

## Analytical Findings

Using the GC-MS method described above for the determination of benzene, Valisure analyzed 294 unique batches from 69 brands of sunscreen and after-sun care products with the results detailed below. In summary, 78 product batches had detectable levels of benzene, 26 contained benzene in concentrations between 0.1 ppm and 2.0 ppm and 14 contained over 2 ppm. In Tables 2 – 5, an asterisk “\*” denotes data generated by the Chemical and Biophysical Instrumentation Center at Yale University from a sample from the same lot and specific product package. Two asterisks “\*\*” denotes data generated by Boston Analytical from a sample of the same lot and specific product package. For samples where benzene was detected, at least three samples from each batch were tested individually and the amount of benzene detected is reported as an average followed by the percent standard deviation of the results from replicate measurements.

**Table 2.** Product description and results of benzene analysis on various batches of sunscreen and after-sun care products in which benzene was detected at 2 ppm or higher.

Brand Name	Type	Description	SPF	UPC	Lot	Exp.	Active Pharmaceutical Ingredient(s)	Benzene Avg ppm	% St Dev
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 100+	100+	086800100416	04820E04	2022-01	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	6.26 6.77*	7%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 70	70	086800100409	07020E01	2023-02	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	5.96	7%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 70	70	086800100409	06920E01	2023-02	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	5.76	5%
Sun Bum	Gel	Cool Down Gel	N/A	871760002005	50082C	–	N/A (Cosmetic Product)	5.33 5.49*	3%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 70	70	086800100409	02320E01	2022-12	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	5.30	2%
Neutrogena	Spray	Beach Defense Oil-Free Body Sunscreen Spray - SPF 100	100	086800101444	04721E02	2023-01	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	5.20 5.59*	5%
CVS Health	Spray	After-sun Aloe Vera Soothing Spray	N/A	050428390832	8140449A	–	N/A (Cosmetic Product)	4.71 4.55*	1%
Neutrogena	Spray	Invisible Daily Defense Body Sunscreen Broad Spectrum SPF 60+	60+	086800111542	04921E01	2024-01	Avobenzene 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%	4.65 5.27*	4%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 100+	100+	086800100416	03120E02	2021-12	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	4.11 6.00**	15%
Neutrogena	Spray	Beach Defense Oil-Free Body Sunscreen Spray - SPF 100	100	086800101444	28020E01	2022-09	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	4.01 4.00*	4%
CVS Health	Spray	After-sun Aloe Vera Soothing Spray	N/A	050428390832	4111849A	–	N/A (Cosmetic Product)	3.58 3.93*	4%
Neutrogena	Spray	Beach Defense Spray Body Sunscreen SPF 50	50	086800112549	25520E01	2023-08	Avobenzene 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%	3.52 3.71*	3%
Neutrogena	Spray	Beach Defense Oil-Free Body Sunscreen Spray - SPF 100	100	086800101444	31420E04	2022-10	Avobenzene 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	3.08 2.64*	2%
Fruit of the Earth	Gel	Aloe Vera Gel	N/A	071661001200	6612940A	–	N/A (Cosmetic Product)	2.78 2.94*	6%

**Table 3.** Product description and results of benzene analysis on various batches of sunscreen and after-sun care products in which benzene was detected at 0.1 ppm to 2 ppm.

