

Vulnerable Workers: How structural and work level factors impact health risks among workers

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Learning Objectives (updated 3/6/23)

- ▶ Define and describe characteristics of vulnerable workers
- ▶ Understand how work can be linked to health disparities and impact vulnerable worker populations
- ▶ Understand how chemical exposures and associated health risks may be more prevalent in unique worker populations: A case study on female hairdressers

What do we mean by vulnerable workers?

- ▶ Generally, refers to those workers at greater risk of injury and illness.
- ▶ An Institute for Work and Health (IWH) study identified 4 vulnerability dimensions that lead to increased risk of injury/illness at work:
 - ▶ Hazards workers face
 - ▶ Workplace/organization-level protections offered (policies and practices)
 - ▶ Worker awareness of occupational health and safety rights and responsibilities
 - ▶ Extent to which workers are empowered to take part in work-related injury/illness prevention and demand safe work environments.
- ▶ Vulnerability is associated with elevated rates of self-reported workplace injury and illness.
- ▶ IWH developed a vulnerability tool whereby vulnerability can be modified via prevention rather than changing aspects that cannot be changed (i.e., new immigrants, young workers, etc.).
 - ▶ Challenging in work environments with precarious employment (lower end, service/temp jobs, lack benefits)

Susceptibility vs. vulnerability

Susceptibility: Differences in risk resulting from variation in both toxicity response (sensitivity) and exposure as a result of sex, lifestage and behavior; explains why some people have worse impacts from environmental hazards than others (USEPA)

Trait or factor leading to higher risk at a given exposure level, due to biological or intrinsic factors that can modify the effect of a specific exposure

Example: a person with a pre-existing respiratory condition or genetic alteration may be susceptible and at an increased risk of adverse effects associated with chemical exposures (e.g., PON1 status and OP toxicity)

Difference between susceptibility and vulnerability:

Vulnerability:

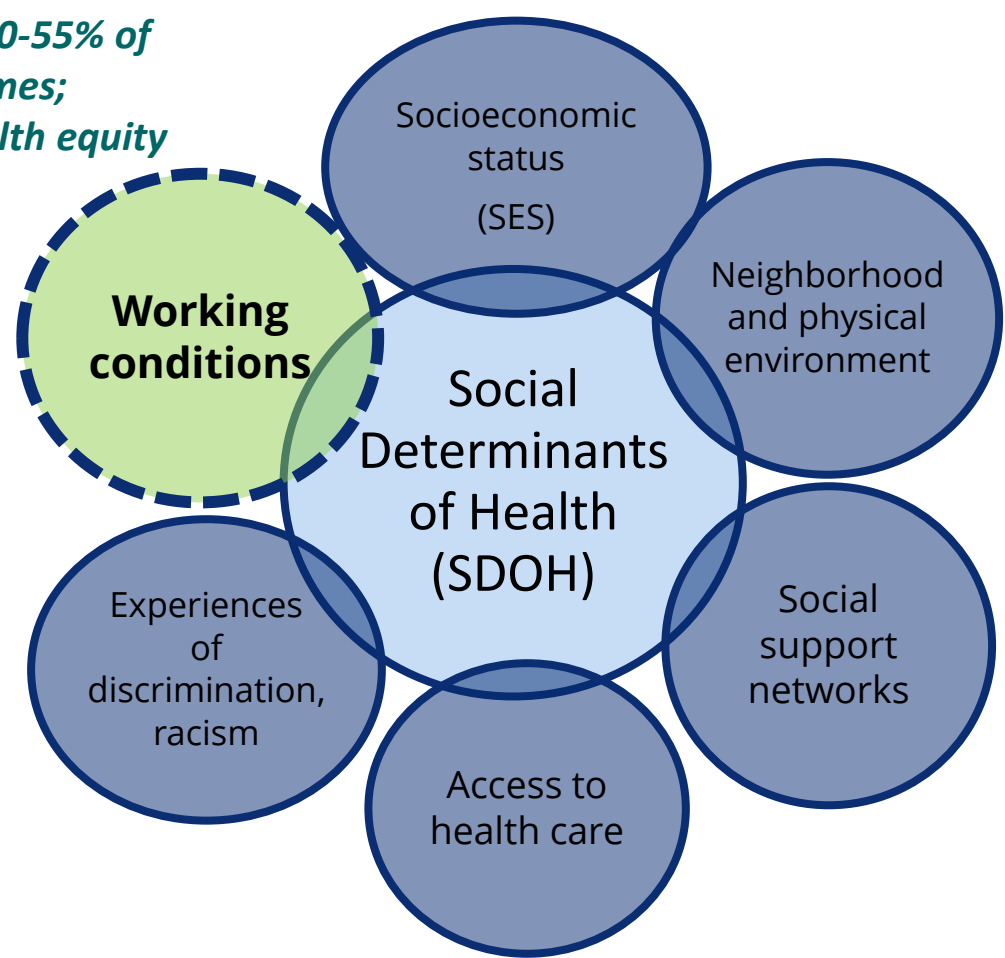
Differences in **risk resulting from the combination of both intrinsic differences in susceptibility and extrinsic social stressors or factors** like low socioeconomic status, crime and violence, lack of community resources, crowding, access to health care, education, poverty, segregation, geography, and other factors.

Source: Exposure Assessment Tools by Lifestages and Populations - Highly Exposed or Other Susceptible Population Groups
<https://www.epa.gov/expobox/exposure-assessment-tools-lifestages-and-populations-highly-exposed-or-other-susceptible#fac>

Work as a social determinant of health

*“Social determinants of health (SDOH): conditions in which people are born, grow, **work**, live, and age, and the wider set of forces and systems shaping the conditions of daily life (WHO definition).”*

*Account for 30-55% of health outcomes;
influence health equity*



These forces and systems include economic policies and systems, development agendas, social norms, social policies, racism, climate change, and political systems.

Work as a social determinant of health

- ▶ Work is a multifaceted construct which operates as a SDOH:
 - Source of income
 - Occupational status/segregation
 - Working conditions/exposures
 - Work-related benefits (e.g., health insurance)
 - Social support networks

Occupational segregation
when one demographic group is overrepresented or underrepresented among different kinds of work or different types of jobs.

Structural/systemic racism may underlie the unequal distribution of many work-related factors.

Structural/Systemic Racism

“Structural racism and discrimination (SRD): refers to macro-level conditions (e.g. residential segregation and institutional policies) that limit opportunities, resources, power, and well-being of individuals and populations based on race/ethnicity and other statuses, including but not limited to:”

- Gender
- Sexual orientation
- Gender identity
- Disability status
- Social class or socioeconomic status
- Religion
- National origin
- Immigration status
- Limited English proficiency
- Physical characteristics or health conditions

Leads to disproportionate exposures and environmental injustices among marginalized communities, including vulnerable worker populations.

Source: <https://www.nimhd.nih.gov/resources/understanding-health-disparities/srd.html>



How can work be linked to health disparities?

