

GE Lighting
New York, New York 10017

In response to your request, I am enclosing information on our standard fluorescent lamp and its contents.

The glass tube used in a standard fluorescent lamp is manufactured from soda-lime glass and is essentially similar to that used throughout the glass industry for bottles and other common consumer items. The end-caps on the lamp are generally aluminum while the wires in the lamps (called electrodes) are made of tungsten. None of these materials would present a potential hazard in the event of breakage of the lamp, aside from the obvious ones due to broken glass.

The white coating (normally called a phosphor) on the inside of a standard cool white fluorescent lamp is generally a calcium chloro-fluoro-phosphate, with small amounts (<1-2% each of the phosphor weight) of antimony and manganese also present but tightly bound in the phosphor matrix. The percentage of these minor components may change slightly depending on the color of the lamp (cool white, warm white, etc.). Normally a 1 1/2 inch fluorescent lamp has approximately 1.5 grams of the phosphor per foot of lamp. A standard four-foot lamp has about 6 grams of the phosphor coating its inside length.

Except for small changes, it is essentially the same phosphor that has been in use in our lamps for nearly forty years. No significant adverse effects, either by ingestion, inhalation, skin contact, or eye implant, were found in a five-year animal study of the original phosphor by the Industrial Hygiene Foundation of the Mellon Institute. Also, to our knowledge there have been no significant adverse effects on humans by any of these routes during the many years of its manufacture or use. The phosphor is somewhat similar to the inert mineral apatites (calcium phosphate-fluorides) which occur in nature.

Antimony and manganese are listed as hazardous materials by OSHA and workplace exposure limits have been established for them. Barium and cadmium had also been used as additives to the phosphor in lamps made prior to mid-1988 but are no longer used in current production. These materials are also considered hazardous chemicals. In addition, although the evidence is limited and conflicting, cadmium and certain cadmium compounds have been listed by the International Agency for Research on Cancer as possible human carcinogens.

Mercury is present in small amounts in all fluorescent lamps. A standard four-foot lamp contains approximately 50 milligrams or less, while an eight-foot lamp may contain 75 - 100 milligrams. The air concentration caused as a result of breaking one or a small number of fluorescent lamps should result in no significant exposure to the individual. However, when breaking a large number of lamps for disposal, appropriate monitoring and controls should be implemented to control airborne levels or surface contamination. We recommend that the work be done in a well-ventilated area, and local exhaust ventilation or personal protective equipment may be needed.

Should you have any further questions, please feel free to contact me at (216) 266-3349.

A. M. Zielinski
Lighting Environmental Operation