Environmental NGOs Response to Stakeholder consultation on mercury-containing lamps – Exemptions 7,8,9 (Review of Annex to the RoHS directive)

4 September 2012

1 Introduction

The European Environmental Bureau and the Green Purchasing Institute[1] appreciate due notification for technical adaptation consultation. However, the announcement and consultation period ran during the summer months, which was not really helpful. With the differences in various EU holiday schedules, the entire 8 weeks of July and August should NOT be counted as legitimate consultation periods. As you probably know, we NGOs usually have a lot of coordination to do between various member groups and affiliated experts; therefore, losing time has an impact on the quality of our submissions. Consequently, we would have appreciated a bit more time for this consultation.

Considering that the above-mentioned NGOs have been mainly focusing on the mercury debate, the comments provided below will refer to Exemptions 7, 8 and 9 relevant to proposed maximum levels of mercury in new categories of energy saving lamps.

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 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 EU level containing such data. This will enable the Commission to set appropriate mercury content limits and monitor compliance with the standards that are ultimately adopted. It will 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.

Our recommendations relating to the proposed RoHS exemptions are based on mercury content and rated life information that is publicly available for lamps offered for sale in both the EU and US markets as presented in this document. We have in general chosen a maximum

[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.)

limit value that two or more of the major lamp manufacturers are meeting already today. For all cases, it has to be considered, however, that new maximum limits will be required after a short transition period, which will facilitate such a transition to safer, low-mercury dosing methods.

2. Comments on the Exemptions

Exemption request 7: "3,5 mg mercury per lamp in single capped compact fluorescent lamps for general lighting purposes < 30 W with a lifetime > 15 000 hrs ("long-life")"

The European Environmental Bureau (EEB) and Green Purchasing Institute (GPI) strongly question the need for the proposed RoHS Exemption Request #7 as presented.

With respect to this exemption request, and in general, we urge the EU not to approve any requests for exemptions without full supporting data. The examples provided for this request #7 in the industry's answer to the Clarification questions of the consultant appear inconsistent and incomplete. Since very little market data have been submitted on mercury content of the lamps in this category, the exemption requested should not be approved by the EC as presented.

The proposer does not present convincing evidence that CFLs containing more mercury actually have a longer rated life. Indeed, hundreds of models of CFLs on the market today have a mercury content of 3,5-4 mg and have a much shorter rated life, typically in the 8000 to 12.000 hour rated life range. If mercury were the limiting factor, these models would have a longer rated life.

While we support the concept of allowing for more mercury in a lamp if it is needed to promote the operation of a longer-lasting CFL (>20.000 hours when tested using the 3-hour start method described as standard practice by the ELC), the Commission should not grant this exemption for models with a rated life of 20.000 hours or less since it can be documented that many models meeting this longer life definition can already meet the current RoHS limit of 2.5 mg (see table below).

Although the proposer originally asked for the exemption to be for all lamps above 15.000 hours, ELC's answers to the Oko-Institut Questionnaire (e.g. on pages 2 and 4) as well as its supporting data justify the cutoff to be at around 20.000 hours For example, on page 4 of the Questionnaire (in response to question 2d,) the proposer stated the following: "…the required RoHS dose max limit for a solid design is indicated by the green line in Annex 4. Based on this line we propose to use a max level of 3.5 mg mercury for long life lamps with lifetimes more than 20.000 hours." This higher cutoff is consistent with our market analysis, which identified a variety of CFLs with lamp life up to AND INCLUDING 20.000 hours that can meet the 2.5 mg RoHS limit – many with a comfortable buffer – that is set to go into effect on January 1, 2013.

The proposer made the argument that this request is similar to the exemption that was granted for linear fluorescent lamps in 2009. We note that data for that exemption did not demonstrate that additional mercury was needed for linear fluorescent lamps with a rated life above 25,000 hours. Many "long-life" linear fluorescent lamps can meet the "normal" life limit of 3.5 mg, which allows more mercury than is necessary in T8 and T5 lamps. Such long-life designations should be revisited as technologies improve. For example, 25,000 hours is no longer considered a long-life T5 or T8.

