

Stylists and PPD Sensitization

Stylists and their clients, as much as people who use home hair dye kits, benefit by changing to henna. In 2005, the UK Health and Safety Executive (HSE) identified hairdressers as having the highest incidence of occupational skin disease in the UK, and that statistical hazard has been found repeated in every broad study done on worker's health.¹ Epidemiological studies dating back to the 1980s have found that hair stylists are at risk for a range of chronic occupational-health conditions, including skin and respiratory diseases and adverse reproductive outcomes. There are chemicals in hair glues and straighteners, such as formaldehyde, styrene, and trichloroethylene, which have been linked to cancer, liver damage, and dermatitis.² Many stylists have severe consequences from poorly understood and unlisted coal tar derivatives in the chemicals they handle every day. A stylist who became sensitized to chemicals lamented,

“I was so miserable for over a year! No one could help me get relief. Finally at Cleveland clinic a dermatologist got me cleared up. I had to give up all of my clients. Now my question is where can I find a salon in the Akron area that I can work with henna and such? I miss doing hair so much and feel like everyone needs to know about it.”³

Hairdresser's health problems caused by para-phenylenediamine and other chemicals in oxidative hair dyes have been known for over one hundred years. Medical journal articles were published about the injuries and assays done on sensitizations, and studies done of oxidative hair dye chemicals' links to cancer, non-Hodgkins's lymphoma, asthma, and lupus, toxicities were limited to publications for the medical profession; the mass of ordinary people who purchased and worked with hair dye were unaware of the hazards of exposure to the products.

European and American women began dyeing their hair with henna during the 19th century through cultural interchange and colonial trade with North Africa, Persia, and the Ottoman Empire. Entrepreneurs adapted PPD dyes from the fur and textile industries into hair dye products to compete for market share gained by henna. By 1898, there were already cases of occupational dermatitis PPD among women's hairdressers in France.⁴ PPD gradually replaced henna as the preferred hair dye among European hairdressers because of its relative convenience and accessibility. Health problems from PPD were recognized as significant health risk to both hairdressers and client; PPD-based hair dye was prohibited in Germany in 1906.⁵ In 1907, French chemist Eugene Schueller, founder of l'Oreal, developed a hair color formula based on PPD that he sold to Parisian hairdressers, but by 1910, those dyes were causing dermatitis among hairdressers in Spain.⁶

Under the present EU Cosmetic Directive, PPD is allowed in hair dye products with a concentration limit of 6%, far lower than 'black henna' temporary tattoo concentrations that

¹ Working Group on Action to Control Chemicals, Occupational skin disease in hairdressers and barbers. http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/050505/pl_annex1.pdf. Accessed on October 17, 2009.

² http://www.theatlantic.com/health/archive/2015/11/getting-toxic-chemicals-out-of-black-womens-hair-salons/415902/?utm_source=SFFB

³ Gretchen Gallatin Doerfler, 2015. <https://www.facebook.com/groups/ancient.sunrise/10156192129800375>

⁴ Cathelineau H 1898." Note sur 18 cases d'accidents provoques par teinture pour cheveux a base de chlorhydrate de PPD". *Bulletin de la Société Chimique de France*: 9: 28–35.

⁵ Fregert S. [Chemical demonstration of paraphenylene diamine in hair dyes]. *Hautarzt* 1972; 23: 393–394.

range from 15% to over 80%. Even though many hair care manufacturers apply PPD in lower concentrations, sensitization to PPD is high among hairdressers and patients because of daily exposure.⁷ Between 1980 and 1993, nearly half of hairdressers patch tested in Madrid had allergic reactions to PPD.⁸ There are similar levels of sensitization among hairdressers in every country; those who dye hair darker colors have higher levels than those working with lighter colors.

In addition to the sensitization problems that may force stylists to choose between chronic health problems and their career, stylists may wish to temporarily discontinue using coal tar derivative chemicals for the duration of pregnancy and nursing. There have been studies that propose a link between hair-dye use during pregnancy and the development of childhood malignancies; physicians recommend that concerned pregnant women avoid all chemical hair coloring;⁹ henna is regarded as safe for pregnant and nursing women as long as it is tested free of contaminants and adulterants. Coal tar derivatives in oxidative hair dye are mutagenic in vitro, are carcinogenic to animals,¹⁰ and these chemicals penetrate human skin.¹¹ In 1980, the FDA required a label warning on hair dyes containing 4-methoxy-mphenylenediamine (4-MMPD) stating the following: “contains an ingredient that can penetrate your skin and has been determined to cause cancer in laboratory animals.”¹² If oxidative hair dyes, particularly the higher levels found in darker colors and increased number of exposures pose a significant health risk to stylists, their families and clients, learning the technology of henna hair dye is more than a trendy fashion alternative, it is urgently needed to prevent harm.