- ▶ Research shows that workplace resources and exposures can impact health
- ▶ Occupational segregation is prevalent in the US labor force
- ▶ Large disparities in access to work policies and benefits beneficial to workers
- ▶ Large disparities in workplace exposures
 - ▶ Physical, chemical, biological, and mechanical exposures
 - ▶ Psychosocial exposures
- ▶ Structural/systemic racism and discrimination may be a key mechanism through which work contributes to health disparities
- ▶ Structural inequities affect hiring policies creating differential opportunities along racial, gender, and physical ability divisions

Injustices in the work environment are as dangerous as those outside the workplace

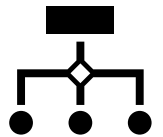
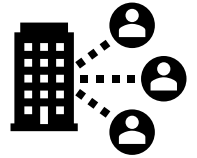
- Black and Brown workers more likely to be exposed to workplace hazards vs. White workers and at greater risk of injury, illness, and death.
- Black and Brown workers overrepresented among workers in low-paying, dangerous/high risk jobs (“3D jobs- dirty, dangerous, demeaning/demanding”) and in essential industries.
- Workers of color suffer from structural/systemic racism in the workplace that may be perpetuated by hiring practices.
- Workplace injuries and illnesses contribute to our economic inequality crisis; keeps many poor people from joining the middle class altogether.

Source: Michaels, Bullard 2021



Mechanisms and Pathways linking work to health disparities

- ▶ **Occupational Segregation:** Uneven distribution across occupations based on select demographic characteristics (e.g., race/ethnicity, gender, immigration status); e.g., linked with poor self-rated health, higher odds of poor physical and psychological health
- ▶ **Worksite Segregation:** Uneven distribution within the workplace based on select demographic characteristics (e.g., race/ethnicity, gender, immigration status)
- ▶ **Intergenerational Transmission (Cycle of disadvantage):** occurs when ethnic/racial groups pass social assets and liabilities from one generation to the next; e.g., children in poverty more likely to become lower SES adults



Mechanisms and Pathways linking work to health disparities

- ▶ **Upstream Policies:** Labor, economic, education, workers' compensation policies
- ▶ **Lack of enforcement at the federal level**
- ▶ **System-Level Trends**
 - ▶ increase in number of precarious jobs (i.e., non-standard/temp jobs poorly paid, insecure, unprotected, and unable to support a household)
 - ▶ recessions (increases in job loss/unemployment)
 - ▶ demise of labor unions which fight for worker health and safe, better wages
 - ▶ globalization of production and deregulation of markets
 - ▶ increases in the number of immigrant workers
 - ▶ impact of pandemics, natural disasters (disparate exposures in essential workers)

Who is impacted by precarious employment?

- ▶ Precarious employment affects many people, but certain groups of workers are disproportionately affected, directly and negatively.

- ▶ **Women**
- ▶ People of color
- ▶ **Immigrants**
- ▶ **Individual with disabilities**
- ▶ Elder adults
- ▶ **Youth**

Examples of vulnerable worker populations

Women workers



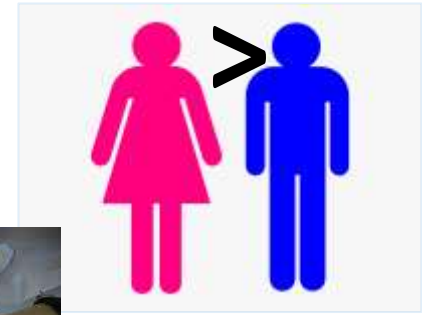
Among people in the labor force for at least 27 weeks...

- ▶ In 2020, ~76,000 women in the U.S. labor force
- ▶ More women than men (3.9 million vs. 3.1 million) lived below the official poverty level
- ▶ Black and Hispanic more likely to be among the working poor vs. White or Asian women.
- ▶ Working poor-rate:
 - Black women: 9.7%
 - Hispanic women: 8.7%
 - White women: 4.5%
 - Asian women: 3.1%



The workplace and women's health

- ▶ Women tend to be over-represented in select occupations.
- ▶ Women face different workplace health hazards compared to men.
- ▶ Women generally have more work-related cases of musculoskeletal disorders, respiratory diseases, infectious diseases, and anxiety and stress disorders.
- ▶ Many in the workforce are women of reproductive age and/or work during pregnancy (women and children's health implications).



Examples of vulnerable worker populations

Women workers



Immigrant/Migrant workers



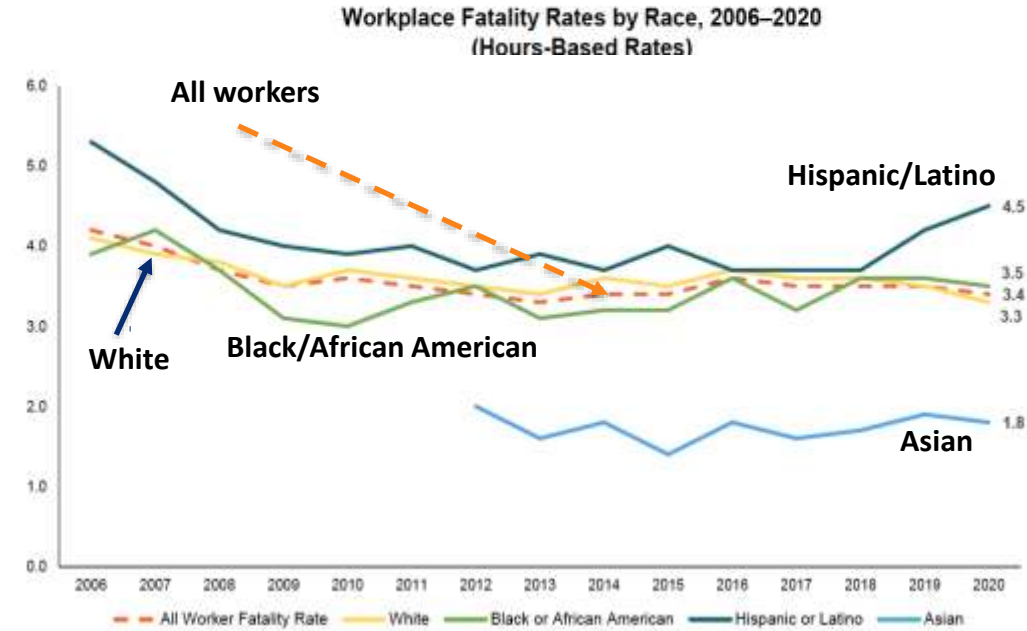
Immigrants in the U.S. Labor Force

- ▶ 2019: 17% (~29 million people) of the civilian labor force
- ▶ Immigrant participation in the labor force has tripled since 1970
- ▶ U.S. labor force racial/ethnic distribution:
 - ▶ Hispanic (~48% foreign-born vs. 12% native-born)
 - ▶ Asian (~25% foreign-born vs. 2% native-born)

***The civilian labor force** is comprised of civilians 16 years of age and older who were either employed or unemployed but looking for work in the week prior to participation in the American Community Survey or decennial census conducted by the U.S. Census Bureau.*

Immigrant Deaths in the U.S. among Latino workers

- ▶ 1,072 Latino workers died on the job in 2020
 - ▶ ~ 1,088 in 2019
 - ▶ ~ 961 in 2018
 - ▶ ~ 903 in 2017
- ▶ Latino fatality rate: 4.5 per 100,000 workers (2020)
 - ▶ 32% > than the national average
- ▶ 65% were born outside of the U.S. (2020)



Why are immigrant workers at an increased risk of injury/illness, psychosocial consequences, and more...

- ▶ Often engaged in “3D” jobs: dirty, dangerous and demanding (sometimes degrading or demeaning)
- ▶ More likely to be employed in seasonal or temporary jobs vs. native-born workers who tend to be employed year-round.
- ▶ Work for less pay, longer hours and in poor working conditions vs. nonimmigrants
- ▶ Subject to human rights violations, abuse, human trafficking, and violence



Why are immigrant workers at an increased risk of injury/illness, psychosocial consequences, and more...

