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CORE PERFORMANCE ELEMENTS OF THE GUIDELINES FOR ENVIRONMENTALLY SOUND MANAGEMENT OF WASTES

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This paper was submitted to Delegates of the Working Group on Waste Prevention and Recycling and participants to the third workshop on Environmentally Sound Management of Wastes for consideration in March 2002.

The document provides the third revision of the Core Performance Elements of the Guidelines for Environmentally Sound Management of Wastes.

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FOREWORD

This paper provides an elaborated attempt in developing the generic "Core Performance Elements of ESM Guidelines" that would be applicable to recovery of waste, including the preceding transport, storage, treatment and subsequent storage, transport and disposal of residues, and providing the basis for the environmentally sound management (ESM) of recoverable wastes.

These core performance elements are quite general in nature. However, more specific guidelines may be necessary for certain problematic waste and/or material streams (e.g. for personal computers ENV/EPOC/WGWPR(2001)3/FINAL).

For specific waste streams mandatory or voluntary collection schemes are in place in all OECD countries, a number of which to date implement the principle of Extended Producer Responsibility or Extended Product Responsibility. Due to the existence and continued development of all these programmes there may not be a particular need to separately address collection within the context of the core performance elements that are presented below.

This paper provides a third revision of the "core performance elements of ESM guidelines" and it was addressed at the third ESM Workshop in March 2002. The paper should be considered as a link in a chain of evolving issues under the OECD's ESM work, not as an end product. When drafting this paper, a small working group, consisting of experts from Austria, USA and the Secretariat, carefully considered all the received comments and incorporated them to the extent possible to this third version of the "core performance elements of ESM guidelines". However, there are still issues and elements that the working group may not have been able to incorporate properly into the document. Those issues, such as i) can the "level playing field" be reached through these elements; ii) what is the appropriate scope of the core performance elements: hazardous waste or all waste; and iii) how can the "performance" be measured, were carefully considered at the workshop.

Member countries recommended the declassification of this paper in December 2002. It is released on the responsibility of the Secretary General of the OECD.

CORE PERFORMANCE ELEMENTS OF THE GUIDELINES FOR ENVIRONMENTALLY SOUND MANAGEMENT OF WASTES

BACKGROUND

1. The OECD has focused on developing and promulgating international policies to promote the environmentally sound management (ESM) of wastes since the 1980s. Considerable time and effort has been devoted to the development of appropriate measures for controlling transboundary movements of hazardous wastes. This work has resulted in the adoption of eight Council Acts on transboundary movements of wastes, in particular the operational Decision C(92)39/FINAL. The Basel Convention and many European Community directives are based on this pioneering work of the OECD. Recently, it has been recognised that the level of environmental safety varies widely within the recovery facilities, and even within the OECD Member countries. Therefore, the OECD has decided in 1999 to start working towards international ESM guidelines, to improve and harmonise the environmental safety level of recovery facilities within the OECD area.

2. As a starting point for the work programme on ESM of recoverable wastes, the WGWMP held a workshop on *Environmentally Sound Management of Wastes Destined for Recovery Operations (ESM)* in October 1999. The objectives of the workshop were to consider relevant experience in assessing ESM in OECD countries and non-OECD countries, elaborate the elements of ESM, and discuss voluntary and regulatory approaches to the assessment of ESM.

3. At the second ESM Workshop in September 2000 it was widely recognised that for the time being the principal focus of an OECD ESM programme should be on recovery and related activities. However, to optimise resource efficiency, recovery should not be addressed in isolation, but rather in the context of fostering sustainable development, in particular encouraging waste minimisation (including recovery) and achieving a more level playing field within the OECD. It was also widely viewed that an OECD ESM programme should be designed to be useful for both domestic and transboundary applications.

