

MATERIAL CATEGORIZATION GUIDE



DALHOUSIE UNIVERSITY - OFFICE OF SUSTAINABILITY

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The following guide categorizes materials into nine streams. Each major category has sub categories. It is important to have a constant set of categories and sub-categories for waste auditing, tracking, and planning.

Due to differences between waste management jurisdictions, it is challenging to consistently define waste streams according to collection regimes. Therefore, this guide groups materials according to physical properties except for hazardous waste which is classified according to applicable legislation (Table 1). This method of organization can be utilized to identify collection categories by each region. An example has been provided for Halifax Regional Municipality (Table 2).

With this guide, waste managers will be able to identify which materials they are handling in their waste streams. Once these materials have been properly identified, the NS ICI Waste Management Guide, can help to provide ideas for the reduction, reuse, and recycling of these materials.



Table 1: Material Categorization Summary Sheet

<p>1. <u>Fibre</u></p> <ul style="list-style-type: none"> • Corrugated Cardboard • Office Paper • Miscellaneous Paper • Other Mixed/Composite Paper 	<p>5. <u>Glass</u></p> <ul style="list-style-type: none"> • Glass Bottles and Containers (refundable) • Glass Bottles and Containers (non-refundable) • Remainder/Composite Glass
<p>2. <u>Organic</u></p> <ul style="list-style-type: none"> • Food • Boxboard/ Soiled Paper • Agricultural Crop Residues • Manures • Cooking Oil/Grease • Leaf and Yard Waste • Remainder/Composite Organic 	<p>6. <u>Construction and Demolition</u></p> <ul style="list-style-type: none"> • Concrete • Asphalt Paving • Asphalt Roofing • Lumber • Gypsum Board • Carpet • Rocks and Soils • Remainder/Composite
<p>3. <u>Plastic: Containers, Bags and Products</u></p> <ol style="list-style-type: none"> 1. Polyethylene terephthalate 2. High-density polyethylene 3. Poly(vinyl chloride) 4. Low-density polyethylene 5. Polypropylene 6. Polystyrene 7. Any combination of plastics 1 through 6. 	<p>7. <u>Hazardous</u></p> <p>Class 1 - Explosives Class 2 - Gases Class 3 - Flammable and combustible liquids Class 4 - Flammable solids Class 5 - Oxidizing substances; organic peroxides Class 6 - Poisonous (toxic) and infectious Class 7 - Radioactive Materials Class 8 - Corrosives Class 9 - Miscellaneous products, substances</p>
<p>4. <u>Metal</u></p> <ul style="list-style-type: none"> • Iron/Steel • Tin/Steel Cans • Aluminum • Aluminum Cans • Copper • Other Non-Ferrous • Remainder/Composite Metal 	<p>8. <u>Universal Waste</u></p> <ul style="list-style-type: none"> • Fluorescent Bulbs/Lamps • Paint • Vehicle and Equipment Fluids • Batteries –(all types) • Consumer Household Hazardous Wastes • Small Appliances • Regulated Electronic Goods
<p>9. <u>Composite & Miscellaneous Materials</u></p> <ul style="list-style-type: none"> • Textiles (such as clothing and blankets) • Bulky Appliances & non-regulated Electronic Devices • Bulky Furniture • Special Care Waste (Bio-medical) • Disposable Cups • Composite Packaging • Soiled plastic wrap and foil • End-of-Life Products 	

Table 2: Colour-coding materials by waste stream according to Halifax Regional Municipality (HRM)