This book, “Ancient Sunrise® Henna for Hair” has been researched, written, and published free to reclaim the forgotten technologies of dyeing hair safely, permanently, and beautifully from the centuries prior to the invention of coal tar derivative dyes. The technique of dyeing hair with henna, once learned at the village bath from a family member or friend, can now be learned online in a virtual village conversation.

You can do this. Begin now. Ancient Sunrise® will help.

⁶ Azua J. 1910. “Dermatitis producida por una tintura de pelo (quinona resultante de la accion del agua oxigenada sobre el clorhidrato de parafenileno-diamina” *Actas Dermo-Sifiliográficas* 1910: 2: 220–228.

⁷ Thyssen, J. P., Johansen, J. D., Menne, T., 2007. “Contact allergy epidemics and their controls” *Contact Dermatitis* 2007: 56: 185–195

⁸ Conde-Salazar L, Baz M, Guimaraens D, Cannavo A. “Contact dermatitis in hairdressers: patch test results in 379 hairdressers (1980–1993).” *American Journal of Contact Dermatology* 1995: 6: 19–23.

⁹ Saitta, P. DO; Cook, C. E., DO; Messina, J. L., MD, Brancaccio, R., MD; Wu, B. C., MBS, Grekin, S. K., DO, FAOCD, Holland, J. MD. 2013. “Is There a True Concern Regarding the Use of Hair Dye and Malignancy Development? A Review of the Epidemiological Evidence Relating Personal Hair Dye Use to the Risk of Malignancy.” *Clinical & Aesthetic Dermatology* Volume 6 • Number 1|46 46

¹⁰ Ammenheuser M.M, Warren, M.E. 1979 “Detection of mutagens in the urine of rats following topical application of hair dyes.” *Mutation Research*. 66(3):241–245.

¹¹ Wolfram, L.J., Maibach H.I. 1985. “Percutaneous penetration of hair dyes.” *Archives of Dermatological Research*. 277(3):235–241

¹² Product and ingredient safety: hair dye products. *U.S. Food and Drug Administration*. <http://www.fda.gov/Cosmetics/ProductandIngredientSafety/ProductInformation/ucm143066.htm>.

Appendix I: Cross Sensitizations to Para-Phenylenediamine

Coal tar derivative chemicals in consumer goods should not be used on a person who has had a ‘black henna’ temporary tattoo, or who is suspected to have an allergy to oxidative hair dye. A person sensitized through ‘black henna’ temporary tattoos may also be allergic to dark-colored cosmetics, dyed clothing, rubber products, and perfumes, and medications such as hydrochlorothiazide.¹³ Cross-reactivity between chemicals in the azo group and p-phenylenediamine may occur due to the same central molecular structure of a benzene ring with 1,4 attachment of nitrogen salts.”

People who have had a ‘black henna’ temporary people may have severe reactions to any product that has an ingredient in the content declaration that contains chemicals with the following components.

- phenylamine
- thalene
- phenylenediamine
- toluenediamine
- para-toluene diamine
- aminophenol
- diaminophenol
- Disperse dyes
- Benzocaine
- Substituted para-diamines
- Ortho- or para-aminophenols

‘Black henna’ cross-sensitizations may also cause cross-sensitization reactions to:

- Nitroanilines
- Nitrophenylenediamines
- Nitroaminophenol
- Azo derivatives

‘Black henna’ temporary tattoos may sensitize people to eyelash, eyebrow, and eyeliner cosmetics, even though the PPD concentrations in these cosmetics are low, 0.3% to 1%, and may not be declared on the product label. People sensitized by ‘black henna’ and re-exposed through cosmetics and hair dye may have post-inflammatory hyper- or hypopigmentation, scarring and lifelong sensitization. These extreme reactions affect not only consumers, but threaten the livelihood of hairdressers and aestheticians.¹⁴

¹³ Jacob SE, Zapolanski T, Chayavichitsilp F. 2008 . “Sensitivity to para-phenylenediamine and intolerance to hydrochlorothiazide.” *Dermatitis*. 2008 Nov-Dec;19(6):E44-5.

