

“CRITERIA AND CORE PERFORMANCE ELEMENTS FOR THE ENVIRONMENTALLY SOUND MANAGEMENT OF WASTE”

A resource document comprising a compilation of: i) environmentally sound management (ESM) criteria and core performance elements under the Basel Convention and other relevant organisations; and ii) selected existing standards, guidelines, policies and codes of practice for ESM of hazardous wastes and other wastes.

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Glossary of useful Acronyms

BAN	Basel Action Network
BAT	Best Available Techniques
BEP	Best Environmental Practices
BCRC	Basel Convention Regional and Coordinating Centres for Training and Technology Transfer
BIR	Bureau of International Recycling
BREF	BAT Reference Document (EU)
BSI	British Standards Institute
CEC	North American Commission for Environmental Cooperation
CLI	Indonesian-Swiss Country – Led Initiative to Improve the Effectiveness of the Basel Convention
CEN	Comité Européen de Normalisation (European Committee for Standardisation)
COP	Conference of the Parties to the Basel Convention
CPE	Core Performance Element
EC	European Community
EMS	Environmental Management System
EPOC	Environment Policy Committee (under the Organization for Economic Cooperation and Development)
EPR	Extended Producer Responsibility
ESM	Environmentally Sound Management
EU	European Union
IPPC	Integrated Pollution Prevention and Control (EU)
ISO	International Organization for Standardization
ISWA	International Solid Waste Association
JRC	Joint Research Centre (of the European Commission)
LAB	Lead Acid Battery
MFCA	Material Flow Cost Accounting
MSW	Municipal Solid Waste
NAICS	North American Industry Classification System
NIP	National Implementation Plan
OECD	Organisation for Economic Cooperation and Development
PIC	Prior Informed Consent
POPs	Persistent Organic Pollutants
SBC	Secretariat of the Basel Convention
SLAB	Spent Lead-Acid Batteries
SME	Small and Medium-sized Enterprise
UN	United Nations
UNECA	UN Economic Commission for Africa
UNDESA-DSD	UN Department of Economic and Social Affairs Division for Sustainable Development
UNECE	UN Economic Commission for Europe
UNEP	United Nations Environment Programme
UNEP-DTIE	UNEP Division of Technology Industry and Economics
UNEP-DTIE IETC	International Environmental Technology Centre
WGWPR	Working Group on Waste Prevention and Recycling (OECD)
WGWMP	Working Group on Waste Management Policy (OECD)

Purpose and structure of this document

This is a resource document to support actions under Decision BC-10/3 on the “Indonesian-Swiss country-led initiative to improve the effectiveness of the Basel Convention”, as adopted by the tenth meeting of the Conference of the Parties to the Basel Convention. Section B of that decision decided to complete a framework for the environmentally sound management of hazardous wastes and other wastes, mandating a technical expert group to undertake this work, taking into account the elements listed in the annex to the decision. This annex further stated that in developing this framework, the ESM criteria and core performance elements under the work of the Basel Convention and other relevant organizations need to be considered. Decision BC-10/27 on the Programme Budget for the biennium 2012-2013 (Table 1 of the Programme budget for 2012-2013 section 2) mandated this work to: “Follow-up on the implementation of the Indonesian-Swiss country-led initiative” and identifies Activity 19 to “Coordinate and provide support to parties for environmentally sound management and further legal clarity.”

This document therefore comprises a compilation of:

- i) environmentally sound management criteria and core performance elements under the Basel Convention and other relevant organisations such as the International Organisation for Standardisation (ISO), Organisation for Economic Cooperation and Development (OECD), and others; and,
- ii) existing standards, guidelines, policies and codes of practice for ESM of hazardous and other wastes

as a reference list.

This document sets out to reference key examples of the ESM criteria and core performance elements under the Basel Convention and other relevant organizations such as ISO, OECD and others, as well as examples of existing standards, guidelines, policies and codes of practice for ESM of hazardous wastes and other wastes. In some cases, an outline of the elements of the key examples is provided to describe their content and for the reader’s ease of reference. An overview of the development of the terminology of ESM is also provided for context. The resource document draws on various published sources, including relevant international conventions and agreements, as well as supporting guidelines produced by a number of organizations, mainly UNEP, the OECD and the EU. The work of standards organizations such as ISO, the Comité Européen de Normalisation (European Committee for Standardisation) (CEN) and the British Standards Institution (BSI) are linked by agreement and a hierarchy applies whereby standards work taken up the ISO subsumes that of the other bodies to avoid duplication and overlap. Where it deals with environmental management systems (EMS) this document therefore concentrates on ISO work on EMSs.

Some examples of individual country approaches to ESM are also provided. This document assumes that different approaches to ESM may be adopted, such as:

- i) a broader approach, considering ESM as a continuous linked process in the steps in the chain from the generation of wastes through to their final disposal; or
- ii) a facility-based approach, considering the adequacy of the performance of individual facilities for the storage, treatment, handling, and/or disposal, of hazardous and other wastes.

In the context of this document, reference to ‘other wastes’ is taken to include municipal solid waste (MSW), on which there is useful literature and where it is not expected that standards of ESM in terms of criteria and general principles should differ markedly between those for hazardous wastes as well as wastes that are not hazardous according to the Basel Convention.

Wherever possible, web links are provided in this document. Some further references are provided in the Annex for information.

1. INTRODUCTION - GENESIS OF “ENVIRONMENTALLY SOUND MANAGEMENT”

A brief history

The development of the concept of environmentally sound management (ESM) of hazardous wastes and other wastes can be traced back to the early work preceding the 1989 adoption of the Basel Convention on the Transboundary Movements of Hazardous Waste and their Disposal (the “Convention”).

The issue of transboundary movements of hazardous wastes had already been examined within other international groups, notably the Organization for Economic Cooperation and Development (OECD) and the European Community (EC). These organizations had carried out much groundwork on “transfrontier shipments of wastes”, recognizing the potential for unequal and mis-management of such wastes, as well as the need to track cross-border movements to ensure they were dealt with in a manner consistent with the protection of the environment, wherever the place of disposal.

Within UNEP, the Montevideo programme on environmental law addressed the issue of the environmentally sound management of hazardous wastes from 1981 producing the “Cairo Guidelines”¹. The Cairo Guidelines were adopted by the UNEP Governing Council of Ministers in 1987. Thus by the mid-1980s the concept of environmentally sound management can be said to have become established at the UN level. The Cairo Guidelines provided text that subsequently formed the basis of the Basel Convention.

The OECD undertook considerable work on waste management matters throughout the 1970s and 1980s. Its Waste Management Policy Group examined the issue of transfrontier movements of hazardous wastes during the 1980s. The outcome was an OECD “Decision/Recommendation” on Transfrontier Movements of Hazardous Wastes, C(83)180 (Final)². The preamble to this Decision refers to the “efficient and environmentally sound management of hazardous waste” (emphasis added).

