

BEESWAX, COPERNICIA CERIFERA (CARNAUBA) WAX, EUPHORBIA CERIFERA (CANDELILLA) WAX, AND RHUS SUCCEDANEA FRUIT WAX

The Expert Panel for Cosmetic Ingredient Safety (Panel) first published the Safety of Candelilla Wax, Carnauba Wax, Japan Wax, and Beeswax in 1984¹. The Panel concluded that these ingredients are safe in cosmetics in the present practices of concentration and use, as stated in that assessment. The Panel previously considered a rereview of this report in and re-affirmed the 1984 conclusion, as published in 2005.² Between the publication of the 1984 report and the 2005 re-review, Candelilla Wax, Carnauba Wax, and Japan Wax were re-named Euphorbia Cerifera (Candelilla) Wax, Copernicia Cerifera (Carnauba) Wax, and Rhus Sucedanea Fruit Wax, respectively.

Because it has been at least 15 years since the previous re-review was published, in accordance with Cosmetic Ingredient Review (CIR) Procedures, the Panel considered whether the safety assessment should be reopened. At the March 2025 meeting, the Panel reviewed updated information regarding product types and ingredient use frequencies according to the US Food and Drug Administration (FDA) Registration and Listing Data (RLD; 2024)³ and Voluntary Cosmetic Registration Program (VCRP; 2023) database,⁴ and maximum use concentrations provided in response to the survey conducted by the Personal Care Products Council in 2022.⁵ According to 2002 VCRP Beeswax, Copernicia Cerifera (Carnauba Wax), Euphorbia Cerifera (Candelilla) Wax, and Rhus Sucedanea Fruit Wax were used in 1074, 1194, 701, and 528 formulations, respectively. However, frequencies of use differ from what was reported at the time of the first re-review; 2023 VCRP data indicated that these ingredients were used in 1758, 808, 703, and 16 formulations, respectively. In 2003, Beeswax had the highest concentration (used at up to 56% in lipsticks and lip glosses), while in 2022, Rhus Sucedanea Fruit Wax had the highest concentration of use in 2022 (used at up to 37.9% in eyebrow pencils). In 2024, RLD collected indicate frequencies of use greater than 5000 formulations for three of the ingredients, i.e., Beeswax, Copernicia Cerifera (Carnauba) Wax, and Euphorbia Cerifera (Candelilla) Wax; Rhus Sucedanea Fruit Wax was reported to be used in 300 formulations. The data also suggests that these ingredients are used in children's eye and non-eye makeup preparations, hair sprays, airbrush products (foundations, leg and body paints, makeup bases), oral products, and tattoo preparations. The cumulative frequency and concentration of use data are presented in Table 1.

In January 2025, an extensive search of the world's literature was performed for studies dated 2000 forward, and new data were found. The information that was found included impurities and specifications, acute toxicity, dermal irritation and sensitization to propolis, ocular irritation, and case reports that indicated allergies to propolis which can be found in Beeswax (if contaminated), Carnauba Wax, and Candelilla Wax. The Panel concluded these new data served to reaffirm the existing conclusion of safety; accordingly, this safety assessment was not reopened. However, they acknowledged the importance of capturing this information robustly, and therefore these studies are summarized in Tables 2-8.

Furthermore, the Panel discussed the possibility for these ingredients to be used in cosmetic products which may be incidentally inhaled. A detailed discussion and summary of the Panel's approach to evaluating incidental inhalation exposures to ingredients in cosmetic products is available at <https://www.cir-safety.org/cir-findings>. This resource document also notes that airbrush technology presents a potential safety concern. Although frequency and/or concentration of use data are now available (and in some cases mandated) for ingredients marketed for use with airbrush delivery systems in certain product categories, no data is available for consumer habits and practices thereof, product particle size, or other relevant particle data (e.g., diameter). As a result of deficiencies in these critical data needs, the data profile is incomplete, and the safety of cosmetic ingredients applied by airbrush delivery systems cannot be determined by the Panel. Accordingly, the Panel has concluded the data is insufficient to support the safe use of cosmetic ingredients applied via an airbrush delivery system.

In summary, the Panel reviewed updated frequency and concentration of use data, in addition to any new, available, relevant safety data. During its deliberations, the Panel expressed concern regarding heavy metals and pesticides that may be present in these ingredients. They stressed that the cosmetics industry should continue to minimize impurities in cosmetic formulations according to limits set by the US FDA and the EPA. However, specifically for Beeswax, impurities such as propolis should be avoided. The contamination of Beeswax with this substance appeared to cause multiple reactions based on the case reports. After considering this information, as well as the information provided in the original safety assessment, the Panel reaffirmed the 1984 conclusion that Beeswax, Euphorbia Cerifera (Candelilla) Wax, Copernicia Cerifera (Carnauba) Wax, and Rhus Sucedanea Fruit Wax are safe in cosmetics in the present practices of concentration and use.

TABLES

Table 1. Frequency (RLD/VCRP) and concentration of use according to likely duration and exposure and by product category