<p>1. Fibre</p> <ul style="list-style-type: none"> • Corrugated Cardboard • Office Paper • Miscellaneous Paper • Other Mixed/Composite Paper 	<p>5. Glass</p> <ul style="list-style-type: none"> • Glass Bottles and Containers (refundable) • Glass Bottles and Containers (non-refundable) • Remainder/Composite Glass
<p>2. Organic</p> <ul style="list-style-type: none"> • Food • Boxboard/ Soiled Paper • Agricultural Crop Residues • Manures • Cooking Oil/Grease • Remainder/Composite Organic • Leaf and Yard Waste 	<p>6. Construction and Demolition</p> <ul style="list-style-type: none"> • Concrete • Asphalt Paving • Asphalt Roofing • Lumber • Carpet • Gypsum Board • Rocks and Soils • Remainder/Composite
<p>4. Plastic Containers and Bags</p> <ol style="list-style-type: none"> 1. Polyethylene terephthalate 2. High-density polyethylene 3. Poly(vinyl chloride) 4. Low-density polyethylene 5. Polypropylene 6. Polystyrene 7. Other <p>* Plastic Products (like toys, straws and cutlery)</p>	<p>7. Hazardous</p> <p>Class 1 - Explosives</p> <p>Class 2 - Gases</p> <p>Class 3 - Flammable and combustible liquids</p> <p>Class 4 - Flammable solids</p> <p>Class 5 - Oxidizing substances; organic peroxides</p> <p>Class 6 - Poisonous (toxic) and infectious</p> <p>Class 7 - Radioactive Materials</p> <p>Class 8 - Corrosives</p> <p>Class 9 - Miscellaneous products, substances</p>
<p>3. Metal</p> <ul style="list-style-type: none"> • Iron/Steel • Tin/Steel Cans • Aluminum • Aluminum Cans • Copper • Other Non-Ferrous • Remainder/Composite Metal 	<p>8. Universal Waste</p> <ul style="list-style-type: none"> • Fluorescent Bulbs/Lamps • Paint • Vehicle and Equipment Fluids • Batteries • Household Hazardous Wastes • Small appliances • Regulated Electronic Goods <p>• <i>Universal waste is a term not typically used in NS but is used in other jurisdictions. Recycling and special disposal options do exist in NS for these wastes.</i></p>
<p>9. Composite & Miscellaneous Waste</p> <ul style="list-style-type: none"> • Textiles • Bulky Appliances & Electronic Devices not regulated by AECS • Bulky Furniture • Special Care Waste 	<ul style="list-style-type: none"> • Disposable Cups • Composite Packaging • Soiled plastic wrap and foil • End-of-Life Products

Garbage
Recyclables

Organics
Paper

Cardboard
Universal Hazardous
Waste

Hazardous Waste
C&D Waste

1. FIBRE

Fibre is the primary component that makes up paper and cardboard. It is created by mechanically or chemically treating wood through a process called pulping. Fibres can be reused, typically in the range of five to seven times. After this point fibres become too short to be of use in the manufacturing of recycled paper. For this reason, paper products comprised of long fibres are typically more valuable for recycling than those made of shorter fibres. The recycling process for fibre, and therefore the marketability of fibre products, is dependent upon the quality and length of the fibres as well as any contamination which may be found in the original product including ink, dirt, and wax (U.S Environmental Protection Agency, 2011).

Corrugated Cardboard – Corrugated cardboard is easily identified by its triple layer construction, consisting of a center wavy layer that is sandwiched between two outer layers. It does not have any wax coating on the inside or outside. Examples include entire cardboard containers, such as shipping and moving boxes, computer packaging cartons, and pieces of boxes and cartons.

Office Paper – Generally refers to any type of paper used in offices. Examples include computer paper, colored paper, ruled stationary, manila folders, manila envelopes, index cards, white envelopes, white window envelopes.

Miscellaneous Paper – Refers to: (1) Magazines and catalogs including glossy magazines, catalogs, brochures, and pamphlets. (2) Phone books and directories including whole or damaged telephone books, “yellow pages,” real estate listings, and some non-glossy mail order catalogs. (3) Paper bags used at fast food restaurants and department stores. (4) Newspaper including glossy inserts, and all items made from newsprint, such as free advertising guides, election guides and plain news packing paper.

Other Mixed/Composite Paper – Items made mostly of paper that do not fit into any of the subtypes listed above. Paper may be combined with minor amounts of other materials such as wax or glues. Examples include, unused paper plates and cups, goldenrod colored paper, school construction paper/butcher paper, ice cream cartons and other frozen food boxes. The recyclability of these products will depend heavily on the quantity of contamination in the product.

