

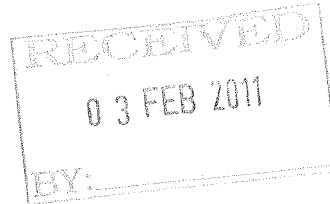


Cabinet Secretary



**Parliamentary Secretary for Climate Change and Energy Efficiency**

The Hon John Murphy MP  
Chair  
Standing Committee on Petitions  
PO Box 6021  
Parliament House  
CANBERRA ACT 2600



*John*

Dear Mr Murphy

Thank you for your letter of 22 November 2010 to the Minister for Sustainability, Environment, Water, Population and Communities, the Hon Tony Burke MP, concerning a petition on low energy light globes. Your letter has been forwarded to me for reply as I have portfolio responsibility for this matter.

Energy efficiency in lighting is a crucial component of the Australian Government's response to climate change. Considerable energy is wasted through inefficient lighting from many sources across Australia, including street lighting, homes and office buildings. The Government believes that these areas present opportunities for significant energy savings.

At present, a key focus is the phase-out of inefficient incandescent light bulbs. The savings to the environment and the economy resulting from the phase-out initiative will be considerable. Across the country, the move to more efficient lighting is expected to save around 30 terawatt hours of electricity over the period 2008 to 2020 and around 28 million tonnes of greenhouse gas emissions over the same period. This is equivalent to permanently decommissioning a small coal-fired power station or taking more than 500,000 cars off the road for good. It is expected to result in savings to the Australian economy of around \$380 million per year by 2020 and result in net savings for each household that changes all its incandescent lamps to compact fluorescent lamps (CFLs) of more than \$50 per year.

It is important to note that CFLs are not being mandated. More efficient forms of incandescent lighting will continue to be available, such as mains voltage halogen lamps. Mains voltage halogens have a very similar appearance to the traditional incandescent light bulb, can be used in all of the same fittings, and are readily available. However, mains voltage halogens are not as energy efficient as CFL alternatives.

The submitted petition refers to a range of possible health impacts, which it suggests may be related to the use of CFLs. The Government is aware of the concerns of some members of the public about possible health impacts of CFLs, and information addressing possible health impacts of CFLs has been prepared and is available on the Department of Climate Change and Energy Efficiency website at: [www.climatechange.gov.au/en/what-you-need-to-know/lighting/faqs/health.aspx](http://www.climatechange.gov.au/en/what-you-need-to-know/lighting/faqs/health.aspx). This information was developed in consultation with the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and other specialist health professionals, as appropriate.

In relation to the health concerns raised in the petition, our investigations and advice received from experts indicate that apart from a small number of people with photosensitivity related medical conditions, day-to-day use of CFLs does not pose a hazard to the general public. Information for people with relevant medical conditions is available on the departmental website. The Department is also currently examining options to bring this information to the attention of medical practitioners. I do not consider that a broader public education program is warranted at this stage.

While the matters raised in the petition are not specific, the following information attempts to address the issues raised:

### CFLs and Headaches

One concern relating to CFLs is the effects of CFL flicker on migraine sufferers. While light sources with a detectable flicker can trigger migraines in susceptible individuals, CFLs flicker at a rate well above that detectable by the human brain and so should not affect migraine sufferers. As part of their normal operation, CFLs flicker at a rate of more than 20,000 times per second, compared to modern linear fluorescent tubes at more than 5,000 times per second, and older linear fluorescents at 100 times per second. Occasionally, fluorescent lamps may develop a fault which causes them to have a noticeable flicker, and these lamps should be replaced.

If light is suspected as the triggering event for migraines, ordinary headaches, or even eyestrain, the primary cause is likely to be glare, highly contrasting or inappropriate light levels. These problems are a result of poor lighting design rather than a feature of fluorescent lamps and can occur with any lighting technology if used inappropriately. Light fittings that enclose lamps and distribute light evenly without compromising light output and efficiency can help avoid these problems.

### Electromagnetic Radiation

Concerns have been raised regarding the emission of electromagnetic radiation (EMR) from CFLs. The ARPANSA has provided the following advice on CFLs and EMR.

The predominant EMR emitted by CFLs is the visible light that they are designed to produce, but they also produce small amounts of ultraviolet (UV) radiation and very small amounts of radiofrequency EMR from the high frequency currents produced by the electronics that control the lamp.

CFLs, like all electrical appliances, will produce 50 Hertz magnetic fields from the currents drawn from the supply. Both the lamp and the associated household wiring will produce these fields. The magnetic fields from the wiring should theoretically be lower with CFLs than incandescent globes because of their lower power consumption. Magnetic fields from the lamps themselves may be higher than from incandescent lamps very close to the fittings, but preliminary tests undertaken on a small range of CFLs tested at the ARPANSA did not find any cases where the 50 Hertz magnetic fields, at distances greater than 30 centimetres, were elevated above typical residential levels.

