

Compound henna: Part 3 Para-phenylenediamine and Henna

August Wilhelm von Hoffmann discovered para-phenylenediamine, oxidative dyes, in 1863. The first patent for its use in hair dye was taken out by Monnet in 1883.¹ In Monnet's patent, he found he could dye hair shades of brown by immersion in a solution of para-phenylenediamine or 2,5-toluenediamine, with hydrogen peroxide or another oxidizing agent. A further series of patents for coal tar derivative hair dyes were granted to H. and E. Erdmann between 1888 and 1897.² The Erdmann patents added p-aminophenol, 2,4-diaminophenol, 2,3,6-triaminophenol, some N-substituted derivatives of p-phenylenediamine and p-aminophenol, and 1,5-dihydroxyand 1,5-diaminonaphthalene to the oxidation bases. During the next thirty years, more than one hundred fifty further compounds were claimed for variants of oxidative dyes in over seventy-five patents; the early patents were held by textile companies, then formulated for fur dyes, and subsequently applied to on-head application to human hair.



Oscar Fingal O'Flahertie Wills Wilde, Irish poet and playwright, (16 October 1854 – 30 November 1900) photograph by Napoleon Sarony, New York in 1882. Wilde dyed his graying hair with henna while living in Paris in the early 1890's, but he seems to have dyed his hair with para-phenylenediamine when in prison, the dye probably causing the severe skin reactions observed during that time, 1895 – 7.

Hair dye entrepreneurs tried various chemicals including the newly developed coal tar based para-phenylenediamine dyes. When applied to pelts, para-phenylenediamine was an effective

¹ Corbett, J. F., (1971) "II. Oxidative Hair Dyes," *The Chemistry of Synthetic Dyes, Volume 5*, edited by K Venkataraman, National Chemical Laboratory, Academic Press New York and London. p. 479

² H. Erdmann and E Erdmann, DRP47,349;51,073; 80,814; 92,006; 98,431.

dye, but living skin often reacted with severe contact dermatitis and delayed hypersensitivity reactions. Fur dyers became ill,³ and legislation was introduced to protect workers. At about this time, Oscar Wilde⁴ suffered from a painful and itchy rash with red blotches, hypothesized to have been caused by his use of para-phenylenediamine hair dye to cover his graying hair.⁵

Eugène Schueller,⁶ the founder of *Société Française de Teintures Inoffensives pour Cheveux*, the French Safe Hair Dye Company later known as L'Oréal, was recognized for creating the first commercially marketed synthetic dye for hair in 1907.⁷ He was also an innovator of mass marketing. He spent twenty years developing and marketing his new products, advertising, and subsidizing coiffeurs who would use his products in their salons. By 1920, coiffeur Raul Patois wrote that the sales of cheap hair dye had quintupled from the period before WWI, stating that, “*Teinture* is not the most agreeable work in the profession, but it is without comparison the most lucrative.”⁸ By 1915, the dangerousness of para-phenylenediamine was well understood by the scientific and medical community, as noted in “Cosmetics as Drugs: A Review of Some of the Reported Harmful Effects of the Ordinary Constituents of Widely Used Cosmetics” in *Public Health Reports*,⁹ if ignored by those profiting from the new industry.

“Of the potent drugs of a possibly harmful nature that are used in so-called "hair restoratives" it will suffice to mention: Lead acetate, silver nitrate, paraphenylene diamine and resorcin.¹⁰

“The latter preparations serve very well to show the gullibility of that portion of the public that is desirous of improving its facial appearance. ... Paraphenylene diamine is an aniline derivative, which by oxidation becomes black or brown. The poisonous qualities of this chemical are well known. A number of cases of poisoning from the use of the compound as a hair stain and even from wearing hose dyed with this chemical have been reported.