2. ORGANICS

In Nova Scotia (NS), organic waste is composted in every region as required by landfill bans. Compostable organic materials are defined as vegetative matter, food processing waste, landscaping, garden and horticultural wastes, kitchen scraps, feed processing wastes, and other organic wastes which can be readily composted in composting facilities (Nova Scotia Environment, 2010).

Composting typically involves the aerobic decomposition of organic waste by a variety of microorganisms. The ratio of carbon to nitrogen is important for the decomposition process and an ideal carbon:nitrogen ratio is between 30:1 and 35:1. Higher paper content increases the carbon:nitrogen ratio. Compost is rich in nutrients and can be used as a soil amendment. Organic waste can also be processed through aerobic and anaerobic digestion. Anaerobic processes involves breaking down the waste in the absence of oxygen. The process used in in-vessel composting typically releases methane gas which can be captured and processed into a usable source of fuel as well as liquid and solid by-products which can be used as fertilizers (Smith & Scott, 2005). Aerobic

composting integrates air thus oxygen into the process such as in windrow composting. Certain materials may require some mechanical processing so they can be broken down in a shorter time span. In Nova Scotia, there are large centralized aerobic compost facilities along with backyard programs. There is a small pilot project in the valley which is anaerobic.

Food – Refers to food material resulting from the processing, storage, preparation, cooking, handling, or consumption of food. This type includes material from industrial, commercial, or residential sources. Examples include discarded meat scraps, dairy products, egg shells, fruit or vegetable peels, and other food items from homes, stores, and restaurants.

Boxboard/ Soiled Paper – Refers to lower grade fiber paper products such as shoe, cracker & cookie boxes, paper towel rolls, food napkins, paper plates, kitchen paper towels and those that have been contaminated with food or other material. *Wax coated cardboard is acceptable in the organics stream in most of NS outside of HRM.*

Agricultural Crop Residues – Plant material from agricultural sources. Examples include orchard and vineyard prunings, vegetable by-products from farming, residual fruits, vegetables, and other crop remains after usable crop is harvested.

Yard waste - Refers to organic materials that result from renovating or maintaining a yard. Examples include glass clippings, leaves, twigs and hedge trimmings.

Manures and Bedding– Manure and soiled bedding materials such as straw from domestic, research, farm, or ranch animals. Examples include manure and soiled bedding from animal operations, racetracks, riding stables, animal hospitals, and other sources.

Cooking Oil and Grease - Most typically produced by firms in the food service industry. These wastes cannot be handled through the regular organic waste stream and cannot be placed down drains. They must be placed in suitable containers and are often picked up by companies/individuals and used to create biofuel and other products such as soaps.

Remainder/Composite Organic – organic materials that cannot be put in any other type or subtype or have other waste associated with it. This type includes items made mostly of organic materials but combined with other materials. Examples include cork (compostable), hemp rope, hair (compostable) wood products (popsicle sticks and toothpicks – fine in composting stream), sawdust (depending upon quantity), and animal feces (acceptable in NS Colchester’s county program).

Human / Animal remains - There are other materials which are organic in nature that are not typically processed as waste; most notably the remains of once-living organisms. Human and animal remains (used for research purposes as an example) are treated through other processes in a manner which is reflective of certain ethical or spiritual beliefs. This material is classified as biomedical. Specialized companies are often contracted to manage this material.

3. PLASTIC: CONTAINERS, BAGS, AND PRODUCTS

There are two main types of plastics: thermoplastics and thermosets. Thermoplastics are the most common found in municipal solid waste and are characterized as plastics that soften when heated and harden when

cooled. Thermoplastics can often be re-heated and remoulded. Thermosets are plastics which harden when cured such as fibreglass and epoxy resin. Thermosets cannot be recycled. The raw materials that are used to make plastics are petroleum and natural gas (Smith & Scott, 2005).