- ▶ May take greater risks on the job, do work without adequate training or protective equipment, and do not complain about unsafe working conditions
- ▶ Greatest impact for workers who lack work authorization and at risk for losing their jobs or deportation
- ▶ Experience disparate chemical exposures (>1 billion lbs of pesticide active ingredients used annually)



Examples of vulnerable worker populations

Women workers



Immigrant/Migrant workers



Workers with disabilities



- Face a hard time being employed
- More likely to encounter hazards and experience vulnerability due to inadequate measures to mitigate hazards
- Inadequate accommodations and work modifications

Source: Breslin et al. 2018

Examples of vulnerable worker populations

- ~17.3 million workers <25 years (~12% of total workforce)
- 2020: 352 workers <25 years of age died from work-related injuries
- Still developing physically and emotionally
- As new workers, they are inexperienced, unfamiliar with tasks, lack knowledge on workplace hazards
- Employed at part-time, temporary, low-paying jobs; often unaware of their rights as workers and receive inadequate safety training (e.g., may not be geared towards youth)
- Child labor laws are not current, often unenforced, do not limit number of hrs or times of day that workers ≥ 16 years can work

Child workers



Overlapping vulnerabilities increase the risk of injury/illness, including among child workers

▶ **Overlapping vulnerabilities**

- ▶ Gender
- ▶ Lack of education/training
- ▶ Migration status
 - fear of speaking up
 - lack of knowledge on worker rights
- ▶ Age
 - physical development
 - exemptions to child labor laws



Fact: A 12-year-old cannot legally buy cigarettes in the U.S., but is allowed to work in a tobacco field for 10-12 hrs/day in 100-degree heat and suffer repeated bouts of nicotine poisoning!



Occupational Exposures in Hair Salons: A Case Study on Hairdressers of Color



Hairdresser Demographics in the U.S.

- ~95,000 business in the U.S. classified as beauty salons, nail salons, barbershops
- ~ 1.2 million people employed in the beauty salon sector (e.g., hairdressers, cosmetologists, nail salon workers)
- >700,000 hairdressers
 - Mostly female (~95%), low-wage workforce
 - Mean age: 38 years
 - ~30% women of color (Black/Latina)



Source: US Census Bureau, 2022



Worker health and safety in beauty salons

- Do not employ IH/safety personnel to assist with OSH
- No medical surveillance program
- Exempt from keeping OSHA injury/illness records (<10 employees)
- OSHA lacks the capacity to enforce OSH in beauty salons
- Promulgated by state cosmetology/barbering boards



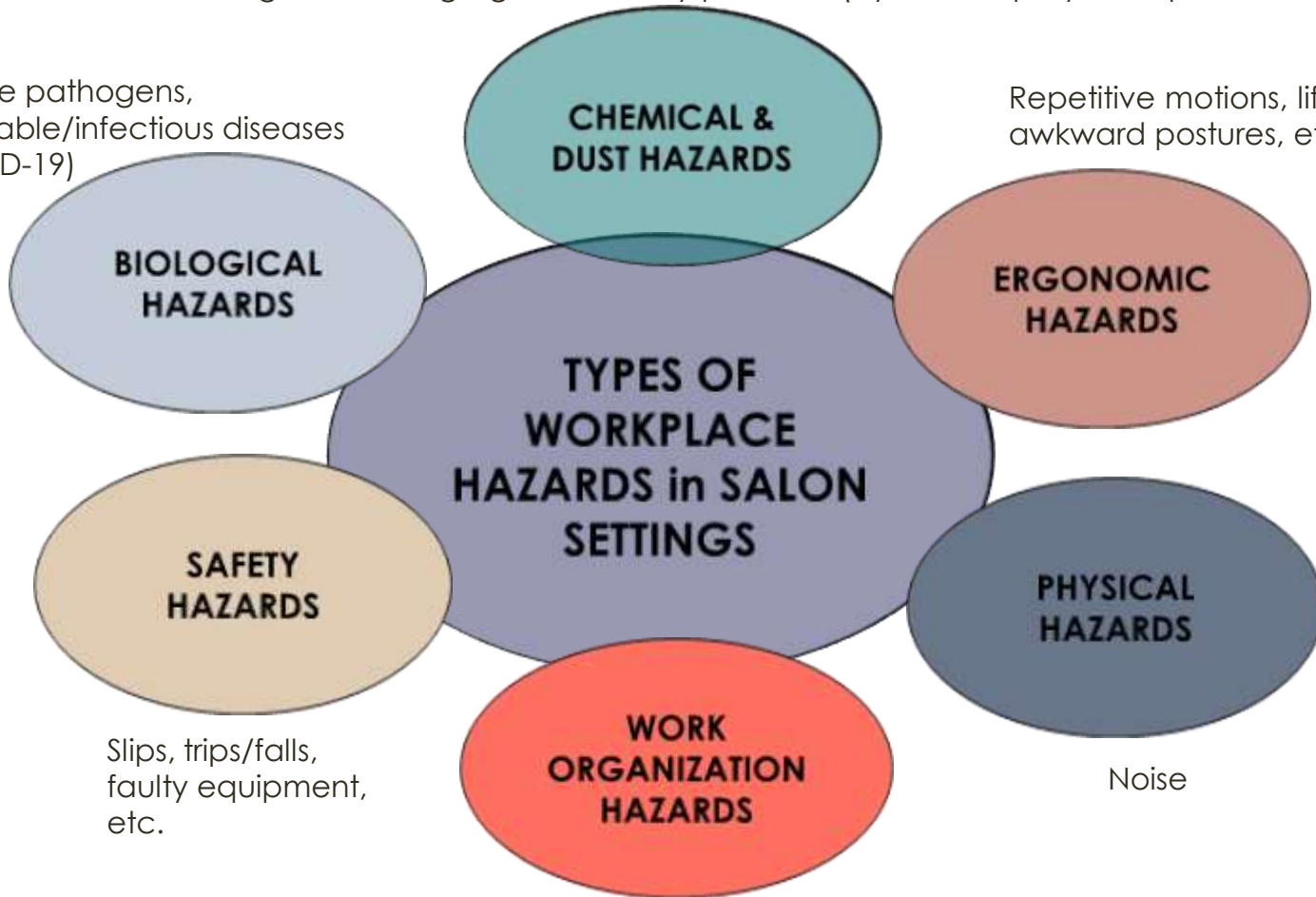
Challenges in enforcing health and safety by state cosmetology and barbering boards

- Can vary by state
- Seldomly address chemical exposures in salon settings
- Vague guidelines and no useful resources
- Number of establishments places challenges on enforcement



Cleaning/disinfecting agents, beauty products (dyes, hair sprays, nail polish, etc.)

Blood-borne pathogens,
communicable/infectious diseases
(e.g., COVID-19)



Repetitive motions, lifting,
awkward postures, etc.

Slips, trips/falls,
faulty equipment,
etc.

Noise

Psychosocial stressors

What do we know about chemical exposures among hairdressers?