The European Community (later becoming the European Union, EU) had adopted a Directive on the transfrontier shipments of waste in 1984³. While the expression “environmentally sound management” was not incorporated into that Directive, terminology that could be understood to have similar effect was included in Article 11 of the Directive regarding the sound management of waste:

“1. Without prejudice to national provisions concerning civil liability, irrespective of the place in which the waste is disposed of, the producer of the waste shall take all necessary steps to dispose of or arrange for the disposal of the waste so as to protect the quality of the environment in accordance with Directives 75/442/EEC and 78/319/EEC and with this Directive. “

¹ UNEP Governing Council 14th Session Decision 14/30 of the Council on 17th June 1987 adopting the Guidelines and recalling the UNEP Governing Council Decision 10/24 of 31 May 1982 forming an Ad Hoc Working Group of Experts on the environmentally sound management of Hazardous Wastes

² Decision-Recommendation of the Council on Transfrontier Movements of Hazardous Waste, of 1 February 1984 - C(83)180/FINAL

³ Council Directive 84/631/EEC on the supervision and control within the European Community of the transfrontier shipment of hazardous waste

The abovementioned Directive 75/442/EEC⁴ concerns the management of waste, establishing a system for definition and controls on waste and Directive 78/319/EEC on Toxic and Dangerous waste⁵ for the management of hazardous waste (both now superseded by more recent EU legislation).

⁴ Council Directive 75/442/EEC of 15 July 1975 on waste, now updated and consolidated with the directive on hazardous waste as Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

⁵ Council Directive 78/319/EEC of 20th March 1978 on toxic and dangerous waste

2. CRITERIA AND CORE PERFORMANCE ELEMENTS FOR ENVIRONMENTALLY SOUND MANAGEMENT

A. The UNEP Approach

i) The Basel Convention and ESM

The Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes

These Guidelines, which set out principles for ESM for transboundary movements of hazardous wastes, were agreed in 1985 and adopted by Decision 14/30 of the Governing Council of UNEP on 17th June 1987. They were intended for governments, with a view to assisting them in the process of developing policies for the ESM of hazardous wastes. They deal mainly with the administrative aspects of the ESM of hazardous wastes rather than providing specific guidance on more technical aspects. Nevertheless the need for technical requirements is recognised as shown by the following examples from the Guidelines.

Paragraph 12 of the Cairo Guidelines concerns the duty to ensure safe disposal, that States should ensure that persons engaged in activities in the course of which hazardous wastes are generated are required to make appropriate arrangements for the disposal of those wastes in an environmentally sound manner.

Paragraph 13 of the guidelines refers to the employment of “best practicable means” in all aspects of hazardous waste management and paragraph 14 to the authorization of sites or facilities for storage, treatment and disposal of hazardous wastes. Paragraph 14(b) establishes that an authorization or operating permit for approved sites or facilities for storage, treatment and disposal of hazardous wastes should be granted only if two criteria are met, namely:

- “ i) An assessment undertaken by or at the request of the competent authority has established that no significant adverse effects on health or the environment are to be expected as a result of such storage, treatment or disposal;
- ii) The competent authority is satisfied as to the suitability of the operator of the facility at which such storage, treatment or disposal is to be carried out, including the technical knowledge and financial means of that operator to carry out the operations in respect of which the authorization or operating permit is sought to be granted and to take the appropriate safety measures in respect thereof.”

Paragraph 19 of the Cairo Guidelines addresses the role of States in monitoring, for example with respect to ensuring that operators of sites or facilities at which hazardous wastes are managed monitor the effects of those activities on health and the environment; that competent authorities have the power to enter the facilities for the purposes of monitoring the effects upon health and the environment of the activities carried out; that appropriate remedial action is taken in cases where monitoring gives indications that management of hazardous waste has resulted in adverse effects on health or the environment and record keeping. These guidelines formed the basis for the subsequent development of the Basel Convention.

The Basel Convention

The Basel Convention identifies environmentally sound management of waste as a cornerstone of its obligations. ESM is referenced in several of the Convention's preambular paragraphs - in particular within the penultimate preambular paragraph:

"Convinced also that the transboundary movement of hazardous wastes and other wastes should be permitted only when the transport and the ultimate disposal of such wastes is environmentally sound,"

The Convention defines environmentally sound management in Article 2 (Definitions) as:

"...taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes;"

Article 4 on General Obligations, within paragraph 2(b), requires Parties to the Convention to take appropriate measures to:

"Ensure the availability of adequate disposal facilities for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within in it, whatever the place of their disposal;"

Article 4, paragraph 2(d) further requires that Parties:

"Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes, and is conducted in a manner which will protect human health and the environment against the adverse effects which may result from such movement;"

Exporting Parties also have an obligation under Article 4, paragraph 2(e) to:

"Not allow the export of hazardous wastes or other wastes to a State or group of States belonging to an economic and/or political integration organization that are Parties, particularly that are developing countries, which have prohibited by their legislation all imports, or if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner, according to criteria to be decided by Parties at their first meeting;" .

Furthermore, Article 4 paragraph 2 (g) requires Parties to:

"Prevent the import of hazardous wastes and other wastes if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner;"

The Convention establishes a system of prior informed consent (PIC) for the transboundary movement of hazardous wastes and other wastes, with general and specific obligations on Parties regarding the management of wastes under the scope of the Convention. The obligations on Parties to ensure ESM extend to arrangements:

- For treatment of wastes to be disposed of following cases of illegal traffic (Article 9);
- To cooperate with one another to improve and achieve ESM (Article 10); and
- To ensure any bilateral, multilateral and regional agreements on transboundary movements of hazardous and other wastes entered into under Article 11 do not derogate from and are no less environmentally sound than those under the Basel Convention.

While the Convention text itself contains an elaboration of the PIC procedure, no such elaboration was provided for the environmentally sound management of hazardous wastes and other wastes. Following the entry into force of the Basel Convention, the elaboration of ESM has largely therefore been developed

through the series of general and technical guidelines adopted by meetings of the Conferences of the Parties.

This does not, however, indicate a diminished importance of ESM of wastes. This was underlined at the fifth meeting of the Conference of the Parties, which adopted the Basel Declaration on Environmentally Sound Management (Decision BC-V/1)⁶.

➤ <http://archive.basel.int/meetings/cop/cop5/cop5reportfinal.pdf>

At the ninth meeting of the Conference of the Parties to the Basel Convention (COP 9) in his statement on the way forward on the Ban Amendment (found in the Annex to decision IX/26⁷), the President called for a process to explore means by which objectives of the Ban Amendment might be achieved. Indonesia and Switzerland announced their readiness to organize a “Country-led Initiative” (CLI), inviting key players, to discuss in an informal, dynamic and non-dogmatic manner those issues related to the transboundary movements of hazardous wastes, especially to developing countries, contrary to the overarching objective of the Ban Amendment. The CLI process developed a draft omnibus decision, which formed the basis of discussions and the adoption of a decision at the tenth meeting of the Conference of the Parties (Decision BC-10/3 on the Indonesian-Swiss country-led initiative to improve the effectiveness of the Basel Convention) as described above under “Purpose and Structure of this document”.

ii) The Stockholm Convention on Persistent Organic Pollutants and the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

These two multilateral environmental agreements within the UNEP chemicals cluster also deal with aspects of environmentally sound management of hazardous chemicals and wastes. The Basel, Rotterdam and Stockholm Conventions share the common objective of protecting human health and the environment from hazardous chemicals and wastes. In light of the ongoing process to enhance coordination and cooperation (“synergies”) between these conventions, the relationship between them merits mention in this document.