To aid with identifying different types of plastics, and subsequently the sorting and recycling of plastic, a numbering system has been developed and implemented (University of Southern Mississippi, 1998). There are 7 different numbers of plastics:

Table 3: Plastic characteristics according to identification number

Symbol	Name	Examples	Can be recycled into
 PETE	Polyethylene terephthalate	Beverage containers, food containers	Fibre (polyester), bottles, clothing, furniture, carpet
 HDPE	High-density polyethylene	Detergent containers, bleach, shampoo bottles	Liquid detergent bottles, pipes, recycling bins, picnic tables, lumber
 V	Poly(vinyl chloride)	Pipes, shower curtains, cooking oil bottles	Packaging, binders, films, flooring, pylons, carpet, cables
 LDPE	Low-density polyethylene	Food wrap, grocery bags, sandwich bags	Bags, paneling, garbage cans, lumber, composters
 PP	Polypropylene	Tupperware, yogurt containers, diapers	Bins, flower trays and pots
 PS	Polystyrene	Coffee cups, disposable cutlery, meat trays, Styrofoam.	CD cases, desk accessories
 OTHER	Any combination of plastics 1 through 6.	Baby bottles, nalgene water bottles, glass lenses	Customized products, synthetic lumber

(University of Southern Mississippi, 1998; Yellow Pages Group, n d)

Most plastic products can be melted down and re-moulded as new plastic products. In most NS municipalities, all plastic containers and bags (except Styrofoam) are accepted as recyclable and products (including toys, laundry baskets, and cutlery) are not.

4. METAL

Metals are substances which are good conductors of heat and electricity and are typically fusible, ductile and opaque. Metallic elements can be fused together to make alloys which have different

properties and can be used to produce a wide range of goods. Recycling metal wastes and scraps is one of the oldest forms of recycling. Metals can be recycled into new products by smelting the metals and using various chemical reactions to isolate specific metals which can then be used to make new products (Hanes, 2010; US Geological Survey, 2000).

Ferrous metals – Any item made from iron or steel (magnetic) or any stainless steel item. Examples include structural steel beams, major appliances, metal clothes hangers, metal pipes, stainless steel cookware, security bars, and scrap ferrous items. Steel is the largest source of metallic waste and it can be produced in different ways depending on how much recovered steel is being included in the manufacturing process. Steel is a product of combining iron and carbon.

Ferrous metals cans - also include tin and steel cans which are rigid containers made mainly of steel. These items will stick to a magnet and may be tin-coated. This subtype is used to store food, beverages, paint, and a variety of other household and consumer products. Examples include canned food and beverage containers, empty metal paint cans, empty spray paint and other aerosol containers.

Aluminum – Examples include aluminum window frames, aluminum siding, and aluminum foil. This subtype does not include “Aluminum Cans”

Aluminum Cans – Refers any food or beverage container that is made mainly of aluminum. Examples include most beverage cans. For the most part aluminum cans as beverage containers are refundable: however, there are some non-refundable aluminum cans.

Copper – Items made from copper, including; copper wire, plumbing, circuit boards, electromagnets, lead-free solder.

Other Non-Ferrous – Any metal item, other than aluminum cans, that is not stainless steel and that is not magnetic. These items may be made of brass, bronze, lead, zinc, or other metals.

5. GLASS

Glass is a material that is composed of primarily silica (sand) and soda (sodium carbonate) and may include other materials depending on the colour and type of glass. Glass can be recycled indefinitely since it can be broken and crushed into a sand-like substance called cullet. Cullet can be used in the glass making process and can displace the use of new materials, thus reducing costs. It also has a lower melting point than using raw materials so it can save on energy and associated greenhouse gas emissions.

Different coloured glass is made of different quantities and types of materials so when being sorted for recycling glass is often sorted by colour. Glass products, particularly drink bottles, are often targeted with deposit-refund programs because reusing bottles can yield significant savings in energy, emissions

and costs. Reusing glass bottles is facilitated by the fact that they are durable and can be treated with a variety of substances for cleaning and sterilization (SNC - Lavalin, 2006; U.S Environmental Protection Agency, 1995).

Glass Bottles and Containers (refundable) – Clear or colored glass containers that meet the criteria for refund at recycling depot. Examples include soda bottles and fruit juice bottles, and wine/beer bottles. Refundable containers are typically targeted for reuse.

Glass Bottles and Containers (non-refundable) – Clear or colored glass containers that do not meet the criteria for refund at recycling depot. Examples include mayonnaise jars, and jam jars.