Publicly released data by at least two major European lamp manufacturers (Philips and Osram) demonstrate that CFL lamp lifetimes of at least 20,000 hours can be maintained with mercury

content of 2 mg or less; therefore, even a 2 mg limit would be enough – not only for long lasting CFLs but for all CFLs as we proposed in the 2008 -2009 consultation.

For a non-exhaustive list of examples of CFLs with a rated life of 20.000 hours or more that can meet the 2.5 mg RoHS exemption on CFLs <30 watts, see table below. These examples include CFLs at, below and above 30 watts that are offered for sale in the European Union as well as the United States. They include models that are self-ballasted, non-self-ballasted, pin-based and screw-based, dimming and non-dimming, in various shapes and sizes.

Country /Region	Manufacturer	Lamp Model	Description	Mercury Amount	Rated Life
EU	Osram	DULUX INTELLIGENT (DINT) FACILITY 10 W/840 E27 (1)	10 watt, self-ballasted, screw base	1.3 mg	20.000
EU	Osram	DULUX INTELLIGENT (DINT) FACILITY 14 W/825 E27 (1)	14 watt, self-ballasted, screw base	1.3 mg	20.000
EU	Osram	DULUX INTELLIGENT Dim Globe (DINT DIM GL 15 W/825 E27) (1)	15 watt, self-ballasted, screw base, dimming	1.3 mg	20.000
EU	Osram	DULUX INTELLIGENT (DINT) FACILITY 18 W/840 E27 (2)	18 watt, self-ballasted, screw base	1.3 mg	20.000
EU	Osram	DULUX INTELLIGENT (DINT) DIM STICK 18 W/825 E27 (1)	18 watt, self-ballasted, screw base, dimming	1.3 mg	20.000
EU	Osram	DULUX INTELLIGENT (DINT) FACILITY 22 W/840 E27 (1)	22 watt, self-ballasted, screw base	1.3 mg	20.000
EU	Philips	PL-L XEW IS 40W835/4P/25W (3)	25 watt, non-self-ballasted, 4-pin base, dimmable	1.4 mg	20.000
EU	Philips	MASTER PL-Electronic 15W/827 E27 230-240V (2)	15 watt, self-ballasted, screw base	1.41 mg	20.000
EU	Philips	MASTER PL-Electronic 20W/827 B22 230-240V (2)	20 watt, self-ballasted, screw base	1.41 mg	20.000
EU	Philips	MASTER PL-Electronic 20W/827 E27 230-240V (2)	20 watt, self-ballasted, screw base	1.41 mg	20.000
EU	Philips	MASTER PL-Electronic 23W/827 E27 230-240V (2)	23 watt, self-ballasted, screw base	1.41 mg	20.000
EU	Philips	MASTER PL-Electronic 33W/827 E27 230-240V (2)	33 watt, self-ballasted, screw base	1.41 mg	20.000
EU	Philips	MASTER PL-Electronic Dimmable 20W/827 B22(3)	21 Watt, self-balasted, screw base	1.41 mg	20.000
EU	Philips	MASTER PL-Electronic Dimmable 20W/827 E27 (3))	21 Watt, self-balasted, screw base	1.41 mg	20.000

(1) Information on the rated life and mercury content of this family of CFLs can be found in the Osram brochure: *Dulux Intelligent Facility CFLI, Stick Shape with Screw Base*, August 11, 2012; see http://www.osram.com/osram_com/products/lamps/compact-fluorescent-lamps/osram-dulux-intelligent/osram-dulux-intelligent-facility/index.jsp

(2) Information on the rated life and mercury content of this family of CFLs can be found in the Philips brochure: *MASTER PL-Electronic*; 2011, November 25; http://download.p4c.philips.com/l4bt/3/322873/master_pl-electronic_322873_ffs_aen.pdf

(3) Information on the rated life and mercury content of this family of CFLs can be found in the Philips brochure: MASTER PL-Electronic Dimmable, 2011, November 23; http://download.p4c.philips.com/l4bt/3/326448/master_pl-electronic_dimmable_326448_ffs_aen.pdf.

