



Green Chemistry & Commerce Council

Moving Business Toward Safer Alternatives

A GC3 Retailer Webinar Series



February 28, 2013

Eliminating Restricted Substances in the Apparel and Footwear Supply Chain: The AFIRM Supplier Toolkit



Nathaniel Sponsler, Manager-Product Regulations, Gap Inc.

Webinar Discussion Instructions



- Due to the number of participants on the Webinar, all lines will be muted.
- If you wish to ask a question, please type your question in the Q&A box located in the drop down control panel at the top of the screen
- All questions will be answered at the end of the presentation.



Introduction to the AFIRM Supplier Toolkit

Nathaniel Sponsler
Gap Inc.





Who is AFIRM?

- Apparel & Footwear International RSL Management Group
- Established in July 2004
- Original Member Companies:
 - adidas
 - C&A
 - Gap
 - Levi
 - Nike
 - Marks and Spencer

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AFIRM Mission

- To reduce the use and impact of harmful substances in the apparel and footwear supply chain

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- Carhartt
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- Gap, Inc.
- Gymboree
- H&M
- Hugo Boss
- J.CREW

- Levi Strauss & Co.
- New Balance
- Nike
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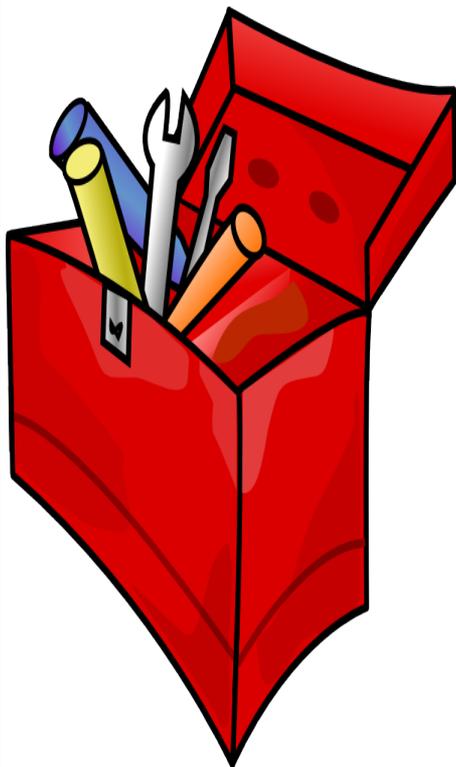
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What Exactly is the Toolkit?



- Collection of resources to help the global apparel/footwear supply chain understand and reduce the use and impact of harmful substances

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AFIRM Toolkit History

- First version published October 2008
- Supplier Feedback:
 - Seemed geared toward brands
 - More technical information and examples requested
 - Request for AFIRM combined RSL to meet all brand requirements

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New 2011 AFIRM Supplier Toolkit

- Published November 2011
- Responds to Supplier Feedback
 - Geared toward suppliers
 - More detailed information on more chemicals
 - Improved formatting and internal links
- Available in Chinese & Vietnamese
 - More languages planned in 2013



Newly
Improved

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New 2011 AFIRM Supplier Toolkit

- Key Additions
 - RSL Failures with corrective action examples in simple format
 - Detailed Chemical Guidance Document with full Index
- ***Resources available for all levels of technical expertise***

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Where are the risks?

	Natural fibres	Synthetic fibres	Natural and synthetic blends	Artificial leather with fibre backing	Natural leather	Plastic, rubber, paint, and coatings	Natural materials (e.g., paper, wood)	Metal	Fusing, padding, feather, and down
AP / APEO	•	•	•	•	•	•			•
AZO	•	•	•		•				
Cationic Surfactant		•	•						
Chlorinated Organic Carriers		•	•						
Chloroparaffins (SCCP and MCCP)					•				
Chromium VI					•				
Disperse Dyes		•	•						
Flame Retardants	If special finish								•
Formaldehyde	•	•	•		•	•	•		•
Metals, extractable	•		•		•				
Metals, total				•		•		•	
Nickel release								•	
Perfluorooctane Sulfonate (PFOS) and PFOS-related substances	If water-repellent finish								
Perfluorooctane Acid (PFOA) and its salts	If water-repellent finish								
pH-value	•		•		•				
Phenols	•		•		•		•		•
Phthalates				•		•			
Polycyclic Aromatic Hydrocarbons (PAHs)						•			
PVC				•		•			
Tin Organic Compounds				•		•			



