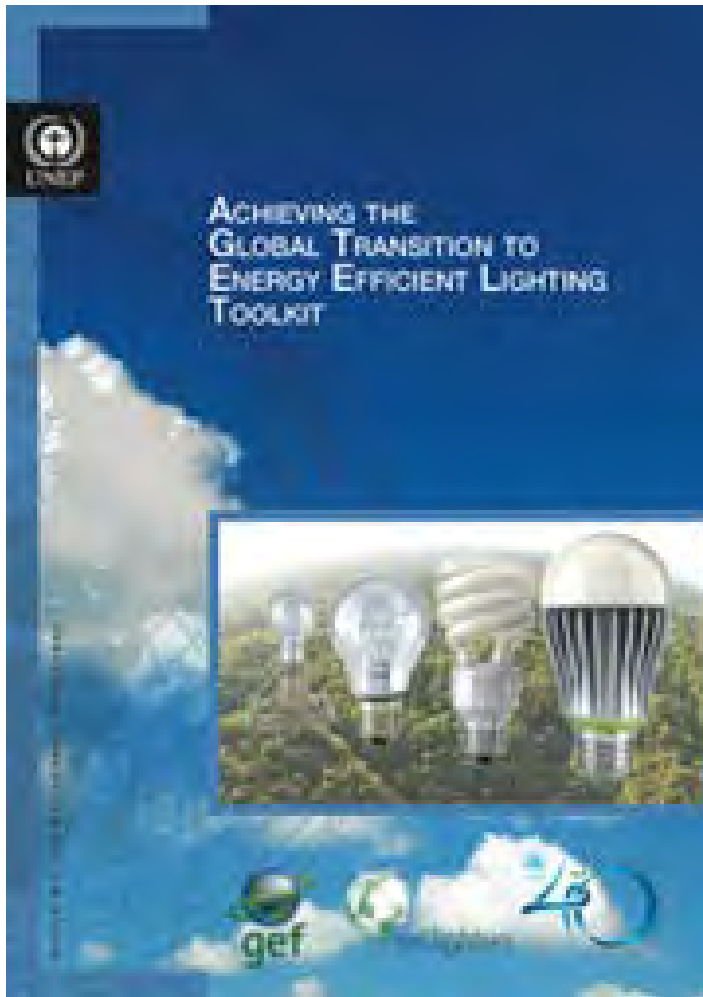


Agenda

- The Efficient Lighting Toolkit
- Section 5: Safeguarding the Environment and Health
- Conclusions, from Section 5 of the Toolkit
- Questions and answers: at end of webinar session



Achieving the Global Transition to Energy Efficient Lighting Toolkit



Access the e-book in
English and Spanish

www.enlighten-initiative.org

Forthcoming:

Arabic, French and Russian

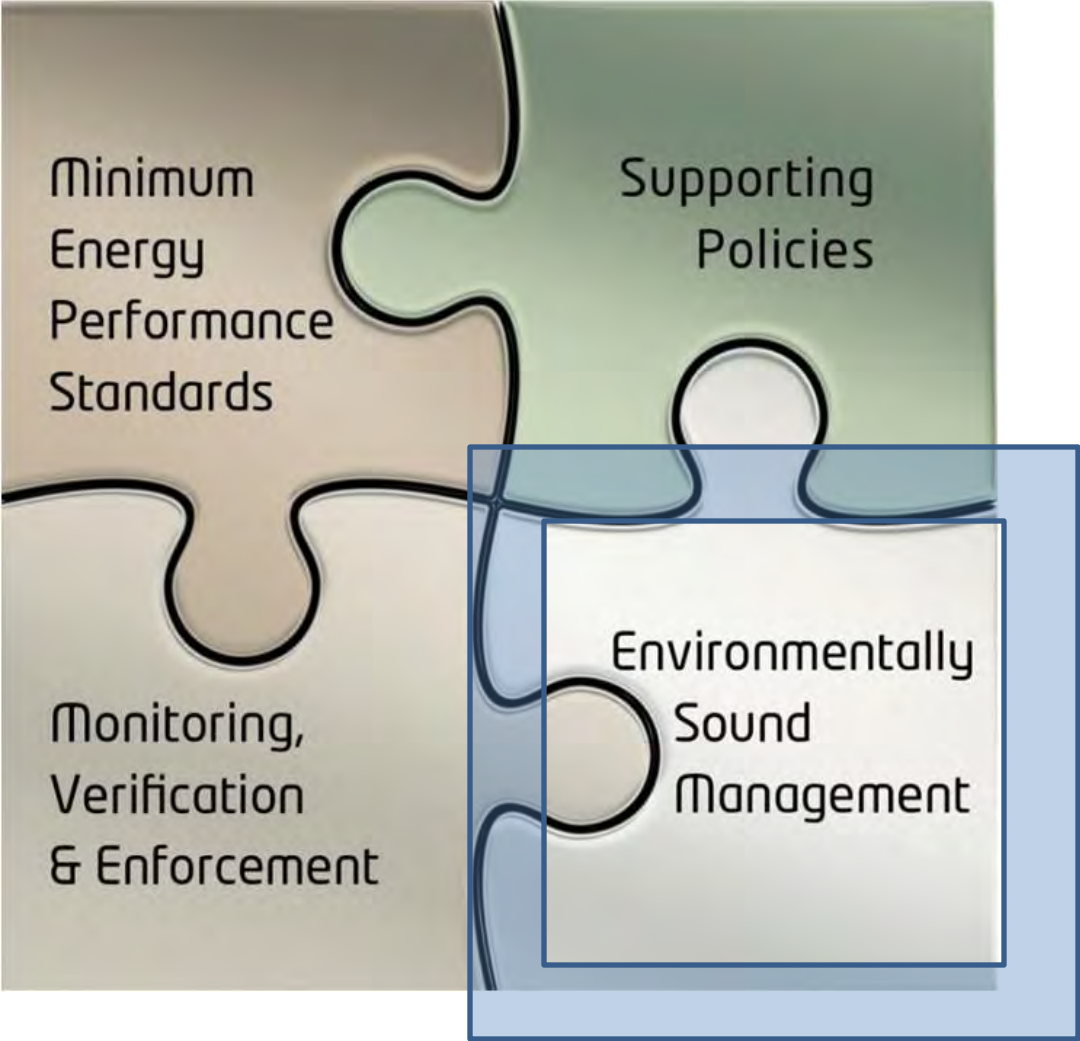


The Efficient Lighting Toolkit

- For government officials, energy agencies, environmental groups, distributors, retailers and civic sector leaders
- Policy and technical tools, including templates
- Provides resources and case studies
- Describes types of financing
- Gives guidance on ensuring product quality in the market
- Focuses on environmental sustainability
- Has six sections, plus an overview and glossary
- Based on the “integrated policy approach”
- Contributions from many experts, including today’s panelist!



Elements of an Integrated Policy Approach



Section 5: Safeguarding the Environment & Health





- Environmentally sound management
- Lamp production, usage and end-of-life issues
- Carbon, material and water-consumption footprints
- Mercury in lamps versus mercury emissions from fossil fuel combustion
- How to communicate technical issues to end users

Environmentally Sound Management

- Provides regulators a framework to manage environmental impact of goods and services at all life-cycle stages:
 - Production: Minimizing toxicity in design and manufacturing
 - Usage: Environmental impact during use; breakage guidance
 - End-of life: Best practices, management and financing
- International policies
 - Basel Convention on Control of Trans-boundary Movement of Hazardous Wastes
 - UNEP Intergovernmental Negotiating Committee (INC) on Reducing Mercury Pollution



