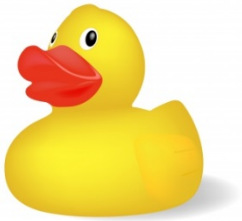
Results of the HERMOSA Study: Reducing teenagers' exposures to phthalates and phenols in personal care products

- Research PI: Kim Harley, UC Berkeley
- Community PI: Kimberly Parra, Clinica de Salud del Valle de Salinas

Potential Endocrine Disruptors in Personal Care Products

Phthalates (fragrance)



Parabens (preservative)

Oxybenzone (sunscreen)

Triclosan (antibacterial)

HERMOSA Study Aims

1) To characterize levels and sources of ED exposure from personal care products in young Latina women

2) To lower ED concentrations in the body by using alternate products

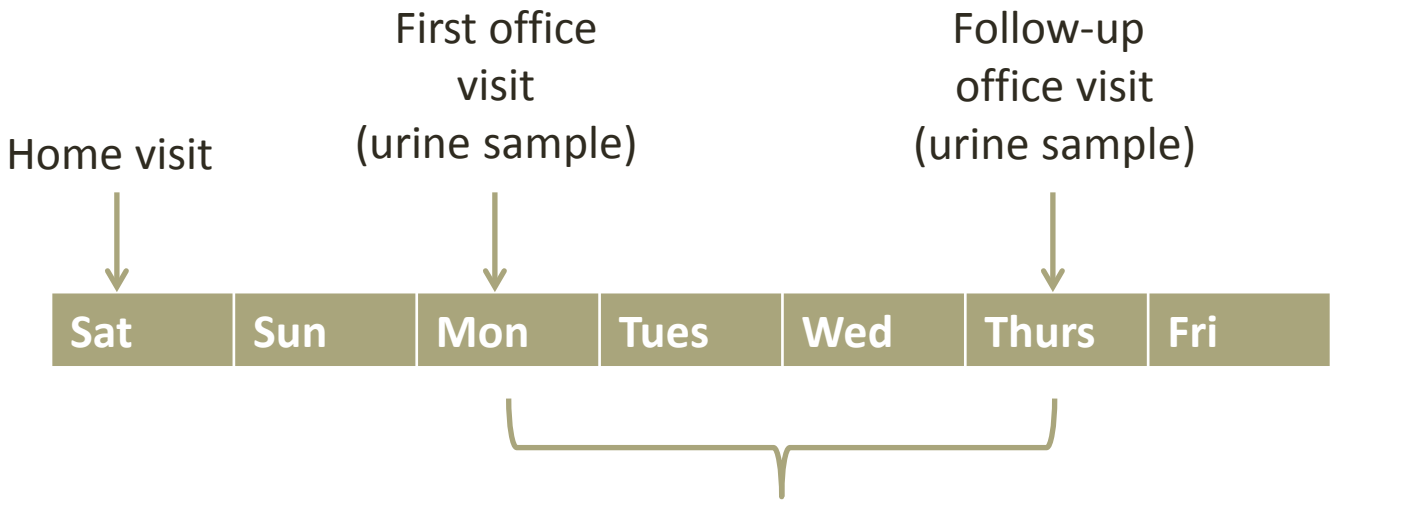
3) To empower local youth in scientific research methods

4) To work with local youth to develop health education and advocacy skills

Research Methods

- Enrolled 100 teen girls
- Pre-intervention visit:
  - Questionnaire about recent beauty product use
  - Urine sample
  - Education about EDs in make-up
- Gave low chemical products for 3 days
- Post-intervention visit:
  - Urine sample

Data Collection Activities



3-day intervention:

- No nail polish
- No perfume
- Only use the products we give you

“Low Chemical” Alternatives

- Identified through internet searches, drug/health food stores
- Prioritized locally available, affordable products. Prioritized brands that used fewer chemicals across the board.
- Parabens, triclosan, BP-3:
  - ✓ Based on ingredients list
- Phthalates:
  - ✓ Not listed on ingredients
  - ✓ Chose brands that pledged not to use phthalates
  - ✓ Chose options with no fragrance or parfum

We did <u>not</u> conduct independent tests for the presence of phthalates or phenols

The Beauty Bar

Girls Received:

- Shampoo
- Conditioner
- Body wash
- Liquid soap
- Lotion
- 1 Bar hand soap
- Deodorant
- Toothpaste (only for Colgate Total users)

Plus 4 extras from choice of: Liquid foundation, Powder foundation, Mascara, Eye liner, Lip stick, Lip gloss, Lip balm, Sunscreen

Chemical Analysis

- Conducted by the Environmental Health Laboratory Branch of CDPH
- Solid phase extraction, high-performance liquid chromatography-isotope dilution tandem mass spectrometry (LC/MS/MS)
- QA/QC:
  - ✓ Precision
  - ✓ Accuracy
  - ✓ Method blanks
  - ✓ Quality control samples
- Urinary dilution corrected with specific gravity

Urinary Phthalate Metabolites

Parent Compound	Metabolite	LOD	Detected	Range (ng/mL)
Diethyl phthalate (DEP)	mEP	0.46	100%	7.5 - 5049.2
Dibutyl phthalates (DBP)	mBP	0.91	97%	<LOD - 146.5
	miBP	0.39	99%	<LOD - 301.6
Benzylbutyl phthalate (DBzP)	mBzP	0.20	100%	1.3 - 79.7
Dicyclohexyl phthalate (DCHP)	mCHP	0.10	3%	<LOD - 1.3
Di-2-ethylhexyl phthalate (DEHP)	mEHP	0.19	88%	<LOD - 90.4
	mEHHP	0.19	98%	<LOD - 386.1
	mECPP	0.19	100%	2.0 - 713.7
	mEOHP	0.10	99%	<LOD - 299.5
Di-octyl phthalate (DOP)	mCPP	0.10	97%	<LOD - 42.4

Urinary Phthalate Metabolites (2)

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Urinary Phenols

Compound	Abbreviation	LOD	Detected	Range (ng/mL)
Triclosan	TCS	0.2	93%	<LOD – 2,360
Benzophenone-3	BP3	0.5	97%	<LOD – 19,680
Methyl Paraben	MP	0.5	93%	<LOD – 6,550
Ethyl Paraben	EP	0.5	55%	<LOD – 738
Propyl Paraben	PP	0.2	90%	<LOD – 1,716
Butyl Paraben	BP	0.2	49%	<LOD – 115
Bisphenol A	BPA	0.2	81%	<LOD – 19

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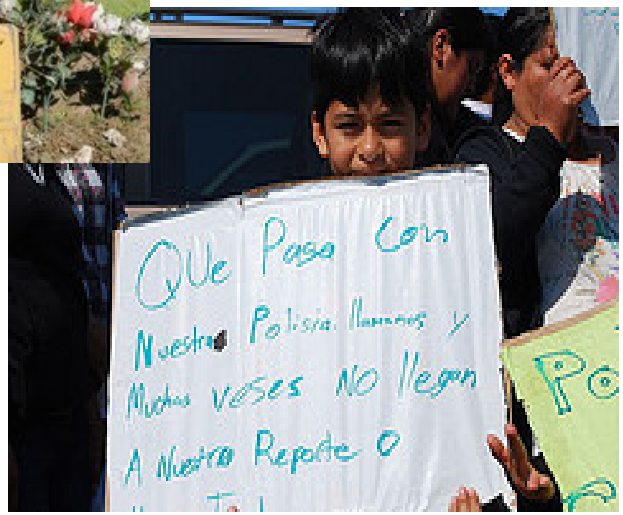
Salinas: A Farmworker Community with Youth at Risk

Teen birth rate is double CA average

Highest **youth** homicide rate in CA



16% of Latina girls drop out of school

The CHAMACOS Youth Council

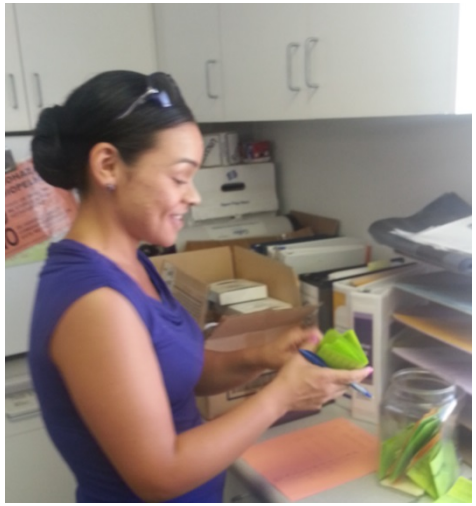
Preparing the next generation of Environmental Health Leaders

