

## APFA FAQ Regarding Uniform Testing by the Company

The Company has stated in the past that it has done thorough testing on the current uniforms and that the testing has shown that the uniforms are safe. This FAQ provides information about the Company's chemical test results from Intertek Laboratory and the potential health effects of the chemicals identified in the uniforms. The Company's testing found that new and worn uniforms contained numerous chemicals, including irritants, allergens and chemicals capable of causing other health problems. The health information in this FAQ is based on standard medical scientific sources and chemical suppliers' Material Safety Data Sheets.

### Q. Where can I find the test results?

A. The Company test results can be found in the link below. The Company previously provided these results to individual Flight Attendants on request. The results are also summarized in Table 1 on page 6 below.

>>[Company test results previously released upon request.](#)

>>[Results from APFA-sponsored testing at Hohenstein Laboratory](#) were provided earlier and can also be found on the Uniform Reaction Fact Sheet on the APFA website.

The testing by both the Company and APFA is limited. Due to the potential for variation in chemicals that could be found across multiple manufacturing lots of garments, testing of additional uniform pieces would be appropriate. APFA is continuing to investigate the safety of the current uniforms and also intends to do additional chemical testing.

### Q. What kinds of problems can chemicals found in uniform garments cause?

A. Chemicals identified in the Company's testing are capable of causing irritation, allergic responses, and a range of other health problems (for example, hormone disruption such as abnormal thyroid, estrogen or androgen levels). Many of the chemicals identified in the Company's testing are generally considered safe (for example, waxes). Others are generally considered toxic. Allergic responses and hormone disruption can be caused in some people by low exposure levels. But most health effects identified in Table 1 won't occur unless chemical exposure levels are very high, a person exposed to a particular chemical is especially susceptible to that chemical, or multiple chemicals are present that can harm the same organ system. (Note: "organ system" refers to a major part of the body such as liver, kidneys, nervous, reproductive, musculoskeletal, cardiovascular, blood or skin.)

**Q. What does it mean to say that a chemical is an “irritant?”**

**A.** An irritant disrupts cells it comes in contact with, causing symptoms such as itching, rash, burning, hives or other problems at the point of contact. Inhalation of an irritant can cause coughing, sneezing, sore throat, and related problems. Eye contact can cause burning, itching, watery eyes, blurred vision and other eye problems. At high concentrations or in sensitive individuals (see below), irritants can cause severe skin disorders, difficulty breathing and other serious health conditions. Exposure to multiple irritants simultaneously can increase the risk and severity of irritation. All people will potentially respond to irritant exposures at some level, but people vary considerably in the amount of exposure that is required to elicit a response.

Table 1 below contains a column indicating which chemicals are known or suspected of causing irritation. Many irritants in Table 1 are used at low concentrations in cosmetics, personal care products such as lotions or shampoos, and are in skin medications. They rarely cause problems at low concentrations unless someone is highly susceptible. Some irritants in Table 1 are solid at room temperature and so are not easily absorbed through the skin or inhaled. They will only cause irritation if they become airborne as the clothing items break down into fine respirable particles. See [Additional Resources](#) for more information on irritant effects.

**Q. What does it mean to say that a chemical is an “allergen?”**

**A.** Table 1 has a column that identifies allergens, also referred to as sensitizers. These chemicals signal the immune system to trigger an allergic reaction, potentially at very low chemical concentrations. Allergic responses only occur in people with specific sensitivity to the chemicals. People who have had past allergies are more likely to respond to allergenic chemicals. See [Additional Resources](#) for more information on allergen effects.

People with allergies are often more susceptible to irritant chemicals as well. When exposed to allergens and irritants together, their risk of an adverse reaction increases. Some chemicals are irritants and allergens, as shown in Table 1.

**Q. What other health effects can be caused by chemicals?**

**A.** Many chemicals in Table 1 can also cause health effects on other organ systems. The specific effects on the individual organ system can vary greatly across individuals and depending on the amount of exposure. For example, nervous system effects can include headaches, irritability, anxiety, tiredness, disorientation, clumsiness, and worsening of existing medical conditions. See [Additional Resources](#) for more detail on these other health effects.

Most organ systems listed under “other effects” will only be affected at high exposure levels, unless multiple chemicals are present that impact that same organ system. (For some chemicals identified in Table 1, specific health effects that are identified in toxicity studies are listed. For example, if studies indicate that thyroid abnormalities have occurred due to chemical exposure, that specific effect may be listed instead of “endocrine system,” which the thyroid is a part of.)