Remainder/Composite Glass – Glass that cannot be put in any other type or subtype. It includes items made mostly of glass but combined with other materials. Examples include Pyrex, Corningware, crystal and other glass tableware, mirrors, non-fluorescent light bulbs, and auto windshields. Glass windowpanes, doors, and tabletops, flat automotive window glass (side windows), safety glass, and architectural glass. This type does not include windshields, laminated glass, or any curved glass.

6. CONSTRUCTION AND DEMOLITION

In Nova Scotia C&D waste includes materials which are normally used in the construction of buildings, structures, roadways, walls and other landscaping material, and includes, but is not limited to, soil, asphalt, brick, mortar, drywall, plaster, cellulose, fibreglass fibres, gyproc, lumber, wood, asphalt shingles, and metals (Solid Waste-Resource Management Regulations, 1996). One of the main challenges with recycling and reusing C&D waste stems from having to sort the waste properly on site.

Concrete – A hard material made from sand, gravel, aggregate, cement mix, and water. Examples include pieces of building foundations, concrete paving, and cinder blocks.

Asphalt Paving – Refers to a black or brown, tar-like material mixed with aggregate used as a paving material.

Asphalt Roofing – Includes composite shingles and other roofing material made with asphalt. Examples include asphalt shingles and attached roofing tar and tar paper.

Lumber – Wood processed for building, manufacturing, landscaping, and packaging purposes. Examples include dimensional lumber, lumber cutoffs, engineered wood such as plywood and particleboard, wood scraps, pallets, wood fencing, wood shake roofing, and wood siding. Depending on the type of wood management options vary. For example, there are currently more options in NS for reusing/recycling clean dimensional lumber versus coated and/or engineered wood.

Gypsum Board – Interior wall covering made of a sheet of gypsum sandwiched between paper layers. Examples include used or unused, broken or whole sheets of sheetrock, drywall, gypsum board, plasterboard, gypboard, gyproc, and wallboard.

Rocks and Soils - Rock pieces of any size and soil, dirt, and other matter. Examples include rock, stones, and sand, clay, soil, and other fines. This type also includes non-hazardous contaminated soil.

Remainder/Composite Construction & Demolition – Construction and demolition material that cannot be put in any other type or subtype. This type may include items from different types combined, which would be very hard to separate. Examples include brick, ceramics, tiles, toilets, sinks, dried paint not attached to other materials, and fiberglass insulation. This type may also include demolition debris that is a mixture of items such as plate glass, wood, tiles, gypsum board, aluminum scraps and furniture.

7. HAZARDOUS

Hazardous waste is defined as a substance which due its nature or quantity is potentially hazardous to human health and/or the environment and which requires special disposal techniques to eliminate or reduce the hazard (Meakin, 1992). Hazardous wastes are classified in the *Transportation of Dangerous Goods Regulations*.

It is sometimes possible to recycle and reuse hazardous wastes, but this is not typically the case. As a result most hazardous waste must be disposed in a safe location or treated and processed to remove the hazard and then disposed. The best management practice is to minimize the generation of hazardous waste (Niemela, 1984).

The following classifications have been taken directly from the Federal Transportation of Dangerous Goods Act and the associated Transportation of Dangerous Goods Regulations. For more information visit <http://www.tc.gc.ca/eng/tdg/clear-part2-339.htm>. In addition, The Hazardous Products Act and Controlled Products Regulation, define which materials (i.e., controlled products) are included in the Workplace Hazardous Materials Information System (WHMIS) and what information suppliers must provide to employers for controlled products used in the workplace.

Class 1 – Explosives: Substances capable, by chemical reaction, of producing gas at a temperature, pressure and speed that would damage the surroundings; or designed to produce an explosive or pyrotechnic effect by heat, light, sound, gas or smoke or a combination of those means as a result of non-detonative, self-sustaining exothermic chemical reactions.

Class 2 – Gases: Substances included in section 2.14 of the TDG regulations, mixtures of gases; mixtures of one or more gases with one or more vapours of substances included in other classes; an article charged with a gas; tellurium hexafluoride; or an aerosol.

