

# Report on international legislation and practical experiences in the treatment of hazardous substances in WEEE including mercury containing thermometers

Christian Stiglitz  
European Institute of Environmental  
Economics  
Vienna

Almaty,/Astana, August 2014



# Table of Contents

<b>Introduction</b>	<b>3</b>
<b>Legislation regarding hazardous substances in EEE and WEEE</b>	<b>3</b>
<b>Legislation concerning the treatment of hazardous waste in WEEE</b>	<b>5</b>
<b>Some practical experiences in local legislation and treatment</b>	<b>7</b>
Transposition into national law: example Austria	7
Transposition into national law: United Kingdom	9
<b>Special legislation and experiences concerning mercury filled thermometers</b>	<b>10</b>
Case in Austria: voluntary take-back action for thermometers containing mercury	10



# Why are special laws needed regarding EEE and WEEE

- Electrical and electronic products contain precious substances, but also many hazardous components to ensure functionality
- It must be secured that these substances be phased out as soon as technical replacement with harmless materials is possible
- Recovery and recycling of Waste from EEE (WEEE) has to be encouraged to recover precious resources
- At the same time it must be guaranteed that the treatment of WEEE presents no danger to human health and the environment from the hazardous materials contained



# Regulations on hazardous substance in EEE

- EC REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006, concerning the Registration, Evaluation, Authorization and Restriction of Chemicals(**REACH** Directive)  
Regulates the use of hazardous substances in products etc
- DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. (**RohS Directive**)



# Regulations on hazardous substance in EEE

## The REACH Directive

- regulates the registration, evaluation, authorization and restriction of Chemicals
- set the ground stone of definition of hazardous substances in general and limitation in their use in products and processes



# Regulations on hazardous substance in EEE

## The RohS Directive

- restricts of the use of certain hazardous substances in electrical and electronic equipment
- Forces Member States to ensure that EEE placed on the market does not contain the substances listed in Annex II, or that the maximum concentration levels in homogenous substances are kept
- Conotains many exemptions until substitution by safe materials is technologically possible



# Regulations on hazardous substance in EEE

## The RohS Directive (2)

Covers:

1. Small household appliances
2. IT and telecommunications equipment
3. Consumer equipment
4. Lighting equipment
5. Electrical and electronic tools
6. Toys, leisure and sports equipment
7. Medical Large household appliances
8. devices
9. Monitoring and control instruments including industrial monitoring and control instruments
10. Automatic dispensers
11. Other EEE not covered by an of the categories above



# Regulations on hazardous substance in EEE

## The RohS Directive (3)

restricted substances and maximum concentration values

- Lead 0,1%
- Mercury 0,1%
- Cadmium 0,01%
- Hexavalent chromium 0,1%
- Polybrominated biphenyls (PBB) 0,1%
- Polybrominated diphenyl ethers (PBDE) 0,1%





# Legislation concerning the treatment of hazardous waste in WEEE

## Directive on waste electrical and electronic equipment (WEEE)

- regulates the general provisions for recovery and recycling the treatment of specific substances in WEEE considered hazardous to “avoid the dispersion of pollutants into the recycled material or the waste stream”
- ensures best available recovery and recycling techniques of WEEE for human health and environmental protection.



# Legislation concerning the treatment of hazardous waste in WEEE

## Directive on waste electrical and electronic equipment (WEEE) (2)

- The regulation states that as a minimum the defined substances, preparations and components have to be removed from any separately collected WEEE
- the regulation also defines how a number of components of separately collected WEEE have to be treated
- the regulation sets specific minimum requirements for WEEE treatment facilities to ensure proper management of hazardous substances:



# Some practical experiences in local legislation and treatment

## Transposition into national law: example Austria

- Austria follows EU legislation in this field with more detailed regulations especially with regards to WEEE.
- For instance, clear detailed instructions are given for the treatment of lamps
- Similar detailed regulations are established for the treatment of the refrigeration circuit of cooling and air-conditioning equipment and treatment of the insulating foam of cooling equipment.
- As a consequence of these regulations, new plants and technologies were developed and constructed. For example Saubermacher and AVE companies established WEEE treatment plants in Austria.



# Some practical experiences in local legislation and treatment

## Transposition into national law: example Austria

### Treatment of LCD and Fluorescent Lamps



LCD and Fluorescent lamp transport system  
(box to prevent breakage)



LCD and Fluorescent lamp Recycling plant  
(capacity 1500 t / year)



# Some practical experiences in local legislation and treatment

Transposition into national law: example Austria

**Treatment of refrigeration equipment**



Refrigerator Processing plant with high  
CFC/HCFC/HFC recovery (cap 300.000  
units/year)



# Some practical experiences in local legislation and treatment

## Transposition into national law: United Kingdom

The Department for Environment, Food and Rural Affairs (Defra) of the UK established Treatment recommendations for following products and substances (which were adopted also by Australia and New Zealand):

- CFCs, HCFCs, HFCs and HCs
- Gas discharge lamps
- Liquid crystal displays
- External electric cables
- Components containing refractory ceramic fibres
- Components containing radioactive substances
- Electrolyte capacitors



# Special legislation and experiences concerning mercury filled thermometers

- Already in 2007 EU regulations prohibited the marketing of mercury filled measuring devices
- In 2012 the REACH Directive was amended and more products were added to the list of banned products, e.g barometers, hygrometers, manometers, sphygmomanometers, thermometers etc
- Preceding these legal bans, member states already took measures to remove mercury containing thermometer from the market/households.
- In the UK the Health Protection Agency (HPA) stated already in 2006 that 1 mercury thermometers could no longer be sold to the general public and released a guide to dealing with small spills of mercury



# Special legislation and experiences concerning mercury filled thermometers

## Case in Austria: voluntary take-back action for thermometers containing mercury

- voluntary take-back action for thermometers containing mercury in cooperation between Pharmacists, the Ministry of Environment, private waste disposer, a producer of electronic thermometers and a pharmaceutical distributor.
- During the collection period, consumers could bring in a mercury thermometer and buy an electronic thermometer for a subsidized price of 1 Euro.
- Between October 2007 and January 2008, about 465,000 electronic thermometers were sold and about one million mercury thermometers were collected.
- The collected mercury containing thermometers were put in safe underground landfill.