**Q. Who is most susceptible to chemicals found in fabrics?**

**A.** Health agencies consider “susceptible populations” to be groups that require special protections from exposure to potentially harmful chemicals. Susceptible populations typically include children, the elderly and pregnant women, as well as people with pre-existing health conditions (for example, asthma, heart disease, or nervous system disorders).

There are hundreds of pre-existing conditions and all may increase susceptibility to health effects from exposure to specific chemicals. This occurs when a chemical is capable of harming the organ system involved in a pre-existing condition. For example, someone with heart disease is more sensitive to chemicals that can harm the heart. People with skin conditions, abraded or damaged skin (for example, sunburn, dermabrasion, cosmetic skin peels) are more easily harmed by irritant chemicals. People taking prescription medications can have a health condition that can be affected by exposure to certain chemicals.

Aside from those with pre-existing conditions, every person reacts uniquely to chemical exposure, depending on the amount, timing and conditions of exposure, his or her health status, age and genetics, and other chemicals in their environment. For example, the same amount of exposure to some metals will cause endocrine disruption in some people but not others due to differences in their genetically-determined ability to detoxify chemicals. See [Additional Resources](#) for more information on increased susceptibility.

**Q. Are there situations that increase my risk of experiencing health problems from chemicals potentially found in uniforms?**

**A.** Some common factors increase exposure to chemicals. Personal care products, such as oils and emollients make it easier for chemicals to penetrate the protective outer skin layers and reach the underlying sensitive reactive areas. Damp skin (for example, due to sweat while working) increases skin penetration. Warm skin also increases skin penetration because it induces increased pore size. Clothing close to the skin can make direct contact with it, abrades it, and/or create very warm conditions on it, so that chemical penetration occurs more easily. These all can increase localized irritation and allergenic responses, and can also increase uptake of a chemical into the body, increasing overall exposure and therefore increasing the likelihood of other health effects.

The duration of exposure to chemicals is another important factor. To the degree possible, avoiding exposure when the clothing isn't being worn and avoiding cross-contamination with other clothing, linen and personal items by uniform garments suspected of causing reactions will reduce exposure.

Exposure to chemicals at home or in the workplace that can cause the same types of health effects will increase the likelihood of having an adverse reaction. Hobbies, home repairs, and other activities that may involve chemical exposures should be considered by people who are concerned about the potential effects of chemicals in their uniforms. Exposure to multiple chemicals is discussed below.

**Q. What about exposure to multiple chemicals that may be present in a uniform at the same time?**

**A.** The Company's testing found that multiple garments contained more than one irritant, as shown in Table 1 (for example, sample 8a, the female heavy zip sweater, or sample 10, the male slim flat front pant). Exposure to multiple chemicals capable of causing similar health effects increases the risk and/or severity of health problems. For example, someone exposed to a given amount of each of ten different irritant chemicals in his/her uniform has a higher risk of health problems and/or may experience more severe health effects than someone exposed to a uniform that contains the same given amount of just one of the chemicals. In the case of irritants, exposure to a low level of one irritant chemical is far preferable to exposure to that same low level of many irritant chemicals. One chemical may not reach the level of a noticeable impact on the skin, whereas many occurring together creates a more substantial burden and is less easily tolerated without adverse health effects.

Medical science does not currently have a simple way to determine the risk posed by multiple chemical exposures. Chemical standards are based on only individual chemical exposures and generally don't protect against harm in situations where more than one chemical is present that could impact the same organ system. As noted above, exposure to other chemicals at home can increase risks associated with chemical exposure. Some chemicals in jet fuel are also irritants and can contribute to other health problems. More information on exposure to multiple chemicals is available on the [Additional Resources](#) web page.

**Q. Where can I learn more about the potential health effects of the chemicals that were found in uniform garments?**

A. The information in Table 1 is based on scientific studies and technical documents from chemical manufacturers. Links to these sources can be found at [Additional Resources](#). Although some chemicals were studied extensively, most only have limited testing on effects such as irritation.

**Q. What are my options if I have experienced a suspected reaction to a uniform?**

A. If you have experienced a suspected reaction to a uniform, APFA strongly recommends that you seek medical advice. Depending on your symptoms, we suggest that you seek advice from a well-regarded medical professional who specializes in the health problems you have experienced (for example, a dermatologist, allergist, endocrinologist, or neurologist). It may be helpful to find a doctor who has experience with patients dealing with chemical exposure issues. The list of chemicals in Table 1, as well as the list of chemicals found in the testing by APFA (see the link above), may be useful in a medical evaluation of a suspected reaction—although we stress that these lists are the result of the limited testing that has been performed to date.

