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Force of Change column by Mark Lien – underlining by me

"Performance does not equal the hype. The October DOE caliper report revealed that the average white LED luminaire tested produces about 50 Lumens per watt. While in some applications LEDs can be more effective, though less efficient than fluorescent and metal halide, the efficacy is below consumer expectations. Based on low efficacy and high fixture costs, there is a slow return on investment. LED growth may also be affected by research into photobiology and toxicity. Last October, the French Agency for Food, Environmental and Occupational Health & Safety (ANSES) recommended , "avoiding the use of light sources emitting cold white light (light with a strong blue component) in places frequented by children." Architectural LEDs tend toward cooler correlated color temperatures having a strong blue component, especially in exterior applications. The report specifically addressed LED health concerns and, with qualifiers, recommends limiting LED sales, regulating installation and encourages manufacturers to design fixtures "in which beams of light emitted by LEDs cannot be seen directly."

Earlier this year researchers from University of California-Irvine's School of Social Ecology and Program in Public Health analyzed red, green and blue LEDs in low and high intensities. They chose lights that would commonly be found on the typical Christmas tree and then ground up the contents of each bulb in order to analyze the different substances, specifically a wide range of heavy metals. In the LEDs, the researchers found toxic chemicals including antimony, arsenic, chromium and lead, as well as numerous other metals. In the low intensity red LEDs, researchers found the lead content was over eight times the regulatory limit and the nickel content was approximately two and a half times over the limit. Under environmental regulations in the State of California, most LEDs would be classified as hazardous waste. Damaged LEDs could pose health risks to those handling them and having direct contact with the toxic substances. These negatives can ultimately be addressed but will influence the unchallenged acceptance LED sources have enjoyed.

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