³ “Symptoms such as persistent headache, nausea, vomiting, anemia, loss of weight, loss of appetite, and “fur dye asthma” were noted. Innumerable cases were brought to the attention of physicians, until measures had to be taken to protect the people.” From Levin, O., (1928) “Shall I Dye My Hair? The Question that Woman Soon or Late, Answered by a Distinguished Physician, Oscar Levin, MD” (February 1928). *Good Housekeeping*: Volume 86, Number 2. Curated by Albert R. Mann Library. page 158

⁴ For more information about Oscar Wilde, henna, and hair dye, read Oscar Wilde’s *Hair and Skin: Investigations into His PPD Sensitization and Use of Henna* by Rebecca Chou, <https://www.ancientsunrise.blog/oscar-wilde/>

⁵ Nater, J. P., 1992 “Oscar Wilde's skin disease: allergic contact dermatitis?” *Contact Dermatitis*, Vol. 27, 1, 47 – 49, Blackwell Publishing Ltd

⁶ Gladwell, M. (March 28, 2011). "The Color of Money" *the New Yorker Magazine* “During the early twentieth century, Schueller provided financial support and held meetings for La Cagoule at L'Oréal headquarters. La Cagoule was a violent French fascist-leaning, antisemitic and anti-communist group whose leader formed a political party *Mouvement Social Révolutionnaire* (MSR, Social Revolutionary Movement) which in Occupied France supported the Vichy collaboration with the conquerors from Nazi Germany.”

⁷ Pointer, Sally (May 1, 2005). *The Artifice of Beauty: A History and Practical Guide to Perfume and Cosmetics*. The History Press.

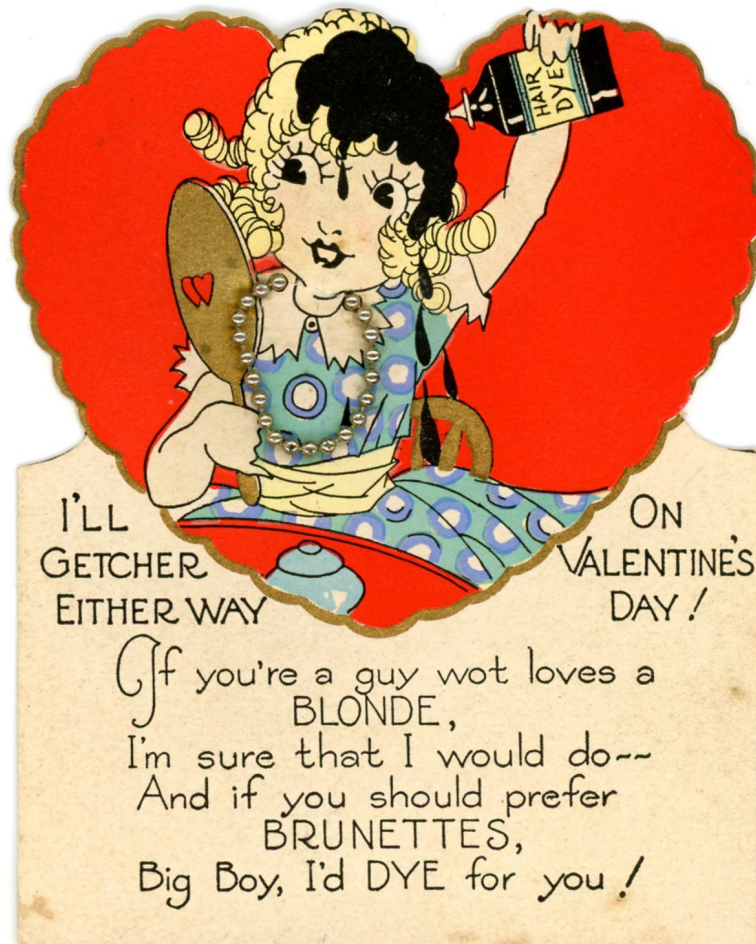
⁸ *La Coiffure de Paris*, January 1920

⁹ Wilbert, M. I. (1915) “Cosmetics as Drugs: A Review of Some of the Reported Harmful Effects of the Ordinary Constituents of Widely Used Cosmetics” *Public Health Reports* (1896-1970), Vol. 30, No. 42 (Oct. 15, 1915), pp. 3059-3066. Sage Publications, Inc.