Learning about Chemicals in Personal Care Products

The Campaign for Safe Cosmetics

Designing the Study

Devising a Name and Logo



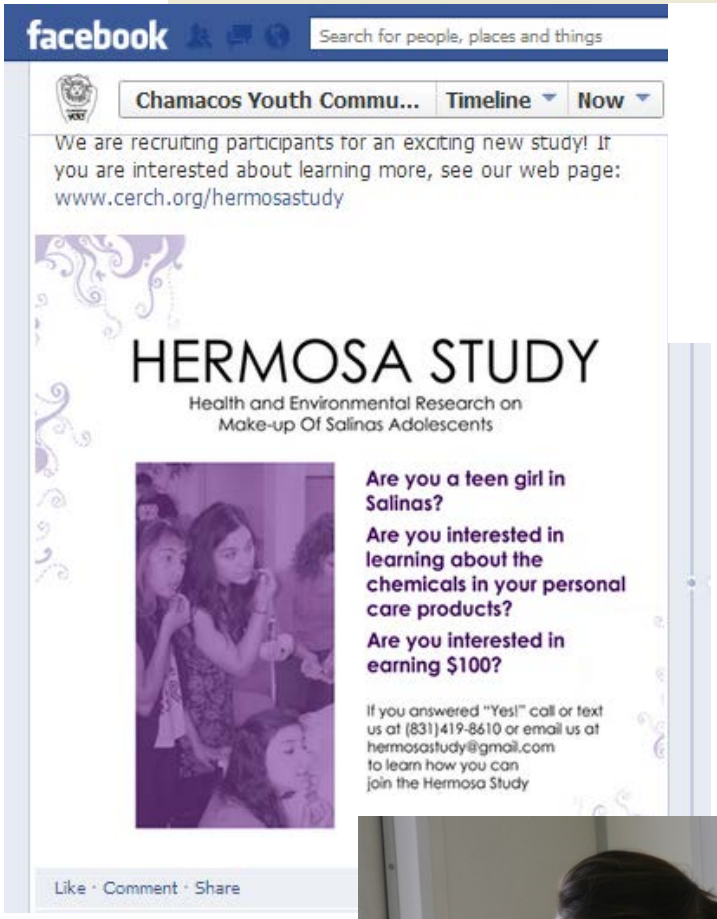
HEP MOSA STUDY

HEALTH AND ENVIRONMENTAL RESEARCH ON MAKE-UP OF SALINAS ADOLESCENTS

Trying Out Alternate Products

Conducting the Data Collection

Recruiting & Interviewing

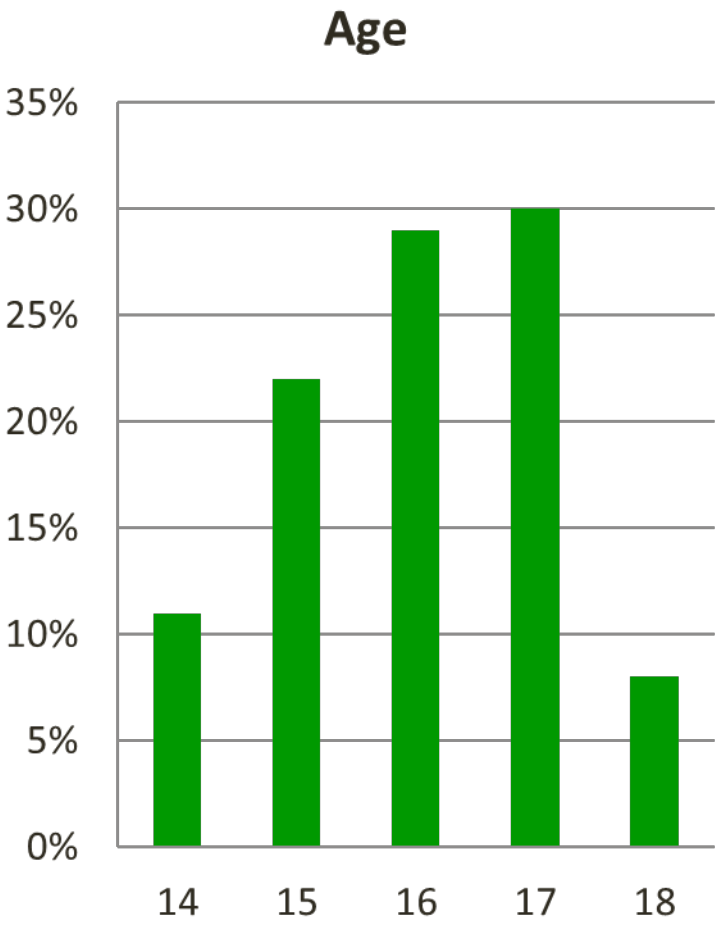


Analyzing the Data

Field Trip to the CA Department of Public Health Laboratories

