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**RESPONSIBLE RECYCLING  
PRACTICES  
For  
ELECTRONICS RECYCLERS**

**Facilitator Draft Strawproposal**

**Version 16.1  
July 16, 2007**

## INTRODUCTION

This document sets forth responsible recycling (“R2”) practices for use in accredited certification programs that assess electronics recyclers’ environmental, health and safety, and security practices.

Customers want a simple means of verifying that an electronics recycling company is forthright and responsible about how it manages used and end-of-life electronic equipment. At the same time, responsible electronics recyclers want a means of highlighting their values and performance to customers.

The purpose of this document is to take a first step in addressing this situation – to develop a commonly-accepted set of R2 practices for electronics recyclers. Accredited certification programs that verify an electronics recycler adheres to these R2 practices will enable customers to make better informed decisions and have increased confidence that their end-of-life electronics equipment will be dealt with in a responsible manner.

This document’s primary focus is on assuring that recyclers carefully manage the materials in end-of-life electronics equipment that warrant greater care due to their toxicity or other potential adverse environmental, health, and safety effects. Referred to as “Materials of Concern” (and defined in the Definitions section), many of the R2 practices focus on them, calling for heightened care in the management of these materials, and strong due diligence practices regarding recyclers’ selections of downstream vendors for these materials. The provisions on due diligence and exporting focus exclusively on these materials.

The R2 practices set forth herein are not legal requirements and do not replace electronic recyclers’ legal obligations. Electronic recyclers that adhere to this set of R2 practices are doing so on a voluntary basis.

While the document has been developed with a focus on electronics recyclers in the United States, the R2 practices could be utilized elsewhere with modifications (e.g. where the document references US regulatory requirements, agencies, or exporting requirements).

A national group of stakeholders has worked since January, 2006 to develop this draft document. The group has included representatives of the United States Environmental Protection Agency (EPA) and State environmental agencies, the electronics recycling industry (including reuse/refurbishers), public interest groups, and original equipment manufacturers (OEMs).

This draft document is an interim result of the group’s discussions. It has been drafted by the group’s facilitator<sup>1</sup>.

**This draft document is not a final product. This version of the document will be field tested and further refined before a final version is available.**

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<sup>1</sup> The effort has been facilitated by John Lingelbach of [Decisions & Agreements, LLC](#).

## General Principles

Below are the general principles underlying the R2 practices presented in this document.

1. **Hierarchy of Responsible Management Strategies** *Responsible electronics recyclers manage used and end-of-life electronic equipment in accordance with a hierarchy of responsible management strategies.*
2. **Legal Requirements** *Responsible electronics recyclers maintain compliance with all applicable environmental, health, and safety legal requirements.*
3. **Environmental, Health, and Safety Management Systems** *Responsible electronics recyclers utilize an Environmental, Health, and Safety Management System (EHSMS).*
4. **Recordkeeping** *Responsible electronics recyclers maintain business records sufficient to demonstrate the material flow of equipment, components, and materials that pass through their facilities.*
5. **On-Site Practices** *Responsible electronics recyclers utilize practices at their facilities that protect worker safety, public health, and the environment.*
6. **Refurbishment Operations** *Responsible electronics recyclers adhere to the R2 practices described in this document when undertaking on-site, and shipping to downstream, refurbishment operations.*
7. **Equipment and Components Going to Reuse** *Responsible electronics recyclers take all practical steps to direct equipment and components to reuse. For all equipment or components destined for reuse, they adhere to the R2 practices described in this document – including those relating to due diligence downstream and exporting – until it tests any equipment or components that contain a Material of Concern, ensures they are functioning properly, and properly ships them.*
8. **Separation and Recovery of Reclaimable Materials** *Responsible electronics recyclers recover the reclaimable materials in equipment and components not destined for reuse unless it is not technically or economically feasible to do so. They first separate the materials as appropriate and they utilize effective, safe strategies for recovering the reclaimable materials.*
9. **Materials that Cannot Be Recovered** *Responsible electronics recyclers utilize safe energy recovery or disposal strategies for any remaining materials. They do not send Materials of Concern to incinerators or solid waste landfills that are not designed to safely accommodate the Materials of Concern and the substances they contain.*
10. **Due Diligence Downstream** *Responsible electronics recyclers get assurances that their downstream vendors to which they ship Materials of Concern utilize practices that protect worker safety, public health, and the environment. They do so in a way that establishes a verifiable chain of custody for these materials through to final disposition.*
11. **Exporting** *Responsible electronics recyclers ensure that their exports of Materials of Concern comply with all legal importation requirements of each transit and recipient country.*
12. **Transport** *Responsible electronics recyclers transport all equipment, components, and materials using entities that have the necessary regulatory authorizations and in a manner protective of public health and the environment.*
13. **Insurance** *Responsible electronics recyclers possess insurance that is adequate to cover the potential risks and liabilities associated with the nature and size of the company's operations.*
14. **Closure Plan and Financial Responsibility** *Responsible electronics recyclers have assurances in place regarding the proper closure of their facilities.*
15. **Data Sanitization/Destruction** *Responsible electronics recyclers employ current generally-accepted data destruction procedures.*
16. **Facility Security** *Responsible electronics recyclers employ facility security measures appropriate for the equipment they handle and customers they serve.*

