Training Overview

Best Practices for Achieving Environmentally Sound Management (ESM) for Workers and Supervisors

At Facilities that

Refurbish and Recycle

Used and End-of-Life Electronic Products in North America

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Commission for Environmental Cooperation

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Commission for Environmental Cooperation

Best Practices for Achieving Environmentally Sound Management at Facilities that Refurbish and Recycle Used and End-of-life Electronic Products in North America

Training Overview

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Table of Contents

Training Overview.....1

Is This Training for You? 1
Scope of This Training..... 2
What Will the Training Include? 2
Why Is Training on Environmentally Sound Management Important for Small and Medium-sized Enterprises? 3
Learning Tools..... 4
Glossary of Terms 5

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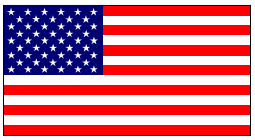

Training Overview

The Commission for Environmental Cooperation (CEC) is an intergovernmental organization established by Canada, Mexico and the United States to implement the North American Agreement on Environmental Cooperation (NAAEC), the environmental side agreement to the North American Free Trade Agreement. The CEC supports cooperation among these three governments to address environmental issues of continental concern. A current priority of the CEC is the environmentally sound management of used, end-of-life, or discarded electronics in North America.

Objective of the Training

The Commission for Environmental Cooperation developed this training program to address the the following objectives:

- To enhance the capacity of small and medium-size enterprises (SMEs)[1] that refurbish or recycle used and end-of-life electronic products in North America to ensure environmentally sound management (ESM) in all facility activities, operations and services.

- To foster and support greening the North American economy in a way that minimizes potential negative impacts on the environment from economic growth, while enhancing the competitiveness of e-refurbishers and e-recyclers in both the domestic and global marketplace.

Is This Training for You?

This training is for: managers, supervisors, and workers at refurbishing and recycling facilities for used and end-of-life (EOL) electronic products.[2] This training is not specifically designed for collectors, consolidators, or transporters.

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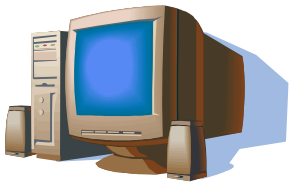
[1] For the purposes of these training materials, SMEs refer to smaller facilities that have limited resources and capacity to advance environmental, health and safety practices and would benefit from additional training and guidance.

[2] Note that the CEC has adapted the content of this training program so that there are separate modules targeted for: group a) managers, and group b) facility supervisors and workers.

Scope of This Training



This training material was originally designed for refurbishers and recyclers that process the following types of electronic products:

- PCs and associated displays, printers and peripherals;
- personal desktop computers, including their central processing units (CPUs) and all other parts contained in them;
- personal notebook and laptop computers, including docking stations, CPUs and all other parts contained in the computers;
- computer monitors, including cathode-ray-tube, liquid-crystal-display and plasma monitors;
- computer keyboards, mice and cables;
- computer printers, including dot matrix, inkjet, laser and thermal printers and any computer printer with scanning or facsimile capabilities; and
- mobile phones.

However, the ESM and concepts presented in training modules can also be applied to a much broader range of products and refurbishing and recycling activities.

What Will the Training Include?

Organization of the training: The training material is organized into six (6) training modules, and one (1) evaluation module at the end. A separate series of modules has been developed for each of the following target audiences:

a) managers and
b) facility supervisors and workers

While similarities exist, the content within each series of modules is streamlined to anticipate the specific needs of each target audience. One module (Module 6) is identical for both target audiences, while two modules (Modules 2 and 5) are designed for managers.

Module	Modules for Managers	Module	Modules for Supervisors and Workers
1a	Introduction to Environmentally Sound Management	1b	Introduction to Environmentally Sound Management
2	Top Management Commitment	-	N/A
3a	Environment, Health and Safety Risk Assessment	3b	Environment, Health and Safety Risk Assessment
4a	Risk Prevention and Minimization	4b	Risk Prevention and Minimization
5	Legal Compliance	-	N/A
6	Record Keeping and Performance Measurement	6	Record Keeping and Performance Measurement
7a	Self-evaluation	7b	Self-evaluation

Training Content: The training focuses specifically on the ESM of refurbishing and recycling electronic products, *not* other aspects of processing (e.g., *not* methods for data destruction and sanitization, *not* basic methods on how to recycle) and *not* health and safety aspects that are of a general nature and non-specific to e-refurbishing and e-recycling.

All material is based on a combination of existing published works, including guidance, verification and certification schemes, best practices, conference papers and presentations, and interviews with technical experts. The intention of this training material is not to replace verification and certification standards but rather to increase access to similar best practices, by a broader audience.

Why Is Training on Environmentally Sound Management Important for Small and Medium-size Enterprises?