Country /Region	Manufacturer	Lamp Model	Description	Mercury Amount	Rated Life
US	Philips	PL-L 40W/830/XEW/4P/IS 25W (4)	25 watt, non-self-ballasted, 4-pin base	1.4 mg	20.000
US	Philips	PL-L 40W/41/RS/IS (4)	40 watt, non-self-ballasted, 4-pin base	1.4 mg	20.000
US	Philips	PL-L 50W/35/RS (4)	50 watt, non-self-ballasted, 4-pin base	1.4 mg	20.000
US	Philips	PL-L 55W/950/4P (4)	55 watt, non-self-ballasted, 4-pin base	2.0 mg	20.000
US	Philips	PL-L 80W/841 (4)	80 watt, non-self-ballasted, 4-pin base	2.0 mg	20.000

(4) Information on the rated life and mercury content of this family of lamps can be found in the Philips brochure: *Energy Savings, Compact Size: PL-L Energy Advantage*; 2012, June 4; http://download.p4c.philips.com/l4bt/3/332478/pl-l_energy_advantage_332478_ffs_aen.pdf

Similarly, there are many CFLs with a rated life >15.000 hours but <20.000 hours that can meet the 2.5 mg mercury limit. Therefore, this exemption is not needed for CFLs in this rated life range. See table below for some examples offered by major lamp manufacturers in the US. .

Country /Region	**Manufacturer**	**Lamp Model**	**Description**	**Mercury Amount**	**Rated Life**
US	Philips	PL-T 13W/827/X/4P/ALTO	13 watt, non-self-ballasted, 4-pin base	1,4 mg	16.000
US	Philips	PL-T 32W/830/XEW/4P/ALTO 27W	27 watt, non-self-ballasted, 4-pin base	1,4 mg	16.000
US	Philips	PL-T 13W/841/X/4P/ALTO	13 watt, non-self-ballasted, 4-pin base, instant on	1,4 mg	16.000
US	Philips	PL-T 18W/841/X/4P/ALTO	18 watt, non-self-ballasted, 4-pin base, instant on	1,4 mg	16.000
US	Philips	PL-T 26W/841/X/4P/ALTO	26 watt, non-self-ballasted, 4-pin base, instant on	1,4 mg	16.000
US	Philips	PL-T 18W/30/4P/ALTO	18 watt, non-self-ballasted, 4-pin base	1,4 mg	16.000
US	Philips	PL-T 26W/27/4P/ALTO	26 watt, non-self-ballasted, 4-pin base	1,4 mg	16.000

US	Philips	PL-T 32W/30/4P/ALTO	32 watt, non-self-ballasted, 4-pin base	1,4 mg	16.000
US	Philips	PL-T 42W/35/4P/ALTO	42 watt, non-self-ballasted, 4-pin base	1,4 mg	16.000
US	Philips	PL-T 57W/841/4P/A	57 watt, non-self-ballasted, 4-pin base	1,4 mg	16.000
US	Sylvania	CF26DT/E/IN/21W/841/SS/ECO	21 watt, non-self-ballasted, 4-pin base	2,4 mg	18.000
US	Sylvania	CF32DT/E/IN/28W/841/SS/ECO	28 watt, non-self-ballasted, 4-pin base	2,4 mg	18.000
US	Sylvania	CF32DT/E/IN/28W/830/SS/ECO	28 watt, non-self-ballasted, 4-pin base	2,4 mg	18.000
US	Sylvania	CF42DT/E/IN/38W/841/SS/ECO	38-watt, non-self-ballasted, 4-pin base	2,4 mg	18.000

Many longer-lasting CFLs have less mercury because they are manufactured with mercury amalgam dosing. Amalgam dosing, which is extremely accurate and releases mercury vapor over time, concurrently results in low-mercury content -- generally less than 2.0 mg per CFL. At the same time, they have a greater temperature tolerance, which prevents premature failures. Conversely, many CFLs that have a higher mercury content also have a relatively short life because they use older, less precise, mercury dosing methods, which are also less safe for workers and the environment due to the potential for exposure.

