PRACTICE Greenhealth

Textiles – Additional Environmental Considerations for the RFP/RFI Process*

Below are suggested environmental considerations for the RFI/RFP for reusable textiles that are in addition to some of the Standardized Environmental Questions for Medical Products, V1.0. This contract category for reusable textiles covers everything from towels and blankets, staff and patient apparel, to room decor (such as curtains, drapes). If you have any questions or comments about this resource, email gsc@practicegreenhealth.org.

#	Question	Preferred Response	Definition	Rationale
1	Does this product contain no more than 70 ppm hydrolysed formaldehyde for direct skin contact or less than 300 ppm with no direct skin contact? (Yes/No)	Yes	Hydrolysed formaldehyde is formaldehyde extracted by water, as opposed to "free" formaldehyde. Formaldehyde is used on textiles for wrinkle, stain and water resistance. Formaldehyde resin products used in the textile industry include printing inks, dyes and textile finishing products. These formaldehyde-based materials help bind dyes and pigments to fabrics, prevent colors from running, improve a fabric's resistance to wrinkles, ease clothing care and maintenance and prevent mildew. Permanent press clothes are soaked in formaldehyde. [i] The EU GPP (Green Public Procurement) Criteria for textiles with skin contact requires they not exceed 70 ppm and 300 ppm for all other products, http://ec.europa.eu/environment/gpp/pdf/criteria/textiles.pdf. ISO 14184-1:2011 specifies a method for determining the amount of free and hydrolysed formaldehyde.	Formaldehyde has been identified by the International Agency for Research on Cancer (IARC) as a known chemical carcinogen. The adverse health effects from formaldehydes in textiles are likely to be skin irritations related to “free or easily hydrolysable (reacts with water) formaldehyde. The threshold is set by the EU Green Public Procurement specification for textiles that come into contact with the skin.
2	Is this product free of intentionally added perfluorinated compounds? (Yes/No)	Yes	Perfluorinated compounds (PFCs) are family of compounds (include Perfluorooctane sulfate (PFOS) and Polytetrafluorethylene (PTFE)). PFOS is used in stain repellent finishes such as Crypton®, Teflon®, Gore™, and Scotchguard.™ [ii] PTFE is used as repellent and non-stick component.	PFCs are extremely persistent and bioaccumulative chemicals. [iii] How we are exposed is not well documented but concern comes from the prevalence of PFCs in humans. In a study from Johns Hopkins Bloomberg School of Public Health, researchers analyzed cord blood samples from 300 newborns in Baltimore and found PFOS and PFOA in 99% and 100% of umbil-ical cord blood, respectively.[iv] In animal studies, PFOS is linked to bladder cancer, liver cancer, and developmental and reproductive toxicity (including neonatal mortality).

	3	Does this product contain less than 0.2 mg/kg of antimony? (Yes/No)	Yes	One of the synthetic fibers used in textiles is PET, polyethylene terephthalate, commonly referred to as polyester. Antimony is a catalyst used to create PET so this does not apply to other textiles such as cotton. The threshold uses GOTS Version 4.0 criteria.	Antimony is a carcinogen. The concern with antimony is it leaches from the fibers during the high temperative dyeing process and is expelled with the wastewater into rivers. Another problem occurs when antimony containing products are incinerated releasing it as a gas (antimony trioxide). According to EPA, acute (short-term) exposure to antimony by inhalation in humans results in effects on the skin and eyes. Respiratory effects, such as inflammation of the lungs, chronic bronchitis, and chronic emphysema, are the primary effects noted from chronic (long-term) exposure to antimony in humans via inhalation. Human studies are inconclusive regarding antimony exposure and cancer, while animal studies have reported lung tumors in rats exposed to antimony trioxide via inhalation.
	4	Is this product (including colors and dyes) made without heavy metals (i.e., cadmium, arsenic, cobalt, lead, mercury)?	Yes	Fabrics use colors and dyes manufactured with synthetic chemical additives which may contain heavy metals such as cadmium, a known carcinogen and cobalt and antimony trioxide, both possible carcinogens.	Colors and dyes used in textiles may contain heavy metals that are released into the environment from manufacturing and production. They do not break down readily and remain in air and water for long periods of time. Many metals find there way through the food chain into the foods we eat. Some companies are eliminating the use of all heavy metals from the dyestuffs and fiber.
	5	Is this product free of colors and dyes listed as carcinogenic, probably carcinogenic or possibly carcinogenic to humans by the International Agency for Research on Cancer (IARC)? (Yes/No)	Yes	The International Agency for Research on Cancer (IARC) maintains lists of colors and dyes that are carcinogens, probable carcinogens and possible carcinogens. Group 1 and Group 2A and 2 B lists can be found at http://monographs.iarc.fr/ENG/Classification/index.php.	Suppliers are encouraged to give preference to products that do not contain ingredients that are carcinogenic, probably carcinogenic, or possibly carcinogenic to humans. Products can meet this criteria through certification by GOTS (measured at less than 30mg/kg using test method DIN 54231).

