

This write-up aims to create awareness on the hazards posed by the mercury content in CFL Bulbs, which if disposed off incorrectly or haphazardly, could create severe environmental and health problems. The information given here is collated from different sources, both online and offline and we express our thanks to those who have taken pains to provide the information. Please forward this doc to as many people in your circuit to ensure that awareness is created before a calamity strikes....

The potentially hazardous CFL

Compact Fluorescent Lights (CFL) contains **Mercury** and must be disposed off in accordance with the regulations for hazardous substances. While CFL at this point may be an alternative for Energy saving, the environmental disaster looming large - due to lack of awareness, lack of organised collection/disposal mechanism for fused/defective CFL bulbs - cannot be ignored. The concern is heightened in India, where environmental standards are virtually ignored or non-existent.

Unfortunately most people are unaware of and not many are talking about the fact that although CFL bulbs reduce energy and greenhouse gases, they put our health at an even greater risk than incandescent bulbs. They are energy efficient but not environmentally friendly. The potentially hazardous CFL, which cannot now and will not in the foreseeable future be made without mercury, is being pushed by companies which want to capitalise on the notion that CFLs are the best replacement for the Incandescent bulb or Tube-lights. Given that there are about one billion light bulb sockets in Indian households, we're looking at the possibility of creating billions of hazardous waste sites soon.

The results of a recent ad-hoc telephonic survey we conducted with leading Indian CFL manufacturers scare us. No one has yet set-up safe collection and safe disposal systems. The warnings on their cartons are not informative. It is very sad that in a country which has seen a great tragedy in Bhopal and is yet to recover from it, most manufacturers do not have a sense of Social responsibility to prevent one.

While the mercury is contained in the light bulb there is no risk, however if you drop the bulb on the floor of your home, then you are exposed to dangerous mercury vapors. Many are reporting that it is quite easy to break CFL light bulbs as you are screwing it in the socket. Additionally, when we toss them in the garbage and they are picked up by the garbage company, they are getting broken all over the city and in the landfills. This means that our air and soil is being contaminated with mercury across our cities.

The problem till now did not seem big, because of the replacement warranties issued by the manufacturers. But now, the warranty period for bulbs over two years is over and so the fused CFL bulbs cannot be replaced. Soon we'll be disposing billions and billions of CFL mercury bombs. Much of the mercury from discarded and/or broken CFLs is bound to make its way into the environment and give rise to something akin to Bhopal tragedy which till now has needlessly disrupted many lives, cost tens of billions of rupees and sent many people into poverty.

Mercury is a powerful neurotoxin that can cause serious damage to all the tissues and organs in the body as well as the central nervous system and endocrine system and it disrupts functioning of crucial neurotransmitters in the brain. It is one of the most toxic

substances on the planet and has been linked to a variety of serious health conditions like autism, memory problems, infertility, depression, thyroid disorders, alzheimers, adrenal disorders, anxiety, Parkinson's and MS to name a few. It is especially toxic to children, pregnant women and small pets.

Like batteries, used CFLs need to be disposed at a toxic waste depot rather than tossed out with the ordinary household trash. Because mercury is cumulative, this poisonous element would add up if all the spent bulbs went into a landfill. As each CFL contains five milligrams of mercury, it would take 16,667 cubic meters of soil to "safely" contain all the mercury in a single CFL. While CFL vendors and environmentalists tout the energy cost savings of CFLs, they conveniently omit the personal and societal costs of CFL disposal.

CFLs - whose use is estimated to result in a just 45% savings in energy costs over the life of incandescent - take longer to switch on, may not work with dimmer switches and can interfere with radios, cordless phones, and remote controls.

In an interview with CNN, Ron Hui, a Hong Kong professor and co-author of a recent peer reviewed publication on the environmental impact of CFLs, pointed out that no one wants to talk about the issue that the circuit board of the bulbs, which is where the mercury is implanted, can't be recycled and there is nowhere for the toxins to go but our air and soil and we are creating a ticking time for our future generations. He also tells us that although we are under the impression that CFLs last longer than incandescent bulbs they are not as energy efficient as we have been led to believe because of a high failure rate within the electrolytic capacitor

In several cities worldwide, it is illegal to put a CFL bulb into the garbage as they are considered to be hazardous waste. But the response to a recent ad-hoc telephonic survey we conducted with leading Indian CFL manufacturers scare us. No one has yet set-up safe collection and safe disposal systems. The warnings on their cartons are not informative. It is very sad that in a country which has seen a great tragedy in Bhopal and is yet to recover from it, most manufacturers do not have a sense of Social responsibility to prevent another one.

