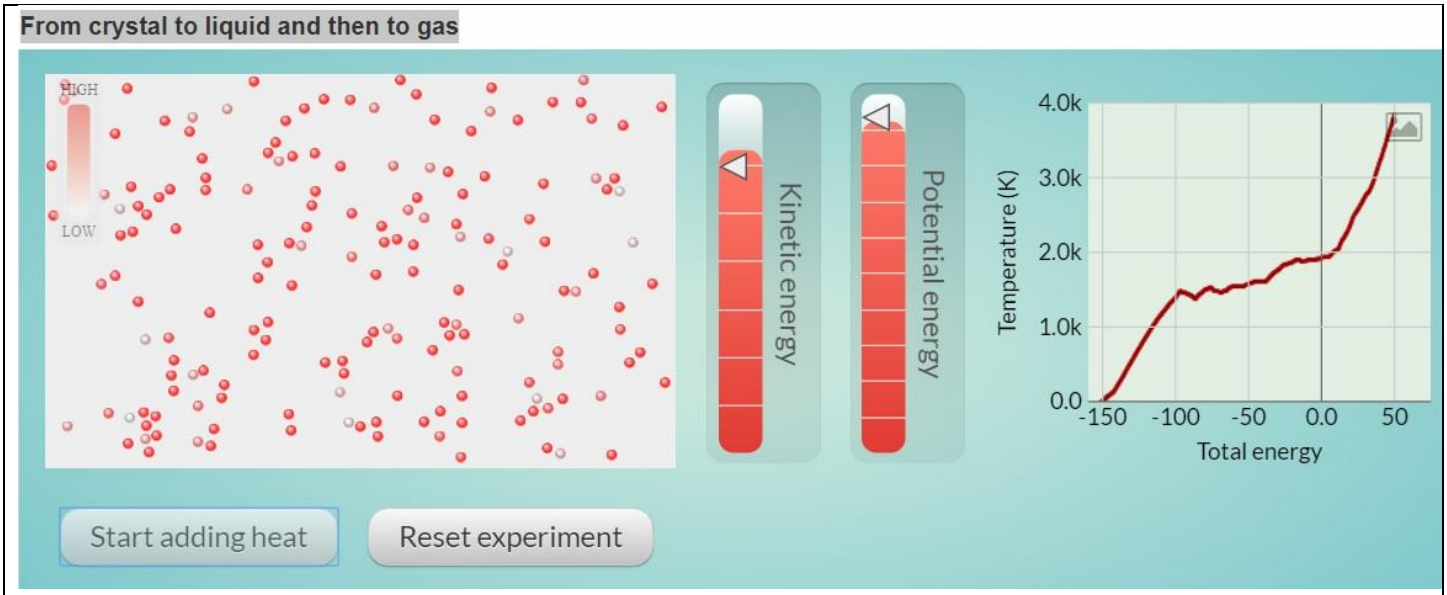
Evaporation Unit Study Guide

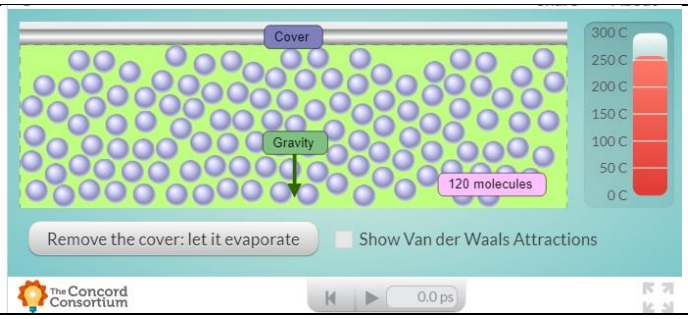
From crystal to liquid and then to gas

The following model shows crystal converting to a liquid and then to a gas when heat is applied. The two bar graphs in the middle show the kinetic energy and the potential energy. The line graph on the right shows the temperature as a function of the total energy of the system.



1. What happens to the overall energy over time?
2. What happens to the average kinetic energy when the temperature of molecules increases?
3. Which of the following statement is correct about the gas phase molecules?
4. Which of the following statement is correct about the molecules of the solid crystal?

In the following model we put many molecules in a container, which is initially covered from the top to prevent evaporation. Run the model for a while and observe the bar graph on the right, which represents temperature of the system. Then press the "Remove the cover. Let it evaporate" button and observe the change of the bar graph.

In the model (Concord site) to the right we put many molecules in a container. The bar graph on the right, which represents temperature of the system.	

5. When the cover is opened and allow the molecules to evaporate. What will happen to the temperature of the system?

6. In the activity you have learned about the arrangement and movement of atoms and molecules in each state of matter, the role of the intermolecular attractions in phase change, and about how energy relates to changing phases of matter. Please answer the questions below to summarize what you have learned.

When water cools from 2℃ to –2℃, what happens to the motion of the molecules?

The molecules stop moving.

The molecules remain moving just the same.

The molecules move less freely.

The molecules move more freely.

When water cools from 22℃ to 12℃, what happens to the motion of the molecules?

The molecules stop moving.

The molecules remain moving just the same.

The molecules move less freely.

The molecules move more freely.

When you get out of the water after swimming, you often feel cold as water evaporates off of your skin. That means you must be losing heat energy. As the water evaporates, it is changing from a liquid to a gas. Explain why the process of evaporation should use up heat from you