

# 4 waste management

## ***Waste Minimisation and Extended Producer Responsibility***

Worldwide waste generation is on the rise, and, in an effort to stem the tide, consumers and households in many countries have long been tasked to separate their wastes prior to disposal to facilitate materials recovery and recycling. Waste management is being dealt with increasingly at a national strategic level, and all actors in the economy are increasingly expected to do their share to minimize waste and maximize recovery of waste materials.

### ***Extended Producer Responsibility for Post-Consumer Waste***

The trend noted in our previous report of holding industry responsible for post-consumer waste continues, and is spreading around the globe. In the late 1980s and early 1990s the trend began, notably in Europe, of increasingly holding manufacturers of packaging and the goods contained in them legally responsible for the recovery and recycling of a growing proportion of the post-consumer waste. In the past few years, this trend has spread to other parts of the world, and has grown to encompass other types of products, such as automobiles and electrical and electronic products. It is probable that such requirements will continue to expand around the globe and to cover a growing list of product types used by consumers everywhere in the world.

Essentially, manufacturers are being tasked to reduce the environmental impacts of their product at each stage of the products' life cycle, from the time the raw materials are extracted, processed and distributed, through to the use and final disposal of the product.

The European Union adopted a Directive 2002/96/EC in January 2003 on the take-back by manufacturers and recycling of waste electrical and electronic equipment (the so-called "WEEE Directive") [ID 1320]. The requirements of the directive will be progressively implemented by the Member States by August 2004. The purpose of this legislation is to promote ever greater material recovery and recycling of electrical and electronic equipment from all source, including households, industry, research and other avenues. The legislation requires that Member States establish and implement systems by August 2005 allowing final holders of such waste from private households and distributors to return the waste free of charge. When supplying new products, distributors of such equipment will have to ensure that waste electrical and electronic equipment can be returned free of charge.

While a number of EU Member States have already implemented similar requirements (e.g., Netherlands, Denmark, Sweden, Belgium, Portugal), these countries will need to modify existing legislation to bring it in line with the new EU requirements, while the other EU Member States will need to develop similar requirements.

These take-back requirements have already spread beyond Europe, and are the law in such countries as Taiwan, Japan and South Korea.

### ***Reduction of Hazardous Waste by Substitution Principle***

Increasingly, countries in Europe are applying the so-called "substitution principle" to reduce the amount of dangerous substances in the products and processes placed on the market. The concept is simple, replace, wherever feasible, the more dangerous with the less dangerous, in the understanding that, if the dangerous material is not in the process or the product, it cannot end up in the waste stream.

In January 2003 the European Union approved a Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (the so-called "RoHS directive") [ID 3648]. Under the terms of the legislation, Member States have until mid-August 2004 to enact new or modify existing national requirements to achieve the Directive's objectives. From July 2006, new electrical and electronic equipment (EEE) put on the market may not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). Exemptions are listed in the Annex of Directive 2002/95/EC, including e.g. lead in glass of cathode ray tubes, light bulbs and fluorescent tubes; lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85 % lead), lead in solders for network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunication, lead in electronic ceramic parts, etc.

Implementation of both the WEEE and RoHS Directives will likely be guided in part by the experiences these governments have had in implementing the Directive 2000/53/EC on end-of-life vehicles, which requires vehicle manufacturers to take back, free of charge, vehicles from the final owner.



## ***National Waste Prevention and Management Strategies***

Most countries today have implemented or are in the process of implementing policies aimed at promoting the prevention of waste generation and greater use of reuse and recovery strategies, including reuse of materials, recovery of materials through recycling and incineration (with energy value recovery), with only non-recoverable wastes ultimately going to landfill, and this only after all pre-treatment options have been exhausted.

In many countries, such policies are part of overall national waste management strategies aimed at rationalizing the rules and the infrastructure needed to effectively manage wastes at a national scale. New Zealand, for example, launched its Waste Strategy in March 2002 [ID 4169]. The strategy is a vision and an action plan for reducing and better managing waste. It is aimed at providing a comprehensive means for solving the waste problem in New Zealand through ensuring a preventative approach, whereby material and resource efficiency is actively promoted. The strategy covers solid, liquid and gaseous wastes, and deals with waste from generation to disposal. It provides targets, guidelines and economic incentives to reduce waste, and change wasteful behaviour.

In the European Union, two-thirds of waste is landfilled, whereas waste recycling rates have shown a rather limited increase over recent years. The EU is now pursuing a policy of landfilling waste only as a last resort. Waste that cannot be recycled should be incinerated as a matter of priority. Due to its potential serious environmental impacts, landfill management is strictly regulated. Council Decision 2003/34/EC establishes criteria and procedures for the acceptance of waste at landfills and lays down procedures for characterizing waste, acceptance criteria for the different types of waste at landfills and test methods to be used [ID 5369]. The Decision is directed at Member States to provide guidance on which types of waste are acceptable at which type of landfill. Some Member States already have a well-developed and working system in place to determine these factors, while others still need to work on fully implementing such a system.