	# of Uses			Max Conc of Use		# of Uses			Max Conc of Use	
	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²
Totals*	8872	1758	1074	0.00015 - 35	1 - 56	5199	808	1194	0.05 - 30	0.07 - 20
summarized by likely duration and exposure**										
Duration of Use										
Leave-On	***	1544	958	0.00015 - 35	1 - 56	***	793	1177	0.05 - 30	0.1 - 20
Rinse-Off	***	210	116	0.0004 - 25.5	1 - 2	***	15	16	0.25 - 4.5	0.07 - 0.2
Diluted for (Bath) Use	***	4	NR	NR	NR	***	NR	1	NR	NR
Exposure Type										
Eye Area	***	296	222	0.00015 - 35	2 - 19	***	360	603	0.15 - 30	1 - 6
Incidental Ingestion	***	270	224	0.49 - 25.5	2 - 56	***	229	481	0.33 - 7	0.07 - 9
Incidental Inhalation-Spray	***	9; 371 ^a ; 193 ^b	25; 175 ^a ; 125 ^b	5; 0.001 - 14 ^a	1; 1 - 4 ^a ; 1 - 10 ^b	***	3; 64 ^a ; 23 ^b	2; 13 ^a ; 4 ^b	0.5; 0.7 - 8 ^a	0.1 - 4 ^a
Incidental Inhalation-Powder	***	14; 193 ^b ; 26 ^c	6; 125 ^b	0.34 - 6; 1.5 - 13.5 ^c	2; 1 - 10 ^b	***	7; 23 ^b	1; 4 ^b	6.8 - 7.1; 0.05 - 1 ^c	0.8 - 1
Dermal Contact	***	1170	679	0.00015 - 27	1 - 19	***	358	559	0.05 - 12.5	0.1 - 20
Deodorant (underarm)	***	24 ^a	1 ^a	3.5	NR	***	3 ^a	NR	NR	NR
Hair - Non-Coloring	***	114	21	0.001 - 14	1	***	41	1	4 - 8	NR
Hair-Coloring	***	86	24	0.01 - 1.5	NR	***	2	8	NR	NR
Nail	***	2	10	7.5	NR	***	2	2	NR	NR
Mucous Membrane	***	289	228	0.0004 - 25.5	2 - 56	***	229	482	0.33 - 7	0.07 - 9
Baby Products	***	31	4	2 - 13.5	NR	***	4	NR	NR	0.8 - 1
as reported by product category										
Baby Products	35					7				
Baby Lotions/Oils/Powders/Creams	30	26	4	2 - 13.5	NR	7	4	NR	NR	0.8 - 1
Baby Wipes	1	NA	NA	NR	NA					
Other Baby Products	5 (l.o.); 1 (r.o.)	5	NR	NR	NR	2 (l.o.)	NR	NR	NR	NR
Bath Preparations	19					7				
Bath Oils, Tablets, and Salts	4	NR	NR	NR	NR	1	NR	1	NR	NR
Bubble Baths	1	NR	NR	NR	NR					
Other Bath Preparations	16	4	NR	NR	NR	6	NR	NR	NR	NR
Eye Makeup Preparations (not children's)	1424					2090				
Eyebrow Pencil	291	48	15	7.8 - 9.8	NR	408	52	36	4 - 12.5	NR
Eyeliners	307	19	29	1.5 - 12.5	2	590	66	317	2 - 9	1
Eye Shadow	366	68	23	0.33 - 13.8	2	264	41	59	0.15 - 6.8	NR
Eye Lotion	22	19	1	0.00015 - 1.5	NR	9	3	NR	NR	NR
Eye Makeup Remover	4	NR	NR	NR	NR	1	NR	NR	NR	NR
False Eyelashes	4	NA	NA	NR	NA	4	NA	NA	NR	NA
Mascara	414	115	116	11.4 - 35	19	776	176	143	2 - 30	2 - 6
Eyelash and Eyebrow Adhesives, Glues, and Sealants	20	NA	NA	NR	NA	9	NA	NA	NR	NA
Eyelash and Eyebrow Preparations (primers, conditioners, serums, fortifiers)	23	NA	NA	NR	NA	66	NA	NA	NR	NA
Eyelash Cleansers	1	NA	NA	NR	NA					

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	# of Uses			Max Conc of Use		# of Uses			Max Conc of Use	
	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²
Other Eye Makeup Preparations	141	27	38	2.3 – 5	3	133	22	48	3.5 – 4.5	5
Children's Eye Makeup Preparations	9					2				
Children's Eyeshadows	8	NA	NA	NR	NA	2	NA	NA	NR	NA
Other Children's Eye Makeup	1	NA	NA	NR	NA					
Fragrance Preparations	151					5				
Cologne and Toilet Water	1	NR	NR	NR	NR	NR	NR	1	NR	NR
Perfumes	31	6	18	NR	1					
Powders (dusting/talcum, excl aftershave talc)	2	NR	NR	NR	NR					
Sachets	NR	NR	9	NR	NR					
Other Fragrance Preparation	118	2	6	5	NR	5	3	1	0.5	NR
Hair Preparations (non-coloring)	421					110				
Hair Conditioners	19 (l.o.); 24 (r.o.)	8	4	0.01 – 2	NR	8 (l.o.); 5 (r.o.)	3	NR	NR	NR
Hair Sprays (aerosol fixatives)	58	NR	NR	NR	NR	1	NR	NR	NR	NR
Hair Straighteners	7	4	NR	NR	NR	1	1	NR	NR	NR
Permanent Waves	3	NR	NR	NR	NR					
Rinses (non-coloring)	10	NR	NR	NR	NR	1	NR	NR	NR	NR
Shampoos (non-coloring)	6	1	NR	NR	NR	1 (r.o.)	NR	1	NR	NR
Tonics, Dressings, and Other Hair Grooming Aids	137	83	17	0.001 – 14	NR	37	28	NR	NR	NR
Wave Sets	11	NR	NR	NR	NR	NR	2	NR	8	NR
Other Hair Preparations	141 (l.o.); 27 (r.o.)	18	NR	NR	1	54 (l.o.); 5 r.o.)	7	8	4	NR
Hair Coloring Preparations	1119					182				
Hair Dyes and Colors (all types requiring caution statements and patch tests)	947	83	20	0.75 – 1.5	NR	151	NR	NR	NR	NR
Hair Tints	87	2	1	NR	NR	21	1	NR	NR	NR
Hair Rinses (coloring)	9 (r.o.)	NR	NR	0.01	NR					
Hair Shampoos (coloring)	1 (r.o.)	NR	NR	NR	NR					
Hair Color Sprays (aerosol)	7	NR	1	NR	NR					
Hair Lighteners with Color	7	NR	NR	0.2	NR					
Hair Bleaches	7	NR	NR	NR	NR	1	NR	NR	NR	NR
Eyelash and Eyebrow Dyes	8	NA	NA	NR	NA	2	NA	NA	NR	NA
Other Hair Coloring Preparation	30 (l.o.); 22 (r.o.)	1	2	NR	NR	6 (l.o.); 1 (r.o.)	1	NR	NR	NR
Makeup Preparations (not eye; not children's)	3219					2382				
Blushers and Rouges (all types)	263	49	13	6.5 – 11	19	186	13	10	2 - 6.8	4
Face Powders	190	14	2	0.34 – 6	2	116	3	1	6.8 – 7.1	
Foundations	262 (traditional application); 8 (airbrush application)	10	14	9	5	317 (traditional application)	26	NR	7.6	6 – 20
Leg and Body Paints	63 (traditional application); 1 (airbrush application)	1	NR	NR	NR	2	NR	NR	NR	NR
Lipstick and Lip Glosses	2073	269	224	2 – 12.2	56	1718	228	479	1 – 7	1 – 9

