

**Report concerning the Second
OECD Workshop on
Environmentally Sound Management of Wastes
Destined for Recovery Operations**

Vienna, Austria 28-29 September 2000

1. BACKGROUND

The Working Group on Waste Management Policy (WGWMP) reviewed on 1-3 November 1999 the outcome of the first ESM Workshop, which was held in Cancun, Mexico on 28-29 October 1999. Based on the recommendations from this first ESM Workshop, the WGWMP decided to undertake the following work in 2000 as part of the OECD's waste management programme:

- Declassify the Cancun ESM workshop report in early 2000;
- Collect Member country experience on ESM and make it publicly available;
- Start developing pilot ESM standards/guidelines for personal computers (PCs);
- Develop guidelines/checklists for national competent authorities to consider ESM of waste exports;
- Organise the second ESM workshop in Autumn 2000.

The different areas of the 2000 ESM work were assigned as follows:

Canada took the lead to carry out a survey on Member country experiences on ESM. Seventeen Member countries provided information for this survey.

The United States took the lead on developing pilot international ESM standards/guidelines for personal computers (PCs). At this stage the work focused on recycling, while also recognising the need to address at a later stage the upstream and downstream requirements, such as design for environment and final disposal.

Austria took responsibility to create checklists/guidelines, to be used by national competent authorities in evaluating the compliance of waste exports with the developed ESM standards/guidelines. Those were developed in close co-operation with the United States.

The second ESM Workshop was hosted by the Government of Austria in Vienna on 28-29 September 2000. It brought together 54 experts on ESM from Member countries, intergovernmental organisations and industry. In basic terms, this two-day workshop consisted of discussions on the outcome of the three above mentioned lead country projects and direction of future OECD work on ESM.

This report provides a summary of the major workshop components, a discussion of the direction coming out of the workshop, as well as recommendations to WGWMP. This report focuses on key issues, particularly those relevant to future efforts to develop standards/guidelines for ESM.

2. SESSION 1: EXPERIENCE WITH ESM

The Canadian survey revealed that the most prevalent reason given for the occurrence of material exports and imports was the lack of domestic processing facilities and economics.

The survey clearly demonstrated that there is not a universal approach to practices related to the ESM of hazardous wastes destined for recovery operations. While this has led to a variety of adopted approaches, some common elements were identified, such as: ESM standards are either design-based and/or performance-based; ESM programmes/legislation generally exist for hazardous waste exports and imports, as well as for domestic wastes; the environmental basis for ESM programmes/legislation typically includes the protection of human health and the environment, and promotion of effective material recovery; and the scope of activities cover transportation, interim storage, processing at the receiving facility and the final disposal of residues. However, more universal programme structures may be of benefit to Member countries.

One intervention under Session 1 reflected views of industry and employers on ESM, emphasising that:

- ESM should encourage and promote the environmental, social and economic aspects of recovery;
- ESM should not cause distortions of the market; and that
- ESM should encourage the improvement of environmental performance of the recycling industry through better management and technology rather than providing criticism to companies who are not yet well advanced, since the introduction and improvement of environmental management systems is a 'natural' step-by-step process.

Another intervention emphasised that the personal computer (PC) industry continues to develop products that contain fewer and less harmful chemicals. The two drivers largely responsible for this outcome are the increased functionality of components, which enable the same job to be accomplished with fewer resources, and the reduced size of components and products, which is being driven by technological advancements.

The PC of the future will continue to evolve into a "cleaner" and more environmentally friendly device. Moreover, studies have shown that the PCs of today and yesterday do not pose significant environmental risks. PCs are mainly composed of non-hazardous constituents. Hazardous constituents that may be present are usually contained in *de minimis* concentrations – usually lower than the concentrations found in other household items managed as municipal solid waste. Many potentially problematic compounds can be easily removed and recycled at properly equipped facilities with trained personnel.

