

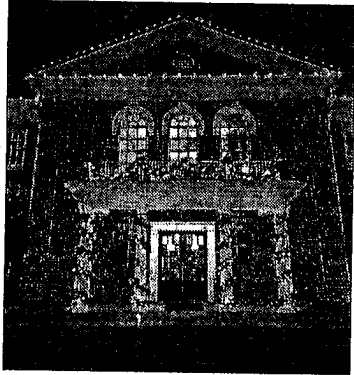
LED holiday lights contain lead, chemicals

By Wendy Koch
USA TODAY

Small holiday LED lights, marketed as eco-friendly alternatives to traditional bulbs, contain lead, arsenic and a dozen other chemicals that could pose potential health risks if the bulbs break, new research finds.

Many consumers know compact fluorescent lamps, or CFLs, require special cleanup because they have bits of mercury, but this study is one of the first to look at whether LEDs (light-emitting diodes) should also be handled with care.

Red LEDs in holiday lighting strands had up to eight times the amount of lead allowed under California law, and though white bulbs had less lead than the colored ones, they had high levels of nickel, according to researchers at the University of California-Irvine and the University of California-Davis. Lead and nickel, at high enough doses, have been linked to cancer, neuro-



File photo by Michael A. Schwarz, USA TODAY

In Monroe, Ga.: LED-bulb Christmas decorations light up City Hall in 2007.

logical damage and other illnesses.

"I didn't expect this full range of chemicals to leach out," says study co-author Oladele Ogunseitan of UC-Irvine, whose team crunched the bulbs.

He says the findings, published in

the January issue of *Environmental Science & Technology*, apply only to the tiny multicolored lights. Yet he says his team has also found chemicals in other LEDs, including screw-in versions designed to replace incandescent bulbs, and will soon release those results.

The research comes as Thomas Edison's incandescent light bulb faces a Congress-ordered phaseout that will begin in January with the 100-watt bulb. The 75-watt bulb will follow in January 2013 and the 40- and 60-watt ones in January 2014. Decorative bulbs, such as those for candles, are exempt. California began the phaseout last month, a year early.

Ogunseitan says the tiny holiday LEDs pose a potential threat only if they break. In that event, he advises consumers to sweep up the pieces with a special broom while wearing gloves and a mask. He says the red ones are "hazardous waste" and shouldn't be tossed in the trash.

Consumers shouldn't panic, because the vast majority of LEDs are encapsulated in metal or plastic and don't easily break, says Terry McGowan, director of engineering at the American Lighting Association, a trade group.

"They don't shatter like a glass light bulb; don't have a gas that might escape; don't readily burn, melt, dissolve or break apart," he says. It would take a hammer or pliers to get at the insides of the screw-in bulbs.

McGowan says almost all electronics have chemicals and thus should be manufactured so they can be taken apart at the end of their life and properly recycled. He says LEDs should be made that way.

"I still think LEDs are the next generation of lighting," Ogunseitan says. He says they tested free of mercury and, though still expensive, are highly energy-efficient. Many LEDs use 85% less energy than incandescents and can last 25 times longer.