¹⁴ Kind F, Scherer K, Bircher AJ. 2012, “Contact dermatitis to para-phenylenediamine in hair dye following sensitization to black henna tattoos - an ongoing problem.” *Journal der Deutschen Dermatologischen Gesellschaft* Aug;10(8):572-8. doi: 10.1111/j.1610-0387.2011.07882.x. Epub 2012 Feb 2.

Appendix II: Incidents

As of this writing in 2015, there have already been many hospitalizations and mortalities reported. This is a brief list of accessible newspaper articles on people who have had severe injuries and hospitalizations, including fatalities, from extreme allergic reactions to the paraphenylenediamine in oxidative hair dye. To view more incidents of allergic reactions to oxidative hair dye, Google “Hair Dye Allergic Reaction.”



“My head turned into a football! Shocking pictures show swollen face of woman, 25, after allergic reaction to home colouring kit.”¹⁵

Carmen said she performed a patch test 48-hours before with no problems. ‘The most disgusting thing is my head started to leak pus,’ she said”

Doctors eventually diagnosed an allergic reaction to the Paraphenylenediamine in the dye. Carmen, of Swansea, said: ‘I woke up and my head was so swollen that I couldn’t see. I was blind.

‘I looked in the mirror and half of my face was swollen. It looked like half of my head had been pumped up like a football.

‘I went straight to hospital and by the time I got there my head was swollen everywhere, even my ears were huge. The doctors admitted me immediately.

‘The most disgusting thing is my head started to leak pus. I had to wrap my head in a towel, it was horrible and it smelt like a wet dog.’

¹⁵ <http://www.dailymail.co.uk/health/article-2109186/Carmen-Rowe-hair-dye-Pictures-swollen-face-woman-25-allergic-reaction.html#ixzz3oIom4tqN> accessed October 11, 2015



“Hair dye allergy left woman looking like 'Elephant Woman’” A woman was rushed to hospital after an allergic reaction to a hair dye left her looking like the "Elephant Woman"¹⁶

She said: "I went straight to see my GP but when I got there I looked like an alien with one side of my face was going out like a rugby ball."He took one look at me and sent me straight to A&E. By the time I got there the other side of my face had swelled up too.

"I couldn't see my ears, the swelling must have gone out about three inches on either side. It was terrifying."The incident took place when Paula, a production manager, dyed her hair on June 7 to cover up a few stray grey hairs. She went to work as usual the following day, but that evening her head, face and neck began swelling up like a balloon.

Her eyes closed, her scalp stretched and began to weep, and her throat swelled making it difficult to breathe.

She said: "I did everything it said on the tin and had no reaction to the 48 hour test, so my sister went ahead and dyed my hair for me.

"The next day my face was so bad both eyes were completely swollen shut and you couldn't see my eyelashes. I looked like a sumo wrestler or the elephant woman.

¹⁶ “Hair dye allergy left woman looking like 'Elephant Woman’” A woman was rushed to hospital after an allergic reaction to a hair dye left her looking like the "Elephant Woman" June 17, 2009. The Telegraph, UK. <http://www.telegraph.co.uk/news/health/5558616/Hair-dye-allergy-left-woman-looking-like-Elephant-Woman.html> accessed October 22,2015



Teenager sues L'Oreal after hair dye left her with 'severe burns and ears swollen to 3 times their normal size'¹⁷

A young mother is suing beauty company L'Oreal after she claims a home hair dye left her with peeling skin and ears that had ballooned to three times their normal size. Crystal Atkinson, 19, claims that her L'Oreal hair dye gave her burns that were so severe the pain has prevented her from picking up her baby and even leaving the house. The distraught mother-of-one had the Garnier Nutrisse chestnut brown hair dye applied by a mobile hairdresser - days later she was writhing in agony as a painful rash spread across her body and burns appeared on her face neck and scalp.

Miss Atkinson, of Darwen, Lancashire, said: "I have chemical burns on both sides of my face, between my neck and half my scalp, behind my ears and a rash all over my body." "I haven't been able to go out or hold my baby because my skin is peeling off and there's pus leaking out of my face." "The pain is unbearable and it looks disgusting.

"I went to one hairdresser and she said that in her 40 year experience she's never seen anything like it."