The Stockholm Convention on Persistent Organic Pollutants (the ‘Stockholm Convention’)

The Stockholm Convention deals with the protection of human health and the environment from persistent organic pollutants (POPs). Article 6 in particular addresses the environmentally sound disposal and /or management of POPs. This provision deals with measures to reduce or eliminate releases from stockpiles and wastes. Paragraph 2 of Article 6 specifically requires the Conference of the Parties to the Stockholm Convention to cooperate with the appropriate bodies of the Basel Convention on (amongst other things):

- i) Establishing levels of destruction and irreversible transformation necessary to ensure that POPs characteristics are not exhibited;
- ii) Determining what is considered to be methods that constitute environmentally sound disposal as referred to in the Stockholm Convention; and

⁶ See Annex II of the report of the meeting (Document UNEP/CHW.5/29) at <http://www.basel.int/Admin/meetdocs/tabid/2311/Default.aspx?meetingId=1&sessionId=2&languageId=1>

⁷ See decision IX/26 in the report of the ninth meeting of the Parties to the Basel Convention, Bali, Indonesia, June 2008; <http://archive.basel.int/meetings/cop/cop9/docs/39e-rep.pdf>

- iii) Work to establish, as appropriate, concentration levels of chemicals listed under the Stockholm Convention so as to define the low POPs content.

The Basel Convention has worked in close cooperation with the Stockholm Convention to produce a number of guidelines on the ESM of POPs wastes. A general guideline on the ESM of wastes consisting of, containing or contaminated with persistent organic pollutants is available, as well as four specific technical guidelines on the wastes consisting of, containing or contaminated with the Stockholm Convention-listed POPs⁸. These guidelines address the whole range of management issues from legislation standards, to waste prevention, to inventories, to sampling and monitoring, to packaging and transportation, to environmentally sound disposal (described further in Section 3).

Under the Stockholm Convention, to facilitate the implementation of Article 5 (measures to reduce or eliminate releases from unintentional production) Parties recognized the need for a harmonized framework for elaboration of comparable release inventories of its Annex C chemicals, such as polychlorinated biphenyls and dioxins, (dealing with unintentional releases of persistent organic pollutants from sources such as waste incinerators and cement kilns firing hazardous wastes), and for detailed state-of-the-art guidelines on best available techniques and guidance on best environmental practices. The Guidelines on best available techniques and guidance on best environmental practices provide the necessary guidance called for in paragraph c) of the Article 5. A description of this process and relevant guidelines is found at:

- <http://chm.pops.int/Implementation/BATBEP/Guidelines/tabid/187/Default.aspx>

This approach defines “best” as meaning the “...most effective in achieving a high general level of protection of the environment as a whole” (Article 5(f)iv) and as such can be considered to be consistent with ESM.

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (the ‘Rotterdam Convention’)

The Rotterdam Convention deals with the international trade in hazardous chemicals and pesticides. It aims to achieve this among other matters by:

- i) Promoting shared responsibility and cooperative efforts among its Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; and,
- ii) Contributing to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

The Rotterdam Convention creates legally binding obligations to implement a prior informed consent (PIC) procedure for chemicals within its scope, as well as a process for listing chemicals. Although the Convention may not directly address ESM as such, information on chemicals’ properties and hazards under the Rotterdam Convention may assist Basel Convention Parties in assessing risks when these chemicals become wastes.

- <http://www.pic.int/Home/tabid/855/language/en-US/Default.aspx>

⁸ <http://www.basel.int/TheConvention/Publications/TechnicalGuidelines/tabid/2362/Default.aspx>

B. The OECD Approach

At the beginning of the 1990s, the Waste Management Policy Group of the OECD undertook a review of the issue of ESM of wastes, to clarify the scope of the OECD ESM instruments and develop a common understanding to assist practical implementation of these instruments. The objectives of its work were:

- to provide facilities with common basic provisions for ESM in order to improve their environmental performance, if necessary;
- to achieve a more level playing field among facilities within the OECD area, in order to help ensure that facilities which have invested in environmentally sound technologies maintain their competitiveness; and
- to use the implementation of “guidelines” as a way of helping member states to have greater confidence that their waste shipments within the OECD area were being sent to facilities that ensure ESM.

The initial working definition of ESM for this process was:

“a scheme for ensuring that wastes and used and scrap materials are managed in a manner that will save natural resources, and protect human health and the environment against adverse effects that may result from such wastes and materials”.

This differs from the Basel Convention definition in that the scope of the OECD definition was intended to cover all wastes in the OECD context, including hazardous and non-hazardous waste (as defined by OECD). That meant all materials and substances and objects destined for disposal or recovery operations as listed in OECD Decision C(2001)107/Final⁹. The OECD subsequently adopted a Recommendation on Environmentally Sound Management of Waste - C(2004)100 of the Council On The Environmentally Sound Management (ESM) of Waste, as amended by C(2007)97. The Recommendation comprises three objectives:

- “1. sustainable use of natural resources, minimisation of waste and protection of human health and the environment from adverse effects that may result from waste;
2. fair competition between enterprises throughout the OECD area through the implementation of ‘core performance elements’ (CPEs) by waste management facilities, thus contributing to a level playing field of high environmental standards;
3. through incentives and measures, diversion of waste streams to the extent possible from facilities operating with low standards to facilities that manage waste in an environmentally sound and economically efficient manner.”

The OECD Recommendation itself provides eleven factors to be considered:

“RECOMMENDS that Member countries elaborate and implement policies and/or programmes to ensure that waste be managed in an environmentally sound and economically efficient manner.

⁹ Decision Of The Council C(2001)107/Final, Concerning The Control Of Transboundary Movements Of Wastes Destined For Recovery Operations, OECD 2002

Domestic policies and/or programmes implemented under this Recommendation shall not lead to or create unnecessary obstacles to international trade of waste destined for recovery operations.

