



ELECTRONICS PRODUCT STEWARDSHIP CANADA (EPSC)

ELECTRONICS RECYCLING STANDARD (2010)

- OCTOBER 27, 2010 -

ELECTRONICS RECYCLING STANDARD

1.0 ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT SYSTEM (EHSMS)

Recyclers shall implement and maintain a documented environmental, health and safety (EHS) management system to ensure the identification and adequate control over the environmental, health and safety impacts associated with the organization's operations. The EHSMS shall be updated as required to ensure that it is effective and current to the operations. As part of the EHSMS, Recyclers shall maintain at a minimum:

- 1.1. A written policy reviewed and approved by senior management on an annual basis, detailing the organization's commitment to regulatory compliance, sound EHS management practices and continual improvement in EHS performance.
- 1.2. An EHS training program to provide at a minimum new hire training, annual worker refresher training, and contractor training on the following core EHS components:
 - 1.2.1. Potential EHS risks and controls associated with the position or overall job responsibilities;
 - 1.2.2. Safe material handling and storage practices;
 - 1.2.3. Spill prevention;
 - 1.2.4. Equipment safety;
 - 1.2.5. Proper use and care of personal protective equipment (PPE); and
 - 1.2.6. Emergency response.
- 1.3. A documented process for workers to report, record and track any accidents, injuries, spills or releases, or other incidents that have or could have resulted in injury or unapproved release to the environment.
- 1.4. An EHS committee that monitors and evaluates the effectiveness of the EHS programs, procedures and controls on an ongoing basis and meets at least on a quarterly basis to:
 - 1.4.1. Review any changes in the operations or workplace;
 - 1.4.2. Review results of the risk assessments, EHS sampling, workplace inspections, worker accident/incident reports, Electronics Recycling Standard (ERS) conformance audits, regulatory compliance audits, and any corrective or preventive actions undertaken; and
 - 1.4.3. Make recommendations to management for operational or workplace improvements.
- 1.5. A process to retain all records required by the ERS for a minimum of three years, including training records; worker accident/incident reports; EHSMS annual review minutes; EHS sampling and inspection results; and waste records including the chain of custody of all end-of-life electronics (EOLE) and materials processed.
- 1.6. An annual review of the EHSMS by senior management that provides an assessment of the adequacy and effectiveness of the EHS policy, procedures and other controls. The management review shall consider at a minimum the results of and any corrective or preventive actions undertaken as a result of:

- 1.6.1. The annual risk assessment;
- 1.6.2. EHS sampling;
- 1.6.3. Workplace inspections;
- 1.6.4. Worker accident/incident reports;
- 1.6.5. ERS conformance audits;
- 1.6.6. Regulatory compliance audits; and
- 1.6.7. Recommendations from the EHS committee.

2.0 LEGAL AND OTHER REQUIREMENTS

Recyclers shall identify and comply with all applicable legal and other requirements. At a minimum, Recyclers shall:

- 2.1. Maintain a documented process to identify and track any changes to regulatory and other applicable requirements on an ongoing basis and as a result of any changes in operations or legislation.
- 2.2. Maintain a current summary of applicable legal and other requirements, their relevance to the operations and any associated controls.
- 2.3. Possess and adhere to all necessary permits and/or approvals to operate.
- 2.4. Possess Comprehensive or Commercial General Liability Insurance including coverage for bodily injury, property damage, complete operations and contractual liability with combined single limits of not less than \$2 000 000 per occurrence, \$2 000 000 general aggregate.
- 2.5. Possess adequate workers compensation coverage.
- 2.6. Not use child or prison labour.
- 2.7. Maintain a documented procedure to provide notice to the Stewardship Program of any of the following incidents that have occurred either at the Recycler's facility or a Downstream Recycler within 5 business days of the incident:
 - 2.7.1. Fines or regulatory orders;
 - 2.7.2. Environmental incidents such as fires or spills to the natural environment;
 - 2.7.3. Any incidents requiring notification to a regulatory agency or dispatch of a 'first responder'; or
 - 2.7.4. Data security breaches such as theft or other loss of Program products or data.
- 2.8. Maintain a process to provide notice to the Stewardship Program of any changes in name or ownership of the organization within 5 business days of completion.