¹⁰ *Ibid*, p. 3062

“Resorcin is one of the frequently occurring constituents of hair tonics. In common with other coal-tar derivatives, it is highly toxic, because of the production of methemoglobin. Some persons are particularly susceptible to its influence and many cases of collapse and even death from the external use of resorcin are on record.

“In conclusion it may be worthwhile to quote from some of the published analyses of cosmetics to demonstrate the dangerous character of many of these preparations and the fraudulent nature of others.¹¹



American Valentine card,¹² 1920's implies that a woman would readily dye her hair to secure the romantic attentions of a male partner.

¹¹ Ibid, p. 3064-5

¹² Author's private collection, Catherine Cartwright-Jones PhD

Hair dye and the Culture of Youth, Modernity, and Convenience following WWI

BANISH GREY HAIR
Wm. J. Brandt
Liquid

EAU DE HENNA

Hair Color Restorer



covers the grey, and restores the color to grey, faded, bleached, or streaky hair, leaving it Soft, Glossy and Natural.

Works so well no one will know the color has been restored. Covers ALL the grey; covers ANY grey, no matter how stubborn or how caused.

Does not interfere with permanent waving.

Eau de Henna is two liquids, one application. It colors at once. No mess. No pack. Does not shade off reddish as with many powdered Hennas.

Anyone Can Put It On

No experience necessary. Will not rub off. Not affected by sea bathing, sun, shampooing, or permanent waving. Will withstand tropical climates.

Wonderful For Touching Up

You can put it on just where it is needed. Can be used where powdered henna dyes have been used. The shades blend in beautifully. Can be used over other hair dyes or restorers. Directions in English and Spanish.

Eau de Henna comes in colors: Black, dark brown, medium brown, light brown, drab, blond, auburn. Price postpaid \$2.50 or C. O. D. \$2.72.

Order through your Druggist, Department Store or Beauty Parlor, or direct from us.

HAIR SPECIALTY CO.
Dept. 121, 112 East 23rd St., New York
Men as well as women can use Eau de Henna to advantage.

Eau de Henna was widely in newspapers in 1923 and 1924¹³. The available colors advertised were black, dark brown, medium brown, light brown, drab, blond, and auburn. This ad reappeared with a different image, but similar copy in *Ebony* magazine, November 1963.

“Eau de henna” had no listed ingredients; it was available in several colors. The claim that it did not interfere with permanent waving eliminates the possibility that it might have been a progressive metallic salt dye or compound henna. The text also implied that it was more convenient than real henna (referencing a “pack” and a “powder”). The name was certainly misleading; it cannot have been henna, because it was two bottles of clear liquid. The fact that

¹³ *Waco News-Tribune*, Waco, Texas, October 24, 1924, page 8. *Brooklyn Daily Eagle*, New York, March 25, 1923, *Wilkes-Barre Record*, Wilkes-Barre Pennsylvania, April 21, 1923

the contents were two clear liquids indicates that it was almost certainly para-phenylenediamine (or an equivalent oxidative dye) and peroxide, though there is no ingredient declaration, nor are there any warnings. The advertising text of Eau de Henna emphasizes its convenience and effectiveness, as well as differentiating it from actual henna:

“Banish Grey Hair Wm. J Brandt Liquid
Eau de Henna Hair Color Restorer

“covers the gray, and restores the color to grey, faded, bleached, or streaky hair, leaving it Soft, Glossy, and Natural.

“Works so well no one will know the color has been restored. Covers ALL the grey; covers ANY grey, no matter how stubborn or how caused.

“Does not interfere with permanent waving.¹⁴

“Eau de Henna is two liquids, one application. It colors at once.¹⁵ No mess. No pack. Does not shade off reddish as with many powdered Hennas.

“Anyone Can Put It On.

“No experience necessary. Will not rub off. Not affected by sea bathing, sun, shampooing, or permanent waving. Will withstand tropical climates.