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Makeup Bases	153 (traditional application); 2 (airbrush application)	4	25	9	3	84 (traditional application)	NR	7	NR	NR
Makeup Fixatives	143	NR	NR	NR	NR	5	1	2	NR	NR
Other Makeup Preparations	213 (l.o.)	125	27	25	9	151 (l.o.); 1 (r.o.)	36	45	1.1 – 4	2 – 6
Makeup Preparations for Children (not eye)	487					148				
Children's Blushers and Rouges (All Types)	1	NA	NA	NR	NA					
Children's Face Paints	5	NA	NA	NR	NA	1	NA	NA	NR	NA
Children's Face Powders	1	NA	NA	NR	NA					
Children's Foundations	1	NA	NA	NR	NA					
Children's Lipsticks and Lip Glosses	474	NA	NA	NR	NA	147	NA	NA	NR	NA
Other Children's Makeup	11	NA	NA	NR	NA					
Manicuring Preparations	30					2				
Basecoats and Undercoats	2	NR	NR	NR	NR					
Cuticle Softeners	4	NR	5	7.5	NR					
Nail Creams and Lotions	2	2	5	NR	NR	NR	1	NR	NR	NR
Nail Polish and Enamel	6	NR	NR	NR	NR	2	1	1	NR	NR
Nail Polish and Enamel Removers	3	NR	NR	NR	NR					
Other Manicuring Preparations	13	NR	NR	NR	NR	NR	NR	1	NR	NR
Oral Products	21									
Dentifrices						NR	1	NR	0.33	NR
Mouthwashes and Breath Fresheners	NR	1	NR	NR	NR					
Other Oral Products	21	NR	NR	0.49 – 25.5	2	NR	NR	2	4.5	0.07
Personal Cleanliness	103					22				
Bath Soaps and Body Washes	17	3	2	0.0004	NR	4	NR	NR	NR	NR
Deodorants (underarm)	57 (not spray); 1 (spray)	24	1	3.5 (not spray)	NR	10	3	NR	NR	NR
Douches	NR	1	NR	NR	NR					
Feminine Deodorants	1 (l.o.)	1	NR	NR	NR					
Disposable Wipes						1	NA	NA	NR	NA
Other Personal Cleanliness Products	8 (l.o.); 22 (r.o.)	10	2	20	NR	1 (l.o.); 6 (r.o.)	NR	NR	NR	NR
Shaving Preparations	43					3				
Aftershave Lotions	2	4	8	3	NR	1	NR	NR	NR	NR
Beard Softeners	15	10	NR	NR	NR	2	1	NR	NR	NR
Pre-shave Lotions (all types)						2	NR	NR	NR	NR
Shaving Creams (aerosol, brushless, lather)	7	1	NR	NR	NR	1	NR	NR	NR	NR
Shaving Soaps (cakes, sticks, etc.)	1	NR	NR	NR	NR					
Other Shaving Preparation Products	19	3	1	NR	NR					
Skin Care Preparations	1726					273				
Cleansing	147	38	72	0.5 – 6.6	2	13	3	3	0.25	0.2
Depilatories	120	49	1	3 – 19	2	3	3		3	NR
Face and Neck (excluding shaving preparations)	414 (l.o.); 82 (r.o.)	105	32	2- 8.6 (not spray)	1	102 (l.o.); 8 (r.o.)	15	2	0.21 (not spray)	NR

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Body and Hand (excluding shaving preparations)	192 (l.o.); 20 (r.o.)	87	93	1.5 – 12 (not spray)	10	34 (l.o.); 2 (r.o.)	8	2	0.05 – 1 (not spray)	NR
Foot Powders and Sprays	9	NR	NR	NR	NR	NR	NR	NR	0.5 – 3.5 (not spray)	NR
Moisturizing	699	263	102	0.0005 – 27 (not spray)	1	95	30	5	NR	NR
Night	34	23	48	0.5 (not spray)	4	4	4	5	NR	0.2
Paste Masks (mud packs)	36	5	11	5	1	NR	NR	1	NR	NR
Skin Fresheners	13	1	NR	NR	NR	NR	2	NR	NR	NR
Other Skin Care Preparations	258 (l.o.); 27 (r.o.)	115	74	1.5 – 2	4	44 (l.o.); 10 (r.o.)	19	9	0.7	NR
Suntan Preparations	46					3				
Suntan Gels, Creams, and Liquids	30	1	7	NR	NR	3	NR	1	2 (not spray)	0.1
Indoor Tanning Preparations	10 (traditional application)	NR	1	NR	NR					
Other Suntan Preparations	6	NR	NR	NR	NR	NR	NR	2	NR	4
Tattoo Preparations	14									
Temporary Tattoo Inks	2	NA	NA	NR	NA					
Other Tattoo Preparations	12	NA	NA	NR	NA					
Other Preparations (i.e., those preparations that do not fit another category)	169	NA	NA	NR	NA	36	NR	NA	NR	NA
	Euphorbia Cerifera (Candelilla) Wax					Rhus Succedanea Fruit Wax				
Totals*	5394	713	701	0.005 – 25	0.03 - 27	300	16	528	0.98 – 37.9	1 - 34
summarized by likely duration and exposure**										
Duration of Use										
Leave-On	***	674	696	0.2 – 25	0.2 – 27	***	16	527	0.98 – 37.9	1 – 34
Rinse-Off	***	38	5	0.005 – 3.1	0.03 – 12	***	NR	NR	NR	NR
Diluted for (Bath) Use	***	1	NR	NR	NR	***	NR	1	NR	NR
Exposure Type										
Eye Area	***	150	93	0.3 – 18.1	2 – 18	***	6	362	0.98 – 37.9	11 – 34
Incidental Ingestion	***	265	504	2.6 – 20.7	0.03 – 27	***	1	143	5.5	NR
Incidental Inhalation-Spray	***	20; 65 ^a ; 24 ^b	3; 9 ^a	0.5; 25 ^a	0.2 – 8 ^a ; 0.3 ^b	***	4 ^a ; 3 ^b	1 ^a	NR	1 ^b
Incidental Inhalation-Powder	***	24 ^b ; 12 ^c	1	2 – 4.2; 0.2 – 10	1; 0.3 ^b ; 3	***	3 ^b	NR	NR	1 ^b
Dermal Contact	***	375	149	0.01 – 18.1	0.2 – 18	***	14	384	0.98 – 37.9	1 – 34
Deodorant (underarm)	***	7 ^a	NR	NR	NR	***	NR	NR	NR	NR
Hair - Non-Coloring	***	20	2	0.005 – 25	2	***	NR	1	NR	NR
Hair-Coloring	***	7	NR	NR	0.4	***	NR	NR	NR	NR
Nail	***	NR	2	2	9	***	NR	NR	NR	NR
Mucous Membrane	***	284	504	0.05 – 20.7	0.03 – 27	***	1	144	5.5	NR
Baby Products	***	14	NR	NR	NR	***	NR	NR	NR	NR