3.0 EHS RISK ASSESSMENT

Recyclers shall maintain a documented process to conduct an annual EHS Risk Assessment. The risk assessment shall be planned and conducted in a manner to identify and assess the potential environmental impacts of the operations,

and any workplace hazards under both normal and abnormal conditions. The Risk Assessment shall cover all aspects of the Recycler's operations and include at a minimum:

- 3.1. A process to identify and record physical, chemical and ergonomic hazards.
- 3.2. A process to assess risk of identified hazards considering the potential probability and severity of the hazard.
- 3.3. A process to determine the appropriate level of control necessary to eliminate or effectively control the hazards.
- 3.4. A process to assess the need and frequency for EHS monitoring and sampling, including:
 - 3.4.1. Monitoring and tracking of facility emissions, effluent or wastes;
 - 3.4.2. Facility-wide air sampling and analysis for airborne contaminants such as metal content and dusts;
 - 3.4.3. Surface sampling for contaminants that may not be released under normal operating conditions, or may be released in quantities below detectable air sampling limits, but over time may accumulate to hazardous levels or pose other risk of worker exposure;
 - 3.4.4. Analysis of noise levels in processing areas; and
 - 3.4.5. Medical examinations, including hearing assessments and blood testing, where required by regulations or if sampling reveals elevated exposure levels.
- 3.5. A process to record and track the results of the risk assessment to facilitate the identification of recurring issues or trends.
- 3.6. A process to communicate risks and their associated controls to applicable workers and make the overall results of the risk assessment available to all workers.
- 3.7. A process to conduct subsequent risk assessments, either facility-wide or task specific, as a result of any changes in operations that may affect exposure levels.

4.0 ENVIRONMENTAL CONTROLS

Considering the results of the risk assessment, sampling, audits, inspections, worker accident/incident reports, fines or regulatory orders, and any other key indicators, Recyclers shall implement and maintain adequate environmental controls to prevent unapproved releases to the environment. At a minimum, Recyclers shall:

- 4.1. Identify and communicate to workers materials that may be processed mechanically, where suitable controls exist to prevent exposure to hazardous substances and other releases to the environment as a result of the processing.
- 4.2. Maintain documented procedures for the manual removal of any materials prior to mechanical processing, such as mercury bearing lamps, ink and toner cartridges, and batteries, where suitable processing controls to prevent exposure to hazardous substances and other releases to the environment do not exist.

- 4.3. Maintain a documented procedure for the safe handling of substances of concern, and any hazardous materials and wastes, including labelling and storage requirements.
- 4.4. Maintain a current inventory with associated storage limits, noting both the maximum acceptable quantity of materials and maximum permitted length of time in storage, for any substances of concern and other hazardous materials or wastes.
- 4.5. Ensure EOLE and materials are processed in accordance with Table 1: *Material Disposition Hierarchy, and Acceptable Processes and Points of Final Disposition*, where:
 - 4.5.1. Disposition and audit applicability are defined for single stream, non-contaminated materials only;
 - 4.5.2. Processing of mixed or contaminated materials must satisfy criteria for all contained materials;
 - 4.5.3. Incineration without energy recovery is not permitted for any materials;
 - 4.5.4. Export of materials or components is only permitted to downstream vendors located in a country legally permitted to accept the material or component as determined by the authority of the importing country; and
 - 4.5.5. Export of clean material, including to a non-OECD/EU country, as a raw material feedstock in a manufacturing process is permitted and not subject to audit where the material:
 - 4.5.5.1. Has been cleaned in an OECD/EU country (i.e. washed leaded glass cullet);
 - 4.5.5.2. Is fully consumed in the manufacturing process;
 - 4.5.5.3. No additional pre-processing of the material in the non-OECD/EU country is required; and
 - 4.5.5.4. Where applicable, the destination country has provided prior informed consent for the import of the material.