“Wonderful For Touching Up

“You can put it on just where it is needed. Can be used where powdered henna dyes have been used. The shades blend in beautifully. Can be used over other hair dyes or restorers. Directions in English and Spanish.

“Eau de Henna comes in colors: Black, dark brown, medium brown, light brown, drab, blond. Auburn. Price postpaid \$2.50 or C. O. D. \$2.72.

“Order through your Druggist, Department Store, or Beauty Parlor, or direct from us.

“Hair Specialty Co.
Dep 121, 112 East 23rd St., new York.
Men as well as women can use
Eau de Henna to advantage”

¹⁴ This descriptor eliminates the possibility of a progressive dye or compound henna.

¹⁵ This descriptor eliminates any possibility that the product is henna, *lawsonia inermis*. The descriptor is most consistent with a para-phenylenediamine hair dye.

Marketing Para-Phenylenediamine Hair Dyes to Women in the Years Following WWI

David Hume¹⁶ wrote in “Enquiry Concerning the Principles of Morals,” Sec. 9, Pt. 2, in 1751, “Political writers have established it as a maxim, that, in contriving any system of government, and fixing the several checks and controls of the constitution, every man ought to be supposed a knave, and to have no other end, in all his actions, than private interest. By this interest we must govern him, and, by means of it, make him, notwithstanding his insatiable avarice and ambition, co-operate to public good.” The companies which marketed hair dye containing para-phenylenediamine who knew their product could cause severe injuries were, as Hume would characterize, “sensible knaves.” These hair dyes were highly profitable, and their advertising copy was persuasive.

NOTOX NOTOX NOTOX NOTOX NOTOX NOTOX NOTOX NOTOX

WHERE NOTOX IS MADE
Glimpses of the Home of the World's Largest Makers of Hair Coloring

The exceptionally high standards which constitute the basis of leadership in any line of endeavor necessarily exist in the making of the one outstanding and scientific preparation for the hair. On these pages are shown a few of the tangible evidences of the thoroughness and efficiency that make NOTOX the supreme product.—The NOTOX building, the organic laboratory, the modern, scientifically conducted factory and the palatial salons.

The Notox Salons for demonstration and experimental work

The Notox Building at 33-35 West 46th Street New York, U. S. A.

The Notox Laboratory One of the most completely equipped in the world

One Step in Making Notox The most scrupulous cleanliness is rigidly maintained

NOTOX NOTOX NOTOX NOTOX NOTOX NOTOX NOTOX NOTOX

NOTOX promotional and instructional booklet, 1924, “WHERE NOTOX IS MADE”¹⁷

“Glimpses of the Home of the World’s Largest Makers of Hair Coloring

The exceptionally high standards which constitute the basis of leadership in any line of endeavor necessarily exist in the making of the one outstanding and scientific preparation for the hair. On these pages are shown a few of the tangible evidences of the thoroughness and efficiency that make NOTOX the supreme product – The NOTOX building, the organic laboratory, the modern, scientifically conducted factory and the palatial salons.”

Inecto hair dye products were heavily marketed in women’s magazines through the 1920’s; in response to injury lawsuits, Inecto protested that they were the largest seller of hair dye, spending over \$300,000¹⁸ per year on advertising.¹⁹ Inecto sought to differentiate their product

¹⁶ David Hume, born 7 (May 7, 1711 – 25 August 1776) was a Scottish empirical philosopher, historian, economist, and essayist. He developed a system of empiricism, skepticism, and naturalism, placing him with other British empirical philosophers, John Locke, Francis Bacon and Thomas Hobbes.

¹⁷ Author’s private collection, Catherine Cartwright-Jones PhD

¹⁸ \$5,065,561.64 in 2018 US\$

¹⁹ ANNUAL REPORT OF THE FEDERAL TRADE COMMISSION FOR FISCAL YEAR ENDED JUNE 30, 1932 UNFAIR COMPETITION IN THE SALE OF HAIR DYE

from henna, compound henna, and progressive dyes. Their branding of NOTOX was an attempt to assure customers that their dye was scientific, safe, natural, and harmless. They appealed to issues of privacy and convenience, to assure women that their “secret” of having gray hair would not be revealed. The dye contents were undeclared and kept a corporate secret.

