

ELC submission to UNEP INC3

Preparation of a global legally binding instrument on mercury

(27th October 2011)

The European Lamp Companies Federation (ELC) welcomes UNEP's initiative to prepare a global legally binding instrument on mercury, and supports UNEP's goal to reduce global usage of mercury and to prepare a global harmonized approach.

Mercury in lamps

All mercury containing lamps are discharge lamps. They are very much varying in discharge technology, size, shape, wattage and applications. Discharge lamps are e.g. linear (FL) and compact fluorescent lamps (CFL) as well as high-intensity discharge lamps (HID).

Member companies of ELC are working for decades to increase the efficiency of its lamps and reduce the mercury content of its products in particular in fluorescent lighting.

With regard to energy efficiency, discharge lamps provide very high luminous efficacies, up to 12 times the efficacy of incandescent lamps, thus reducing the total environmental impact during the lifecycle, contributing to the global decrease of green-house gas emission and mercury emission in the air from coal fired power plants. Because of this advantage governments and international organisations like UNEP – via e.g. En.Lighten project - promote the replacement of incandescent lamps by discharge lamps.

Regarding mercury in lamps, our member companies are working continuously on the reduction of the mercury content of all our lamp types, wherever this is technologically feasible. In case of fluorescent lamps for example, thanks to the continuous research effort ELC member companies managed by now to decrease tremendously the mercury content per lamp down to 5% of the original lamps developed in the 1960s.

The lifetime of these lamps is long, while there is a certain dependency between lifetime and required mercury content. Any little change in the lamp technology including change of mercury content requires extensive testing and changes in production equipment prior to the marketing of a new improved product. It therefore takes time to develop new innovations, and test the effect on products with decreased mercury content, which in practice takes a few years. In practice it requires a large, many years long innovation effort as the number of different lamps for general lighting or for special purposes is very high.

Products of ELC member companies offer nearly the whole range of lamps falling in the scope of the European RoHS directive - already in place in several countries e.g. in EU¹ from 2006 onwards -, and fulfilling its requirements. This regulation generally prohibits the use of mercury in electrical and electronic equipment, but allows – via exemptions - the use of mercury in discharge lamps. For most lamps challenging limits are set, which are currently the state of the art without compromising reliability, energy efficiency, and lifetime. A too low mercury level results in a significant decrease of light output above a certain lifetime leading to a reduction in reliability and effective lifetime of light sources.

The continuous mercury decrease, however, meets nowadays a technological barrier. The fact is that a very small amount of mercury in discharge lamps is technologically indispensable. It is intentionally added, and it is needed, as mercury is essential for high efficient light generation and needed to realize sufficiently long lifetime. To date and in the foreseeable future, we do not see further substantial reduction potential below the current RoHS state of the art limits, nor realistic alternatives for mercury in discharge lamps.

Nevertheless, our member companies are developing continuously and concentrating resources on mercury free solutions like LED and OLED lamps, aiming at providing alternatives in as many lamp segments as possible.

Discussion of UNEP draft text

ELC would like to emphasize that mercury containing lamps exist in many different luminous intensities, shapes, wattages, colours, lifetime, caps and are used in many applications including non-lighting. They are the best way to realize the highest efficiency and the lowest total environmental impact for lighting. The requirement for the amount of mercury can be very different per lamp type. Regulation of this product group is therefore very complex and requires a very good knowledge of the products.

The RoHS regulation in Europe is developed over many years and did consider a variety of lamp types. The current European regulation gives a maximum allowed mercury dose for every lamp type in accordance with technology constraints.

ELC proposes to consider the mercury limits of RoHS regulation for world wide use, as state of the art limits. However, to reach these limits needs lot of effort and time. Therefore, we also propose that these limits can be reached in several stages depending on the needs of the parties. We also see that RoHS list can be applied world-wide only with modifications and with certain transition time. ELC believes that some adaptations are needed, e.g. considering halophosphate lamps due to availability and affordability of lamps as well as regarding resource aspects like availability of rare earth metals..