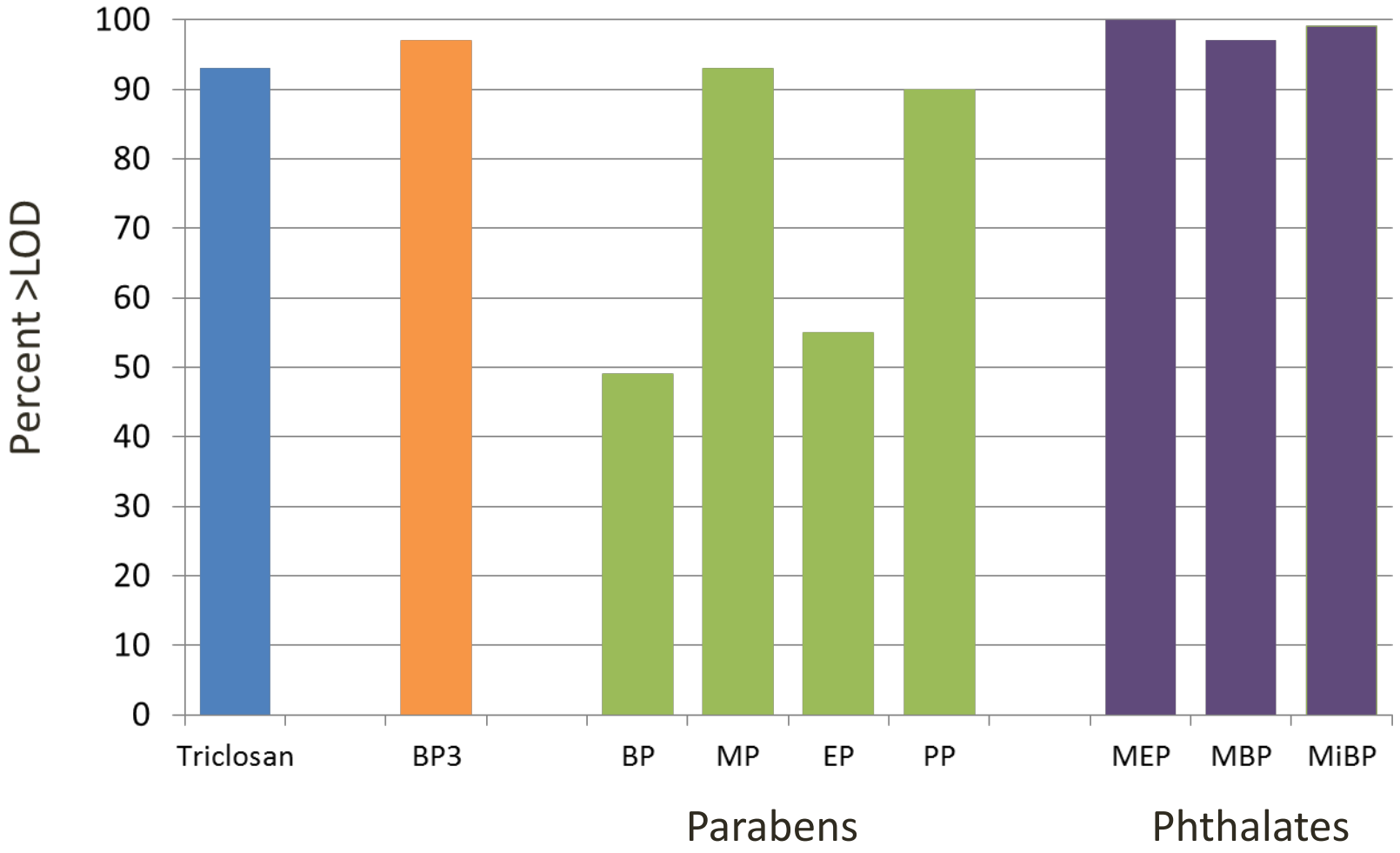
Results

HERMOSA Participants

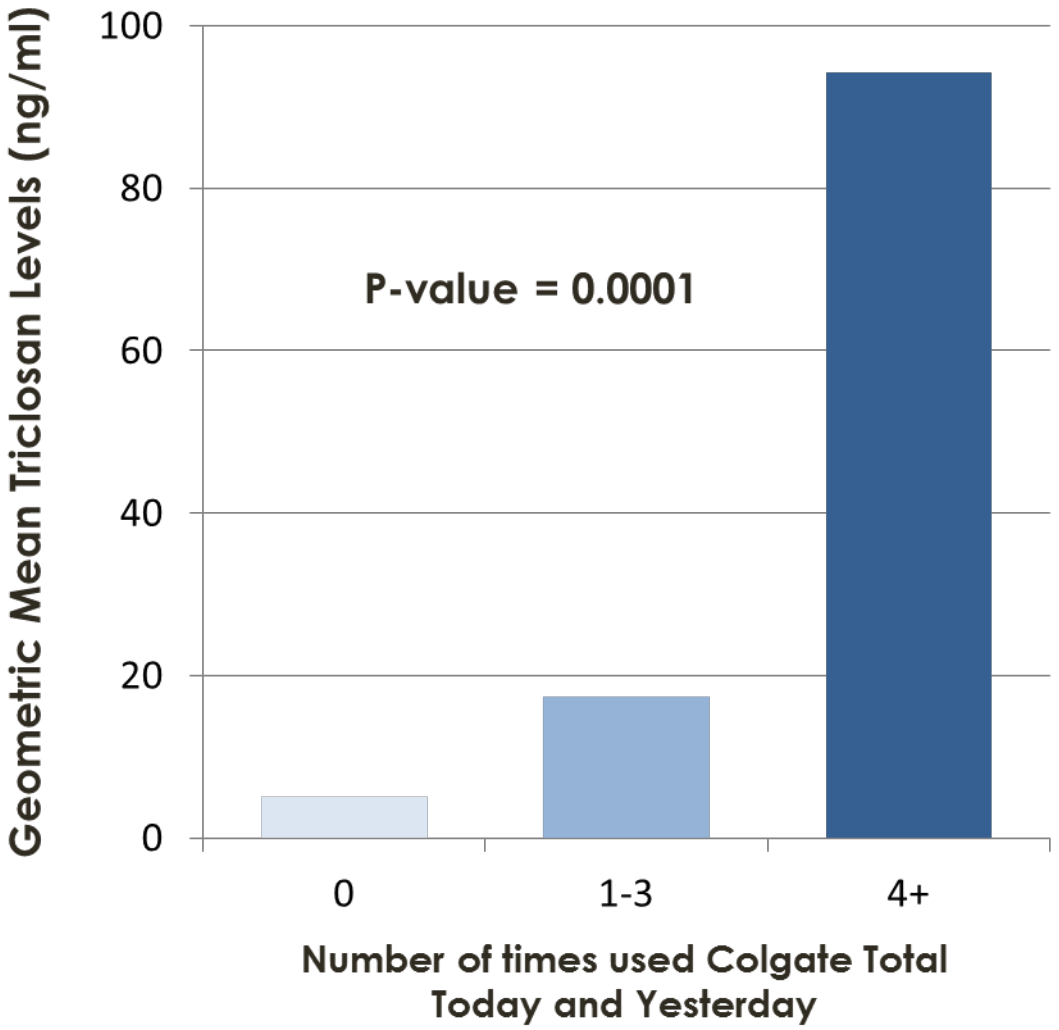


- Mexican or Mexican-American
- Most spoke Spanish at home and English with friends
- 58% were living below poverty

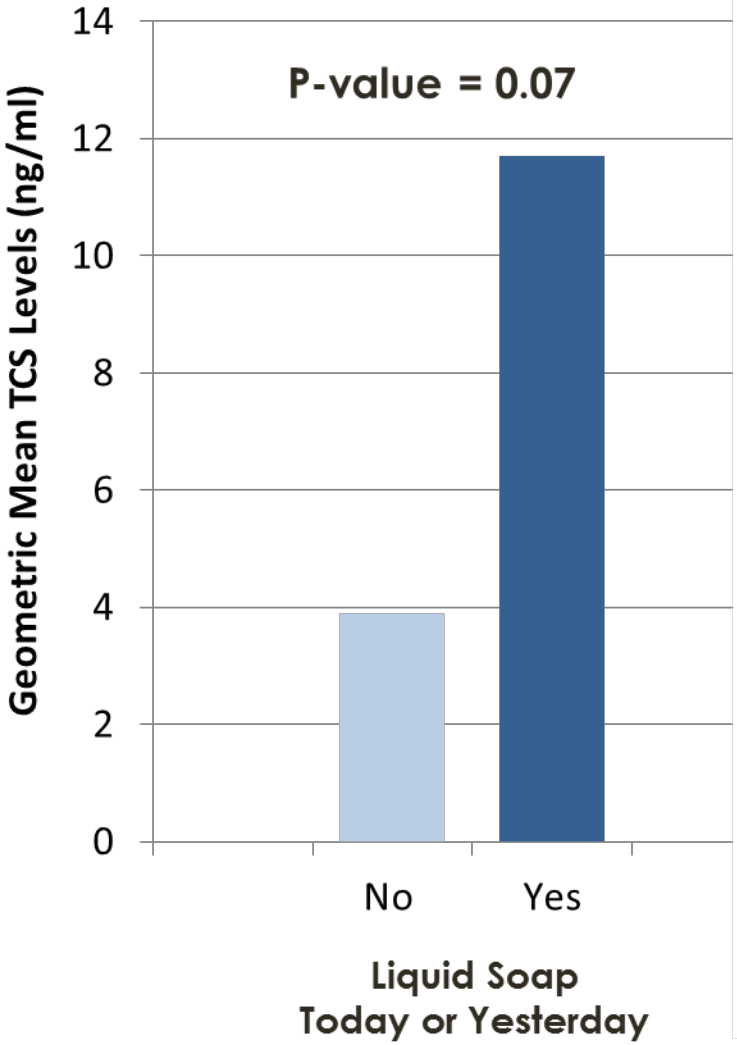
Percent of Participants with Detectable Analyte Concentrations



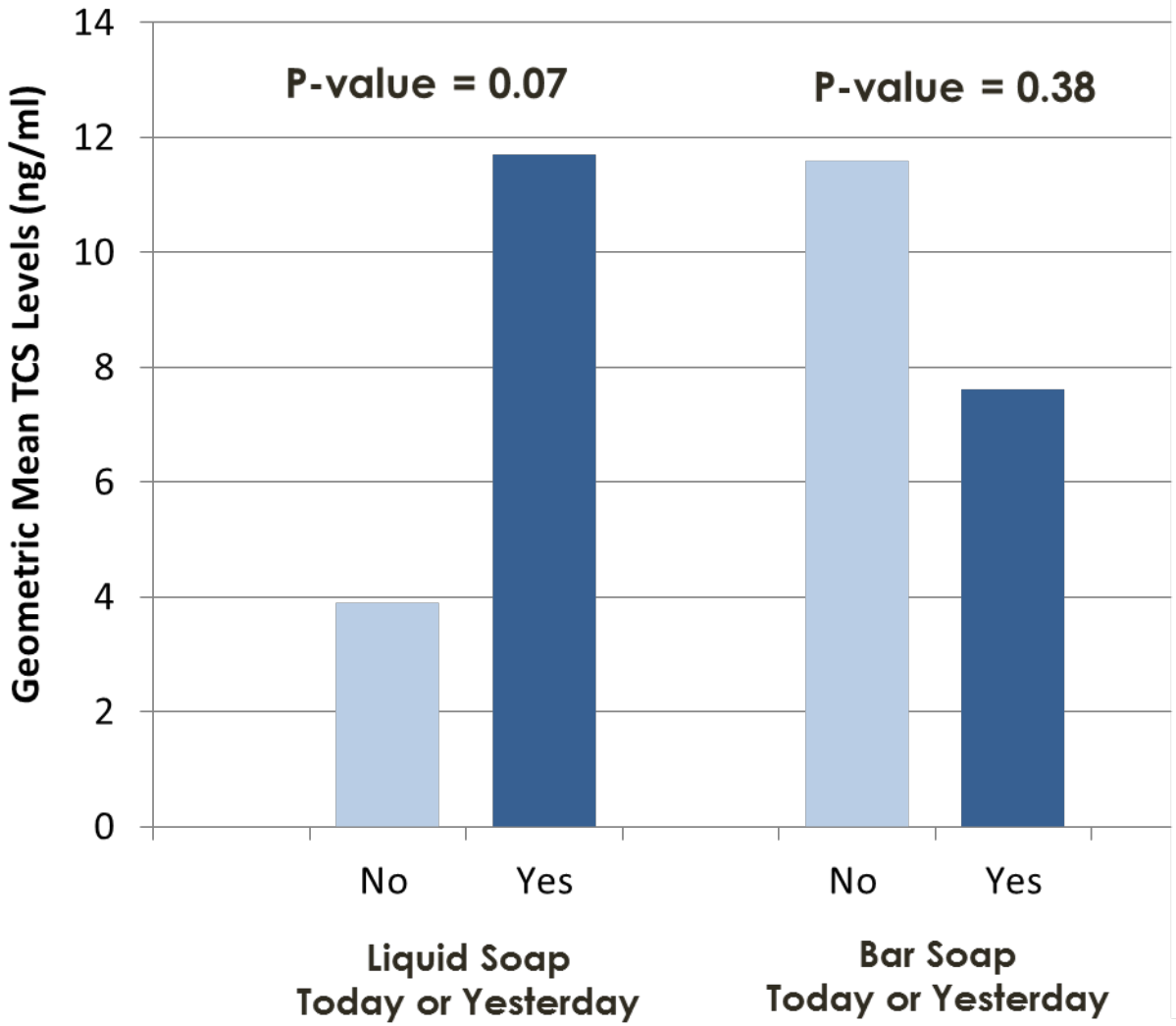
Triclosan Concentrations Differ by Colgate Total Use



