Electronics Recycling Standard

The Electronics Recycling Standard defines the minimum requirements for managing end-of-life electronics (EOLE). This Standard is intended to assist in determining if EOLE products are managed in an environmentally sound manner that safeguards worker health and safety and the environment from the point of primary processing to final disposition.

It is intended that a qualified auditor be used to verify EOLE recycler conformance to this Standard. For further details on the application of the Standard, please refer to the Electronics Recycling Standard Guidance Document.

PART I – REQUIREMENTS

1. General Requirements for Primary Recyclers

All primary recyclers shall:

1.1. 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 $1,000,000 per occurrence, $1,000,000 general aggregate.

1.2. Possess workers compensation coverage through either a provincial/state program or through a private insurance policy.

1.3. Ensure that end-of-life electronic products and hazardous wastes are stored and processed in a secured enclosure.

1.4. Possess and maintain a documented environmental management system to ensure adequate control over the environmental impacts associated with the facility's operations.

1.5. Identify and comply with all applicable environmental, health & safety regulations, including waste processing, storage, handling, and shipping and air emissions permits or certifications.

1.6. Implement and maintain an emergency response plan to prepare for and respond to emergency situations including fires and spills.

1.7. Provide a documented outline of the downstream flow of materials through to the point of final processing and disposition that includes a description of how the materials are processed.

1.7.1. Provide mass balance reporting of material received and material sent for downstream processing.

1.8. Maintain a documented process for the evaluation and selection of downstream processors that assesses the environmental, health and safety impacts of their operation.

1.9. Maintain all records for a minimum of five years, including manifests, bills of lading, waste records, and chain of custody of all materials transferred from the site destined for downstream markets.

1.10. Provide certificates of recycling for all loads of EOLE recycled through the facility.

1.11. Provide a recycling rate for EOLE processed at the facility presented as a percentage by using the formula:

(Total Hardware Weight – (Weight Landfilled + Weight Incinerated)) / Total Hardware Weight.

1.11.1. Total Weight refers to incoming product weight, less packaging, and includes materials recovered and recycled into new products, materials used for energy recovery, materials landfilled, materials stored and materials incinerated.

1.11.2. Weight Landfilled/Weight Incinerated refers to the amount in weight of incoming material that is incinerated or landfilled by the either the primary recycler or the downstream processor(s).

1.12. Provide notice of any fines or regulatory orders in the previous 5 years and within 60 days after any subsequent fine or regulatory order.

1.13. Perform periodic internal audits and make external (e.g., ISO) and internal audit results available.

2. General Requirements for Downstream Processors

All downstream processors shall:

2.1. 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 $1,000,000 per occurrence, $1,000,000 general aggregate. Possess workers compensation coverage through either a provincial/state program or through a private insurance policy.

2.2. Identify and comply with all applicable environmental, health & safety regulations, including waste processing, storage, handling, and shipping and air emissions permits or certifications.

2.3. Implement and maintain an emergency response plan to prepare for and respond to emergency situations including fires and spills.

2.4. Provide certificates of recycling to the primary recycler for all loads of EOLE recycled through the facility.

2.5. Maintain all records of material transferred through the site from the primary recycler for a minimum of two years, including manifests, bills of lading, waste records, and chain of custody of all materials transferred from the site destined for downstream markets.

2.6. Provide notice of any fines or regulatory orders in the previous 5 years and within 60 days after any subsequent fine or regulatory order.

3. Occupational Health and Safety

3.1. All recyclers shall maintain an Occupational Health Program that includes processes to:

3.1.1. Safeguard the health and safety of employees by providing regular documented health and safety training, providing and enforcing the use of personal protection equipment, and by safeguarding hazardous mechanical processes.

3.1.2. Conduct, at a minimum, a documented annual risk assessment of worker exposure to lead and toxic substance through air, absorption, ingestion, or other means.

3.1.3. Control lead and other toxin exposures through training, mechanical processes, personal protection equipment, or modified work practices.

3.1.4. Conduct air sampling and analysis for airborne contaminants such as metal content and dusts to ensure compliance with applicable exposure requirements at a frequency determined through the risk assessment.

3.1.5. Monitor worker exposure to lead through medical examinations, if required by applicable legislation.

3.1.6. Implement policies and procedures for hygiene, eating and drinking to reduce worker exposure to lead and other toxic substances.

3.1.7. Evaluate and post noise levels, and ensure adequate hearing protection is provided when those levels exceed applicable regulated requirements.

3.1.8. Implement administrative processes and provide personal protection equipment to reduce exposure to dusts and metals that may contact the skin and lungs either through airborne dusts or handling materials.

3.1.8.1. Use of personal respiratory protection equipment requires a fit-test and use training program.

4. Material Separation

4.1. EOLE received by the primary recycler or downstream processor are typically processed manually and/or mechanically to separate materials into the following general categories:

Non-Hazardous Materials	4.1.1. Ferrous metal 4.1.2. Non-ferrous metal 4.1.3. Other metals (brass, bronze, metal fines) 4.1.4. Plastics 4.1.5. Wood 4.1.6. Glass (non-leaded)
Electronic Scrap	4.1.7. Cables and wires 4.1.8. Printed circuit boards (high, medium and low grade) 4.1.9. Components, including hard drives, chips and other electronic components;
Hazardous Material	4.1.10. Cathode Ray Tubes (CRT), CRT frit, leaded plasma display glass and other leaded glass 4.1.11. Rechargeable batteries 4.1.12. Non-rechargeable batteries, including alkaline, lead acid, and coin cell batteries on circuit boards 4.1.13. Mercury bearing lamps and switches; 4.1.14. Components containing polychlorinated biphenyls 4.1.15. Ink and toner cartridges

4.2. Materials listed as Electronics Scrap are to be managed in accordance to the Electronic Scrap Materials section of this standard.

