



Environmental NGOs Response to Stakeholder consultation #3 on mercury-containing lamps – Exemption 15 (Review of Annex to the RoHS directive)

1 February 2013

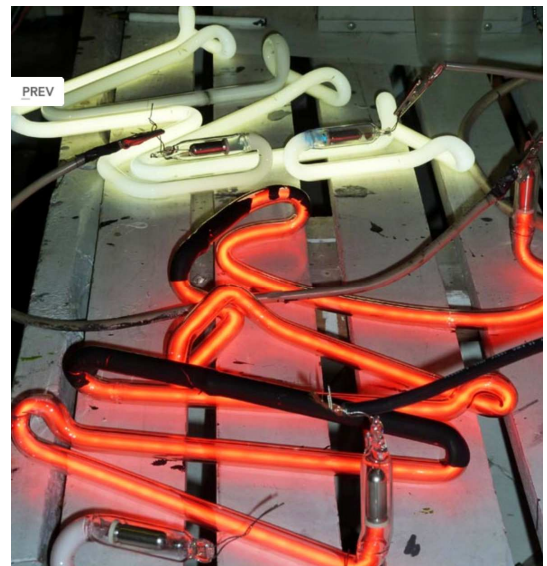
1 Introduction

The European Environmental Bureau and the Green Purchasing Institute¹ appreciate due notification for technical adaptation consultation and the opportunity to comment on proposed Exemption #15, which, if adopted would needlessly allow the sale of illuminated hand-made lamps and signs with exceedingly high levels of mercury throughout the European marketplace. The fact that these products are manufactured by hand amplifies the impacts by increasing the exposure risks that these products pose.

2. Comments on the Exemption

Exemption request 15: *"Hand crafted luminous discharge tubes (HLDT) used for signs, decorative or general lighting and light-artwork"*

The European Environmental Bureau (EEB) and Green Purchasing Institute (GPI) strongly oppose the proposed RoHS Exemption Request #15 as presented since the need for it has not been demonstrated and if adopted would encourage the production of inherently high-toxicity illuminated lamps and signs while safer alternatives are readily available, practical, and beneficial for users, workers and the environment.



HLDTs typically contain very high amounts of mercury; many have in the gram range, while substitutes are readily available. In the US, this has spurred some governments such as the State of Vermont to ban the use of neon signs because of the mercury and the availability of mercury free alternatives.²

¹ NGOs include the **European Environmental Bureau, (EEB)**, www.eeb.org, is a federation of more than 140 environmental citizens' organisations based in all EU Member States and most Accession Countries, as well as in a few neighbouring countries. These organisations range from local and national, to European and international. The aim of the EEB is to protect and improve the environment of Europe and to enable the citizens of Europe to play their part in achieving that goal.

The **Green Purchasing Institute** is a non-profit organization based in the United States that helps government agencies, institutions and business to specify, evaluate and purchase environmentally preferable goods and services.)

² <http://isa.files.cms-plus.com/PDFs/Vermont%20Mercury.pdf>

When evaluating the product category of “handcrafted luminous discharge tubes”, the Commission should consider and compare all of the technology options for creating an illuminated sign, for example, and not simply allow the most antiquated technology to secure an exemption that enables manufacturers to essentially use as much mercury as they need to make their old technology work effectively. Like mercury vapour lamps, luminous signs using high-mercury tubes are literally an antiquated technology that was invented approximately one century ago (in the early 1900s). Since then, there has been little improvement of the methods used to dose such lamps; consequently, they often require around 80 mg per lamp, with several lamps connected together to make a single sign or decoration. (See photo above.)

Recommendation for Exemption 15: No exemptions for illuminated signs should be allowed because safer mercury-free signs (using LEDs) and low-mercury signs (using CCFL channel lights) are widely available and practical. In addition, these or the latter offer significant environmental benefits including mercury reduction and energy-efficiency improvements.

Our recommendation is consistent with the legislative intent of the Directive. Moreover, this proposed exemption does not meet the minimum regulatory requirements necessary to be granted an exemption. The Commission wrote in its “Check List for Requests for Additional Exemptions,” that “Article 5(1)b allows the exempting of materials and components of electrical and electronic equipment from Article 4(1) if their elimination or substitution via design changes or materials and components which do not require any of the materials or substances referred to therein is technically or scientifically impractical, or where the negative environmental, health and/or consumer safety impacts caused by substitution are likely to outweigh the environmental, health and/or consumer safety benefits thereof. These terms of reference mean that the TAC cannot consider exemptions for any other reason, for example, a justification based on increased costs.”