3. SESSION 2: GUIDELINES/STANDARDS FOR ESM

A major function of the draft U.S. paper on the ESM guidelines was to serve as a vehicle for focusing discussion at the second ESM Workshop on the principal issues regarding the development of ESM guidelines/standards. Given the major differences in the views expressed at the first ESM Workshop, it was decided that a "pilot" set of guidelines/standards should be developed for used personal computers (PCs). It was hoped that the draft will inform and assist steps towards resolution of the numerous overarching issues that are present in the development of ESM guidelines generally, as well as those major issues that are somewhat more particular to the management of PCs.

It was noted that one of the major issues that is attendant with development of ESM guidelines is the question of whether the guidelines should provide rather general information on various means to achieve ESM, or whether the guidelines should be of a more prescriptive nature. The more generic approach would allow a high degree of flexibility to countries and facilities to tailor their programs and operations to their individual needs (as well as to be mindful of evolving technology), while the alternative approach would provide greater clarity as to the specific processes that constitute ESM.

As a starting point, the first draft of ESM guidelines provides a somewhat general approach. There are, however, numerous areas where the guidelines could be made much more prescriptive, such as i) specific facility permit conditions (e.g., emission limits); or ii) a specific list of the minimum regulatory elements of an adequate governmental infrastructure. However, the more generic approach was chosen for now, in recognition of the wide variety of national approaches and industry practices currently in place throughout the OECD.

The other key notions, or questions, which came out from the U.S. submission were:

- i) could the guidelines provide an OECD wide benchmark on ESM;
- ii) how to ensure compliance with the ESM guidelines;
- iii) should the ESM guidelines be developed to cover all waste streams in general terms, or be more waste stream oriented, or a combination of both approaches;
- iv) should the guidelines address in addition to recovery also some upstream or downstream issues because of their link to enhancing environmentally sound recovery; and
- v) should ESM programmes be designed to be useful for both domestic and transboundary applications?

One intervention under Session 2 described ESM "as a global concept with concrete applications" within the framework of the Basel Convention. Progress in ESM needs to be built on the practical work carried out at the national level as well as making use of the technical and scientific expertise developed within intergovernmental bodies, in particular in regard to hazard characterisation and risk assessment. Each stakeholder should bring its own specificity, expertise and experience in the design of an operational ESM framework.

An intervention from the business community provided an outline for a strategic planning approach (mission, goals, strategies and implementation) towards a systems management approach for defining and implementing ESM. Some suggested particular elements were referenced and described briefly. The difference between ESM goals and strategies was highlighted.

4. SESSION 2: BREAK-OUT GROUP DISCUSSIONS

During the Session 2 there were three break-out groups addressing the following topics:

Group 1: Scope of ESM guidelines/standards

- should ESM guidelines cover only exports of waste or also domestic programmes?;
- should ESM guidelines cover only hazardous waste, or also other wastes and non-wastes?;
- should ESM guidelines cover the whole waste hierarchy?; and
- should OECD-wide ESM guideline targets and/or recovery/reuse/recycling targets be developed?

Group 2: Are general ESM guidelines also needed to cover all waste management practices?

- e.g., incineration and landfilling, or should guidelines be only waste stream specific ?

Group 3: Tools and instruments to ensure ESM

- how to ensure compliance with the guidelines ?; and
- voluntary/mandatory/negotiated approaches ?

The outcome of each of the break-out group discussions was presented in summary to the workshop plenary.

Group 1: outcome of discussions:

1. *Should ESM guidelines cover only exports of wastes, or also domestic programs?*

- Guidelines would be relevant in both circumstances; and
- Developing guidelines should not lead to different control standards for domestic and imported wastes within OECD.

2. *Should ESM guidelines cover only hazardous waste, or also other wastes and non-wastes?*

- The group agreed that this was not an appropriate forum for discussing the waste/non-waste issue nor the hazardousness of wastes;
- The group recognised that many significant waste streams, for example electronic scrap are composite and consist of both hazardous and non-hazardous components;
- Therefore, it seems sensible to cover both hazardous and non-hazardous wastes; and
- The group is not proposing that guidelines should be used to apply new controls to Green List wastes within the context of the C(92)39/FINAL.

