

## The Time for Clean Lighting is Now

### The Clean Lighting Coalition Responds to the Global Lighting Association's Position Statement on Fluorescent Lamps in Advance of Minamata COP 4.2

Over the past year, the Clean Lighting Coalition has gathered evidence in over 25 countries around the world to assess the feasibility of a global transition to LEDs, in line with the fluorescent phase-out dates stipulated in the African region's [proposed amendment](#) to the Minamata Convention on Mercury.

The evidence proves that a transition to all LED lighting is not only feasible, but a cost-effective and safer lighting solution for people, businesses, and governments. Today's LED lamps can easily replace fluorescent – both compact and linear lamps – and completely remove mercury from lighting installations around the world. LED lighting is widely accessible, affordable, and compatible with over 91% of all existing fluorescent fixtures in buildings and homes. For more information about the benefits of mercury-free lighting, please visit our website at [www.cleanlightingcoalition.org](http://www.cleanlightingcoalition.org).

This document addresses issues raised by the [Global Lighting Association](#) (GLA), an association of regional and national lighting associations, in their [Position Statement](#) from December 2021.

The Minamata Convention was created to *Make Mercury History*; it is time to fulfil that mission in the lighting sector because alternatives to mercury lamps are readily available and cost-effective.

CLiC responds to claims made in the GLA's statement below (*text in italics is copied/pasted from the GLA document*).

#### 1. The Importance of Mercury Use in Lighting

##### **Text from the Global Lighting Association Position Statement**

*Because of the widespread transition to LED technology over recent decades, the world's lighting industry has considerably reduced the content of mercury in fluorescent lamps. In 2015, the amount of mercury in lamps placed on the global market represented just 1% of total anthropogenic mercury emissions (see UNEP reports). This figure has reduced even further because of the ongoing transition to solid state lighting. The Global Lighting Association is firmly committed to further reductions of mercury, where it is feasible to do so.*

##### **Clean Lighting Coalition's Response**

The GLA's percentage of mercury calculation contains a math error. The UN Global Mercury Assessment, 2018 and the UN Mercury Supply Trade and Demand Study, 2017 (table 12, page 46) both report that lamps are 3% of the total (products and processes) mercury consumed in 2015. The 2017 study provides a distinction between products (listed in Annex A of the Minamata Convention) and processes (listed in Annex B). **Considering all the products listed in Annex A of the Convention, fluorescent lighting represents 9.3-10.3% of total mercury emissions.<sup>1</sup>**

#### 2. Compatibility of LED Retrofit Lamps into Fluorescent Fixtures

##### **Text from the Global Lighting Association Position Statement**

*In the absence of functioning plug-and-play alternatives, users will need to rewire or replace a majority of existing fixtures world-wide, involving certified and skilled installers to ensure the*

safety and quality of the LED replacement. These adaptations or replacement of fixtures will be the predominant society costs of the transition to solid state lighting (see Annex 2). The financial, human and supply chain resources associated with such an enormous operation require careful long-term planning (see Annex 2).

### Clean Lighting Coalition's Response

**The percentage of fluorescent luminaires that do not accept plug-and-play solutions is less than 10%.** Industry has worked hard to develop plug-and-play alternatives that drop directly into existing fluorescent luminaires. Studies evaluating installed luminaires stock in Europe and North America found more than 91% of fixtures can accept plug and play LED retrofits.<sup>ii</sup>

- A European study published a database of 470 different T5 and T8 fluorescent ballasts and incorporated compatibility literature published by three manufacturers (Philips/Signify, OSRAM/LEDvance and Sylvania) and they found 91-93% of European fluorescent fixtures can accept plug-and-play LED retrofit tubes.
- A similar study in North America reviewed ballast compatibility literature from eight manufacturers (GE Lighting, Philips/Signify, Sylvania, Feit Electric, Technical Consumer Products (TCP), Universal Lighting Technologies, EIKO and Great Value) and prepared a database of over 800 fluorescent lamp ballasts. This study found 92-94% compatibility with plug-and-play LED tubes (called "Type A" in North America).

Elsewhere in the world, and especially in developing and emerging markets, most fluorescent fixtures contain magnetic ballasts, commonly called "choke" ballasts. These ballasts are long lasting and tolerate humidity and voltage surges better than electronic (high frequency) ballasts.