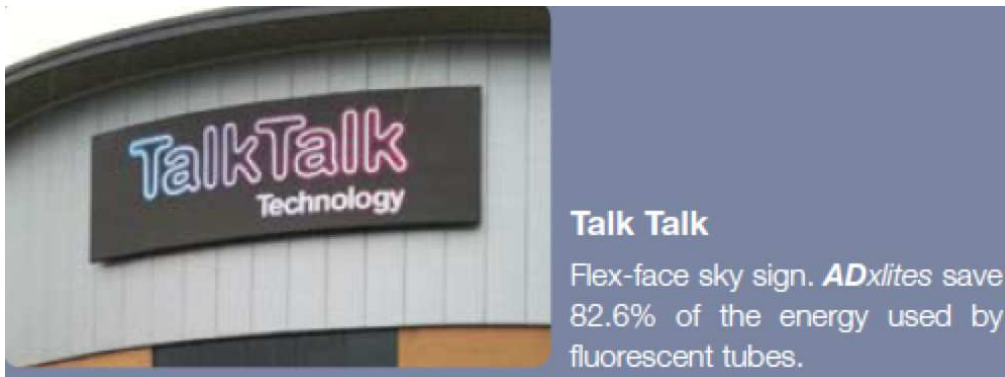
LED-lit Signs and LED lamps for general illumination Are Now Practical Alternatives.

Decorative and advertising signs (for both indoor and outdoor applications) can be made using LED flexible light strips. LEDs are more energy efficient and mercury-free. LED signs and other decorative fixtures are considered best available technology for this application and are rapidly becoming the market leader. LED light strips are bendable and can be used to make channel lighting for luminous signs as well as decorative and ambient lighting. See photos below.



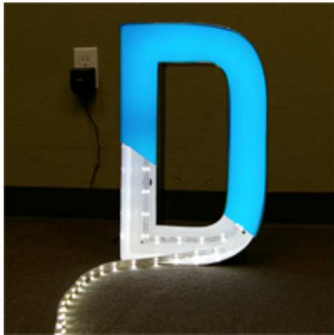
Many sign manufacturers (including some that offer both LED and HLDT signs aka “neon” signs) promote the availability and benefits of LED-lit signs. For example:

- Sign Lights Ltd. in the UK (<http://www.sign-lights.co.uk/>) states: The ADxlite is a new very low energy LED light for uses in all types and sizes of illuminated signs...ADxlites have a lifespan of over 100,000 hours in normal working conditions.” In one of its installations (see photo of Talk Talk Technology, below), the company claims that this installation saved “82.5% of the energy used by fluorescent tubes.”



- The website for the Wholesale Sign Superstore in the US highlights several benefits of LED-lit signs: “LED Illuminated Channel Letters are energy efficient, low voltage, and low maintenance compared to “Neon” Illuminated ones. The lightweight design of an LED module virtually eliminates breakage. LED Channel Letters provide the opportunity to create savings over a long period of time. Initial cost of this product can be a little higher than “neon” illuminated letters depending on the color.” It adds: “Historically, all channel letters were neon illuminated. However, the emergence and decreasing price of LEDs is gaining more and more ground versus Neon.” See www.wholesalesignsuperstore.com/channelletters/

OUR PRODUCTS



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A US-based trade magazine for the “neon” industry also favorably compared LEDs to “neon” signs, reporting:

From the brightness and clarity standpoint, the LED signs are sure winners. There are also a lot of categories where LED signs may rise above the neon signs. They are more energy-efficient. They are lighter and slimmer than neon signage so installation and shipping isn't that difficult. They don't entail a lot of maintenance. There are no potential risks for glass tube breakage; therefore there are no gases or mercury leaks to worry about. (Source: “The Change from Neon Signs to LED Signs,” <http://neon.ezinemark.com/the-change-from-neon-signs-to-led-signs-31cade39a40.html>)

The energy-efficiency benefits of LEDs can become even more substantial when the sign is hooked up to lighting controls such as dimmers or timers, which is not an easy option with traditional high-mercury signs.

Below is an excerpt from an article, “Making the Switch from Fluorescent Lighting in Box Signs to LED,” in which lighting manufacturer GE praises the energy-efficiency and environmental benefits of LED signs:

The use of white light-emitting diodes (LEDs) in box signs is becoming more common as the efficiency of their illuminated output continues to increase.

[LED technology] ...already became a standard option for channel letter illumination several years ago, proving cost-effective in comparison to the expenses of and related to neon.

As a result of such applications, LEDs comprise a large percentage of the sign illumination systems used today.

With a rated life of 50,000 hours, they can last up to four times longer than fluorescent bulbs.

Benefits of LEDs

The long useful life of LEDs means reduced labor and maintenance costs. While the cost of a single fluorescent tube is relatively minimal, it may well cost several hundred dollars to bring in a bucket truck and change a burned-out tube in a box sign. Such replacements typically need to be made every few years, whereas LED illumination running 10 hours per day can last more than 13 years.

