Uniforms

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Across industries, the most talked about factors to consider when selecting an employee uniform are comfort, durability, fabric care instructions, and style. Within aviation, it is also important to select fabrics made of natural fibers that provide flame-resistance without the need for chemical treatments. Until recently, the primary uniform-related health issue reported to AFA-CWA was the need for airlines to offer a non-wool uniform option to flight attendants who have a wool allergy. Since early 2011, though, hundreds of AFA-CWA members at Alaska Airlines, PSA Airlines, Envoy Air, and Piedmont Airlines – in addition to our sisters and brothers at American Airlines - have reported symptoms caused by exposure to chemical contaminants in employee uniform fabrics manufactured by TwinHill (a subsidiary of Men’s Wearhouse). These reports have led us to research both the literature regarding chemical contaminants in fabrics sold in the US, and the chemical additives in those particular uniform fabrics. There are other examples, too, of chemical-contaminated clothing generating reports of illness amongst flight attendants, ambulance employees, nurses, TSA officers, and even babies.

This webpage is intended to provide basic information to our flight attendant members who are experiencing uniform-related symptoms, and are seeking information to bring to their doctors. Some of the information is airline-specific, but the lessons learned from our research into the fabric contaminants and reported symptoms apply system-wide. Thus, beyond trying to serve the needs of individual members with relevant information, we provide recommendations for union representatives and airline management to facilitate the selection of safe fabrics and establish a means for crewmembers to report any problems, especially during the early months of a new uniform “roll out.” The goal is to prevent, or at least quickly identify and remedy, uniform-related ill health. Comfort, durability, fabric care, and style all matter, but health and safety must be number one.

Bigger picture on toxins in clothes: Greenpeace International commissioned an investigation that delves even further into the hazardous chemicals used in the production of high street fashion. Click HERE to read the Greenpeace reports, and HERE to read a Nov. 2012 op-ed article about toxic chemicals identified in clothing. More information on specific families of chemicals in clothes, many of which have been
measured in the TwinHill garments, is provided HERE.

**Jan. 1, 2011 – Feb. 5, 2014:** As of Feb. 5, 2014, AFA-CWA had received reports of illness from more than 800 of its approximately 3,000 members at Alaska Airlines, involving symptoms that developed since wearing the TwinHill/Men’s Wearhouse employee uniforms. Many of these symptoms (e.g., rash/hives, burning eyes, swelling around the eyes/mouth, difficulty breathing) are typically exacerbated at work and either improve/resolve when away from work. Some symptoms (e.g., hair loss, abnormal thyroid function) appear more constant, unless there is an extended absence from work. Of the affected flight attendants, some have reported positive skin patch reactions to potassium dichromate and cobalt. The heavy metals identified in some fabric samples include antimony, aluminum, arsenic, bismuth, chromium (trivalent and hexavalent), cobalt, copper, lead, manganese, and titanium. Other identified compounds include diisodecylmaleate, 2-ethyl hexyl fumarate, phthalates, tributyl phosphate, and various allergenic dyes (see July 2013 bulletin, below). Note that, these chemicals have been confirmed in fabric samples but it may not be a comprehensive list. If you experience symptoms when wearing these uniforms, talk to your doctor about whether skin patch/prick testing (if you have skin symptoms) and testing blood levels of heavy metals, for example, would be appropriate for you.

Regarding arsenic, lead, and chromium in fabrics: Significantly, heavy metals fabric data commissioned by Alaska Airlines and completed in Aug. 2012 reported that 13 of 35 fabric samples appeared to have excess levels of arsenic and lead, 6 of 35 samples appeared to have excess levels of chromium (not hexavalent), and one had excess hexavalent chromium, all as compared to the Oeko-Tex 100 fabric standard. AFA-CWA has not been provided with the names of the arsenic, lead, and chromium-containing compounds in these fabrics, but these test data confirm their presence.