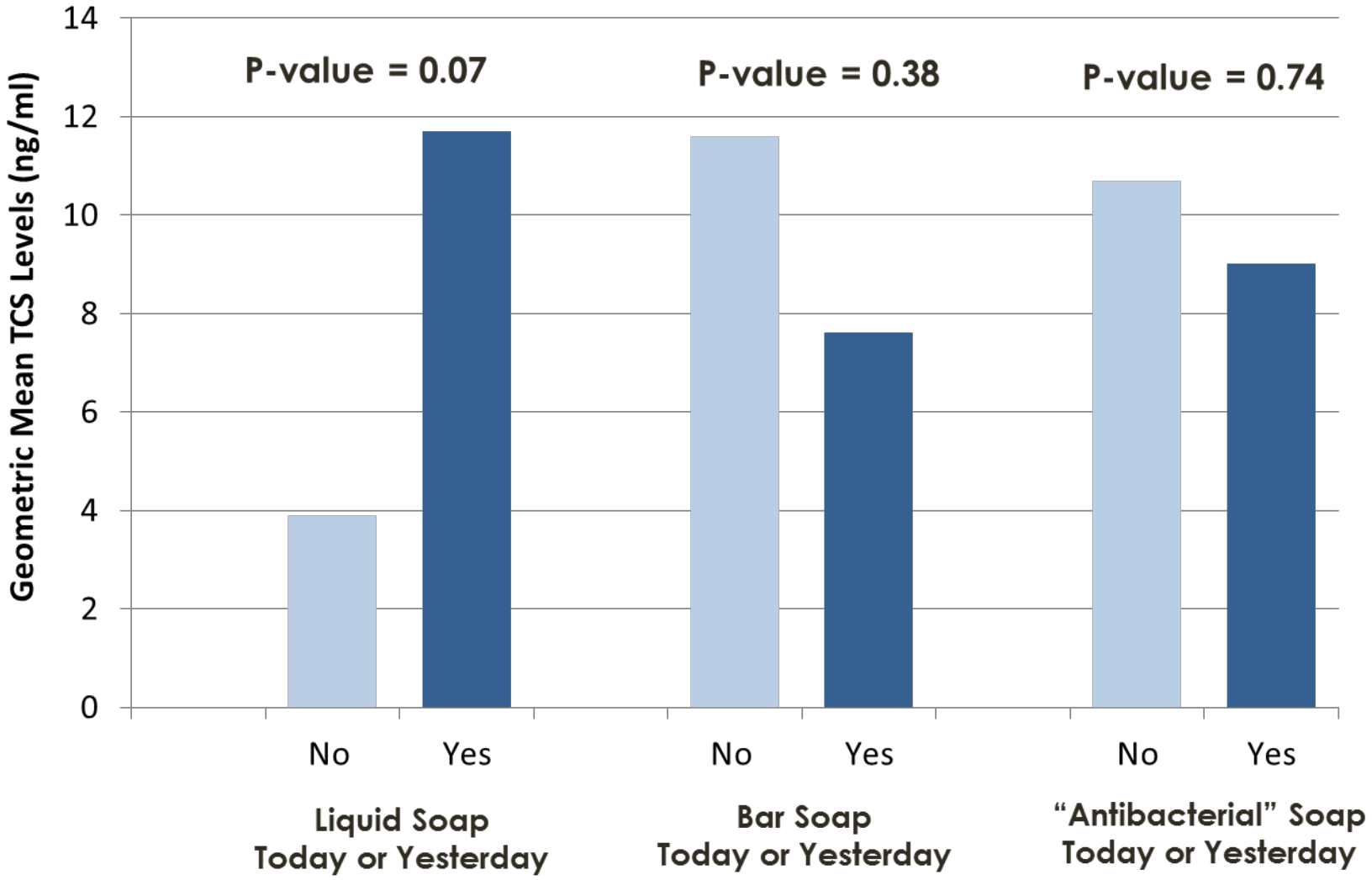
Triclosan Concentrations by Hand Soap Type



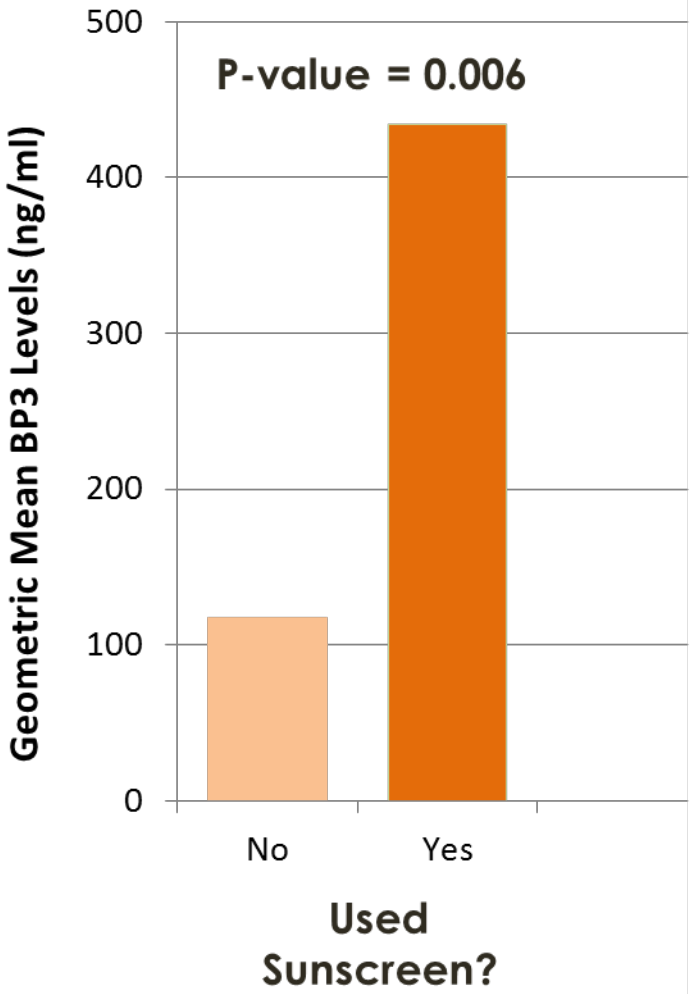
Triclosan Concentrations by Hand Soap Type (2)



Triclosan Concentrations by Hand Soap Type (3)



BP-3 Concentrations by Sunscreen Use



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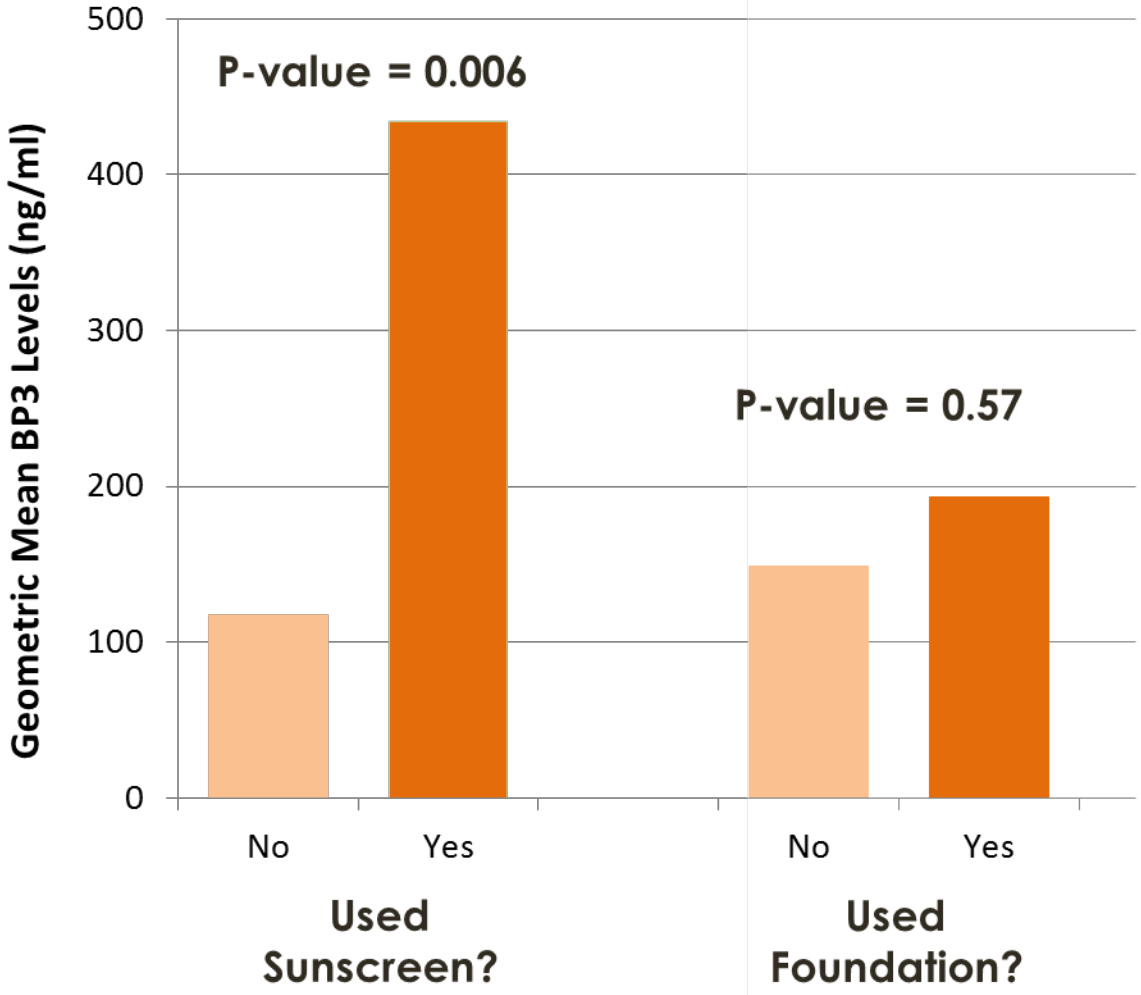