In addition, if you have experienced a suspected reaction to your uniform, APFA highly encourages you to fill out a [Uniform Reaction Report](#) through the APFA website. You should also contact the AA Uniform Call Center to obtain permission to wear an alternative uniform as well. Here is the contact information for the Call Center:

• **LAA - 1-800-VIP-CREW (#, 6, then option 5)**

• **LUS - 1-800-327-0117 (2,2, 5, then option 2)**

**(Call Center Open Daily, 0700 – 1800 CST)**

You also should consider filing an IOD, depending on your personal circumstances, if you have experienced an injury or illness that you suspect is related to your uniform. If you have questions about filing an IOD, you can contact Bellia Peckson at [iod@apfa.org](mailto:iod@apfa.org).

**Table 1: Chemicals found in uniform garments and preliminary health effects information**

The information below is from scientific sources listed in the National Library of Medicine or from chemical manufacturers’ publications (for example, Material Safety Data Sheets). The health effects are known or suspected of being caused by the chemicals based on human, animal, or other widely accepted testing systems. It is important to note that most of those tests were at high exposure levels. See [Additional Resources](#) for more information.

**TABLE 1<sup>1</sup>**

Chemical Name <sup>2</sup>	Number of Garment Samples <sup>3</sup>	Garment Description	Irritant <sup>4</sup>	Allergen <sup>5</sup>	Suspected Carcinogen or Genotoxin <sup>6</sup>	Other Health Effects and Organ System(s) that May be Harmed <sup>7</sup>	Additional Information
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<sup>1</sup> The chemicals listed in this table were identified in testing performed by Intertek on behalf of American Airlines. APFA is not responsible for the results or the methods used. The testing was limited in scope with respect to the number of garments tested and the chemicals that were evaluated.

<sup>2</sup> Chemical names are those most commonly used. Chemical Abstracts Service (“CAS”) numbers are provided for each specific chemical to aid in identification, because many chemicals have multiple names.

<sup>3</sup> “Number of Garment Samples” refers to the number of different sample garments in which the chemical was found.

<sup>4</sup> “Irritants” can cause transient or permanent damage ranging from a mild rash to severe dermatitis and other serious skin conditions. Irritant effects typically occur at concentrations above those found in garments. Exposure to multiple irritants and/or sensitive individuals increases the risk of irritation at lower exposure levels. See the FAQ and the [Additional Resources](#) web page for more information.

<sup>5</sup> Allergens can trigger responses at low concentrations. Individual sensitivities vary greatly. Exposure to multiple allergens increases the risk of an allergic response. See the FAQ and the [Additional Resources](#) web page for more information.

<sup>6</sup> “Suspected Carcinogen or Genotoxin” refers to chemicals for which studies have indicated that the chemical may cause cancer or damage to genetic material such as DNA.

<sup>7</sup> “Other Health Effects and Organ System(s) that May Be Harmed” includes health effects aside from irritant and allergenic effects. In addition to organ system (see text), specific health effects identified in toxicity studies are listed for some chemicals. (For example, thyroid abnormalities may be listed, when reported in studies, instead of just listing “endocrine system”, which the thyroid is a part of). Most effects occur ONLY at high levels of exposure. However, sensitive individuals may experience them at lower levels of exposure. See the FAQ and the [Additional Resources](#) web page for more information.

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Benzyl benzoate CAS # 120-51-4	17	1a. returned FEMALE ALLWEATER COAT 2. new unworn MALE ALL WEATHER COAT 4. new unworn FEMALE ALL WEATHER COAT 6a. returned BUTTON CARDIGAN SWEATER 7. new unworn MALE TRENCH COAT – PILOT 7a. returned FEMALE VEST 8a. returned FEMALE HEAVY ZIP SWEATER 13a. returned SHIRT DRESS- LONG SLEEVE 18. new unworn MALE 2 BTTN JKT SLIM 21. new unworn FEMALE BUTTON CARDIGAN SWEATER 22. new unworn MALE ZIPPER CARDIGAN- PILOT 23. new unworn MALE 2 BTTN JKT CLASSIC 1 STRIPE 27. new unworn SHIRT DRESS- LONGSLEEVE 45. new unworn Male LS Twill Shirt Blue 46. new unworn MALE HEAVY WEIGHT SWEATER NW 48. new unworn MALE ALL WEATHER COAT PILOT 52. new unworn MALE ALL WEATHER COAT				Heart	FDA approved food additive, preservative, antimicrobial and flavoring agent