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as reported by product category										
Baby Products	9									
Baby Lotions/Oils/Powders/Creams	5	12	NR	NR	NR					
Baby Wipes										
Other Baby Products	4 (l.o.)	2	NR	NR	NR					
Bath Preparations (diluted for use)	3									
Bath Oils, Tablets, and Salts	1	NR	NR	NR	NR	NR	NR	1	NR	NR
Bubble Baths										
Other Bath Preparations	2	1	NR	NR	NR					
Eye Makeup Preparations	1236					239				
Eyebrow Pencil	231	22	4	0.33 – 18.1	NR	146	3	56	9 – 37.9	34
Eyeliners	313	46	17	3.4 – 11	5 – 12	17	1	276	0.98 – 10	11
Eye Shadow	228	24	16	0.3 – 10.3	3 – 5	29	NR	23	5	NR
Eye Lotion	5	3	NR	NR	NR					
Eye Makeup Remover	1	NR	NR	NR	NR					
False Eyelashes	1	NA	NA	NR	NA					
Mascara	403	46	44	0.5 – 6.6	3 – 8	34	1	NR	NR	NR
Eyelash and Eyebrow Adhesives, Glues, and Sealants	2	NA	NA	NR	NA					
Eyelash and Eyebrow Preparations (primers, conditioners, serums, fortifiers)	42	NA	NA	NR	NA					
Eyelash Cleansers										
Other Eye Makeup Preparations	70	9	12	10	2 – 18	20	1	7	NR	NR
Children's Eye Makeup Preparations	7									
Children's Eyeshadows	7	NA	NA	NR	NA					
Other Children's Eye Makeup										
Fragrance Preparations	32									
Cologne and Toilet Water										
Perfumes	26	16	3	NR	NR					
Powders (dusting/talcum, excl aftershave talc)										
Other Fragrance Preparation	7	4	NR	0.5	NR					
Hair Preparations (non-coloring)	124					6				
Hair Conditioners	3 (l.o.); 24 (r.o.)	7	NR	0.01 – 2	NR					
Hair Sprays (aerosol fixatives)	3	NR	NR	NR	NR					
Hair Straighteners										
Permanent Waves										
Rinses (non-coloring)	2	NR	NR	NR	NR					
Shampoos (non-coloring)	1 (l.o.)	NR	NR	0.0005	NR					
Tonics, Dressings, and Other Hair Grooming Aids	21	11	2	25	NR	1	NR	1	NR	NR
Wave Sets	2	NR	NR	NR	NR					
Other Hair Preparations	59 (l.o.); 14 (r.o.)	2	NR	8.5	2	4 (l.o.); 1 (r.o.)	NR	NR	NR	NR
Hair Coloring Preparations	46									
Hair Dyes and Colors (all types requiring caution statements and patch tests)	28	NR	NR	NR	NR					
Hair Tints	12	2	NR	NR	NR					

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	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²
Hair Rinses (coloring)										
Hair Shampoos (coloring)										
Hair Color Sprays (aerosol)										
Hair Lighteners with Color										
Hair Bleaches	3	NR	NR	NR	NR					
Eyelash and Eyebrow Dyes										
Other Hair Coloring Preparation	2 (l.o.); 1 (r.o.)	5	NR	NR	0.4					
Makeup Preparations (not eye; not children's)	3502					44				
Blushers and Rouges (all types)	310	27	14	3 – 8.6	2 – 8	7	2	NR	NR	NR
Face Powders	87	NR	1	2 – 4.2	3					
Foundations	408 (traditional application)	8	14	8.9	3 – 10					
Leg and Body Paints	NR	2	NR	NR	NR					
Lipstick and Lip Glosses	2533	265	504	2.6 – 20.7	5 – 27	41	1	143	5.5	
Makeup Bases	NR	1	13	3.5	NR	1 (traditional application)	NR	NR	NR	NR
Makeup Fixatives	12	1	NR	NR	NR					
Other Makeup Preparations	277 (l.o.); 4 (r.o.)	46	41	NR	6 – 10	4 (l.o.)	NR	19	NR	7
Makeup Preparations for Children (not eye)	11					3				
Children's Blushers and Rouges (All Types)										
Children's Face Paints	1	NA	NA	NR	NA					
Children's Face Powders										
Children's Foundations										
Children's Lipsticks and Lip Glosses	10	NA	NA	NR	NA	3	NA	NA	NR	NA
Other Children's Makeup										
Manicuring Preparations (Nail)	2					1				
Basecoats and Undercoats										
Cuticle Softeners	NR	NR	NR	2	NR	1	NR	NR	NR	NR
Nail Creams and Lotions	1	NR	NR	NR	NR					
Nail Polish and Enamel	NR	NR	1	NR	9					
Nail Polish and Enamel Removers										
Other Manicuring Preparations	1	NR	1	NR	NR					
Oral Hygiene Products										
Dentifrices										
Mouthwashes and Breath Fresheners										
Other Oral Products	NR	NR	NR	3.1	0.03 – 12					
Personal Cleanliness Products	48					2				
Bath Soaps and Body Washes	12	12	NR	0.05	NR					
Deodorants (underarm)	26 (not spray)	7	NR	NR	NR					
Douches										
Feminine Deodorants	NR	1	NR	NR	NR					
Disposable Wipes										
Other Personal Cleanliness Products	11 (r.o.)	5	NR	NR	NR	2 (r.o.)	NR	NR	NR	NR

Table 1. Frequency (RLD/VCRP) and concentration of use according to likely duration and exposure and by product category