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Background on Restricted Substances

RESTRICTED SUBSTANCES	DESCRIPTION & WHERE THEY MAY BE FOUND
<p><i>Alkyphenol Ethoxylates (APEOs) / Alkyphenols (AP)</i></p> <p><i>Nonylphenol Ethoxylates (NPEO)</i> <i>Octylphenol Ethoxylates (OPEO)</i> <i>Nonylphenol (NP)</i> <i>Octylphenol (OP)</i></p>	<p>APEOS are non-ionic surfactants including NPEOs, OPEOs, NP, and OP. NPEOs and OPEOs degrade into NP and OP, respectively.</p> <p>APEOs can be used as or found in:</p> <ul style="list-style-type: none"> • Detergents • Scouring agents • Wetting agents • Softeners • Emulsifier/dispersing agents for dyes and prints • Impregnating agents • Degreasing agents for leather • Leather Finishing • De-gumming for silk production • Dyes and pigment preparations • Polyester padding • Down/feather fillings



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Appendix B - Factory Management Plan

7. Data Management

- 7.1. Access to RSL data throughout the supply chain is a key component in management strategy for the RSL. Strategic testing of materials is critical for streamlining RSL management.
- 7.2. Describe how you manage data you collect from sample analysis/testing and how you share that information with your partners
 - Do you have a database for all testing data?
 - Do you send this data for management review on a regular basis?
 - Do you identify suppliers with repeated failures and put them on notice?

8. Tracking Time Table

- 8.1. Set up a time table which identifies your RSL Plan of each year. Some items must be included, such as: Four deadlines of reviewing of your RSL Data trend; One training/meeting on RSL to your vendors; Summary of your RSL tracking from Purchasing at the end of the year.

Example:

Progress	Target Date	Finish Date
Complete RSL Plan and present to factory management	1/20/13	
Discuss RSL Plan with vendors	2/20/13	
Set up the RSL Action Plan Schedule	4/20/13	
Prepare material for RSL testing	5/20/13	
Finish RSL testing	6/20/13	
Review RSL data trend with vendors	7/20/13	
Review and revise RSL plan for continuous improvement	8/20/13	



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Appendix D – Best Practices to Avoid RSL Issues

