

Name:

Date:

Class:

Real-World Connection Sheet **Answer Key**

The growing use of vaping products, especially among adolescents, has raised concerns about the safety of the chemical additives used in e-liquids. Recent research has begun to investigate how these additives affect lung surfactants, the substances that help keep the lungs functioning properly by reducing surface tension in the alveoli. Early findings suggest that certain additives, such as vitamin E acetate and some flavoring agents, may interfere with surfactant function, potentially leading to impaired breathing and lung injury. This area of study is critical for understanding the full respiratory impact of vaping beyond nicotine exposure.

1. How did the additives in the candy melts affect the performance of it coating your treat?

Potential answer: The additives changed how well the candy melt coated the treat. Some additives made the coating spread more easily and form a smoother, thinner layer, while others made it thicker, clumpier, or uneven. This showed that additives can change surface tension and viscosity, which affects how liquids flow and stick to surfaces.

2. How does surfactant work in your lungs?

Potential answer: Surfactant reduces surface tension inside the tiny air sacs in the lungs called alveoli. This helps keep the alveoli from collapsing and makes it easier for them to expand when we breathe in. Without surfactant, breathing would require much more effort, and oxygen exchange would be less efficient.

3. What do additives in vape liquid do to the surfactants in your lungs?

Potential answer: Some vape additives can interfere with or damage lung surfactants. This can increase surface tension, making it harder for the alveoli to stay open. As a result, breathing becomes more difficult and lung injury can occur, especially with repeated exposure.

4. List two ideas to prevent/fix this real-world problem of vaping lung injury.

Answers will vary. Potential answers:

- Educate teens and young adults about the health risks of vaping.
- Regulate or ban harmful additives in vape products.
- Encourage vaping cessation programs and support.
- Develop safer alternatives or medical treatments to repair lung surfactant damage.
- Increase research and testing of vape liquid ingredients before approval.

5. How did you feel about the lesson as a whole? What did you learn? What suggestions do you have to improve the lesson?

Answers will vary.

BROUGHT TO YOU BY