Brand Name	Type	Description	SPF	UPC	Lot	Exp.	Active Pharmaceutical Ingredient(s)	Benzene Avg ppm	% St Dev
Neutrogena	Spray	Invisible Daily Defense Body Sunscreen Broad Spectrum SPF 60+	60+	086800111542	17820E01	2023-05	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%	1.99 1.66*	8%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 100+	100+	086800100416	06420E05	2022-02	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	1.44 1.06*	6%
Raw Elements	Lotion	Eco Formula Sunscreen Lotion SPF 30	30	858855002003	58J19	2021-07	Zinc Oxide 23%	1.35 1.31*	9%
CVS Health	Spray	After-sun Aloe Vera Soothing Spray	N/A	050428390832	1101990A	--	N/A (Cosmetic Product)	0.90 1.04*	3%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 70	70	086800100409	26119E01	2022-08	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	0.87	9%
CVS Health	Gel	After-sun Aloe Vera Moisturizing Gel	N/A	050428324837	4500231A	--	N/A (Cosmetic Product)	0.81 0.98*	2%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 100+	100+	086800100416	08119F36	2022-02	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	0.77	4%
SunBurnt	Gel	Advanced After-Sun Gel	N/A	324330210060	62R20	2022-12	N/A (Cosmetic Product)	0.75 0.87*	2%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 100+	100+	086800100416	32619E06	2021-10	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	0.73	9%
Goodsense	Lotion	Sunscreen Lotion SPF 30	30	846036001143	070606920	2022-07	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%	0.71	4%
Neutrogena	Spray	CoolDry Sport Water-Resistant Sunscreen Spray SPF 70	70	086800100379	33719E01	2022-10	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	0.66	5%
Neutrogena	Spray	Ultra Sheer Body Mist Sunscreen Broad Spectrum SPF 30 Spray	30	086800100386	28219E02	2021-09	Avobenzone 3%, Homosalate 8%, Octisalate 5%, Octocrylene 8%	0.49	18%
Banana Boat	Spray	Kids Max Protect & Play Sunscreen C-Spray SPF 100	100	079656050820	200910346	2023-02	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	0.41 0.43*	7%
Neutrogena	Spray	Beach Defense Oil-Free Body Sunscreen Spray - SPF 100	100	086800101444	35219E05	2021-11	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	0.41	8%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 100+	100+	086800100416	29519E02	2021-09	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	0.37 0.38*	2%
Banana Boat	Spray	UltraMist Deep Tanning Dry Oil Continuous Clear Spray SPF 4	4	79656046632	200944022	2023-03	Homosalate 3.0%, Octocrylene 1.0%	0.36	18%
Banana Boat	Spray	Kids Max Protect & Play Sunscreen C-Spray SPF 100	100	079656050820	200273634	2022-12	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	0.19	11%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 70	70	086800100409	13019F84	2022-04	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	0.18	10%
Neutrogena	Spray	Ultra Sheer Body Mist Sunscreen Broad Spectrum SPF 45	45	086800100393	15719F83	2022-05	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 2.35%, Oxybenzone 6%	0.15	12%
Banana Boat	Spray	Ultra Sport Clear Sunscreen Spray SPF 100	100	79656050806	201060792	2023-03	Avobenzone 3.0%, Homosalate 10.0%, Octisalate 5.0%, Octocrylene 10.0%, Oxybenzone 6.0%	0.15	4%
Neutrogena	Lotion	Ultra Sheer Dry-Touch Water Resistant Sunscreen SPF 70	70	86800687702	0090L0069	2022-06	Avobenzone 3.0%, Homosalate 15.0%, Octisalate 5.0%, Octocrylene 2.8%, Oxybenzone 6.0%	0.13	73%
Neutrogena	Spray	CoolDry Sport Water-Resistant Sunscreen Spray SPF 50	50	086800100362	15619F25	2022-05	Avobenzone 2.7%, Homosalate 9%, Octisalate 4.5%, Octocrylene 6%, Oxybenzone 4.5%	0.13	4%
TopCare Everyday	Lotion	Ultimate Sheer Sunscreen Lotion SPF 70	70	036800459007	9533119A	2021-11	Avobenzone 3%, Homosalate 10%, Octisalate 3%, Octocrylene 7%, Oxybenzone 6%	0.12 0.16*	6%
EltaMD	Spray	UV Aero Broad-Spectrum Full-Body Sunscreen Spray, SPF 45	45	390205025879	67155I	2022-11	Zinc Oxide 9.3%, Octinoxate 7.5%	0.11 0.17*	18%
EltaMD	Spray	UV Aero Broad-Spectrum Full-Body Sunscreen Spray, SPF 45	45	390205025879	67155H	2022-11	Zinc Oxide 9.3%, Octinoxate 7.5%	0.11	9%
Banana Boat	Spray	Kids Max Protect & Play Sunscreen C-Spray SPF 100	100	079656050820	200243635	2022-12	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	0.11	19%

**Table 4.** Product description and results of benzene analysis on various batches of sunscreen and after-sun care products in which benzene was detected at below LLOQ.