3. *Should ESM guidelines cover the whole waste hierarchy?*

- The group agreed that the focus of the guidelines should be on waste recovery/minimisation and prevention;
- However, if ESM guidelines consider wastes on a cradle-to-grave basis, there will be some need to consider final disposal, but only to the extent of the non-recoverable part of the recoverable waste; and
- In some circumstances, there may also be some need to consider the design-for-environment to minimise waste.

4. *Should OECD-wide ESM guideline targets, and/or recovery/reuse/recycling targets be developed?*

- Developing aspirational goals for recovery rates or waste minimisation may be a good idea for the future;
- However, this would be difficult when everyone is starting at different level; and
- Therefore, the group considered that any such proposed work would benefit of further consideration.

Group 2: outcome of discussions:

Are general ESM guidelines needed to cover all waste management practices, e.g., incineration and landfilling, or should guidelines be only waste stream specific?

- The starting point for discussions was article 2.8 of the Basel Convention: "ESM of hazardous and other wastes" means taking all practicable steps to ensure that wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes;
- For the time being the principal focus of an OECD ESM programme should be on recovery. However, to maximise resource efficiency, recovery should not be addressed in isolation and there may be a need to touch upon some upstream or downstream issues because of their link to enhancing environmentally sound recovery;
- Therefore, the ESM guidelines should cover also final disposal (landfilling, incineration), but only to the extent of the non-recoverable part of recoverable wastes; and
- ESM guidance must be flexible (ESM definition varies over time due to the development of technology).

Group 3: outcome of discussions:

Tools and instruments to ensure ESM:

- ***how to ensure compliance with the guidelines; and***
- ***voluntary/mandatory/negotiated approaches ?***

There was general agreement on 6 points:

- i) For the time being, focus on ESM for recovery facilities, with the intention of addressing upstream issues on a different track or later;
- ii) EMSs combined with voluntary, core, and achievable performance elements provide a good basis for assessing ESM; possibly through an ESM Council Act or amended C(92)39/FINAL;
- iii) The core, achievable performance elements could be included in the ISO or EMAS certifying process for recovery facilities;
- iv) Third-party certifiers are well-suited to assess ESM at facilities and this assessment could be incorporated into obtaining ISO or EMAS certification;
- v) Transparent ESM assessment process and elements/criteria, and sufficient information certifiers made easily available; and

- vi) Economic incentives are needed to serve as an important underpinning of strengthening ESM.

Proposed next steps:

- 1) Develop the core, achievable performance elements;
- 2) When developing these elements, consider performance standards being developed by other bodies such as the association of recyclers;
- 3) Involve third-party environmental auditors in the development of the core, achievable performance elements; and
- 4) At a future OECD ESM meeting/workshop have speakers on i) EMS and its relevance for recovery facilities; ii) ISO "interpretive guidelines", a representative from the performance standards committee of the association of recyclers; and iii) third-party environmental auditors with experience relevant to recovery operations.

Plenary discussion addressed the outcomes from different break-out groups, trying to build common understanding on the present status of the work and appropriate elements for future OECD work on ESM. The presentations from government and industry representatives, and in particular the papers contributed by Austria, Canada and the U.S., enabled focused discussion on the potential elements of a programme of ESM of wastes. Certainly, numerous questions regarding scope and content still remain, however, progress was made in identifying a possible framework.

5. SESSION 3: GUIDELINE/CHECKLIST FOR THE EVALUATION OF THE ENVIRONMENTAL SOUNDNESS OF WASTE EXPORTS AND IMPORTS

In the Austrian presentation, the following points were raised:

- The main purpose of the exercise to develop a checklist and explanatory memorandum for used personal computers was to put the term "ESM of PCs" into more concrete terms and provide all interested parties with information on the current "state of the art" of treatment of used personal computers.
- Personal computers are an ubiquitous part of the present life style, with increasing per capita ownership within the foreseeable future. Consequently, the amount of obsolete PCs will also increase considerably within the near future, due to the extremely rapid technological development. In many OECD countries waste PCs are still to a large extent landfilled. Therefore, governments would need to ensure that the obsolete PCs are managed in a more environmentally sound way.
- The pilot checklist and explanatory memorandum should be considered as an administrative tool to help the competent authorities to evaluate the environmental soundness of hazardous waste exports and imports. Although this particular checklist was originally developed for

used PCs, its general elements could serve the development of further checklists within the context of future guidelines on other waste streams.