**All fixtures with a magnetic ballast (100%) can accept plug-and-play LED tubes.**

For the 6-9% of fluorescent lamp fixtures which have electronic ballasts and don't have a plug-and-play LED tube, the fixture can still be used, however the ballast must be by-passed (rewired) to bring mains-voltage to the lamp socket and a mains-voltage LED tube is installed (called "Type B" in North America).

### 3. Don't Use Policy to Promote LED Lighting, Let Market Forces Gradually Transition

#### Text from the Global Lighting Association Position Statement

**Importance of a smooth transition to LED lighting.** *A gradual and manageable transition to LED-based lighting is recommended in order to avoid disruptions and shortages in the supply chain. An abrupt transition will make it extremely challenging to ramp up production of critical components such as power transistors and integrated circuits, particularly in view of current supply chain problems. A gradual transition will also provide more time for innovation to improve LED plug-and-play compatibility. In addition it will provide customers the right to repair and service their existing lighting equipment. In the absence of a gradual transition customers may be driven to highly inefficient incandescent lighting or sub-standard LED products which persist in many markets.*

### Clean Lighting Coalition's Response

Despite the widespread availability of cost-effective, mercury-free alternatives, the GLA continues to advocate for and sell fluorescents because it is profitable. Some companies that are members of the GLA make more profit selling fluorescent lamps than LED lamps. For example, the most recent [financial statement](#) of Signify/Philips show that the profit from conventional lighting (largely fluorescent tubes) in 2021 was 36% higher than the profit from digital lighting (including

LED tubes). In Signify's [2020 Annual Report](#) to Shareholders, they reference their on-going corporate strategy to be the last company in the world selling conventional lighting due to the higher profitability: "The performance of Conventional Products in 2020 reflected the successful execution of the 'last company standing' strategy to extract value from the conventional business."

The GLA favors fewer regulatory interventions on the global lighting market. The Association has a webpage specifically dedicated to this topic, referred to as '[Fewer Rules Enforced](#).'

It should also be noted that over 69 countries around the world have already phased-out incandescent lamps, and LED options are cheaper than CFLs in many markets including the 25 analysed by the Clean Lighting Coalition in Africa, Latin America and Asia. For more information on the market readiness of LED lamps to replace fluorescent, please see Annex A.

#### 4. GLA Compatibility Claims Contradict Lighting Manufacturers' Websites and Literature

##### Text from the Global Lighting Association Position Statement

*Abruptly phasing out LFL lamps, as proposed for consideration at the Minamata COP 4 convention, is premature and currently unrealistic for many regions. Should the ban be implemented, it would cause significant problems for the existing installed fixture base and for the supply chain, as linear LED plug-and-play replacement alternatives are technically not compatible for a majority of fluorescent lamp fixtures world-wide (see Annexes 1 and 2). It would make plug-and-play servicing with LED replacement lamps unfeasible for a majority of existing installations in all regions. The Global Lighting Association is promoting a sustainable transition to more energy efficient LED fixtures to replace fluorescent lamps.*

##### Clean Lighting Coalition's Response

**Over 91% of existing fluorescent luminaires can accept direct, drop-in, plug-and-play LED retrofit tubes**, according to literature published by several large global lighting companies including OSRAM/LEDvance, Signify/Philips, Sylvania, Havells and others. For the 6-9% of incompatible fixtures, the ballast can be bypassed by an electrician, and a normal LED tube that operates on mains voltage can be installed, thus no fluorescent fixtures are wasted or need to be replaced.

LED retrofit tubes typically last 2-3 times longer than the fluorescents they replace, meaning they do not need to be replaced as often and they lower servicing costs for building owners. For example, fluorescent lamps are typically rated 20,000 hours, but the standard lifetime rating for an LED tube is 50,000 hours. The longer lifespan is particularly beneficial for hard-to-reach locations. If a 50,000-hour lamp operates for 10 hours per day, it will operate for 13 years before it must be replaced.

#### 5. GLA Calls for a Global Ban on New Fluorescent Fixtures

##### Text from the Global Lighting Association Position Statement

*A possible roadmap to reduce demand for LFL lamps is to restrict or discourage by national law new traditional fixtures intended and certified for these lamps, while allowing LFL spare part lamps for existing installations. GLA members have ceased offering these fixtures in many regions. Such an initiative is likely to accelerate the transition to more efficient LED fixtures, similar to the current transition to electric vehicles that makes significant progress but takes time to effectively implement.*

**Clean Lighting Coalition’s Response**

CLiC agrees that the sooner national economies adopt policy measures that ban the installation of fluorescent fixtures, the better for those economies.