Class 3 – Flammable and combustible liquids: Substances that are liquids or liquids containing solids in solution or suspension if they have a flash point less than or equal to 60°C using the closed-cup test method referred to in Chapter 2.3 of the UN Recommendations; or a flash point of 65.6°C, using the open-cup test method referred to in Chapter 2.3 of the UN Recommendations; or are intended or expected to be at a temperature that is greater than or equal to their flash point at any time while the

substances are in transport. It is possible to use certain flammable substances as a source of fuel in certain processes.

Class 4 – Flammable solids; substances liable to spontaneous combustion; substances that on contact with water emit flammable gases: Substances are included in Class 4 if they are flammable solids, substances liable to spontaneous combustion or substances that on contact with water emit flammable gases (water-reactive substances) and meet the criteria for inclusion in one of the divisions and packing groups of Class 4.

Class 5 – Oxidizing substances; organic peroxides: Substances are included in Class 5 if they are oxidizing substances or organic peroxides and meet the criteria for inclusion in one of the divisions of Class 5.

Class 6 – Poisonous (toxic) and infectious substances: Substances are included in Class 6 if they are liable to cause death or serious injury or to harm human health if swallowed or inhaled or if they come into contact with human skin; or infectious substances.

Class 7 – Radioactive Materials: Substances defined as Class 7, Radioactive Materials in the Packaging and Transport of Nuclear Substances Regulations are included in Class 7, Radioactive Materials.

Class 8 – Corrosives: Substances are included in Class 8, Corrosives, if they are known to cause full thickness destruction of human skin, that is, skin lesions that are permanent and destroy all layers of the outer skin through to the internal tissues; cause full thickness skin destruction, as determined in accordance with the OECD Guidelines; or do not cause full thickness destruction of skin, but exhibit a corrosion rate that exceeds 6.25 mm per year at a test temperature of 55°C, as determined in accordance with the ASTM Corrosion Test.

Class 9 – Miscellaneous products & substances: A substance is included in Class 9, Miscellaneous Products, Substances or Organisms, if it is included in Class 9 in column 3 of Schedule 1. It may also be included if it: contains a genetically modified micro-organism that would endanger public safety if accidentally released during transport; is listed in Appendix 1, Marine Pollutants; or except for asphalt or tar, is offered for transport or transported at a temperature greater than or equal to 100°C if it is in a liquid state or at a temperature greater than or equal to 240°C if it is in a solid state.

8. UNIVERSAL

Universal is waste which poses environmental and safety hazards which cannot be processed with standard municipal solid waste, but does not pose the same level of risk as hazardous wastes. In some jurisdictions, many of these products have specific disposal and processing requirements. Some of these materials may also be recycled or reused. It is wise to check with local area waste education officers or retailers who sell the materials to see what standard disposal methods are and any alternative recycling or reuse options which may exist.

In Nova Scotia, the RRFB, municipality, and or/industry associations sponsor recycling initiatives for many of these products from the residential sector; however, Institutional, Commercial, and Industrial (ICI) organizations are typically required to contract the services of a hazardous waste materials handling company to recycle or dispose of these products. Firms in the ICI sector also face the additional challenge of dealing with many of these products at a scale where these products will present significant hazards and cannot be disposed of through regular means.

Fluorescent Bulbs/Lamps – All types of mercury containing compact fluorescent lamps. In some areas these may be classified as garbage, but in large quantities they will be classified as hazardous waste which needs to be processed by a hazardous waste handling company. ICI sector organizations can purchase technology to crush bulbs to reduce to volume and capture mercury in bulbs for proper disposal.

Paint – Examples include latex paint, oil based paint, and tubes of pigment or fine art paint. This type does not include dried paint, empty paint cans, or empty aerosol containers. It is possible to recycle leftover liquid paint in some areas. Empty paint cans, or paint cans with dried paint inside are garbage. Residential paint is accepted at local Enviro-Depots.

Vehicle and Equipment Fluids – Containers with fluids used in vehicles or engines. Examples include used antifreeze and brake fluid spent lubricating oil and transmission oil. Some retailers will accept used motor oil for reprocessing or know the location of a collection depot which may reprocess used oil.

