

DRAFT Facilitator Strawproposal v.17.1 11/30/07 – This draft document does not represent the views of stakeholders and has not been endorsed by USEPA or any other group.

RESPONSIBLE RECYCLING
(“R2”) PRACTICES
For
ELECTRONICS RECYCLERS

Facilitator Draft Strawproposal

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NOTE REGARDING VERSION 17

This draft document remains a work in progress with outstanding issues relating to some of its key provisions. It will be revised prior to field testing.

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~~ potential adverse environmental, health, and safety effects that can arise if the materials are managed without appropriate safeguards. ~~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 on-site management of these materials, and strong ~~due diligence~~ practices regarding recyclers’ selection, and ongoing due diligences of downstream vendors for 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. If a requirement of this document conflicts with an applicable legal requirement, the recycler must adhere to the legal requirement.

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 product of the group’s discussions, not a final product. It has been drafted by the group’s facilitator¹. Issues remain (e.g. how to confirm and disseminate information about other countries’ importation requirements), and further guidance for both recyclers and auditors will be needed. **The document will be reviewed and field tested, and language changed, before a final version is available.**

¹ 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. **Environmental, Health, and Safety Management System** *An R2 electronics recycler shall develop and use/utilize an Environmental, Health, and Safety Management System (EHSMS) to plan and monitor its environmental, health, and safety practices, including the activities it undertakes to conform to these R2 Practices.*
2. **“Reuse, Recover, ...” Hierarchy of Responsible Management Strategies** *An R2 electronics recycler shall develop and adhere to a policy for managing used and end-of-life electronic equipment in accordance with that is based on a “reuse, recover, dispose” hierarchy of responsible management strategies.*
3. **Legal Requirements** *An R2 electronics recycler shall maintain compliance with all applicable environmental, health, and safety legal requirements.*
4. **On-Site: Environment, Health, and Safety** *An R2 electronics recycler shall utilize practices at their facilities that protect worker health and safety; ~~public health~~; and the environment.*
5. **On-Site: Appropriate Management of Certain Items** *An R2 electronics recycler shall manage certain items in end-of-life electronic equipment to minimize worker health and safety and environmental risks during subsequent processing or disposal of the equipment and materials.*
6. **On-Site: Refurbishing, Testing, and Packaging of Equipment and Components Going to Reuse** *An R2 electronics recycler shall refurbish as needed, properly test, and adequately package equipment and components going to reuse.*
7. **On-Site: Storage** *An R2 electronics recycler shall store items and materials that may cause risk to worker health or safety or the environment if they were inappropriately stored, and equipment and components going to reuse, in an appropriate manner.*
8. **On-Site: Tracking Throughput** *An R2 electronics recycler shall maintain business records sufficient to demonstrate the material flow of equipment, components, and materials that pass through its facility.*
9. **On-Site: Data Sanitization/Destruction** *An R2 electronics recycler shall employ ~~current~~ generally-accepted data destruction procedures.*
10. **On-Site: Facility Security** *An R2 electronics recycler shall employ facility security measures appropriate for the equipment they handle and customers they serve.*
11. **On-Site: Insurance, Closure Plan, and Financial Responsibility** *An R2 electronics recycler shall possess insurance that is adequate to cover the potential risks and liabilities associated with the nature and size of the company’s operations, and shall have adequate legal and financial assurances in place regarding for the proper closure of its facilities.*
12. **Recordkeeping** *An R2 electronics recycler shall ~~maintain business records sufficient to demonstrate the material flow of equipment, components, and materials that pass through its facility.~~*

13. **Downstream: Appropriate Downstream Vendors and Due Diligence for Various Types of Equipment, Components, and Materials**~~**Equipment and Components Going to Reuse**~~ *An R2 electronics recycler shall direct various types of equipment, components, and materials to downstream vendors that have the ability to, and contractually agree to, appropriately manage them. An R2 electronics recycler test equipment and components that contain a Materials of Concern, and ensure they are functioning properly, before shipping them for reuse.*
14. ~~**Downstream: Separation and Recovery of Raw Materials**~~ *R2 electronics recyclers utilize effective, safe strategies for recovering raw materials.*
15. ~~**Materials that Are Not Reused or Recovered**~~ *R2 electronics recyclers send Materials of Concern that are not reused or recovered to facilities designed to safely manage these materials and the substances they contain.*
16. ~~**Exporting**~~**Compliance with other Countries' Import Laws when Exporting** *An R2 electronics recycler ensure that their exports of Materials of Concern shall comply with all legal importation requirements of each transit and recipient country, and shall contractually obligate and document its downstream vendors' adherence to such legal requirements.*
17. ~~**Due Diligence**~~ *An R2 electronics recycler shall get assurances that the downstream vendors to which it sends 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.*
18. **Transport** *An R2 electronics recycler shall 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.*
19. **Recordkeeping** *An R2 electronics recycler shall maintain the documentation necessary for an auditor to assess its conformity to the requirements of this document.*
20. **Auditing to these R2 Practices** *An R2 electronics recycler shall only claim to conform to these R2 Practices after it has been audited and found to conform to them by an accredited certification body.*