Production Summary for Lamps, By Type

Lamp Type	Production
 <p>Filament</p> <ul style="list-style-type: none"> • Incandescent • Tungsten halogen 	<ul style="list-style-type: none"> • Outer glass bulb • Tungsten filament inside sealed capsule • Capsule is glass or quartz-glass containing inert gas (halogen, xenon) • Gas flames used to shape bulbs • Metals for base and filaments • Lead solder, or, lead-free solder
 <p>CFL</p>	<ul style="list-style-type: none"> • Sealed glass tube with phosphor coating • Mercury, aluminium, nickel, iron, tungsten • Lead solder, or, lead-free solder • Phosphors • Flame retardants, plastics
 <p>LED</p>	<ul style="list-style-type: none"> • Semiconductor diodes • Phosphors • Chemicals in a closed-cycle process • Lead solder, or, lead-free solder • Aluminum heat sink

Environmental Impact of Lamps During Usage Phase

- Electricity consumption accounts for the major environmental impact of lamps
- Combustion of fossil-fuels emits mercury into the atmosphere
- Efficient lamps reduce mercury emissions because of lower energy usage over lamp lifetime



Regulating Hazardous Substances

- Widespread adoption of efficient lamps brings attention to issues regarding hazardous substances
- There is increasing government and public sensitivity to mercury and electronic waste concerns
- Technical advances enable many lamp manufacturers to reduce the amount of lead, mercury and other materials in their products



Examples of Regulation and Voluntary Initiatives: Regarding Mercury (Hg) in Lamps

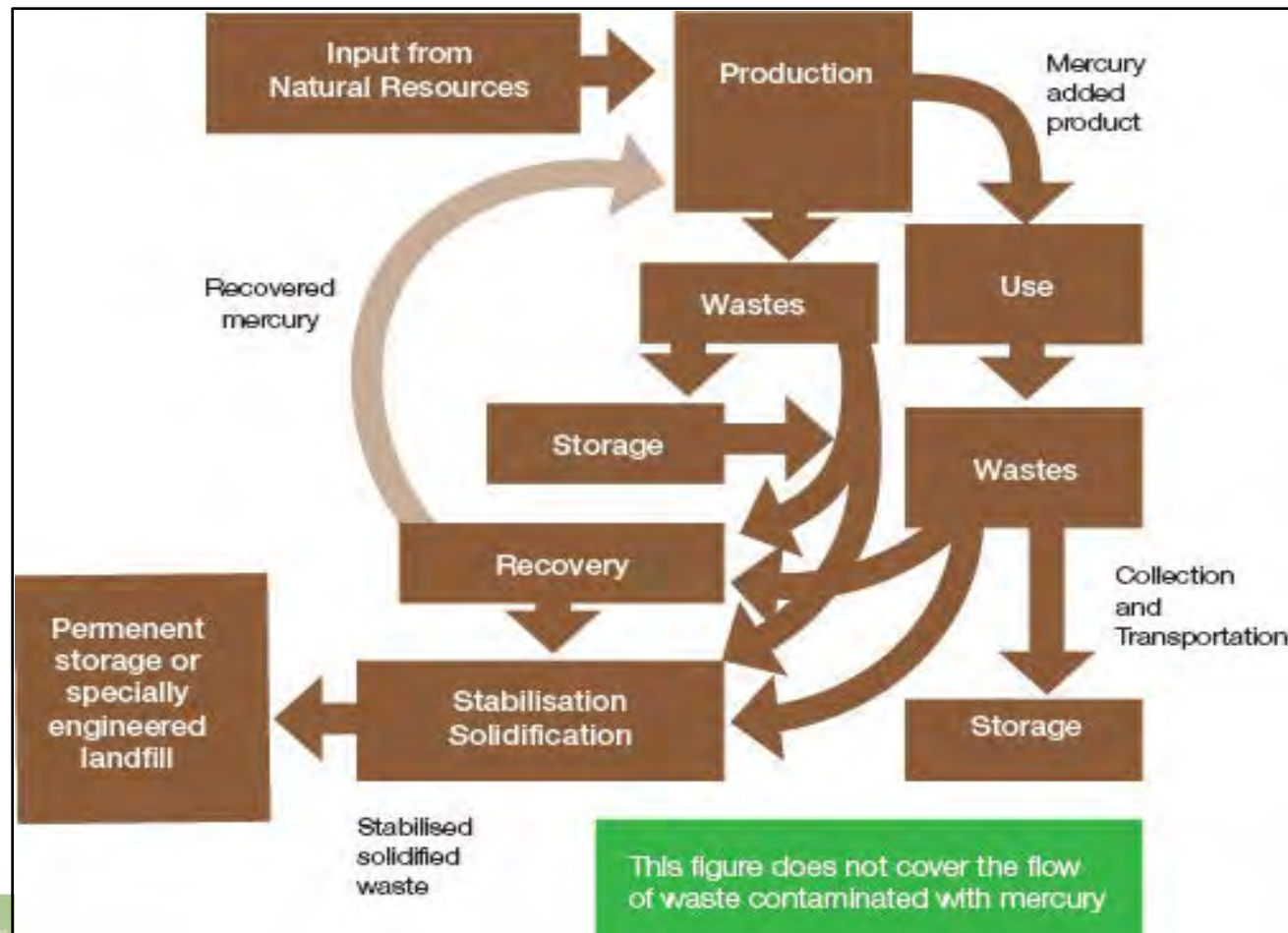
- China: Limit of 5mg for CFLs; incentives for CFLs containing < 1.5mg
- Colombia: Limit of 5 mg in CFLs
- Europe: Restriction of Hazardous Substances Directive (RoHS)
 - Establishes progressively lower levels of mercury in CFLs
 - Levels are updated every four years; 2.5 mg by 1/1/2013
- Russia, South Korea, Turkey: similar to RoHS
- UNEP: Intergovernmental Negotiating Committee (INC) presently considering limit of 3.5 mg for lamps <30W
- USA: Voluntary industry initiative has lowered CFL mercury levels