	Restricted Substance	Manufacturing Technology that Could Introduce The Substance	Steps to Avoid Restricted Substance in Finished Products
Natural Fibers (cotton, rayon, wool, hemp, etc.)	Formaldehyde	Resins to prevent shrinkage	Use formaldehyde free resins; Use low formaldehyde resins & fully cure to chemical supplier specifications to remove free formaldehyde.
		Resins to prevent wrinkling	Use formaldehyde free resins; Use low formaldehyde resins & fully cure to chemical supplier specifications to remove free formaldehyde.
		Resins to permanently include wrinkles	Use formaldehyde free resins; Use low formaldehyde resins & fully cure to chemical supplier specifications to remove free formaldehyde.
		Discharge Printing	Water based discharge printing systems rely on Zinc Formaldehyde Sulfonate (ZFS). Discharge prints must be used according to manufacturers instructions to meet adult formaldehyde requirements.
	Heavy metals (mercury, lead, cadmium)	Pigment print binder	Use formaldehyde free binders; Use low formaldehyde binders & fully cure to chemical supplier specifications to remove free formaldehyde.
		Dye stuff	Use dyestuff from internationally recognized dye stuff suppliers with commitments to chemical compliance.
	Azo amines	Pigment prints	Use pigments from internationally recognized dye stuff suppliers with commitments to chemical compliance.
		Dye stuff	Use dyestuff from internationally recognized dye stuff suppliers with commitments to chemical compliance.
Synthetic Fibers (polyester, nylon, acetate, acrylic, etc.)	Formaldehyde	Resins to prevent shrinkage	Use formaldehyde free resins; Use low formaldehyde resins & fully cure to chemical supplier specifications to remove free formaldehyde.
		Resins to prevent wrinkling	Use formaldehyde free resins; Use low formaldehyde resins & fully cure to chemical supplier specifications to remove free formaldehyde.
		Resins to permanently include wrinkles	Use formaldehyde free resins; Use low formaldehyde resins & fully cure to chemical supplier specifications to remove free formaldehyde.
		Cross linking agent in coating processes	Use formaldehyde free resins; Use low formaldehyde resins & fully cure to chemical supplier specifications to remove free formaldehyde.
	Heavy metals (mercury, lead, cadmium)	Dye stuff	Use dyestuff from internationally recognized dye stuff suppliers with commitments to chemical compliance.
		Stabilizer	More likely in molded plastics than fibers, but cadmium should not be used as a stabilizer.
		Polymer extrusion contamination	Heavy metals such as lead, cadmium and mercury are not likely intentionally used in polymer extrusion, but could be present due to contamination.
	Disperse dyes	Dye stuff	Use dyestuff from internationally recognized dye stuff suppliers with commitments to chemical compliance. Orange 37/76 is the most common failure and is commonly found in dark colors which use Orange 37/76 in the recipe.
	Azo dyes	Dye stuff	Synthetic fibers with a PU or fluorinated coating may give a false positive for azo amines if tested using GC/MS. LC/MS can be used for confirmation. Use dyestuff from internationally recognized dye stuff suppliers with commitments to chemical compliance.



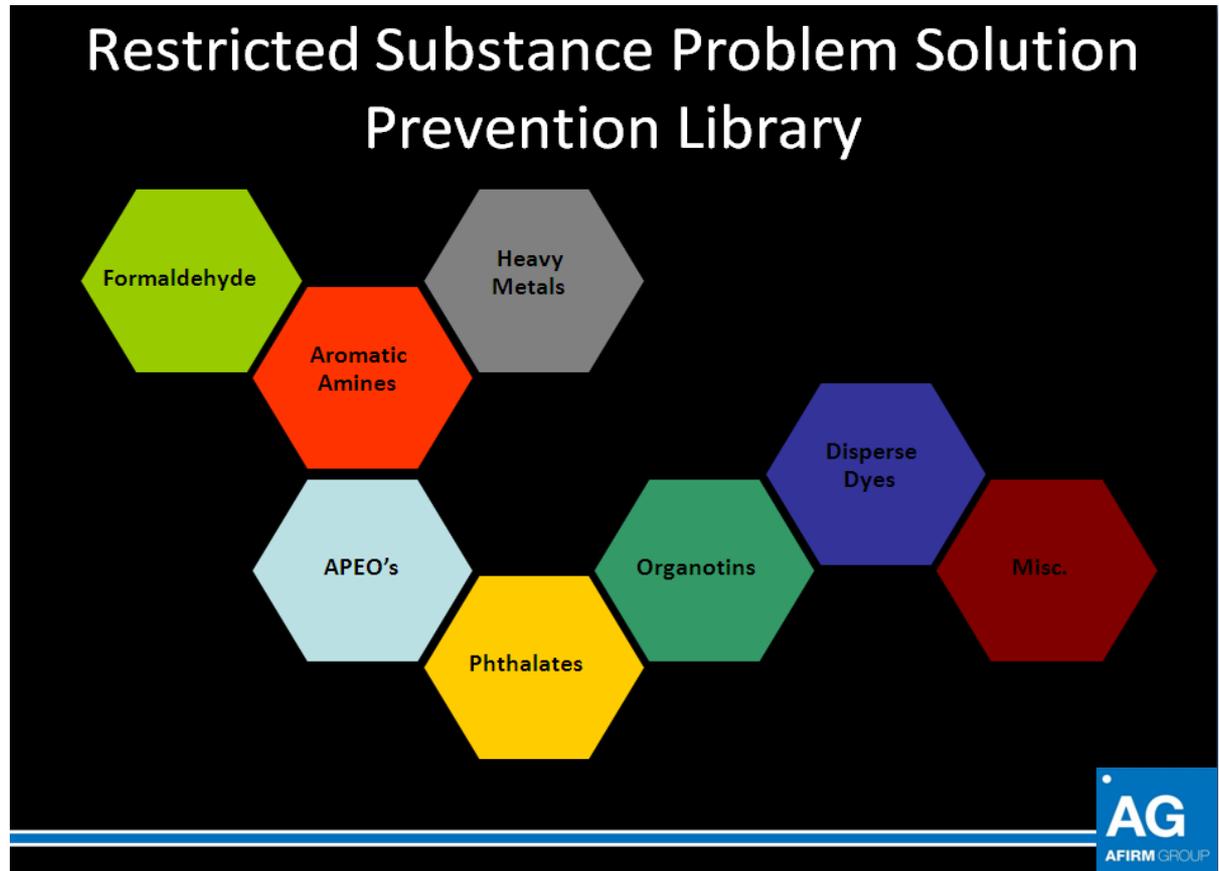
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Appendix E – RSL Corrective Actions