Hair salon workers are exposed a myriad of chemicals linked to adverse effects (e.g., volatile organic compounds-VOCs and particulate matter- PM)

CHEMICAL NAME	FOUND IN THESE PRODUCTS	SYMPTOMS OF EXPOSURE	POTENTIAL LONG TERM EFFECTS
Dibutyl Phthalate	Nail polish	Nausea, dizziness, eye and skin irritation	Reproductive toxin, birth defects
Formaldehyde or methylene glycol	Nail hardener, nail polish, keratin hair straighteners	Breathing problems, coughing, wheezing, skin rashes, eye, nose, throat irritation	Cancer, dermatitis
Toluene	Nail polish, nail glue, hair dye, wig glue/hairpiece bonding	Dizziness, headaches, skin rashes, eye, nose, throat irritation	Liver damage, kidney damage, birth defects, pregnancy loss
Methyl Methacrylate (MMA)	Artificial nails	Breathing problems, chest tightness, eye, nose, throat irritation, headaches, confusion	Loss of smell, reproductive toxin, asthma, allergic reaction
Cyclopentasiloxane or cyclomethicone	Flat iron sprays, thermal protection sprays	Under the high heat of a flat iron, cyclopentasiloxane creates formaldehyde. Formaldehyde leads to breathing problems, coughing, wheezing, skin rashes, eye, nose, throat irritation	Formaldehyde exposure may cause cancer, dermatitis
Styrene	Hair extension glue, lace wig glue	Vision problems, trouble concentrating, tiredness	Cancer
Trichlorethylene	Hair extension glue, lace wig glue	Dizziness, headache, confusion, nausea, eye and skin irritation	Liver damage, kidney damage, dermatitis, double vision
1,4 Dioxane	Hair extension glue, lace wig glue	Eye and nose irritation	Cancer, liver damage, kidney damage
2-butoxyethanol or Ethylene glycol monobutyl ether	Disinfectants, cleaners	Headache, eye and nose irritation	Reproductive toxin

- Phthalates
- Propylene glycol
- Ammonia
- Sodium Hydroxide
- ...and many more
- **Reproductive**
- **Respiratory**
- **Dermal**
- **Cancer**

WORLD HEALTH ORGANIZATION
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER



IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC
RISKS TO HUMANS

VOLUME 57

**OCCUPATIONAL EXPOSURES OF
HAIRDRESSERS AND BARBERS
AND PERSONAL USE OF HAIR
COLOURANTS; SOME HAIR DYES,
COSMETIC COLOURANTS,
INDUSTRIAL DYESTUFFS AND
AROMATIC AMINES**

1992
I A R C
L Y O N
F R A N C E

“..occupational exposures (to hair colourants) as a hairdresser or barber are probably carcinogenic to humans.”

IARC 2010

Chemical exposures among hairdressers remain understudied and research to date is very limited

- Limited studies on indoor contaminants in hair salons, particularly in the U.S.
 - Limited to a few VOCs and/or a specific hair service
- Epidemiologic findings limited and/or inconsistent
 - Most conducted in Europe
 - Occupational title to assess exposure
 - Little information on specific chemicals
- Data on occupational exposures to workers serving racially ethnically diverse population lacking



Research is critically needed among workers serving racially/ethnically diverse populations

- Products marketed for use in Black women (African American, African, Afro Caribbean) contain EDCs, lye, toxic solvents, and adhesives.



Photo credit: Beauty and it's Beast Report.



Products marketed to this population contain EDCs and other toxic chemicals linked to asthma and more...



Environmental Research
Volume 165, August 2018, Pages 448-458



Measurement of endocrine disrupting and asthma-associated chemicals in hair products used by Black women

Jessica S. Helm ^a, Marcia Nishioka ^{b, 1}, Julia Green Brody ^a, Ruthann A. Rudel ^a, Robin E. Dodson ^a

- Products contained mixtures of EDCs
- 72% of products contained parabens and phthalates
- 84% of chemicals not listed on the product label

Research is critically needed among workers serving racially/ethnically diverse populations

- Products marketed for use in (African American, African, Afro Caribbean) contain EDCs, lye, toxic solvents, and adhesives.
- Product use patterns among women of color pose a risk and health impacts to salon workers using these products on their clients and potentially on themselves remains largely unknown



Photo credit: Beauty and it's Beast Report.



Beauty and its burden on women of color

- Racial/ethnic differences in beauty product use documented across multiple categories (e.g., skin care, hair care, and feminine hygiene).
- Women of color have higher body burden of chemicals found in PCPs/cosmetics; could be due to external/social factors, products, use patterns

TABLE

Examples of disproportionate beauty product exposures among vulnerable populations

External factors	Vulnerable populations	Product use	Chemical exposures	Potential adverse outcomes
Colorism	Dark skinned women (globally)	Skin-lightening creams	Mercury	Mercury poisoning, neurotoxicity, kidney damage
Hair texture preferences	African American women (United States)	Hair relaxers and other hair care products	Parabens and estrogenic chemicals from placenta	Uterine fibroid tumors, premature puberty, and endocrine disruption
Odor discrimination	African American women (United States)	Vaginal douches and other feminine care products	Phthalates and talc powder	Gynecologic cancers and endocrine disruption

Zota & Shamasunder. *Beauty products, environmental chemicals, health disparities. Am J Obstet Gynecol* 2017.



Product use patterns pose an environmental and occupational disparities risk among women of color already overburdened

- Low-income and racial/ethnic minority groups may be further susceptible and vulnerable because they are exposed more frequently to multiple environmental and social risk factors and face poorer health outcomes.



Beauty and its price on the health of women of color

- Beauty product use is an understudied source of environmental chemical exposures and may be one avenue for environmental and occupational health professionals to intervene among vulnerable populations such as women of color.

Research is critically needed among workers serving racially/ethnically diverse populations

- Products marketed for use in (African American, African, Afro Caribbean) contain EDCs, lye, toxic solvents, and adhesives.
- Product use patterns among women of color pose a risk and health impacts to salon workers using these products on their clients and potentially on themselves remains largely unknown
- Critical need to examine the impacts on this population of salon workers to establish more protective measures and help determine safer products to ensure a healthier workplace environment.



Photo credit: Beauty and it's Beast Report.



**Exposures in this
work group
represent a
women and
children's health
issue!**



Image source: <https://www.istockphoto.com/photos/interracial-pregnant-silhouettes>



Summary of major knowledge gaps and factors impacting susceptibility and vulnerability

- Limited information on:
 - chemical exposures (limited exposure and epidemiologic studies)
 - modifiable factors associated with exposures
 - health effects linked to chemical exposures
- Concerns that exposures among women of color are elevated placing them at an increased risk of adverse health risks, yet no studies have examined this
- Susceptible and vulnerable workforce
 - Majority **low-income workforce**; experience exposures to chemical/non-chemical stressors outside the workplace
 - **Female (>95% female)/Lifestage**: Work during preconception and prenatal period (women and children's health implications)
 - **Sensitivity**: Pre-existing health conditions that may be exacerbated and impact quality of life; concerns on disease development and control (morbidity)



What did we do to begin addressing some of these gaps?