Comments on the proposed submission:

In Annex 1, the proposer submitted Graph 1: Light Output Versus Lifetime for Different (Maximum) Mercury Doses (2.5 mg, 3.0 mg and 3.5 mg). This graph has no citations or sources. It does not indicate which types of lamps it applies to (e.g., CFLs, linear fluorescents,, etc.). Moreover, it clearly shows that lamps can meet a 20.000 rated life with 2.5 mg of mercury.

In Annex 2, the proposer submitted Graph 2: Required Mercury Dose as A Function of Lamp Lifetime. Again, there was no source on the graph. This graph seemed to indicate that many lamps dosed at 2.5 mg can last up to 60.000 hours.

Furthermore, with respect to the longer lasting CFLs of over 20000h, the little data that industry provided – in Annex I of the answers to Questionnaire, actually shows that such lamps meet a 3mg limit. This also agrees with our little findings provided the available time and what was found in website. In general however, it seems that very few CFLs last for over 20.000 h when run on all compatible balasts and tested at 3h starts.

Country /Region	Manufacturer	Lamp Model	Description		Rated Life	Mercury Amount
USA	Philips	209130	PL-L 40W/830/XEW/4P/IS 25W,	4-pin 25W	24000	1.4
USA	Philips	209148	PL-L 40W/835/XEW/4P/IS 25W,	4-pin 25W	24000	1.4
USA	Philips	406520	PL-L 40W/835/XEW/4P/IS 25W,	4-pin 25W	24000	1.4
USA	Philips	209155	PL-L 40W/841/XEW/4P/IS 25W,	4-pin 25W	24000	1.4

Relevant to the above, the ELC asserted that information on manufacturers' lamp brochures represent "nominal" rather than maximum mercury levels. Our research does not support this assertion. While older dosing methods may have significant variation, modern dosing methods, including amalgam and pills are very precise. Therefore, the amount in the pill or strip is carefully controlled and monitored. The data sources we used often indicated that the mercury content was either a "total" or "maximum" amount The US Green Building Council gives LEED green building credit to facilities that purchase low-mercury lamps; each major manufacturer (i.e., Sylvania, Philips and GE) offers a mercury calculator that lists the total (or if there is a range the maximum) amount of mercury in each lamp. Much of our US data was derived from these "LEED" mercury calculators[2].

Note: it is important for the Commission to detail the conditions under which a CFL would be considered a longer-life model so that there is a fair comparison among all models. First, models should only qualify if they meet the minimum rated life requirement when tested using the standard 3-hour test method (as described by ELC). CFLs that pass only when tested using the 12-hour start method should not qualify.
Also, it is evident from the information submitted by the proposer that CFLs often have a different rated life when they are tested on different types of ballasts. To qualify for the longer life exemption, the lamps should meet the minimum rated life requirement on every type of ballast the lamp can be operated on. By doing this, the Commission will ensure that lamps are designed to operate only with ballasts that ensure that they will meet the long-life definition.

For example, Aura's Long-Life CFLs, which are discussed by the applicant, only meet the long-life definition when they are tested using 12-hour starts, which artificially inflates the lamp life. When tested using 3-hour starts on magnetic ballasts, their Long Life CFLs only have a rated life of 15.000 hours according to the manufacturer's fact sheet on this product, and would not qualify for the exemption.

Other relevant issues

In addition to the above, we urge the Commission to consider increasing the wattages of CFLs that fall under the 2.5 mg limit since many high-watt models (30 watts or higher) can meet the limit that is set to go into effect in 2013 (see information on high-wattage CFLs in tables above).