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Cholesterol CAS # 57-88-5	17	7a. returned FEMALE VEST 9. new unworn FEMALE PANT – CLASSIC 9a. returned FEMALE SS JACKET 10. new unworn MALE SLIM FLAT FRONT PANT 11. new unworn FEMALE WRAP SKIRT 12. new unworn FEMALE SB JACKET 12a. returned FEMALE SB FA JKT 1 STRIPE 13. new unworn FEMALE SS JACKET 13a. returned SHIRT DRESS- LONG SLEEVE 14. new unworn MALE PILOT CLASSIC FLAT FRONT 16. new unworn MALE VEST 17. new unworn FEMALE SB FA JKT 1 STRIPE 18. new unworn MALE 2 BTTN JKT SLIM 23. new unworn MALE 2 BTTN JKT CLASSIC 1 STRIPE 25. new unworn FEMALE VEST 27. new unworn SHIRT DRESS- LONGSLEEVE 28. new unworn FEMALE PILOT PANTS-SLIM					Naturally occurring in the body
Caprolactam CAS # 105-60-2	14	11. new unworn FEMALE WRAP SKIRT 12a. returned FEMALE SB FA JKT 1 STRIPE 1a. returned FEMALE ALLWEATER COAT 2. new unworn MALE ALL WEATHER COAT 23. new unworn MALE 2 BTTN JKT CLASSIC 1 STRIPE 24. new unworn FEMALE A-LINE SHIRT 25. new unworn FEMALE VEST 26. new unworn FEMALE SB JKT- FO-CLASSIC 27. new unworn SHIRT DRESS- LONGSLEEVE 49. new unworn MALE 2 BTTN JKT CLASSIC 51. new unworn MALE 2BTTN JKT CLASSIC 1STRIPE 6. new unworn MALE CAR COAT 7a. returned FEMALE VEST 9a. returned FEMALE SS JACKET	X	X		Liver, kidneys, nervous system, male and female reproductive system, fetus	



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Butylated hydroxytoluene CAS # 128-37-0	13	2. new unworn MALE ALL WEATHER COAT 3. new unworn MEN'S PARKA 4. new unworn FEMALE ALL WEATHER COAT 5. new unworn LADIES PARKA 7a. returned FEMALE VEST 9. new unworn FEMALE PANT – CLASSIC 10. new unworn MALE SLIM FLAT FRONT PANT 14. new unworn MALE PILOT CLASSIC FLAT FRONT 24. new unworn FEMALE A-LINE SHIRT 28. new unworn FEMALE PILOT PANTS-SLIM 48. new unworn MALE ALL WEATHER COAT PILOT 50. new unworn MALE CLASSIC FLAT FRONT PANT 52. new unworn MALE ALL WEATHER COAT	X	X		Nervous system, liver, thyroid, male hormone levels, abnormal lipid and cholesterol levels	Common food additive
Diethylene glycol CAS # 111-46-6	11	2a. returned FEMALE LS BLOUSE-CHECK (32. new unworn FEMALE LS BLOUSE – CHECK) 33. new unworn MALE CLASSIC SS SHIRT – CHECK 34. new unworn SERVING GARMENT 39. new unworn FEMALE SS BLOUSE - SOLID 40. new unworn MALE SLIM LS SHIRT – CHECK 41. new unworn MALE CLASSIC LS SHIRT – SOLID 43. new unworn FEMALE SS BLOUSE – CHECK 44. new unworn FEMALE SS BLOUSE - SOLID (4a. returned FEMALE LS BLOUSE-CHECK ) (5a. returned FEMALE SS BLOUSE-CHECK)	X			Nervous system, kidneys, endocrine	

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Methyl palmitate CAS # 112-39-0	11	2a. returned FEMALE LS BLOUSE-CHECK 4a. returned FEMALE LS BLOUSE-CHECK 5a. returned FEMALE SS BLOUSE-CHECK 9. new unworn FEMALE PANT – CLASSIC 10. new unworn MALE SLIM FLAT FRONT PANT 10a. returned FEMALE S-S BLOUSE 11. new unworn FEMALE WRAP SKIRT 13. new unworn FEMALE SS JACKET 39. new unworn FEMALE SS BLOUSE - SOLID 41. new unworn MALE CLASSIC LS SHIRT – SOLID 44. new unworn FEMALE SS BLOUSE – SOLID	X			Basic cell functions	
Desmosterol CAS # 313-04-2	11	7a. returned FEMALE VEST 9. new unworn FEMALE PANT – CLASSIC 9a. returned FEMALE SS JACKET 10. new unworn MALE SLIM FLAT FRONT PANT 11. new unworn FEMALE WRAP SKIRT 12a. returned FEMALE SB FA JKT 1 STRIPE 14. new unworn MALE PILOT CLASSIC FLAT FRONT 17. new unworn FEMALE SB FA JKT 1 STRIPE 18. new unworn MALE 2 BTTN JKT SLIM 25. new unworn FEMALE VEST 27. new unworn SHIRT DRESS- LONGSLEEVE	X				Occurs naturally in the body; minimal toxicity information
Methyl oleate CAS # 112-62-9	10	7a. returned FEMALE VEST 8a. returned FEMALE HEAVY ZIP SWEATER 13. new unworn FEMALE SS JACKET 13a. returned SHIRT DRESS- LONG SLEEVE 17. new unworn FEMALE SB FA JKT 1 STRIPE 18. new unworn MALE 2 BTTN JKT SLIM 22. new unworn MALE ZIPPER CARDIGAN- PILOT 23. new unworn MALE 2 BTTN JKT CLASSIC 1 STRIPE 24. new unworn FEMALE A-LINE SHIRT 25. new unworn FEMALE VEST	X				Minimal toxicity information is available; FDA approves for use in food packaging