¹ E.g. EU RoHS Directive 2002/95/EC on the restriction of the use of certain hazardous substances (2011/65/EU, RoHS Recast)

In view of the importance of energy saving mercury containing lamps and the complexity of the product portfolio, ELC advises to prepare such a legislation which minimizes the risk that lamps are accidentally prohibited, allows technological development and gives enough time to find and introduce alternatives. Therefore, ELC suggests considering a dedicated, separate Article on mercury containing lamps.

Article 6: Mercury-added products

General considerations

Lamps containing mercury differ from many other mercury containing products among others regarding the following aspects:

- In the area of general lighting, mercury containing lamps have an overall better environmental performance than most mercury-free lighting sources. In few cases this is different, e.g. for some LED lamps, but availability and affordability of these lamps is not given so far
- For most special purpose lamps no alternatives are available so far e.g. disinfection UV lamps, projector lamps, short arc mercury lamps, medical lamps, etc.
- Measures set in force to discourage the use of mercury containing lamps can have negative environmental, economic and social consequences.
- Some of the proposals demand “environmentally sound disposal of the mercury added products at the end of its life”. While ELC members welcome sound take back and recycling schemes for lamps this cannot be a prerequisite for delivering lamps. To set up of such schemes including take back facilities, transportation, recycling disposal as well as financing will take a lot of time and can be organized in countries parallel to market introduction. -In the meantime energy efficient lighting should be made available for all countries to achieve substantial reductions of greenhouse gasses and reducing the environmental impact of current Lighting installations. Therefore ELC members believe that within Article 6 there should be room for these aspects, which are unique compared to many other products.

Critical aspects to be considered for regulating lamps

- ELC members welcome the introduction of well defined limits for certain lamp types, however without compromising high performance, specifications and environmental impact of the lamps.
- ELC recommends a stepwise approach with limits based on already existing limits and transition times, which are needed to introduce new technologies and change production facilities. It should be open for certain countries to demand lower limits, if this is appropriate from technical and economic point of view, when the technology is available and affordable.

- The introduction of limits has to be defined in such a way that no lamp types, which are demanded or required in a certain market or application are accidentally or unjustified banned without having an alternative. Limitation of mercury in certain lamps shall be based on scientific grounds. Technical feasibility, the total environmental impact, market demands and socio-economic aspects have to be taken into account.
- Limitation of mercury in certain lamps shall be harmonised as far as possible and appropriate. A race: “Who can demand lower limits and within shorter transition times?” will lead to the unjustified phase out of certain lamp types, it will reduce reliability, light efficiency and lifetime of lamps and leads to a higher environmental impact.
- These products are needed everywhere in the world to achieve the most efficient lighting. These products should be available in every country irrespectively, whether these states are parties of the Convention or not. Therefore registration, notification and certification steps will not help avoiding or reducing mercury usage. Indeed, this can have negative effects, if it leads to partial or complete unavailability of lamps in certain markets.
- Lamps do not only have the character of an electrical or electronic product. Mercury-containing lamps are no stand-alone products but are used in a lamp-specific fixture in most cases. This “spare-part character” leads to the consequence that in case of a phase-out of a certain mercury-containing lamp also the lamp ballast, the complete luminaire or the equipment, where the lamp is used has to be exchanged, causing huge investment costs for the owners.
- When limits are introduced or changed, appropriate transition times are required in order to have legal certainty as well as a level playing field regarding economic aspects.
- ELC’s lamp manufacturers nowadays use for production of discharge lamps² mercury containing components - so-called dosing units -, which are produced in controlled, safe production areas, often different to the production site of the lamps. These mercury containing components need to be transported to the production sites, thus reducing the environmental and health risks during production processes.
- Wherever limits are introduced it is necessary to control also the market based on standardized test methods. Market surveillance is task of the different countries, not of the lamp manufacturers. If there is no control, more mercury will be put on the markets than necessary giving also financial advantages to those companies not complying with the regulations and harming the environment.
- ELC strongly encourage the parties to combine the regulation of mercury in lamps with the installation of take-back and recycling schemes for lamps. But the presence of such systems

² These are low pressure discharge lamps, as well as some high pressure lamps

shall not be prerequisite for the allowance of marketing lamps as it delays the introduction process and delaying the positive effect on the environment.

