Science Media Centre Fact Sheet

Energy-saving light bulbs

What are compact fluorescent light bulbs?

- **Compact fluorescent light bulbs** (or compact fluorescent lamps, CFLs) – are the most commonly used type of energy-efficient bulbs
- High-quality CFLs produce a light quality that is very similar to that of incandescent bulbs, according to a measurement called the **Colour Rendering Index** (CRI), which is a measure of the level at which colours are represented in comparison to a natural light source (e.g. sunlight)
- A GLS has an CRI of 100 which is the same for halogen energy-saving bulbs. Good quality CFLs will have a typical CRI of 80-85**.**

What other types of energy saving bulbs are there?

- **Halogen bulbs** are also available – these provide the same light quality as incandescent bulbs but with a 2-3 times longer lifetime
- **Light-emitting diodes** – these produce high-quality light with very little energy lost through heat, so they are also highly efficient, and have a long lifetime. However, because they are small, many of them are required to produce practical domestic lighting, resulting in greater expense

How much energy do they save/use?

- CFLs are up to five times more efficient than older, energy inefficient incandescent bulbs – in other words they use up to five times less energy to produce the same amount of light
- Typically a CFL lasts on average 6-15 times longer than an incandescent bulb.
- It takes around five times more energy to produce one CFL than one incandescent bulb – however, the higher efficiency and longer life of CFLs equates to a saving over the lifetime of the product.

Are they a danger to health?

- CFLs are widely considered to pose no risk to health. They produce very little heat when compared to incandescent light bulbs and produce a constant, light that is described as 'flicker free' – any flickering occurs at such a high frequency as to be unnoticeable to the majority of people. A small number of cases of adverse reactions have been reported by people with existing medical conditions such as epilepsy – in a majority of cases these were the result of older or inferior technology.
- Energy saving bulbs do not damage the eyes. The eye naturally protects itself from excessive light and a natural mechanism prevents it from being exposed to light that is too intense.
- CFLs do emit small amounts of UV light, as do all fluorescent bulbs. For general illumination CFLs are regarded as entirely safe.
- As a precautionary measure (according to advice from the Health Protection Agency) where people are in very close contact (less than 30 cm) with non-shaded single envelope (i.e. single-layer encasement) light bulb for more than an hour at a time the CFL lamp should be

replaced by a double envelope type. Alternatively it should be moved so that it is at least 30 cm or 1 ft away

Are they a danger to the environment? How are they disposed of?

- CFLs are regarded as entirely safe. Although they contain mercury, there is no danger of the mercury being released if the bulb is intact
- CFLs should be disposed of separately to normal household waste. Unlike old incandescent bulbs, CFLs can be recycled – all local recycling centres are required to have facilities for disposing of used CFLs.

Is there an official policy on this issue?

- There is no law on which bulbs should be used – retailers are moving towards selling energy-efficient bulbs over older incandescent ones owing to the economic benefits
- Plans have been drawn up by the European Parliament for a voluntary phasing out of old incandescent light bulbs by 2012 – at the moment all regulations are voluntary – see link below for further information.

Sources / further information:

Lighting Association:
www.lightingassociation.com

Lighting Industry Federation:
http://www.lif.co.uk/

European Lamp Companies Federation:
http://www.elcfed.org/
(includes more information about the various lamp types – see
http://www.elcfed.org/2_lighting_types.html)

The European Lamp Industry's Strategy for Domestic Lighting – available from the Lighting Association web site:
http://www.lightingassociation.com/pdf/ELC_FQA_Nov08.pdf

Defra:
http://www.defra.gov.uk/environment/climatechange/uk/household/products/cfl.htm

European Parliament position on energy-efficient light bulbs:
http://www.europarl.europa.eu/news/expert/infopress_page/064-49662-047-02-08-911-20090217IPR49659-16-02-2009-2009-false/default_en.htm

Energy Saving Trust:
http://www.energysavingtrust.org.uk/Energy-saving-products/Energy-saving-lightbulbs-and-fittings/Frequently-asked-questions

Contains additional material from Philips Lighting.

This is a fact sheet issued by the Science Media Centre to provide background information on science topics relevant to breaking news stories. This is not intended as the 'last word' on a subject, but rather a summary of the basics and a pointer towards sources of more detailed information. These can be read as supplements to our roundups and/or briefings.

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