Several EU Member States adopted legislation on the prevention or reduction of negative effects on the environment caused by the incineration and co-incineration of waste by setting up emission limit values for waste incineration and co-incineration plants, transposing the EU Directive on the incineration on waste [ID 1371, 5643, 2815, 5596, 1489, 1327, 1917, 5483, 2085]. Specially targeted pollutants are acid gases such as nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>) and hydrogen chloride (HCl) as well as heavy metals (cadmium).

The recycling of secondary raw materials/wastes is an important contributor to waste prevention and minimization strategies. Long a feature of national action plans in Europe and a growing number of industrialized countries in other parts of the world, such as Japan and Australia, these approaches to waste management are now spreading to other countries, including newly industrialized countries. Although solid waste is primarily landfilled in Asia, available space is rapidly being exhausted, causing a growing number of countries to establish recovery and recycling as priority waste management solutions over landfilling. Malaysia, for example, is expected to adopt a Solid Waste Management Act and a Solid Waste Master Plan by the end of 2003 [ID 4833]. The government would make the recycling of waste compulsory. Malaysian authorities are currently taking steps to increase public awareness of recycling.

Still, in most other parts of the world, particularly in poorer countries, landfilling remains the option for waste disposal, being more cost effective than incineration.

## 2002-2003 Regulatory Developments

The following is a list of regulatory developments related to waste minimization and extended producer responsibility that occurred in 2002 and the first half of 2003. The overview is taken from the EPC-Update. The ID-number preceding each reference refers to the corresponding database record of the EPC-Update. For more details on any of these developments one can subscribe to the "EPC-Update" which provides an abstract of each development. A more detailed two-page summary and analysis of each initiative is also available via this service.

### Country • 2002 - 2003 Regulatory/Policy initiative • EPC-Update Record ID

European Union - Decision on component and material coding standards for vehicles under Directive 2000/53/EC adopted [\[ID 5722\]](#)

European Union - Directive on end-of-life vehicles amended [\[ID 1812\]](#)

European Union - Consultation on battery Directive revision [\[ID 2822\]](#)

European Union - European Court decisions: new ways for waste disposal and recovery [\[ID 5694\]](#)

European Union - Directive on hazardous substance restrictions in electronic equipment (RoHS) adopted [\[ID 3648\]](#)

Austria - Ordinance on end-of-life vehicles adopted [\[ID 5524\]](#)

Belgium - FLANDERS: Flemish Rules on waste prevention and management amended [\[ID 1365\]](#)

Belgium - WALLONIA: Waste Catalogue modified [\[ID 1296\]](#)

Czech Republic - Decree on waste management and take back adopted [\[ID 3175\]](#)

Czech Republic - Further developments on packaging and packaging waste [\[ID 3174\]](#)

Denmark - Statutory Order on treatment of end-of-life vehicles and waste from motor vehicles adopted [\[ID 5322\]](#)

France - Decree on classification of dangerous waste adopted [\[ID 1256\]](#)

Finland - Revised Finnish Waste Strategy [\[ID 2766\]](#)

Germany - Act and Ordinance on disposal of end-of life vehicles published [\[ID 4601\]](#)

Hungary - Government Decree on packaging and packaging waste [\[ID 5226\]](#)

Ireland - Adopted Packaging Waste Regulations [\[ID 521\]](#)

Italy - New guidelines for the participation to the CONAI system for the management of packaging and packaging waste [\[ID 1617\]](#)

Italy - Adopted Ministerial guidelines on the transition from the old European Waste Catalogue (EWC) to the new one pursuant to Decision EC/532/2000 [\[ID 5115\]](#)

Netherlands - Amended Rules on packaging and packaging waste [\[ID 5134\]](#)

Netherlands - Adopted amendments to several Decisions as a result of amendments to the Environmental Management Act for new waste policy [\[ID 2237\]](#)

Netherlands - Adopted European Waste Catalogue [\[ID 4163\]](#)

Poland - Ordinance on authorized concentration levels of heavy metals in packaging [\[ID 5656\]](#)

Poland - Further developments on the management of packaging and packaging waste [\[ID 2993\]](#)

Poland - Additional requirements on the management of certain types of waste and on environmental fees and deposits for certain products [\[ID 4466\]](#)

Poland - Further developments on the management of packaging and packaging waste [\[ID 2993\]](#)

Portugal - Strategic Plan 2001 for the Management of Industrial Waste adopted [\[ID 5192\]](#)

Spain - The European List of Waste and the List of Waste Recovery and Disposal Operations published [\[ID 2637\]](#)



Sweden - Proposal on amending the Car Scrapping Law [\[ID 5774\]](#)

Sweden - Regulations on pre-treatment of electric and electronic waste amended [\[ID 2959\]](#)

United Kingdom - ENGLAND: Adopted Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations 2002 [\[ID 3376\]](#)

United Kingdom - WALES: Adopted Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations [\[ID 5131\]](#)

South Africa - 2002 Regulations on plastic bags repealed and Draft Regulations published for comment [\[ID 3804\]](#)