For the purpose of this Recommendation, taking into account the size of the enterprise, especially the situation of small and medium size enterprises (SMEs), the type and amount of waste, the nature of the operation and their domestic legislation, Member countries should:

1. have an adequate regulatory and enforcement infrastructure at an appropriate governmental level, consisting of legal requirements such as authorisations/licences/permits, or standards;
2. develop and implement practices and instruments that facilitate the efforts of competent authorities to monitor the implementation of the CPEs listed in Annex I to this Recommendation and control compliance of waste management activities with applicable national and international rules and regulations. In case of noncompliance with existing rules, prompt, adequate and effective actions should be undertaken;
3. ensure that waste management facilities are operating according to best available techniques (Use of best available techniques implies the use of technology, processes, equipment and operations that are based on scientific knowledge, whose functional value has been successfully tested in operative comparable plants) while taking into consideration the technical, operational and economic feasibility of doing so, and work towards continually improving environmental performance;
4. encourage, through appropriate measures, information exchange between producers, waste generators, waste managers and authorities, including participation in sectoral trade or industry association activities addressing these issues, in order to foster waste prevention, optimise recovery operations and minimise quantities as well as potential risk of waste destined for disposal or recovery;
5. integrate into national policies and/or programmes the core performance elements listed in Annex I to this Recommendation, which constitute the basic requirements to ensure environmentally sound management of waste;
6. consider incentives and/or relief measures for facilities that fulfil the core performance elements listed in Annex I to this Recommendation;
7. implement the technical guidance for environmentally sound management of waste that has been developed by the OECD and, where appropriate, work towards the implementation of other ESM guidance referred to in Annex III to this Recommendation;
8. move towards internalisation of environmental and human health costs in waste management, taking into account the differences between hazardous and non-hazardous waste;
9. provide incentives to take part in environmentally sound recycling schemes;
10. encourage the development and implementation of an environmental liability regime for facilities that carry out risky or potentially risky activities to ensure adequate measures upon definite cessation of activities and to prevent environmental damage;

11. ensure that the implementation of the core performance elements listed in Annex I to this Recommendation does not discourage recycling in Member countries, recognising, in particular, the flexibility appropriate for each Member country to increase the rates of environmentally sound recovery of low risk waste.”

Of importance within the context of current discussions relating to decision BC-10/3, Annex I of the Recommendation contains the following “Core Performance Elements” for ESM of facilities:

- **CPE1:** The facility should have an applicable environmental management system (EMS) in place;
- **CPE2:** The facility should take sufficient measures to safeguard occupational and environmental health and safety;
- **CPE3:** The facility should have an adequate monitoring, recording and reporting programme;
- **CPE4:** The facility should have an appropriate and adequate training programme for the personnel;
- **CPE5:** The facility should have an adequate emergency plan;
- **CPE6:** The facility should have an adequate plan for closure and after-care

These Core Performance Elements were then further elaborated in the Guidance Manual for the Implementation of the OECD Recommendation C(2004)100 On Environmentally Sound Management (ESM) of Waste, OECD 2007¹⁰.

C. The EU Approach

The EU and its Member States have adopted a significant range of environmental measures on environmentally sound waste management. Member States to the EU aim to achieve high environmental standards in implementing their environmental obligations. How this is implemented in practice depends on the subject matter.

For example, the EU Directive on landfill¹¹ in practice provides for ESM of landfill, although the term ‘ESM’ is not explicitly employed. The Directive, which aims to prevent or reduce as far as possible negative effects on the environment from the landfilling of waste:

- Sets conditions for types of landfill and defines different categories of wastes for landfill (hazardous waste, non-hazardous waste, inert waste);
- Bans certain types of waste from landfill altogether;
- Lays down a standard “waste acceptance procedure¹²” to be followed before landfilling of wastes so as to avoid risks; establishes a permit and monitoring system; establishes closure procedures.
- Establishes a Technical Committee to address changing requirements for matters such as testing and limit values.

Member States are required to implement the Directive and report to the European Commission every three years on its implementation. Further information can be found at:

- http://ec.europa.eu/environment/waste/landfill_index.htm

¹⁰ <http://www.oecd.org/dataoecd/23/31/39559085.pdf>

¹¹ Council Directive 99/31/EC of 26th April 1999 on the Landfilling of waste

¹² A method of assessing the characteristics and suitability of waste for landfilling

In contrast to Directives, the EU has also adopted numerous Regulations, which are self-executing and do not need transposition into Member States' national legislation. Regulations have direct effect in all Member States. An example of this is the Regulation on shipments of waste¹³, which implements both the Basel Convention and the OECD Decision on transboundary movements of hazardous waste and other wastes¹⁴. ESM is specifically referred to in the recitals to the Regulation, for example recital 33 states:

“...As regards exports from the Community that are not prohibited, efforts should be made to ensure that the waste is managed in an environmentally sound manner throughout the period of shipment and including recovery or disposal in the third country of destination. The facility which receives the waste should be operated in accordance with human health and environmental protection standards that are broadly equivalent to those established in Community legislation. A list of non-binding guidelines should be established in which guidance may be sought on environmentally sound management.”

Article 49 of the Regulation further states that:

“Environmentally sound management may, *inter alia*, be assumed as regards the waste recovery or disposal operation concerned, if the notifier or the competent authority in the country of destination can demonstrate that the facility which receives the waste will be operated in accordance with human health and environmental protection standards that are broadly equivalent to standards established in Community legislation.”

Other Articles of the Regulation restrict certain exports of wastes, in accordance with the amendment to the Basel Convention (Decision III/1 – the ‘Ban Amendment’). The Ban Amendment provides for the prohibition by Parties in the new Annex VII (Parties and other States which are members of the OECD, EC, Liechtenstein) of all transboundary movements to States not in Annex VII of hazardous wastes covered by the Convention that are intended for final disposal, and of all transboundary movements to States not included in Annex VII of hazardous wastes covered by paragraph 1 (a) of Article 1 of the Convention that are destined for reuse, recycling or recovery operations.

Article 49 and Annex VIII to the Regulation identify a number of guidelines to be considered when seeking guidance on ESM. The guidelines listed in the Annex VIII have been produced by the Basel Convention, the OECD, the IMO and the ILO (the latter two with respect to ship recycling/breaking)¹⁵.

¹³ Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste, as amended by Commission Regulation No. 1379/2007 of 26 November 2007

¹⁴ Decision C(2001)107/FINAL of the OECD Council concerning the revision of Decision C(92)38/Final on the control of transboundary movements of wastes destined for recovery operations

¹⁵ Further information can be found at: <http://ec.europa.eu/environment/waste/shipments/legis.htm>

3. EXISTING STANDARDS, GUIDELINES, POLICIES AND CODES OF PRACTICE FOR ESM OF HAZARDOUS AND OTHER WASTES

A. GUIDELINES

UNEP - Basel Convention Guidelines

A large number of the Convention's guidelines have been developed and cover technical aspects of the ESM for disposal operations of specific waste streams.

A Framework Document (1994) on the preparation of technical guidelines for the environmentally sound management of wastes subject to the Basel Convention¹⁶ was adopted by Decision II/13 at the second meeting of the Conference of the Parties to the Basel Convention. This guidance document explains what is to be understood by the environmentally sound management of hazardous wastes. It is to be used as a reference document when developing strategies for the management of wastes within a country. It includes a note on environmentally sound management, principles to be considered in the development of waste and hazardous waste management strategies, control measures for ensuring environmentally sound management of waste and hazardous waste and good management practices. Paragraph 6 asserts that "domestic legislation and a statutory regulatory framework are seen as being essential prerequisites for controlling transboundary movements and disposal of wastes and, in particular, hazardous wastes." Five criteria are provided for ESM in paragraph 9 of the document:

- a) There exists a regulatory infrastructure and enforcement that ensures compliance with applicable regulations;
- b) Sites or facilities are authorized and of an adequate standard of technology and pollution control to deal with the hazardous wastes in the way proposed, in particular taking into account the level of technology and pollution control in the exporting country;
- c) Operators of sites or facilities at which hazardous wastes are managed are required, as appropriate, to monitor the effects of those activities;
- d) Appropriate action is taken in cases where monitoring give indications that the management of hazardous wastes have resulted in unacceptable emissions
- e) Persons involved in the management of hazardous wastes are capable and adequately trained in their capacity.