THE R2 PRACTICES

1. Environmental, Health, and Safety Management System

General Principle – *An R2 electronics recycler shall develop and use an Environmental, Health, and Safety Management System (EHSMS) to plan and monitor its environmental, health, and safety practices, including the activities it undertakes to conform to these R2 Practices.*~~R2 electronics recyclers utilize an Environmental, Health, and Safety Management System (EHSMS).~~

R2 Practices:

- (a) An R2 electronics recycler shall develop, document, fully implement, review at least annually, and update 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” model for continual improvement that includes EHS hazard and risk identification and goal-setting (Plan); training, communications, operational controls, and emergency preparedness (Do); monitoring & measurement, nonconformance identification and root-cause analysis, and system audits (Check); and management review and corrective action (Act). ~~Is based on a “plan, do, check, act”² 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~~
 - (4) Includes a procedure(s) 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
 - (4) Includes a plan listing the activities undertaken to conform to the requirements of these R2 Practices and identifying the documentation necessary to show conformity with these requirements.
 - (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.~~

2. “Reuse, Recover, ...” Hierarchy of Responsible Management Strategies

² 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.

General Principle – *An R2 electronics recycler shall develop and adhere to a policy for managing used and end-of-life electronic equipment ~~in accordance with that is based on a “reuse, recover, dispose” hierarchy of responsible management strategies.~~*

R2 Practices:

(a) An R2 electronics recycler shall develop in writing and adhere to a policy stating how it manages hierarchy of responsible management strategies for used and end-of-life electronics equipment, with respect to both on-site activities and the selection of downstream vendors, which calls for, in order of priority is based on a hierarchy of responsible management strategies:

(1) Reuse – Taking ~~An R2 electronics recycler shall take all practical~~ steps to direct equipment and components to reuse – if/after they are functioning properly and any data is destroyed – unless a customer directs otherwise ~~requires objects to reuse 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 Raw Materials Recovery – An R2 electronics recycler shall separate as appropriate the materials in equipment and components that are not directed to reuse and direct them to appropriate state-of-the-art materials recovery facilities 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 raw materials,~~

~~(B) As appropriate, mechanically processing the components or materials in a stream to enable effective and safe recovery of raw materials,~~

~~(B) Sending the separated materials for recovery of raw materials at facilities that use technologies protective of health, safety, and the environment.~~

(3) Energy Recovery or Disposal – An R2 electronics recycler shall direct each remaining material to Utilizing appropriate appropriate state-of-the-art energy recovery and/or disposal technologies facilities 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) An R2 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.~~

3. Legal Requirements

General Principle – *An R2 electronics recycler shall maintain compliance with all applicable environmental, health, and safety legal requirements.*

R2 Practices:

- (a) An R2 electronics recycler ~~shall take the steps necessary to~~ comply with all Federal, State, and local environmental, health, and safety 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) An R2 electronics recycler shall make available upon request by customers notice of any material fines, regulatory orders, or violations relating to environmental, health, or safety legal requirements in the previous 3 years and within 60 days after any subsequent fine or regulatory order.

4. **On-Site: Environment, Health, and Safety Practices**

General Principle – *R2 electronics recyclers utilize practices at their facilities that protect worker health and safety ~~public health,~~ and the environment.*

R2 Practices:

General

- (a) An R2 electronics recycler ~~has~~ shall possess 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) An R2 electronics recycler adheres to good housekeeping standards, including keeping all work and storage areas clean and orderly.