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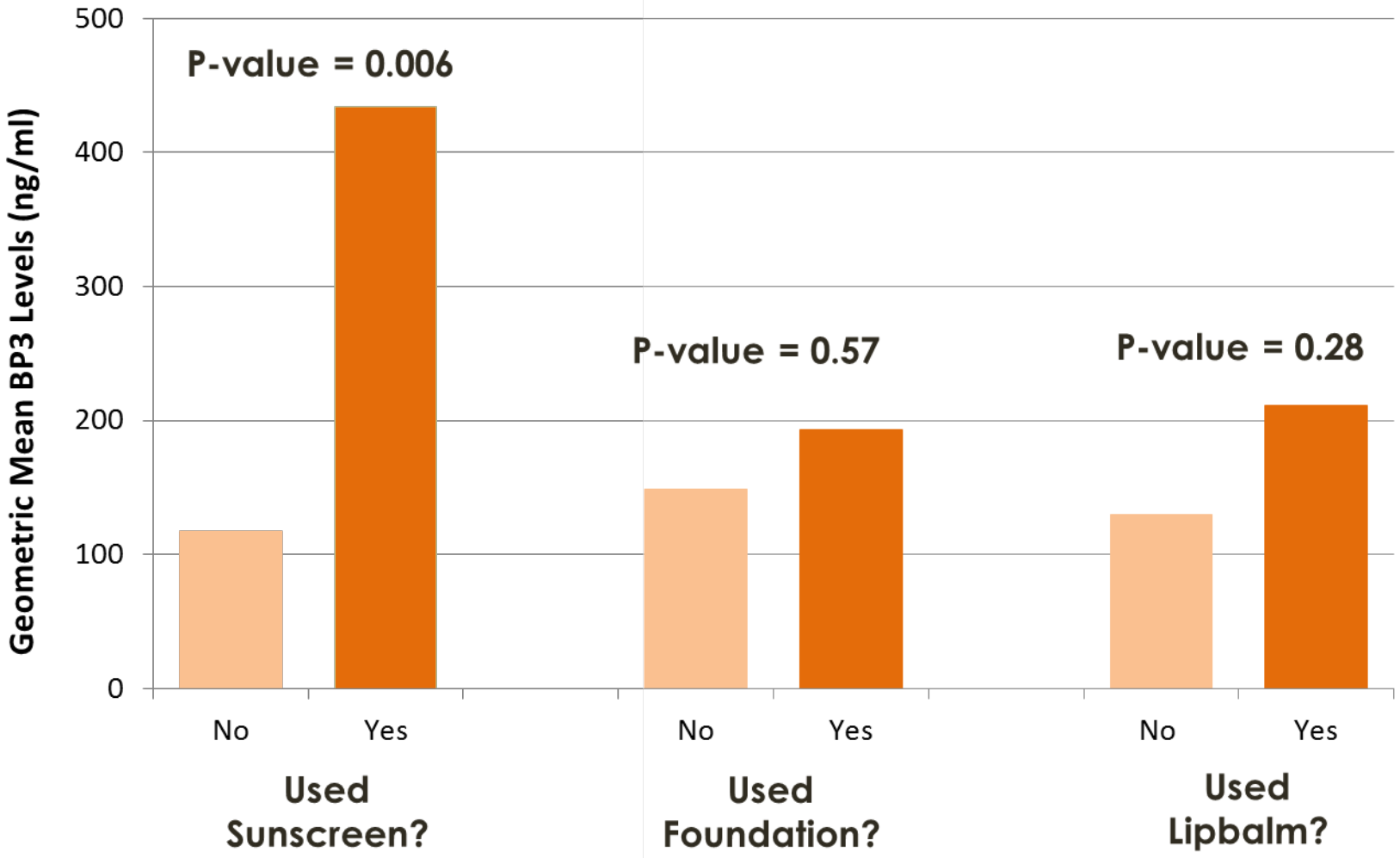
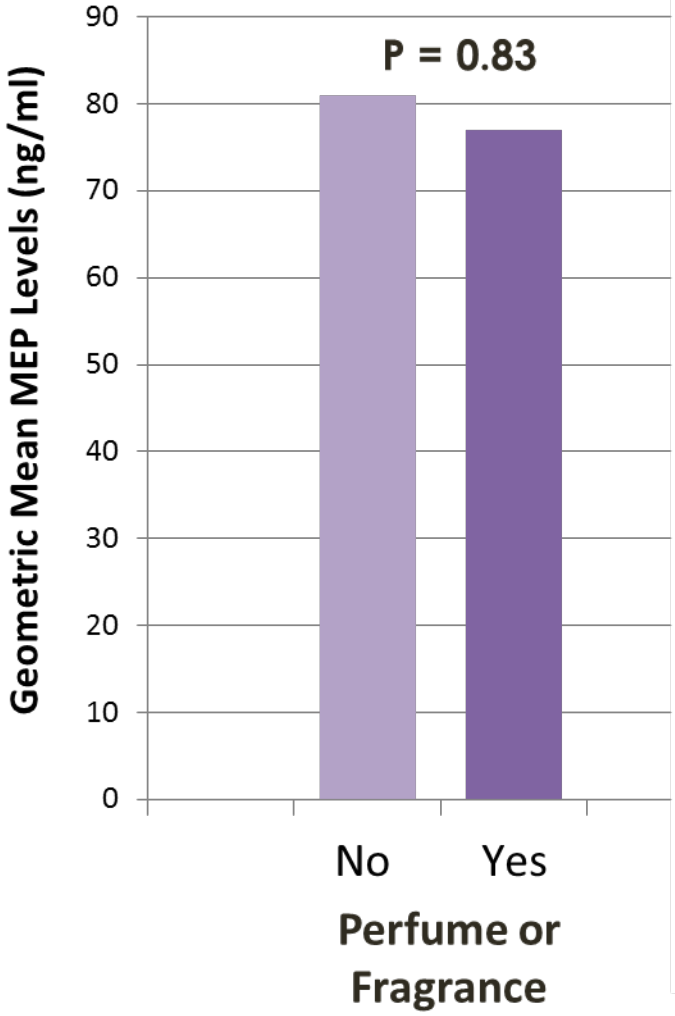


Phthalate (MEP) Concentrations by Product Use



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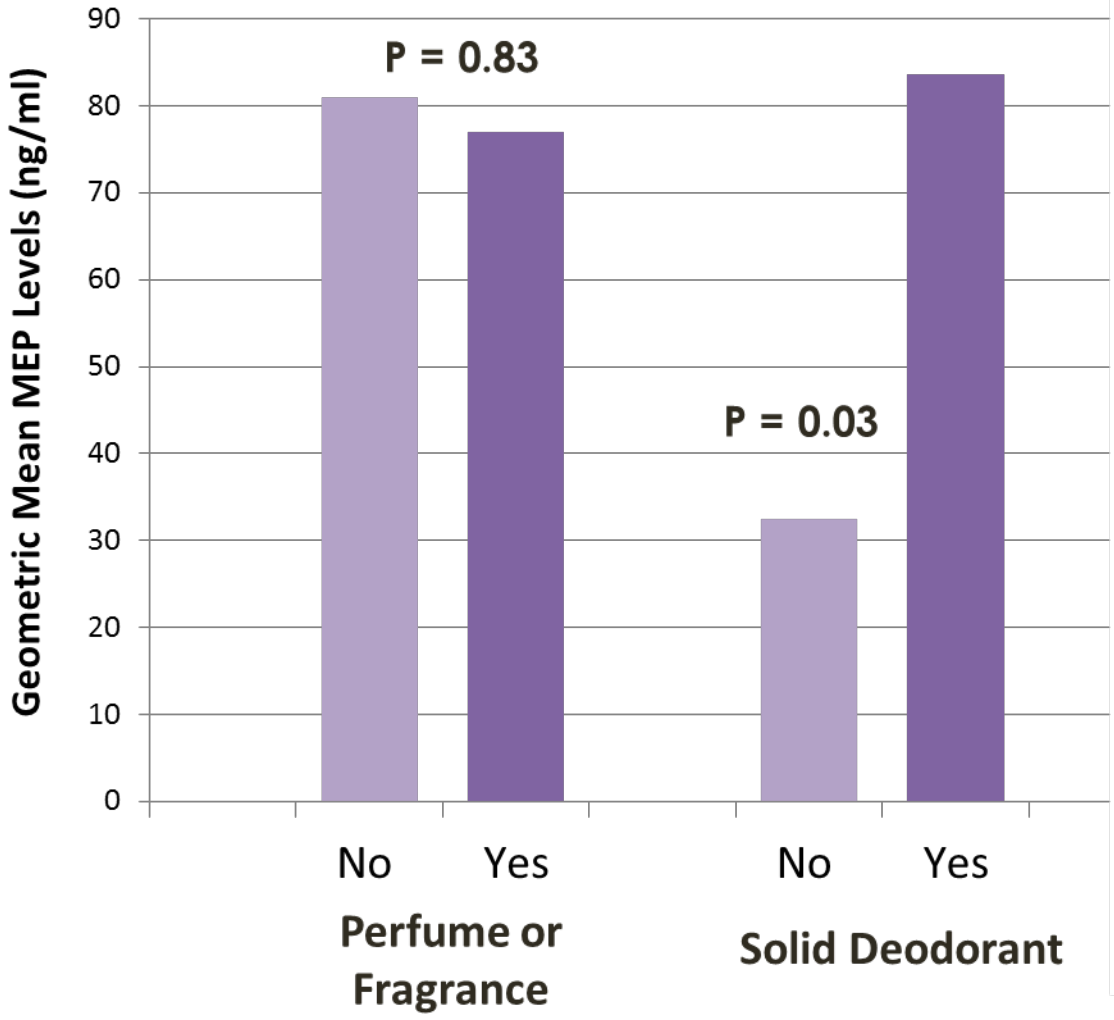

