**Student Worksheet: Green light means “go”**

**Directions**: Watch this simulation and answer the “Before Reading” questions. Then read the online *Science News* article “Light, not just heat, might spur water to evaporate” and answer the following questions as directed by your teacher.

**Before Reading**

1. Before viewing the simulation, think about a glass of water sitting on your counter for five days. What changes can you observe?

2. During evaporation, what happens to the states of matter? Do you think this is a physical or chemical change? Explain why.

3. Watch the simulation. Explain what happens to a water molecule as it evaporates.

4. What action might you take if you wanted to speed up the evaporation of water? What does the simulation allow you to control to change the speed of evaporation?

**During Reading**

1. What are photons?

2. What do the study’s new findings suggest about the impact of photons on the bonds between water

molecules?

3. How does added heat affect the rate of evaporation?

4. Before these findings, what did scientists believe about the impact of light on evaporation rates?

5. In the new study, researchers shone light on various hydrogel samples. How did their measured rates of evaporation compare with what they expected?

6. The study’s findings suggested that different wavelengths of light impacted the water differently. Which wavelength — or color of light — stood out in the study?

7. What evidence did Janet A.W. Elliott point to that supported the claim that added heat alone could not account for the differences seen between samples exposed to different colors of light?

**After Reading**

1. Your best friend attempts to explain evaporation, but you notice that their explanation contains an error. Your friend says, “When water evaporates, the hydrogen and oxygen atoms in the water molecules all break apart, and that is how the water turns from a liquid to a gas. Find the error in your friend’s explanation and write out a response that would address and correct that error.

2. Before this study, scientists believed that light “indirectly” affected water's evaporation rates. However, after this study, scientists realized that light might also have a “direct” effect. After reading this story, consider the difference between an indirect effect and a direct one. If an action — such as shining a light on water — directly impacts a result, what does that mean? How does that direct impact differ from an indirect impact? Point to evidence from this story that supported the scientists changing their position regarding light's direct vs. indirect impact on water evaporation.