The text of Inecto’s advertisements appealed to women’s uneasiness about finding and keeping the affections of a mate in the post-war environment where hundreds and thousands of young men lost in WWI: there had been 116,516 American deaths and approximately 320,000 sick and wounded in the war, and greater casualties in Great Britain, causing a gender imbalance in the population. Would a woman remain single if their hair showed signs of aging? Would another woman steal the affections of a man? Inecto placed ads in movie magazines such as Photoplay, where women compared their ordinary lives to dramatic romantic relationships and tropes in motion pictures. If the women felt satisfying companionship lacking, Inecto suggested that loneliness could be remedied through hair dye.

PHOTOPLAY MAGAZINE—ADVERTISING SECTION 65



“Then come to mourn
the vanished hair.”
— Pope.

Beauty through Harmony

THE famous French physician-scientist, Dr. Emile of the Paris Faculty and Pasteur Institute, discovered the scientific coloring process

INECTO RAPID

Used for the last six years in 97% of the European Beauty Salons by Royalty and leaders of society and now adopted in the very best American Beauty Parlors from coast to coast.

In New York it is used exclusively in the Ritz-Carlton Hotel, Waldorf-Astoria, Biltmore, Plaza, Commodore, Pennsylvania and many others.

INECTO RAPID not only accomplishes beauty through harmonizing the hair with your individual characteristics but possesses superior features over anything hitherto known.

Permanently colors white, gray or faded hair regardless of cause in thirty minutes. Does not stain linens, brushes or hat linings. Is easy to use, has pleasant odor and is guaranteed harmless to hair or growth. Is not affected by shampooing, salt water, sunlight, rain, perspiration, permanent wave, Turkish or Russian Baths. Cannot be detected from nature's own coloring—not even under a microscope. Is packed in a new and very attractive manner which eliminates waste.

INECTO RAPID must not be confused with obsolete restorers, darkeners and ordinary gray hair lotions. It is a new, scientific process of impregnating the hair-shaft so that repigmentation takes place after nature's own method. You can safely apply INECTO RAPID in the privacy of your own home if you so desire.

Send for full information and Harmony Analysis Chart—no cost or obligation.

INECTO, Inc. Laboratories: 818 Sixth Ave., New York
LONDON PARIS BRUSSELS MADRID MILAN

When you write to advertisers please mention PHOTOPLAY MAGAZINE.

*Gray Hair
banished
in
30minutes*

Inecto Rapid advertisement, 1921, Photoplay Magazine²⁰

The 1921 Photoplay Inecto Rapid advertisement played to women’s insecurities through imagery of wealth, fashion, science, and the promise of eternally youthful beauty through hair dye. The promotional, largely unverifiable text was as follows:

²⁰ Author’s private collection, Catherine Cartwright-Jones, PhD

“INECTO RAPID

“Then cease to mourn thy ravished hair” Pope²¹

Beauty through Harmony

“The famous French physician-scientist, Dr. Emile of the Paris Faculty and Pasteur Institute, discovered the scientific coloring process

INECTO RAPID

Gray Hair Banished in 30 Minutes

“Used for the last six years in 97% of the European Beauty Salons by Royalty and leaders of society and now adopted in the very best American Beauty Parlors from coast to coast.

“In New York, it is used exclusively in the Ritz-Carlton Hotel, Waldorf-Astoria, Biltmore, Plaza, Commodore, Pennsylvania and many others.

“INECTO RAPID not only accomplishes beauty through harmonizing the hair with your individual characteristics but possesses superior features over anything hitherto known.

“Permanently colors white, gray, or faded hair regardless of cause in thirty minutes. Does not stain linens, brushes or hat linings. Is easy to use, has pleasant odor is guaranteed harmless to hair growth. Is not affected by shampooing, salt water, sunlight, rain, perspiration, permanent wave, Turkish or Russian Baths. Cannot be detected from nature’s own coloring – not even under a microscope. Is packed in a new and very attractive manner which eliminates waste.