Paragraph 10 of the document additionally sets out a number of principles, presented as those that merit consideration which some countries had found useful in the development of hazardous waste strategies. These were:

- Source reduction
- Integrated Life Cycle
- Precautionary
- Integrated pollution Control
- Standardization
- Self Sufficiency
- Proximity

¹⁶ <http://www.basel.int/TheConvention/Publications/TechnicalGuidelines/tabid/2362/Default.aspx#>

- Least Transboundary Movement
- Sovereignty
- Public Participation

Technical Guidelines

A number of other technical guidelines on various aspects of ESM of hazardous and other wastes have also been published. The titles of the key guidelines amongst these are in the Annex to this document. All Basel Convention technical guidelines are also available on the Basel Convention website¹⁷.

Basel Convention Projects and Programmes

A considerable amount of work has been carried out at the international level on the issue of wastes from electrical and electronic equipment. Through its work programme mandated from various meetings of the Conference of the Parties initiated by the Nairobi Declaration on the Environmentally Sound Management of Electrical and Electronic Waste and decision IX/6 adopted by the ninth meeting of the Conference of the Parties, the Partnership for Action on Computing Equipment (PACE) has produced criteria recommendations for ESM including an overview of those that exist at the Basel Convention-, OECD- and country-level for e-waste. Many of these criteria may also be applicable to ESM for hazardous wastes and other wastes. These criteria are contained in the Environmentally Sound Management (ESM) Criteria Recommendations Prepared by the Ad Interim Project Group on ESM Criteria for the Partnership for Action on Computing Equipment (PACE)¹⁸

Stockholm Convention

The Stockholm Convention aims to eliminate the production, use, release, import, export and storage of certain POPs listed in its Annex A. It achieves this objective through several means:

- Funded programmes are implemented that may establish in-country facilities for the destruction of POPs and POPS-containing materials and wastes;
- Parties are required to develop, transmit, implement, review and update National Implementation Plans (NIPS) for the implementation of their obligations under this Convention. NIPS may provide more up-to-date and specific assessments of the ESM of relevant waste destruction technologies;
- Guidelines on Best Available Techniques and Best Environmental Practices (“BAT/BEP”) have also been adopted to assist Parties in achieving the Convention’s objective.

In implementing their obligations relating to POPs wastes, Parties to the Stockholm Convention will need to take into account and implement ESM criteria and guidelines such as those produced by the Basel Convention. Information on BAT/BEP Guidelines can be found at:

- <http://chm.pops.int/Implementation/BATBEP/Guidelines/tabid/187/Default.aspx>

Guidance on development of NIPs (under review for publication in April 2012) is available at:

- <http://chm.pops.int/Implementation/NIPs/Overview/tabid/565/Implementation/NIPs/Guidance/tabid/587/language/en-US/Default.aspx>

¹⁷ <http://www.basel.int/TheConvention/Publications/TechnicalGuidelines/tabid/2362/Default.aspx>

¹⁸ <http://archive.basel.int/industry/compnership/docs/FinalApprovedReportESM-22March2010.pdf>

National Implementation Plans that have been submitted by Parties to the Secretariat of the Stockholm Convention are available on the Stockholm Convention website¹⁹.

EU Guidelines

The European Commission develops guidance on technical standards through its Joint Research Centre (JRC). The European Integrated Pollution Prevention and Control (IPPC) Bureau is located in the [Institute for Prospective Technological Studies](#) (IPTS) (Directorate General, Joint Research Centre, Institute for Prospective Technological Studies (Seville). They establish Best Available Techniques reference documents (BREF). These serve as a reference for EU Member States authorities to ensure that permits for the industrial processes concerned include emission limit values based on best available techniques that have been determined by working groups encompassing experts from industry and national administrations. BREF Reference documents are found at:

- <http://eippcb.jrc.es/reference/>

For example the BREF on waste incineration is:

- Integrated Pollution Prevention and Control, Reference Document on the Best Available Techniques for Waste Incineration, August 2006
http://eippcb.jrc.es/reference/BREF/wi_bref_0806.pdf

B. STANDARDS

ISO Standards

The ISO is a network of national standards institutes of 163 countries²⁰. ISO standards are intended to:

- make the development, manufacturing and supply of products and services more efficient, safer and cleaner;
- facilitate trade between countries and make it fairer;
- provide governments with a technical base for health, safety and environmental legislation, and conformity assessment;
- share technological advances and good management practice;
- disseminate innovation;
- safeguard consumers, and users in general, of products and services;
- make life simpler by providing solutions to common problems.

General information on ISO documents can be found at:

- <http://www.iso.org/iso/home.html>

For the purposes of considering ESM a distinction should be made between **standards systems**, as outlined in this section, and **technical standards of operation** e.g. of a facility. The standards for systems approach applies to management of the processes. This enables consistent delivery of the chosen technical standards, which may be selected or required by reference to applicable national legislation, technical standards and guidelines. Using an Environmental Management System (EMS) to assist in delivering ESM is beneficial in that it leads to in a methodical and consistent approach to monitoring and

¹⁹ <http://chm.pops.int/Implementation/NIPs/NIPSubmissions/tabid/253/Default.aspx>

²⁰ Information from ISO website as at 10 April 2012 <http://www.iso.org/iso/about.htm>

managing ESM of wastes; it may help identify where improvements can be made; it may provide a structured means of implementing such improvements with regular checks on progress.

ISO 14000 Series

The ISO 14000 series comprises a series of international standards on environmental management, some of which are discussed below. It could provide a framework for the development of a system for the ESM of wastes and an accompanying audit program. ISO 14001 is known as a 'generic management system standard', meaning that it is applicable to any size and type of organization, product or service, in any sector of activity. It is intended to help organizations (including waste management companies and others):

- (a) minimize how their operations (processes etc.) may have adverse effects on the environment (e.g. air, water, or land);
- (b) comply with applicable laws, regulations, and other environmentally oriented requirements; and
- (c) continually improve in the above.

ISO 14001 specifies requirements for an environmental management system to enable an organization to develop and implement a policy and objectives which take into account legal requirements and other requirements to which the organization subscribes, and information about significant environmental aspects. It applies to those environmental aspects that the organization identifies as those which it can control and those which it can influence. It does not itself state specific environmental performance criteria.

ISO 14001:2004 is applicable to any organization that wishes to establish, implement, maintain and improve an environmental management system, to assure itself of conformity with its stated environmental policy, and to demonstrate conformity with ISO 14001:2004 by:

- a) making a self-determination and self-declaration, or
- b) seeking confirmation of its conformance by parties having an interest in the organization, such as customers, or
- c) seeking confirmation of its self-declaration by a party external to the organization, or
- d) seeking certification/registration of its environmental management system by an external organization.