Australia - New South Wales: Consultation on Extended Producer Responsibility [\[ID 5816\]](#)

Australia - Victoria: Waste management regime strengthened [\[5269\]](#)

Australia - Victoria: Industrial waste management policy published [\[5275\]](#)

China - Clean Production Law adopted [\[ID 2712\]](#)

China - Regulations on discarded consumer electronic products are being drafted [\[ID 2836\]](#)

China - Adopted measures on inspection, supervision and management of the import of used electrical and mechanical equipment [\[ID 2838\]](#)

Hong Kong - Scheme for the recycling of cell phone batteries launched [\[ID 4732\]](#)

Hong Kong - Trial recovery program for computers and electrical appliances launched by the Environmental Protection Department [\[ID 5704\]](#)

India - Draft Hazardous Wastes (Management and Handling) Amendment Rules 2002 [\[2941\]](#)

Japan - Industries subject to penalty for non-compliance with labeling requirements on packaging materials and products for recycling [\[ID 1667\]](#)

Malaysia - Update on Proposed Solid Waste Act and Solid Waste Management Plan [\[ID 4833\]](#)

New Zealand - Guidelines for the management of hazardous waste prepared [\[ID 5283\]](#)

Philippines - Bill mandating the use of recyclable or biodegradable materials for the packaging of consumer products [\[ID 5389\]](#)

South Korea - Adopted amendments to the regulation on the standards for packaging methods and properties of packaging materials [\[ID 5631\]](#)

South Korea - Adopted amendments to the enforcement decree of the act on the promotion of saving and recycling of resources [\[ID 5626\]](#)

South Korea - Amended standards for environmental marks for products [\[ID 5639\]](#)

Thailand - Postponed: proposed tax on packaging waste [\[ID 4553\]](#)

Argentina - Proposed Law on Integrated Domestic Waste Management [\[ID 5862\]](#)

Argentina - Administrative requirements for the management of hazardous waste [\[ID 4473\]](#)

Argentina - Integrated waste management law adopted [\[ID 5618\]](#)

Canada - Ontario: Act to promote waste reduction, reuse and recycling adopted [\[ID 4618\]](#)

Canada - Ontario: Waste tires designated waste under Waste Diversion Act [\[ID 5770\]](#)

Canada - Ontario: Used oil material designed waste under Waste Diversion Act [\[ID 5772\]](#)

Canada - Ontario: Blue box plan under Waste Diversion Act proposed [\[ID 5742\]](#)

Chile - Public and private sector representatives sign an agreement aimed at improving the management of packaging waste [\[ID 5069\]](#)

Mexico - Law on waste management and soil contamination drafted [\[ID 5209\]](#)

Mexico - Establishes criteria for classifying hazardous waste [\[ID 5435\]](#)

USA - Adopted EPA decision to retain current mercury disposal standards [\[ID 2875\]](#)

## ***Technology to detect illegal waste sites***

The Japanese Ministry of Environment is developing a radar-based search technology deployed in helicopters by 2003 in order to detect waste like metal, wood or sludge by using radar. It is expected that by 2007, helicopters and satellites will be used to detect illegal waste sites.

## ***Web-links***

The quantity of interesting information that is being made available on internet is growing every day. For the EHS Professional internet has become an important tool for finding more information on the issues of concern. The following overview of interesting websites is not intended to be exhaustive. It however is intended to point at some of the more interesting websites on Waste.

### **Secretariat of the Basel Convention of the transboundary movement of hazardous waste**

<http://www.basel.int/>

Information about the Basel Convention, its implementation, hazardous waste.

### **OECD web site**

<http://www.oecd.org>

Provides information on waste management in member countries. Link to the OECD Reference Manual on Strategic Waste Prevention. The OECD Extended Producer Responsibility (EPR) programme focuses on providing Member governments with information and advice about EPR policies and programmes, e.g., for waste minimisation purposes. OECD's work aims to identify issues and benefits to EPR and to provide suggestions on what is needed to establish effective policies and programmes. OECD's work aims at providing a benchmark for Environmentally Sound Management (ESM) of wastes and scrap materials by developing international ESM guidelines to be used in conjunction with an environmental management system (EMS). The OECD has issued several regulations for importing/exporting waste to ensure that hazardous waste is disposed and recovered in an environmentally sound and economically efficient manner.

### **International Solid Waste Association**

<http://www.iswa.org/>

Network of professional experts promoting sustainable waste management worldwide. World-wide association representing more than 1200 organisations, companies and individuals within the field of sustainable waste management.

### **The European Commission, Directorate General Environment Waste page**

<http://europa.eu.int/comm/environment/waste/index.htm>

EU approach to waste management. Links to policies and legislation, waste studies, etc.

### **European Environment Agency, 2002 Environmental assessment report**

[http://reports.eea.eu.int/environmental\\_assessment\\_report\\_2002\\_9/en](http://reports.eea.eu.int/environmental_assessment_report_2002_9/en)

Benchmarking the Millennium, provides an insight into the state of Europe's environment and is targeted at high-level policy makers in EEA member countries and the European Union, as well as the wider public.