Information sought from ELCOMA and TERI reveal that only now the Environment Ministry in India has woken up to the dangers and have initiated a committee to come up with a solution. We are told that implementation of any measures suggested by this committee can be done only by early 2012. No awareness or information dispensing methods are also visible as of now. I love our elected representatives - because we get what we deserve. Coupled with a bureaucrat, the nation can be held for ransom and we would still continue to watch the latest Salman flick with bulging biceps and pulsating hips, without a blink. Frankly, he is far more interesting than rubbish dumps, contaminated water and disposal streams.. **Not only that, most people are not recyclers and many people could care less about the environment, even when it is illegal to do so, many people will not abide by the rules and they will end up in the garbage any ways. There is no way to contain this beast.**

Some countries are now publishing guidelines on how to reduce your risk for toxic exposure from a broken bulb. Suggestions will vary depending on the source, but here are the most common.

- remove children, pregnant women and pets immediately (they should not participate in or be present during the clean up process)
- ventilate the area well
- open a window and leave the room for at least 15 minutes
- wear gloves, a mask and safety glasses
- do not use a sweeper or a broom to clean it up
- do not turn on your heating or air conditioning system
- pick up big pieces with your fingers
- use sticky tape to get small pieces
- wipe the area with a wet rag
- place all broken materials collected as well as all materials used in the clean up process in a second sealed plastic bag (air tight) or a screw-top glass jar and remove them from the house.
- throw everything away that was used in the clean up process, including the rag and gloves.
- if the break occurs on a carpet, cut that piece of that carpet out and throw it away.
- wash your hands immediately
- call your local recycling center to see if they collect CFL bulbs, otherwise put it in the trash.
- as a preventative measure, it is suggested that compact fluorescent light bulbs should never be used in areas where there is carpeting or in sockets where a breakage is more likely to occur.

Wow, that's quite a protocol and an awfully lot to go through just to reduce energy and greenhouse gases. It really makes no sense. Does this really sound like a product we want to be using? There are a couple problems with the protective measures mentioned above even if you follow them perfectly.

1. You have been exposed to mercury in the process of cleaning it up, so you have breathed in the vapor and absorbed it. So your health has been impacted by it at least to some degree.
2. The mercury will not be gone completely. There will still be residue that will take time to break down and thus you will be exposed to mercury during this time period.
3. Now for the average healthy adult, they may not see immediate consequences to their health with one broken bulb. However, if it occurs frequently, then it can accumulate in the body. On the other hand, for people with chemical sensitivities or chronic health conditions, they could have severe reactions and become quite ill for a long time with a single broken bulb.

Mercury is not the only problem with CFLs either. Other studies now tell us that they also expose us to dangerous electro magnetic pollution. Physicians report they are seeing an increase in migraines, headaches and severe skin rashes caused by compact fluorescent light bulbs.

CFLs can only be a short-term solution, considering that the environmental clean-up costs may finally be more than the energy costs saved. CFLs can be termed "safe" only when these parameters are strictly enforced...

- Ensure strict standards for Mercury dosing of CFLs
- Use of amalgams or pellets instead of liquid to ensure the correct dose of mercury inside CFL
- Strict standards to ensure mercury inside a CFL does not exceed 5 mg. The aim is to reduce to about 1 or 2 mg
- Strict standards to ensure that toxicity of mercury be labelled on every CFL package along with the quantity of mercury present in that CFL
- Labels must also advise consumers on what to do in case the CFL breaks
- Strict enforcement of .85 PF so that transmission and distribution losses are minimised so that all the benefits of the CFL can be availed
- Set parameters to ensure that poor quality Chinese CFLs are heavily taxed at point of entry so that they lose the edge of lower price
- Only long life CFLs with 10,000 hours must be allowed to be sold in the market
- Existing recycling facilities at manufacturing sites must be made available so that CFLs can be recycled even before the government mechanism is put in place
- Cost of disposal must be part of the cost of the CFL
- A system must involve buy back of burned out CFLs

At this juncture and from what I gain from chats with executives of BEE and ELCOMA, I don't see these happening in the near future... It is already too late as I can see from haphazard disposal prevalent in areas like Ooty and Kerala.... the contamination has already begun. Soon, we will see an environmental disaster that will make Bhopal look like child's play.

Effect on Animals & Pets

Modern CFLs use an electronic ballast and for better efficiency convert to a much higher frequency, such as 25 kHz. This eliminates the flicker and even the hum associated with the old models because that 25 kHz is outside human hearing range. But guess whose hearing range it is in? Yeah, everything on the planet.

Species	Approximate Range (Hz)
human	64-23,000
dog	67-45,000
cat	45-64,000
cow	23-35,000
horse	55-33,500
sheep	100-30,000
rabbit	360-42,000
rat	200-76,000
mouse	1,000-91,000
gerbil	100-60,000

The best way for you to reduce your carbon footprint is to follow your mother's advice and turn the lights off when you leave the room. The second best is switching over to LEDs.