

ENVIRONMENTAL HEALTH AND PEOPLE OF COLOR

UNEQUAL EXPOSURES TO TOXIC CHEMICALS.

Harmful chemicals in our environment

In the past 70 years, the manufacture and use of industrial chemicals has increased more than 15-fold¹. There are approximately 85,000 chemical substances used in commerce². Many of these chemicals are known to be harmful, but most have not been assessed for their long term health impacts³.

Exposure to potentially harmful chemicals is a problem we all share in the United States, across all ethnicities, age groups, and geographic locations⁴. Chemicals linked to harm are now pervasive in the environment: they can be found in our air, water, soil, as well as in the food we eat and the consumer products we use everyday.

However, several studies have shown that people of color (defined as people of Asian/Pacific Islander, Arab/Middle-Eastern, Black/African-American/Caribbean/WestIndies, Native/Indigenous, and Hispanic/Latin descent) are exposed to a variety of indoor pollutants, including lead, allergens, and pesticides at levels greater than in Caucasian populations⁵. In addition, some of the cosmetic products marketed to women of color, such as skin lighteners, dyes and hair relaxers and nail polish, contain some of the most concerning chemicals used in cosmetics, including known hormone disruptors and carcinogens⁶.

In the United States, women of color suffer from a higher incidence of chronic diseases that have been linked to exposure to toxic chemicals⁷.

The factors are complex: Genes, diet, exposure to harmful chemicals through the environment, and more. These and other factors can all add up and contribute to people of color's disproportionate exposure to harmful chemicals. In 2009, the National Academy of Sciences reported that the effects of low-dose exposure to environmental toxins⁸ can be exacerbated by injustice, poverty, neighborhood and housing quality, stress, and nutrition⁹.

It is important to underscore that it is unlikely that any one exposure or type of product- including beauty products- can be blamed for the rise in illness. Beauty products, like other routes of exposure, are just one piece of the overall puzzle.

What are the health risks associated with exposure to harmful chemicals?

Everyday exposures to harmful chemicals—even at very small amounts—during fetal development can have profound and lasting effects on health throughout our lifetime¹⁰.

Lupus (systemic lupus erythematosus) is a complex disease caused by the interaction of genetic susceptibilities and environmental risk factors, and there is a growing body of evidence for the role of industrial chemicals in increasing the onset and severity of disease¹¹. Asian American, Hispanic, Native American and African American women are diagnosed with Lupus at two to three times the rate of Caucasian women¹².

Uterine fibroids (leiomyomas) are benign tumors that are highly responsive to estrogen and progesterone. The incidence and severity of uterine fibroids is 2 to 3 times greater in African-American women compared to their Caucasian peers^{13,14}. Laboratory studies and epidemiological evidence suggest that endocrine-disrupting chemicals can contribute to the growth and severity of fibroids¹⁵.

Early onset of puberty is significantly higher among African-American females compared to all other ethnic groups in the U.S.¹⁶ and there is growing evidence that endocrine-disrupting chemicals and natural hormones sometimes found in personal care products may play an important role in regulating the timing of puberty^{17,18}.

Although the incidence of **breast cancer** in the U.S. is lowest among Asian women compared to all other racial/ethnic groups, U.S.-born Asian women have a 2-fold higher incidence rate of invasive breast cancer compared to foreign-born Asian women, which suggests a major role for environmental factors in breast cancer causation¹⁹.

African American women are more likely to die of breast cancer than all other ethnic groups in the U.S.²⁰ Black women are often diagnosed later, at more advanced stages, and often develop forms of cancer that grow faster and are harder to treat. Early onset of puberty increases a woman's lifetime exposure to estrogen and has been shown to increase the risk of breast cancer²¹. As importantly, studies over the last few decades have shown that African-American women have significantly higher levels of organochlorine compounds such as polychlorinated biphenyl(PCB) and bis(4-chlorophenyl)-1,1 dichlorethene (DDE), known endocrine disruptors that have been linked to increased breast cancer risk²².

What can we do to decrease our toxic load?

Taking steps to avoid potentially harmful exposures will help reduce the risk of illness. These steps can include reducing consumption of processed foods and drinks, minimizing the use of household and personal care products that contain harmful chemicals, washing food well before eating it, and vacuuming and mopping floors to reduce toxic chemicals in house dust and indoor air.

It is also important to evaluate potential occupational exposures to chemicals of concern. Find ways to prevent exposure by using protective gear and good ventilation, and advocate for safer work environments whenever possible.

And—some good news! A recent study has shown that the use of safer personal care products (free of suspected hormone-disrupting chemicals such as phthalates, parabens and triclosan) significantly reduced the concentration of these chemicals in the urine of teenage girl volunteers in just 3 days²³. This shows that changes in beauty routines can reduce the potentially harmful chemicals in our bodies.