4. Considerable interest was expressed in an OECD framework having at least two basic components. One component would focus on enhancing industry progress toward sustainable practices by emphasising the use of existing Environmental Management Systems (EMS), such as ISO 14 000 series and the European Eco-management and Audit Scheme (EMAS). It was recognised that EMS could play a role in promoting the application in practice of ESM guidelines. However, there was a recognition that any ESM system making use of such EMS would also have to provide approaches that small and medium size enterprises could implement.

5. Another component would consist of ESM guidelines, including ″core performance elements,“ to be used in conjunction with EMS, specifically relating to recovery of wastes. It was foreseen that these performance elements may be quite general in nature, pertaining to the recovery of all types of wastes, covering collection, transport, storage and recovery including the disposal of pertinent residues. The said applies also to wastes sent off-site for further recovery and/or final disposal. More specific guidelines may be necessary for certain problematic waste and/or material streams, such as personal computers.

6. For specific waste and material streams mandatory or voluntary collection schemes are in place in all OECD countries, a number of which to date implement the principle of Extended Producer Responsibility (EPR). This concept presumes that manufacturers and importers of products should bear a significant degree of responsibility for the environmental impacts of their products throughout the product life-cycle, including upstream impacts inherent in the selection of materials for the products, impacts from manufacturers' production process itself, and downstream impacts from the use and disposal of products.

Producers and importers accept their responsibility when they design their products to minimise life-cycle environmental impacts, and when they accept legal, physical or socio-economic responsibility for environmental impacts that cannot be eliminated by design. Other product stewardship programmes are used by some countries that provide for "Shared Responsibility" across a wide array of producers, retailers and consumers, waste management firms and government. Due to the existence of and continued development of all these programmes there may be no need to separately address collection within the context of the core performance elements that are presented below.

7. In the OECD context ESM could be defined as: "*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*".

8. The ESM guidelines should be operative mainly at the facility level, while taking into account the wider needs for ESM at the international and/or national, sub-national, and/or regional level.

CORE PERFORMANCE ELEMENTS OF ESM GUIDELINES

9. Recovery facilities should, within the framework of laws, regulations and administrative practices in the countries in which they operate, and in consideration of relevant international agreements, principles, objectives and standards, take due account of the need to protect the environment, public health and safety, and generally conduct their activities in a manner contributing to the wider goals of sustainable development. In particular, the following core performance elements of ESM guidelines would apply to waste recovery facilities including preceding collection, transport, treatment and storage and subsequent storage, transport, treatment and/or disposal of pertinent residues:

1. Adequate Regulatory Infrastructure and Enforcement Should Exist to Ensure Compliance with Applicable Regulations

10. A regulatory infrastructure and enforcement at some governmental level should exist, that would ensure compliance with applicable regulations. It is, however, understood that the legal requirements, e.g. authorisation/license/permit requirements and conditions, may vary from country to country and from operation to operation.

11. A regulatory framework and national environmental and/or waste legislation are considered to be prerequisites for controlling transboundary and/or domestic movements and recovery of wastes. Legislation and measures adopted at the national level should also include provisions on the enforcement. National legislation should also consider relevant international agreements, principles and standards for ensuring that a due account has taken to save natural resources and protect human health and the environment.

2. The Recovery Facility Should Be Authorised

12. The recovery facility should be authorised under applicable domestic law for receiving waste from domestic and/or transboundary sources and perform recovery operations on them, including their intermediate storage and submission of pertinent residues to further recovery and/or final disposal. In relation to the recovery process concerned, the authorisation should list the wastes categories that can be recovered and specify emission controls and/or limits to air, land and water, including wastes. In addition,

the authorisation shall describe the recovery and storage capacity of the facility, in particular the amount of unprocessed hazardous wastes as well as their residues that may be temporarily stored on site.

13. The authorisation should require the recovery facility to apply available "state-of-the-art" techniques (= BAT = Best Available Techniques) with technical and operational feasibility and economical viability, i.e. technology, processes, equipment and operations that are based on relevant scientific knowledge, whose functional value has been successfully tested in operative comparable plants.