“INECTO RAPID must not be confused with obsolete restorers, darkeners and ordinary gray hair lotions. It is a new, scientific process of impregnating the hair shaft so that repigmentation takes place after nature’s own method.

“You can safely apply INECTO RAPID in the privacy of your own home if you so desire.

“Send for full information and Harmony Analysis Chart – no cost or obligation

INECTO Inc. Laboratories 818 Sixth Ave., New York

London Paris Brussels Madrid Milan

When you write to advertisers please mention Photoplay Magazine”²²

Inecto was persuasive, appealing to working class women who dreamed of a glamor and wealth, and who were easily persuaded by misleading advertising. Inecto mentioned popular symbols of wealth and style, “In New York, it is used exclusively in the Ritz-Carlton Hotel, Waldorf-Astoria, Biltmore, Plaza, Commodore, Pennsylvania and many others,” and “Is not affected by permanent wave, Turkish or Russian Baths.”

²¹ Pope, A. (1712) “The Rape of the Lock:” Canto 5

²² *Photoplay Magazine* was a magazine directed at movie fans from 1911 through the 1970’s.
<https://en.wikipedia.org/wiki/Photoplay>

Turkish and Russian Baths were luxurious, fashionable public facilities during the early 20th century, similar to a day spa during a period when private apartments and houses often had minimal plumbing. There was even a Turkish Bath for the upper class passengers on the Titanic. To state that a woman would be concerned about her hair dye running in a Turkish bath was to imply that she was wealthy enough to pay admission to a Turkish bath.



Left: Turkish Bath, London, built 1895.²³
Right: Turkish Bath on the Titanic, 1912.²⁴

Roher's cosmetology text in 1924 warns that any stylist ask for a guarantee that hair dye not contain para-phenylenediamine, as the Department of Health of the city of New York had issued a warning against the use of this chemical following numerous injuries.²⁵ Unfortunately, Inecto never declared para-phenylenediamine in their ingredients, even refusing to do so in the lawsuits brought by people who were injured by Inecto. The health department found that para-phenylenediamine was extensively used in hair dye, and that it produced reactions appearing similar to smallpox eruptions. The health department also warned against lead, arsenic, bismuth, and other dangerous additives to hair dye.

Following this, New York City passed an amendment to the Code of Ordinances (in 128, Article 8, Chapter 20, Sanitary Code in 1926 to prohibit the use of noxious chemicals in hair dyes and cosmetics. This law had little effect. Women wanted to color their hair, to emulate movie stars and to hide graying hair. Producers of hair dye wanted their money.

In February, 1928, Oscar Levin, MD, wrote a banner article for Good Housekeeping magazine, titled "Shall I Dye my Hair?"²⁶ This article followed a number of toxic poisonings in New York

²³ Image by Lawford, H. (2009)

²⁴ Postcard in author's private collection: Catherine Cartwright-Jones, PhD, The Turkish Baths were an exclusive First Class Accommodation of the Titanic. They were located on F Deck between the Swimming Bath and the Third Class Dining Room. The baths were designed in a Moorish style with heating blankets and service waiters.

²⁵ (1924) *Roher's Illustrated Book on Scientific Modern Beauty Culture, of Hair-dyeing, Care of the Hair and Scalp, Facial Massage, Beautifying, Electrolysis and Manicuring, Etc.*, Prof. Rohrer's Institute of Beauty Culture, New York City, N. Y., p. 10

²⁶ "Shall I Dye My Hair? The Question that Woman Soon or Late, Answered by a Distinguished Physician, Oscar Levin, MD" (February 1928). *Good Housekeeping*: Volume 86, Number 2. Curated by Albert R. Mann Library.

City caused by hairdressers applying para-phenylenediamine dyes. Dr. Levin stated unequivocally that the only safe and effective dye for hair was henna. In his article for Good Housekeeping, Levin detailed cases of poisoning from the metallic salts in progressive and compound dyes, and went on to discuss the more serious problem of para-phenylenediamine dyes.