Table 1: Material Disposition Hierarchy, and Acceptable Processes and Points of Final Disposition

		Disposition Hierarchy			Acceptable Processes & Points of Final Disposition							
		Material Recovery Required	Energy recovery Permitted	Other disposition Permitted	Manual dismantling and material separation	Mechanical material separation	Extraction/purification/refinement	Smelting to reclaim metal	EFW Incineration (use of material as an energy substitute)	Landfill	Hazardous Waste Landfill	Export to a non-OECD/EU country for processing
Electronic Scrap	EOLE	★			✓	✓	✗	✗	✗	✗	✗	✗
	Components (hard drives, chips, etc)	★			✓	✓	✓	✓	✗	✗	✗	✗
	Wires / Cables	★			✓	✓	✓	✓	✗	✗	✗	✗
	Copper Yokes	★			✓	✓	✓	✓	✗	✗	✗	✗
	Circuit Boards	★			✓	✓	✓	✓	✗	✗	✗	✗
	Metal / plastic laminates	★			✓	✓	✓	✓	✗	✗	✗	✗
Non Hazardous	Metal	★							✗	✗	✗	✗
	Mixed Metals	★							✗	✗	✗	✗
	Metal dusts (bag house)	★							✗	✗	✗	✗
	Non-lead Glass	★							✗	✗	✗	✗
	Plastic		★	★				✗			✗	✓
	Mixed Plastics		★	★				✗			✗	✓
	Wood		★	★				✗			✗	✗
	Leather, cotton and other fibres		★	★				✗			✗	✗
Substances of Concern	Insulation (Fibreglass / composite)		★	★				✗			✗	✗
	Lead Glass	★			✓	✓	✓	✓	✗	✗	✗	✗
	Washed lead glass cullet	★			✗	✓	✓	✓	✗	✗	✗	✗
	Mercury Lamps	★			✗	✓	✓	✗	✗	✗	✗	✗
	Mercury	★			✗	✓	✓	✗	✗	✗	✗	✗
	Batteries	★			✗	✓	✓	✓	✗	✗	✗	✗
	Ink / Toner Cartridges		★		✓	✓	✓	✓	✓	✗	✗	✗
	Ink / Toner		★		✗	✓	✓	✗	✓	✗	✗	✗
	Phosphor Powder			★	✗	✓	✓	✗	✗	✗		✗
	Ethylene Glycol			★	✗	✓	✓	✗	✗	✗		✗

In accordance with the Disposition Hierarchy material recovery is always preferential over other disposition methods for all materials but only required where indicated with an '★'.

Where the use of the material for energy recovery, or other disposition methods is permitted, they are indicated with an '★'.

Process/application not permitted under the ERS	✗
Process/application is permitted under the ERS & subject to on-site audit	✓
Process/application is permitted under the ERS & subject to document review and verification	

5.0 HEALTH AND SAFETY CONTROLS

Considering the results of the risk assessment, sampling, audits, inspections, worker accident/incident reports, fines or regulatory orders, and any other key indicators, Recyclers shall implement and maintain adequate health and safety controls to prevent accidents, injuries or other exposure to hazardous substances. At a minimum, Recyclers shall:

- 5.1. Implement, communicate and enforce policies for worker, contractor and visitor access to and hygiene practices while in and leaving processing areas, including restrictions for eating, drinking and smoking in the workplace to reduce exposure to contaminants.
- 5.2. Implement and maintain a thorough housekeeping program to prevent physical hazards (i.e. slips, trips and falls), and ensure any hazardous materials and contaminants are under suitable control.
- 5.3. Implement a program for the proper use and care of Personal Protective Equipment (PPE) to reduce exposure to hazards such as noise, dusts and flying objects with provisions to:
 - 5.3.1. Provide and enforce the use of necessary PPE ;
 - 5.3.2. Ensure that PPE is appropriate, properly rated, and fit-test to individual needs where required; and
 - 5.3.3. Post notice of areas requiring the use of PPE.
- 5.4. Provide physical guards on hazardous mechanical processes to prevent access to hazardous areas while in operation and an emergency shut-off system for immediate shut down of automated mechanical equipment.
- 5.5. Maintain a lockout/tagout program to ensure that mechanical and electrical equipment remains in a de-energized state during any setup, cleaning, maintenance or other activity that may require the removal of physical guards or other worker access to a hazardous area.
- 5.6. Maintain a mechanical air handling system with appropriate controls for fire suppression to collect airborne particulate from automated shredding, grinding and other mechanical processing equipment that generates gasses, dust or particulates, and provide adequate ventilation to the work area to maintain acceptable air quality levels.
- 5.7. Maintain a process for the safe removal and replacement of filters from processing equipment ventilation systems to prevent exposure to dusts and particulate.

6.0 OPERATIONAL CONTROLS

Recyclers shall maintain effective controls to ensure that EOLE and materials are handled, stored and processed in a secure manner to protect from hazards, release or unauthorized access. At a minimum, Recyclers shall:

- 6.1. Maintain a process to track and report the quantity and chain of custody of program materials received, processed, and shipped, as well as provide certificates of recycling for all material once processed.

- 6.2. Maintain effective procedures and security measures to prevent:
 - 6.2.1. Unauthorized access to the premises and storage areas, and
 - 6.2.2. Unapproved removal of any material or equipment from the facility.
- 6.3. Ensure that all processing is conducted indoors.
- 6.4. Ensure that all Substances of Concern are stored indoors.
- 6.5. Ensure that Electronic Scrap is stored indoors or sufficiently covered and contained to prevent exposure to weather and leaching into the surrounding natural environment.
- 6.6. Ensure that materials are not stored in a location, manner or quantity creating increased susceptibility to fire, spill or other release.
- 6.7. Ensure that materials are stored within established and appropriate storage limits, both in terms of quantity of material and length of time in storage, when accumulating material for shipment. Materials may not be stockpiled or otherwise stored without an approved downstream market for the material.
- 6.8. Maintain adequate fire suppression equipment for the type and size of the facility.
- 6.9. Maintain a contingency plan for handling Stewardship Program materials in the event the Recycler is unable to process materials or ship to an approved Downstream Recycler.
- 6.10. Maintain a documented closure plan that at a minimum identifies the financial requirements upon closure of the facility to remove, transport and process all materials under the ownership of the Recycler in accordance with the requirements of the ERS, and further provides the financial mechanism for ensuring the availability of such funds.

7.0 DATA SECURITY

Recyclers shall maintain adequate controls to ensure that data containing products, processed materials and any information contained on either, are received, stored and processed in a manner to protect from unauthorized access or theft. Where data containing products are handled, Recyclers shall at a minimum:

- 7.1. Maintain a process to identify and communicate to workers, products and components that may contain data, such as computers, hard drives, data cards, PDAs, cellular phones, printers and cameras.
- 7.2. Maintain a documented procedure for the secure receiving, storage and handling of data containing products.
- 7.3. Maintain a documented procedure to destroy all information contained on data storage products through physical means.
- 7.4. Maintain an internal audit program to test and verify the effectiveness of the data destruction process.
- 7.5. Maintain a procedure to investigate and respond to any data security breaches.