In fact, given many retailers and other clients rebrand their signs every seven to 10 years, LEDs can effectively last for the entire life of a sign without ever needing to be touched. They often carry a five-year limited warranty, require fewer system repairs and can eliminate the risk of damaging the sign during maintenance.

These savings can be realized in all box sign applications, but they make a particularly big difference for pylon sign installations where a bucket truck is needed to perform any servicing, adding to maintenance costs.

Accordingly, many utilities offer rebates for LED-based signage. In British Columbia, for example, BC Hydro has been offering rebates for four years. Sign-makers should check with their local utilities to see if such rebates are offered and, if so, which documentation is needed to qualify for them. LED system vendors can usually provide the appropriate paperwork with ease.

The environmental benefits of LEDs extend beyond energy savings, as they also contain no lead, mercury or glass, allowing for easier disposal.

The technology also overcomes the cold-weather problems that have always plagued fluorescent lighting. With an operating range of -40 to 60 degrees C (-40 to 140 degrees F), LEDs can maintain consistent light output for a uniform appearance across a wide range of temperatures.

Thinking inside the box

There is no question LED lighting reduces energy costs compared to fluorescent bulbs, but the other return on investment(ROI) factors to consider include incremental acquisition costs, annual maintenance costs and the number of years required for payback. For many users today, a payback within two to three years is entirely possible using LED lighting in box signs. That period will likely be further reduced as LED technology continues to advance.

From letters to boxes

LEDs have already made a lasting impression in channel letter applications and are now well-positioned to illuminate single- and double-sided box signs.

One project that involved both types of applications, for example, was the global rebranding of Holiday Inn. Through this massive makeover involving more than 3,200 locations around the world, the hotel chain is saving an estimated \$4.4 million in annual costs after its exterior signage was updated with energy efficient, long-life LED lighting systems, compared to previous neon and fluorescent lighting.

The estimate includes \$3 million in maintenance savings and \$1.4 million in energy savings. This is based on Holiday Inn's expectation to reduce its kilowatt hours by 52 percent for signs lit an



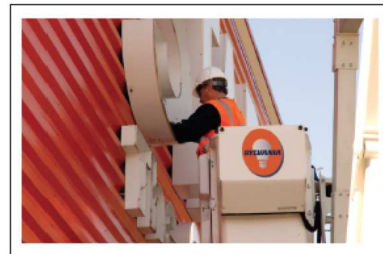
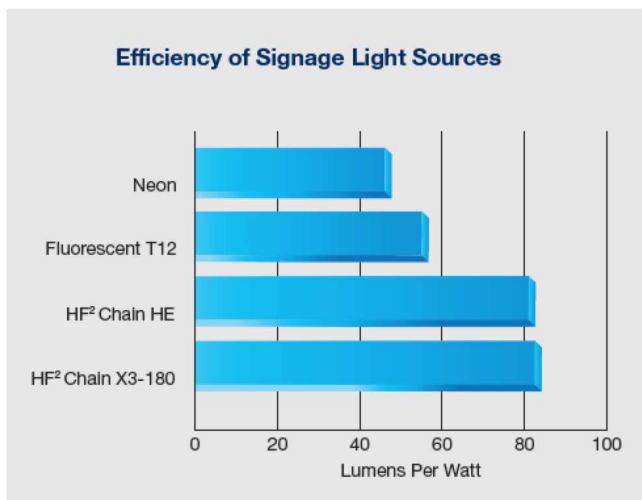
average of 12 hours per day, 365 days per year, and on the low maintenance needs of the systems.

The massive project involved more than 20 sign companies manufacturing approximately 9,300 channel letter and box signs, with more than 270 different lighting configurations across five Holiday Inn brands. These signs range from 279mm (11 in.) high to as large as 2.4m (8 ft.).

Another company that actively promotes the benefits of LED-lit signs and other decorative lighting fixtures over conventional technology is Sylvania, which emphasizes energy-efficiency, performance and maintenance benefits. See table below.

Bright, modern LEDs.

Protecting your image and your bottom line.



Advantages of LEDs

- Energy efficiency
- Brighter light with lower wattage
- Uniform illumination
- LEDs can be serviced instantly
- No disruption to customers during installation
- Dramatically reduces service time vs. neon
- Rebates may be available

Cold Cathode Fluorescent Lamps (CCFLs)

In general terms and within the framework of RoHS, cold-cathode fluorescent lamps (CCFLs) used in signs, artwork and general lighting applications could also be seen as another practical alternative to high-mercury HLDTs, while transitioning to mercury-free (LED) technologies.