## **THE R2 PRACTICES**

### **1. Hierarchy of Responsible Management Strategies**

General Principle – *Responsible electronics recyclers manage used and end-of-life electronic equipment in accordance with a hierarchy of responsible management strategies.*

R2 Practices:

- (a) A responsible electronics recycler develops in writing and adheres to a hierarchy of responsible management strategies for used and end-of-life electronics equipment which calls for, in order of priority:
  - (1) Reuse – Directing equipment and components to reuse (except when customers require other management options or the equipment/components are substantially outdated),
    - (A) Refurbishing equipment and components as appropriate to enable reuse.
  - (2) Separation and Recovery of Reclaimable Materials – Directing equipment and components to materials recovery whenever technically and economically feasible:
    - (A) As appropriate, dismantling and separating equipment, components, and materials into separate “streams” based on principles of effective (value generating and waste minimizing) and safe recovery of reclaimable materials,
    - (B) As appropriate, mechanically processing the components or materials in a stream to enable effective and safe recovery of reclaimable materials,
    - (C) Sending the separated materials for recovery of reclaimable materials at facilities that use technologies protective of health, safety, and the environment.
  - (3) Energy Recovery or Disposal – Utilizing appropriate energy recovery and/or disposal technologies for any remaining material:
    - (A) As appropriate, further separating these materials to assure safe energy recovery or land disposal,
    - (B) Sending these materials to facilities that use technologies protective of health, safety, and the environment.
- (b) A responsible electronics recycler periodically evaluates its management strategies to assure it takes advantage of new more effective technologies and is otherwise continuously improving its practices and processes.

### **2. Legal Requirements**

General Principle – *Responsible electronics recyclers maintain compliance with all applicable environmental, health, and safety legal requirements.*

R2 Practices:

- (a) A responsible electronics recycler takes the necessary steps to comply with all Federal, State, and local requirements—and, if it exports, those of all transit and recipient countries—that are applicable to the operations and transactions in which it engages.
- (b) A responsible electronics recycler makes available upon request by customers notice of any material fines, regulatory orders, or violations in the previous 3 years and within 60 days after any subsequent fines or regulatory order.

**3. Environmental, Health, and Safety Management Systems**

General Principle – *Responsible electronics recyclers utilize an Environmental, Health, and Safety Management System (EHSMS).*

R2 Practices:

- (a) A responsible electronics recycler develops, documents, fully implements, reviews at least annually, and updates as needed (e.g. as products and/or technologies change) a written EHSMS that:
  - (1) Includes written goals and procedures and requires the organization to systematically manage its environmental, health, and safety matters, and
  - (2) Is based on a “plan, do, check, act”<sup>2</sup> model that identifies and assesses environmental and occupational risks, implements operational controls, and provides corrective action procedures, and
  - (3) Includes a plan for responding to and reporting exceptional releases, accidents, spills, fires, explosions, and other out-of-the-ordinary events that pose risks to worker safety, public health, or the environment. The recycler submits this plan to all appropriate emergency responders—e.g., police, fire department, hospitals, and
  - (5) Includes a procedure for identifying and evaluating the environmental, health, and safety impacts of downstream vendors, and for utilizing this information in the selection of downstream vendors, and
  - (6) Is consistent with a generally-recognized standard(s) that covers environmental and worker health/safety management such as ISO 14001 and ANSI Z10, the International Association of Electronics Recyclers’ (“IAER’s”) certification standard, or the Recycling Industry Operating Standard (“RIOS”); or is a similarly rigorous in-house standard.
- (b) A responsible electronics recycler ensures all employees that work on their behalf understand and follow the portions of the EHSMS relevant to the activities they perform.