Finally, we urge the Commission to clarify that single capped cold cathode CFLs also fall under the same limits as conventional CFLs. Data presented below shows several cold cathode CFLs that can meet the regular exemption (2.5 mg for models up to and including 20.000 hours) as well as the proposed higher limit for longer life CFLs. We note that there is scant data available about the mercury content of cold cathode CFLs.

Region / country	Manufacturer	Lamp Model	Base Type	Watts	Rated Life	Mercury Content
USA	Sylvania	Dura-One (29535) CF23RC/BR30/827 (5)	Screw	23	15.000	1,8 mg

[2]Sylvania calculator - https://www.sylvania.com.en-us/sustainability/environmental-responsibility/Pages/leed-eb-mercury-calculator.aspx , Philips calculator US http://applications.nam..lighting.philips.com/us/sustainability_calculator/sustain_summary.php, and GE calculator http://geconsumerandindustrial.com/environmentalinfo/regulations_resources/usgbc.htm#picogramLookup

USA	Sylvania	Dura-One (29537) CF20RC/A19/827 (5)	Screw	20	15.000	1,8 mg
USA	TCP, Inc.	3-watt Cold Cathode CFL A-Lamp (6)	Screw	3	25.000	2,5 mg
USA	TCP, Inc.	3-watt Cold Cathode CFL Globe (6)	Screw	3	25.000	2,5 mg
USA	TCP, Inc.	3-watt Cold Cathode CFL Deco Torpedo (6)	Screw	3	25.000	2,5 mg
USA	TCP, Inc.	5-watt Cold Cathode CFL A-Lamp (6)	Screw	5	25.000	2,5 mg
USA	TCP, Inc.	5-watt Cold Cathode CFL Globe (6)	Screw	5	25.000	2,5 mg
USA	TCP, Inc.	5-watt Cold Cathode CFL Deco Torpedo (6)	Screw	5	25.000	2.5 mg
USA	TCP, Inc.	5-watt Cold Cathode CFL A-Lamp (6)	Screw	5	25.000	3 mg
USA	TCP, Inc.	5-watt Cold Cathode CFL Globe (6)	Screw	5	25.000	3 mg
USA	TCP, Inc.	5-watt Cold Cathode CFL Deco Torpedo (6)	Screw	5	25.000	3 mg
USA	Sylvania	28932 - CF5EL/B10/DIM/827/BL (7)	self Bal	5 ,	25000	3
USA	Sylvania	28962 - CF5EL/A15/DIM/827/BL (7)	self Bal	5 ,	25000	3
USA	Sylvania	28964 - CF5EL/B10/C/DIM/827/BL (7)	self Bal	5	25000	3

(5) Information on the rated life and mercury content of Sylvania's cold cathode CFLs can be found in the following Sylvania Fact Sheet: Mercury Quantity in Lamps for General Lighting Applications, April 20, 2012; http://assets.sylvania.com/assets/documents/Public%20Mercury%20Quantity%20in%20Lamps%20for%20General%20Light.1b882b8b-1f18-41d3-b4f8-539dcd204b1d.pdf

(6) Information on the rated life TCP's cold cathode CFLs, can be found at http://www.tcpi.com/PDF/2113_41630%20TCP%20CC%20ALamp%20SS_pub_0001.pdf.

(7) DULUX EL compact fluorescent lights, Sylvania, 11/2011, http://assets.sylvania.com/assets/documents/CF)34-INSERT.96a90d1d-cc26-4146—b7c0-2c6ab10d0641.pdf

Cold cathode compact fluorescent lamps (CC CFLs) are an innovation that offers enormous benefits over existing CFL bulb technology. First, the average lifespan of CCFL bulbs is around 25,000 hours - many times more than the average CFL bulb, and consistent with the rated life of longer-life CFLs as defined above. This increase in lifespan has been achieved by reducing the thickness of the glass tube, thereby enabling CCFL bulbs to run cooler[3]. A CC CFL operating for 25,000 hours will use just 15% of the mercury that the 3 or 4 CFL equivalents would get through during that lifetime[4].