Workforce and Environmental Protection

- (c) An R2 electronics recycler shall conduct 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 substances³, noise, ergonomic factors, thermal stress, substandard machine guarding, cuts and abrasions, etc.. The hazards identification and assessment ~~shall be~~ captured in writing and incorporated as a component of the recycler’s EHSMS.
- (d) An R2 electronics recycler shall manage the hazards and minimizes the releases it identifies 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),

³ 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.

- (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) Personal protective equipment, including respirators, protective eyewear, cut-resistant gloves, etc. as appropriate for the risks involved in the tasks being performed.
- (3) 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.
- (e) An R2 electronics recycler shall utilize 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) An R2 electronics recycler shall treat 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) An R2 electronics recycler shall designate a qualified employee or consultant to coordinate its efforts to promote worker health and safety. This individual shall be identified to all employees and two-way communication shall be 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) An R2 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. At a minimum, batteries and mercury-containing devices such as fluorescent lamps and mercury switches are removed from equipment and components prior to mechanical or thermal processing and handled separately, according to (h) (2).~~
- ~~(2) An R2 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) An R2 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) An R2 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

(h) An R2 electronics recycler **shall be** 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.

5. On-Site: Appropriate Management of Certain Items

General Principle – An R2 electronics recycler shall manage certain items in end-of-life electronic equipment to minimize worker health and safety and environmental risks during subsequent processing or disposal of the equipment and materials.

R2 Practices:

(a) An R2 electronics recycler shall remove from equipment and components items that may pose a risk to worker safety, public health, or the environment if not removed prior to subsequent processing or disposal. Accordingly, an R2 electronics recycler shall **remove**:

- (1) Prior to shredding, ~~remove:~~ toner cartridges, CRT glass, batteries, mercury-containing fluorescent lamps and switches, ~~and any items that contain PCBs, and circuit boards, and~~
- (2) Prior to thermal processing (i.e. materials recovery processing energy recovery, or incineration), ~~remove:~~ toner cartridges, CRT glass, batteries, mercury-containing fluorescent lamps and switches, ~~and any items that contain PCBs, and circuit boards, and~~
- (3) Prior to energy recovery or incineration: CRT glass, batteries, mercury-containing fluorescent lamps and switches, any items that contain PCBs, and circuit boards, and
- (4) Prior to land disposal, ~~remove:~~ toner cartridges, CRT glass, batteries, mercury-containing fluorescent lamps and switches, any items that contain PCBs, and circuit boards.

(b) An R2 electronics recycler shall manage the items removed from equipment and components pursuant to section (a) in a manner consistent with the regulatory requirements that apply to them and any substances contained in them.

6. On-Site: Refurbishing, Testing, and Packaging of Equipment and Components Going to Reuse

General Principle: An R2 electronics recycler shall refurbish as needed, properly test, and adequately package equipment and components going to reuse.

R2 Practices:

(a) An R2 electronics recycler that sells or donates equipment or components for reuse shall:

- (1) Not sell or donate equipment or components for reuse if the entity from which it received them directs otherwise. ~~Confirm that the equipment and/or components were obtained from or through a customer that was aware of, and did not object to, the possibility of their going to reuse, and~~
- (2) ~~Confirm that the equipment and components are not so outdated that their reuse lifespan is likely to be less than one year, and~~
- (3) Refurbish the equipment and/or components as needed, conforming to all the requirements of this document during all such activities, and
- (4) Confirm through appropriate testing procedures that equipment or components containing CRT glass, toner cartridges, batteries, mercury-containing fluorescent lamps and switches, any items that contain PCBs, or circuit boards are functioning properly for their intended reuse, and
- (5) Package the equipment and/or components in a manner that will protect them during transportation.

7. **On-Site: Storage**

General Principle – An R2 electronics recycler shall store items and materials that may cause risk to worker health or safety or the environment if they were inappropriately stored, and equipment and components going to reuse, in an appropriate manner.

(h) An R2 electronics recycler shall store items removed pursuant to Provision 5, 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.

(i) ~~An R2 electronics recycler shall send at least 75% of the material (by weight or volume) that it has onsite to downstream vendors during any 12-month period.~~

8. **On-Site: Tracking Throughput**

General Principle – An R2 electronics recycler shall maintain business records sufficient to demonstrate the material flow of equipment, components, and materials that pass through its facility.

R2 Practices:

(a) An R2 electronics recycler shall maintain for at least three years 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.