Particulate matter

28 VOC biomarkers*

14 VOCs in air



- Characterized IAQ and concentrations of indoor air pollutants (VOCs, PM) in 6 hair salons mainly serving a Black/Latinx clientele
- Conducted biomonitoring (23 hairdressers/17 office workers)
- Obtained information on health history, including symptoms at work

Nasal
microbiome

9 Phthalate biomarkers *

Workplace symptoms*

Untargeted analyses

Study design

• Recruitment

- Salon owners ≥ 18 years of age

- **Location:** Maryland and Washington DC Metropolitan area.

n= 6 salons
(3 Dominican, 3 African American)



n=23 hairdressers



Focus groups
with salon
owners



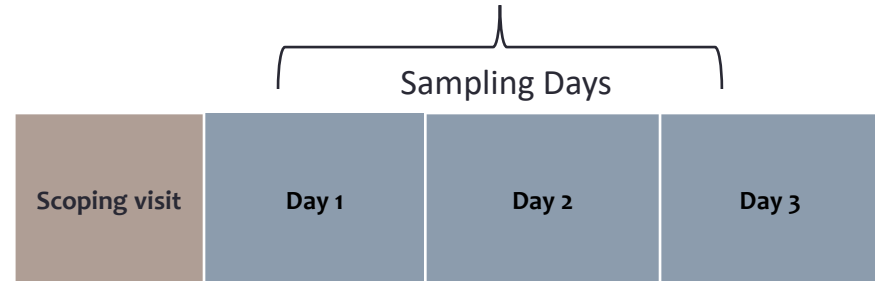
...



n=17 office workers

Days 1,2,3:

- IAQ and indoor air sampling for 8 hours
- Worker surveys and biospecimens (Day 2 or 3)



Day 1

- Determine equipment location
- Administer questionnaires (salon owners)
- Walk-thru facility inspection

**What did we
find?**





Salon characteristics

- General layout and size of salons varied
 - Partitioned vs. Open floor plan
 - Size: 592-1890 ft² (180-576m²)
- All salons located in a strip mall
- 4-13 hairdressers per salon
- ~ 15-25 clients serviced on a busy day



Study population characteristics

- Racially/ethnically comparable groups
- Average age: Hairdressers 40 yrs vs. Office workers 34 yrs
- Hairdressers had lower income
- >80% non-smokers
- Hairdressers used more beauty products and sought more salon services vs. office workers

Characteristic	Hairdressers	Office
	(n=23)	Workers (n=17)
N(%)		
Race/Ethnicity		
Hispanic/Latina	11 (47.8)	7 (41.2)
Non-Hispanic Black	11 (47.8)	7 (41.2)
Other	1 (4.4)	3 (17.6)
Income		
≤ \$30,000	10 (52.6)	3 (17.7)
\$30,001-\$50,000	4 (21.1)	3 (17.7)
> \$50,000	5 (26.3)	11 (64.7)
Current smoker		
No	19 (82.6)	16 (94.1)
Yes	4 (17.4)	1 (5.9)
Received salon services ≤ 12 months		
None	7 (30.4)	12 (70.6)
1 service	6 (26.1)	3 (17.7)
2-3 services	10 (43.5)	2 (11.8)
Characteristic	Mean (SD)	
Age (years)*	40.2 (10.6)	33.6 (7.9)
Work week hrs.	44.3 (18.7)	40.4 (10.4)
Personal use ≤48 hrs.		
Makeup	3.4 (3.1)	2.5 (2.1)
Hair products	2.1 (1.5)	1.5 (1.1)
Other PCPs	10.5 (4.7)	10.6 (2.0)



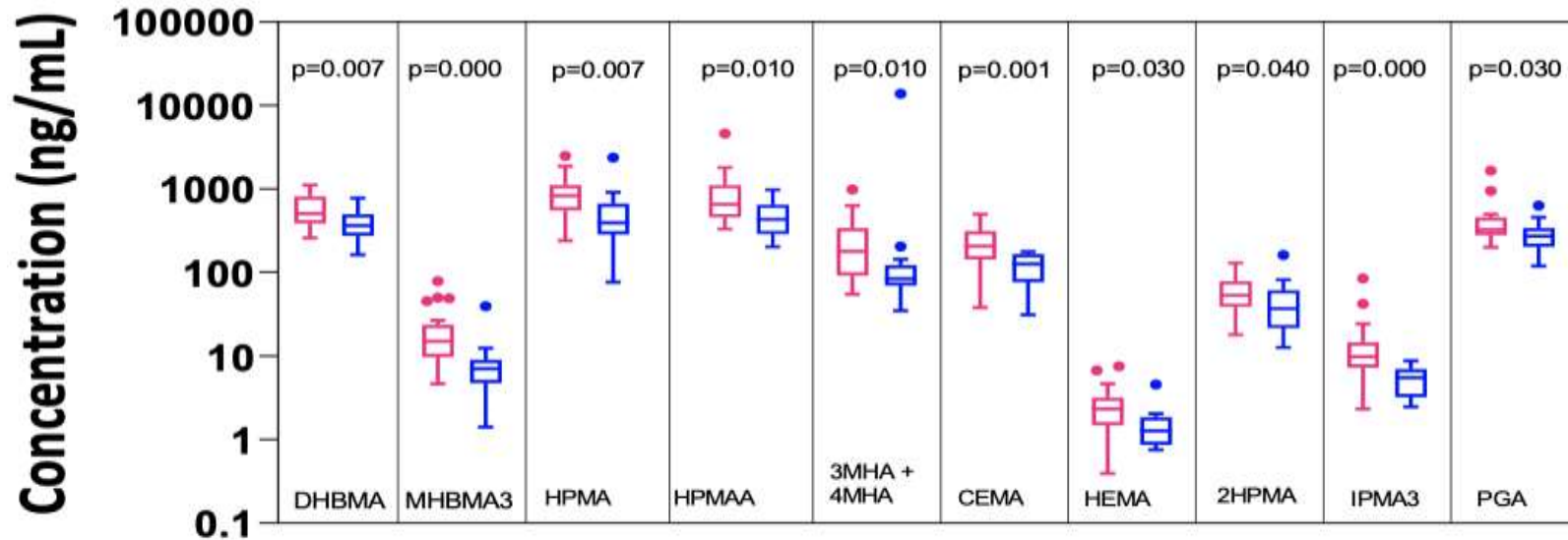
Study population characteristics

- ~50% worked while pregnant
- 2 hairdressers in their 3rd trimester

Biomonitoring results (chemicals in urine)



Higher VOC biomarker concentrations in hairdressers vs. office workers



Urinary VOC Biomarkers

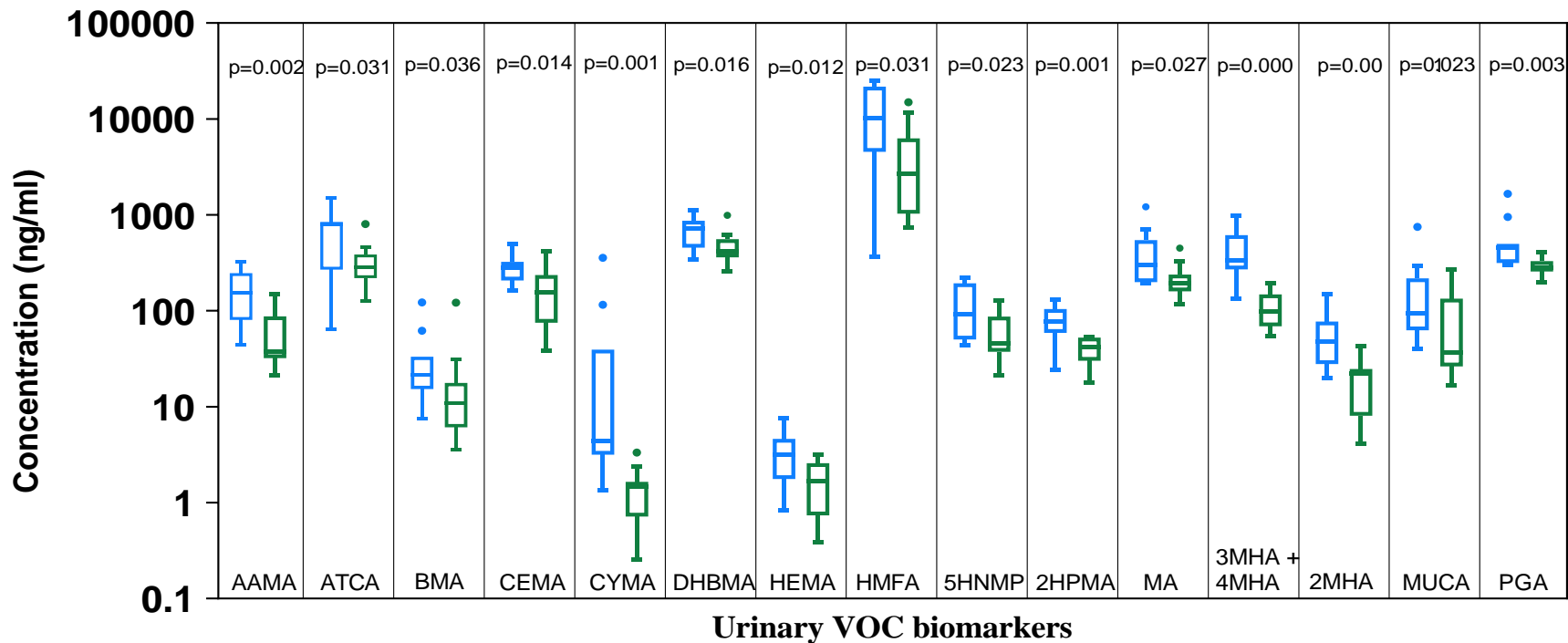
>4Xs higher than US women
 1-bromopropane
 acrolein
 1,3-butadiene