ISO 14004 provides guidance on the development and implementation of environmental management systems and principles and their co-ordination with other management systems.

ISO 19011: 2002 offers guidelines for quality and/or environmental management systems auditing. It is intended that by using this new standard, organizations can save time, effort and money by:

- Avoiding confusion over the objectives of the environmental or quality audit programme.
- Securing agreement of the goals for individual audits within an audit programme.
- Reducing duplication of effort when conducting combined environmental/quality audits.
- Ensuring audit reports follow the best format and contain all the relevant information.
- Evaluating the competence of members of an audit team against appropriate criteria.

There is also a useful checklist on ISO 14001 for use by small businesses. These documents can be found at:

- http://www.iso.org/iso/iso_catalogue/management_and_leadership_standards/environmental_management/iso_14000_essentials.htm

and the Annex concisely describes the essential features of the ISO 14000 family as set out by ISO.

CEN Standards

The European Committee for Standardization (CEN) was officially created as an international non-profit association based in Brussels in 1975. It provides a platform for the development of European Standards and other technical specifications. It is the only recognized European organization according to the Directive 98/34/EC for the planning, drafting and adoption of European Standards in all areas of economic activity with the exception of electro-technology (CENELEC) and telecommunication (ETSI). The Vienna Agreement – signed by CEN in 1991 with ISO, its international counterpart ensures technical cooperation by correspondence, mutual representation at meetings and coordination meetings, and adoption of the same text, as both an ISO Standard and a European Standard. General information on CEN can be found at:

- <http://www.cen.eu/cen/pages/default.aspx>

It is also of note that standards can have legal effect if incorporated within European legislation (Directives, Regulations). Some standards with respect to the environment include:

EN 13427:2004 Packaging and packaging waste (describes how the standards apply)

EN 13431:2004 Packaging - Requirements for packaging recoverable in the form of energy recovery, including specification of minimum inferior calorific value

The CEN Technical Committee CEN/TC 292 has published a series on standards on waste Characterization:

- <http://www.cen.eu/CEN/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/Standards.aspx?param=6273&title=CEN/TC+292>

Country Policies and Standards

Many Parties to the Basel Convention have adopted and implemented their own national policies for ESM of wastes. Sometimes the exact terminology of ESM under the Convention may not be used, although the effect is the same. An example of this has been shown already for the EU and its Landfill Directive in section 2 above. Implementation of the Basel Convention, including as relates to ESM, relies on implementation and enforcement by each Party within its jurisdiction. A few examples illustrating the different approaches adopted by Parties are shown below.

Japan

Japan has produced a study on the criteria and requirements for ESM of hazardous waste and other wastes as part of its contribution to discussions within the CLI²¹. Japan, the Republic of Korea the Philippines and Singapore were studied to examine the legal framework and its operational status. The resulting study on Criteria and Requirement on Environmentally Sound Management of Hazardous Waste and Other wastes is available electronically²².

India

Following an assessment by its Central Pollution Control Board, India developed comprehensive guidelines for the ESM of electronic and electrical wastes ('e-wastes') in 2008²³. In 2011, the E-waste (Management and Handling) Rule of 2011 was enacted by the Ministry of Environment and Forest as part of the Environment Protection Act of India. This was to enter into force on 1 May 2012. This Rule shall apply to all producers, consumers and bulk consumers involved in manufacture, sale, purchase and processing of electronic and electrical equipment or components. The Rule defines 'environmentally sound management of e-waste' as:

“taking all steps required to ensure that e-waste are managed in a manner which shall protect health and environment against any adverse effects, which may result from hazardous substance contained in such wastes.”²⁴

The United Kingdom of Great Britain and Northern Ireland (UK)

At the policy level, the UK has published a number of documents on ESM. The UK has adopted a policy specifically dealing with transboundary movements of waste – the UK Plan for Shipments of Waste²⁵. The definition of ESM given is the same as that in the EU Regulation and relies upon the competent authority to apply European Community law in making its assessments in applicable cases.

More technical guidance on standards to ensure ESM of wastes, e.g. domestic controls placed on facility operators, tend to be prepared and published (sometimes jointly) by the national Competent Authority(-ies) e.g. the Environment Agency for England and Wales, the Scottish Environmental Protection Agency and the Northern Ireland Environment and the Heritage Service.

Other Sources of standards on ESM-developed by non-governmental organizations (NGOs)

The main NGO in this regard is the ISO, whose work has been described above. Other NGOs that may have developed standards on ESM for wastes are not widely reported. One NGO that has is the Basel Action Network (BAN), which has published a standard specifically addressing the issue of e-waste. The

²¹ See the Basel Convention website:

<http://www.basel.int/Implementation/LegalMatters/CountryLedInitiative/SecondMeeting/tabid/2372/Default.aspx>

²² Study on Criteria and Requirement on Environmentally Sound Management of Hazardous Waste and Other wastes, Ministry of Environment Japan, March 2011

http://www.env.go.jp/en/recycle/asian_net/Project_N_Research/PDF/asia%20ESM%20paper.pdf

²³ Guidelines for Environmentally Sound Management of e-waste, Ministry of Environment and Forests Central Pollution Control Board March 2008:

<http://www.cpcb.nic.in/latest/27.06.08%20guidelines%20for%20E-Waste.pdf>

²⁴ e-waste (Management and Handling) Rules, 2011, Ministry of Environment and Forests, 12th May 2011, S.O.1035(E). http://moef.nic.in/downloads/rules-and-regulations/1035e_eng.pdf

²⁵ Department for Environment Food and Rural Affairs London UK 2007, available at:

www.doeni.gov.uk/niea/waste-shipments.pdf

BAN e-Stewards Standards *e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment*[®] is an industry-specific EMS standard designed as the basis for the e-Stewards Certification. It was developed with detailed input from experts in the recycling and asset recovery industries, the environmental community, occupational health and safety professionals, and the certification and accreditation industries. The e-Stewards Standard is developed for international use and is consistent with international waste trade rules, social accountability standards, and environmental management system norms. Using the ISO 14001 standard as its framework, the e-Stewards Standard adds additional industry-specific performance requirements, which results in a systemic, documented and top management commitment to best management practices for electronics recycling and reuse, 365 days a year.

More information on this can be found at:

- <http://e-stewards.org/certification-overview/>

C. CODES OF PRACTICE AND OTHER SIMILAR MATERIAL

UNEP

The UNEP Division of Technology Industry and Economics International Environmental Technology Centre has produced a range of publications and tools specifically on waste management that contribute to the development of environmentally sound management standards. A number of these are described below. The IETC promotes and implements environmentally sound technologies (ESTs), including management systems, for sustainable production and consumption as well as for water and sanitation. General information about their publications can be found at:

- <http://www.unep.or.jp/ietc/SPC/publications.asp>

Information on UNEP DTIE Programmes/Tools can be found at:

- <http://www.unep.org/dtie/Home/tabid/6459/Default.aspx>

One example is the ESTIS²⁶ system. ESTIS is a multi-language, Information System (IS) management tool to assist the transfer of Environmentally Sound Technologies (EST). ESTIS encompasses two integrated components providing a decentralized IT network for improved access and local control in EST related information transfer. The ESTIS concept has been driven by an international group of people dedicated to EST transfer for sustainability.

