - What would you do if a friend offered you a cigarette?
 - What would do if a friend was smoking?
 - Are cigarettes good for you? Why or why not?
 - What additives are put into cigarettes?
 - Why is it not a good idea for children to smoke?
 - Why do people smoke?
 - Is smoking addictive?
 - What does addictive mean?
4. Have students complete the *What Would You Say? worksheet* (Page 24) for homework or in class. They could work individually or in groups. You could expand this activity by collecting everyone's ideas and putting the responses together into a poster or bulletin board for the classroom; this activity should help students know what to say when someone tries to encourage them to smoke a cigarette or use tobacco.

Some of the Ingredients Found In Tobacco

1. Ask a student to pass out the *Some of the Many Ingredients Found in Tobacco handout* (Page 25).
2. Read over and discuss as a class.
3. If students have access to the internet, have them complete the short research project *C.A.I. Cigarette Additive Investigators* (Page 26) in class or as a homework assignment to find out more about what is added to cigarettes.

Additional homework - have students complete:

1. *Nicotine and Smoking Word Find* (Page 27)
2. *Some of the Ingredients Found in Tobacco Word Find* (Page 29).