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2-bromo-4,6-dinitrobenzenamine CAS # 1817-73-8	9	2. new unworn MALE ALL WEATHER COAT 3. new unworn MEN'S PARKA 4. new unworn FEMALE ALL WEATHER COAT 5. new unworn LADIES PARKA 7a. returned FEMALE VEST 9. new unworn FEMALE PANT – CLASSIC 10. new unworn MALE SLIM FLAT FRONT PANT 14. new unworn MALE PILOT CLASSIC FLAT FRONT 24. new unworn FEMALE A-LINE SHIRT 28. new unworn FEMALE PILOT PANTS-SLIM 48. new unworn MALE ALL WEATHER COAT PILOT 50. new unworn MALE CLASSIC FLAT FRONT PANT 52. new unworn MALE ALL WEATHER COAT	X		X	Liver, heart, lungs, nervous system	
Pentacosane CAS # 629-99-2	7	6. new unworn MALE CAR COAT 6a. returned BUTTON CARDIGAN SWEATER 8a. returned FEMALE HEAVY ZIP SWEATER 21. new unworn FEMALE BUTTON CARDIGAN SWEATER 22. new unworn MALE ZIPPER CARDIGAN- PILOT 46. new unworn MALE HEAVY WEIGHT SWEATER NW 47. new unworn FEMALE BUTTON CARDIGAN NW	X				Generally considered nontoxic
Tetracosane CAS # 646-31-1	7	6. new unworn MALE CAR COAT 6a. returned BUTTON CARDIGAN SWEATER 8a. returned FEMALE HEAVY ZIP SWEATER 19. new unworn FEMALE HEAVY ZIP SWEATER 22. new unworn MALE ZIPPER CARDIGAN- PILOT 46. new unworn MALE HEAVY WEIGHT SWEATER NW 47. new unworn FEMALE BUTTON CARDIGAN NW	X				Generally considered nontoxic

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2,3-Dihydro-1,1,3-trimethyl-3-phenyl-1H-Indene CAS # 3910-35-8	6	2. new unworn MALE ALL WEATHER COAT 3. new unworn MEN'S PARKA 4. new unworn FEMALE ALL WEATHER COAT 5. new unworn LADIES PARKA 48. new unworn MALE ALL WEATHER COAT PILOT 52. new unworn MALE ALL WEATHER COAT	X	X			Generally considered nontoxic; minimal toxicity information
Heptacosane CAS # 593-49-7	6	6. new unworn MALE CAR COAT 6a. returned BUTTON CARDIGAN SWEATER 8a. returned FEMALE HEAVY ZIP SWEATER 19. new unworn FEMALE HEAVY ZIP SWEATER 22. new unworn MALE ZIPPER CARDIGAN- PILOT 46. new unworn MALE HEAVY WEIGHT SWEATER NW 47. new unworn FEMALE BUTTON CARDIGAN NW	X				Generally considered nontoxic
Hexacosane CAS # 630-01-3	6	6. new unworn MALE CAR COAT 6a. returned BUTTON CARDIGAN SWEATER 8a. returned FEMALE HEAVY ZIP SWEATER 22. new unworn MALE ZIPPER CARDIGAN- PILOT 46. new unworn MALE HEAVY WEIGHT SWEATER NW 47. new unworn FEMALE BUTTON CARDIGAN NW	X			Nervous system	Generally considered nontoxic
Octacosane CAS # 630-02-4	6	6. new unworn MALE CAR COAT 6a. returned BUTTON CARDIGAN SWEATER 8a. returned FEMALE HEAVY ZIP SWEATER 19. new unworn FEMALE HEAVY ZIP SWEATER 22. new unworn MALE ZIPPER CARDIGAN- PILOT 47. new unworn FEMALE BUTTON CARDIGAN NW	X				Generally considered nontoxic

