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## Inside Medicine: 'Green,' recycling don't always mesh

By Dr. Michael Wilkes -

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Gil was at home in his small, hot apartment with the air conditioner running when he accidentally broke a fluorescent lamp on the carpet.

As a concerned citizen, he knew that fluorescent lights are energy- efficient and help reduce greenhouse gases, so he had changed all the incandescent bulbs in his home to the fluorescent type. He carefully picked up the larger glass pieces and threw them in the trash bin under the sink, then vacuumed up the smaller pieces with a hand-held, battery- operated device.

What Gil did not know, because the fluorescent bulb manufacturers haven't informed the public, is that the bulbs produce light by using mercury – a highly toxic neurotoxin.

Gil should not have vacuumed up the pieces (it aerosolized the mercury) but instead should have used sticky duct tape or masking tape to pick up the small pieces, followed by a wet paper towel. Then these, together with the larger glass pieces, should all have been placed in a plastic bag and brought outside until they could be disposed of properly. He also should have opened the apartment windows to allow in fresh outside air.

Then there is the bigger issue of what to do with these bulbs when they burn out. Because they contain mercury, the state of California has made it illegal to throw fluorescent lights in the trash, and it is illegal to bring them to landfills. The problem is that when mercury gets into the environment, it is broken down into ethyl mercury, which enters the soil and water and eventually enters the food chain. So what are we to do with these bulbs, particularly now that their use is skyrocketing?

The answer is we don't have a good recycling plan, which is why fewer than 3 percent of fluorescent bulbs get recycled.

As a society we have a big (environmental health experts would say huge) problem disposing of all sorts of dangerous chemical products. Most locations don't have a plan or the funds to recycle or safely dispose of older thermostats, TVs, disposable cameras, batteries, medical and veterinary syringes, medications that expire ... and the list goes on and on.

In California, it is illegal to dump these products in the trash, but there is often no other solution. It's the local government that is left holding the hazardous-recycling bag, and recycling costs are enormous.

It typically costs counties about 75 cents each to recycle small fluorescent bulbs and 25 cents a foot for the tubes. The reason is that big business has big lobbies and business wants a back-end system by which disposal at the end of a product's life is a government responsibility, not a business issue.

Yet, as we know from news reports, governments do not have the funds to tackle new problems, let alone deal with old ones like health care, education and crime.

Heidi Sanborn, director of the California Product Stewardship Council, has a solution. In her opinion, that disposal of products should be the producer's responsibility – after all they are the ones who profit from the sales. In fact, Canada, Japan, European nations and other industrialized countries, manufacturers are responsible for disposal of harmful products.

Certainly, consumers will end up paying either way, but at least when the burden is removed from local government and placed where it belongs – in the private sector – innovation will drive recycling prices down and solutions up. Companies could charge a recycling fee at the time of purchase, they could provide mail-back envelopes, or utility companies could handle recycling and charge users a small fee.

The problem isn't just fluorescent bulbs – it is chemical exposures in general and public safety in particular. Why isn't the public told about mercury in bulbs and how to safely dispose of these common products?

Perhaps because it might generate an uproar related to their safety.

We just don't know enough about the biology of exposure to all sorts of chemicals that enter our bodies. Many of these chemicals can accumulate for years inside us, making toxic exposure difficult to study. While animal models are not perfect, they do suggest that toxic chemicals found in everyday life can affect normal function at very low doses and contribute to increased rates of asthma, behavioral problems and cancer.

Simply put, federal laws to protect us against chemical dangers are unnecessarily weak and designed to benefit industry rather than the public. It is time to revisit these laws, many of which were enacted in the 1970s, and replace them with laws requiring research on human safety, effective disposal and manufacturer responsibility.

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