14. The competent authorities should conduct regular inspections for controlling compliance with all legal requirements taking into account enforcement priorities and available resources. The authorities should then also consider the need for amending the authorisation requirements, their continuity in the existing form, length of the their extension and/or termination in case of imminent danger to human health and/or the environment due to the emission(s) exceeding controls and/or limits, severe mismanagement or fraud of monitoring results.

3. The Recovery Facility Should Take Adequate Measures to Safeguard Occupational and Environmental Health and Safety

15. Workers of recovery facilities may be exposed to occupational health and accident risks, related to the content of the materials they are handling, emissions from those materials and the equipment being used. The recoverable materials may include radioactivity, hazardous chemicals, heavy metals, they may emit toxic gases or release harmful dust. Workers may have to handle heavy loads, be exposed to vibration and noise of machinery. Also, the risk of fire, explosion, etc. may exist in some cases. Consequently, adequate measures should be taken against these occupational health and safety risks.

16. People living and working in the vicinity of a recovery and/or disposal facility may also be exposed to environmental health and accident risks. These risks relate mainly to the emissions, including noise, from the recovery process and transport to and from the facility. Therefore, adequate measures should be taken to minimise also these impacts to human health.

4. The Recovery Facility Should have an Applicable Environmental Management System (EMS) in place

17. All recovery facilities should be certified/verified by an independent verifier/third party certifier under an applicable environmental management system (EMS), including:

- Measurable objectives and, where appropriate, targets for continual improvements in environmental performance, including periodical review of the continuing relevance of these objectives;
- Regular monitoring and verification of progress toward environmental, health and safety objectives;
- Collection and evaluation of adequate and timely information regarding the environmental, health and safety impacts of their activities;

18. Large recovery facilities should conduct regular inspections and/or audits to verify compliance with rules and regulations. These should be carried out through external independent "Auditors" (e.g. European Eco-Management and Audit Scheme (EMAS); ISO 14 000 Environmental Management).

19. Regular audits may create a burden and impose excessive costs on small and medium size enterprises (SMEs). Therefore, the audits of SMEs normally are less complicated and carried out less frequently than those of large facilities.

5. The Recovery Facility Should Have an Operative Monitoring, Recording and Reporting Programme

20. A Recovery facility shall have an operative monitoring and recording programme which covers:

- monitoring and recording of process parameters and compliance with the safety requirements;
- monitoring and recording of the authorisation requirements;
- monitoring and recording of effluents and emissions; and
- monitoring and recording of incoming and outgoing wastes and materials and, in particular stored stocks and residues of hazardous waste.

21. All relevant environmental records should be maintained and made available to competent authorities according to the national legislation and authorisation requirements. Recovery facilities recovering (and generating) hazardous wastes shall report origin, types, amounts and location of hazardous wastes to the competent authorities.

22. On-site recovery or disposal of wastes generated by the process concerned must be carried out in compliance with the relevant authorisation requirements and recorded appropriately. In case of off-site recovery or disposal, outgoing wastes shall be recorded appropriately and handed over only to environmentally sound recovery and/or disposal operations.

23. Taking into account business confidentiality and the protection of intellectual property rights, the environmental, health and safety impacts of the activities of the recovery facility should be reported to the public in a reliable and timely manner. The report should also include information on the progress in improving environmental performance of the recovery facility.

6. The Facility Shall Have an Appropriate and Operative Training Programme for the Personnel

24. A facility shall have a system in place for proper identification and handling of any hazardous components in incoming wastes. Personnel involved in the management of wastes and materials, in particular hazardous wastes and materials, must be capable and adequately trained to be able to handle properly the materials, equipments and processes, eliminate risk situations, control releases and carry out safety and emergency procedures.

25. Responsibility, authority and interrelations of key personnel who manage, perform and monitor the activities which may have adverse effects on the environment must be defined and documented.