	6	Is this product certified to an environmental standard, such as GOTS or Global Recycled Standard (GRS)? (Yes/No/NA)	Yes/NA	There are several environmental certifications for fibers and fabrics; some do not cover the entire process. The certifications referenced below, however, do. (Some environmental certification only cover the manufacture of fibers versus fabrics. Certified fibers still go through a production process using chemicals and water. However, certified fabrics to an environmental standard look at production processes for fabrics as well.) Look for certification standards that cover multiple attributes, such as GOTS and Global Recycle Standard (GRS). The Global Organic Textile Standard (GOTS) is a processing standard for textiles made from organic fibers. It defines environmental criteria along the entire organic textiles supply chain and requires compliance with social criteria as well. Only textile products that contain a minimum of 70% organic fibres can become GOTS certified. All chemical inputs such as dyestuffs and auxiliaries used must meet certain environmental and toxicological criteria. Global Recycled Standard (GRS) is a product standard for tracking and ensuring the content of recycled materials in a final product, while ensuring strict production requirements. This sets requirements for third-party certification of recycled content, chain of custody, social and environmental practices, and chemical restrictions. GRS applies to synthetic fibers and GOTS applies to natural fibers.	For more informtion on GOTS, see http://www.global-standard.org/certification.html and for certified products, see http://www.global-standard.org/public-database.html. For a list of companies certfied to the Global Recycled Standard (GRS), see http://textileexchange.org/upload/Integrity/Standards/GRS/GRS%20Combined%20List.pdf.
	7	Is this product free of intentionally added antimicrobial surface treatments? (Yes/No)	Yes or No Depending on Application	An antimicrobial is an agent that kills microorganisms or inhibits their growth.	Some health care facilities may wish to avoid products with added antimicrobial surface treatments because overuse and unnecessary use of antimicrobials may contribute to the growing number of antimicrobial-resistant bacterial infections.

	8	Is this product free of intentionally added nanomaterials? (Yes/No)	Yes	According to a definition from the UK, a nanoparticle is a particle having one or more dimensions of the order of 100 nanometers or less. [v] A nanoparticle (or nanopowder or nanocluster or nanocrystal) is a microscopic particle with at least one dimension less than 100 nm. [vi] The properties of materials change as their size approaches the nanoscale and as the percentage of atoms at the surface of a material becomes significant. [vii] Nanomaterials may be added to fibers or finishes. Silver nanoparticles are used in medical fabrics to control odors to kill bacteria.	Nanotechnology is a fast-growing and promise-filled sector of the economy. [viii] There are concerns about the lack of regulatory oversight of the industry, the absence of safety testing, and scant health data about potential environmental and human health effects. [ix] Potential health impacts include impairing the ability of white blood cells to function – a risk factor for cancer; impact cell signaling processes which could lead to cardiovascular disease, programmed cell death and premature aging; and formation of granulomas that perceive foreign substances and fight them off. [x] One study found silver nanoparticles wash out in the wash. [xi] Silver is more toxic than most other metals to many fresh- and salt-water organisms, ranging from phytoplankton to marine invertebrates – such as oysters and snails – to different types of fish. [xii]

* These questions are in addition to the Standardized Environmental Questions for Medical Products, V1.0. In the v1.0 set of questions, some of the questions most applicable to textiles include recycled content, PVC, phthalates, and halogenated organic flame retardants.

Practice Greenhealth thanks its EPP Supporters for their contributions to the creation of this resource.

[i] Pharos Project Wiki Website, http://www.pharosproject.net/wiki/index.php?title=Formaldehyde.

[ii] Silas, Julie; Hansen, Jean; Lent, Tom; The Future of Fabric, October, 2007

[iii] Factsheet: Perfluorinated compounds and Human Health Concerns, Healthy Building Network, April 2009

[iv] Apelberg, B, Goldman L, Calafat A, Herbstman J, Kuklenyik Z, Heidler J, Needham L, Halden R, Witter F. Determinants of Fetal Exposure to Polyfluoroalkyl Compounds in Baltimore, Maryland . Environmental Science and Technology, in press and online edition dated April 2007.

[v] Malvern, http://www.malvern.com/labeng/industry/nanotechnology/nanoparticles_definition.htm viewed December 2011

[vi] Science Daily, http://www.sciencedaily.com/articles/n/nanoparticle.htm viewed December 2011

[vii] Ibid

[viii] Recommendations for Addressing Potential Health Risks from Nanomaterials in California, University of San Francisco Obstetrics Gynecology and Reproductive Services, 2010, p 8.

[ix] Silas, Julie; Hansen IIDA, LEED AP, CID, AAHID, Jean; Lent, Tom; The Future of Fabric, October, 2007

[x] Wise, A. R., Schwartz, J., Woodruff, T. J. Recommendations For Addressing Potential Health risks From Nanomaterials In California. 2010. University of California, San Francisco Program on Reproductive Health and the Environment. P 32.

[xi] Geranio, L, M Heuberger, and B Nowack. 2009. The behavior of silver nanotextiles during washing. Environmental Science and Technology 43(21):8113–8118.
[xii] Ibid