The high frequency electrical currents produced within the base of the lamp will cause some localised electric and magnetic fields. The radiofrequency emissions are constrained by the need to avoid producing electrical interference to well below the limits known to be associated with any health effects.

The ARPANSA will continue to monitor developments in relation to the potential health effects of emissions from these lamps in order to keep the community informed.

### Ultraviolet Radiation

All general use lamp types, including the traditional incandescent light bulb, produce UV light. The UV levels vary with the type of lamp and light output. UV light levels from CFLs can be somewhat higher than incandescent light bulbs of equivalent (visible) light output. However, these emissions should not be significant when the CFLs are installed in ceiling fittings and, if necessary, could be absorbed easily by appropriate filters in desk or bedside lamps. People concerned about UV exposure should minimise the time spent closer than 30 centimetres from these lamps. Further information about UV exposure for the general population is available on the ARPANSA website at: [www.arpansa.gov.au/radiationprotection/Factsheets/is\\_CFL.cfm](http://www.arpansa.gov.au/radiationprotection/Factsheets/is_CFL.cfm).

In cooperation with the ARPANSA and the Lighting Council Australia, the Department has arranged for the development of a list of CFL lamps that typically have levels of UV emissions comparable to tungsten filament incandescent lamps. This will be made available in the near future and may be useful for people with light sensitivity related medical conditions such as Lupus.

Traditionally, we have used light covers, light fittings and light diffusers in our homes for both aesthetic reasons and to reduce glare from bare light bulbs. When used correctly, acrylic light covers can also reduce UV light levels by as much as 94 per cent. Available in a range of styles, light covers should be positioned between the light source (light bulb) and yourself to reduce the level of UV light. It is important that the user cannot see the light bulb once the cover is fitted. For some photosensitive Lupus sufferers, an appropriately selected and dimmed frosted halogen lamp may also provide a suitable light source.

### CFL Mercury Content

All fluorescent lamps, including CFLs, contain very small amounts of elemental mercury. Government and industry continue to work together to minimise the mercury content of lamps. The new minimum quality standard recently introduced for CFLs includes a maximum mercury content, aligned with the European Commission standard, of five milligrams (one two-hundredth of a gram) per bulb. The ordinary fluorescent tubes in current use contain approximately 15 milligrams of mercury per tube, consistent with the Australian standard. To put the amount of mercury contained in CFLs in context, five milligrams would fit on the tip of a ball point pen. The old mercury thermometers contain approximately 500 milligrams of mercury. With appropriate precautions regarding disposal in place, elemental mercury continues to be used safely in a variety of products, including lamps, watch batteries and various medical instruments.

Less mercury is released into the environment from the use of CFLs than from incandescent lamps, despite the fact that CFLs contain a small amount of mercury. The reason for this is that burning coal to produce electricity also produces emissions of mercury. As CFLs use significantly less electricity than incandescent lamps their use results in lower overall emissions of mercury.

Waste disposal and handling is primarily a state and local government responsibility in Australia. Landfill disposal of large amounts of mercury-containing lamps is prohibited in some states. Large amounts are generated by the commercial and public lighting sectors, e.g. from office buildings, retail centres, institutions and roadways. At present, CFLs from homes can generally be disposed of in regular garbage bins, where the garbage goes to landfill. An alternative to landfill disposal is taking mercury-containing lamps to specialist recyclers who are able to safely recover not only the mercury, but also the glass, phosphor and aluminium contained in the lamps.

On 21 July 2010, a national voluntary scheme called FluoroCycle began operations to increase recycling rates and help reduce the amount of mercury entering the environment from the disposal of mercury-containing lamps. The initial focus of the scheme is on the commercial and public lighting sectors, which account for the majority of all lighting waste. The scheme is based on cooperation between government and industry and is sponsored by the Environment Protection and Heritage Council. A national scheme for the recycling of household CFLs may be considered in the future.

More information on FluoroCycle is available at: [www.fluorocycle.org.au](http://www.fluorocycle.org.au), while information regarding CFL clean up and disposal is available at: [www.climatechange.gov.au/what-you-need-to-know/lighting/faqs/disposal.aspx](http://www.climatechange.gov.au/what-you-need-to-know/lighting/faqs/disposal.aspx).

As the phase-out of inefficient light bulbs progresses, the Government will continue to consider health issues and examine options to address any significant concerns. I trust that this information addresses the issues raised in the petition and demonstrates that the Government is taking these issues into account in phasing out inefficient lighting.

Please inform me if you require further information.

Yours sincerely

**MARK DREYFUS QC MP**

25/1/11