[3] Reuk http://www.reuk.co.uk/Cold-Cathode-Fluorescent-Light-Bulbs.htm

[4] Reuk http://www.reuk.co.uk/Cold-Cathode-Fluorescent-Light-Bulbs.htm

Under the current set of RoHS exemptions, it may be unclear under which exemption single-capped cold cathode CFLs fall. Since Exemption 3 covers cold cathode lamps for special purposes that are used largely for backlighting, these single capped cold cathode CFLs would not be covered under this category. It would be helpful for the Commission to revise the wording in Exemption 1 or to clarify that single-capped cold cathode CFL models are included under this exemption. This would ensure a consistent interpretation of the Directive. Otherwise, it is possible that manufacturers would assume that they could fall under one of the other exemptions or that there was no exemption at all for these types of lamps.

Recommendation for revised exemption 7:

On the basis of the above, we would recommend the RoHS Exemption 1a to be modified as follows:

1 (a) Mercury in single capped (compact) florescent lamps (including conventional CFLs and cold cathode models) not exceeding (per burner):

> 1(a)1 For general lighting purposes <30 W with lifetime ≤20.000 hours when tested using 3-hour starts: 2.5 mg
>
> 1(a)2 For general lighting purposes <30W with longer lifetime (>20.000 hours when tested using 3-hour starts): 3.0 mg

Exemption request 8 "Mercury in cold cathode fluorescent lamps for general lighting purposes" and Exemption request 9 "Mercury in cold cathode fluorescent lamps for luminous sign for advertising or decorative purposes".

On the basis of our initial general comments, the proposer of this exemption (the Anie Federazione) did not provide mercury content information on the types of products it provides other than indicating that it needs at least 1 mg per 100 mm for proper operation. Furthermore , it has been difficult for us to comment on the appropriate mercury limit for double-capped cold cathode fluorescent lamps because there is virtually no data on their mercury content that is publicly available, at least on the basis of our search given the time available. Yet the claim that 1mg Hg is needed for every 100 mm of lamp sounds too high.

Given these circumstances we have the following observations;

One of the arguments that the Anie Federazione made was that this amount of mercury it is requesting in the exemption is reasonable because these CCFLs have a rated life of at least 50,000 hours, which the proposer argues is much higher than that of linear fluorescents. While that may have been true a few years ago, many linear fluorescents today have a rated life 25.000 to 50.000 hours. At least one manufacturer of cold cathode lamps, Eiko, states that a benefit of cold cathode lamps is that they have approximately 25% of the amount of mercury of a regular fluorescent lamp. (See http://www.eiko-lamps.co.uk/FAQ%20for%20CCFL%20Retrofit%20-%20UK.pdf.) If this is true, it does not make sense to allow CCFLs to contain more mercury than conventional linear fluorescent lamps. Therefore, since this exemption was justified on the basis that the lamp life of cold cathode fluorescent lamps “is longer than hot cathode fluorescent lamps and not less than 50000 hours”, if the Commission approves this exemption it should be limited to double-capped CCFLs that

meet or exceed this lamp life rating. This would prevent inferior products with a lower rated life from qualifying for this exemption since they would not have the same life-cycle benefit.

Allowing 1,0 to 1,3 mg for every 100 mm (approximately 4 inches) will create a runaway train allowing for hundreds of milligrams of mercury in signs and ambient lighting without justification. For every 4-feet (1.2 m) of CCFLs, approximately 12 mg of mercury will be allowed , which is more than twice the amount allowed in conventional 4 foot long life linear fluorescent (T8s and T5s) lamps.

