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efficient lighting for developing and emerging countries

Environmentally Sound Management: Sustainability

4th November 2011

Singapore

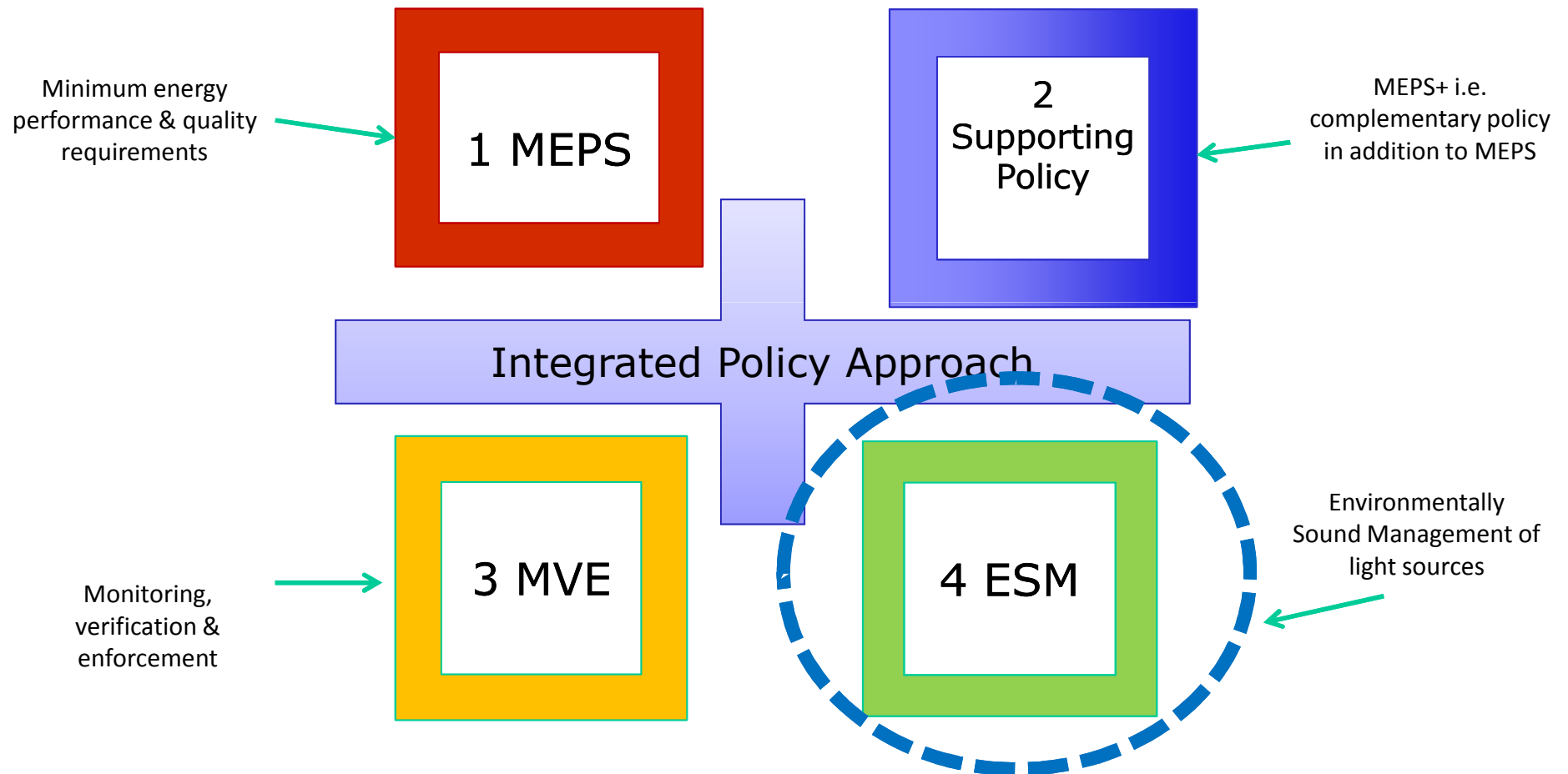


PHILIPS





Integrated Policy Approach