ELC clearly is in favour of Article 6 Option 3 as above aspects are addressed in the most suitable way for all affected parties: states, users, manufacturers as well as other stakeholders. We strongly recommend to regulate lamps according to the provisions of Article 6 Option 3, even, in case other products can be regulated more effectively with a different approach.

Option 3 offers a clear and harmonized approach to regulate mercury in lighting products. Option 1 and 2 are from our point of view not at all suitable for lamps as they set up unnecessary burdens, and additionally they bear the risk of unavailability of lamps in certain markets. Option 4 has aspects, which we find quite acceptable like legislation, but this option lacks a common harmonized approach.

According to Option 3, the COP could define allowable use lamps as well as limits and transition times, while this option also leaves room for stricter legislation, if appropriate in a country or region.

Option 3 would also be a suitable choice for other electrical and electronic equipment (EEE) as they are in the current scope of different RoHS regulations world-wide. In these regulations, mercury is generally banned, but allowed in discharge lamps.

Energy efficient lighting, particularly discharge lamps, will need in the foreseeable future mercury for emitting light. So mercury must be available for these products. Option 3 is a suitable way to gradually reduce mercury releases via harmonized limits, it pushes the market towards replacing certain mercury-containing lamps, if better alternatives are available and affordable without risking the unavailability of lamps and without hampering innovation.

ELC will work on a proposal for lamps needed world-wide including the minimum amounts of mercury needed for different technologies.

Text proposal for Article 6

ELC proposes to retain the text of Option 3 with the following changes:

Article 6, option 3

1. For the purposes of this Convention, mercury-added products shall be listed in the various parts of Annex C based on the following criteria:
 - (a) Products for which non-mercury alternatives are globally accessible, affordable and effective shall be prohibited and shall be listed in Part I of Annex C;
 - (b) Products for which a transition period is needed to allow Parties, particularly developing countries and countries with economies in transition, to phase out their use based on their social and economic circumstances shall be listed in Part II of Annex C;
 - (c) Products for which [low-mercury] or non-mercury alternatives are unavailable or are available but not affordable globally shall be listed in Part III of Annex C under the category of “essential use.”

Article 7: Manufacturing processes in which mercury is used

General considerations

When ELC members started to reduce the amount of mercury in their lamps decades ago the main reason was occupational health and safety in the production sites. Therefore clear regulation and control is needed, so that people involved in the production are not harmed.

The technologies of safe storage and use – dosing - of mercury in discharge lamp production sites are well-known and widely applied. Dosing the tiny amounts of mercury in lamps can be done by means of precise mercury dispensers or as so-called dosing units, where the mercury is brought into the lamp as a separately produced component. These technologies make sure that mercury is not released into the factory environment and does not come in contact with workers above acceptable workplace limits. Hence safety is guaranteed.

ELC is in favour of a positive list approach, which is proposed in Paragraph 1 Option 1. Such an approach allows the banning of non-acceptable technologies. It helps to focus on the problem areas, but keeps open the door for developing technologies.

ELC is in favour of either option 1 or option 2 for paragraph 1 of Article 7. The manufacturing process for discharge lamps shall be either

1. not on the list of prohibited processes of Annex D in case of option 1, or
2. on the list for exempted processes of Annex D in case of option 2

ELC is strongly opposing option 3. This option provides a framework for phasing out all production processes using mercury. Since there is no alternative known for mercury in discharge lamps such a plan cannot be made at this time. Production technology for lamp production is only available in a limited way. In some cases the machinery is produced by lamp manufacturers. Therefore it is necessary to be able to import or export lamp production machinery without unnecessary burdens.

Text proposal for Article 7

ELC proposes to retain the text of option 1:

Each Party shall not allow the use of mercury or mercury compounds in the manufacturing processes listed in Annex D except in accordance with an [acceptable-use or] allowable-use exemption listed in that annex for which the Party is registered as provided in Article 8.