□ Hairdressers, n=23

□ Office workers, n=17

Louis et al. 2021

Differences in VOC exposures observed between clientele served in salons

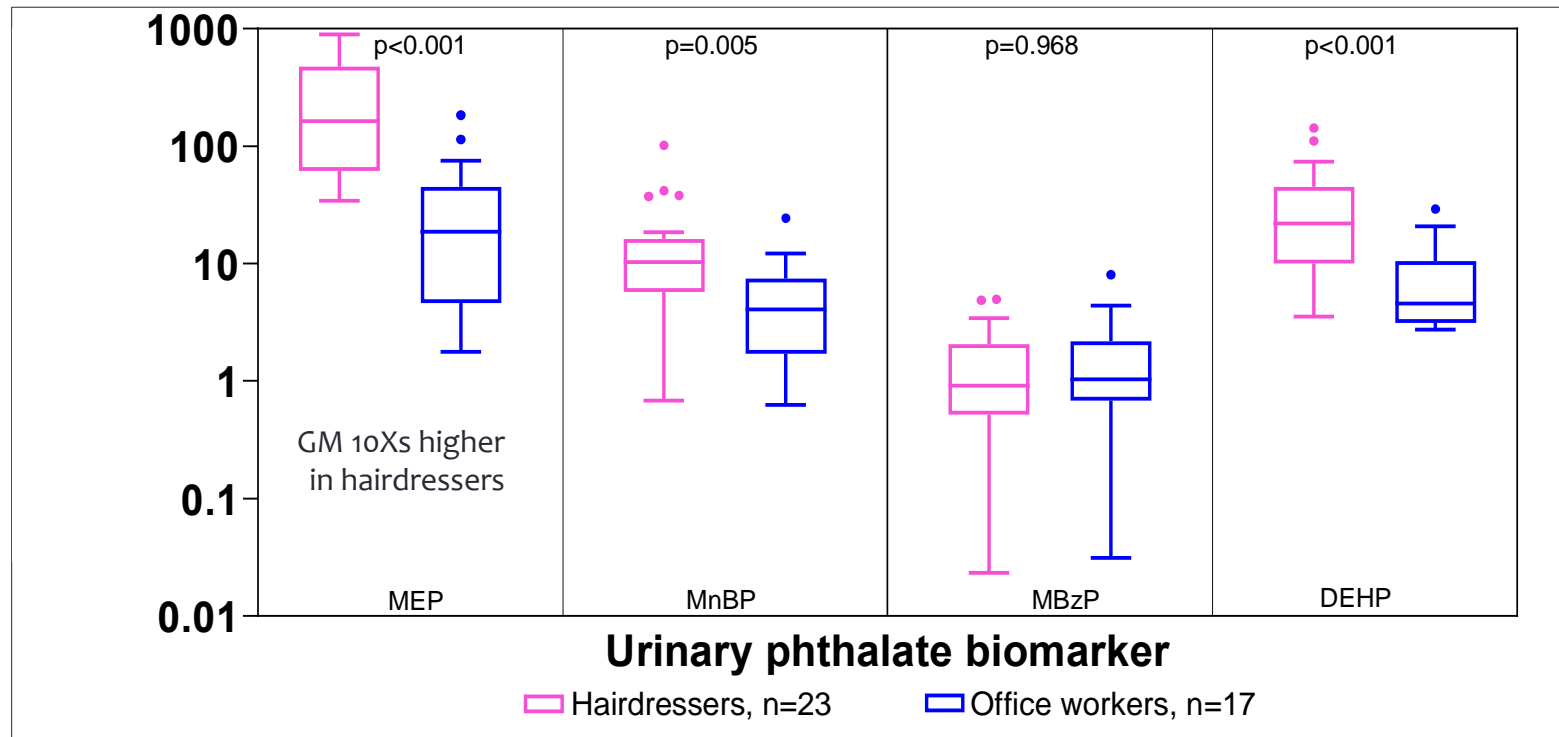


Black hairdressers; n = 11

Dominican hairdressers; n = 12

Louis et al. 21021

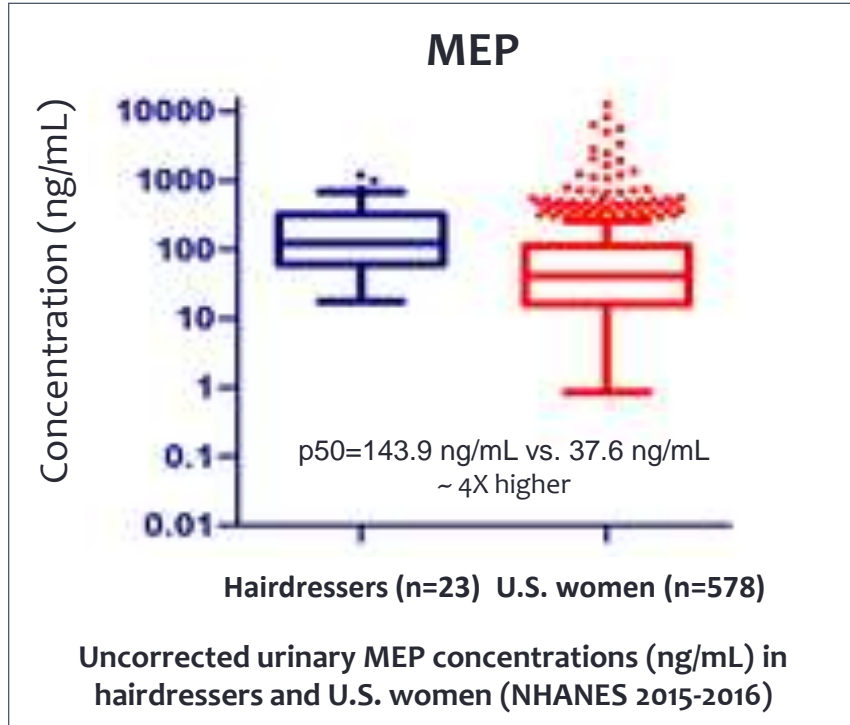
Higher phthalate concentrations in hairdressers vs. office workers



Specific gravity corrected urinary concentrations for select phthalate biomarkers in hairdressers and office workers



Higher MEP biomarker concentrations in hairdressers vs. women in the US general population.