**6. GLA Proposal to Maintain Sales of Mercury-Containing Fluorescent Lamps**

**Text from the Global Lighting Association Position Statement**

**Proposed amendments to Minamata Convention text.** *The Global Lighting Association has evaluated the proposals of the African-region and the European Union to phase out CFL.i, LFL and CCFL/EEFL lamps, and recommends revising the current wording of Part I of Annex A of the Minamata Convention (2013) by adding the following (revisions in italics):*

Mercury-added products	Date after which the manufacture, import or export of the product shall not be allowed (phase-out date)
<i>Compact fluorescent lamps (CFLs) for general lighting purposes that are ≤ 30 watts</i> <i>(a) integrated compact fluorescent lamps (CFL.i)</i> <i>(b) non-integrated compact fluorescent lamps (CFL.ni) with a mercury content exceeding 5 mg per lamp burner</i>	2026
Linear fluorescent lamps (LFLs) for general lighting purposes: <i>(a) Triband phosphor &lt; 60 watts with a mercury content exceeding 5 mg per lamp;</i> <i>(b) Halophosphate phosphor ≤ 40 watts with a mercury content exceeding 5 mg per lamp</i>	2025

**Clean Lighting Coalition’s Response**

The GLA proposal will maintain the highest volume fluorescent lamp products on the market, and only remove integrally ballasted CFLs (CFL.i), which the market is already phasing out due to competition from better performing LEDs. Compared to the current Minamata Convention Annex A requirements, the GLA proposal would:

- Phase-out integrally ballasted CFLs (CFL.i) in 2026 and make no change to the mercury content of non-integrally ballasted (also called “pin-based”) CFL.ni;
- Maintain both triband phosphor lamps (no change to the limit of 5 mg/lamp) and halophosphate (proposes a reduction from 10 mg/lamp to 5mg/lamp in 2025). Linear fluorescent lamps have the highest volume sales of all mercury-containing lighting products.
- Not change proposed for cold cathode or external electrode fluorescent lamps (CCFL and EEFL), even though these are no longer used in the market. All electronic displays today are made with LED backlit displays rather than CCFL or EEFL.

The Clean Lighting Coalition recommends that countries consider the [African region’s proposed amendment](#) to the Minamata Convention’s COP 4.2. The African proposal seeks to eliminate CFL.i, CCFL and EEFL lamps by 2024, and all linear fluorescent lamps by 2025. **If adopted, the cumulative (2025-2050) global benefits of the African Lighting Amendment would be significant:**

- **Eliminate 232 tonnes of mercury pollution** from the environment, both from the light bulbs themselves and from avoided mercury emissions from coal-fired power plants;

- **Reduce global electricity use by 3%;**
- **Avoid 3.5 gigatonnes of CO<sub>2</sub> emissions** cumulatively between 2025-2050; equivalent to removing all passenger cars globally from the road for a whole year; and
- **Save US\$1 trillion on electricity bills.**

In sum, LED technologies and markets have advanced significantly over the last 3-5 years. Though the GLA maintains its interest in selling fluorescent lighting, there are affordable LED alternatives available in markets worldwide.

*If you have any questions about the CLiC response, please contact Hannah Blair at [hblair@clasp.ngo](mailto:hblair@clasp.ngo).*

**Annex A.****Performance: Do mercury-free LED replacement lamps pass the performance test?**

Yes, LED retrofit lamps offer consumers and businesses better quality lighting products that last longer, use less energy, and produce equal or better-quality light than the mercury-containing fluorescent lamps they are designed to replace. For example, there are thousands of different models of T8 and T5 linear LED lamps and 4-pin compact LED lamps on the DesignLights Consortium (DLC) [Qualified Products List](#). This list is used by utilities across North America because it includes high-performing LED lamps that meet DLC's rigorous performance requirements (e.g., minimum lumen output and efficacy requirements for each category of LED lamps that it covers).