Article 8: Allowable-use exemptions [and acceptable use]

General considerations

As mentioned above mercury-containing lamps for general lighting, as well as for most special purposes will be necessary in the foreseeable future. It would be very critical for countries, users as well as manufacturers, if lamps are “accidentally” banned due to the end of an exemption period, while no new exemption is granted. Regarding lamps or even broader regarding EEE ELC proposes Option 3 of Article 6 leading to the consequence that Article 8 has to be adapted accordingly.

Critical aspects to be considered for regulating lamp

- Registration of countries regarding the use of mercury-containing lamps should not be mandatory. As mentioned above mercury-containing lamps are used world-wide, irrespective whether a party signs the convention or not. It is not appropriate if the Conference of parties decides whether energy efficient lighting products should be available for certain states or not. This also would hamper a harmonized global approach as proposed by ELC for EEE or for lighting equipment for article 6 above.
- A register as proposed in Article 8 Option 1 Paragraph 3 would list all mercury containing lamps in all countries, so it would not give the conference of parties more knowledge or benefit
- Regarding Option 1 Paragraph 4 alternative 1 and 2 “sunset dates” should be set in a way that mercury containing lamps are not phased out automatically without clear prior evaluation and decision that alternative technology is available and affordable. As mentioned above for most mercury-containing lamps available and affordable mercury-free substitution is not foreseeable today. A sunset date of e.g. 5 years would literally switch off energy efficient lighting and most special purpose lamps
- ELC proposes to regularly update the lists of Annex C as referred to in Article 6 option 3 based on technological progress and scientifically justified data. Technical feasibility, market demands, availability of components and socio-economic aspects have to be taken into account. All relevant stakeholders parties, governmental and non-governmental organisations and of course manufacturers and their organizations shall have opportunity for being consulted. ELC recommends an update of Annex C Parts I and II as proposed in Article 6 Option 3 every [5] years and an update of Part III every [10] years.
- The revision process of the Annex C lists shall be transparent at any time for any stakeholder
- Manufacturers or manufacturer associations shall have the right to ask for new “Essential Use” products in order not to limit innovation. They shall provide scientifically based data

revealing the justification of the request. The secretariat shall approve the Essential Use request if it is sufficiently based on scientific ground and offers environmental, health or safety benefit or is critical for the functioning of the society. A decision on such a request shall be taken within a reasonable time of not more than [18] months.

- The secretariat may develop an Annex C list revision proposal based on above listed procedural aspects on which the COP can either decide actively or compile a revision proposal which is communicated to the parties and adopted automatically if no or only minor objections arise by the parties within a defined period of time.

Text proposal for Article 8

ELC proposes to choose Article 8 Option 2 with some modifications as this option is the only suitable one for lamps or other electrical and electronic equipment. The modifications are necessary to take above mentioned considerations into account.

Annex C, option 3

Text proposal

Mercury-added products

Part I: Prohibited

Mercury-added product
Comment of ELC: This list will contain products of Part II after the transition time has ended.

Part II: Phase-out

Mercury-added product	Transition period
<p>Comment of ELC:</p> <p>ELC will prepare a stepwise approach to introduce limits representing a roadmap towards the products as listed in part III.</p> <p>The ELC proposal will take into account already existing regulations as well as sufficient transition time for all the changes necessary for lamp production.</p>	[insert transition period]

Part III: Essential use

Mercury-added product
<p>Comment of ELC:</p> <p>ELC will prepare a list of mercury containing lamps which are not replaceable in the foreseeable future including for some lamps limits which are state of the art today</p>

About the European Lamp Companies Federation (ELC)

For over 20 years the European Lamp Companies Federation (ELC), has represented the leading European lamp manufacturers. ELC members include the leading eight European lamp manufacturers. These companies account for 95% of total European lamp production, employ more than 50.000 people in Europe, and generate more than 5 billion Euros turnover annually.

ELC is dedicated to promoting efficient lighting practice for the benefit of the global environment, human comfort and the health and safety of consumers. More information about the ELC can be found at www.elcfed.org.