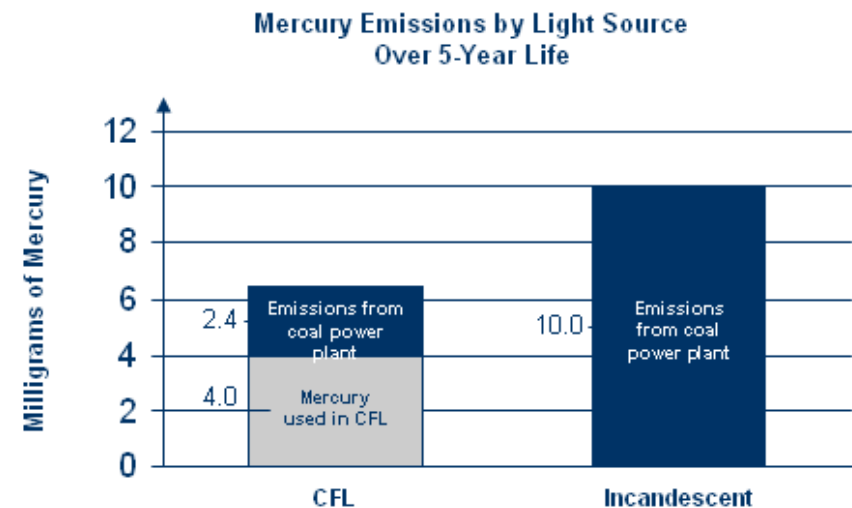


Holistic View of Sustainability

- Phasing out inefficient lighting viewed as most effective solution to limit the environmental impact of lighting

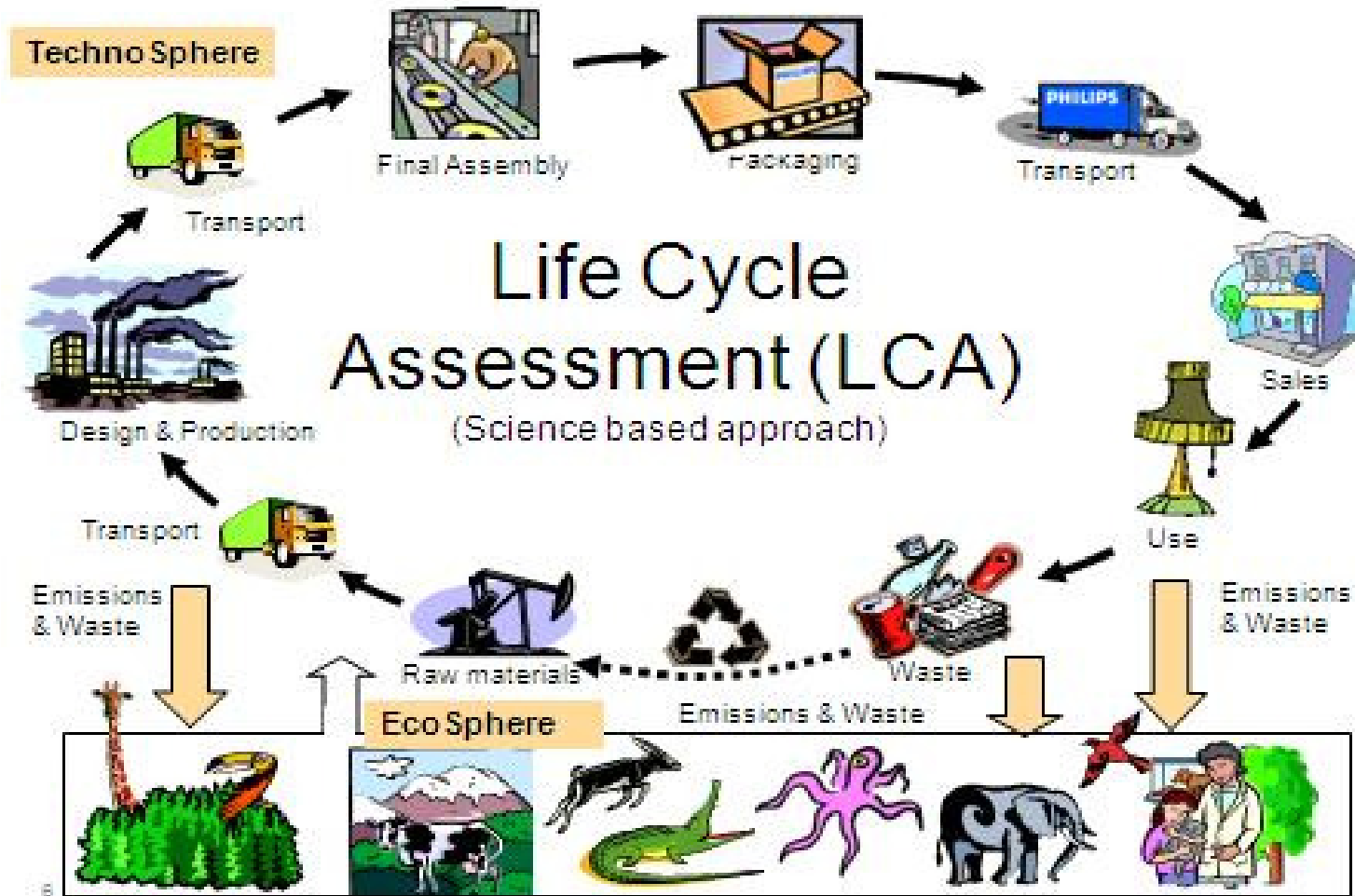
Mercury-paradoxon:

- Burning coal to generate the electricity releases mercury into the environment
- Generating additional electricity for powering an incandescent lamp for five years releases more mercury into the atmosphere than is contained in the CFL
- Mercury emitted by coal power plants is never recycled





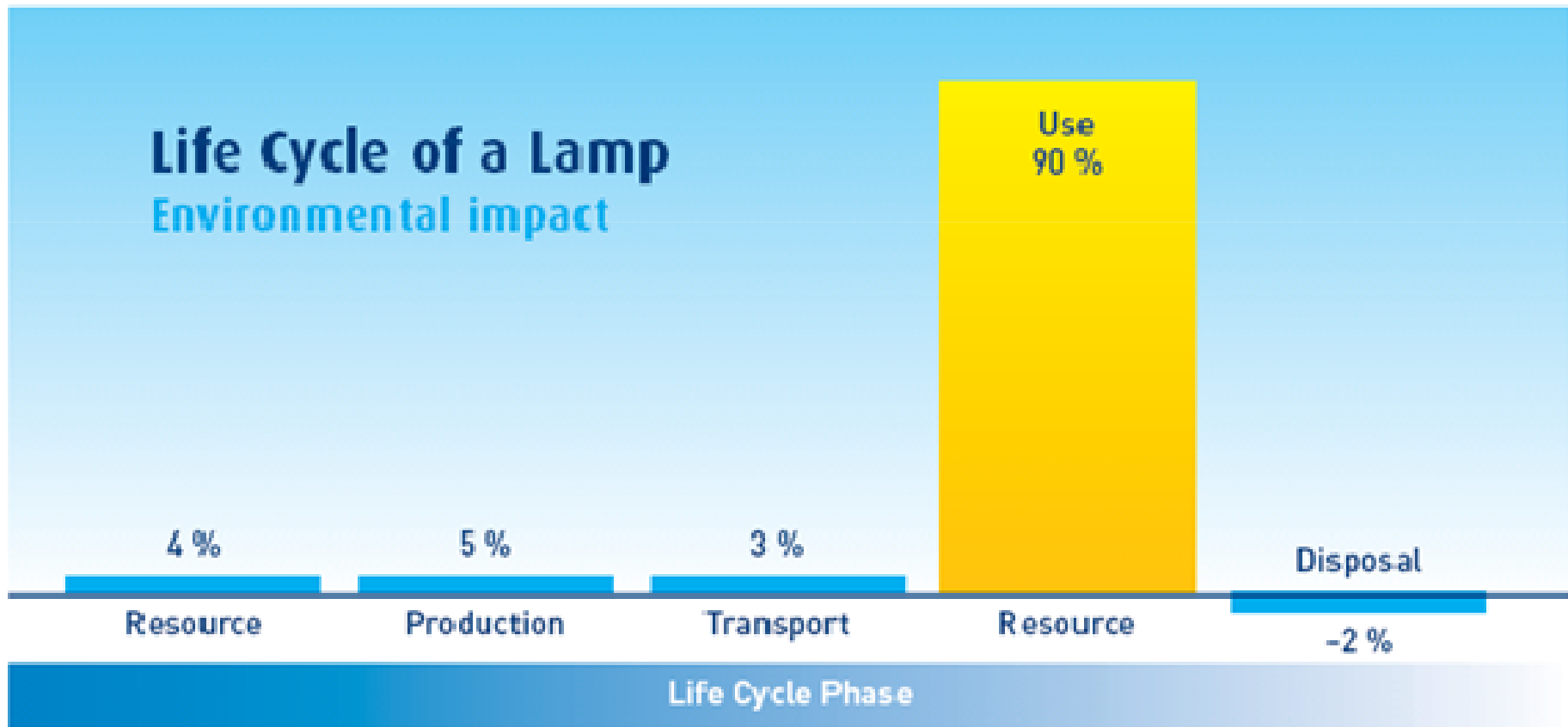
Life Cycle Assessment as science based approach


