9. **On-Site: Data Destruction**

General Principle – *An R2 electronics recycler shall employ generally-accepted data destruction procedures.*

R2 Practices:

- (a) An R2 electronics recycler shall sanitize or destroy 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 800-88 88⁴ lists categories of devices which need sanitization consideration). The R2 electronics recycler shall adhere 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 be certified by ~~the National Association for Information Destruction (NAID)~~ or another a generally-accepted certification program, unless otherwise requested in writing by the customer.
- (b) An R2 electronics recycler 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 basis.

10. **On-Site: Facility Security**

General Principle – *An R2 electronics recycler shall employ facility security measures appropriate for the equipment they handle and customers they serve.*

R2 Practices:

- (a) An R2 electronics recycler shall maintain 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~~

⁴ See http://csrc.nist.gov/publications/nistpubs/800-88/NISTSP800-88_rev1.pdf

~~(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) — An R2 electronics recycler has adequate lighting inside and outside of their facilities.~~

11. On-Site: Insurance, Closure Plan, and Financial Responsibility

General Principle – An R2 electronics recycler shall possess insurance that is adequate to cover the potential risks and liabilities associated with the nature and size of the company's operations, and shall have adequate legal and financial assurances in place for the proper closure of its facilities.

R2 Practices:

(a) An R2 electronics recycler shall possess adequate Comprehensive or Commercial General Liability Insurance including coverage for bodily injury, property damage, pollutant releases, accidents and other emergencies.

(b) An R2 electronics recycler shall develop 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.

12.

~~General Principle —~~

~~R2 Practices:~~

~~(a) An R2 electronics recycler maintain 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) An R2 electronics recycler keeps such documentation for at least 3 years.~~

13. Downstream: Appropriate Downstream Vendors and Due Diligence for Various Types of Equipment, Components, and Materials

General Principle – An R2 electronics recycler shall direct various types of equipment, components, and materials to downstream vendors that have the ability to, and contractually agree to, appropriately manage them.

R2 Practices:

Downstream Vendors for Equipment and Components Going to Reuse

~~(a) An R2 electronics recycler shall transfer all equipment and components going to reuse pursuant to Provision 6 to either:~~

~~(1) An end-reuser, or~~

~~(2) A downstream vendor that contractually agrees to sell the equipment and components for reuse and to provide documentation that will enable an auditor to confirm that they are doing so.~~

Downstream Vendors for Whole Equipment and Components Not Going to Reuse

~~(b) An R2 electronics recycler shall transfer equipment and components (except equipment and components going to reuse in conformity with Provision 6) that are not going to reuse pursuant to Provision 6 and that contain any of the following items – toner cartridges, CRT glass, batteries, mercury-containing fluorescent lamps and switches, any items that contain PCBs, and circuit boards – only to downstream vendors who contractually agree to conform, and to provide documentation that will enable an auditor to confirm that they conform, to the requirements of this document pertaining to:~~

~~(1) On-site management of these items (Provision 5), and~~

~~(2) Exporting of these items or any equipment or components that contain them (Provision 13), and~~

~~(3) Selection and ongoing due diligence of downstream vendors for these items and equipment and components containing them (this Provision), and~~

~~(4) Refurbishing, testing, and packaging of equipment and components going to reuse (Provision 6).~~

Downstream Vendors for Removed Toner Cartridges, CRT glass, Batteries, Mercury-Containing Fluorescent Lamps and Switches, any Items that Contain PCBs, and Circuit Boards

~~(c) An R2 electronics recycler shall transfer these items – toner cartridges, CRT glass, batteries, mercury-containing fluorescent lamps and switches, any items that contain PCBs, and circuit boards – that have been when removed from equipment or components, only to downstream vendors who: (1) — contractually agree to adhere to (1) – (7) below, and to provide documentation that will enable an auditor to confirm that they do so:~~

~~(A) Process each type of item themselves utilizing state-of-the-art thermal processing or land disposal technology that is designed and licensed for the type of item, or~~

~~(B) Return each type of item to its original manufacturer, or~~

~~(C) Send each type of item directly to a facility that utilizes state-of-the-art thermal processing or land disposal technology that is designed and licensed for the type of item, in conformity with Provision 12 (Exporting) if the facility is in another country.~~

- (1) For toner cartridges: combust them in an energy recovery facility that is designed and licensed to accept them, or return them to their original manufacturer,
- (2) For CRT glass, smelt them in a lead smelting facility that is designed and licensed to accept them,
- (3) For mercury containing fluorescent lamps and switches: retort them in a mercury retorting facility that is designed and licensed to accept them,
- (4) For items containing PCBs, ???
- (5) For circuit boards, ???
- (6) For all items: conform to the requirements of this provision relating to selection and ongoing due diligence of downstream vendors,
- (7) For all items: conform the exporting requirements of this document (Provision 13).