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<sup>2</sup> Elements of this model include: *Plan* – (a) Identify environmental and worker health/safety impacts, and legal and regulatory requirements; (b) Establish environmental goals, objectives and targets; (c) Plan actions that work toward achieving identified goals; (d) Plan for emergency preparedness and response; and (e) Identify management support. *Do* – (a) Establish roles and responsibilities for the EHSMS and provide adequate resources; (b) Ensure that staff are trained and capable of carrying out responsibilities; and (c) Establish a process for communicating about the EHSMS. *Check* – (a) Monitor key activities and track performance; (b) Identify and correct problems and prevent recurrence; and (c) Provide a measurement system. *Act* – (a) Conduct annual progress reviews; (b) Act to make necessary changes to the EHSMS; (c) Create and implement an action plan for continual improvement.

#### 4. **Recordkeeping**

General Principle – *Responsible electronics recyclers maintain business records sufficient to demonstrate the material flow of the equipment, components, and materials that pass through their facilities.*

R2 Practices:

- (a) A responsible electronics recycler maintains commercial contracts, bills of lading, or other commercially-accepted documentation for all transfers of equipment, components, and materials into and out of its facility, as well as for any brokering transactions.
- (b) A responsible electronics recycler keeps such documentation for at least 3 years.

#### 5. **On-Site Practices**

General Principle – *Responsible electronics recyclers utilize practices at their facilities that protect worker safety, public health, and the environment.*

R2 Practices:

##### General

- (a) A responsible electronics recycler has the expertise and technical capability to process each type of equipment, component, and material it accepts in a manner protective of worker safety, public health, and the environment.
- (b) A responsible electronics recycler adheres to good housekeeping standards, including keeping all work and storage areas clean and orderly.

##### Workforce and Environmental Protection

- (c) A responsible electronics recycler conducts on an ongoing basis (as new types of materials are processed or new processes are utilized) a hazards identification and assessment of occupational and environmental risks that exist or could reasonably be expected to develop at the facility. Such risks could result from any sources, including but not limited to emissions of and/or exposure to substances<sup>3</sup>, noise, ergonomic factors, thermal stress, substandard machine guarding, cuts and abrasions, etc.. The hazards identification and assessment is captured in writing and incorporated as a component of the recycler's EHSMS.
- (d) A responsible electronics recycler manages the hazards and minimizes the releases it identifies

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<sup>3</sup> Risks posed by exposure to substances may arise in a variety of situations – sometimes involving substances that do not under ordinary conditions pose a risk to worker safety or the environment. Such substances may include mercury, lead, beryllium, cadmium, PCBs, some phosphor compounds, certain brominated flame retardants (i.e., polybrominated biphenyls, pentabrominated diphenyl ether, and octabrominated diphenyl ether), silica dust, chlorinated or brominated dibenzodioxins and dibenzofurans, and hexavalent chromium.

using an appropriate combination of strategies, including but not limited to (in order of priority):