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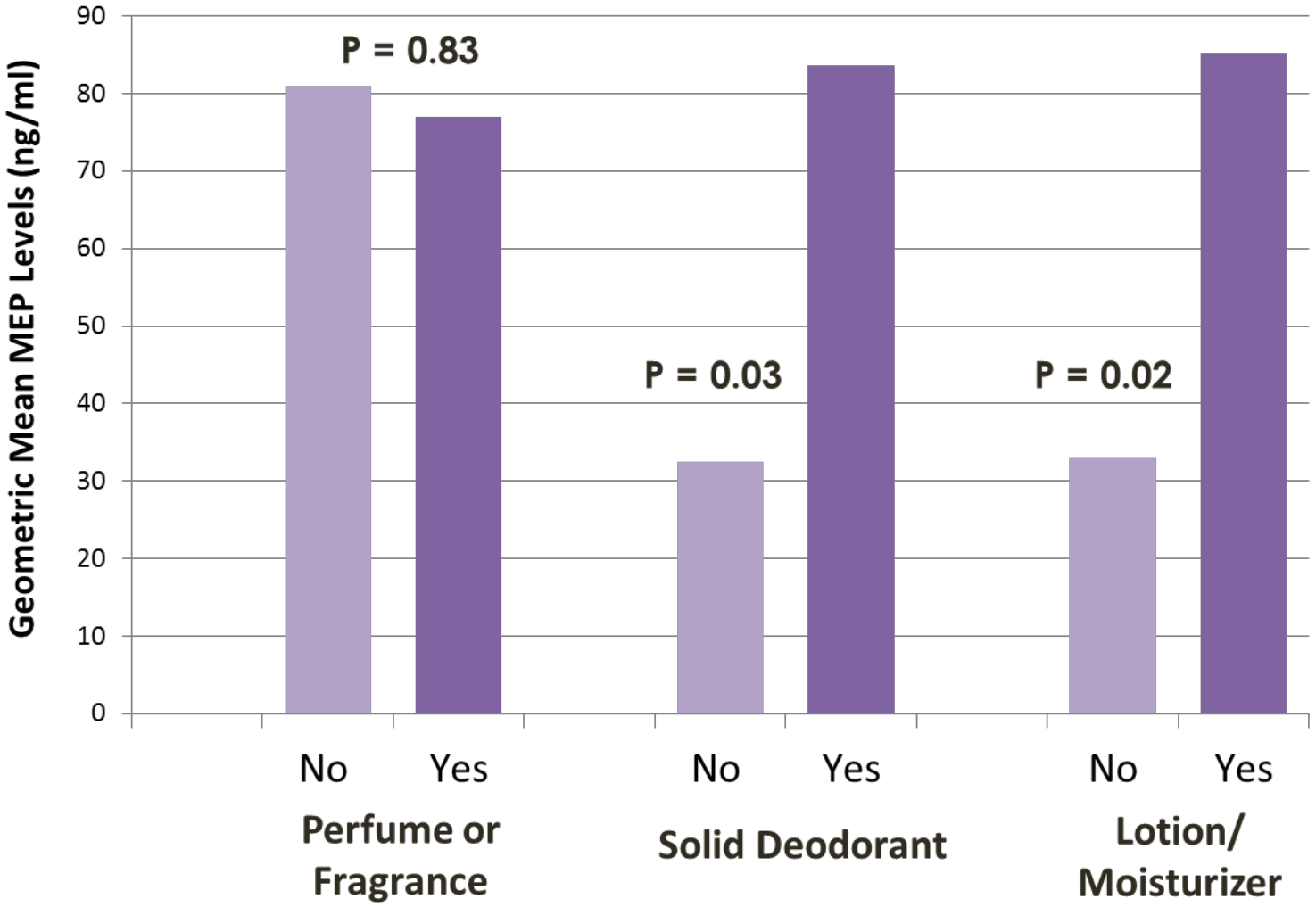
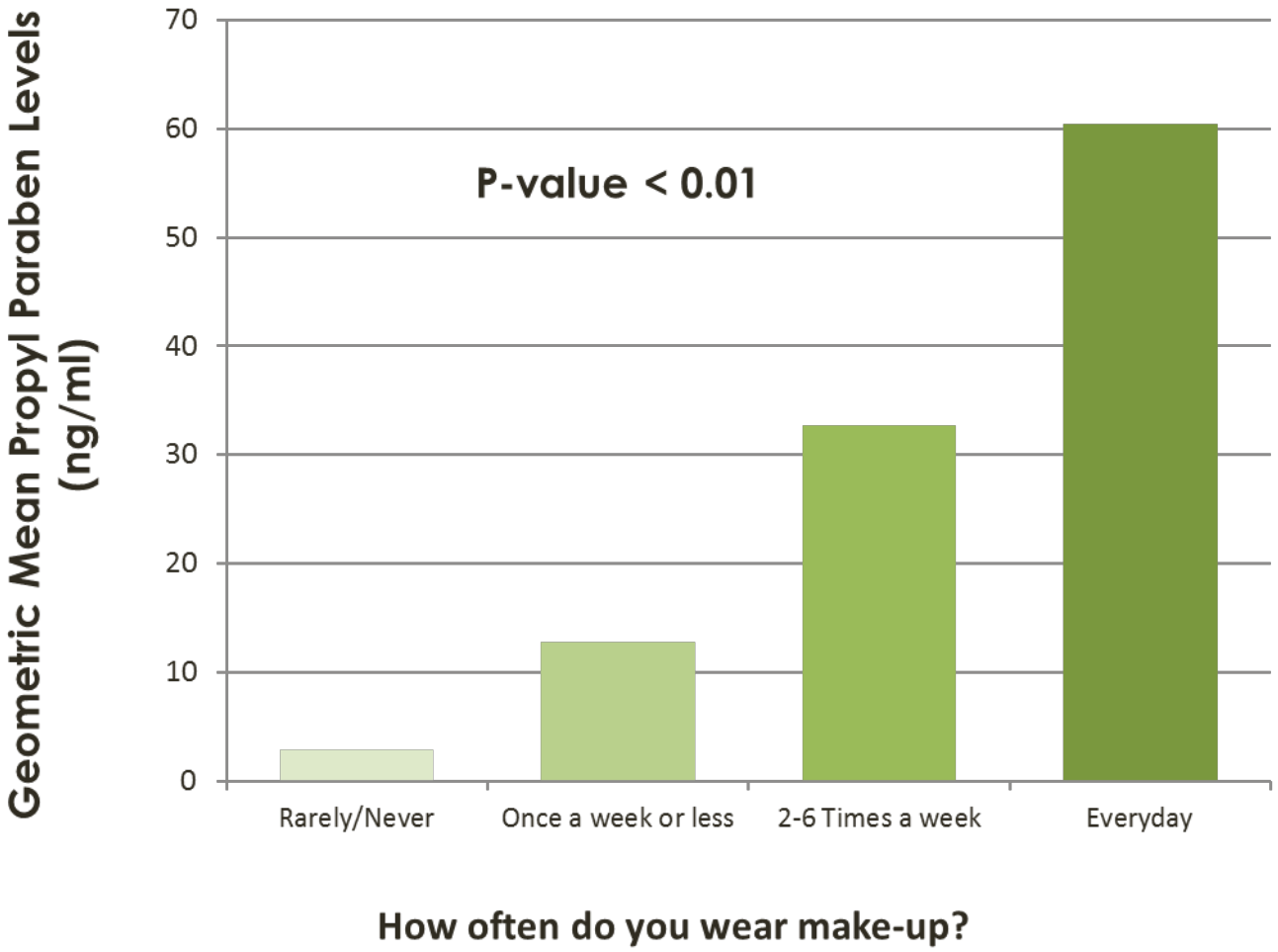
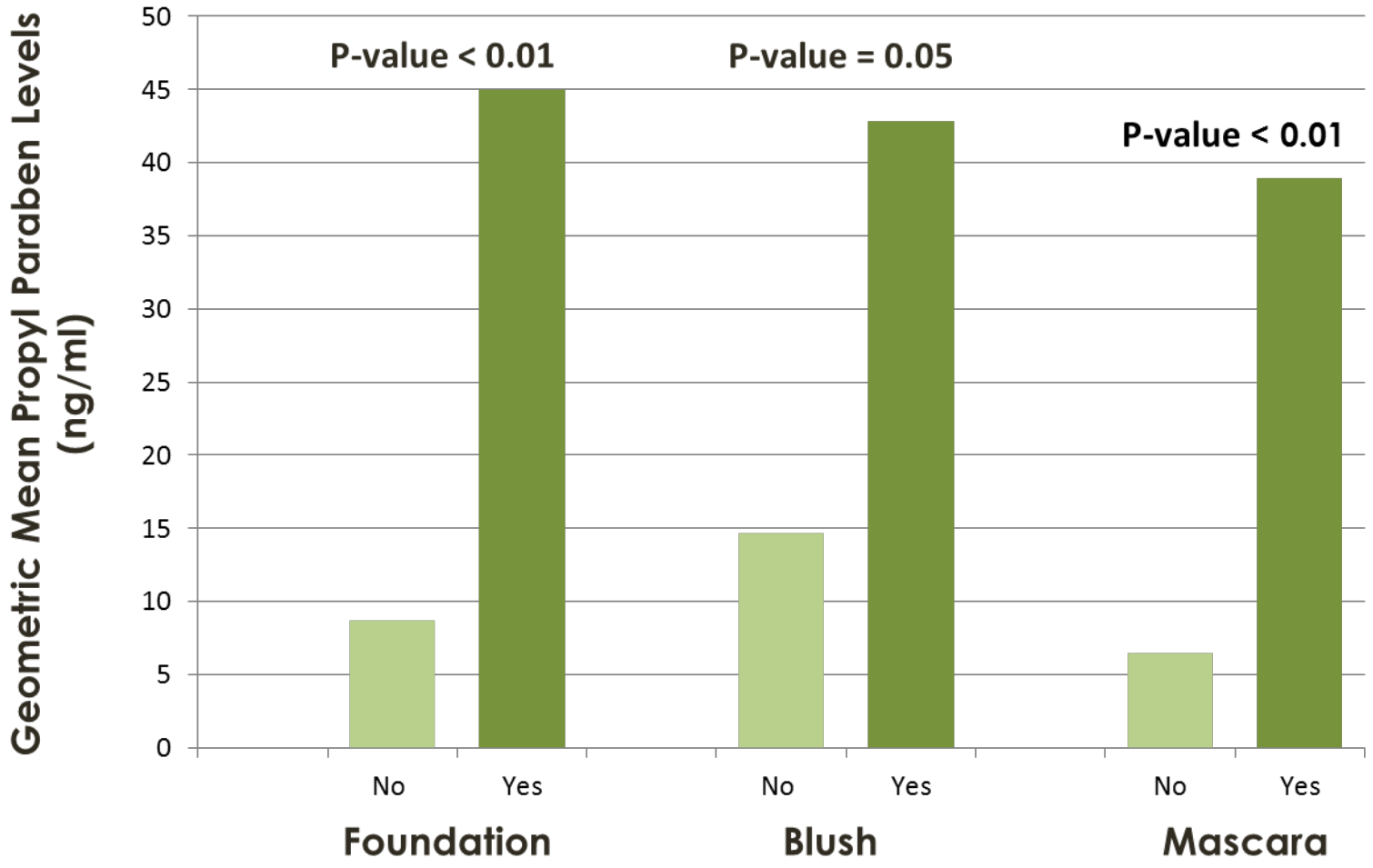