Brand Name	Type	Description	SPF	UPC	Lot	Exp.	Active Pharmaceutical Ingredient(s)	Benzene Avg ppm	% St Dev
Live Better by CVS Health	Spray	Body Mineral Spray Sunscreen SPF 50	50	050428538913	4270950B	2022-03	Titanium Dioxide 3.5%, Zinc Oxide 7.25%	< 0.1	5%
CVS Health	Lotion	Ultra Sheer Broad Spectrum Sunscreen Lotion SPF 100 (050428415528)	100	050428616062	5881760A	2022-06	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	< 0.1	1%
Ethical Zinc	Lotion	Natural Clear Zinc Sunscreen SPF 50+	50+	9354028000025	A0747	2022-09	Zinc Oxide 22.0%	< 0.1	25%
Banana Boat	Spray	Protective Dry Oil Clear Sunscreen Spray with Coconut Oil SPF 15	15	79656044836	202023826	2023-06	Avobenzone 1.5%, Homosalate 5.0%, Octocrylene 3.5%	< 0.1	11%
Babyganics	Spray	Kid's Sunscreen Continuous Spray - SPF 50	50+	813277017554	3713449A	2021-12	Octisalate 5%, Zinc Oxide 15%	< 0.1	24%
Walgreens	Lotion	Sport Lotion Sunscreen SPF 50	50	049022977464	2142499A	2021-09	Avobenzone 3%, Homosalate 10%, Octisalate 4.5%, Octocrylene 8%	< 0.1	12%
Banana Boat	Spray	Ultra Defense Ultra Mist Clear Sunscreen Spray SPF 100	100	079656050813	191932590	2022-06	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	< 0.1	11%
CVS Health	Lotion	Ultra Sheer Lotion Broad Spectrum Sunscreen SPF 45	45	050428620083	6060370C	2022-02	Avobenzone 3.0%, Homosalate 10.0%, Octisalate 5.0%, Octocrylene 2.8%	< 0.1	3%
Raw Elements	Lotion	Eco Formula Sunscreen Lotion Tin SPF 30	30	858855002065	21J19	2021-07	Zinc Oxide 23%	< 0.1	11%
Coppertone	Spray	Whipped Sunscreen Lotion Spray SPF 50	50	041100007094	9J03CS	2021-08	Avobenzone 3%, Homosalate 9%, Octisalate 4.5%, Octocrylene 9%	< 0.1	10%
CVS Health	Lotion	Ultra Sheer Broad Spectrum Sunscreen Lotion SPF 100 (050428415528)	100	050428616062	7470720B	2022-03	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	< 0.1	7%
CVS Health	Lotion	70 Beach Guard Sun Sunscreen SPF 70	70	050428402528	5980339C	2022-01	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 4.5%, Oxybenzone 4%	< 0.1	70%
Max Block	Lotion	Sunscreen Lotion 4 Fl Oz Broad Spectrum Water Resistant SPF 30	30	639277292865	91047	2022-01	Avobenzone 3%, Homosalate 7.5%, Octisalate 5%, Octocrylene 5%	< 0.1	70%
Walgreens	Lotion	Broad Spectrum Sport SPF 50 Sunscreen	50	049022977471	4440660B	2022-03	Avobenzone 3%, Homosalate 10%, Octisalate 4.5%, Octocrylene 8%	< 0.1	10%
CVS Health	Lotion	Ultra Sheer Broad Spectrum Sunscreen Lotion SPF 100 (050428415528)	100	050428616062	1362040A	2022-07	Avobenzone 3.0%, Homosalate 15.0%, Octisalate 5.0%, Octocrylene 10.0%, Oxybenzone 6.0%	< 0.1	4%
TopCare Everyday	Lotion	Sport Sunscreen Lotion SPF 70	70	036800456303	0440090A	2023-01	Avobenzone 3%, Homosalate 10%, Octisalate 3%, Octocrylene 7%, Oxybenzone 6%	< 0.1	27%
Max Block	Lotion	Sport Sunscreen Lotion Water Resistance Blue 30 SPF	30	639277292063	00189	2022-03	Avobenzone 3%, Homosalate 7.5%, Octisalate 5%, Octocrylene 5%	< 0.1	7%
Walgreens	Lotion	Sunscreen Sport SPF 50	50	049022977457	3232629A	2021-09	Avobenzone 3%, Homosalate 10%, Octisalate 4.5%, Octocrylene 8%	< 0.1	10%
Max Block	Lotion	Sunscreen Lotion 4 Fl Oz Broad Spectrum Water Resistant SPF 30	30	639277292865	91188	2021-12	Avobenzone 3%, Homosalate 7.5%, Octisalate 5%, Octocrylene 5%	< 0.1	51%
Max Block	Lotion	Sunscreen Lotion 4 Fl Oz Broad Spectrum Water Resistant SPF 30	30	639277292865	91188B	2021-12	Avobenzone 3%, Homosalate 7.5%, Octisalate 5%, Octocrylene 5%	< 0.1	7%
Banana Boat	Spray	Kids Sport Sunscreen Lotion Spray SPF 50	50	079656020526	192546543	2022-08	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 6%	< 0.1	19%
TopCare Everyday	Lotion	Ultimate Sheer Sun Lotion Sunscreen SPF 55	55	036800456242	9543129A	2021-11	Avobenzone 3%, Homosalate 10%, Octisalate 5%, Octocrylene 7%	< 0.1	9%