26. Adequate operative training programme for the personnel shall be in place and properly documented.

7. The Recovery Facility Should Have an Information Exchange Programme to Optimise Recovery

27. The recovery facility should establish and maintain an information exchange programme with the waste producers with the aim to optimise the recovery rate and quality of the product and minimise the generation of waste from the recovery process. Correspondingly, the recovery facility should get feed back also from the subsequent recovery and/or disposal facility concerning the optimum composition of his wastes. The purpose of this programme is to adjust the type and quality of the recoverable waste to facilitate improvements in the recovery process.

28. This programme should cover all types and amounts of waste accumulating in the recovery facility and indicate options for optimal recovery and practical prevention and reduction of waste. Waste streams should be treated distinctively which would facilitate identification of optimised solutions, thus entailing advantages, such as savings on disposal costs. The programme should be constantly updated in order to be able to monitor the waste management on a continuous basis and evaluate the effects of measures taken.

8. The Recovery Facility Should Have a Verified Emergency Plan

29. A facility shall have a constantly updated plan for monitoring, reporting and responding to accidental or otherwise exceptional pollutant releases, including emergencies such as accidents, incidents, fires, explosion, abnormal operating conditions etc. The emergency plan should be based on the evaluation of existing and potential risks. An emergency co-ordinator should be designated to handle hazardous wastes. Large facilities would need a complete contingency plan. The plan should cover both the short-term and long-term remedial activities.

9. The Recovery Facility Should Have a Plan for Closure and After-care

30. For the case of closure the recovery facility should have a periodically updated plan for the clean-up and after-care of the facility site. An adequate financial guarantee (e.g. insurance, fund, earmarked fees) should be provided by large recovery facilities to assure clean up of the facility site in case of major pollutant releases, severe mismanagement of wastes and materials, and/or closure of the facility.

COMMENTARY ON ESM CORE PERFORMANCE ELEMENTS

Commentary on the Scope and Goal of ESM

31. A starting point for the establishment of *international guidelines on environmentally sound management of wastes (ESM) destined for recovery operations* arises from the notion that the level of environmental and health safety varies widely within the recovery and associated waste management facilities, even among the OECD countries. Basel Convention, revised OECD Council Decision C(92)39/FINAL and the EC Shipment Regulation 259/93, as amended, all require that exported and imported waste shall be managed in an environmentally sound manner, yet there is no common understanding what ESM actually means, what are its criteria and how its performance can be measured.

32. It is obvious that compliance with the domestic rules, regulations and standards is the primary obligation of recovery facilities in providing the required environmental and health safety. The ESM guidelines are not a substitute for, nor should they be considered to override relevant domestic rules and regulations. They represent supplementary principles and standards of behaviour of a non-legal character. ESM guidelines are meant to provide a common set of measures to level the playing field among recovery facilities within the OECD area.

33. What ESM actually means? A working definition has been provided in paragraph 7 in trying to encapsulate the essence of ESM. For the time being the principal focus is recovery and closely related waste management activities, but recovery should not be addressed in isolation, but rather in the context of waste prevention and minimisation and contribution to sustainable development.

34. What ESM consists of? The OECD framework for ESM consists basically of three elements: i) domestic rules, regulations and standards; ii) ESM guidelines; and iii) an environmental management system (EMS). ESM guidelines have two components: a) core performance elements (CPEs), which cover all wastes; and b) waste stream specific guidelines, such as those for personal computers (PC guidelines), which may cover more broadly even used and scrap materials, or in some cases narrowly only hazardous wastes. EMS in principal terms provides a "good housekeeping" system for a recovery and associated waste management facilities in compliance with domestic rules and regulations and the ESM guidelines provide the supplementary element to "level the playing field" among recovery and related waste management facilities, for wastes received from domestic and/or transboundary sources.