Higher Propyl Paraben Concentrations in Girls who Wear Makeup More Often

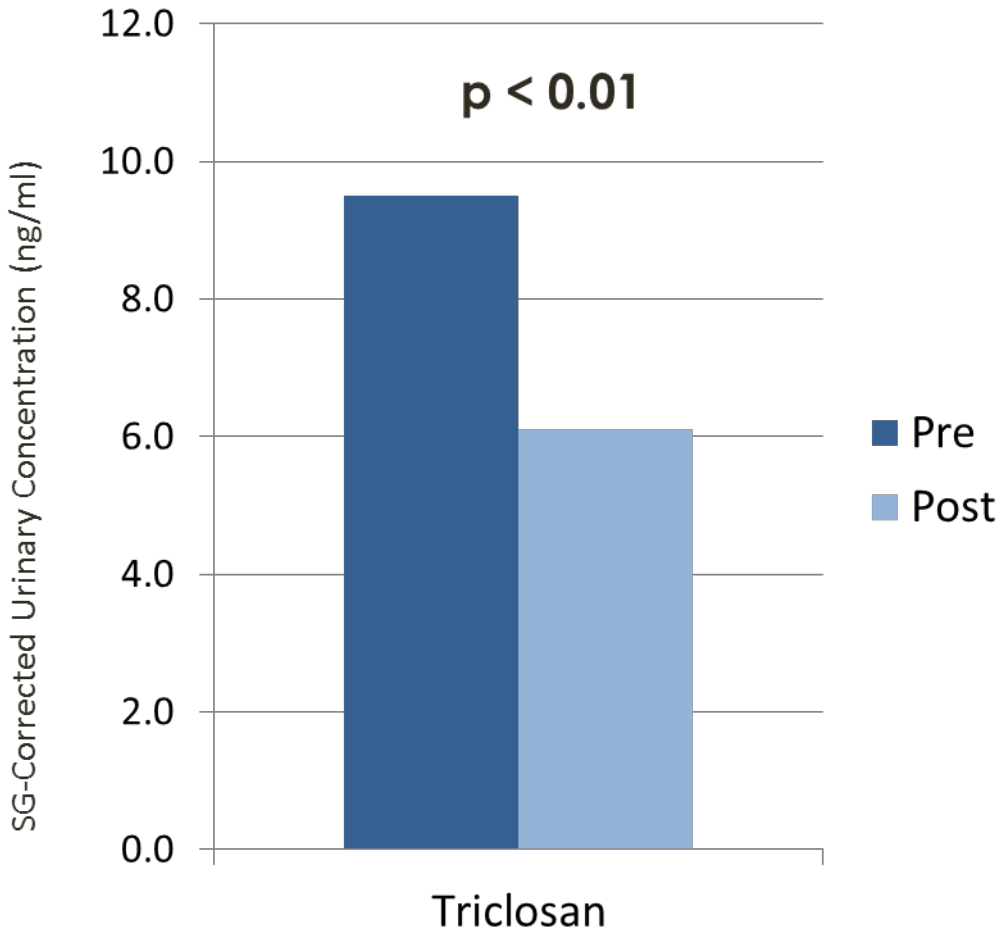


Propyl Paraben Concentrations by Makeup Use



Did Levels Go Down During the Intervention?