The Commission should not approve this exemption until it gets a better answer as to why these cold cathode fluorescent lamps cannot meet the same mercury limits as those that have already been adopted in the RoHS exemptions 3(a), 3(b) and 3(c). Since the proposer indicates that some of its CCFLs are as short as 500 mm, why can't these products meet the 3.5 mg limit that is currently in place for CCFL designed for special purposes? The Commission should require the proposer to disclose and document the amount of mercury in a short length (<= 500 mm) CCFL used for ambient lighting or a luminous sign. The proposer should also answer the Commission's question about why it could not improve its dosing methods to meet the limits that are currently in effect.

Similarly, the proposer should explain why it cannot meet the 3(b) exemption of 5 mg for medium length CCFLs (>500 mm and <=1500 mm) when other manufacturers agreed to this mercury limit during the original consultation where CCFLs were discussed. Why are their CCFLs different than those that are manufactured for special purposes, which can meet the 5 mg limit in Exemption 3(b)?.

The question is why the proposer cannot meet a 5 mg limit for each 1500 mm length of CCFL used for general purpose ambient lighting, luminous signs or other decorative lighting purposes. Also it is not clear why the 13mg limit for > 1500mm length of CCFL cannot be met, as per exemption 3c. There is no sufficient documentation provided by the applicant on the mercury content of all CCFL lamps used for general lighting applications, signs or decorative lighting, nor the question on improving dosing methods has been addressed. Moreover, it is not explained adequately why its proposed mercury limits are significantly higher than those that were agreed upon for other CCFL technologies.

The proposer justified its products by comparing them to three hot cathode FLs and indicated that the technologies should be compared by using life-cycle analysis of the whole system. Unfortunately, the Anie Federazione case study comparisons use unrealistic information about the amount of mercury and rated life of the alternatives to justify the benefits of CCFLs (see below). In addition, they don't demonstrate mercury or energy benefits from using CCFLs compared to traditional (hot cathode) fluorescent lamps.

For example, when comparing a 73-watt 3000 mm CCFL lighting system, which would be allowed to have 30 mg of mercury to T5s, it states that "30 mg is almost equivalent to the limit for 3 X 21W T5 lamps through their lifetime cycle." It uses the assumptions that T5s have a wattage of 21 watts and rated life of 16.000 hours, both of which are unrealistically low. Most modern T5s have a rated life that is about two-times higher (30.000 to 35.000 hours), while the most popular T5s use 54 watts. Using more realistic assumptions, while the CCFL would contain approximately 30 mg of mercury to generate 5400 lumens using 73 watts of electricity, a user could get almost an equivalent amount of lumens from one 54-watt T5 lamp. Over the 50.000 hours, users would need 1.5 54-watt T5 lamps each rated at 30.000 to 35.000 hours. (Sylvania now has an XL T5 lamp rated at 45.000 hours). Each T5 lamp would have a maximum

mercury content of only 5 mg each (or 7.5 mg total) and use about 20 watts of energy less than the CCFL system. Consequently, the CCFL systems cannot be justified on a LCA basis compared to modern T5 lamps.

Cold Cathode CFLs for Display signs as well as decorative and ambient lighting can be replaced by LED flexible light strips. LEDs are more energy efficient and mercury-free.
We challenge some of the proposer's comments about the ability of LEDs, which are mercury free to be considered best available technology for several of these applications. For example, LEDs are bendable and can be used to make channel lighting for luminous signs as well as decorative and ambient lighting. See photos below.

LED INC
The Bright Idea

Other relevant concerns

Although we believe that LEDs will ultimately become the best alternative to neon lighting for making luminous signs and other decorative channel lighting, we see cold cathode fluorescent lighting as a significant improvement over neon in terms of energy efficiency and mercury content. The Commission should clarify that there is no exemption for neon lighting under the RoHS, therefore neon is not permitted in the EU market.

Recommendation on exemptions 8 and 9

To that end we would recommend to reject exemptions 8 and 9 until further information and clarifications are provided, and then set stringent mercury limits on doubled-capped CCFLs based on technical feasibility within the industry, potentially under the already existing exemptions.

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