- (1) Engineering controls such as ((A)-(C) are in order of priority):
    - (A) Substitution (e.g., replacing a toxic solvent with one less toxic),
    - (B) Isolation (e.g., automating a process to avoid employee exposure), or
    - (C) Ventilation and, if appropriate, capture (e.g., fume hood),And
    - (D) Dust control, capture, and clean up, and
    - (E) Emergency shut-off systems, and
    - (F) Fire suppression systems,
  - (2) Administrative and work practice controls including appropriate combinations of:
    - (A) Regular, documented health and safety training that covers information from the hazardous assessment, safe management handling, spill prevention, engineering controls, equipment safety, and use and care of personal protection equipment; with training for new hires and refresher courses for all employees that is understandable to them given language and level-of-education considerations,
    - (B) Job rotation as feasible given workforce size,
    - (C) Safe work practices,
    - (D) Medical surveillance,
    - (E) Safety meetings.
  - (3) Personal protective equipment, including respirators, protective eyewear, cut-resistant gloves, etc. as appropriate for the risks involved in the tasks being performed.
- (e) A responsible electronics recycler utilizes monitoring and sampling protocols to provide assurances that the practices it employs are effectively and continuously managing the risks it has identified. This includes complying with all applicable Federal or State OSHA standards and PELs for sampling and/or monitoring.
  - (f) A responsible electronics recycler treats its entire workforce, including volunteer workers, temporary workers, and anyone else performing activities in its facilities, using the standard of care established pursuant to section (d) of this provision.
  - (g) A responsible electronics recycler designates a qualified employee or consultant to coordinate its efforts to promote worker health and safety. This individual is identified to all employees and two-way communication is encouraged between employees and this individual regarding potential hazards and how best to address them.

#### Removal and Handling of Sub-Components Posing Higher Risks

- (h) (1) A responsible electronics recycler removes from equipment and components any sub-components that would pose a risk to worker safety, public health, or the environment during subsequent processing—this includes batteries and fluorescent tubes containing mercury.
- (2) A responsible electronics recycler handles these sub-components in a manner consistent with the regulatory requirements that apply to the items and any substances contained in them.

#### Storage

- (i) A responsible electronics recycler stores the sub-components removed per section (h), and equipment and components destined for reuse, in a manner that:
  - (1) Protects them from adverse atmospheric conditions and floods and, as warranted includes a catchment system, and
  - (2) Is secure from unauthorized entrance, and
  - (3) Is in clearly labeled containers and/or storage areas.
- (j) A responsible electronics recycler does not engage in “speculative accumulation”, i.e. the storage of any material where less than 75% of the material by weight or volume is sent to downstream vendors in any 12-month period.

#### Exceptional Releases

- (k) A responsible electronics recycler is prepared at all times to implement the practices set forth in its EHSMS for responding to and reporting exceptional releases, accidents, spills, fires, explosions, and other out-of-the-ordinary events that pose risks to worker safety, public health, or the environment.

### **6. Refurbishment Operations**

*General Principle – Responsible electronics recyclers adhere to the R2 practices described in this document when undertaking on-site, and shipping to downstream, refurbishment operations.*

R2 Practices:

- (a) A responsible electronics recycler adheres to this document’s R2 practices for its onsite and sub-contracted refurbishment operations, contractually requiring sub-contractors to conform to these practices and auditing them in a manner that can ensure conformity.
- (b) A responsible electronics recycler adheres to the R2 practices relating to downstream due diligence (Provision 10) and exporting (Provision 11) when shipping equipment or components to downstream vendors for refurbishment.

### **7. Equipment and Components Going to Reuse**

*General Principle – Responsible electronics recyclers take all practical steps to direct equipment and components to reuse. For all equipment or components destined for reuse, they adhere to the R2 practices described in this document – including those relating to due diligence downstream and exporting – until it tests any equipment or components that contain a Material of Concern, ensures they are functioning properly, and properly ships them.*

R2 Practices:

- (a) A responsible electronics recycler takes all practical steps to direct equipment and components to reuse, unless a customer requires other management options or the equipment/components are substantially outdated.

- (b) A responsible electronics recycler adheres to all the R2 practices described in this document when managing or engaging in transactions involving equipment and components destined for reuse. However, a recycler need not adhere to the practices relating to due diligence downstream (Provision 10) and exporting (Provision 11) for a shipment of equipment and/or components going to reuse after the recycler:
  - (1) Tests, using test methods appropriate for the types of equipment and/or components in the shipment, any equipment or components that contain a Material of Concern and ensures they are functioning properly (see Definitions), and
  - (2) Accurately labels the equipment and components, and packages and ships them in a manner that will minimize damage during transport.