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1-Methyl-3-phenylindane CAS # 6416-39-3	6	2. new unworn MALE ALL WEATHER COAT 3. new unworn MEN'S PARKA 4. new unworn FEMALE ALL WEATHER COAT 5. new unworn LADIES PARKA 48. new unworn MALE ALL WEATHER COAT PILOT 52. new unworn MALE ALL WEATHER COAT				Fetus	
Dimethyl terephthalate CAS # 120-61-6	5	7a. returned FEMALE VEST 23. new unworn MALE 2 BTTN JKT CLASSIC 1 STRIPE 25. new unworn FEMALE VEST 26. new unworn FEMALE SB JKT- FO-CLASSIC 49. new unworn MALE 2 BTTN JKT CLASSIC	X			Blood-forming system, nervous system, cardiovascular system (blood vessels and heart,) kidneys, ureter, bladder; immediate and delayed effects on offspring	
Tricosane CAS # 638-67-5	5	6. new unworn MALE CAR COAT 8a. returned FEMALE HEAVY ZIP SWEATER 19. new unworn FEMALE HEAVY ZIP SWEATER 22. new unworn MALE ZIPPER CARDIGAN- PILOT 47. new unworn FEMALE BUTTON CARDIGAN NW	X				Generally considered nontoxic
Nonacosane CAS # 630-03-5	4	6. new unworn MALE CAR COAT 6a. returned BUTTON CARDIGAN SWEATER 8a. returned FEMALE HEAVY ZIP SWEATER 19. new unworn FEMALE HEAVY ZIP SWEATER	X				Generally considered nontoxic
Quinoline CAS # 91-22-5	4	7. new unworn MALE TRENCH COAT – PILOT 9. new unworn FEMALE PANT – CLASSIC 10. new unworn MALE SLIM FLAT FRONT PANT 38. new unworn TIE, FIH CREW	X		X	Very broadly toxic, especially to the liver and nervous system, fetus	

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Lanolin CAS # 2598-99-4	3	5a. returned FEMALE SS BLOUSE-CHECK 40. new unworn MALE SLIM LS SHIRT – CHECK 43. new unworn FEMALE SS BLOUSE – CHECK		X			Generally low toxicity but may be contaminated with metals and other chemicals; FDA-approved for treating dry skin and nursing mothers
2-Chloro-4,6-nitro-benzenamine (-dinitroaniline) CAS # 3531-19-9	3	7. new unworn MALE TRENCH COAT – PILOT 9. new unworn FEMALE PANT – CLASSIC 14. new unworn MALE PILOT CLASSIC FLAT FRONT	X		X	Blood	
C.I. Disperse Orange 30 CAS # 5261-31-4	3	11. new unworn FEMALE WRAP SKIRT 12. new unworn FEMALE SB JACKET 15. new unworn MALE SB JACKET-FO-SLIM	X				Minimal toxicity information. Member of the "azo dye" chemical family that is generally hazardous.
Docosane CAS # 629-97-0	3	6. new unworn MALE CAR COAT 8a. returned FEMALE HEAVY ZIP SWEATER 19. new unworn FEMALE HEAVY ZIP SWEATER	X				Generally considered nontoxic
n,n-dimethylformamide CAS # 68-12-2	3	11. new unworn FEMALE WRAP SKIRT 32. new unworn FEMALE LS BLOUSE – CHECK 45. new unworn Male LS Twill Shirt Blue	X		X	Liver, kidneys, nervous system, blood-forming system, male and female reproductive systems, heart	Helps other chemicals penetrate the skin