	# of Uses			Max Conc of Use		# of Uses			Max Conc of Use	
	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²	RLD (2024) ³	VCRP (2023) ⁴	VCRP (2002) ²	% (2022) ⁵	% (2003) ²
Shaving Preparations						1				
Aftershave Lotions	1	NR	NR	NR	NR					
Beard Softeners	3	2	NR	NR	NR					
Pre-shave Lotions (all types)	1	NR	NR	NR	NR					
Shaving Creams (aerosol, brushless, lather)	1	NR	NR	NR	NR					
Shaving Soaps (cakes, sticks, etc.)										
Other Shaving Preparation Products	1	NR	NR	NR	NR	1	NR	NR	NR	NR
Skin Care Preparations	438					9				
Cleansing	30	6	2	0.01 – 0.063	1					
Depilatories	2									
Face and Neck (excluding shaving preparations)	138 (l.o.); 19 (r.o.)	11	NR	3.3 – 10 (not spray)	NR	2 (l.o.)	3	NR	NR	1
Body and Hand (excluding shaving preparations)	57 (l.o.); 1 (r.o.)	12	NR	0.2 – 2.3 (not spray)	0.3	3 (l.o.)	NR	NR	NR	NR
Foot Powders and Sprays										
Moisturizing	136	49	4	0.2 – 5 (not spray)	NR	2	2	NR	NR	NR
Night	8	4	2	NR	2	1	2	NR	NR	NR
Paste Masks (mud packs)	5	1	3	NR	2					
Skin Fresheners	4	NR	NR	NR	NR					
Other Skin Care Preparations	105 (l.o.); 19 (r.o.)	41	2	NR	0.3 – 5	1 (l.o.)	NR	2	NR	NR
Suntan Preparations	8									
Suntan Gels, Creams, and Liquids	7	NR	1	NR	8					
Indoor Tanning Preparations										
Other Suntan Preparations	1	NR	NR	NR	0.2 – 4					
Tattoo Preparations										
Temporary Tattoo Inks										
Other Tattoo Preparations										
Other Preparations (i.e., those preparations that do not fit another category)	28	NA	NA	NR	NA	2	NA	NA	NR	NA

NR – not reported; NA – not applicable (this category was not part of the VCRP)

l.o. – leave-on; r.o. – rinse-off

*The total FOU provided for RLD refers to the ingredient count supplied by FDA, and is not a summation of the number of uses per category because each product may be categorized under multiple product categories. For data supplied via the VCRP or by the Council survey, the sum of all exposure types may not equal the sum of total uses because each ingredient may be used in cosmetics with multiple exposure types.

**Likely duration and exposure are derived from VCRP and survey data based on product category (see Use Categorization <https://www.cir-safety.org/cir-findings>)

***In the RLD each ingredient may be reported under several product categories, making a summation of RLD misleading in comparison to VCRP data. Accordingly, RLD are presented below by product category (as supplied by FDA), but are not summarized by likely duration and exposure.

^a It is possible these products are sprays, but it is not specified whether the reported uses are sprays.

^b Not specified whether a spray or a powder, but it is possible the use can be as a spray or a powder, therefore the information is captured in both categories.

^c It is possible these products are powders, but it is not specified whether the reported uses are powders.

Table 2. Impurities and specifications*

Ingredient	Data	Reference
Beeswax	Specifications of Beeswax according to European opinions on food additives: -glycerol and other polyols: not more than 0.5% (as glycerol) -ceresin, paraffins, and certain other waxes: absent -fats, Japan wax, rosin, and soaps: absent -arsenic: not more than 3 mg/kg -lead: not more than 5 mg/kg -mercury: not more than 1 mg/kg	6
Beeswax	Beeswax may be contaminated by persistent lipophilic acaricides. The active varroacide substances coumaphos, fluvalinate, and bromopropylate were the main acaricide residues found in commercial Beeswax samples from European countries and were detected in levels ranging from 0.05 – 16.40 mg/kg, less than 0.01 to 15 mg/kg, and 0.07 – 15 mg/kg, respectively. Other contaminants reported include z-chlorfenvinphos (0.16 – 4.82 mg/kg), amitraz (0.10 – 0.56 mg/kg), lindane (0.04 – 0.29 mg/kg), endosulfan sulphate (0.12 – 0.36 mg/kg), lead (0.06 – 6.2 mg/kg), cadmium (0.01 – 0.1 mg/kg), and mercury (0.0001 – 0.06 mg/kg).	6
Beeswax	Heavy metal concentrations of Beeswax comb samples (n = 15) of different ages were measured between 2018 to 2022 in Egypt. Concentrations at year 1 were as follows: iron (2.1 ppm), chromium (1.01 ppm), zinc (0.36 ppm), copper (0.65 ppm), nickel (0.89 ppm), manganese (0.22 ppm), lead (0.04 ppm), cadmium (0.024 ppm), cobalt (0.027 ppm). Concentrations at year 5 were as follows: iron (5.04 ppm), chromium (2.7 ppm), zinc (2.5 ppm), copper (2.6 ppm), nickel (2.5 ppm), manganese (1.2 ppm), lead (0.19 ppm), cadmium (0.05 ppm), cobalt (0.05 ppm).	7
Beeswax	Amounts of trace metals in Beeswax samples of different countries of origin were evaluated. The highest amounts observed were as follows: iron (334,000 µg/kg; Poland), zinc (729,000 µg/kg; Italy), copper (40,930 µg/kg; Croatia), manganese (41,904 µg/kg; Slovakia), nickel (17,830 µg/kg; Croatia), chromium (56,280 µg/kg; Croatia), lead (6510 µg/kg; Italy), arsenic (140 µg/kg; Italy), cadmium (289 µg/kg; Italy), mercury (1700 µg/kg; Spain).	8
Beeswax	According to a review articles on the toxic compounds present in bee products, Beeswax may contain polycyclic aromatic hydrocarbons, polychlorinated naphthalenes, <i>Clostridium botulinum</i> spores, pesticides, and other inorganic contaminants.	9,10
Beeswax	According to a review article on residues found in different samples of Beeswax in Europe, 68 different residues were found. These residues include acaricide, insecticides, antiparasitics, molluscicides, fungicides, nematocides, antimicrobials, ovicides, etc.	11
Beeswax	Monitoring of lipophilic acaricides was performed in commercial Swiss Beeswax. In 2019, <i>tau</i> -fluvalinate, coumaphos, and thymol residues were found in average amounts of 0.38, 0.41, and 17.4 mg/kg, respectively (number of samples evaluated not stated).	12
Beeswax	Swiss commercial Beeswax samples from 9 manufacturers were evaluated for pesticides. Mean values of 401, 236, 106 and 3 µg/kg were obtained for coumaphos, <i>tau</i> -fluvalinate, bromopropylate and N-(2,4-dimethylphenyl)-formamide, respectively. For other pesticides, the mean values were 203 µg/kg synergist piperonyl butoxide, 120 µg/kg repellent N,N-diethyl-3-methylbenzamide), 19 µg/kg (chlorfenvinphos and 4 µg/kg (E)-fenpyroximate, while the means for acrinathrin, azoxystrobin, bendiocarb, boscalid, chlorpyrifos, flumethrin, permethrin, propoxur and thiacloprid were below the limit of quantification.	13
Beeswax	Thirty-five Beeswax samples from Spain were collected in 2016 to evaluate pesticide incidence. The compounds coumaphos (detected in 100% of samples), fluvalinate (detected in 86% of samples), and amitraz (detected in 83% of samples) were the pesticides most frequently detected, with maximum concentrations of 26,858, 3593 and 6884 ng/g, respectively. Chlorfenvinphos, acrinathrin and flumethrin, also acaricides, were detected in 77, 71 and 54% of samples, respectively.	14
Copernicia Cerifera (Carnauba) Wax	Specifications of carnauba wax according to European opinions on food additives: -arsenic: not more than 3 mg/kg -lead: not more than 2 mg/kg -mercury: not more than 1 mg/kg	15
Euphorbia Cerifera (Candelilla) Wax	Specifications of candelilla wax according to European opinions on food additives: -glycerol and other polyols: not more than 0.5% (as glycerol) -ceresin, paraffins, and certain other waxes: absent -fats, Japan wax, rosin, and soaps: absent -arsenic: not more than 3 mg/kg -lead: not more than 2 mg/kg -mercury: not more than 1 mg/kg	16