35. What is the scope of ESM in the OECD context? The OECD approach toward ESM should cover *all wastes destined for recovery operations*. Hazardous wastes are nowadays under a very tight legislative control in all OECD Member countries, hence no particular value added will be gained by further voluntary ESM measures. However, recovery of non-hazardous wastes is presently controlled rather differently in different OECD countries and, therefore, voluntary ESM measures would create most environmental and health value added in the recovery of non-hazardous wastes. In addition, the OECD revised Control System [C(2001)107] covers both the hazardous and non-hazardous wastes destined for recovery operations.

36. The ESM should *be operative mainly at the recovery facility level, but should also address the preceding collection, transport, storage and treatment of recoverables*. Further, ESM *should also target the storage, transport, treatment and/or disposal of residual waste from the recovery process*. The OECD Control System on recoverable wastes and the different control systems for transport of dangerous goods provide appropriate controls for the transport of hazardous wastes, therefore, the voluntary ESM system would gain environmental benefits in addressing the transport of non-hazardous wastes.

37. For specific hazardous and non-hazardous waste and material streams mandatory or voluntary collection schemes are in place in all OECD countries, a number of which to date implement the principle of Extended Producer Responsibility (EPR). Other product stewardship programmes are used by some countries that provide for "Shared Responsibility" across a wide array of producers, retailers and consumers, waste management firms and government. Due to the existence of and continued development of all these programmes there may be no need to separately address collection within the context of the ESM core performance elements.

38. Small and medium size enterprises (SMEs) account for over 90 % of OECD enterprises and are not insignificant contributors to pollution and resource consumption, regardless of their size (1-249 employees). It may be justified to state that also over 90 % of recovery facilities are SMEs. Environmental management certification and registration systems are difficult for many small firms to understand, adopt and use. They may also be too complex and bureaucratic for typical SME managers. Moreover, environmental certification can be expensive and their benefits are not always apparent in terms of helping with environmental compliance, attracting and retaining customers, reducing costs or leading to improved products. As a result, many small firms do not see environmental management systems as a cost-effective way of enhancing their business (OECD 2001b). The said evidently means that any ESM approach needs to take account of the particular requirements of SMEs. Governments already use a range of programmes to encourage SME participation in ISO 14001 and EMAS, which still may need to be intensified in promoting implementation of ESM.

39. The ESM core performance elements should not be applied to: i) military establishments, installations or storage facilities; ii) transport, storage and treatment of radioactive substances; and iii) transport of dangerous goods or wastes in pipelines, including pumping stations.

Commentary on the First Element

40. The existence of regulatory framework and enforcement are considered very important for promoting the creation of the "level playing field" among the recovery facilities in OECD Member countries. The main purpose of this infrastructure is to ensure the effective implementation of the rest of the performance elements. The measurement of this element is not very simple, since the regulatory infrastructure and enforcement are very different in different OECD countries. Verification of the existence of relevant legislation can be done fairly easily, but the measurement of the "proper" enforcement needs further discussion. Possible measures could be e.g. number of permit applications pending decision, number of annual inspections per facility, etc.

Commentary on the Second Element

41. In OECD countries, recovery and related waste management facilities must apply for a government authorisation to initiate or continue their activities. This public authorisation takes a form of a license or permit granted by the competent authoritiy on the basis of a variety of environmental, health, economic and territorial criteria. The permitting process seeks to ensure proper environmental management of the permitted facility. A permit may also address environmental and health safety issues, in particular in case of emergency situations.

42. Over the last thirty years, permitting systems have proven to be very effective in achieving remarkable pollution reductions from stationary sources. Where major industrial accidents have taken place, e.g. in Seveso, Bhopal, the permitting systems were either inadequate, non-existent or poorly enforced. These incidents clearly demonstrate that strong, predictable and consistent legislation, enforcement and permitting system are prerequisites for the protection of occupational and public health and the environment.

43. Along the technical development new environmental and health challenges have emerged, such as persistent pollutants, climate change, biodiversity, etc. This development, together with increasing environmental awareness, scope and complexity of environmental and health problems, has led to re-evaluation of the benefits of the permitting systems. Nowadays environmental policies are more focused on the resource efficiency and pollution prevention and therefore the most beneficial policy intervention point is often much more upstream in the life cycle than what permitting allows. Therefore, permitting systems may not be alone as workable tool as before, yet still an excellent pollution reduction tool in combination with other pollution reduction instruments (OECD 1999).