“Unfortunately, the second great class of dyes does not offer a safe and effective substitute for metallic dyes, either. These are the modern dyes, undreamed of through the centuries, when not a few of the metal dyes were used. These dyes are organic, synthetically prepared. They are obtained from aniline, a coal tar product, and a material widely used in the manufacture of dyes for general use. From the aniline is obtained the para-phenylenediamine, which is used as the base of all these synthetic dyes, of the brown-to-black shades, different from the metal preparations. The immediate results were so remarkable that the discovery was hailed as a glorious thing. For instead of merely coating the hair, which, of course, always made the dye more or less apparent, with the “varnished look” that is so unattractive, this new dye actually was absorbed by the hair shaft itself.²⁷

“Now then, the enthusiasm with which the discovery of this class of dyes was greeted is understandable. Actually, here was a product that penetrated the outer horny layer of the hair cells. The result looked natural. Moreover, the color was fairly permanent – what the chemists call a “fast” dye.

“The method of applying the dye is much the same as the metallic group. The para-phenylenediamine combines with oxygen, either from the air or from chemicals which yield oxygen easily, such as hydrogen peroxide or potassium chlorate. The chemical process of oxidation follows, and the brown or black color results, once again depending on the strength of the compound.

“However, the “great discovery” soon showed itself as a great source of danger. The first warnings about it came from the fur industry, where synthetic dyes were universally adopted. Here people were subjected to contact with the para-phenylenediamine over long periods. In a comparatively short time, workers in the industry came down with symptoms of poisoning resulting from these dyes. Symptoms such as persistent headache, nausea, vomiting, anemia, loss of weight, loss of appetite, and “fur dye asthma” were noted. Innumerable cases were brought to the attention of physicians, until measures had to be taken to protect the people. Cases are being constantly observed today in those who wear the cheaper dyed furs from which the excess dyes are not completely washed away.”

²⁷ Ibid, p.158 This probably refers to metallic progressive dyes which darkened the surface of hair when exposed to the air.

“Government Control is Difficult

“The German Government was among the first to pass a law necessitating the labeling of these dyes as poisonous, and all preparations containing them had to have their contents listed on the label, marked poisonous. Today, almost all European countries forbid their use, and now, with the adoption of the amendment to the Sanitary Code, New York City has taken the inevitable step against the use of these poisonous substances, specifically naming para-phenylenediamine.

“The difficulty here is two-fold. First, laws can be evaded, and no mention of the poisonous ingredient made on the label. Second, laws can be complied with, in the serene confidence that nine of ten buying such a hair dye and even reading the tiny lettering on the label, telling the presence of para-phenylenediamine, will not have the faintest idea of what the thing with the long name is, or that it is at all harmful.

“The symptoms of poisoning from the synthetic dyes are very much the same as those from the metallic ones. Likewise, some people show the toxic results quickly, while others do not for a long time. When the eruption finally does appear, there is the same itching, the same burning, swelling, and eczema, which may be recurrent.²⁸ This means that sometimes a person seems to be cured completely, the practice of dyeing the hair is abandoned, and yet at periodic intervals there is an exacerbation of the old eruption.²⁹

“Poisoning from para-phenylenediamine may be very severe as in the case of Mrs. X., who complained of an itching eruption which has been present for one week and covered the entire body. She had been referred to me by her oculist, who had been treating her eyes for an inflammation which had been present for one month. The patient stated that for one and a half years, in order to conceal some of her gray hairs, which had appeared at an early age, she had been using one of the famous preparations on the market. Applications were made once a month, regularly, the last having been made just prior to the onset of the inflammation of the eyes. The eruption of the skin appeared about three weeks later.