Mercury-free LED lighting market has improved dramatically over the last five years in terms of product availability, price, performance and quality. Reflecting the advancements in LED technology, the [US Department of Energy stated](#) in 2019 that LEDs "are revolutionizing the lighting market," explaining that they "have surpassed, or matched, all conventional lighting technologies in terms of energy efficiency, lifetime, versatility, and color quality, and, due to their increasing cost competitiveness, LEDs are successfully competing in a wide variety of lighting applications."

Moreover, the European Commission recently conducted a thorough evaluation of the potential for LEDs to replace fluorescent lamps under its Restriction of Hazardous Substances (RoHS) Directive. The Commission decided to ban all general-purpose linear fluorescent lamps from the European marketplace within 12-18 months. In its [decision](#), dated December 16, 2021, the Commission concluded that "the availability of substitutes has been documented and calculations based on the socioeconomic impact of substitution have shown to result in overall savings and in total environmental, health and consumer safety benefits." It also pointed to studies that found:

- "Reliable mercury-free substitutes are available on the European Union market;"
- "Ample evidence that substituting mercury in the lamp categories covered by the exemption [i.e., double-capped linear fluorescents for general lighting purposes including, but not limited to T5s, T8s and T12s] is scientifically and technically practicable;"
- "The substitution costs would be relatively quickly offset by benefits generated by related energy savings;" and
- "Substituting mercury with LED alternatives in the lamp categories under assessment would avoid placing 2882 kg [i.e., nearly 3 tonnes] of mercury in lamps on the EU market."

**Manufacturer's websites advertise equal or better performance than fluorescent lamps**

We found that lamp manufacturers make statements on their websites touting the ability of LEDs to offer equal or better performance than the fluorescent lamps they are designed to replace while also lasting significantly longer. The table below provides some examples of these statements made by major lamp manufacturers.

**Lamp Manufacturer Statements on LED Lamp Performance**

Lamp	Product	Manufacturer Statements
T5	<a href="#">Sylvania SubstiTUBE LED T5HO</a>	<ul style="list-style-type: none"> <li>“SYLVANIA SubstiTUBE LED T5HO lamps are an energy saving alternative, designed to replace traditional fluorescent T5HO lamps. These LED T5HO lamps mimic the look of traditional fluorescent T5 HO lamps, contain no mercury and provide a uniform light distribution with an optimized glass optic design.”</li> </ul>
T8	<a href="#">Philips MASTER Value LEDtube Universal T8</a>	<ul style="list-style-type: none"> <li>“And thanks to a high degree of efficiency and long service life, the MASTER Value LEDtube Universal T8 is the ideal alternative to standard fluorescent tubes for all demanding lighting applications.”</li> <li>“Up to 65% more energy efficient than conventional TL-D (fluorescent) lamps.”</li> <li>“Up to 3× longer lasting performance than conventional TL-D (fluorescent) lighting tubes.”</li> </ul>
T12	<a href="#">Feit Electric T12 Plug and Play</a>	<ul style="list-style-type: none"> <li>“These T12 lamps produce 1800 lumens of 4100K Cool White light while using only 20 watts - up to 50% less energy than a standard fluorescent lamp. Each shatterproof lamp is rated for 35,000 hours / 32 years service life, is RoHS compliant and 100% mercury free. Choose a dependable flicker-free bulb for residential or commercial applications. Installation is simple: No replacement of the ballast or installation of LED driver or removal of old ballast required.”</li> </ul>
CFL Pin-Based	<a href="#">Sylvania LED Pin-Based Lamps</a>	<ul style="list-style-type: none"> <li>“Long life of 50,000 hours, lasting up to three times as long as the lamps they replace, minimizes maintenance costs over the life of the lamp. 5-year warranty for worry-free installations.”</li> <li>“Over temperature protection ensures that lamps will not overheat.”</li> <li>“Available in 2700K-4100K providing choices to harmonize colors with other technologies in the same application space.”</li> </ul>

**ENDNOTES:**

<sup>i</sup> Lighting represents 112 – 173 metric tonnes per year in 2015, out of a total for products (not processes) of 1088 to 1868 metric tonnes. Thus, lighting represents 9.3 to 10.3% of anthropogenic consumption in products (Annex A). UN Mercury Supply Trade and Demand Study, 2017 (Table 12, page 46) – [Link](#).

<sup>ii</sup> Sweden-CLASP, 2020 fluorescent ballast compatibility database posted on the Minamata Convention website - [Link](#).