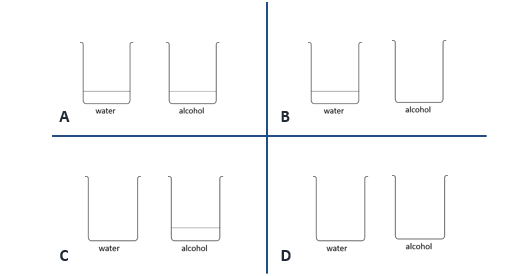
**Different liquids**

The same volume of water and alcohol are added to two beakers.

What do you predict will be observed after two weeks?



*Chemistry > Big idea CPS: Particles and structure > Topic CPS5: Evaporation > Key concept CPS5.1: Explaining evaporation*

|  |
| --- |
| **Diagnostic question** |
| **Different liquids** |

**Overview**

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| --- | --- |
| Learning focus: | Evaporation takes place at any temperature between melting and boiling point. |
| Observable learning outcome: | Recognise that evaporation occurs in different liquids, not just water. |
| Question type: | Diagnostic, simple multiple choice |
| Key words: | water, evaporation |

|  |  |
| --- | --- |
| **P** | **PRIOR UNDERSTANDING**  This diagnostic question probes understanding of ideas that are usually taught at age 5-11, to aid transition from earlier stages of learning. |

**What does the research say?**

Research by Coştu and Ayas (2005) found that some students associated evaporation only with water and not other liquids. This may be due to limitations in their experience with other liquids as reported by Kind (2004).

**Ways to use this question**

Students should complete the question individually. This could be a pencil and paper exercise, or you could use an electronic ‘voting system’ or mini white boards and the PowerPoint presentation.

The answers to the question will show you whether students understood the concept sufficiently well to apply it correctly.

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs.

*Differentiation*

It may help some students if you demonstrate the set-up of the experiment.

Practical work should be carried out in accordance with local health and safety requirements, guidance from manufacturers and suppliers, and guidance available from CLEAPSS.

**Expected answers**

D

**How to respond - what next?**

A student who selects option C may think that evaporation only occurs in water. Selection of option A could either mean that the student is unaware of the process of evaporation or that they hold some other ideas about the length of time it would take or the necessity of some sort of source of heat. Selection of B could suggest that a student has some understanding of the relative rates of evaporation of alcohol and water so further discussion would be needed to find out more about the student’s thinking.

If students have misunderstandings about the process of evaporation occurring only in water, you may wish to share example of the evaporation of other liquids.

**Acknowledgments**

Developed by Helen Harden (UYSEG), from an idea by Bayram Coştu and Alipaşa Ayas (Karadeniz Technical University, Turkey).

Images: Helen Harden and Alistair Moore (UYSEG).

**References**

Coştu, B. and Ayas, A. (2005). Evaporation in different liquids, secondary students' conceptions. *Research in Science and Technological Education,* 23(1)**,** 75-97.

Kind, V. (2004). Beyond appearances: Students' misconceptions about basic chemical ideas. [Online]. Available at: <http://www.rsc.org/learn-chemistry/resource/res00002202/beyond-appearances?cmpid=CMP00007478>.