SCIENCE

Lesson 8

Year 8

Topic: The particle model of matter

Using changes of state in everyday applications

Today you will:

- ► explain an application of changes of state in everyday life
- ► evaluate secondary sources of information for validity, credibility and relevance.

Resources

Find and prepare

Sheet 7 — Everyday applications of changes of state

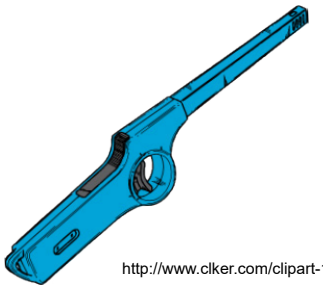
Key terms

For definitions and explanations of terms, please see the Glossary.

Science start-up

Change of state in everyday life

1. Shown here is a gas lighter, used to light gas stoves or barbecues. It contains a liquefied gas called butane. When the pressure is released, the liquid turns back into a gas, which produces a flame when ignited. These lighters are an example of an everyday application of change of state.



http://www.clker.com/clipart-10337.html

   a. In what state of matter is the butane inside the lighter?

   b. What is the advantage of having the butane inside the lighter in this state?

STOP

This lesson requires students to research information from third party sources and assess the scientific information found. The internet is used as an example. If you do not have access to the internet, contact your teacher for advice about other research materials you can use.

Lesson

Research everyday applications of changes of state

2. Open **Sheet 7 —** Everyday applications of changes of state. Choose one everyday application of a change of state that interests you.

When it comes to researching a science topic, the internet is a useful and convenient way to access resources. When selecting websites from search results, read the description, title, headings or introduction to see whether the site is relevant or irrelevant to your topic.

relevance: the extent to which an information source suits your task

Secondary sources of information

Almost anyone can publish on the web, but the information can be of variable quality. So an important part of research when using websites is to evaluate the quality of the information on the site.

Criteria used for this are: **credibility, validity** and **reliability**.

A **credible** source of information can be trusted. When asking about the products of chemical change, for instance, a chemistry professor may be regarded as a more credible source than a professor of another subject.

Validity and **reliability** can be used to describe data from scientific research and investigation, as well as information sources.

When **validity** refers to data from secondary sources, it is about the extent to which information reported on is based on scientific research and investigations that accurately measure, describe or record the phenomenon being studied.

When **reliability** refers to data from secondary sources, it is about the extent to which the information presented is based on well-explained or respected procedures, and is consistent with information derived from other respected sources. If the secondary source lists several other credible sources, or has an editor, these may be clues to its reliability.

These words are not specifically science words, but can be applied to science research. You may increase your understanding of these terms by looking them up in a dictionary.

Hot tip

Structuring your research

Keep the criteria in mind when selecting the source of your information. Limit your research to the following questions:

- In the example you have chosen, what material is going through a change of state?
- What states of matter are involved in the change of state?
- How is the change of state used in this example?

Use the model response as a guide to your research.

3. Complete Part A of **Sheet 7**.

Explain applications of changes of state in everyday life

4. Complete Part B of **Sheet 7**, where you will explain the change of state you investigated.

Hot tip

Make sure your explanation includes the four (4) points listed in **Sheet 7**. Use what you have learned from your research; as well as what you have learned so far about the properties of solids, liquids and gases, and how the particle model is used, to explain these properties and changes of state.

Evaluate secondary sources of information

5. The **Website — The 5W's of Website Evaluation** (Kathy Schrock) http://www.schrockguide.net/uploads/3/9/2/2/392267/5ws.pdf is a useful tool for evaluating websites.
6. Complete Part C of **Sheet 7**. Use the model response in Part C as a guide.

   Keep **Sheet 7** as your teacher may ask you to send it in for marking.