8.0 SAMPLING, AUDITS, INSPECTIONS AND OTHER ASSESSMENTS

Recyclers shall maintain programs to schedule and conduct any sampling, audits, inspections or other assessments to test and verify the effectiveness and adequacy of EHS programs and controls, and to demonstrate regulatory compliance and conformance to the ERS. At a minimum the programs shall:

- 8.1. Include the following activities:
 - 8.1.1. Regular workplace inspections;
 - 8.1.2. Emission, effluent, or waste sampling required by regulation, approval to operate or through the risk assessment;
 - 8.1.3. Air contaminant, surface sampling, noise analysis or medical evaluations required by regulation, approval to operate or through the risk assessment;
 - 8.1.4. ERS conformance audits; and
 - 8.1.5. Regulatory compliance audits.
- 8.2. Define the schedule, criteria, process, qualifications and responsibilities for conducting, recording, analysing and tracking the results of the activity.
- 8.3. Define the process for assessing the results of the activity in conformance with the requirements of the EHSMS, regulatory requirements and industry best practices, including where applicable, recognized industrial hygiene standards.

9.0 CORRECTIVE ACTION PLANS

Recyclers shall maintain a process to initiate, record, and track corrective and/or preventive actions for any issues identified through sampling or monitoring; audits, inspections or other assessments; accident/incident reports; fines or regulatory orders; security breaches; complaints; or other programs, that pose a risk of noncompliance or nonconformance. At a minimum, the corrective action process shall define:

- 9.1. Responsibility for developing and implementing the corrective/preventive action plan.
- 9.2. Requirements to review the effectiveness of any corrective and/or preventive actions undertaken following implementation.
- 9.3. The process to communicate to applicable workers the outcome of, and any corrective or preventive actions undertaken as a result of the activity.

10.0 EMERGENCY PLANNING AND RESPONSE

Recyclers shall identify any potential emergency situations associated with the operations, such as spills, fires, or medical emergencies, and maintain documented response procedures. The emergency response procedures shall at a minimum:

- 10.1. Define the responsibilities and actions for responding to the incident.

- 10.2. Provide a list of emergency contacts and telephone numbers.
- 10.3. Provide for a readily available supply and direction to response resources, such as first aid supplies and spill clean-up materials.
- 10.4. Detail the requirements for reporting the incident internally, and where applicable to the Stewardship Program and regulatory authorities.
- 10.5. Be tested on at least an annual basis and records of the test and response maintained.
- 10.6. Be reviewed following any test or actual response to an emergency, and revised as necessary considering the effectiveness of the response in preventing or mitigating any environmental, health or safety hazards.

11.0 TRANSPORTATION

Recyclers shall ensure that all material is transported in a safe and environmentally sound manner, in accordance with regulatory requirements. At a minimum, Recyclers shall:

- 11.1. Maintain a documented procedure to identify when export/import regulations, Transportation of Dangerous Goods, or equivalent regulations, apply to shipments and the specific requirements the applicable materials must be shipped under.
- 11.2. Provide specific training for those workers that handle, offer for transport, or transport dangerous goods or other regulated materials.
- 11.3. Maintain a documented process to evaluate third-party Transporters and assess their ability to handle material in a safe and environmentally sound manner, in accordance with regulatory requirements.
- 11.4. Maintain evidence of the Transporter's relevant regulatory permits/approvals, including where applicable permits/approvals for:
 - 11.4.1. Transporting regulated materials; and
 - 11.4.2. Storing regulated materials where storage or consolidation services may be used.
- 11.5. Maintain evidence of the Transporter's insurance coverage.

12.0 DOWNSTREAM RECYCLERS

Recyclers shall maintain a documented process to evaluate Downstream Recyclers to assess their ability to handle material in a safe and environmentally sound manner, in accordance with the ERS and regulatory requirements. At a minimum, Recyclers shall:

- 12.1. Document the downstream flow and handling of materials from the Recycler's facility to each Point of Final Disposition, including details on how the goods are processed at each point, and the percentage of processed materials sent to each Downstream Recycler.
- 12.2. Maintain evidence of the service provider's relevant regulatory permits/approvals, including where applicable any permits/approvals to:

- 12.2.1. Accept, process and store waste materials;
 - 12.2.2. Generate or dispose of regulated waste; and
 - 12.2.3. Release process emissions or effluent.
- 12.3. Maintain evidence of the Downstream Recycler's insurance coverage.

