Analyzers, Reagents, Consumables, Blood Gas/Electrolytes

Electronic Devices – Environmental Considerations for the RFP/RFI Process

Electronic products are those that plug in or contain a battery. (These considerations do not apply to computers, laptops and monitors.) Some of the Standardized Environmental Questions are relevant. Additional questions related to electronic products are also included.

	#	Question	Preferred Response	Definition	Rationale
Natural Resources	1.	Does the product's primary packaging contain postconsumer recycled content? (Yes/No) If yes, what percentage?	Yes, highest %	The primary packaging surrounds the product. For example the paper wrap surrounding a roll of toilet paper is primary packaging. (Secondary packaging surrounds a group of products, such as the box containing rolls of toilet paper.) Postconsumer recycled content material is a material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item.[i] Basically, it is the material collected from recycling programs. It is calculated as a percentage of the total weight of the product.	Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products. According to EPA, recommending postconsumer recycled content levels for items will have the most positive impact on reducing the amount of solid waste requiring disposal.[ii] Purchasers should prefer products with the highest postconsumer recycled content that also meet other considerations. Use of postconsumer recycled content is fundamental to closing the loop in the recycling process, using fewer natural resources, and based on EPA's ReCon Tool, can reduce greenhouse gas emissions. There are exceptions to the use of postconsumer recycled content in sterile barrier packaging (ISO 11607-1).
	2.	Does this product contain postconsumer recycled content (excluding steel)? (Yes/No) If yes, what percentage by weight?	Yes, highest %	Postconsumer recycled content material is a material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item.[iii] Basically, it is the material collected from recycling programs. It is calculated as a percentage of total weight of the product. Steel is excluded from consideration as it commonly contains recycled content. This does not include preconsumer (sometimes referred to as postindustrial) recycled content which are recovered materials obtained from manufacturers.[iv]	Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products. According to EPA, recommending postconsumer recycled content levels for items will have the most positive impact on reducing the amount of solid waste requiring disposal.[v] Purchasers should prefer products with the highest postconsumer recycled content that also meet other considerations. Use of postconsumer recycled content supports closing the loop in the recycling process, and, based on EPA's ReCon Tool, helps avoid generating greenhouse gas emissions.