Batteries – Any type of battery including both dry cell and lead acid. Examples include car, flashlight, small appliance, watch, and hearing aid batteries. There are a number of recycling programs available for rechargeable batteries in most areas. Rechargeable batteries must be separated according to type when shipping to a recycling facility. Typical categories include: Li-Ion Batteries; Pb (Lead acid dry cell batteries); and Ni-Cd, Ni-MH, and Ni-Zn Batteries.

Organizations which collect rechargeable batteries for recycling send them off to recycling facilities where usable materials are recovered and some credible programs ensure that no portion of the materials makes it to landfill . Organizations which accept old rechargeable batteries will often limit the size and weight of batteries that can be returned and will not typically accept lead acid batteries. However, scrap metal or auto repair shops may be interested in lead acid automotive batteries.

When placing batteries into a container, it is important to tape the terminals on the batteries to prevent them from short-circuiting and causing a fire. Single use non-rechargeable batteries below 9V do not require taping.

Household Hazardous – Universal material that cannot be put in any other type or subtype. This type also includes household material that is mixed. Examples include household hazards which if improperly put in the solid waste stream may present handling problems or other hazards, such as pesticides, caustic cleaners, and empty aerosol cans. ICI firms are required to contract the services of a

hazardous waste company.

Small Appliances & Electronic Devices – Small appliances and electronic devices that are not regulated by the Atlantic Canada Electronic Stewardship (ACES) program. Appliance examples include microwaves, toasters, can openers, blenders and air conditioners. Electronic devices include electric razors, hair clippers and hair dryers. If the items are in reusable condition, there are many charitable, non-profit and commercial organizations which may be willing to accept the items.

Regulated Electronics

The ACES program accepts all of the following classes of electronics except for cellular phones which are accepted through alternative programs administered by the Canadian Wireless Telecommunications Association (CWTA) and the Rechargeable Battery Recycling Association (RBRC). Electronics which are part of the ACES program in Nova Scotia must be dropped off at a certified ACES depot. From there, waste electronics are sent to a processing facility where items are broken down and sold off to various facilities. The locations where these products are sent may change depending on market conditions but each firm that the ACES processing facilities deal with must be properly certified under a Recycling Vendor Qualification Program. This qualification program ensures that the facilities where the materials are being shipped have the ability to handle the materials or can ensure that any further processing companies further downstream that deal with these materials are also certified through the program.

Desktop Computers: Includes Central Processing Units (CPUs), mice, keyboards, cables and other components within the computer. This includes desktop computers, desktop computers acting as servers, and all associated keyboards and cabling.

Monitors: A device used for displaying images from computers or other sources that does not meet the definition of a television. This includes traditional Cathode Ray Tube (CRT) and all flat panel display technologies such as LCD and plasma.

Notebook Computers: Includes portable computers such as notebook, laptop, netbook and tablet PCs.

Desktop Printers: This includes printing devices that are designed to reside on a work surface, and includes various printing technologies, including laser & LED (electrophotographic), ink jet, dot matrix, thermal, dye sublimation and "multifunction" devices that may copy, scan, fax, or print. Standalone desktop scanners and fax machines are also included in this category.

Televisions: A video display device with an embedded television tuner. This includes various display technologies, such as traditional Cathode Ray Tube (CRT), flat panel (LCD and plasma) or rear projection.

Personal or Portable Audio/Video Systems: Includes portable devices primarily for personal use including computer/docking speakers; portable stereos/tape players/radios; clock radios; personal CD

players, portable audio recorders/portable tape/radio players; headphones; MP3 players; solid state voice recorders; digital cameras; digital picture frames and video cameras/camcorders.

Vehicle Audio/Video Systems (Aftermarket): Includes car stereo amplifiers, equalizers, speakers and in-dash audio/video components.

Home Theatre in a Box (HTB) Systems: Includes pre-packaged speaker/amplifier systems for use with any manner of video or television display to create a home theatre experience.

Home Audio/Video Systems: Includes VCRs and DVD players; mini/mid/full size package systems; single/multi CD players; digital cable equipment; satellite cable equipment; speakers (home speakers; home theatre speakers and multi-media speakers), amplifiers, receivers, data projectors and similar audio/video systems.

Non-Cellular Telephones: Includes wire telephones; cordless telephones and telephone answering machines.