Examples of other publications of relevance by IETC include:

- [State of Waste Management in South East Asia UNEP 2004](#)
This report is a result of a small survey conducted in 2002 by UNEP IETC in cooperation with the ASEAN Working Group for Multilateral Environmental Agreements (AWGMEA). The survey was undertaken to prepare a background paper on waste management in the sub-region prior to the holding in Kuala Lumpur in October 2002 of an ASEAN High Level Consultation Meeting. The focus is to deliberate on a proposal to establish a regional framework for collaboration in sustainable integrated waste management. This is a joint publication of UNEP IETC and the ASEAN Secretariat. It is envisaged to be a reference for planning, programming and policy reviews on waste management in each member state of ASEAN. It is also planned to be updated every two years so

²⁶ <http://www.estis.net/>

that it can serve as a supplement to the GEO, a biennial publication of UNEP, on the specialized area of waste management.

- http://www.unep.or.jp/ietc/Publications/spc/State_of_waste_Management/index.asp

- Solid Waste Management United Nations Environment Programme, UNEP DTIE-IETC (2005) ISBN: 92-807-2676-5
This publication looks at the use of technologies that are environmentally sound for managing municipal solid wastes in developing countries. It is designed as a sourcebook on solid waste management, covering a multitude of topics including the principles of solid waste management, processing and treatment, and final disposal. It also covers key non-technical aspects, and offers regional overviews on SWM.
- http://www.unep.or.jp/ietc/Publications/spc/Solid_Waste_Management/index.asp

- Lessons Learned on Mainstreaming Pilot projects into Larger Projects
UNEP DTIE IETC 2009
This report summarizes lessons learned from implementing Environmentally Sound Technology (EST) pilot projects by the International Environmental Technology Centre of UNEP Division of Technology, Industry and Economics (UNEP-DTIE-IETC). The document aims to inform national level mainstreaming of the EST pilot project results, and provides lessons learned for decision makers in national governments and for international technical cooperation personnel. The featured projects were conducted within three pillars of IETC's focal areas. They are: Support for Environmental Management of the Iraqi Marshlands project in the water-sanitation pillar; Integrated Solid Waste Management project in China, India and Lesotho under the waste management pillar; and ESTs for Building waste Reduction in Indonesia (DEBRI) project under the disaster management pillar. Each project and cross-cutting lessons learned focus on six areas, which are project management structure, governance, capacity building, EST implementation, financing, and local conditions/infrastructure.
- http://www.unep.or.jp/ietc/Publications/Water_Sanitation/LessonsLearned_on_Mainstreaming_PilotProjects.pdf

- Developing Integrated Solid Waste Management Plan
Training Manual Volume 1: Waste Characterization and Quantification with Projections for Future
UNEP DTIE IETC 2009
This book is the first volume in the series of training manuals on developing Integrated Solid Waste Management (ISWM) plan. This manual aims to build the capacity of practitioners and policy makers in waste characterization and quantification with projections for future for all the waste generating sectors viz.: residential, commercial, construction and demolition, healthcare and industrial sectors. The objective of the manual is to facilitate characterization of different types of wastes from each sector and quantification of the level of waste generation. The manual provides a methodology to conduct studies leading to collection and analysis of the data from different sectors. An example has been worked out to make this manual user friendly.
- http://www.unep.or.jp/ietc/Publications/spc/ISWMPlan_Vol1.pdf

Training Manual Volume 2: Assessment of Current Waste Management System and Gaps therein

This book is the second volume in the series of training manuals on developing Integrated Solid Waste Management (ISWM) plan. This manual aims to build the capacity of practitioners and policy makers for assessing the current waste management system and practices covering all the stages of waste management chain viz.: primary generation and disposal, collection and transportation, sorting and material recovery for recycling, treatment and resource recovery, and final disposal. The objective of the manual is to facilitate identification of important aspects of waste management system and gaps therein with reference to regulations, institutional arrangements, financial mechanisms, technology and infrastructure, and roles and responsibilities of various stakeholders in the current system. The manual provides a methodology to conduct studies leading to collection and analysis of the information.

- http://www.unep.or.jp/ietc/Publications/spc/ISWMPlan_Vol2.pdf

Training Manual Volume 3: Targets and Issues of Concern for ISWM

This book is the third volume in the series of training manuals on developing Integrated Solid Waste Management (ISWM) plan. This manual aims to build the capacity of practitioners and policy makers for setting up targets for ISWM and identifying stakeholders' issues of concern. The objective of the manual is to facilitate setting targets expected to be achieved through the ISWM Plan. The manual also provides guidelines for conducting stakeholder consultation to identify their concerns with reference to financial aspects, environmental impacts, technology considerations and cultural aspects.

- http://www.unep.or.jp/ietc/Publications/spc/ISWMPlan_Vol3.pdf

Training Manual Volume 4: ISWM Plan

This book is the fourth and last volume in the series of training manuals on developing Integrated Solid Waste Management (ISWM) plan. This manual aims to build the capacity of practitioners and policy makers for developing a comprehensive ISWM Plan by utilizing the information collected earlier regarding waste characterization and quantification, assessment of current waste management system and gaps therein, and targets and issues of concern for ISWM. The objective of the manual is to facilitate the development of a comprehensive ISWM Plan including policy, technical and voluntary interventions. The manual provides a methodology for developing the ISWM Plan utilising the information from Volume 1 and Volume 2 as baseline information and information from Volume 3 for contextualising the Plan. The manual also provides guidelines for developing specific projects/schemes along with an implementation strategy.

- http://www.unep.or.jp/ietc/Publications/spc/ISWMPlan_Vol4.pdf

Industry

Industry standards are often produced as operating procedures for specific facilities (perhaps as part of a formal Environmental Management System) and have no wider application. National trade bodies or associations may also produce their own standards. For wider application some industry standards exist at the international level of relevance for ESM, most notably by the Bureau of International Recycling (BIR) that has published "Tools for Environmentally Sound Management" (2006) BIR:

- <http://www.bir.org/assets/Documents/Public/GuideESM.pdf>

This publication aims to assist recyclers, whether members of BIR or customers of BIR members, to demonstrate their commitment to ensuring the ESM of wastes. The document provides an exposition of the ISO 14000 series and the OECD Core Performance Elements. With respect to OECD CPE1 (having an

appropriate environmental management system in place) the BIR document draws attention to the importance of public reporting on environmental health and safety (EHS) by facilities. The proposed elements for an annual (or triennial in the case of small and medium sized companies) EHS report are:

Proposed elements of an Annual EHS Report:

