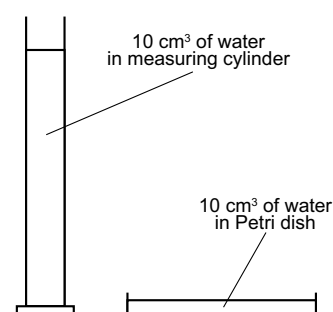


STUFF AND SUBSTANCE: INVESTIGATING EVAPORATION

When water is left in an open container, it slowly disappears – this process is called *evaporation*. In this activity you will investigate some of the factors that affect the rate of evaporation, and explain your results in terms of the particle model.

Task A What effect does surface area have on evaporation?

1. Put 10 cm³ of water into a measuring cylinder. Put 10 cm³ of water into a Petri dish.
2. Put the containers in the corner of a room or in a cupboard and leave for several days.
3. What happens to the volumes of water? How do the rates of evaporation compare? How does surface area affect evaporation?

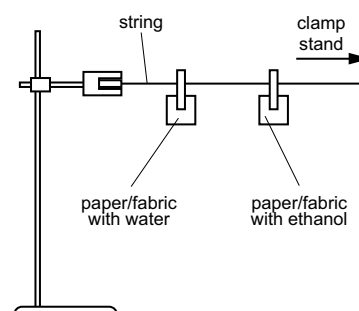


Task B Comparing evaporation of different substances

4. Using a pencil, label a piece of filter paper or fabric (approximately 3 cm x 3 cm) with the word 'water', and add your name. Put it on a watch glass, and add 3 drops of water with a dropping pipette.
5. Repeat with a second piece of filter paper (or fabric) using ethanol.
6. Hang the two pieces on a 'washing line' (a string stretched between two clamp stands) using paper clips and observe them for a few minutes. Does one appear to 'dry' more quickly?
7. Which substance evaporated faster?



Ethanol (IDA) is highly flammable and harmful through inhalation. Keep away from naked flames and use in a well-ventilated laboratory. Wear eye protection.



STUFF & SUBSTANCE:

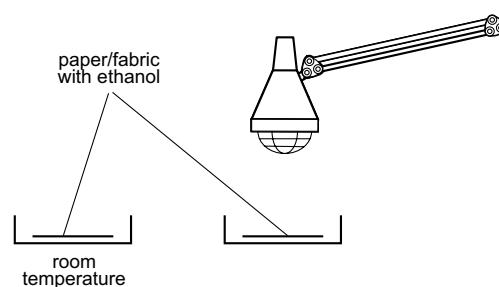
INVESTIGATING EVAPORATION

Task C What effect does temperature have on evaporation?

8. Use two pieces of filter paper (or fabric) as before. Label one 'cool' and the other 'warm'. Add 3 drops of ethanol to each.
9. Put one in a dish at room temperature and the other under a heat lamp. Observe them for a few minutes. Does one appear to 'dry' more quickly?
10. What effect did the temperature have on evaporation?

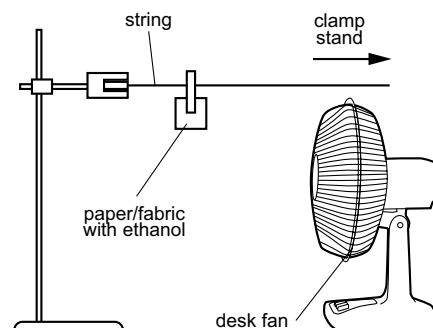


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Task D What effect does a breeze have on evaporation?

11. Use two pieces of filter paper (or fabric) as before. Label one 'no breeze' and the other 'with breeze'. Add 3 drops of ethanol to each.
12. Put one on a 'washing line' with no breeze, and the other on a 'washing line' next to a desk fan. Observe them for a few minutes. Does one appear to 'dry' more quickly?
13. What effect did the breeze have on evaporation?



Task E Particles

14. Use the ideas of the *particle model* to explain how the rate of evaporation is affected by:
 - the substance used
 - the surface area
 - the temperature
 - movement of the air over the surface.