*Compared to other studies among non-pregnant women of reproductive age, hairdressers in our study had up to **41Xs** higher median MEP levels*

Prenatal exposures linked with:

- Preterm birth
- Decreased anogenital distance in male infants
- Pregnancy complications

Sources: **Cosmetics/personal care products, insecticides, and aspirin, toys, and food packaging**

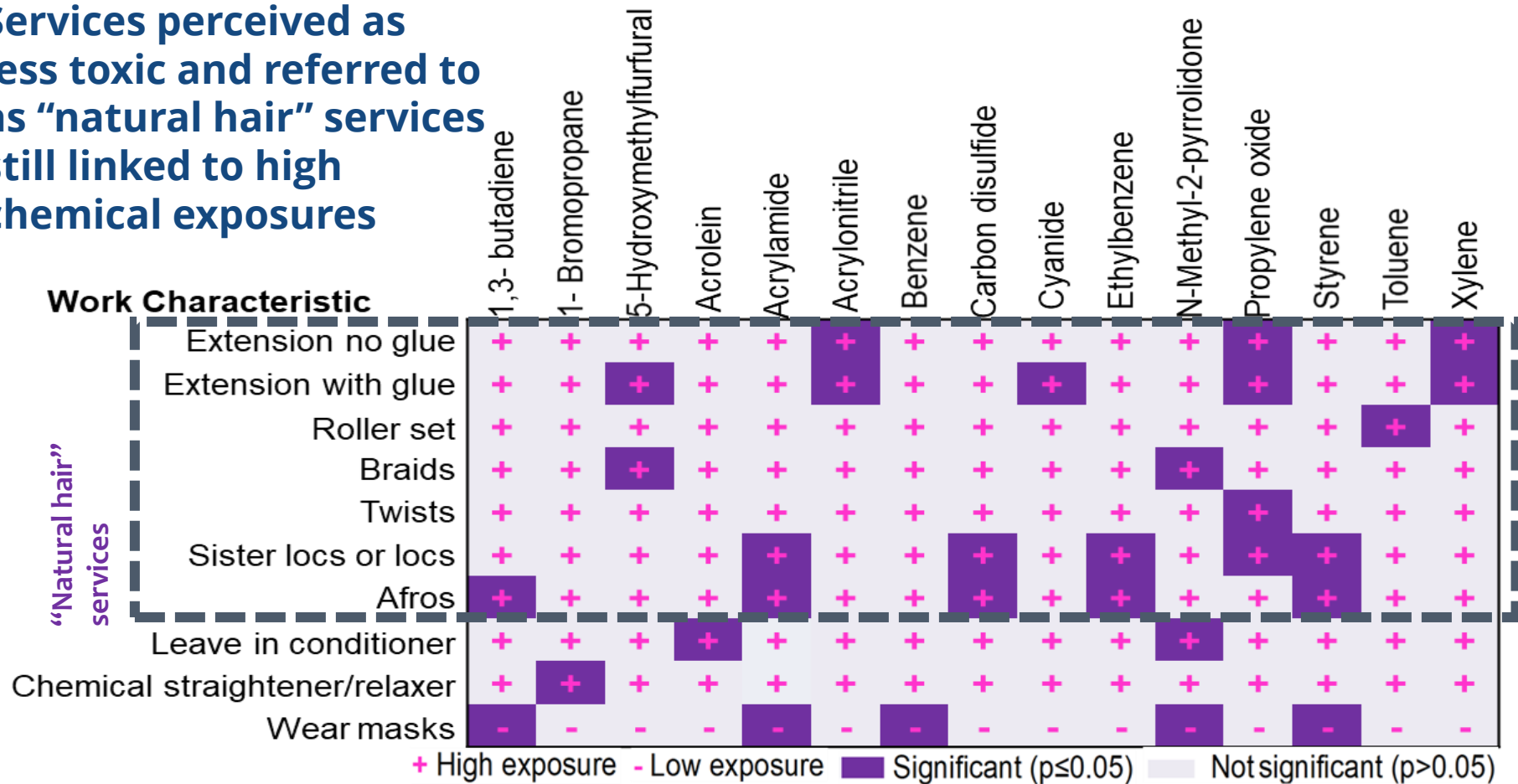
Higher biomarker concentrations in hairdressers reporting use of select products or providing select services vs those that did not



Louis et al 2021; Boyle et al. 2021



Services perceived as less toxic and referred to as “natural hair” services still linked to high chemical exposures

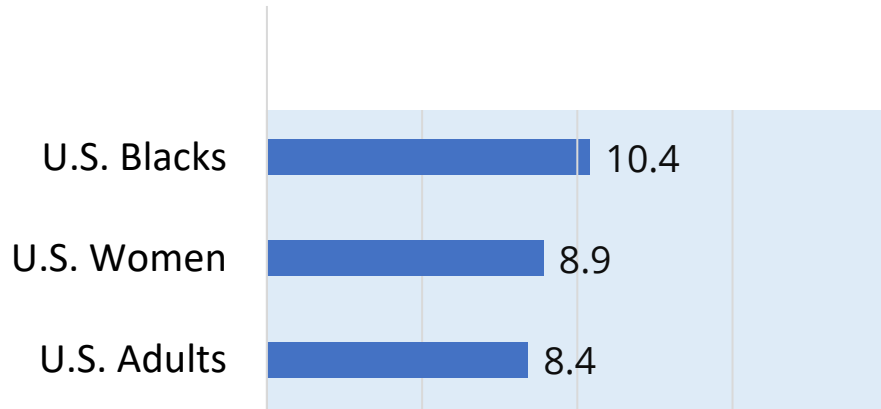


Health History

A woman with dark hair, wearing a black long-sleeved shirt, is focused on styling a person's hair. She is using a hairbrush and a yellow hair roller. The person whose hair is being styled has brown hair with several rollers already in place. The background is slightly blurred, showing what appears to be a salon or a similar setting. The text 'Health History' is overlaid in the center of the image in a large, white, sans-serif font.