Ongoing Due Diligence

~~(d) An R2 electronics recycler shall obtain every two years, from each downstream vendor with which it does business pursuant to sections (b) and (c), the documentation each vendor has contractually agreed to provide, and shall discontinue doing business with any downstream vendor whose documentation indicates it is not conforming to the requirements of this document referenced in sections (b) and (c).~~

~~14. **Downstream: Separation and Recovery of Raw Materials** – R2 electronics recyclers utilize effective, safe strategies for recovering raw materials.~~

~~15. **Materials that Are Not Reused or Recovered** – R2 electronics recyclers send Materials of Concern that are not reused or recovered to facilities designed to safely manage these materials and the substances they contain.~~

~~16. **Exporting Compliance with other Countries' Import Laws when Exporting**~~

~~General Principle – An R2 electronics recycler ensure that their exports of Materials of Concern shall comply with all legal importation requirements of each transit and recipient country, and shall contractually obligate and document its downstream vendors' adherence to such legal requirements.~~

R2 Practices:

~~(a) An R2 electronics recycler that exports Materials of Concern for any purpose toner cartridges, CRT glass, batteries, mercury-containing fluorescent lamps and switches, any items that contain PCBs, and circuit boards, or equipment or components containing any of these—except when contained in equipment or components going for reuse in conformity with Provision 6—in conformity with Provision 6 (b)—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 shall either:~~

- (1) Request and receive documentation, prior to shipping, from the Competent Authority⁵ of each

⁵ 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

transit and/or import country, that clearly verifies that the country legally accepts such imports, or

- (2) Requests and receives prior to shipping confirmation—that ~~the country(ies)~~each transit and/or import country 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.

~~(b) An R2 electronics recycler shall contractually obligate its downstream vendors to conform to this provision – including this section (b) – and to provide documentation on an annual basis every two years sufficient for an auditor to confirm their conformity.~~

~~(c) And R2 electronics recycler shall review the documentation each downstream vendor provides pursuant to section (b) and shall discontinue doing business with any downstream vendor whose documentation indicates it – or any of its downstream vendors – is not conforming to the requirements of this provision.~~

17. ~~Due Diligence~~

~~General Principle—An R2 electronics recycler shall get assurances that the downstream vendors to which it sends 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) An R2 electronics recycler undertakes the practices in sections (b) and (c) below in a way that establishes and maintains a verifiable chain of custody for Materials of Concern through to final disposition.~~

~~(b) An R2 electronics recycler obtains from each downstream vendor to which it sends Materials of Concern, either directly or through intermediate vendors, a written contractual commitment, and 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) Conforms to sections a, e, h, and i of Provision 5 (On-Site Practices).~~

~~(5) Conforms to Provision 6 (Equipment and Components Going to Reuse).~~

~~(7) Conforms to Provisions 7 (Separation and Recovery of Raw Materials).~~

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.

~~(8) Conforms to Provision 8 (Materials that Are Not Reused or Recovered).~~

~~(9) Conforms to Provision 10 (Exporting) when exporting Materials of Concern.~~

~~(e) An R2 electronics recycler maintains access to the entire downstream chain of documentation and reviews its downstream vendors' conformity to these practices at least every two years and more frequently as changes in circumstances warrant.~~

~~(d) An R2 electronics recycler does not need to conduct the due diligence set forth in section (b) for:~~

~~(1) Vendors that are certified to these R2 practices by an accredited certification program.~~

~~(2) Vendors to which the R2 electronics recycler sends only equipment and components for reuse in conformity with Provision (6) (b).~~

~~(3) Vendors, to which a recycler sends materials for final disposition in conformity with the due diligence and other practices set forth in either Provision (7) relating to the recovery of raw materials or Provision (8) relating to energy recovery and disposal.~~

18. **Transport**

General Principle – *An R2 electronics recycler shall 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) An R2 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) An R2 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.