44. In some OECD countries permits require an integrated approach: "*emission controls and/ or limits shall be designed to prevent, and where this is not practicable, generally reduce emissions and the impact to human health and the environment as a whole without shifting emissions from one medium to another*". This is to guarantee that all wastes and materials are managed to minimise adverse exposures to workers and releases to the environment (EC 1996a). In some other countries separate permits are still addressing the air, health, water and waste issues. Therefore, the permitting requirement of element 2 refers to the domestic legislation.

45. Depending on the domestic requirements and practices also elements 3, 5, 6, 7, 8 and 9 could be addressed in the permit, rather than separately. The financial guarantee (in element 9) may not, however, be a matter that could be handled within a permit/licence.

46. Paragraph 13 requires the facility to apply available “state-of-the-art" techniques. This means that the applied techniques are best available, when taking into account technical and operational feasibility and economical viability, i.e. technology, processes, equipment and operations that are based on relevant scientific knowledge, whose functional value has been successfully tested in operative comparable plants. The reason behind this requirement is that ESM should not only level the playing field, but also improve the quality of waste recovery, both in terms of the recovery rate and economics and in terms of environmental and health safety. This does not mean that the recovery process has to fulfill BAT requirements continuously. It means that when it is required by the competent authorities and/or it would be economically, technically and environmentally feasible to improve the process, a BAT option should be selected.

47. A suitable measure of performance may be that the measured emissions are below the set limit values and other permit/licence requirements are fulfilled. This should be verified through periodical inspections by competent authorities.

Commentary on the Third Element

48. It is worthwhile to recognise that the recovery facility should not only have in place measures to safeguard the occupational health and safety, but also implement measures to safeguard the health and safety of the people living and/or working in the vicinity of the recovery facility. Suitable measures for performance may be the amount of annual accidents, amount of annual outside complaints, annual number of sick-leave days due to occupational health problems, annual investments in safety measures and annual accident insurance costs. Possible benchmarks could be the sector average and the trend within the facility.

Commentary on the Fourth Element

49. At the moment there are two basic environmental management systems (EMS) in place: ISO 14 000 series and the European Eco-Management and Audit Scheme (EMAS). In addition, there are domestic systems which are specially tailored to address the needs of SMEs, such as the "Environmental Lighthouse Programme" in Norway and the "Eco-Profit" programme in Austria. Whatever EMS system will be

selected, it is most important that the government, or large companies have a partnership programme in place to provide support for SMEs, not only in financial terms but also in terms of information and know-how sharing. Experience has shown that SMEs are not willing and/or able to implement EMS without a considerable support from "big brothers", like government or large companies. However, it has also been experienced that instituting an environmental management system can provide economic benefits to companies through reduced operating and insurance costs, improved energy and resource conservation, reduced compliance and liability charges, improved access to capital, improved customer satisfaction and improved community and public relations. In addition, there are initiatives underway to reduce regulatory oversight to companies with environmental management systems (ENDS 2000).

50. Most of the ESM core performance elements are actually the same what ISO 14 001or EMAS are requiring. Therefore, the purpose of these guidelines is not to reinterpret any existing instruments or to create new instruments. They are just intended to create a common understanding around the paradigm "environmentally sound management" of wastes.

51. In this context it may be appropriate to emphasise the importance of the third party certification and public environment and health reporting. To gain full transparency on the environmental and health aspects of a recovery facility, the performance should be measured against set targets and verified (under EMAS) or certified (under ISO 14 001) by accredited environmental verifiers/certifiers. In addition, the recovery facility should publish a report describing the firm's EMS system and the achieved environmental and health performance. In this case the benchmark will be the set targets, existing certification or registration and periodically produced environmental and health report.