Some direct benefits of ESM are identified at the center rings of the circle in Exhibit 1 below, while more indirect benefits are demonstrated in the circle as cascading outward from its nucleus. Business goals, environmental goals, and social goals are included.

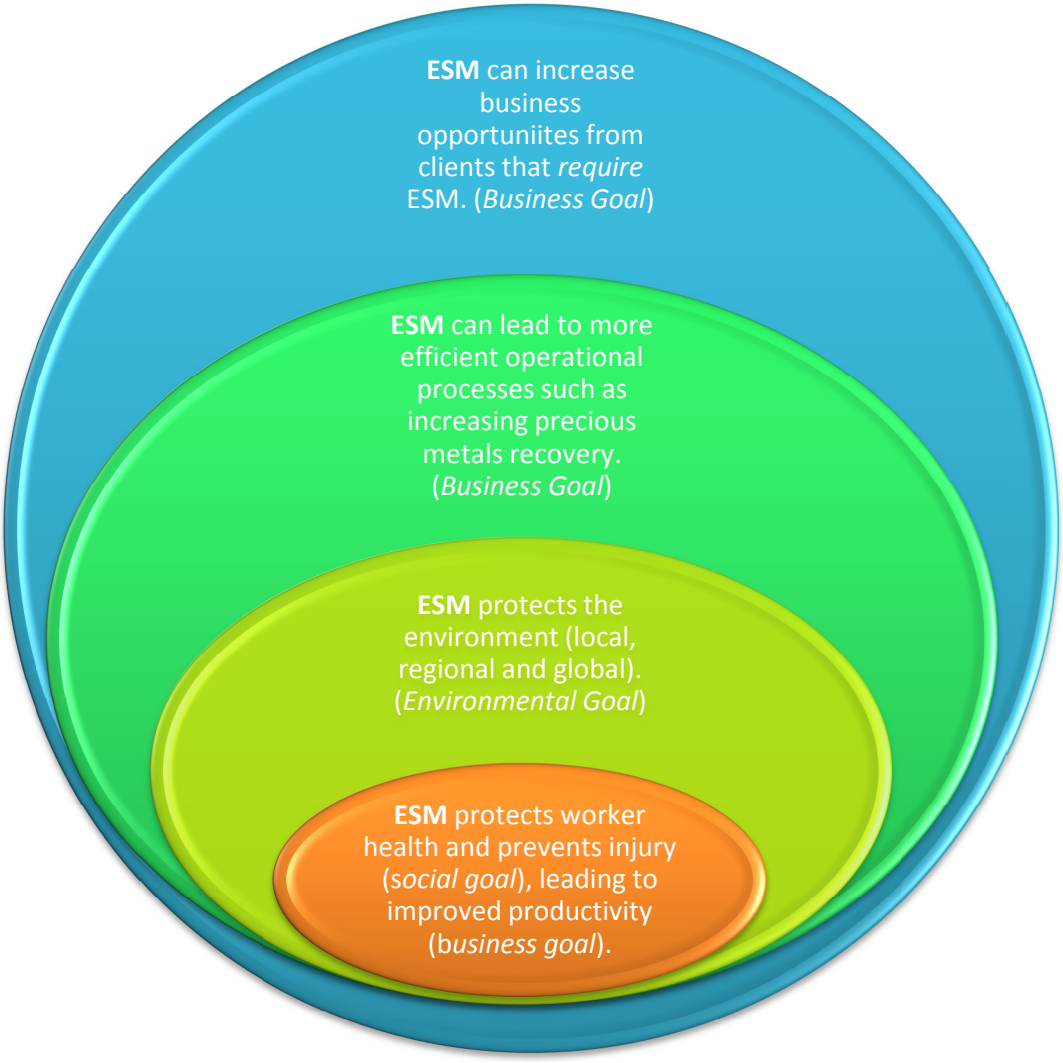


Exhibit 1: Direct and Indirect Benefits of Environmentally Sound Management.

Learning Tools

This training includes a number of opportunities to help you reflect on what you have learned in each module and how to apply that to your facility.

1) *Module Pre-questionnaire*: A short pre-questionnaire is included at the beginning of each module to help you reflect on the material ahead of time and to help the facilitator identify what to focus on when your answers are brought up for discussion.

Module Post-questionnaire: A short post-questionnaire is included at the end of each module to help you further reflect on the training material. These questionnaire sections of the manual have been identified with the thought bubble icon, to the right.

2) *Facility Manager's Notebook* OR *My Notebook*: These sections will provide you with guiding questions, spaces for writing, and checklists that you can use to think through how to apply what you have learned to your facility. They have been identified with the notebook icon to the right, and with a blue page.