## **8. Separation and Recovery of Reclaimable Materials**

*General Principle – Responsible electronics recyclers recover the reclaimable materials in equipment and components not destined for reuse unless it is not technically or economically feasible to do so. They first separate materials as appropriate and they utilize effective, safe strategies for recovering the reclaimable materials.*

R2 Practices:

- (a) A responsible electronics recycler identifies and utilizes effective and safe strategies for recovering reclaimable materials from each type of equipment and component not directed to reuse, unless it is not technically or economically feasible to do so.
- (b) A responsible electronics recycler dismantles, separates, and/or mechanically processes, as appropriate, the equipment and components from which reclaimable materials are to be recovered into separate “streams” as necessary to maximize value and minimize waste, and to enable safe management through to final disposition (see Definitions).
- (c) A responsible electronics recycler directs each stream from which reclaimable materials are to be recovered to a facility that the recycler verifies:
  - (1) Is designed, managed, licensed, and insured to recover reclaimable materials from the stream, and
  - (2) Is in compliance with its environmental and worker safety legal obligations, and
  - (3) Possesses and adheres to an environmental, health, and safety management system consistent with Provision 3 of this document, and
  - (4) If the stream contains Materials of Concern, appropriately manages any by-products or wastes produced at the facility from the stream shipped by the recycler.

## **9. Materials that Cannot Be Recovered**

*General Principle – Responsible electronics recyclers utilize safe energy recovery or disposal*

*strategies for any remaining materials. They do not send Materials of Concern to incinerators or solid waste landfills that are not designed to safely accommodate the Materials of Concern and the substances they contain.*

R2 Practices:

- (a) A responsible electronics recycler identifies and utilizes effective and safe energy recovery or disposal strategies for all equipment, components, and materials that do not go for reuse and from which reclaimable materials are not technically or economically feasible to recover.
- (b) A responsible electronics recycler separates equipment, components, and materials destined for energy recovery or disposal into separate streams as necessary, in light of the energy recovery and/or disposal technologies to be employed, to minimize risks to worker safety, public health, and the environment.
- (c) A responsible electronics recycler may direct streams with high BTU values to energy recovery only if the energy recovery facility is designed to safely accommodate the Materials of Concern and the substances they contain.
- (d) A responsible electronics recycler does not send Materials of Concern to incinerators or solid waste landfills that are not designed to safely accommodate the Materials of Concern and the substances they contain.
- (e) A responsible electronics recycler directs each stream destined for energy recovery or disposal to a facility that the recycler verifies:
  - (1) Is designed, managed, licensed, and insured to recover energy from or engage in land disposal for all the contents of the stream, and
  - (2) Is in compliance with its environmental and worker safety legal obligations, and
  - (3) Possesses and adheres to an environmental, health, and safety management system consistent with Provision 3 of this document, and
  - (4) If the stream contains Materials of Concern, appropriately manages any by-products or wastes produced at the facility from the stream shipped by the recycler.

**10. Due Diligence Downstream**

*General Principle – Responsible electronics recyclers get assurances that their downstream vendors to which they ship Materials of Concern utilize practices that protect worker safety, public health, and the environment. They do so in a way that establishes a verifiable chain of custody for these materials through to final disposition.*

R2 Practices:

- (a) A responsible electronics recycler obtains from each downstream vendor that receives ~~to which it ships~~ Materials of Concern from it, either directly or indirectly, a written contractual commitment, and appropriate, verifiable business records and/or a third-party audit verifying, that the downstream vendor:

- (1) Conforms to Provision 2 (Legal Requirements).
  - (2) Conforms to Provision 3 (EHSMS).
  - (3) Conforms to Provision 4 (Recordkeeping).
  - (4) Has the expertise and technical capability to process each Material of Concern in a manner protective of worker safety, public health, and the environment.
  - (5) Conforms to Provision 6 (Refurbishment).
  - (6) Conforms to Provision 7 (Equipment and Components Going to Reuse) when engaging in transactions involving equipment and/or components containing Materials of Concern destined for reuse.
  - (7) Conforms to Provisions 8 (Separation and Recovery of Reclaimable Materials) and Provision 9 (Materials that Cannot Be Recovered).
  - (8) Conforms to Provision 11 (Exporting) when exporting Materials of Concern.
- (b) A responsible electronics recycler maintains access to the entire downstream chain of documentation and reviews its downstream vendors' conformity to these practices at least annually and more frequently as changes in circumstances warrant.
- (c) A responsible electronics recycler undertakes the practices in sections (a) and (b) in a way that establishes and maintains a verifiable chain of custody for these materials through to final disposition.
- (d) A responsible electronics recycler conducts due diligence as set forth in section (a) on all downstream vendors to which it ships Materials of Concern, except:
- (1) Vendors that are certified to these R2 practices by an accredited certification program.
  - (2) Vendors to which the recycler sends only equipment and components for reuse in conformity with Provision (7) (c).
  - (3) Vendors, to which the recycler sends materials for final disposition—in conformity with either Provision (8) (c) relating to the recovery of reclaimable materials or Provision (9) (e) relating to energy recovery and disposal—that the recycler verifies:
    - (A) Are designed, managed, licensed, and insured to receive and safely manage the equipment, components, and/or materials, and
    - (B) Are in compliance with their environmental and worker safety legal obligations, and
    - (C) Possess and adhere to an environmental, health, and safety management system consistent with Provision 3 of this document, and
    - (D) Appropriately manage any by-products or wastes produced at their facilities from the materials shipped by the recycler.

## 11. Exporting

General Principle – *Responsible electronics recyclers ensure that their exports of Materials of Concern comply with all legal importation requirements of each transit and recipient country.*

R2 Practices:

- (a) A responsible electronics recycler that exports Materials of Concern for any purpose—except when contained in equipment or components going for reuse in conformity with Provision 7 (c)—ensures that each transit and recipient country legally accepts such imports. For each country that is not a member of the Organization for Economic Co-operation and Development (OECD), this entails either:
  - (1) Requesting and receiving documentation, prior to shipping, from the Competent Authority<sup>4</sup> of each such transit and/or import country, that clearly verifies in English that the country legally accepts such imports, or
  - (2) Requesting and receiving, prior to shipping, confirmation—that the country(ies) legally accepts such imports—from the United States Environmental Protection Agency, which in turn will communicate with the other country’s Competent Authority to get a determination.

## 12. Transport

General Principle – *Responsible electronics recyclers transport all equipment, components, and materials using entities that have the necessary regulatory authorizations and in a manner protective of public health and the environment.*

R2 Practices:

- (a) A responsible electronics recycler ensures that all equipment, components, and materials to be transported are packaged appropriately in light of the risk they could pose during transportation to public health or the environment and the level of care warranted by their intended use.
- (b) A responsible electronics recycler obtains written documentation or a third-party certification indicating that their transporters have all the necessary regulatory authorizations and no significant violations of relevant legal requirements during the past 3 years.

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<sup>4</sup> In countries that have ratified the Basel Convention the “Competent Authority” is the entity that provides documentation concerning the legality of transboundary transactions involving equipment or components that the country classifies as Basel wastes. In countries that have not ratified this treaty, responsible recyclers acquire the necessary documentation from the national government entity legally responsible for determining the legality of such transboundary transactions.

### 13. Insurance

General Principle – *Responsible electronics recyclers possess insurance that is adequate to cover the potential risks and liabilities associated with the nature and size of the company’s operations.*

R2 Practices:

- (a) A responsible electronics recycler possesses adequate Comprehensive or Commercial General Liability Insurance including coverage for bodily injury, property damage, pollutant releases, accidents and other emergencies.

### 14. Closure Plan and Financial Responsibility

General Principle – *Responsible electronics recyclers have assurances in place regarding the proper closure of their facilities.*

R2 Practices:

- (a) A responsible electronics recycler develops and keep current a written plan and a sufficient financial instrument that assures proper closure of the facility and assures against abandonment of any electronics recycling products, components, or materials.