- The term “state of the art“ is used to describe the stage of development in technological processes and operations, based on relevant scientific knowledge, whose functional value has been successfully proved and guaranteed in comparable plants (technical and operational feasibility and economical viability). Evaluation of the state of the art often requires comparison of procedures, devices or operations at home and abroad.
- The question could be posed whether it is appropriate to compare the level of the management in the importing facility with that required in the exporting country, as specified in the Framework Document on the Preparation of Technical Guidelines for the Environmentally Sound Management of Wastes Subject to the Basel Convention: “*Sites or facilities are authorised and of an adequate standard of technology and pollution control to deal with the hazardous waste in the way proposed, in particular taking into account the level technology and pollution control in the exporting country*“.
- At many instances this approach would be considered to be a trade barrier. E.g. the Austrian National Supreme Court's ruling has repealed some decisions of the Ministry of Environment that objected to exports on the basis of non-compliance with the "state-of-the-art" and when comparing the importing country's standards with those of the exporting country. In addition, different national policies on the management of PCs (electronic scrap) may seriously hamper the effectiveness of recycling policies as transfrontier movements to cheaper waste management systems are likely. Therefore, harmonisation of national standards and requirements for the ESM of PCs (electronic scrap) at the OECD level would be highly desirable.

During the discussion it was emphasized that in the present form the Austrian "Explanatory Memorandum" provides many of the same elements that are reflected in the US guidelines-paper and, therefore, those two documents should be merged. In this context the Secretariat reminded participants that the original purpose of the checklist was to help competent authorities to check the issues which are necessary for the evaluation of whether the management of recoverable wastes in the receiving facility complies with the "ESM Guidelines". The purpose of the "Explanatory Memorandum" is to provide guidance on how to use and fill in the checklist. The checklist is meant to be an administrative tool without any particular legal status.

Two other Austrian interventions described, and emphasised the importance of, "state-of-the-art" collection and treatment of end-of-life waste electric and electronic equipment (EOL WEEE). The issue of separate collection and recycling of EOL WEEE has been a major point of discussion for the past several years in Europe and also in Austria. *The main reasons for these discussions have been the pollutant content of certain components of the appliances and the large proportion of recyclable material contained in this equipment.*

In Austria the following experience has been gained in collecting and treating EOL EEE:

- **Large appliances** are mainly collected together with scrap metals at the municipal collection centres. After dismantling and removal of PCB-containing capacitors and mercury containing components, this fraction is added to scrap metals and mechanically separated in coarse shredding facilities;

- **Appliances with screens** are gathered separately and dismantled. Casings (plastic and partly wood) are separated and presently still landfilled. Hazardous components like large capacitors and buffer batteries and accumulators as well as LCD are removed and specially treated as hazardous waste. The remaining plastic-metal-compounds are submitted to mechanical processing. Remaining questions refer to the environmentally sound recovery or disposal of glass from cathode-ray tubes (CRT) and the realisation of a standardised dismantling depth; and
- **Small electrical appliances** are at first submitted to a removal of hazardous components which are forwarded to specific treatment options according to the special type of pollutant. The appliances of which the hazardous fractions were removed are mechanically processed. By this treatment procedure mainly metal-containing fractions are recovered. The remaining fractions containing mainly plastic are thermally treated or landfilled.