52. Concerning SMEs, the procedures for achieving certification/registration are normally simplified in comparison with large recovery facilities. However, the underlying principle of the ESM is that *all environmentally sound recovery facilities should have the certification/registration under an applicable EMS and publish periodically an environment and health report.*

Commentary on the Fifth Element

53. A monitoring, recording and reporting system is an essential element of "good housekeeping" in a recovery facility. An internal monitoring and control system is needed to manage the facility's activities. Further requirements are coming through permits or licences and established environmental management systems. In combination, all this information about the activities of recovery and associated activities, including the environmental and health impacts, establish an important vehicle for building confidence with authorities, clients and public in large. This vehicle is most effective when information is provided in a transparent manner and when it encourages consultation with employees, customers, suppliers, contractors, local communities and with the public in large so as to promote a climate of long-term trust and understand on environmental and health issues of mutual interest.

54. The purpose of the ESM system within the OECD is also to encourage recovery and associated facilities to work toward improved level of environmental and health performance in all parts of their operations, even where this may not be formally required by existing practice in the countries concerned. Operative monitoring, recording and reporting system strongly supports this purpose in verifying the achievements and disseminating information on the progress made to all stakeholders so as contributing to further confidence on the responsible behaviour of the recovery facility. Suitable performance measures for this element are the number of published reports per annum, the existence of required records and the number of samples taken, analyses carried out and checks made per annum.

Commentary on the Sixth Element

55. Recovery facilities have an important role to play in the training and education of their employees with regard to environmental and health matters. Therefore, companies are encouraged to discharge this responsibility in as broadly as possible, especially in areas related to occupational health and safety. Over time, investments in education and training will definitely pay back their costs, and even with interest, since well-trained employees are also well motivated and will better contribute to the success of the company. In addition, high training level of employees also improves the outside reliance on the competence of the company. Suitable performance measures for this element would be the number of training courses per annum and the number and percentage of the personnel trained per annum.

Commentary on the Seventh Element

56. To optimise waste recovery the recovery facility should establish and maintain a constant dialogue with waste generators and downstream recovery and disposal facilities concerning the quality of the waste generated. It has been said that 80 % of a typical product's environmental impact is determined by its design (ENDS 2001). For example, life cycle analysis showed that the priority for a communications supplier was to reduce the use of substances that are hazardous or inhibit recycling. This analysis led to single out of antimony because it was occuring at levels that prevented recycling. Although bismuth levels were not high enough to rule out recycling, the substance was also targeted for reduction as the contamination was reducing revenue from copper smelters. The current focus of this supplier is on halogenated flame retardants and lead.

57. Correspondingly the recovery facility should have a constant dialogue with the downstream recovery and disposal facilities so as to adjust the recovery process to generate only wastes which are suitable for further processing and do not cause additional environmental and/or health problems when finally disposed of. These efforts are normally beneficial not only in the environmental but also in economic terms.

58. Suitable performance indicators for this element may be the increase of the recovery rate, the improvement of the quality of the recovered material and increased income per recovered material unit. Further discussions may still be needed for identification of the most suitable performance indicators.

Commentary on the Eighth Element

59. The recovery facility should establish and maintain an emergency plan which would: i) identify potential emergency situations; ii) identify proper responses to potential emergency situations; and iii) identify short-term corrective measures and long-term improvements. The plan should be periodically reviewed and tested, and revised as appropriate. In particular after the occurrence of accidents or emergency situations, the plan should always be reviewed and updated. This plan should be periodically verified by the competent authority and/or external auditor.

60. Suitable performance indicators for this element may be the number of emergency rehearsals per annum, number of emergency plan reviews per annum and the number of injuries per accident and annum.

Commentary on the Ninth Element

61. The recovery facility should have a periodically updated plan for carrying out the clean-up and after-care of the site in case of closure of the facility. The existence and the update of this plan should be periodically checked by the competent authority and/or the independent auditor.