### 15. Data Sanitization/Destruction

General Principle – *Responsible electronics recyclers employ current generally-accepted data destruction procedures.*

R2 Practices:

- (a) A responsible electronics recycler sanitizes or destroys data on hard drives and other data storage devices (the National Institute of Standards and Technology’s (NIST’s) Guidelines for Media Sanitation – Special Publication 800-88 88<sup>5</sup> lists categories of devices which need sanitization consideration). The recycler adheres to the data sanitization or destruction practices described in the NIST Guidelines for Media Sanitation: Special Publication 800-88 or another current generally-accepted standard, or is certified by the National Association for Information Destruction (NAID) or another generally-accepted certification program, unless otherwise requested in writing by the customer.
- (b) Recyclers shall document their data destruction procedures.
- (c) Employees involved in data destruction shall receive appropriate training on a regular basis.
- (d) Data destruction processes shall be reviewed and validated by an independent party on a periodic

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<sup>5</sup> See [http://csrc.nist.gov/publications/nistpubs/800-88/NISTSP800-88\\_rev1.pdf](http://csrc.nist.gov/publications/nistpubs/800-88/NISTSP800-88_rev1.pdf)

basis.

## 16. Facility Security

General Principle – *Responsible electronics recyclers employ facility security measures appropriate for the equipment they handle and customers they serve.*

### R2 Practices:

(a) A responsible electronics recycler has a functioning security program that controls access to all or parts of the facility in a manner and to a degree appropriate given the type of equipment handled and the needs of the customers served. The program could include a combination of the following:

- (1) Photo ID
- (2) Badge readers
- (3) Manual logs
- (4) Video surveillance
- (5) Locked doors
- (6) Receptionist and security guards
- (7) Perimeter fencing
- (8) Escorts
- (9) Visitor logs
- (10) Securing facility dock and bay areas when not in use
- (11) Locking gates and doors to storage and processing areas

(b) A responsible electronics recycler has adequate lighting inside and outside of their facilities.

## **DEFINITIONS**

### **Accredited Certification Body**

An “accredited certification body” is accredited under ISO Guide 66 or ISO/IEC Standard 17021:2006 to certify for a standard that ????

### **Downstream Vendors**

“Downstream vendors” include any entity to which a recycler transfers used or end-of-life electronic equipment, components, or materials including reuse, refurbishing, demanufacturing, processing, materials recovery, energy recovery, and disposal facilities.

### **Electronic Equipment**

“Electronic equipment” includes computers and peripheral equipment – central processing units (CPU’s), monitors, printers, keyboards, scanners, storage devices, servers, networking systems; copiers; fax machines; imaging systems; printing systems; telephones; televisions; video cassette recorders; camcorders; digital cameras; control boxes; stereo systems; compact disc players, radios, cell phones; pagers; personal digital assistants (PDAs); calculators; organizers; and game systems and their accessories. It furthermore includes any other or new (future) types of equipment that are designed primarily to store or convey information electronically, and any new accessories to such equipment.

### **Final Disposition**

“Final Disposition” refers to the process of reclaiming material, recovering energy from material, or land disposing of material.

### **Functioning Properly**

“Functioning Properly” means a piece of equipment or component can perform the primary functions it originally was designed to perform and that it does not contain any components or subcomponents containing a Material of Concern that a downstream vendor or end user would typically remove and discard upon receipt. For notebook batteries, “functioning properly” means capable of holding at least a 45 minute charge under typically use and conditions.

### **Materials of Concern**

“Materials of Concern” include each of the following, and any equipment or component, or any aggregate material(s) derived from end-of-life equipment or components (e.g. shredded, granulated, or mixed materials) containing any of the following:

- (1) Any devices, including fluorescent tubes, containing mercury or PCBs

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(2) Batteries

(3) Toner

(4) CRTs and leaded glass (though not when it has been both washed and sorted)

(5) Circuit boards (whole, shredded, or in other form)

These items are included in the definition because of their varying levels of potential for improper handling and/or management that could result in risk to worker safety, public health, or the environment.

### **Recyclers**

“Recyclers” includes but need not be limited to electronics resellers, refurbishers, recyclers, demanufacturers, processors, asset recoverers, brokers, as well as leasing companies that engage in these activities

### **Third-Party Auditor**

“Third-party auditors” are (a) individuals or entities established in the business of conducting environmental audits of companies and that (b) do not have an affiliation or relationship with the company it is auditing other than the formal auditing relationship.