1. Arsenic-containing compounds that may be used in fabrics include: arsenic trioxide, arsenic trisulfide, arsenic pentoxide, potassium arsenate, and sodium arsenate.
2. Lead-containing compounds that may be used in fabrics include: lead acetate and lead pigments.
3. Chromium-containing compounds that may be used in fabrics include: chromic acetate, chromic fluoride, chromic chloride, chromic oxide, chromic trioxide, chromic sulfate, chromo sulfuric acid.

**July 2013:** “Information on chemical content of TwinHill uniforms” - Summary of chemicals identified in TwinHill uniform garments in circulation at Alaska Airlines, including tributyl phosphate, orange dye 37/76, diisodecyl maleate, 2-ethylhexyl fumarate, arsenic (see list above), chromium (see list above), lead (see list above), cobalt, and antimony.

**May 2013:** “Your uniform, your health” - Informational bulletin published by AFA-Alaska Airlines MEC regarding uniform issues. (Originally published 6/2012; revised 5/2013.)

**Feb. 2013:** “Investigation into chemicals in uniforms & lessons learned” - AFA-CWA PowerPoint presentation at AFA-CWA Safety, Health, and Security Roundtable meeting in Chicago, IL. (Photo selection and slides revised May 2013; photos included with permission.)

Oct. 24, 2011: Letter from AFA-CWA to Consumer Product Safety Commission, plus attachments - AFA-CWA asked CPSC to investigate and recall TwinHill employee uniforms at Alaska Airlines in light of the hundreds of reports of uniform-related illness. CPSC did not respond to our request, but the Agency did respond to individual reports from flight attendants, stating that it does not have jurisdiction over employee uniforms, so had forwarded the reports to the FAA. Interestingly, FAA forwarded the reports to OSHA. Then OSHA questioned whether it had jurisdiction, so recommended that the flight attendants contact NIOSH instead.

Links to abstracts/articles of interest: (all available at http://www.pubmed.gov)

Detection of azo dyes and aromatic amines in women undergarment (2016)
Toxicity appraisal of untreated dyeing industry wastewater based on chemical characterization and short term bioassays (2016)
Patch testing to a textile dye mix by the international contact dermatitis research group (2015)
Patch testing with a textile dye mix in two concentrations - a multicentre study by the Swedish contact dermatitis research group (2015)
Case report: poisoning with lead, mercury, arsenic caused hair loss, rash, gastrointestinal, neuropathy, weakness (2013)
Case report: metal sensitivity caused systemic dermatitis and hair loss (2013)
Case report: arsenic poisoning - hair loss, rash, nausea, fatigue (2007)
Hair loss from ingestion of heavy metals – 36 patients (1979)
A case for diagnosis (alopecia areata; arsenical dermatitis?) (1945)
Contact allergy from disperse dyes in textiles: a review (2013)
Exposure to flame retardant compounds on commercial airplanes (2013)
Patch testing with contact allergens: the Mayo Clinic experience (2012)
Immunoregulation of skin sensitization and regulatory T cells (2012)
Assessment of the sensitizing potential of textile disperse dyes and some of their metabolites by the loose-fit coculture-based sensitization assay (2012)
Allergic contact dermatitis probably caused by mercaptobenzothiazole in thermal undergarments (2012)
Dimethyl fumarate (2011)
Dimethyl fumarate: a human health hazard (2011)
Halogenated flame retardants: Do the fire safety benefits justify the risks? (2010)
Formaldehyde in textiles: GAO 10-875 (2010; not peer-reviewed)

Association between indoor exposure to semi-volatile organic compounds and building-related symptoms among the occupants of residential dwellings (2010)
An epidemic of furniture-related dermatitis: searching for a cause (2010)
Contact allergy: Alternatives for the 2007 North American contact dermatitis group (NACDG) standard screening tray (2008)
Contact allergy to textile dyes in southern Sweden (2006)
Diagnosis and treatment of dermatitis due to formaldehyde resins in clothing (2004)
Disperse dyes in fabrics of patients patch-test-positive to disperse dyes (2003)
Occupational contact dermatitis to textile dyes in airline personnel (2001)
Chronic generalized eczema caused by multiple dye sensitization (1996)
Textile dye dermatitis (1995)
Chemicals in fabrics as potential skin irritants (1941)