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Appendix E – RSL Corrective Actions

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Miscellaneous - Phenol	Print paste thickener	65
Miscellaneous - VOC	Yarn lubricant	67
Disperse Dyes	Woven label	69



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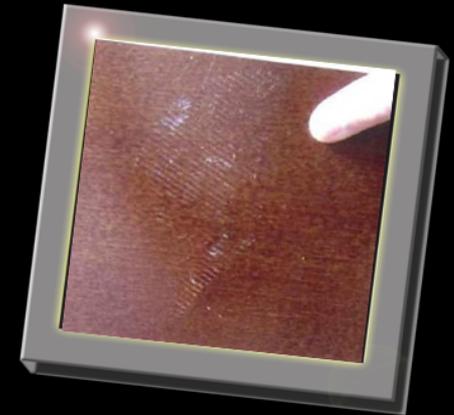
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Appendix E – RSL Corrective Actions

Problem #2

- Consumer complaints that the flip flops had sticky feeling and were removing lacquer finish on wood floors
- Laboratory analysis detected tributycitrate (TBC) instead of ATBC as manufacturer claimed
- TBC is a known solvent for decoating furniture
- Manufacturer substituted TBC as a cheaper alternative for ATBC



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Appendix F – Detailed Chemical Guidance Document



CHEMICAL GUIDANCE DOCUMENT

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Appendix F – Detailed Chemical Guidance Document

6.2.4.1 Unintended Oxidation of Chromium III to Chromium VI in Leather and Leather Products

Chromium (VI) is not intended or used in the production process and must be regarded as cross contamination by avoidable oxidation of trivalent Chromium to **hexavalent chromium**, which is a harmful substance. Oxidation of Cr (III) into **Cr (VI)** normally occurs in presence of strong oxidation agent in acid environment but it can also take place in presence of mild oxidation agents at high pH. In leather processing neutralization is a stage where such conditions are created; therefore, leather and leather products sometimes contain **Cr (VI)** although only chromium compounds in the form of Cr (III) were used in the tanning process.

Also the hydrogen peroxide left over from the first step of tanning will contribute to unintended oxidation of Cr (III) to **Cr (VI)**.



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Appendix F – Detailed Chemical Guidance Document

AFIRM Chemical Guidance Document

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Appendix I – Screen Printing Best & Worst Practices



Screen print Ink Storage Best Practices

- Storage room dedicated to ink
- Room clean and free of clutter
- Shelves available to organize ink by type and keep containers off the floor
- Shelves clearly labeled
- Ink chemicals containers properly labeled
- Ink containers clean, any spills cleaned immediately
- MSDS, spill clean up equipment available



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Appendix J – Frequently Asked Questions (FAQ)

30. Q: For the sample shown below, is a separate RSL test required for each different color, or could a composite test be performed by combining all colors?