¹⁷ "Teenager sues L'Oreal after hair dye left her with 'severe burns and ears swollen to 3 times their normal' size' Daily Mirror, UK, January 15, 2008. <http://www.dailymail.co.uk/news/article-508307/Teenager-sues-L'Oreal-hair-dye-left-severe-burns-ears-swollen-3-times-normal-size.html#ixzz3oIsAXZmV> accessed October 11, 2015



“Woman Ends Up in Burns Unit After Allergic Reaction to Hair Dye”¹⁸

Zoe Vernon was admitted to the burns unit at the Manchester’s Wythenshawe Hospital, where she was placed on a drip, steroids and spent three days recovering from what doctors called the worst case of hair-dye allergic reaction they had ever witnessed. Now, Miss Vernon is using her own example to tell other women that, whether they do anything about it or not, they should be aware of the heavy chemicals that go into the makeup of such hair products.



“Woman who wanted hair like Cheryl Cole suffers bad allergic reaction to L'Oreal dye”¹⁹

Rachel Bulmer, 27, said her face swelled up like a balloon, her skin burned and half her locks fell out after using the L'Oreal gel, despite doing an allergy test. The swelling was so severe, that her hearing was damaged.

¹⁸ “Woman Ends Up in Burns Unit After Allergic Reaction to Hair Dye” <http://news.softpedia.com/news/Woman-Ends-Up-in-Burns-Unit-After-Allergic-Reaction-to-Hair-Dye-125692.shtml> accessed November 23, 2015

¹⁹ “Woman who wanted hair like Cheryl Cole suffers bad allergic reaction to L'Oreal dye” November 17, 2009 <http://www.mirror.co.uk/news/uk-news/woman-who-wanted-hair-like-431489>, accessed November 23, 2015



“Hair dye blunder put me in intensive care for a week” October 25,2009, Mirror, UK²⁰

After a couple of hours Connie's hair had been dyed a glossy chestnut brown. She says: "My only worry when I left the hairdressers was that my hair was a little too dark."

But later that evening her head began to itch and by the next morning large blisters had appeared on her scalp.

Connie, from Daventry, Northants, went to see her GP, who prescribed antibiotics and anti-inflammatories after confirming she was suffering from an allergic reaction.

The following morning she woke up unable to breathe. "By now my whole head had begun to swell. I had felt so unwell I'd stayed at my mum's," she says. "And when she saw me gasping for breath, she was terrified. I remember looking in the mirror and reeling in shock. My head was so enormous I looked like the Elephant Man."

Connie's mum Carolyn rushed her daughter to hospital.

"As the doctors examined me I began to feel incredibly sleepy," says Connie. "I was lapsing into unconsciousness."

She was so ill she had to be transferred to another hospital. "All I can remember is feeling petrified. I could feel it spreading down my neck - my whole body had begun to swell as well." Connie spent a week in intensive care surrounded by machines.

²⁰ “Hair dye blunder put me in intensive care for a week” October 25,2009, Mirror, UK
<http://www.mirror.co.uk/news/uk-news/hair-dye-blunder-put-me-in-intensive-426905>



Woman's hair dye horror.²¹

Susan Taylor was rushed to A&E when her head, neck and face began to swell and burn within hours of using the Garnier Nutrisse hair colour.

‘Mrs Taylor, a part-time carer, applied the light brown hair dye at 4pm.

As she went to bed at 10pm she felt her face burning up and looked in the mirror to find it was 'bright red'.

She then woke up at around 1am unable to swallow and with a burning sensation so bad her husband Anthony drove her to A&E at Fairfield Hospital where she was put on a drip and given antihistamines.

She was monitored and sent home but was still in pain two days later and went to see her GP who prescribed her steroids. When the symptoms had still not eased a week later she went to an NHS walk-in centre and was prescribed penicillin and referred to a dermatologist.

She said: "I want this to serve as a warning to other women. The instructions told me to test the product against my skin for 48 hours before applying it but I only did it for 24 hours because I've used it before without any problems.

"Garnier have been apologetic and offered to pay for a taxi to the dermatologist and any prescription but I think that's just insulting. It's been a horrendous experience. What if I'd needed to go to work or was dying my hair for my son's wedding?"

²¹ Manchester Evening News, 2009, "Woman's hair dye horror."

<http://www.manchestereveningnews.co.uk/news/greater-manchester-news/womans-hair-dye-horror-916577>

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