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Naphthalene CAS # 91-20-3	3	34. new unworn SERVING GARMENT 36. new unworn SCARF, CREW 45. new unworn Male LS Twill Shirt Blue	X			Blood, kidneys, nervous system, gastrointestinal system, lungs, fetus	
2,4-Bis(1,1-dimethylethyl)phenol CAS # 96-76-4	3	49. new unworn MALE 2 BTTN JKT CLASSIC 50. new unworn MALE CLASSIC FLAT FRONT PANT 51. new unworn MALE 2BTTN JKT CLASSIC 1STRIPE	X	X		Nervous system, endocrine, abnormal blood chemistry, produces free radicals.	
9-Octadecenoic acid CAS # 112-79-8	2	13. new unworn FEMALE SS JACKET 15. new unworn MALE SB JACKET-FO-SLIM	X				Minimal toxicity information is available; generally considered nontoxic
Eicosane CAS # 112-95-8	2	8. new unworn MALE HEAVY WEIGHT SWEATER 40. new unworn MALE SLIM LS SHIRT – CHECK					minimal toxicity information is available; generally considered nontoxic
Bis-(2-ethylhexyl)phthalate CAS # 117-81-7	2	9. new unworn FEMALE PANT – CLASSIC 12a. returned FEMALE SB FA JKT 1 STRIPE	X		X	Endocrine, reproductive	
Isoquinoline CAS # 119-65-3	2	7. new unworn MALE TRENCH COAT – PILOT 14. new unworn MALE PILOT CLASSIC FLAT FRONT	X				Minimal toxicity information available
N-Butyl-benzenesulfonamide CAS # 3622-84-2	2	12a. returned FEMALE SB FA JKT 1 STRIPE 54. new unworn SHIRT DRESS - SHORT SLEEVE					Generally considered nontoxic

Chemical Name <sup>2</sup>	Number of Garment Samples <sup>3</sup>	Garment Description	Irritant <sup>4</sup>	Allergen <sup>5</sup>	Suspected Carcinogen or Genotoxin <sup>6</sup>	Other Health Effects and Organ System(s) that May be Harmed <sup>7</sup>	Additional Information
Triacontane CAS # 638-68-6	2	6. new unworn MALE CAR COAT 8a. returned FEMALE HEAVY ZIP SWEATER	X				Generally considered nontoxic
4,4 -Diphenylmethane diisocyanate CAS # 101-68-8	1	26. new unworn FEMALE SB JKT- FO-CLASSIC	X	X	X	Heart	
N-Cyclohexylcyclohexanamine CAS # 101-83-7	1	7. new unworn MALE TRENCH COAT – PILOT	X			Nervous system, reproductive system	
p-Xylene <sup>8</sup> CAS # 106-42-3	1	12a. returned FEMALE SB FA JKT 1 STRIPE	X			Reproductive system, nervous system and kidneys	
2-(2-Butoxyethoxy)ethanol CAS # 112-34-5	1	54. new unworn SHIRT DRESS - SHORT SLEEVE	X			Liver, kidneys and blood-forming system	
Oleic acid CAS # 112-80-1	1	15. new unworn MALE SB JACKET-FO-SLIM	X				Minimal toxicity information is available; generally considered nontoxic
Benzophene CAS #119-61-9	1	45. new unworn MALE LS TWILL SHIRT BLUE	X				Minimal toxicity information available

<sup>8</sup> This chemical was only found in a single returned uniform, where exposure to chemicals outside of the manufacturing chain may have occurred. Future testing may clarify whether this chemical is also found in in new, unworn uniforms.



Chemical Name <sup>2</sup>	Number of Garment Samples <sup>3</sup>	Garment Description	Irritant <sup>4</sup>	Allergen <sup>5</sup>	Suspected Carcinogen or Genotoxin <sup>6</sup>	Other Health Effects and Organ System(s) that May be Harmed <sup>7</sup>	Additional Information
Bis-(2-hydroxyethyl)lauramide CAS # 120-40-1	1	16. new unworn MALE VEST	X				FDA approved for use around food
N-Butyl stearate CAS # 123-95-5	1	12a. returned FEMALE SB FA JKT 1 STRIPE	X			Reproductive system	FDA approved as food additive and in cosmetics
Diphenyl sulfone CAS # 127-63-9	1	34. new unworn SERVING GARMENT	X			Nervous system, kidney, bladder, lungs	Pesticide
Dimethyl phthalate CAS # 131-11-3	1	12a. returned FEMALE SB FA JKT 1 STRIPE	X			Endocrine, nervous system	
Isopropyl palmitate CAS # 142-91-6	1	54. new unworn SHIRT DRESS - SHORT SLEEVE	X				Minimal toxicity information available
Mercaptobenzothiazole CAS # 149-30-4	1	14. new unworn MALE PILOT CLASSIC FLAT FRONT	X	X	X	Thyroid	Pesticide
Stearyl oleate CAS # 17673-49-3	1	18. new unworn MALE 2 BTTN JKT SLIM					Minimal toxicity information available
4-Biphenylester benzoic acid CAS # 2170-13-0	1	6. new unworn MALE CAR COAT					Minimal toxicity information available
Methyl ester 9-octadecanoic acid CAS # 2462-84-2	1	11. new unworn FEMALE WRAP SKIRT				Reproductive system	
Dipropylene glycol isomers CAS # 25265-71-8	1	45. new unworn MALE LS TWILL SHIRT BLUE	X				Minimal toxicity information available