	3.	Is this product packaged without polystyrene? (Yes/No)	Yes	Polystyrene (CAS 9003-53-6) is a plastic polymer from the monomer styrene. It comes in many forms: sheet, expanded or extruded foam, or as oriented polystyrene. What is commonly known as Styrofoam™ refers only to the extruded form of polystyrene. Packaging refers to all materials (primary, secondary, etc) used to transport and protect a product from damage. Alternatives to polystyrene packaging are available.	Also referred to as 'PS' with the SPI (Society of the Plastics Industry) resin code 6, polystyrene is difficult for hospitals to recycle and there are alternatives. Polystyrene is made with styrene.[vi] The International Agency for Research on Cancer (IARC) classifies styrene as a possible carcinogen.[vii] Foam blowing agents (called hydrochlorofluorocarbons, HCFCs) used to make polystyrene foam are compounds that have an ozone depletion potential[viii].
Chemicals	4.	Is this product free of intentionally added polyvinyl chloride (PVC)? (Yes/No)	Yes	Polyvinyl chloride (PVC) shall be defined as a plastic polymer used in a wide array of products. It is the third most widely produced plastic. Intentionally added means a substance is deliberately added in the production of the product.	Production and incineration of PVC releases dioxins and other harmful chemicals. Dioxins are widely distributed throughout the environment in low concentrations and are persistent, bioaccumulative and toxic (PBT). Dioxins are potent toxicants with many health impacts even at low exposure levels.
	5.	Is this product free of intentionally added Bisphenol A (BPA) or BPA derived plastics (such as polycarbonate plastic and resins)? (Yes/No)	Yes	Bis(4-hydroxyphenyl)propane, or Bisphenol A (BPA), is an organic compound used to make polycarbonate plastic, epoxy resins and for other applications. Polycarbonate plastic is derived from BPA. Resin derived from BPA is used to line metal food containers and in thermal paper for impact printing purposes. Intentionally added means a substance is deliberately added in the production of the product.	People can be exposed through the use of products containing these chemicals. BPA is one of the highest volume chemicals produced worldwide. Laboratory studies have shown widespread health effects, at least in part through endocrine disruption mechanisms. The National Toxicology Program has some concern for the effects on the brain, behavior, and prostate gland in fetuses, infants, and children at current human exposures to Bisphenol A.
	6.	Does this product contain less than 1000 ppm halogenated organic flame retardants by weight of homogenous material? (Yes/No)	Yes	Halogenated organic flame retardants are intended to inhibit ignition and the spread of flames. Halogenated chemicals are chemicals that contain bromine, chlorine, fluorine or iodine bonded to a carbon atom. Homogeneous means uniform composition throughout, such as individual types of plastics or paper. Homogenous material, as defined by RoHS, is a unit that cannot be mechanically disjointed into single materials, or any material that is not mechanically divisible (disassembled, cut or ground) into separate material constituents. Mechanically disjointed means the materials can be, in principle, separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.[ix] Guidance for suppliers on testing is available.	Halogenated organic flame retardants and/or their breakdown products tend to be persistent bioaccumulative and toxic (PBT) in the environment. They are widely found in the environment and in humans with Americans having some of the highest levels of them in their bodies. Some halogenated organic flame retardants are carcinogenic. These compounds are used in electronic housings, circuit boards and plastic enclosures. Alternatives exist that reduce the concern for environmental and human health effects. The European Union has a ban on some brominated flame retardants. In Europe, the Restriction of Hazardous Substances Directive (RoHS) restricts the use of PBDE's and PBB's in electronic equipment. Examples include, but are not limited to: Tetrabromobisphenol-A (CAS 79-94-7), Hexabromocyclododecane (CAS 25637-99-4), Deca-BDE (1163-19-5), Octa-BDE (CAS 32536-52-0), Penta-BDE (CAS 32534-81-9), Tris (2- chloroisopropyl phosphate) (TCPP) (CAS 13674-84-5), Tris(2-chloroethyl) phosphate (TCEP)

					(CAS 115-96-8), TDCP (Tris (1,3-dichloro-2-propyl) phosphate (CAS 13674-87-8)
	7.	Is this product free of Short Chain Chlorinated Paraffins (SCCPs)? (Yes/No)	Yes	Short Chain Chlorinated paraffins (SCCPs) are n-paraffins that have a carbon chain length between (and including) 10 and 13 carbon atoms and a degree of chlorination of more than 48% by weight. These may use the CAS number 63449-39-8. They may be used as flame retardants or high temperature lubricant additives in metal working fluids.[x]	SCCPs are generally persistent, bioaccumulative and toxic and have been identified as problematic environmental contaminants in the North Atlantic. Responsible manufacturers stopped using SCCPs in electronic devices in the 1990s.
	8.	Is this product free of intentionally added mercury? (Yes/No)	Yes	Mercury is a naturally occurring element that is found in air, water and soil. It exists in several forms: elemental or metallic mercury, inorganic mercury compounds, and organic mercury compounds. Intentionally added means a substance is deliberately added in the production of the product.	Medical facilities use a large variety of mercury-containing equipment and products.[xi] Mercury is persistent bioaccumulative and toxic (PBT) and is found in thermometers, sphygmomanometers, dental amalgam, lab reagents, cleaners, electrical switches, and other scientific apparatus. Mercury is a potent neurotoxicant that can affect the brain, spinal cord, and peripheral nerves. It is also toxic to the kidneys. Efforts in health care are intended to reduce exposure to patients and staff, address workplace safety, and safely handle products at the end of life.
	9.	Does this instrument require a particular brand of reagents? (Yes/No) **If yes, please complete the chart below.**	Yes or No (depends on answers in chart below)	Many autoanalyzers and other laboratory equipment consume reagents. In some cases, the equipment warranty is voided if non-approved reagents are used, or the equipment is provided on loan for free as long as the facility purchases the appropriate reagents. Thus, it is important, when selecting laboratory equipment, to ask for information about the environmental attributes of the reagents that must be purchased.	Mercury is a toxic chemical targeted for use-reduction by the US EPA, Health Care Without Harm, and Practice Greenhealth, among others. When improperly managed, mercury can escape into the environment, contaminate the food chain (particularly fish and marine life), and cause neurological damage in those who are exposed. • Some laboratory reagents contain mercury-based preservatives such as thimerosal (see attached list of mercury preservatives). • Depending on the product, mercury-free reagents may be available. • The mercury preservative may not always appear on the Material Safety Data Sheet or on the ingredient list that the salesman has, because its concentration is so low. Thus, the salesperson may think the product contains no mercury. • Consider avoiding products that use a mercury preservative, regardless of the concentration,