Goods – Generally refers larger, non-portable electronic goods that have some circuitry. Examples include microwaves, stereos, VCRs, DVD players, radios, audio/visual equipment, and non-CRT televisions (such as LCD televisions).

Televisions, Computer Monitors and Other Items with CRTs – Examples include televisions, computer monitors, and other items containing a cathode ray tube (CRT).

Computer-related Electronics – Electronics with large circuitry that is computer- related. Examples include processors, mice, keyboards, laptops, disk drives, printers, modems, and fax machines. This subcategory excludes “computer monitors”.

Cellular Phones – The CWTA has recently started an industry led recycling program called Recycle My Cell which accepts all makes and models of cellular phones. The program links with existing cellular phone recycling programs in conjunction with many wireless manufacturers and service providers. Phones which are in usable condition are processed for reuse. Phones that cannot be refurbished are broken down and recycled (Canadian Wireless Telecommunications Association, n d).

The RBRC also accepts cellular phones free of charge through their Call2Recycle program; however the phones are shipped to the United States and processed there (Rechargeable Battery Recycling Corporation, n d).

9. COMPOSITE & MISCELLANEOUS

Many waste products are composed of a variety of materials. Composite materials present challenges for recycling because recycling processes often require uniform sources of materials. This means that

composite materials must often be separated into their individual components to be recycled. This process is often costly meaning that recycling is not viable from an economic standpoint and so these materials are often sent to landfill. Recycling of these materials is sometimes possible but will depend on the quantity and composition of the materials in the product. Other waste items included in this section could potentially be classified in other categories (such as bulky appliances being considered in the metals section) but are included here for reasons pertaining to containing other materials, size, or special processing and handling requirements.

Textiles: Includes fabric used for clothing and other household uses such as curtains, bedding and table cloths. Also includes footwear and other items such as handbags, throw rugs and mats. Textiles cannot be broken down into individual fibres and reused as a raw material. They may be reused in their existing form and there are many different organizations that will accept used textiles. There are also used to make rags for heavy industry. In some areas they may also be shredded and used for the production of different products such as filler, insulation or they may be re-used as rags (Waste Online, n d).

Bulky Appliances & Electronic devices: Bulky appliances may include dishwashers, ovens, stoves and refrigerators. Bulky electronics would include large non-regulated electronic devices such as multi-functional devices. If the items are in reusable condition, organizations may accept them and sell them for reuse. Scrap metal dealers may also be interested in the items. The original manufacturers of the product may also have a take back program where they accept end of life equipment and use it for remanufacturing, parts reuse or recycling.

Bulky Furniture: Large furniture items which contain a variety of materials. Examples include mattresses, box springs, sofas and chairs, and tables. Many organizations may be willing to accept these items if they are in reusable condition.

Special Care Waste: Includes diapers, disposable training pants, first-aid residuals, and feminine hygiene products. Due to the nature of the use of these products they are treated as garbage for health and safety reasons.

Disposable Cups: Includes Styrofoam cups, disposable coffee cups made from paper and plastic, soft drink cups, and fast food cups. Disposable cups can be made with a variety of materials. Some have a plastic lining on the inside which prevents them from being recyclable through the same process as standard paper. Some may also be labeled as compostable or biodegradable. Each region may employ different composting methods and may accept materials that must break down within a certain time period. In some areas these compostable cups may be considered organic waste, in others the proper recycling facilities may exist, while others may classify them as garbage.

Composite Packaging: Packaging materials that contain more than one type of material present significant challenges for recycling and are often not recyclable. Common composite packaging materials include: food and condiment packaging such as coffee creamers and dipping sauce containers; toothpaste tubes; toy packaging; and chip bags.

Soiled Containers, Wraps and Foils: Recyclable materials which contain residues are not recyclable. Examples include paint cans with dried up leftover paint, food wraps with excessive food drippings and leftovers, or foils with baked on residues. If the residues are removed from these items they may be placed into the recycling stream.

End-of-Life Products: Materials which are made of a variety of components which cannot be broken down and recycled. Examples include toys made from a variety of different types of plastics and metal components, outdoor patio furniture, binders, and umbrellas.

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