A: Composite testing is allowed by some AFIRM brands and not others. Brands that do allow compositing have different limits for the number of samples that may be included in a composite. This number may vary depending on the materials tested and the restricted substance tested for.

If composite testing is allowed, and if, for example, three is the maximum number of materials allowed for composite testing, a composite of equal amounts of the three materials can be tested. Brand policy as well as nominated laboratories will direct suppliers on composite requirements or restrictions.

31. Q: For an embroidered badge, can RSL testing be performed using a composite test for all colors and all different layers?

A: For those AFIRM brands that allow compositing, RSL testing should be performed by compositing the colors. A separate test of the adhesive layer should be performed if it is possible to separate that adhesive layer.



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Appendix L – Additional Online Resources

Appendix L—Additional Online Resources

Chemical Restriction Information

Restricted Substance Lists and Resources

AAFA Restricted Substance List

<https://www.apparelandfootwear.org/Resources/RestrictedSubstances.asp>

This Restricted Substances List (RSL) was created by a special working group of the American Apparel & Footwear Association’s (AAFA) Environmental Task Force. The RSL is intended to provide apparel and footwear companies with information related to regulations and laws that restrict or ban certain chemicals and substances in finished home textile, apparel, and footwear products around the world. The American Apparel & Footwear Association (AAFA) is the national trade association representing apparel, footwear and other sewn products companies, and their suppliers, which compete in the global market.

AFIRM Brand Links (available on AFIRM website)

<http://www.afirm-group.com/companies.htm>



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- July 2012 – 4,615
- August 2012 – 5,559
- September 2012 – 5,269
- October 2012 – 8,087
- **November 15, 2012 - HCM City, Vietnam Seminar**
- November 2012 – **83,583**
- December 2012 – **28,926**

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Future Toolkit Additions?

- Further additions based on Supplier feedback?
- Additional ideas?

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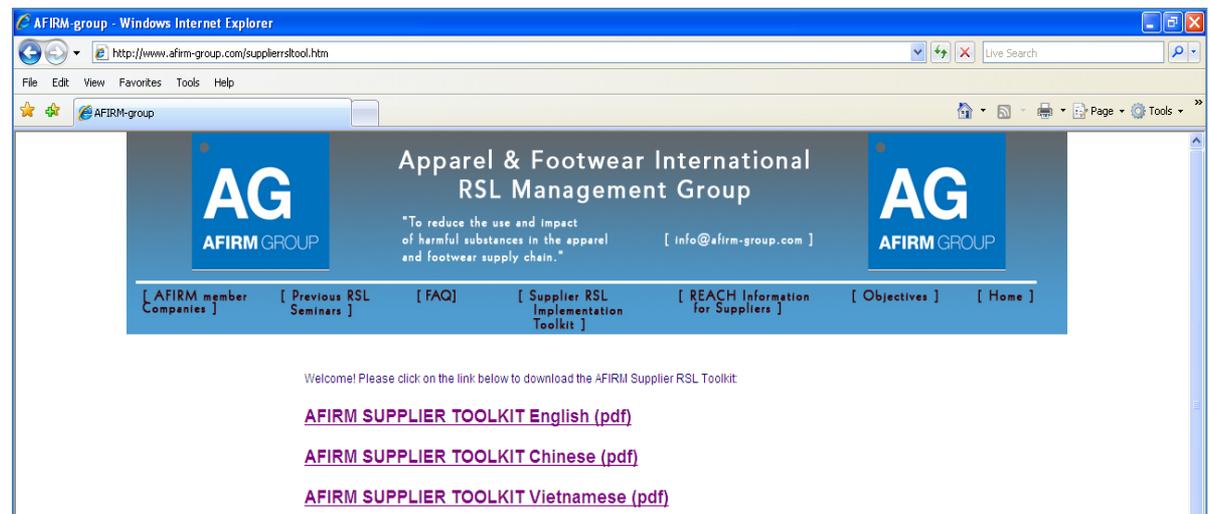
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AFIRM Toolkit Website

- <http://www.afirm-group.com/suppliersrsltool.htm>
- Contact: info@afirm-group.com



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