Spent Lamps

- Mercury-added lamps require attention and best practices during all phases of life cycle
- The Basel Guidelines (2011) provide advice on spent lamps

For the future, programs also should consider how to responsibly manage other types of spent lamps, such as LED lamps.



Avoid Breakage of CFLs

- When a CFL breaks, a rapid release of mercury vapour occurs over the first few minutes, producing a short-term “peak” level of airborne mercury, which declines rapidly over the first hour
- Some countries mandate that clean-up directions be readily available to consumers, on websites, or in package inserts



Programs should communicate to consumers how to avoid breakage of lamps; and, offer best-practice guidance for clean-up of broken lamps

Financial Mechanisms and Responsibilities for Funding Collection Programmes

- Full costs internalized
 - Producer is responsible with costs passed on to end users
 - Motivates producer to reduce internal costs
 - Challenge: initial cost to consumer is higher
- Visible and invisible advance disposal fee
 - “Eco-fees” that are visible to the consumer
 - Can be collected from buyer or from producer
- Deposit that is later refunded
 - Consumers pay a deposit, it is refunded on return of lamp
 - Produces high participation; motivates producer to maximize reuse
 - Challenge: long delay before refund



Financial Mechanisms and Responsibilities for Funding Collection Programmes (continued)

- Last owner pays
 - Consumer pays a flat fee for disposal
 - Challenge: consumers try to avoid paying fees by disposing spent lamps in municipal waste
- Regional collection and recycling
 - Multiple countries collaborate on collection & recycling
 - Challenge: Laws may not be harmonized
 - Challenge: must obtain exemptions to strict guidelines covering shipment of hazardous waste to other countries (Basel Convention)



Conclusions, from Section 5, Efficient Lighting Toolkit

- Efficient lamps are responsible for lower global mercury and greenhouse gas emissions than are incandescent lamps
- Widespread adoption of efficient lamps requires sound management at all lifecycle stages
- Compliant, high-quality lamps are essential for minimizing life-cycle impacts and for delivering expected benefits



Conclusions, continued

- Policymakers should consider international best practices as they determine what is best for their countries
- Recycling is manageable, affordable and can create new jobs
- Extended producer responsibility can be an effective approach
- Basel Guidelines on hazardous waste management will help eliminate release of hazardous materials into the environment
- Success requires legislative frameworks, sustainable funding, clear communication and participation of all parties





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Thanks!

Please type your questions
into the “chat” box.

We will answer as many questions as possible
at the end of the webinar.