Chemical Name <sup>2</sup>	Number of Garment Samples <sup>3</sup>	Garment Description	Irritant <sup>4</sup>	Allergen <sup>5</sup>	Suspected Carcinogen or Genotoxin <sup>6</sup>	Other Health Effects and Organ System(s) that May be Harmed <sup>7</sup>	Additional Information
Di-tert-butylphenol isomers CAS # 26746-38-3	1	45. new unworn Male LS TWILL SHIRT BLUE					Minimal information available
Stearyl stearate CAS # 2778-96-3	1	18. new unworn MALE 2 BTTN JKT SLIM	X <sup>9</sup>				Generally low toxicity; used in skin conditioners and cosmetics
Cyclododecane CAS # 294-62-2	1	45. new unworn MALE LS TWILL SHIRT BLUE	X			Nervous system	
Oleamide CAS # 301-02-0	1	45. new unworn MALE LS TWILL SHIRT BLUE	X	X		Nervous system	
PEG-3 lauryl ether CAS # 3055-94-5	1	13. new unworn FEMALE SS JACKET	X		X	Kidneys	Increases skin penetration of other chemicals
Benzenepropanoic acid, 3-(1,1-dimethyl ethyl)-4-hydroxy-5-methyl-,1,2-ethanediyl CAS # 36443-68-2	1	15. new unworn MALE SB JACKET-FO-SLIM			X	Liver, thyroid, pituitary glands, reproductive system	
Decyl oleate CAS # 3687-46-5	1	51. new unworn MALE 2BTTN JKT CLASSIC 1STRIPE					Minimal toxicity information available; generally considered nontoxic

<sup>9</sup> Evidence for irritant effects was very limited.

Chemical Name <sup>2</sup>	Number of Garment Samples <sup>3</sup>	Garment Description	Irritant <sup>4</sup>	Allergen <sup>5</sup>	Suspected Carcinogen or Genotoxin <sup>6</sup>	Other Health Effects and Organ System(s) that May be Harmed <sup>7</sup>	Additional Information
Laurel palmitate CAS # 42232-29-1	1	15. new unworn MALE SB JACKET-FO-SLIM					Minimal toxicity information available; generally considered nontoxic; used as a skin emollient
Ethylbenzaldehyde CAS # 4748-78-1	1	45. new unworn MALE LS TWILL SHIRT BLUE	X				FDA approved for use in foods and occurs naturally in many foods
1-(2-Butoxyethoxy)ethanol CAS # 54446-78-5	1	7. new unworn MALE TRENCH COAT – PILOT (640-0160-201)				Liver	Minimal toxicity information available; used in eye makeup (so probably not an irritant)
Ethylhexyl benzoate CAS # 5444-75-7	1	1a. returned FEMALE ALLWEATER COAT (original tag attached)			X		FDA approved flavoring agent
Palmitic acid CAS # 57-10-3	1	1a. returned FEMALE ALLWEATER COAT	X				Generally considered nontoxic
1,8-Diazacyclotetradecane-2,9-dione CAS # 5776-79-4 CAS # 56403-09-9	1	2. new unworn MALE ALL WEATHER COAT				Nervous system	
2-(Methylthio)-benzothiazole CAS # 615-22-5	1	10. new unworn MALE SLIM FLAT FRONT PANT	X				Generally considered nontoxic

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Benzoic acid CAS # 65-85-0	1	45. new unworn Male LS Twill Shirt Blue	X	X	X	Lungs, nervous system, liver, kidneys, fetus	Pesticide; food preservative
2,6-Dibromo-4-nitro-benzenamine CAS # 827-94-1	1	7. new unworn MALE TRENCH COAT – PILOT	X			Very broadly toxic across multiple organ systems	
1-Methyl-naphthalene CAS # 90-12-0	1	36. new unworn SCARF, CREW	X	X	X	Blood, nervous system, lungs and gastrointestinal system	Skin photosensitizer; FDA approved flavoring agent that occurs naturally in some foods; pesticide
Limonene CAS # 92-52-4	1	10. new unworn MALE SLIM FLAT FRONT PANT	X			Liver, gastrointestinal system, nervous system	Generally considered nontoxic
Dicloran CAS # 99-30-9	1	50. new unworn MALE CLASSIC FLAT FRONT PANT	X		X	Nervous system, blood, adrenal glands, liver, spleen, thyroid, male and female reproductive systems (infertility), kidneys, gastrointestinal system, fetus; effects may be delayed	Pesticide