Another intervention from industry explained that along with the increasingly widespread use of personal computers (PCs), there is growing interest in promoting the environmentally sound disposition of end-of-life equipment. The Electronics Industries Alliance (EIA) supports the responsible management of used PCs in a manner that is both protective of the environment and economically viable. These goals can be promoted by encouraging the reuse, refurbishment, and recycling of used PCs, and the development of sensible, risk-based environmental regulations governing the disposition of materials without remaining function or value.

The existing and future infrastructure for managing discarded electronics and waste PCs requires flexibility and efficiency. The success of voluntary asset management programs and other recycling programs depends in large part on the ability of industry and management facilities to move used products and waste PCs across national borders in an efficient and unobstructed manner. It is essential for the OECD WGWMP to develop ESM Guidelines for PCs that promote the expansion of an efficient and cost effective reuse, refurbishment and recycling infrastructure, without creating unnecessary barriers to current and future voluntary asset management programs.

6. SESSION 4: GUIDANCE ON OECD'S FUTURE WORK ON ESM

Three break-out groups were to consider whether the ESM work is presently on the right track (no duplication of work with other bodies) and provide guidance and time-lines for the future ESM work within the OECD:

Group 1: outcome of discussions:

Avoiding duplication

- 1) Discussion about duplication of efforts was limited to the interface with work under the Basel Convention. The group agreed that the purposes of the ESM work being carried out under OECD and Basel was different. OECD should seek to set high level standards for developed countries. Basel, on the other hand, is developing ESM guidelines aimed

primarily at developing countries to assist in capacity building. The Basel standards are likely to be less stringent.

Future work

- 2) Before the further discussion on ESM in the WGWMP, further consideration should be given to the following issues:
 - Merging the Austrian "explanatory memorandum" and the US paper on ESM guidelines (by end 2000);
 - Member countries should have the opportunity to reflect and comment on key issues such as the legal status of any guidelines;
 - Relationship of the ESM work with EMS, for example, the work going on in relation to ISO 14000;
 - The purpose of the guidelines (the Netherlands offered to produce a paper on the subject, taking into account any comments received); and
 - Waste streams which might be the subject of future work (the group agreed that we should focus on those with particular relevance to the OECD area).
- 3) Representatives of the electronic recycling industry offered to road test the guidelines to gauge their worth when applied to practical situations. This study could be presented at any future ESM meeting/workshop.

Time scales

- 4) Further discussion of the issues raised above should take place at the next WGWMP meeting. At that stage, a decision could be taken about the need for a further workshop which could possibly take place in late 2001; and
- 5) Before the end of this Vienna meeting of WGWMP, more discussion on the content of the work programme presented to EPOC would be helpful.

Group 2: outcome of discussions:

Future work

- 1) Merge the US guidelines with the Austrian explanatory memorandum, taking into account considerations provided in the Swiss Guidelines.

Time scales

- 2) Distribute a complete draft of the consolidated paper by end of 2000 for comments by Member countries.

Additional points

- Guidelines should not prescribe the practices, since different ESM-techniques/practices in OECD must be recognized;
- Guidelines should also address closed-loop recycling and take-back programmes;
- ESM should be based on ISO plus (ISO 14 000 series + common performance elements); this may, however, pose problems for SMEs;
- Design-for-Environment and waste minimisation need to be addressed at a later stage of developing ESM guidance; and

- The issue of waste/non-waste should be reflected within the guidelines, since there are considerable amount of exports to non-OECD concerning "second hand products".

Group 3: outcome of discussions:

Future work

- 1) It is best not to try reach full agreement on the definition of ESM but rather try to reach a common understanding on the elements of ESM;
- 2) Agree on what it is we are trying to achieve in the OECD ESM effort – agree on what our goal is in doing the ESM work. Generally agreed that achieving a more level playing field within the OECD on ESM is an important goal;
- 3) Complete the pilots on the ESM PCs guidelines and the checklist.
- 4) Develop a list of aspects to take into consideration when performing ESM assessments, that is, the "core, achievable performance elements";
- 5) Identify which relevant aspects of waste streams cause the most significant problems and focus the OECD ESM effort on those problems. These problems could include matters related to recovery facilities as well as those related to collection; and
- 6) At some point perform an analysis on how to lessen the negative impact of the OECD ESM actions on small and medium enterprises (SMEs).