					because mercury contamination is such a problem in our environment, because many reagents are designed to go down the drain or into biohazard waste (where treatments such as incineration can release the mercury to the environment), and because chemical hazardous waste disposal is expensive.
	10.	Is this product and its components free of intentionally added phthalates? (Yes/No) If no, please specify.	Yes	Phthalates are esters of phthalic acid mainly used as plasticizers (substances added to plastics to increase their flexibility, transparency, durability, and longevity). They are used primarily to soften polyvinyl chloride (PVC). Some phthalates include: Di-2-ethyl hexyl phthalate (DEHP) CAS 117-81-7, Benzylbutylphthalate (BBP) CAS 85-68-7, Di-n-hexyl phthalate (DnHP) CAS 84-75-3, Di-isodecyl phthalate (DIDP) CAS 68515-49-1 or 26761-40-0, Dibutyl phthalate (DBP) CAS 84-74-2	People can be exposed through the use of products containing these chemicals. In 2002, the FDA issued a Public Health Notification for PVC devices containing DEHP. DEHP is also listed as a carcinogen on the Prop 65 list. The National Research Council has also noted the importance of looking at cumulative exposure from multiple phthalates. Five phthalates are listed as reproductive toxicants by Prop 65.
	11.	Is this product free of intentionally added latex? (Yes/No)	Yes	Latex is natural rubber latex that comes from a liquid found in tropical rubber trees. Intentionally added means a substance is deliberately added in the production of the product.	Liquid latex is processed to make many medical and dental supplies, including gloves, blood pressure cuffs, urinary catheters, dental dams and material used to fill root canals, as well as tourniquets and equipment for resuscitation. Non-latex substitutes (synthetic latex) can be found for all of these latex-containing items. The protein in rubber can cause an allergic reaction in some people. This reaction can range from sneezing to anaphylactic shock, which is a serious condition that requires immediate medical attention.