Solimo	Lotion	Sheer Face Sunscreen Lotion SPF 55 (842379152474 UPC Description)	55	842379167430	0495376	2022-07	Avobenzone 3%, Homosalate 12%, Octisalate 5%, Octocrylene 10%	< 0.1	6%
Max Block	Lotion	Sport Sunscreen Lotion Water Resistance Blue 30 SPF	30	639277292063	91051	2022-02	Avobenzone 3%, Homosalate 7.5%, Octisalate 5%, Octocrylene 5%	< 0.1	39%
Walgreens	Lotion	Sunscreen Sport SPF 50	50	049022977457	3222629B	2021-09	Avobenzone 3%, Homosalate 10%, Octisalate 4.5%, Octocrylene 8%	< 0.1	10%
Neutrogena	Lotion	Sheer Zinc Dry-Touch Face Sunscreen SPF 50	50	086800110811	2979L1236	2022-03	Zinc Oxide 21.6%	< 0.1	8%
CVS Health	Spray	Sport Clear Spray Sunscreen SPF 100+	100+	050428618868	7062049B	2021-07	Avobenzone 3%, Homosalate 15%, Octinoxate 2%, Octisalate 5%, Octocrylene 10%, Oxybenzone 6%	< 0.1	39%
La Roche-Posay	Spray	Anthelios Sunscreen Lotion Spray SPF 60	60	883140500841	201401230	2022-02	Avobenzone 2.68%, Homosalate 9.60%, Octisalate 2.88%, Octocrylene 5.38%, Oxybenzone 3.46%	< 0.1	79%
Banana Boat	Spray	Simply Protect Kids Sunscreen Spray SPF 50+	50	079656024500	193639916	2022-11	Avobenzone 3%, Homosalate 9%, Octisalate 4.5%, Octocrylene 6%	< 0.1	7%
Equate	Lotion	Kids Broad Spectrum Sunscreen Lotion, SPF 50	50	681131002462	3941300A	2023-05	Titanium Dioxide 3.1%, Zinc Oxide 4.0%	< 0.1	13%
CVS Health	Spray	Sheer Mist Spray Broad Spectrum Uva/Uvb Cont. Spray Sunscreen SPF 70	70	050428449240	2700189A	2022-01	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	< 0.1	15%
Max Block	Lotion	Sport Sunscreen Lotion Water Resistance Blue 30 SPF	30	639277292063	91186	2021-12	Avobenzone 3%, Homosalate 7.5%, Octisalate 5%, Octocrylene 5%	< 0.1	5%
Neutrogena	Spray	Ultra Sheer Weightless Sunscreen Spray, SPF 70	70	086800100409	32318F63	2021-10	Avobenzone 3%, Homosalate 15%, Octisalate 5%, Octocrylene 4%, Oxybenzone 6%	< 0.1	9%
Sun Bum	Lotion	Oxy Free Zinc Oxide Sunscreen Lotion - SPF 50	50	871760003903	S9351AN	2021-12	Homosalate 10%, Octisalate 5%, Octocrylene 10%, Zinc Oxide 7%	< 0.1	24%
Aveeno	Lotion	Baby Continuous Protection Sensitive Skin Sunscreen Lotion Broad Spectrum SPF 50	50	381371164509	2419L1022	2022-02	Zinc Oxide 21.6%	< 0.1	58%
Sun Bum	Spray	After Sun Cool Down Aloe Vera Spray	N/A	871760003187	S1039D	--	N/A (Cosmetic Product)	< 0.1	6%
Walgreens	Gel	After Sun Gel	N/A	049022507326	0701970A	--	N/A (Cosmetic Product)	< 0.1	2%
Up & Up	Gel	Clear Aloe Vera Gel	N/A	371661826163	9701930A	--	N/A (Cosmetic Product)	< 0.1	16%

**Table 5.** Product description of various batches of sunscreen for which benzene was not detected through initial analysis of at least one sample from each batch. Due to length of this table, it is contained in Attachment A to this Petition.

Recall Request and Other Actions

This Petition seeks to have the Commissioner and FDA request recalls for the identified batches of sunscreen products, consistent with FDA’s mandate to ensure the safety of the drug supply in America. The 40 batches in Table 2 and Table 3 have significantly detected benzene and should be recalled.

Such recalls are important for public safety. As indicated in Tables 2 - 5, there is significant batch-to-batch variation in benzene content, but many batches of sunscreen contain no detectable