1 Board of Governors of the Federal Reserve System. Industrial capacity and capacity utilization. G.17 (419). Washington, DC: Board of Governors of the Federal Reserve System; 2013. Available at: <http://www.federalreserve.gov/releases/g17/current/>.

2 Environmental Protection Agency. www.epa.gov/tsca-inventory/about-tsca-chemical-substance-inventory

3 <http://saferchemicals.org/get-the-facts/what-is-tsca/>

4 Centers for Disease Control and Prevention. Fourth National Report on Human Exposure to Environmental Chemicals. 2009. Available at: <http://www.cdc.gov/exposurereport/pdf/fourthreport.pdf>

5 Adamkiewicz G, Zota AR, Fabian MP, Chahine T, Julien R, Spengler JD, et al. Moving environmental justice indoors: understanding structural influences on residential exposure patterns in low-income communities. *Am J Public Health* 2011;101(suppl 1):S238–45.

6 <http://www.safecosmetics.org/get-the-facts/whats-in-my-products/people/women-of-color/>

7 Centers for Disease Control and Prevention, Office of Minority Health and Health Disparities. 2008. Eliminate Disparities in Lupus (Online Factsheet). Available: <http://www.cdc.gov/omhd/amh/factsheets/lupus.htm>.

8 National Research Council. Science and decisions: advancing risk assessment. Washington, DC: National Academies Press; 2009.

9 Morello-Frosch R, Zuk M, Jerrett M, Shamasunder B, Kyle AD. Understanding the cumulative impacts of inequalities in environmental health: implications for policy. *Health Aff* 2011; 30:879–87.

10 <http://endocrinedisruption.org/prenatal-origins-of-endocrine-disruption/critical-windows-of-development/overview> [last accessed June 24, 2016]

11 Parks CG, De Roos AJ. Pesticides, chemical and industrial exposures in relation to systemic lupus erythematosus. *Lupus* 2014;23(6):527-36.

12 http://www.niams.nih.gov/Health_Info/Lupus/ [last accessed June 24, 2016]

13 Marshall LM, Spiegelman D, Barbieri RL, et al. Variation in the incidence of uterine leiomyoma among premenopausal women by age and race. *Obstet Gynecol.* 1997;90(6):967–973.

- 14** Day Baird D, Dunson DB, Hill MC, et al. High cumulative incidence of uterine leiomyoma in black and white women: ultrasound evidence. *Am J Obstet Gynecol.* 2003;188(1):100–107.
- 15** Bergman A, Heindel JJ, Jobling S, Kidd KA, Zoeller RT, editors. *State of the science of endocrine disrupting chemicals-2012*. Geneva: World Health Organization. 2013. Available at: http://www.who.int/iris/bitstream/10665/78101/1/9789241505031_eng.pdf [last accessed June 24, 2016]
- 16** Chumlea WC, Schubert CM, Roche AF, Kulin HE, Lee PA, Himes JH and Sun SS. Age at menarche and racial comparisons in US girls. *Pediatrics* 2003; 111:110-113.
- 17** Tiwary CM. A survey of use of hormone/placenta-containing hair preparations by parents and/or children attending pediatric clinics. *Mil Med* 1997; 162 (4):252-6.
- 18** Buck Louis GM, Gray LE Jr, Marcus M, Ojeda SR, Pescovitz OH, Witchel SF, Sippell W, Abbott DH, Soto A, Tyl RW, Bourguignon JP, Skakkebaek NE, Swan SH, Golub MS, Wabitsch M, Toppari J, Euling SY. Environmental factors and puberty timing: expert panel research needs. *Pediatrics.* 2008 Feb;121 Suppl 3:S192-207.
- 19** Gomez SL, Quach T, Horn-Ross PL, Pham JT, Cockburn M, Chang ET, Keegan TH, Glaser SL, Clarke CA. Hidden breast cancer disparities in Asian women: disaggregating incidence rates by ethnicity and migrant status. *Am J Public Health* 2010. 100 Supple 1:S12531.
- 20** <http://www.cancer.gov/about-nci/organization/crhd/cancer-health-disparities-fact-sheet#q6> [last accessed June 24, 2016]
- 21** Hsieh CC, Trichopoulos D, Katsouyanni K, Yuasa S: Age at menarche, age at menopause, height and obesity as risk factors for breast cancer: associations and interactions in an international case–control study. *Int J Cancer.* 1990, 46: 796-800.
- 22** Wolff MS, Britton JA, and Wilson VP. Environmental risk factors for breast cancer among African-American women; *Cancer.* 2003 Jan 1;97(1 Suppl):289-310. Review.
- 23** <http://www.ewg.org/enviroblog/2016/03/potentially-toxic-chemicals-plummet-teens-after-switching-safer-cosmetics> [last accessed June 24, 2016]