7. CONCLUSIONS

During the concluding discussion, workshop participants generally recognised that an important goal of an ESM programme would be to: 1) develop high level guidelines/standards in order to foster sustainable development (in particular encouraging waste minimisation, including recovery) and 2) achieve a more level playing field for the environmentally sound management of wastes within the OECD countries.

The presentations from government and industry representatives, and in particular the papers contributed by Austria, Canada and the U.S., enabled focused discussion on the potential elements of a programme of ESM of wastes. Certainly, numerous questions regarding scope and content still remain, however, progress was made in identifying a possible framework.

It was widely and clearly recognised that for the time being the principal focus of an OECD ESM programme should be on recovery. However, to maximise resource efficiency, recovery should not be addressed in isolation and there may be a need to touch upon some upstream or downstream issues because of their link to enhancing environmentally sound recovery.

It was also widely viewed that an OECD ESM programme should be designed to be useful for both domestic and transboundary applications and it should address both the hazardous and non-hazardous wastes.

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 14000 series and 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 enterprises could implement.

As EMS programmes focus on a company's organisational commitment to environmental management in general, it was seen that there remained a need for a specific focus on the adequacy of waste management aspects at the facility level. Thus, another component would consist of ESM guidelines, including "core performance elements," to be used in conjunction with EMS, specifically relating to waste management activities. It was foreseen that these may be quite general in nature, pertaining to the management of many types of hazardous and non-hazardous wastes, covering collection, re-use, recovery and disposal of residues. More specific guidelines may be necessary for certain problematic waste streams.

There was widespread recognition that any programme for the ESM of waste would have to be a flexible one, accounting for a wide variety of considerations, such as:

- the need for Member countries to tailor their waste management programmes to their own needs and circumstances;
- the continuous and rapid evolution of technology;
- the degree of risk presented by materials spanning both hazardous and non-hazardous wastes; and
- the unique needs and capabilities of small and medium enterprises.

It was recognised by all Member countries that the question of the legal status of any programme for the enhancement of ESM within the OECD is of vital importance. Some countries recommended that we try to answer this question very early in the development of the ESM programme, while others suggested that this question be postponed until a later stage. It was agreed that some work could be done on this issue in parallel with progress on the major programme components, such as EMS systems and guidelines.

8. RECOMMENDATIONS TO THE WORKING GROUP ON WASTE MANAGEMENT POLICY CONCERNING FUTURE WORK ON ESM

The Workshop recommended to the WGMP that the following actions be undertaken:

- 1) Refine and elaborate the goals and objectives of the ESM work in the context of fostering sustainable development (in particular encouraging waste minimisation, including recovery) and achieving a more level playing field within the OECD, as well as inviting Member countries to take the lead on preparing a paper for consideration by the Working Group.

- 2) Further develop ESM guidelines on used personal computers and invite Austria and the U.S. to combine their contributions, taking into account, as appropriate, other relevant literature and comments from Member countries, by 31 December, 2000.
- 3) Investigate the possibilities of using environmental management systems, e.g., ISO14000 series and EMAS, as key tools in achieving ESM and in promoting the application in practice of ESM guidelines, but paying careful attention to ways and measures to assist small and medium enterprises to implement such systems.
- 4) Identify waste streams where further ESM guidelines are needed to address particular problems in the management of those wastes within the OECD area, noting that it will often be possible to build on work done elsewhere for other purposes but taking care to avoid duplication of work .
- 5) Invite Member country comments on:
 - Austrian and U.S. contributions on used personal computers, by 30 November, 2000;
 - The legal status of ESM guidelines, by 31 December, 2000; and
 - Waste streams where further ESM guidelines are needed, by 31 December, 2000.
- 6) Authorize the WGWMP Bureau to consider the appropriate future steps towards development of the ESM agenda.