

Mercury rises on recycling

Given the mercury from one fluorescent tube can pollute 30kL of water, the fact that 99 per cent of used tubes end up in landfill is frightening. By Garth Lamb.

Environment protection agencies widely consider mercury the most toxic of non-radioactive substances, with a list of positively scary potential problems from exposure to the neurotoxin, especially for children. According to a 2005 study by the US Centre for Children's Health and Environment at the Mount Sinai School of Medicine, mercury pollution retards the development of some 316,000 to 637,000 US children each year, costing its economy an estimated US\$8.7 billion (\$9.6 billion) annually.

However rubbery it is to quantify the economic impact of lower IQ, it is accurate to say the potential for mercury to enter the environment is much higher in Australia than in the US, the EU and most other developed nations that regulate disposal of fluorescent tubes and HID lighting (High Intensity Discharge).

A compact fluorescent tube can contain as little as 1.4mg of mercury, although HID sport stadium lamps may contain more than 225mg. The bulk of the Australian market is serviced with imported tubes containing some 10mg. Multiply these volumes by the 50-60 million fluorescent tubes and 8-12 million HID lamps consumed in Australia annually and the scale of the problem begins to emerge. Add the federal push to eliminate incandescent lighting for energy efficiency gains and the potential problem is set to grow.

Given the mercury from one fluorescent tube can pollute 30kL of water beyond a safe level of drinking, the fact that 99 per cent of used fluorescent tubes and HID lamps end up in landfill is a concern.

Best practice landfill with high integrity lining may seem a fitting disposal, however the combined action of heat and bacteria in landfill transforms it into the highly toxic and more volatile methylmercury, which can be released from the soil.

But there is an alternative. CMA Corporation acquired Southern Recycling (including its subsidiary Eco Cycle) for \$40 million last July, positioning itself as the only mercury recycler in the country.



Mercury from one fluorescent tube can pollute 30kL of water, or it can be recycled.

Ban fluores from landfill

CMA spokesman Peter Bitto says it is high time Australia follows other nations and bans fluorescent tubes to landfill, as California has already done. The wider US goal is to recycle 80 per cent of its fluorescent tubes by 2009, and CMA is so confident Australia will follow that it has forged ahead with a new \$10 million facility in Melbourne, including the world's largest continuous mercury distillation unit.

The 1.6 hectare facility is a significant upgrade over the company's former site, which in 2006 processed just less than one million fluorescent tubes and, according to Bitto, was running at a loss due to the low volumes. He claims volumes have risen quickly in the past year to about 1.6-1.8 million tubes as responsible organisations take up voluntary recycling, although

"we're still barely scratching the surface" and a greater slice of the stream is needed to run a profitable recycling business.

"The only reason [not to recycle] is the landfill option is legal and cheap, and that's where we need the cooperation of government," he says.

While Bitto points out recycling "is not exorbitantly expensive", at about \$3/kg for small volume it is much dearer than landfill, although the costs should drop once volumes of saleable end products increase. There is significant potential. Landfilling 50 million tubes currently wastes some 1.6 tonnes of mercury, 13,000 million tonnes of glass, 500Mt of aluminium (and 400Mt of other metals) and about 300Mt of phosphor powder.

More at www.advancedrecycling.com.au **WME**

FACT CMA gives mercury the special treatment

Swedish specialist mercury recycler MRT System provides the technology at the heart of CMA Corporation's Campbellfield mercury recycling facility.

A heavy-duty conveyor feeds a continuous stream of 200kg drums of waste into the system, which can process 3-5 tonnes per day. Inside the unit, mercury-containing waste is heated to 500-700°C under vacuum in a nitrogen blanket, with the inert atmosphere countering oxygen inhibition of the necessary reactions. The mercury is vaporised to separate it from the other material, before being cooled and condensed. Some 99.9 per cent is recovered.

The unit is totally enclosed and has afterburners and carbon filters to ensure no emissions threaten worker safety.