	12.	Will this product be classified (on its own or when aggregated) as non-hazardous waste according to EPA's RCRA when disposed? (under 40 CFR 261.31-33)? (Yes/No)	Yes	Hazardous wastes are those determined by EPA to be hazardous including those classified as hazardous and if products exhibit one of the four characteristics (defined in 40 CFR Part 261.21-24). Hazardous wastes are divided into listed wastes, characteristic wastes, universal wastes, and mixed wastes. Specific procedures determine how waste is identified, classified, listed, and delisted. The Resource Conservation and Control ACT (RCRA) mandates strict controls over disposal of hazardous waste. These listed wastes are divided into three categories: K-list, F-list, and the P and U-Lists. Characteristic wastes include wastes that exhibit ignitability, corrosivity, reactivity or toxicity. Universal wastes include batteries, pesticides, mercury-containing products and lamps. Examples include computer equipment, lead-containing products, and applicable cleaning chemicals.	Purchasers should know when products may become hazardous waste at the end of product use so that facilities can comply with EPA and RCRA regulations regarding the handling of hazardous waste or to seek alternatives during the procurement process. Reducing hazardous waste generation lessens the environmental impact and the expenses associated with disposal. Suppliers should seek alternative technologies to the greatest extent possible. Many state regulations may be more stringent than federal requirements. Consult the HERC State Hazardous Waste Locator to find more information on an individual state's hazardous waste regulations. For more information on EPA listed wastes: http://www.epa.gov/osw/hazard/wastetypes/index.htm.
	13.	Is this product free of intentionally added halogens? (Yes/No)	Yes	Halogens are any of the six nonmetallic elements that constitute Group 17 of the periodic table. The halogen elements are fluorine (F), chlorine (Cl), bromine (Br), iodine (I), astatine (At), and element 117 (temporarily named ununseptium [Uus]). The most common are chlorine and bromine.	Electronic devices can be made with or coated with halogenated organic polymers such as fluorinated methacrylate or chlorinated polyethylene. These are used for stain-resistance, heat-tolerance, and other properties.
	14.	Is this product compliant with RoHS? (Yes/No)	Yes	RoHS restricts mercury and cadmium at no more than 100ppm, and hexavalent chromium and lead at 1000ppm. Although RoHS does not apply to electronic medical products until 2014, responsible suppliers should manufacture equipment free of intentionally added heavy metals to prevent exposure.	Heavy metals are persistent bioaccumulative and toxic. Heavy metals may enter the human body through food, water, air, or absorption through the skin when they come in contact with humans in agriculture and in manufacturing, pharmaceutical, industrial, or residential settings. They may build up in biological systems and become a significant health hazard. Cadmium is an extremely toxic metal.[xii] Lead accounts for most of the cases of pediatric heavy metal poisoning (Roberts 1999)[xiii].

	15.	Does the supplier offer a Take-Back Program that will reuse or recycle the product and where supplier's recycler has been in operation for over one year? (Yes/No)	Yes	Product take-back programs offer potential business benefits that are significant - fostering a stronger bond with customers, reducing manufacturing and waste expenses, and reusing resources are a few. Product take-backs are a part of Extended Producer Responsibility (EPR), or Product Stewardship, means whoever designs, produces, sells or uses a product takes primary responsibility for minimizing its environmental impact through all stages of the product's life cycle. And the producer, having the greatest ability to minimize impacts, has the most responsibility.	Electronic products contain many toxic chemicals and materials of concern including mercury, lead, polyvinyl chloride and brominated flame retardants. Therefore it is essential that electronic products are properly disposed of at the end of their useful life. One strategy is to support product stewardship through manufacturer take-back programs. In Europe, the waste electronic and electrical equipment (WEEE) directive was passed in 2006 to force manufacturers of electronics to mitigate these risks by taking back and recycling used product in order to divert it from landfills, illegal dumps and unsafe disassembly practices.

If 'Yes' to Question #9: Please list all reagents that are required to be used with this instrument and whether they are available without intentionally-added mercury. Note that some reagents may contain intentionally-added mercury at levels low enough that they are exempt from reporting on a Material Safety Data Sheet. However, we require disclosure of any intentionally-added mercury, regardless of the concentration.

Instrument Model	Required Reagent Name	Available Without Intentionally Added Mercury? (Yes/No)

Supplier must be prepared to show documentation upon request of mercury content.