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Life Cycle Assessment





What is the energy and CO2 Savings Potential in

| Application in general lighting | Energy saving through innovative lamp technologies | | | ~savings / lamp / year* |
|---------------------------------|---|------|---|----------------------------------|
| Street lighting |  Mercury vapor | ~40% | High-pressure sodium lamp  | 220 kWh / 110 kg CO ₂ |
| Office & Industry Lighting |  Fluorescent lp. w. halophosphate phosphor | ~65% | New T5 fluorescent w/ electronic control & light management  | 180 kWh / 90 kg CO ₂ |
| Shop lighting |  3 Standard Halogen lamps | ~80% | New Ceramic metal halide lamps  | 500 kWh / 250 kg CO ₂ |
| Hospitality Spotlighting |  Low voltage halogen reflector | ~30% | Dichroic Halogen lamp with infrared coat technology  | 60 kWh / 30 kg CO ₂ |
| Household lighting (private) |  Standard Incandescent | ~80% | Compact fluorescent  | 50 kWh / 25 kg CO ₂ |
| | | ~80% | Parathom LED-Lamps  | 50 kWh / 25 kg CO ₂ |
| Lighting design |  Low voltage halogen reflector | ~50% | White LED Module COINlight OSTAR  | 45 kWh / 22 kg CO ₂ |

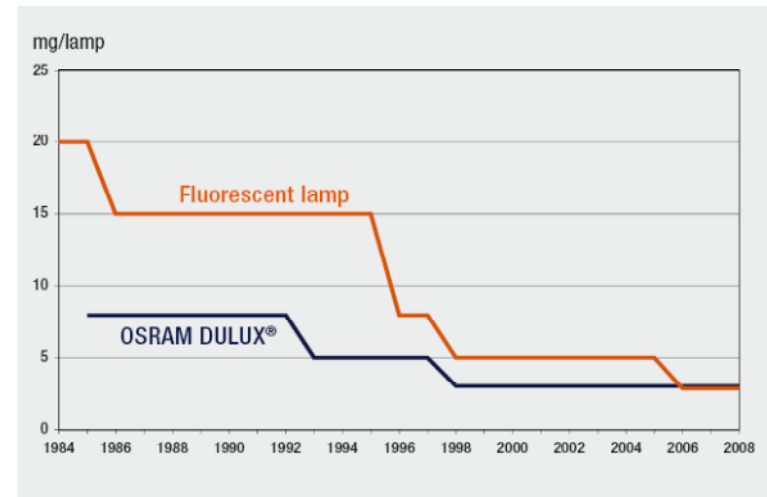
* For typical usage / Energy-Mix 0,5 kg CO₂/kWh



