

# Comparing Different Types of Light Bulb

## Student Inquiry

### Overview

You will use Internet-based research, the corresponding factsheet and other reference sources to:

- Compare the types of light bulbs available to consumers
- Investigate the main light-emitting processes, how they work, and which processes are used by which types of light bulbs
- Consider which types of light bulb are the most environmentally friendly and why.

### Inquiry 1

Before you try to answer Inquiry 1, have a go at answering supporting questions 1A, 1B, 1C, 1D and 1E on the next two pages.

You can research information on these questions by using the resources listed on page 7.

**What is the difference between different types of light bulbs available today?**

### Supporting question 1A

**What types of light bulbs are available to consumers?**

### Supporting question 1B

**How do the types of light bulbs compare? Factors to consider: power used (Watts), power output (Watts) and/or output intensity (lumens), expected lifetime, cost, and other advantages or disadvantages e.g. safe disposal. It may be useful to construct a table to compare the variables you identify.**

### Supporting question 1C

**What happens in the light-emitting processes of thermal radiation, atomic emission, fluorescence and electroluminescence?**

### Supporting question 1D

**Which of these processes produces light from the sun?**

### Supporting question 1E

**Which process is used in each of the different types of light bulb you have investigated?**

## Inquiry 2

Before you try to answer Inquiry 2, have a go at answering supporting questions 2A, 2B, 2C, 2D, 2E and 3F on the next two pages.

You can research information on these questions by using the resources listed on page 7.

**Which types of light bulbs are most efficient and environmentally friendly and why?**

Blank area for student response.

### Supporting question 2A

**How could you measure the efficiency of a light bulb?**

### Supporting question 2B

**Which type of light bulb do you think is most efficient and why?**

### Supporting question 2C

**Which type of light bulb produces light most like natural sunlight and why?**

### Supporting question 2D

**Which type of light bulbs are the cheapest to produce and why?**

### Supporting question 2E

**Which type of light bulbs are the most expensive to produce and why?**

### Supporting question 2F

**Which factors do you need to consider when disposing of light bulbs?**

## 🕒 Resources

### Light, Light Bulbs and the Electromagnetic Spectrum

(<http://www.schoolgen.co.nz/ee/e4.factsheet.aspx>)

This factsheet provides essential background information and a glossary of terms.

### Websites

These websites provide access to easy-to-read technical information as a start point for your research.

- **Level** provides information about energy efficient lamps  
<http://www.level.org.nz/energy/artificial-lighting/>
- **How Stuff Works** offers information about fluorescent lamps  
<http://home.howstuffworks.com/fluorescent-lamp.htm>
- **Wikipedia** provides information about compact fluorescent lamps  
[http://en.wikipedia.org/wiki/Compact\\_fluorescent\\_lamp](http://en.wikipedia.org/wiki/Compact_fluorescent_lamp)
- **Smarterhomes** has information about lightning and offers energy saving tips  
<http://www.smarterhomes.org.nz/energy/lighting>

### Packaging information

You could obtain information from the packaging on a range of light bulbs.