*According to the re-review published in 2005, the Panel reviewed impurities data and reminded manufacturers that cosmetic products containing plant-derived ingredients should be formulated to limit the presence of heavy metal/pesticide residues as follows: lead ≤10 ppm, arsenic ≤3 ppm, mercury ≤1 ppm, and total PCB/pesticide contamination ≤40 ppm, with ≤10 ppm for any specific residue.

Table 3. CFR Citations

Ingredient	Data	Reference
Beeswax	Beeswax is used in OTC drug products (insect bite and sting drug products and skin protectant drug products); there are inadequate data to establish the general recognition of safety and effectiveness of Beeswax for these uses	21CFR310.545
Beeswax	White and yellow Beeswax may be used at up to 5% in combination with one more emollient in OTC ophthalmic drug products	21CFR349.13
Beeswax Copernicia Cerifera (Carnauba) Wax	Residues resulting from the use of carnauba wax or Beeswax as either an inert or an active ingredient in a pesticide chemical formulation, including antimicrobial pesticide chemicals, are exempted from the requirement of a tolerance under FFDCA section 408, if such use is in accordance with good agricultural or manufacturing practices.	40CFR180.950
Copernicia Cerifera (Carnauba) Wax	Carnauba wax is approved as a direct human food ingredient used as an anticaking agent	21CFR184.1978
Rhus Succedanea Fruit Wax	Rhus Succedanea Fruit Wax may be used as an adhesive in articles intended for use in packaging, transporting, or holding food when used in accordance with certain conditions	21CFR175.105
Rhus Succedanea Fruit Wax	Rhus Succedanea Fruit Wax may be used as diluents in color additive mixtures for coloring eggshells subject to the condition that there is no penetration of the color additive mixture of any of its components through the eggshell into the egg	21CFR73.1

CFR = Code of Federal Regulations; FFDCA = Federal Food Drug, and Cosmetic Act; OTC = over-the-counter

Table 4. Acute toxicity studies

Test Article	Vehicle	Animals/Group	Concentration/Dose	Protocol	LD ₅₀ /LC ₅₀ /Results	Reference
DERMAL						
Beeswax	arachis oil	female Wistar rats (1 animal at low dose; 5 animals at high dose)	300 and 2000 mg/kg bw	OECD TG 420; acute oral toxicity assay; gavage administration	LD ₅₀ > 2000 mg/kg bw; no deaths or signs of systemic signs of toxicity observed	¹⁷

LD₅₀ = median lethal dose; OECD = Organisation for Economic Co-operation and Development; TG = test guideline

Table 5. Genotoxicity studies

Test Article	Vehicle	Concentration/Dose	Test System	Protocol	Results	Reference
IN VITRO						
Beeswax	tetrahydrofuran	experiment 1: 1.5, 5, 15, 50, 150, 500, 1500 and 5000 µg/plate experiment 2: 15, 50, 150, 500, 1500, 5000 µg/plate	<i>Salmonella typhimurium</i> TA 1535, TA 1537, TA 98, TA 100 and <i>Escherichia coli</i> WP2	OECD TG 417; 2-part Ames assay; negative control: vehicle; positive controls: benzo(a)pyrene and 2-aminoanthracene	non-mutagenic; controls gave expected results	¹⁷

OECD = Organisation for Economic Co-operation and Development; TG = test guideline

Table 6. Dermal irritation and sensitization studies

Test Article	Vehicle	Concentration/Dose	Test Population/System	Protocol	Results	Reference
IRRITATION						
IN VITRO						
Beeswax	none	100%; 10 ± 5 mg (26 mg/cm ²)	EpiSkin™ tissues (n = 3/group)	OECD TG 439; in vitro skin irritation assay; 15-min exposure period; 42-h post-treatment incubation; tissue viability calculated after incubation; negative control: phosphate-buffered saline; positive control: sodium lauryl sulfate	non-irritating; tissue viability of test article, negative control, and positive control was 100, 96.1, and 2.7%, respectively	¹⁷
SENSITIZATION						
ANIMAL						
Beeswax	tetrahydrofuran	2.5, 5, and 10%	female CBA/Ca mice (5/group)	OECD TG 429; local lymph node assay; negative control: vehicle; positive control: hexyl cinnamic aldehyde	non-sensitizing; controls gave expected results	¹⁷

OECD = Organisation for Economic Co-operation and Development; TG = test guideline

Table 7. Ocular irritation studies

Test Article	Vehicle	Concentration/Dose	Test Population	Protocol	Results	Reference
IN VITRO						
Beeswax	none	100%; 50 mg	EpiOcular™ tissues (n = 2/group)	OECD TG 492; reconstructed human cornea-like epithelium test; 6-h treatment period; 18-h post incubation period; tissue viability evaluated after incubation; negative control: water; positive control: methyl acetate	no indication of irritation; tissue viability of the test substance, negative control and positive control was 96, 100, and 31.8%, respectively	17

OECD = Organisation for Economic Co-operation and Development; TG = test guideline

