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how green is our lighting?

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As compact fluorescent lights get the green light from the Australian Government, we look at just how safe are these and other forms of lighting for people and the environment.

As Australia begins to switch on to compact fluorescent lighting, there are questions about the broader impacts of this form of lighting – for individuals and for the environment.

ENVIRONMENTAL BENEFITS

Hailed as energy-efficient, the compact fluorescent (CFL) globe is being widely promoted in this country by the government, environmental groups and green businesses. This follows the announcement by Environment Minister, Malcolm Turnbull, in February last year that the incandescent light globe is to be phased out in favour of the compact fluorescent globe, to reduce greenhouse gas emissions.

CFLs reduce greenhouse gases because they are 80% more energy efficient than incandescent globes and, because they last up to 15 times as long, less energy is required in their manufacture. However, while the CFL light globe may reduce energy consumption, it may have negative implications for health and the environment.

HEALTH CONSIDERATIONS

CFLs generally emit higher magnetic fields than incandescent globes. EMR Australia has measured fields of up to 144 milliGauss (mG) (see below) from CFL globes that are equivalent in light output to 60 W incandescent globes, and has found that fields vary considerably from one brand of globe to another. In most cases, however, people can reduce their exposure to these fields by keeping a distance from the globes. [Re 144 mG, even though Australian guidelines allow people to be exposed to 1,000 milliGauss, studies have shown that just four mG is associated with a doubling of the incidence of childhood leukemia.]

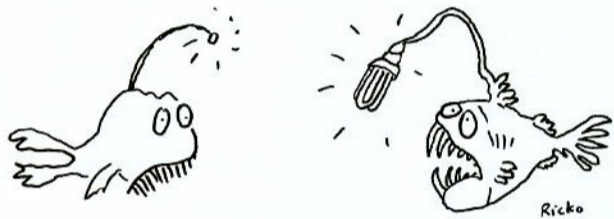
What may be more problematic is that this form of lighting triggers reactions in electrically sensitive people.

In the presence of a CFL for example, even if it is turned off, Adrian Miller experiences problems with memory, concentration, aching bones and general 'unwellness' (Jul-Sept 2007, Vol 3 No 3 *EMR and Health*, page 9).

Another electrically sensitive person told *EMR and Health* that she cannot bear to be in a room with CFL lights. "If these lights are installed in most buildings," she said in despair, "there won't be anywhere I can safely go."

Compact fluorescent lights were reported as one of the principle causes of discomfort for people who are sensitive to energy (and often chemicals as well) in a survey published late last year (see www.stichtingehs.nl). The three-year survey, conducted by the Dutch EHS (Electrical Hypersensitivity) Foundation, asked respondents which household appliances caused them greatest stress. Fifth place on the list went to energy-saving lamps which were rated a problem by 31.4% of people. Also rated as problems were fluorescent lights (by 32%) and halogen lights with transformers (by 32.4%) which took third and fourth place on the list.

This new energy saving
light isn't nearly as
nice as the old one...
and it's giving me a headache !



Another feature of the CFL is that it contains mercury, one of the most toxic substances known. It is not unique in this, as other kinds of fluorescent lights also contain mercury.

Mercury is released when a CFL or other fluorescent globe is cracked or broken, potentially exposing the occupants of the room. The company, Easy Being Green, which is participating in a government-sponsored initiative to replace incandescent globes with CFLs at no cost, recommends dealing with breakages carefully:

"Sweep up – don't vacuum – all the glass fragments and fine particles. Place broken pieces in a sealed plastic bag and wipe the area with a damp paper towel to pick up any stray shards of glass or fine particles. Place the used towel in the plastic bag as well. If weather permits, open windows to allow the room to ventilate."⁽¹⁾

As CFLs and their fluorescent relatives contain mercury, how can we safely dispose of them?

DISPOSAL

There is no national system for disposal or recycling of these globes in Australia at present. However, some companies provide a commercial recycling service.

"We would prefer to think that they [CFLs] all went for treatment," said Judy White on behalf of NSW Waste Services. She points out that monitoring conducted by the Service has not yet identified any leaking of mercury from landfill into the surrounding environment.

Peter Bitto of recycling company, Ecocycle, disagrees. There is scientific evidence, he says, "that elemental and metallic mercury in landfill is converted by the action of heat and bacteria into methyl and diethyl mercury, which are very toxic, volatile forms of mercury. These volatile mercury compounds evaporate into the atmosphere over landfill and are dispersed by wind into the environment. For this reason, mercury leaking from landfill is not relevant."

Easy Being Green believes that CFLs should be responsibly recovered, recycled and the remnants safely disposed of. The company's website contains the advice that, "Like paint, batteries, thermostats and other hazardous household items, CFLs should be disposed of properly. Do not discard CFLs in your household garbage (including domestic recycling bins) if better disposal options exist."

According to spokesman, Erland Howden, the Nature Conservation Council is concerned about the mercury content of CFLs, but points to the fact that mercury is produced by power stations in the process of generating electricity. "The number one step in reducing greenhouse gas emissions," he says, "is reducing electricity consumption." And he suggests this should be supported by energy efficient technology as well.