4.3. Materials listed as Hazardous Material are to be managed in accordance to the Hazardous Recyclable Material section of this standard.

5. Mechanical Processing

5.1. Facilities employing mechanical material processing and separation activities shall be equipped with:

5.1.1. A dust collection system that is engineered to reduce worker and environmental exposure to toxic substances;

5.1.2. An emergency shut-off system; and

5.1.3. Fire suppression equipment.

5.2. Hazardous materials should be either:

5.2.1. Removed prior to mechanical processing; or

5.2.2. Mechanically processed with adequate controls to reduce worker and environmental exposure to toxic substances.

6. Electronic Scrap Materials

6.1. Electronic scrap materials may not be landfilled, exported to non-OECD or non-EU member countries, or processed with the use of prison labour.

6.2. Electronic scrap being exported must be processed using one of the following processes:

6.2.1. As a fuel in an energy recovery system;

6.2.2. Recovery of metals and metal compounds;

6.3. The downstream processor must be authorized in the country of operation to use the process listed above.

6.4. Exporting of these materials must be done in compliance to the Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulation (EIHWHRMR).

7. Hazardous Material

7.1. Hazardous material may not be exported to non-OECD or non-EU member countries, or processed with the use of prison labour.

7.2. Regulatory requirements governing the receiving, handling, processing, labelling, storage, and transportation of these materials must be documented and complied with.

7.3. Transportation of these materials must be done in compliance to the Transportation of Dangerous Goods Act.

7.4. Exporting of these materials must be done in compliance to the Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulation (EIHWHRMR):

8. Operations using Smelting, Foundry, and other forms of Heat Treatment, including Waste to Energy Facilities.

8.1. Implement and maintain processes to control and monitor air emissions in accordance to regulatory requirements.

8.2. Report to the primary recycler the percentage of materials received that result in ash or slag.

8.3. Provide to the primary recycler details of how ash or slag is managed.

PART II – DEFINITIONS

"**Downstream Processor**" or sub-contractor means an entity that receives material from a primary recycler for additional processing and/or disposition.

This includes entities that:

- Bulk and blend materials that are sent to other vendors for additional processing;
- Shred and separate materials that are sent to other vendors for additional processing;
- Process materials into new products;
- Process materials to recover metals, energy, and other resources;
- Disposal by landfill and/or incineration with or without waste to energy recovery;
- Any other contracted party that handles, processes or disposes of materials on behalf of the primary recycler.

"EIHWHRMR" refers to the Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulation under the Canadian Environmental Protection Act. Information is available at the following website: http://www.ec.gc.ca/tmb/eng/EIHWHRM_Information_e.html

"Electronics Scrap" as defined under EIHWHRMR means circuit boards, electronic components and wires that are suitable for base or precious metal recovery.

"**Energy Recovery**" means the heat treatment of material in which the heat produced is used to produce electricity or steam or reduce the energy already required in the process.

- This includes the use of plastics as a fuel substitute in the process of metal recovery.
- This does not include incineration as a method of disposal.

"**Environmental Management System**" is a system used to identify and control the impact of the organization's activities, products, and services on the natural environment. The system typically includes an environmental policy to provide guidance to the organization on controlling environmental matters as well as

procedures outlining how environmentally significant tasks are to be conducted to ensure compliance with applicable environmental legislation.

"EOLE" means end of life electronics

"Hazardous Materials" are materials that are classified as a hazardous waste or hazardous recyclable material under EIHWHRMR. Components of EOLE that often fall under the definition of hazardous material include:

- Batteries or materials containing batteries;
- Mercury or materials containing mercury;
- Polychlorinated biphenyls or materials containing polychlorinated biphenyls;
- Leaded CRT and other glass or materials containing leaded CRT and other glass; and
- Ink and toner cartridges.

"Point of Collection" means an authorized collection agent that collects EOLE for recycling under the program.

"**Point of Final Processing**" means a point in the downstream flow of materials where the materials generated from the processing of EOLE have been physically or chemically altered into a new product or state.

This includes:

- Metal, energy and other resources recovery;
- Pelletization of plastics;
- Landfill and incineration disposal.

This does not include:

- Bulk and blend materials that are sent to other vendors for additional processing;
- Shred and separate materials that are sent to other vendors for additional processing.

"**Primary Recycler**" means an entity at the first point of processing EOLE products that accomplishes any of the following upon receipt of EOLE from a point of collection: receiving, sorting, brokering, transporting, arranging transport, dismantling, disassembly, shredding or any other material processing activity, and disposition.

"**OECD Member Country**" means a country that is a recognized member of the Organization of Economic Cooperation and Development and is listed on the website www.oecd.org.

"**Qualified Auditor**" is an individual trained and certified through an authoritative body to be an environmental auditor, and possesses a strong understanding of the ISO 14 010 – ISO 14 012 Standards, the regulatory requirements in the jurisdiction of the processor, the Electronics Recycling Standard, and the Electronics Recycling Standard Guidance Document.