Table 8. Clinical studies

Ingredient	Subjects	Protocol/Study Description	Results/Case Report Summary	Reference
RETROSPECTIVE AND SINGLE OR MULTI-CENTER STUDIES				
Allergy				
Beeswax	95 patients	retrospective study; patch tests performed in 95 atopic patients using yellow and white Beeswax	A retrospective study was performed using a cohort of 95 patients with a suspicion of contact allergic cheilitis (n = 55), eczema around the lips or on the face (n = 32), or a suspicion of contact allergy to products containing Beeswax (n = 8). Occlusive patch tests were performed using yellow Beeswax, white Beeswax, and propolis (only 84 subjects tested for propolis). In the cohort, 17/95 patients showed positive results to yellow and/or white Beeswax. Positive patch tests to propolis were seen in 16/84 patients. In 16 of the 17 positive reactions to white or yellow Beeswax, the reactions were determined to be clinically relevant (clinical relevance was assessed by checking products used with regard to Beeswax).	18
Beeswax	58 patients	cross-sectional study evaluating allergic response to propolis and Beeswax in beekeepers	An 18-mo cross-sectional study was performed in beekeepers in India. Patch tests using 10% propolis in petroleum, royal jelly (tested as-is), and Beeswax (tested as-is) were performed in bee workers with clinical features of contact dermatitis (n = 58). Six positive reactions were observed for propolis and 0 positive reactions were observed for Beeswax and royal jelly.	19
Beeswax	2828 patients	multi-center study evaluating prevalence of allergy and cross-reactions to Beeswax and yellow and white Beeswax	The prevalence of propolis allergy and cross-reactions to Beeswax were evaluated in 2,828 subjects via patch testing (subjects undergoing patch testing as part of the investigation for contact dermatitis in UK centers). Patch tests were performed using 10% propolis in petroleum and pure yellow and white Beeswax. Fifty-five subjects had a positive patch test to propolis, and 13 subjects had a positive reaction to Beeswax. Fifty-one subjects reacted to propolis only, 9 to Beeswax only, and 4 to both allergens.	20
Euphorbia Cerifera (Candelilla) Wax	146 patients	retrospective study evaluating the prevalence and common allergens associated with cheilitis in a specialist contact dermatitis clinic	The clinic's patch test database was used to pull data on patients (n = 146) with cheilitis over a 19-yr period (1982 – 2001), all of who had patch testing done for potential allergens. A positive allergic patch test reaction was thought to be relevant in 22 patients. Two of the 22 patients had positive patch tests to candelilla wax.	21
Wound Prevention/Healing				
Beeswax	90 mothers	randomized controlled trial evaluated the effectiveness of Beeswax in preventing nipple pain and cracks in the early post-partum period	Ninety primiparous mothers that met qualification criteria were randomly divided into Beeswax (n = 30), breast milk (n = 30), and control (n = 30) groups (mothers who were not allergic to honey or honey products were included in the study). Mothers in each group were evaluated for nipple pain and cracks on post-partum day 1, 3, 5, 7, and 10. Beeswax barriers were prepared by melting 100% Beeswax and molding into nipple shapes. Participants were instructed to wash hands before breastfeeding and allow 20-25 s for drying before application of the barrier. The barriers were worn at all times outside of breastfeeding and bathing. On post-partum day 10, nipple pain and cracks occurred highest in the control group (53.3%), whereas nipple pain and cracks were encountered least in the Beeswax group (20%) on post-partum observation days. None of the participants in this study experienced any Beeswax-related allergic reactions. In addition, no adverse effects were observed among newborns whose mothers used the Beeswax barrier.	22

Table 8. Clinical studies

Ingredient	Subjects	Protocol/Study Description	Results/Case Report Summary	Reference
CASE REPORTS				
Beeswax	60-yr-old male	case report on subject with worsening dermatitis following use of cream containing Beeswax	A 60-yr-old male with chronic venous insufficiency and stasis dermatitis in both legs presented with worsening dermatitis following use of an ointment containing 7% Beeswax, 8% cetylpalmitate, 60% peanut oil, and 25% distilled water. Treatment with this ointment plus 1% hydrocortisone resulted in severe deterioration of the dermatitis. Discontinuation of this ointment resulted in regression of symptoms. Patch tests were performed on the individual ingredients of the ointment, the ointment itself, the ointment in combination with hydrocortisone, hydrocortisone, and propolis (Beeswax tested at 30% in petroleum and propolis tested at 10% in petroleum). Positive reactions were obtained for Beeswax, the ointment, the ointment with hydrocortisone, and propolis. The patient was diagnosed with allergic contact dermatitis to Beeswax, which was likely contaminated with propolis.	23
Beeswax	29-yr-old female	case report on subject with chronic cheilitis due to Beeswax-containing lip balm	A 29-yr-old woman with a nut allergy and asthma presented with chronic, relapsing cheilitis and perioral dermatitis. The patient reported the use of various lip balms without improvement. Patch tests revealed positive results for several substances including fragrances and lip balm containing 30% white Beeswax. Ingredient testing confirmed allergic reactions to the lip balm and to 30% white Beeswax in petroleum.	24
Beeswax	44-yr-old female	case report on subject with dermatitis and cheilitis due to lip balm and candy containing Beeswax	A 44-yr-old woman with a history of atopic dermatitis was patch-tested (with her own products and standard series) after presenting with face and neck dermatitis and pronounced cheilitis. The patient developed reactions to her lip balm and two other substances. When testing the individual ingredients of the lip balm, the patient had a positive reaction to white Beeswax. The skin condition cleared upon lip balm discontinuation; however, dry and chapped lips still occurred. It was subsequently discovered that wine gums often consumed by the patient were coated in white Beeswax. The cheilitis cleared completely following discontinuation of the candy. The patient was again patch tested 6 mo later to evaluate if cross-reaction to propolis was present. Positive reactions were seen to 10% propolis in petroleum, 20% white Beeswax, and 30% yellow Beeswax in petroleum.	25
Beeswax	45-yr-old female	case report on beekeeper with edematous facial eczema	A 45-yr-old woman with a history of facial eczema and previous positive patch testing to several substances (fragrance mix I, balsam of Peru, isoeugenol, and eugenol) presented with severe edematous facial eczema. The patient reported reactions following exposure to beehives. Patch tests were performed using standard series, cosmetic/perfume series, personal perfume, and semi-open tests with the patient's own products (including propolis and Beeswax from her hives). The patient tested positive for the previously positive substances, as well as propolis and Beeswax. Chinese-type propolis and white Beeswax provided by a cosmetics laboratory yielded negative results.	26
Beeswax	26-yr-old male	case report on dental technician with a history of atopic dermatitis following occupational exposure to Beeswax and propolis	A 26-yr-old dental technician with a history of atopic eczema presented with chronic pulpitis and fingertip/nail eczema on the right hand. The patient's job involved the manufacture of dental molds. Patch testing with a standard series, dental series, and 10% propolis yielded positive reactions to propolis and a borderline reaction to bisphenol. It was discovered that the dental molding process involved molding Beeswax. The patient was diagnosed with allergic contact dermatitis secondary to occupational exposure to propolis.	27
Beeswax	81-yr-old male	case report on healthy man with chronic dry lips with fissures and scaling following use of bee's ointment and honey ingestion	An 81-yr-old healthy man who presented with chronic dry lips with fissures and scaling was being treated with hydrocortisone and different types of emollients, including a bee's ointment, with no relief. Patch testing was performed with a Swedish baseline series, 5% carvone in petroleum, 10% propolis in petroleum, and the patient's own products. The patient showed an extreme positive reaction to propolis and a doubtful reaction to <i>Myroxylon pereirae</i> , but remained negative to his own products, including the bee's ointment (which according to the ingredient label contained propolis). The patient reported consumption of a honey sandwich, daily, for many years. Further patch testing was performed with his own honey, <i>Myroxylon pereirae</i> , white Beeswax, and yellow Beeswax. The patient showed positive reactions to yellow Beeswax, his own honey, and <i>Myroxylon pereirae</i> . Symptoms cleared after stopping honey ingestion.	28