We observed however that the consultant is noting on their website that all previous exemptions (including 8 and 9) have been now withdrawn. On top of that, it is not clear what type of lamps may fall under the proposed description/exemption request of HLDT, given it describes an application rather than a technology.

We believe that CCFL technology, as set within the framework of RoHS, is environmentally preferable to higher mercury discharge lamps used for these similar applications. However, we are concerned that the industry has now created a broad category – namely HLDT- which now seems to combine several types of discharge lamps including CCFLs as well the traditional high mercury ‘neon’ or sign lamps.

Consequently, the limit that is now proposed for these HLDT lamps, which would include most likely CCFLs used to manufacture signs and other applications as per the exemption, would no longer be based on what this type of technology can meet. Instead, the proposed mercury limit for CCFLs would now be based on what the other products in this category -- that is, traditional high-mercury HLDT - can meet. This would be much higher than what is needed for CCFLs, which is contrary to the requirements for granting exemptions under the RoHS Directive. Moreover CCFLs would be included in a broad HLDT category that has a much higher mercury limit (approximately 4 times more) than what Anie Federazione had initially requested in Exemption #9, which has since been rescinded.

If we roughly compare the amount of mercury that would be allowed in a 50 cm CCFL used to make an illuminating sign under the existing RoHS Exemption 3a, proposed Exemption #9 and the new proposed Exemption #15, we can see that they are extremely different.

- Under Exemption 3a (current RoHS) , a 50-cm CCFL used to make an illuminating sign would have a limit of 3.5 mg;
- Under Exemption 9 (now rescinded), a 50-cm CCFL used to make an illuminating sign would have a limit of 6.5 mg; and
- Under the new proposed Exemption 15, a 50-cm CCFL used to make an illuminating sign (for indoor purposes above 20 degrees C) would have a limit of 27 mg.

Therefore industry does not explain why they would need 4 times more mercury than they requested in exemption 9 or 15 times more mercury than other CCFLs manufacturers agreed to under RoHS exemption 3a.

The approach/strategy chosen by the industry should be carefully scrutinized by the Commission given that it seems that it will create a loophole and go against the intention of the RoHS directive, and the EU Mercury strategy of reducing and where feasible eliminating mercury use where adequate mercury-free alternatives are available.

Beyond the discussion above however, our comments submitted on 4th September 2012, on exemption requests 7, 8 and 9, should still be taken into consideration.

Conclusion

We strongly encourage the Commission to reject proposed Exemption 15 for two major reasons:

1. It sets mercury limits that are far too high for CCFLs used for these applications; and
2. The limits are not justified for high-mercury HLDTs (such as those used to make traditional illuminating signs) because this outmoded, highly energy-inefficient technology can be readily replaced by both LEDs and CCFLs, which are already beginning to dominate the market.

Based on the information provided above, the available technologies for the same applications should be compared by using life-cycle analysis of the whole system. In this case, the proposer clearly has not demonstrated any environmental or energy-efficiency benefits from allowing the

high-mercury technologies to be granted exemption when they are compared to functionally equivalent products that are lit with LEDs.

The proposer also has still not explained why these types of CCFLs (under HLDT) could not meet the mercury limits in 3a, 3b and 3c, which were agreed to by other CCFL manufacturers.

Also, the proposer of this Exemption has weakly argued that the use of mercury in HLDTs is inevitable, comparing it to the civil duty of paying taxes. But this argument does not carry much weight since the use of high levels of mercury to manufacture illuminating signs and other applications proposed under exemption 15, is not inherently necessary. High mercury HLDTs are more like a horse-and-buggy or mercury vapour lamps, which at one time seemed irreplaceable, but ultimately proved outmoded due to their inefficiency and other negative environmental impacts.

Finally, it is evident that the Commission continues to lack comprehensive data on the mercury content in many of the types of lamps it is evaluating. While we have been able to gather data on the mercury content and rated life of some lamps sold in the EU and the United States in order to assist the Commission making its decisions in this proceeding, we again strongly encourage the Commission to require manufacturers to submit data (including independent lab tests) documenting the maximum mercury content (in milligrams) of all mercury containing lamps that are currently sold in the EU. A database could be set up at the EU level containing such data. This would enable the Commission to set appropriate mercury content limits and monitor compliance with the standards that are ultimately adopted. It would also help prevent the Commission from adopting exemptions for specific product categories when they are not needed. This precautionary approach – requiring mercury content disclosure – has been used to guide US procurement decisions relating to lighting decisions in the United States. The Commission could effectively use the mercury-content information to set exemptions that represent “best in class” for various lamp types and harmonize with proposed Ecodesign criteria (under the EuP Directive) without undermining its energy efficiency requirements. At the very least, the Commission should not approve new exemptions – particularly higher mercury limits – unless the proposers document the need for such exemptions with data.

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