INQUIRY SKILLS MENU

○ Questioning	● Planning	● Analyzing
● Hypothesizing	● Conducting	● Evaluating
● Predicting	● Recording	● Communicating

What Affects the Evaporation of Water?

In order for clouds to form, water must evaporate from lakes, oceans, and plants. Of course, you wouldn't expect the same amount of evaporation above a desert as above an ocean. There are several other factors that affect the evaporation rate of water. In this investigation, you will design ways to test how evaporation depends on those other factors.

Question

What factors affect the evaporation rate of water?

Hypothesis/Prediction

In your group or as a class, discuss the factors that you think might affect the rate of evaporation of water.

(a) For each factor you can think of, write a prediction of how you believe it will affect the rate of evaporation of water.
(b) For each of your predictions, write a hypothesis explaining your prediction.

Design

For each prediction that you decide to investigate, design a controlled experiment to test your prediction and hypothesis. (If your factors are not assigned, you may want to reduce duplication of effort by discussing your decisions with classmates.)

(c) Describe the independent, dependent, and controlled variables for your experiment.
(d) Write a description of your procedure, step by step.
(e) Describe the safety precautions you will take.
(f) Design a table to record your observations.

Materials

(g) Make a list of the materials you require for your procedure.

Procedure

(h) Submit your procedure, safety precautions, observation table, and materials list to your teacher for approval.
(i) Carry out your procedure.

Analysis and Evaluation

(j) For each factor tested by your group and others in your class, state how changing the factor affected the evaporation rate of water.
(k) Describe any factors you were unable to test because of restraints, such as lack of materials.
(l) For the factors you investigated, explain whether your hypotheses and predictions were supported.
(m) If you were to perform your experiment again, describe and explain how it could be improved.
(n) Communicate the main conclusions of this activity in a report.

Understanding Concepts

1. One litre of water is placed in a large jar, and an equal volume of water at the same temperature is placed in a pie plate. Predict which will evaporate faster. Explain your prediction.
2. Equal volumes of milk at the same temperature are placed in two identical saucers to feed cats. But the cats are wandering outdoors, and some milk evaporates before they have a drink. One saucer is in a corner of a room with closed windows. The other is near an open doorway where a breeze is blowing. Predict which milk will evaporate faster. Explain why.
3. One lake is located at a latitude of 23° north, and a lake of the same size is located at a latitude of 46° north. Assuming that the water temperature, surface area, and amount of wind blowing across each lake are the same, would the rate of evaporation of water also be the same? Explain.
4. Would you expect ocean water and fresh water to evaporate at the same rate? Assuming that conditions are identical except for salt content, explain how you would test your hypothesis.
5. Some people say that they feel more comfortable in Phoenix, Arizona, when the temperature is 33°C than in Toronto, at the same temperature. Why?

SKILLS HANDBOOK: Planning an Investigation, Evaluating, Lab Reports