Resource Focus

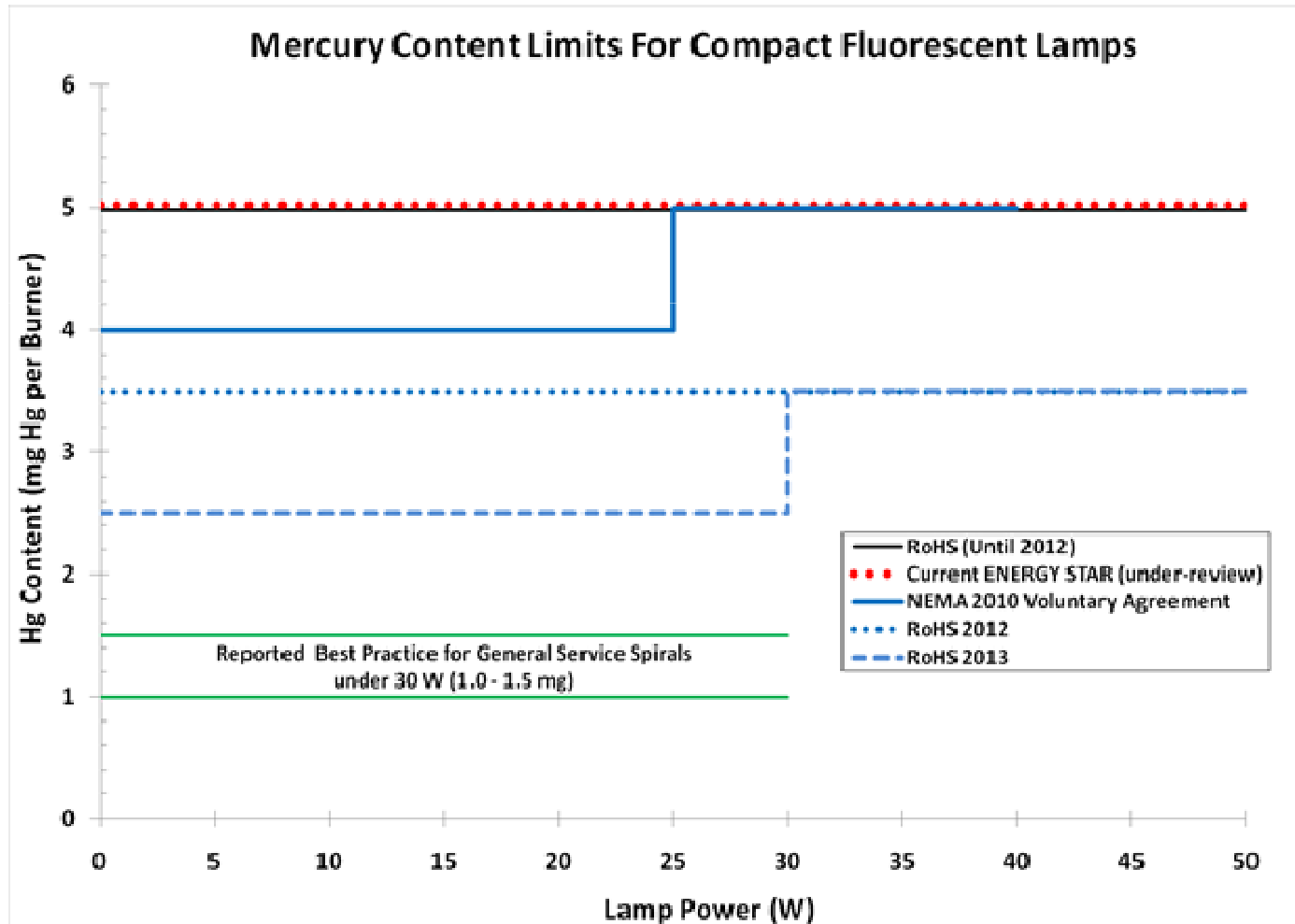
Materials and Substances in Lamps

- Focus on hazardous substances
- Emphasis on regulating the level of mercury in fluorescent and other mercury-containing lamps.
- Summary on the European Union's Restriction of Hazardous Substances (RoHS) Directive - global benchmark for regulating use and level of hazardous substances





Mercury Content Limits CFL





International Context

- Focus on sustainability in lighting is in line with global regulatory best practices
 - Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal,
 - Intergovernmental Negotiating Committee to prepare a legally binding agreement on mercury.



Sustainable Lighting not **only** about energy efficiency and End-of-Life

- Material composition of a typical lamp
- Global best practice benchmark for regulating use and level of hazardous substances in lamps such as mercury (Hg)
- Potential health issues related to light, EMF and mercury in fluorescent lighting
- Compliance with health-related legislation
- The concept of extended producer responsibility
- Collection and recycling systems (and technologies) for gas discharge/mercury containing lamps



Usage Phase

Consumer Related Environmental, Health & Safety Issues

- Focus on environmental, health and safety aspects of lighting
- Based on scientific data and government policy responses
- Emphasis on issues surrounding the breakage of mercury-containing lamps.
- Global review of compliance related health legislation



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End-of-Life Phase

Worker Safety, Environmental Impacts and Environmentally Sound Management

- Focus on end-of-life management of lamps
- Highlights current regulatory frameworks
- Best practice in setting up, managing and financing end-of-life collection, recycling and environmentally sound management and disposal of mercury-containing lamps.



What needs to be done?

- Make the switch to substantially more efficient and long-lasting lamps/lighting technologies to reduce overall emissions of mercury, GHG and increase energy efficiency (example CFL, LED etc.)
- Recommend the adoption of maximum mercury and other hazardous substance content standards in line with global best practice in this area
- Establish monitoring, verification and enforcement programs for sustainability related issues on national or regional levels such as:
 - Labeling (minimal energy-saving performance standards)
 - Mercury content
 - Extended life
 - Collection and Recycling



What else needs to be done?

- Make the proper collection and recycling and disposal of lamps a strong national recommendation by emphasizing environmental and economic gains.
 - Establish collection requirements for gas discharge and other lamp types
 - Enable local funding mechanisms in support of the changeover from IL to CFL
 - Develop a communication strategy on recycling
- Communicate about sustainability and adapt communications to specific audiences
 - The amount of mercury saved from coal plants
 - Other environmental and economic gains (for example from recycling)
- Provide fact based communication on lamp breakage issues
- Recommend regionally harmonized labeling approaches for mercury content and lamp disposal



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Further Saving Potential

There is further saving potential even with the most efficient lighting



When the music's over –
turn out the lights.

Lars Stühlen
Director Domestic
Lighting Legislation

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