Respiratory disease development and control is of concern among hairdressers

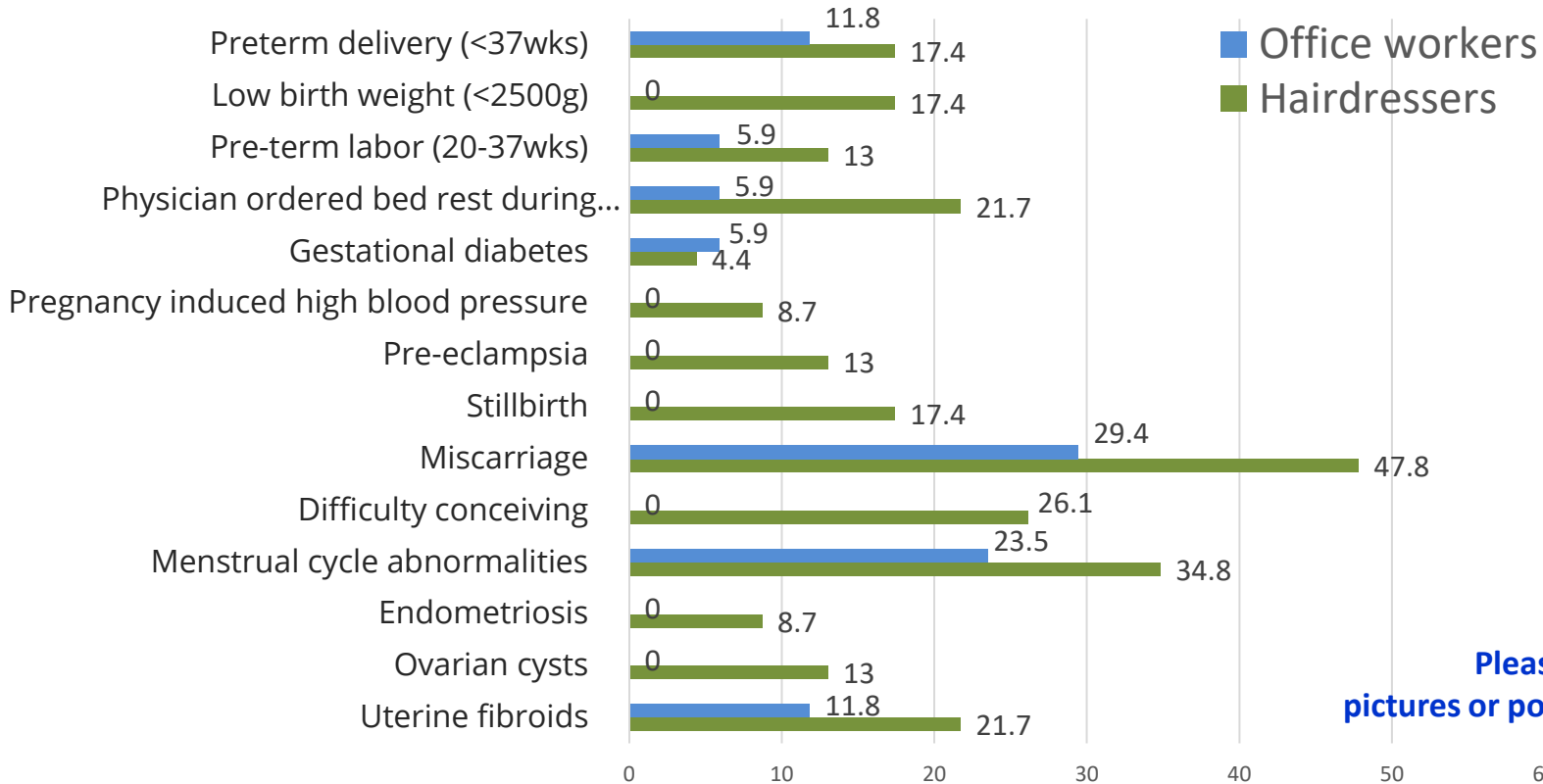
Prevalence (%) of asthma among hairdressers and U.S. population (CDC 2020)



- Higher asthma prevalence in hairdressers
- 75% diagnosed while employed
- 50% had an ED visit in the prior year
- Hairdressers reported symptoms:
 - nasal irritation: 35%
 - trouble breathing at night: 14%
 - wheeze: 9%

Workers stated they cannot stop working and risk wage loss despite concerns and symptoms.

Higher prevalence of self-reported adverse reproductive health outcomes in hairdressers vs. office workers



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pictures or post on any platform



In summary

- First study to assess IAQ and select contaminants among salons and hairdressers primarily serving women of color
- Differences observed among hairdressers and between hairdressers/office workers
- Hairdressers of color exposed to elevated concentrations of phthalates and VOCs
- Select services and products influence exposures, including natural hair services
- Larger, in-depth studies are warranted to: (1) fully characterize the extent of chemical exposures and health risks in salons.; (2) inform interventions and public health policies; (3) improve worker safety and health





Lessons learned and considerations moving forward

Community partnerships were key for successful recruitment

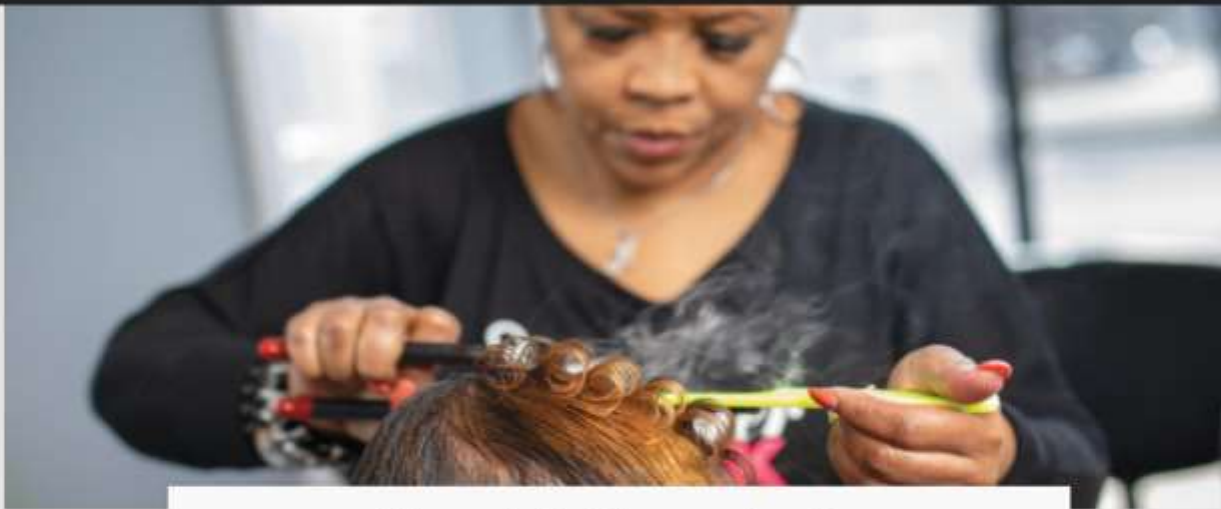
Building trust in affected communities is key for study success

Sustainable interventions will be necessary

How do we equip small businesses with the tools necessary to have a voice

Understanding how structural racism plays a role on exposure/disease relationships





Beauty's Byproducts

Dyes, relaxers, and conditioners give salon clients the styles they want—and leave salon workers with a potentially dangerous chemical burden.

By Lola Butcher • Photos by Chris Hartlove

Late in the week, **Tyè Shades Hair Studio** in Capitol Heights, Maryland, brims with style and energy. Owner Katrina Randolph and seven other stylists juggle eight to 10 clients a day, straightening hair, texturizing, dyeing, curling. Odors from chemical relaxers, hair spray, bleaches, and conditioners blend in a pungent swirl you can feel in your lungs and eyes. Blow-dryers whir behind animated conversations, creating an artificial breeze that does little to dilute the chemical smell. Steam wisps up from hair shaped by straightening or curling irons.

Randolph, who founded the salon with her husband 22 years ago, is a member of **Health Advocates In-Reach and Research (HAIR)**, a program that engages barbershops and beauty salons in Prince George's County, Montgomery County, and Baltimore City to educate their clients about everything from blood pressure and cancer screenings to COVID-19 vaccinations. Randolph herself was the lead instructor for the White House COVID-19 mitigation initiative **Shots@TheShop** and hosted vaccination events at Tré

For more...

The study was featured in an article in the BSPH Public Health Magazine:

<https://magazine.jhsph.edu/2022/beautys-byproducts>

YouTube video also available



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Questions?

Article and video: <https://magazine.jhsph.edu/2022/beautys-byproducts>



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