62. Where national legislation so requires, a financial guarantee shall be provided to assure clean-up of the recovery and associated facility sites in case of major pollutant releases, severe mismanagement and/or closure of the facility. In those OECD countries where legislation does not require such a guarantee, large recovery and associated facilities are encouraged to implement a financial instrument for facilitating clean-up of the sites concerned. The existence of this financial instrument should be periodically checked by the competent authority and/or the independent auditor.

REVIEW AND UPDATE OF THE ESM CORE PERFORMANCE ELEMENTS

63. The OECD guidelines on environmentally sound management (ESM) of wastes destined for recovery operations, including the core performance elements, should be periodically reviewed to adapt them into the technical development. The OECD's Working Group on Waste Prevention and Recycling (WGWPR) shall make proposals for this purpose.

GLOSSARY OF TERMS

Authorisation A company/person must have an official decision (authorisation) by a competent authority to be able to lawfully operate a recovery facility under certain conditions. In different OECD countries different names are used, such as ***permit*** or ***license***. Also, a recovery facility may need one or more authorisations to be able to lawfully operate under a jurisdiction (s). In some countries only one "environmental permit" may be sufficient, while in other countries more permits are needed, such as "siting permit", "waste permit", "emission permit", "discharge permit", etc.

A Large Recovery Facility has 250 employees or more and an annual turnover more than EURO 40 million, or an annual balance-sheet total over EURO 27 million.

Optimisation of recovery means the best yield of recovery in terms of quality and quantity when taking into account technical and economical possibilities.

Recovery facility means a facility which, under applicable domestic law, is operating or is authorised or permitted to operate in the country concerned to receive wastes and to perform recovery operations on them.

Disposal facility means a facility which, under applicable domestic law, is operating or is authorised or permitted to operate in the country concerned to receive wastes and to perform disposal operations on them.

Recovery operation means any operation specified in Appendix 5 B to the OECD Revised Council Decision C(92)39/FINAL [C(2001)107].

Disposal operation means any operation specified in Appendix 5 A to the OECD Revised Council Decision C(92)39/FINAL [C(2001)107].

Hazardous wastes are:

i) Wastes that belong to any category contained in Appendix 1 to OECD Council Decision C(2001)107 unless they do not possess any of the characteristics contained in Appendix 2 to the Decision C(2001)107; and

ii) Wastes that are not covered under paragraph (i) above but are defined as, or are considered to be, hazardous wastes by the domestic legislation of the OECD Member country [C(2001)107].

Wastes are substances or objects, other than radioactive materials covered by international agreements, which:

i) are disposed of or are being recovered; or

ii) are intended to be disposed of or recovered; or

iii) are required, by the provisions of national law, to be disposed of or recovered [C(2001)107].

Radioactive substance is any substance that contains one or more radionuclides the activity or concentration of which cannot be disregarded as far as radiation protection is concerned (EC 1996c).

Small and Medium Size Enterprises (SMEs)

i) A Medium Size Enterprise:

- has 50-249 employees;
- has an annual turnover not exceeding EURO 40 million, or an annual balance-sheet total not exceeding EURO 27 million;
- is less than 25 % owned by a non-SME.

ii) A Small Size Enterprise:

- has 10-49 employees,
- has an annual turnover not exceeding EURO 7 million, or an annual balance-sheet total not exceeding EURO 5 million;
- is less than 25 % owned by a company falling outside the definition "Small Size Enterprise".

iii) A Micro Size Enterprise:

- has fewer than 10 employees (EC 1996b).

State-of-the-art-techniques (= Best Available Techniques = BAT) means the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emission and their impact on the environment (OECD 1999);

- "best" means most effective in achieving a high general level of protection of the environment;
- "available" means techniques that are developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and benefits, whether or not the techniques are used or produced inside the jurisdiction in question, as long as they are reasonable to the operator;
- "techniques" include both the technology used and the way in which the facility is designed, built, maintained, operated and decommissioned.

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