Attachment A: **Mercury Disclosure Information**

Our customers are committed to minimizing the amount of mercury used in their operations and desire to avoid the acquisition of products that contain mercury whenever feasible alternatives exist that do not compromise patient care. Supplier must provide information in relation to those products that contain mercury. *This includes any mercury preservative, at any concentration, present in any part of the product, including required liquid reagents, whether or not the mercury compound is listed on the Material Safety Data Sheet. A list of typical brand names and chemical names of common mercury preservatives is provided below. Note that the mercury preservative may not be listed on the Material Safety Data Sheet, thus it may be necessary to ask the manufacturer for this information.*

Common Names for Mercury Preservatives

▪ Aeroaid ▪ Curativ ▪ Ethyl (2-mercaptobenzoato-S) mercury sodium salt ▪ [(o-carboxyphenyl)thio] Ethylmercury sodium salt ▪ -(Ethylmercurithio)benzoic acid sodium salt ▪ Elcide 75 ▪ Elicide ▪ Estivin ▪ Ethylmercurithiosalicyclic acid, sodium salt ▪ Ethylmercurithiosalicylate sodium ▪ Ethylmercurithiosalicylate sodium salt ▪ Mercurothiolate ▪ Merphol ▪ Merseptyl (VAN) ▪ Merthiolate ▪ Merthiolate salt	▪ Merthiolate sodium ▪ Merzonin sodium ▪ Merzonin, sodium salt ▪ Nosemack ▪ Sodium ethylmercurithiosalicylate ▪ Mercurothiolate ▪ Mertorgan ▪ Merfamin ▪ Septicol ▪ SET ▪ Sodium ethylmercuric thiosalicylate ▪ Sodium ethylmercurithiosalicylate ▪ Sodium merthiolate ▪ Sodium o-(ethylmercurithio)benzoate ▪ Sodium salt of 2-(carboxyphenyl)thioethylmercury ▪ Sodium 2-(ethylmercurithio)benzoate	▪ Thimerosal ▪ Thimerosal solution ▪ Thimerosalate ▪ Thimerosol ▪ Thimerosol solution ▪ Thimersalate ▪ Thiomerosal ▪ Thiomersalat ▪ Thiomersalate ▪ Thiomersal ▪ Thiomersalan ▪ Vitasepto

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[i] Glossary, Comprehensive Procurement Guidelines, U.S. Environmental Protection Agency, http://www.epa.gov/epawaste/conserve/tools/cpg/glossary.htm viewed September 2011

[ii] Background Document for the Final Comprehensive Procurement Guideline (CPG) III and Final Recovered Materials Advisory Notice (RMAN) III, U.S. EPA, September 1999, EPA530-R-00-002

[iii] Glossary, Comprehensive Procurement Guidelines, U.S. Environmental Protection Agency, http://www.epa.gov/epawaste/conserve/tools/cpg/glossary.htm viewed September 2011

[iv] Reusable Vocabulary, U.S. EPA, http://www.epa.gov/osw/wycd/catbook/you.htm viewed September, 2011

[v] Background Document for the Final Comprehensive Procurement Guideline (CPG) III and Final Recovered Materials Advisory Notice (RMAN) III, U.S. EPA, September 1999, EPA530-R-00-002

[vi] U.S. Environmental Protection Agency, "Air Toxics- Styrene," http://www.epa.gov/ttnatw01/hlthef/styrene.html, website viewed June 2011

[vii] Ibid

[viii] *Phaseout of HCFC*s, Ozone Layer Depletion, U.S. EPA, http://www.epa.gov/ozone/title6/phaseout/classtwo.html viewed September 2011

[ix] RoHS Producer Support Booklet, National Measurement Office, 2010, pg 6, http://www.bis.gov.uk/assets/bispartners/nmo/docs/rohs/support-literature/producer-support-booklet.pdf

[x] Muir, Derek; Bennie, Don; Fisk, Aaron; Tomy, Gregg; and Stern, Gary, "*Are Short Chain Chlorinated Paraffins Persistent and Bioaccumulative? An Assessment Based on Recent Environmental Measurements*," Environment Canada, National Water Research Institute, Burlington ON

[xi] EPA: Information for Health Care Providers, http://www.epa.gov/hg/healthcare.htm#facilities, viewed August 30, 2011

[xii] OSHA, http://www.osha.gov/SLTC/metalsheavy/index.html

[xiii] http://www.lef.org/protocols/prtcl-156.shtml#comm