3) *On the Floor:* These sections offer specific procedures and best practices that you can apply to your work. Some of these lessons will be bulleted lists. These sections have been identified with the screwdriver icon to the right.

4) *Group Interaction*: Some modules will include the opportunity for you to discuss what you have heard with other group members and may have you think through scenarios or share good examples with each other. These sections of the manual have been identified with the talk bubbles icon to the right.

5) *Space for Notes*: You will find that some parts of the manual include spaces where you can write any notes or ideas that you find important or useful.

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Glossary of Terms

Best practice: A method or technique that has consistently shown results superior to those achieved with other means.

Downstream processor: An entity that receives products, components and materials from your facility for the purpose of additional handling, processing, refining, treatment and/or final disposal.[3]

End-of-life electronic products: Electronic products that are no longer suitable for reuse and refurbishing, and destined for dismantling and recovery of spare parts, material recovery and recycling, or final disposal. They may also include off-specification or new computing equipment that has been sent for asset recovery, destruction and final disposal.

Environment, health and safety (EHS) management system: A management system that combines elements of an *environmental management system* and an *occupational health and safety management system*.

Environmental management system (EMS): A method for a facility to manage its environmental programs in a comprehensive, systematic, planned and documented manner.[4]

Environmentally sound management (ESM): taking all practicable steps to ensure that used and/or end-of-life products and wastes are managed in a manner which will protect human health and the environment.[5]

Environmentally sound management criteria and **core performance elements:** essential elements which a facility or company that processes used or end-of-life electronic products should have in place to demonstrate that it conforms to the principle of *environmentally sound management*.[6]

Final disposal: The final discarding of waste, typically through the use of approved landfill, incineration or waste confinement facilities.

Hazard: Any source of potential damage, harm or adverse health effects on something or someone under certain conditions at work (see *Risk*). Hazard categories include biological hazards, chemical hazards, ergonomic hazards, physical hazards, psychological hazards, and safety hazards.[7] [Adapted from the Canadian Centre for Occupational Health and Safety website.]

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3 Electronic Products Stewardship Canada (EPSC). 2010. *Recycler Qualification Program for End-of-life Electronics* Recycling.

4 UNEP. Basel Convention. 2011. *Guideline on Environmentally Sound Testing, Refurbishment & Repair of Used Computing Equipment*. Partnership for Action on Computing Equipment (PACE) Project 1.1.

5 Adapted from: UNEP. Basel Convention. 2011. *Guideline on Environmentally Sound Testing, Refurbishment & Repair of Used Computing Equipment*. CHW.10/20. PACE.

6 UNEP. Basel Convention. 2011. *Guideline on Environmentally Sound Testing, Refurbishment & Repair of Used Computing Equipment*. PACE Project 1.1.

7 *Adapted from:* Canadian Centre for Occupational Health and Safety website, <http://www.ccohs.ca/oshanswers/chemicals/glossary/msds_gloss_h.html>.

Incineration: A thermal treatment technology by which wastes, sludges or residues are burned or destroyed at high temperatures. Incineration does not include open burning.

Landfill: A final disposal operation that places waste in or on top of ground containments, which are then generally covered with soil. Engineered landfills are disposal sites that are selected and designed to minimize the chance of release of hazardous substances into the environment, for example through the use of plastic landfill liners and leachate collection systems.[8]

Material recovery: A term that is often used interchangeably with "recycling."

Personal protective equipment (PPE): Specialized clothing or equipment worn by employees for protection against health and safety hazards. Personal protective equipment can vary according to the type of work undertaken and associated hazards. PPE may include special headwear, footwear, clothing and coveralls, gloves, earplugs and earmuffs, safety glasses and face shields, respirators, and safety belts, harnesses and lanyards.

Recycling: The separation and processing of used and *end-of-life electronic products* and components to reclaim raw materials for use as feedstock in the manufacture of similar or different products.

Refurbishing: Process that returns used electronic products to working condition with the intention of performing the essential functions they were designed for, with or without hardware or software upgrades, and in conformity with applicable technical performance standards and regulatory requirements. Refurbishing often includes activities such as equipment cleaning, data sanitization, software upgrading, repair and testing.[9]

Reuse: The process of using again used electronic products or a functional component from used electronic products in the same or a similar function, possibly after *refurbishing*.

Risk assessment: A thorough look at a workplace to identify those elements, situations, activities or processes that may cause harm to people or the environment.

Wastes: Substances or objects that are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.

Waste management hierarchy: Classification of waste management options in order of their environmental impacts in descending order of preference as follows: prevention, minimization, reuse, recycling, energy recovery, and disposal.

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[8] *Adapted from:* UNEP. Basel Convention. 2011. *Guideline on Environmentally Sound Testing, Refurbishment & Repair of Used Computing Equipment*. PACE Project. *Glossary of Terms*.

[9] ibid.