15. **Recordkeeping**

General Principle – An R2 electronics recycler shall maintain the documentation necessary for an auditor to assess its conformity to the requirements of this document.

R2 Practices:

(a) An R2 electronics recycler shall review the R2 Practices Auditor Checklist and any other relevant guidance materials and maintain in a single location each piece of documentation called for in the Checklist.

16. Claiming Conformity to these R2 Practices

General Principle – An R2 electronics recycler shall only claim to conform to the R2 Practices after it has been audited and found to conform to them by an accredited certification body.

R2 Practices:

- (a) An R2 electronics recycler shall only claim to meet, conform, or be certified to the R2 Practices after it has been audited and certified to conform to each of the requirements set forth in this document –in the manner set for in the R2 Practices Auditor Checklist– by an accredited certification body.
- (b) An R2 electronics recycler shall not continue to claim to meet, conform, or be certified to the R2 Practices after its certification by an accredited certification body expires or is revoked.

19. ~~**Equipment and Components Going to Reuse**~~

~~General Principle—*R2 electronics recyclers test equipment and components that contain a Material of Concern, and ensure they are functioning properly, before shipping them for reuse.*~~

~~R2 Practices:~~

~~(a) An R2 electronics recycler adheres to this document’s R2 practices for all onsite activities relating to equipment and components destined for reuse.~~

~~(1) An R2 electronics recycler adheres to this document’s R2 practices for its onsite and sub-contracted refurbishment operations, and when shipping equipment or components to downstream vendors for refurbishment.~~

~~(b) Before shipping equipment or components for reuse, an R2 electronics 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.~~

20. ~~**Separation and Recovery of Raw Materials**~~

~~General Principle—*R2 electronics recyclers utilize effective, safe strategies for recovering raw materials.*~~

~~R2 Practices:~~

~~(a) An R2 electronics recycler dismantles, separates, and/or mechanically processes, as appropriate, the equipment and components from which raw materials are to be recovered into separate “streams” to generate value and minimize waste, and to enable safe management through to final disposition (see Definitions).~~

~~(b) An R2 electronics recycler conducts due diligence on each downstream vendor to which it sends materials for recovery, obtaining a written contractual commitment, and verifiable business records and/or a third-party audit verifying, that the downstream vendor:~~

~~(1) Is designed, managed, licensed, and insured to recover 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, safely manages any by-products or wastes~~

~~produced at the facility from the stream shipped by the recycler.~~

21. **Materials that Are Not Reused or Recovered**

~~General Principle — R2 electronics recyclers send Materials of Concern that are not reused or recovered to facilities designed to safely manage these materials and the substances they contain.~~

~~R2 Practices:~~

- ~~(a) An R2 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.~~
- ~~(b) An R2 electronics recycler may direct streams with high BTU values to energy recovery only if the energy recovery facility is designed to safely manage any Materials of Concern (and the substances they contain) found in the streams.~~
- ~~(c) An R2 electronics recycler sends Materials of Concern to facilities designed to safely manage these materials and the substances they contain.~~
- ~~(d) An R2 electronics recycler conducts due diligence on each downstream vendor to which it sends materials for energy recovery or disposal, obtaining a written contractual commitment, and verifiable business records and/or a third-party audit verifying, that the downstream vendor:
 - ~~(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, safely manages any by-products or wastes produced at the facility from the stream shipped by the recycler.~~~~

DEFINITIONS

Accredited Certification Body

An “accredited certification body” is accredited under ISO Guide 66 or ISO/IEC Standard 17021:2006 to certify electronics recyclers to the R2 Practices.

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, incineration, and disposal facilities.

Electronic Equipment

“Electronic equipment”, also referred to as “equipment and components”, 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 point in the recycling/disposal chain beyond which no further processing takes place and the materials are either in a form capable of direct use as a feedstock in manufacturing new products, as an alternative to primary raw materials, or are finally disposed of (e.g. in a landfill or incinerator.) This includes e.g. smelters, glass-to-glass manufacturing facilities, landfills, incinerators, and waste-to-energy facilities.~~

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:–~~

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- ~~(1) Any devices, including fluorescent tubes, containing mercury or PCBs~~
- ~~(2) Batteries~~
- ~~(3) Toner~~
- ~~(4) CRTs and leaded glass, included unprocessed glass cullet, (though not leaded glass that 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. This list of Materials of Concern will be updated as appropriate.~~

Recyclers

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