Table 8. Clinical studies

Ingredient	Subjects	Protocol/Study Description	Results/Case Report Summary	Reference
Beeswax and Euphorbia Cerifera (Candelilla) Wax	32-yr-old female	case report on atopic patient with severe cheilitis following use of lip balms containing Beeswax and candelilla wax	A 32-yr-old atopic female patient presented with severe, chronic cheilitis and mild facial and hand dermatitis. The patient had tried multiple (n = 6) lip balms for atopic cheilitis treatment. Clinical examination showed pronounced lip dermatitis complicated by bacterial infection. Patch tests were performed using a baseline, fragrance, and bakery series, as well as 4 out of the 6 lip balms used. Positive reactions were observed for all lip balms, propolis, and several other substances. Additional patch tests were performed and positive reactions were observed for several lip balm ingredients including 30% Beeswax in petroleum and 41% candelilla wax in petroleum.	29
Beeswax and Copernicia Cerifera (Carnauba) Wax	6-yr-old female	case report on girl with cheilitis and facial/upper extremity dermatitis due to vitamins containing Beeswax and carnauba wax	A 6-yr-old girl with a history of mild atopic dermatitis since infancy presented with recurrent episodes of cheilitis accompanied by facial and upper extremity dermatitis. Patch tests were performed with selected chemicals. Clinically relevant positive reactions were observed for propolis and cinnamaldehyde. A provocative use test with the child's lip balm (containing natural and artificial flavors and menthol in a wax base) yielded positive results. Significant improvement was noted following discontinuation of the lip balm. Further discussion revealed the use of multivitamins containing an unspecified amount of carnauba wax and Beeswax. Discontinuation of the vitamins results in clearance of both cheilitis and dermatitis.	30
Copernicia Cerifera (Carnauba) Wax	33-yr-old female	case report on woman with desquamative cheilitis and perioral dermatitis after use of lip balm containing carnauba wax	A 33-yr-old woman with a history of atopic dermatitis and asthma presented with desquamative cheilitis and perioral dermatitis after starting a lip balm for cracked lips. The patient was patch-tested with the European baseline series, individual components of fragrance mix I and II, her own lipsticks, lip balm, and toothpaste. Patch tests were positive for nickel sulfate in 5% petroleum and for the hypoallergenic lip balm. Further patch testing was performed on the ingredient of the lip balm. A positive reaction was obtained for carnauba wax.	31
Copernicia Cerifera (Carnauba) Wax	21-yr-old female	case report of woman with rash on eyelids due to mascara containing carnauba wax	A 21-yr-old woman presented with a 1-yr history of a bilateral scaly rash on both upper and lower eyelids. Patch testing was performed using the European standard series, a medicaments series, and her own eye cosmetics (including a mascara and its constituents, including carnauba wax). Positive reactions were observed to the mascara, 50% carnauba wax in mineral oil, and 10% coathylene in petroleum.	32
Euphorbia Cerifera (Candelilla) Wax	11-mo-old male	case report on boy with rash following use of emollient cream containing candelilla wax	An 11-mo-old boy was prescribed an unscented emollient to treat dry skin accompanying atopic dermatitis. A generalized, papular, itchy rash formed 2 wk after starting use, and usage of cream was discontinued. At age 4, as parents struggled to find suitable creams and sunscreens for the child, a patch test was performed using a baseline series as well as the emollient cream. Positive results were obtained for the emollient cream, as well as to a fragrance mix and <i>Myroxylon pereirae</i> resin. Additional patch tests were performed on the individual ingredients of the cream. Strong positive reactions were obtained for 2 of the ingredients (candelilla wax in 41% petroleum and sucrose distearate in 10% petroleum). Cosmetics without fragrances, candelilla wax, and sucrose distearate were eventually advised and well-tolerated by the child.	33
Euphorbia Cerifera (Candelilla) Wax	25-yr-old female	case report on woman with cheilitis following use of lip balm containing candelilla wax	A 25-yr-old woman with a history of atopic dermatitis presented with recurrent episodes of cheilitis. Patch testing was performed with the European baseline series, a cosmetic extended series, and the patient's own products. Positive reactions were observed to the patient's lip balm and thiomersal. Patch tests were performed on the individual ingredients of the lip balm (including candelilla wax). A positive reaction to 10% candelilla wax in paraffin and octyldodecanol were observed. Discontinuation of lip balm resulted in cheilitis clearance.	34
Euphorbia Cerifera (Candelilla) Wax	25-yr-old female	case report on woman with lip and eye dermatitis due to products containing candelilla wax	A 25-yr-old atopic female presented with a history of intermittent pruritic dermatitis on the lips and eyelids with occasional involvement on the trunk and limbs. Over the years, the patient was treated with immunosuppressive, steroidal, and antibiotic treatments. Patch testing was performed using an allergen screening series, several supplemental series (e.g., corticosteroid, cosmetics), and 37 of her own personal products. Patch tests revealed a positive reaction to 50% candelilla wax in petroleum, a lipstick containing candelilla wax, and several other substances.	35

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