Triclosan Concentrations: Pre and Post-intervention



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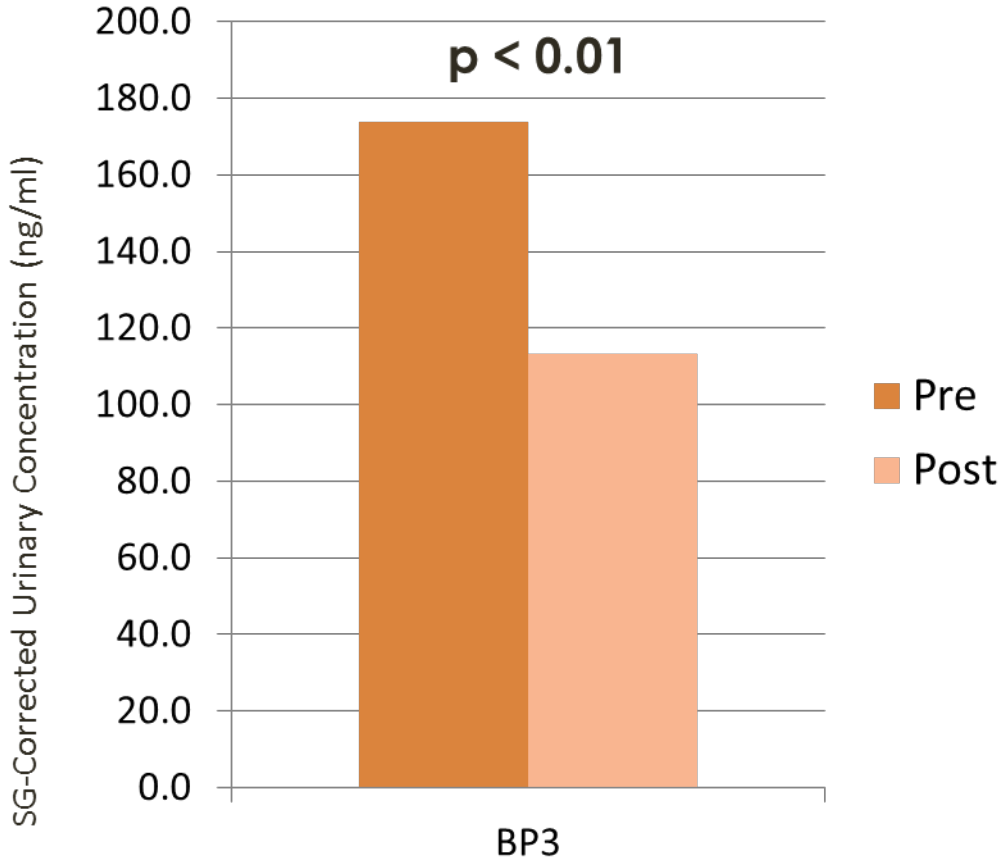
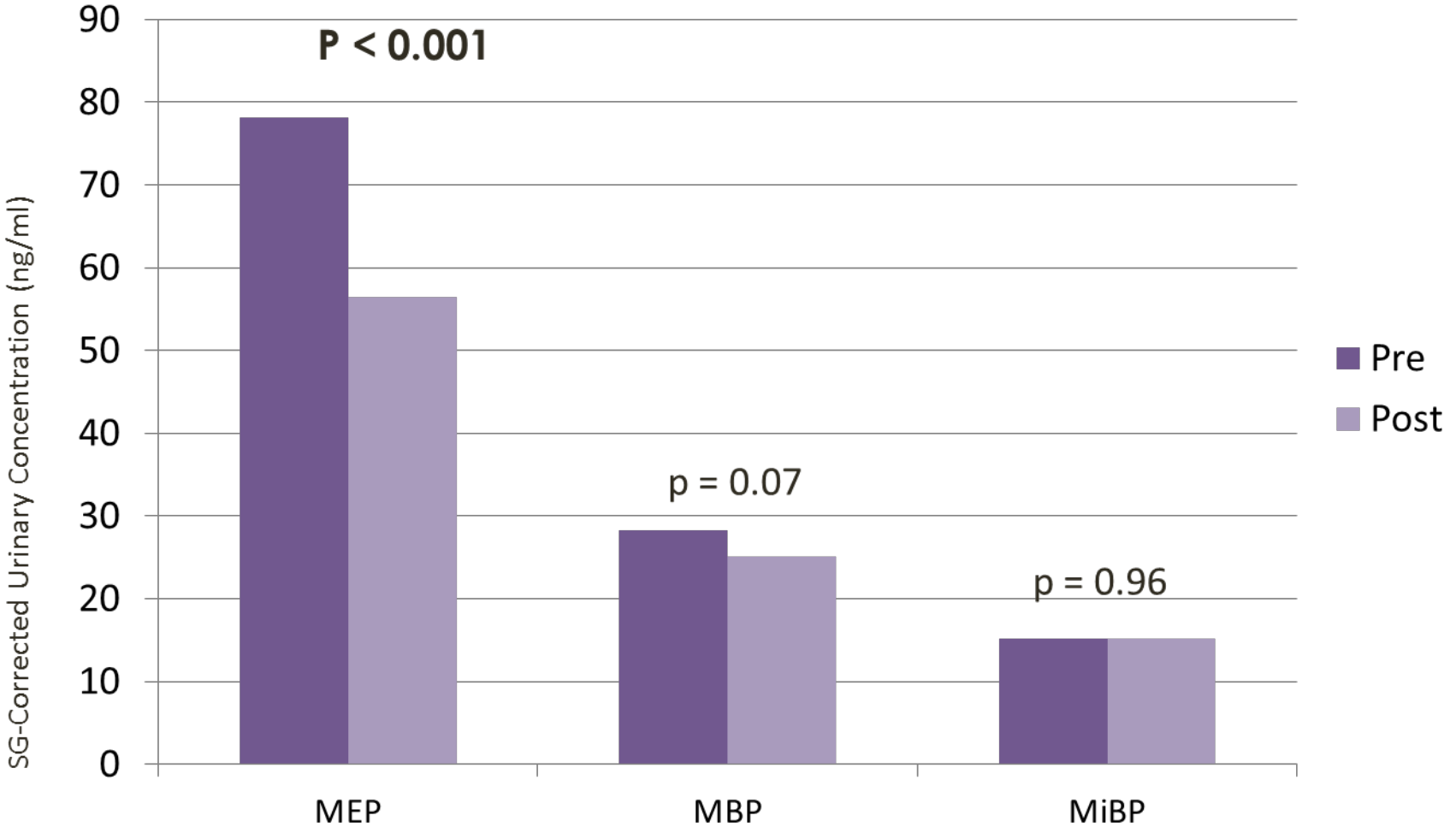
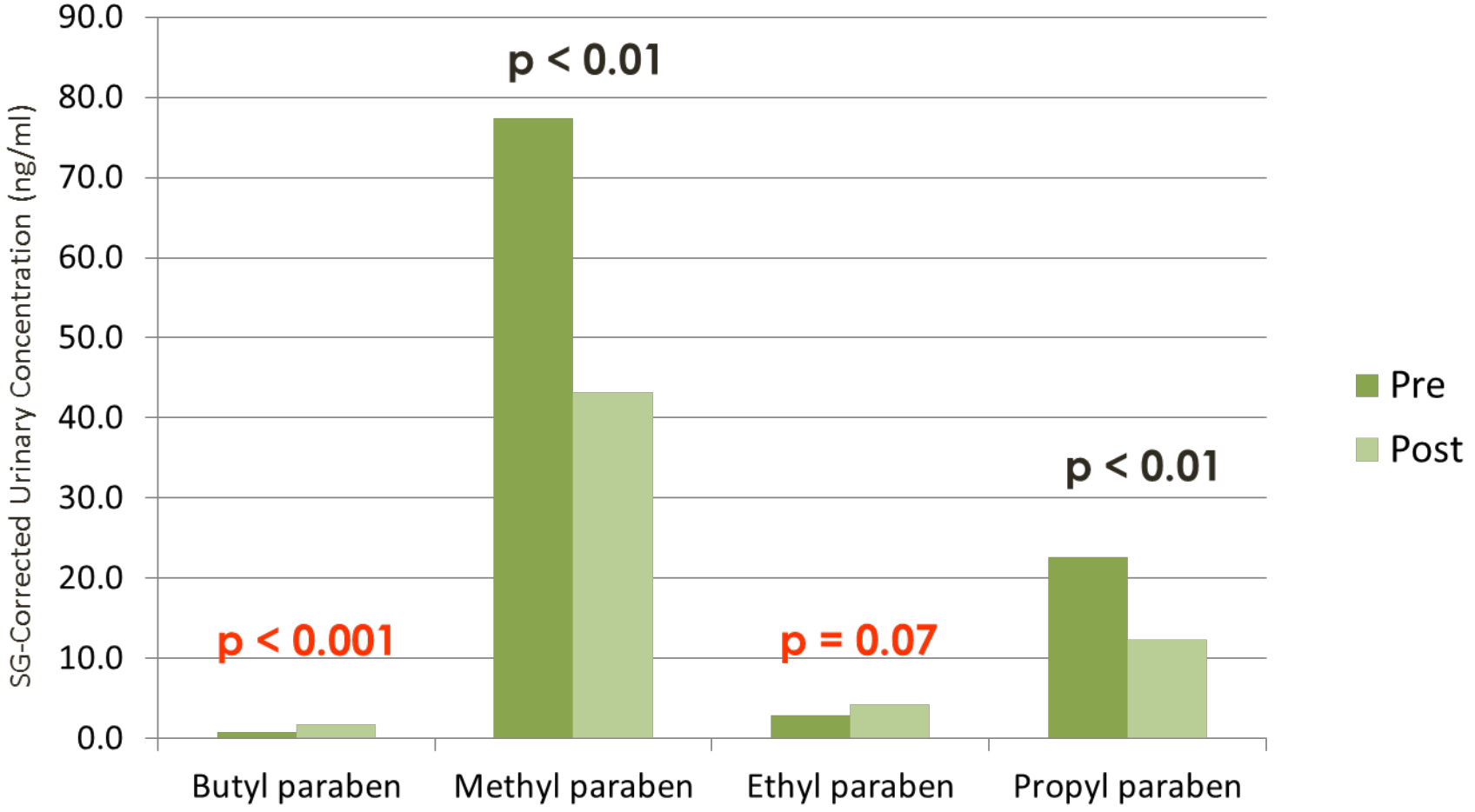


Phthalate Concentrations: Pre and Post-intervention



Paraben Concentrations: Pre and Post-intervention



Urinary Concentrations of Other Phthalates and Phenols did not Change

	Pre-intervention GM (ng/ml)	Post-intervention GM (ng/ml)	P-value
MBzP	13.0	12.3	0.78
MEHP	4.2	4.0	0.10
MEHHP	14.0	11.3	0.83
MECPP	25.9	22.6	0.48
MEOHP	10.9	9.1	0.79
MCPP	3.7	3.7	0.48
BPA	2.3	3.1	0.40

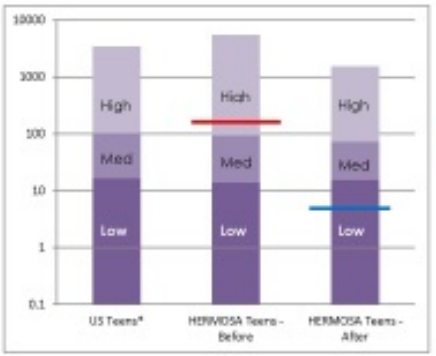
Participant's Attitudes

Learned something new about chemicals in cosmetics	86%
Has checked ingredient list of cosmetics	30%
Will buy beauty products without EDs	93%

Returning Results to Study Participants

Phthalate Levels

- Phthalates are often listed on ingredient lists as "fragrance" or "parfum."
- They are commonly found in perfume, lotions, shampoo, nail polish, and other cosmetics.
- In HERMOSA, girls who used lotion more often had higher phthalate levels.
- On average, phthalate levels **went down** during the HERMOSA intervention.



* 14-18 year old girls from across the US (National Health and Nutrition Examination Survey, 2011-2012). Low means lowest 25% of group, medium means 25-75% of group, high means highest 25% of group.

Summary:

Before the intervention, your phthalate levels were **about the same** as most U.S. girls, and were **about the same** as the pre-intervention levels for most HERMOSA girls.

After using the low chemical personal care products for three days, your phthalate levels were **about the same** as most U.S. girls, and were **about the same** as the post-intervention level for most HERMOSA girls.

Your personal phthalate levels were 32% lower post-intervention than pre-intervention.

Advocacy and Outreach Activities

Educational Materials

You will need:
2 tablespoons olive oil
1 egg
1 tablespoon lemon juice
1 teaspoon apple cider vinegar

Instructions: Combine all ingredients in a blender. Blend until well combined. Use like regular shampoo. Discard any leftovers.

Community Events

Social Media

- Twitter @ hermosa_study
- Instagram @ hermosa_study
- Facebook: Teens For Safe Cosmetics

Summary

- Reduced ED concentrations by 25-45% by switching products for 3 days
- Difficult to reduce phthalate levels
- Able to empower youth by training them to be scientific researchers
- Youth have developed educational materials and are informing their community about our findings

Thanks to our Staff and Collaborators

And thanks to our Funder

Community Research Collaborative
Award 18BB-1800