- Period covered (Annual or Three year period for SME)
- List of plant(s) or site(s) certified to ISO 14001 and the CPEs of the OECD Council Recommendation C(2004)100 on the Environmentally Sound Management (ESM) of Waste
- Illnesses and Injuries
 - Lost time due to illness (e.g. number of cases per 200,000 hrs worked)
 - Lost time due to injuries (e.g. number of cases per 200,000 hrs worked)
- Environmental incidents
 - Number of major environmental incidents
 - Number of minor environmental incidents
- Energy consumption
 - Renewable energy consumption (Gigajoules)
 - Non-renewable energy consumption (Gigajoules)
- Water consumption
 - m³ (cubic metres)
- Air emission
 - tonnes
- Waste
 - Recycled (tonnes)
 - Incinerated (tonnes)
 - Landfilled (tonnes)

Section 7 of the report provides a useful “gap analysis” template for ESM, comprising a comprehensive checklist of matters to be covered according to ISO 14001 to assist companies in determining where they comply with ISO 14001 and the OECD requirements. A series of questions are posed under the headings of:

- General Requirements
- Environmental Policy
- Planning
 - Environmental Aspects
 - Legal and other requirements
 - Objectives, targets and programme(s)
- Implementation and operation
 - Resources, roles, responsibility and authority
 - Competence training and awareness
 - Communication
 - Documentation
 - Control of Documents
 - Operational control
 - Emergency preparedness and response
- Checking

- Monitoring and measurement
- Evaluation of compliance
- Non-conformity, corrective action and preventative action
- Control of records
- Internal audit
- Management review

A space for response is provided in the template and action to be taken to achieve compliance with the ISO 14001 standard. A cross reference to the relevant OECD Core Performance Element is also provided. Other chapters in the document cover the system implementation and documentation.

Regional and sub-regional initiatives

Other regional and sub-regional initiatives also exist, in conjunction with relevant Basel Convention Regional and Coordinating Centres for Training and Technology Transfer (BCRCs) or through other groups, for example:

A report under the auspices of the Commission for Environmental Cooperation: The Demand for Environmental Education and Training in Mexico²⁷ – a study on capacity building in environmental management. This North American group has prioritised environmental and educational training. This study's primary goals were to define the demand for environmental education and training in the Mexican industrial sector by means of an extensive survey; assess the long-term trends in the delivery mechanisms for these services; and analyze opportunities for the promotion of environmental education and training in Mexico's industrial sector, primarily through regional cooperation.

A study on Practices and Options for Environmentally Sound Management of Spent Lead-acid Batteries within North America²⁸ by the Commission for Environmental Cooperation was produced to suggest guidelines as ways of complementing and expanding on those of the Basel Convention, not as a substitute for regional, national or international laws or regulations. The report provided background material on the environmentally sound management of SLABs, and possible options and criteria to ensure the ESM, including tracking and transportation, of spent lead-acid batteries in North America. The report addresses ESM practices for SLABs from the time they become "used" or "spent," through their collection, storage, transportation, and receipt and dismantling in a recycling facility, the recovery of lead in smelting/refining facilities, and the disposal of residues at the recycling facility. The ESM of the manufacture of new products that incorporate recovered components of SLABs, e.g., plastics, new batteries, etc., was not included in the scope of this project.

²⁷ The Demand for Environmental Education and Training in Mexico - study on capacity building in environmental management from the Commission for Environmental Cooperation ISBN 2-922305-07-4 © Commission for Environmental Cooperation, 1997. http://www.cec.org/Storage/43/3502_Enveden_EN.pdf

²⁸ Practices and Options for Environmentally Sound Management of Spent Lead-acid Batteries within North America December 2007 Commission for Environmental Cooperation. http://www.cec.org/Storage/61/5350_SLABs-final-dec07_en.pdf

ANNEX - Additional Reference Material

UNEP

Application of the Sustainability Assessment of Technologies (SAT) Methodology Guidance Manual UNEP DTIE (a draft document for review and comment 2012:) http://www.unep.or.jp/ietc/spc/news-feb12/SAT_Manual.pdf

Regional Workshop on WEEE / E-Waste Management in Osaka, Japan, on 6-9 July 2010:
<http://www.unep.or.jp/ietc/SPC/news-jul10.asp>

Basel Convention

Basel Convention Technical Guidelines

A general guidance note on Basel Convention Technical Guidelines - Guidance Document on the Preparation of Technical Guidelines for the Environmentally Sound Management of Wastes Subject to the Basel Convention is available:

<http://www.basel.int/Portals/4/Basel%20Convention/docs/meetings/sbc/workdoc/guidelns.doc>

All the Convention's technical Guidelines may be found on the web site of the Basel Convention:
<http://www.basel.int/TheConvention/Publications/TechnicalGuidelines/tabid/2362/Default.aspx>

Those with specific reference to the ESM of hazardous wastes and other wastes are:

- Guidance Document on Transboundary Movements of Hazardous Wastes Destined for Recovery Operations Basel Convention series/SBC No. 02/02, November 2002 ISBN : 92-1-158601-1 ISSN : 1020-8364
- Technical Guidelines on the environmentally sound co-processing of hazardous wastes in cement kilns
- Technical Guidelines for the environmentally sound management of wastes consisting of elemental mercury and wastes containing or contaminated with mercury
- Technical Guidelines for the environmentally sound management of used and waste pneumatic tyres
- Updated general Technical Guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with persistent organic pollutants (POPs).
- Technical Guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs) or polybrominated biphenyls (PBBs).
- Technical Guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with 1,1,1 trichloro 2,2 bis(4 chlorophenyl)ethane (DDT)
- Technical Guidelines on the environmentally sound management of wastes containing or contaminated with unintentionally produced PCDDs, PCDFs, HCB or PCBs

- Technical Guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with the pesticides aldrin, chlordane, dieldrin, endrin, heptachlor, HCB, mirex or toxaphene or with HCB as an industrial chemical
- Technical Guidelines for the identification and environmentally sound management of plastic wastes and for their disposal
- Technical Guidelines for the environmentally sound management of the full and partial dismantling of ships
- Technical Guidelines on Hazardous Waste from the Production and use of Organic Solvents (Y6)
- Technical Guidelines on Waste Oils from Petroleum Origins and Sources (Y8)
- Technical Guidelines on Wastes Collected from Households (Y46)
- Technical Guidelines on Specially Engineered Landfill (D5)
- Technical Guidelines on Incineration on Land (D10)
- Technical Guidelines on Used Oil Re-Refining or Other Re-Uses of Previously Used Oil (R9)
- Technical Guidelines on Hazardous Waste Physico-Chemical Treatment (D9)/ Biological Treatment (D8)
- Technical Guidelines for the Environmentally Sound Management of Waste Lead-acid Batteries
- Technical Guidelines on the Environmentally Sound Management of Biomedical and Healthcare Wastes (Y1; Y3)
- Technical Guidelines on the environmentally sound recycling/reclamation of metals and metal compounds (R4)

OECD Publications

OECD (1999), Environmental Requirements for Industrial Permitting, http://www.oecd-ilibrary.org/environment/environmental-requirements-for-industrial-permitting_9789264172586-en

Business and the Environment. Policy Incentives and Corporate Responses, OECD (2007), OECD, Paris. http://www.oecd.org/document/42/0,3746,en_2649_34289_38188714_1_1_1_1,00.html