“Examination revealed a generalized eruption of the body, involving mainly the trunk, upper extremities, scalp and face. The eyes were red and inflamed; the forehead, swollen, puffy, and oozing. The scalp, ears, and back of neck considerably swollen, showed numberless small and large red blisters, many of which had ruptured and crusted. Scattered over the upper extremities and trunk were large patches of eczema. All over the body were similar groups of blisters. The blood pressure was slightly abnormal, and the patient complained of frequent urination, abdominal pains, and loss of weight.

²⁸ “Shall I Dye My Hair? The Question that Woman Soon or Late, Answered by a Distinguished Physician, Oscar Levin, MD” (February 1928). *Good Housekeeping*: Volume 86, Number 2. Curated by Albert R. Mann Library. p. 158

²⁹ Author’s note: if a person has a para-phenylenediamine sensitization, wearing clothing, leather, or using other products dyed with para-phenylenediamine or a related chemical can cause a recurrence of the allergic reaction. Though noted these recurrences were in medical reports, the connection with other uses of para-phenylenediamine was probably not understood at the time.

“She immediately was cautioned against ever using the preparation again. A very bland diet, eliminating spices, salt, pepper, and rich foods, was prescribed. In addition she had to take large quantities of water internally to cleanse the system more rapidly of the poison. On occasions the itching was so intense that the patient was unable to sleep without the use of hypnotics. One week after treatment was commenced; she began to show boils over the body. This was due to the fact that the resistance of the skin, lowered by the severe inflammation, provided a fertile field for infection by the ordinary bacteria and germs usually found in the air and on the skin.

“This patient went through a long siege of eczema and boils, which finally cleared up, after much treatment both at home and in the office. But, it left her run-down, anemic, underweight, and she was obliged to go to the country for a long rest.

This representative case of “para” poisoning shows what may happen from this use of this heralded “new discovery.” It shows that in this second class of hair dyes is involved a real danger, varying only with the susceptibility of the individual.”³⁰

The remarkable thing about Oscar Levin’s hair dye warnings is that the injuriousness of para-phenylenediamine was well understood in the 1920’s, both from industrial use, and through injuries from cosmetic use, but L’Oreal, Inecto, and other cosmetic companies had little reluctance to sell products containing coal tar dyes.³¹ DuPont, the patent holder, “does not recommend and will not knowingly offer or sell p-phenylenediamine (PPD) for uses involving prolonged skin contact. ... use of PPD in prolonged skin contact application has the potential to induce allergic skin reactions in sensitive individuals. Persons proposing to use PPD in any formulation involving any more than incidental skin contact must rely on their own medical and legal judgment without any representation on our part. They must accept full responsibility for the safety and effectiveness of their formulations.”³² That is to say, that if injuries arise from any person or company adding para-phenylenediamine to their product, the patent holder, DuPont, will accept no responsibility for the injury.

The contact allergic reactions from p-phenylenediamine (PPD) in hair dyes vary from mild contact dermatitis to severe life- threatening events (angioedema, bronchospasm, asthma, renal impairment).³³

Inecto Rapid Notox: Para-phenylenediamine Hair Dye

³⁰ “Shall I Dye My Hair? The Question that Woman Soon or Late, Answered by a Distinguished Physician, Oscar Levin, MD” (February 1928). *Good Housekeeping*: Volume 86, Number 2. Curated by Albert R. Mann Library. P. 161

³¹ Pratchett, T., (2010) “What was it that Granny Weatherwax had said once? ‘Evil starts when you begin to treat people as things.’” *I Shall Wear Midnight* Discworld Novel 38. Doubleday

³² Du Pont p-Phenylenediamine Product description
http://www2.dupont.com/Products/en_RU/P_phenylenediamine_en.html

³³ Gupta, M., Mahajan, V., Mehta, K., and Chauhan, P. (2015) Hair dye dermatitis and p-phenylenediamine contact sensitivity: A preliminary report” *Indian Dermatology Online J.* 2015 Jul-Aug; 6(4): 241–246.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4513401/> accessed March 29, 2018

Inecto, Inc. was established in 1919 by Neal R. Andrews to bring the hair dye Inecto Rapid to the United States from the UK and Europe. By 1924, Inecto Rapid Notox was widely advertised and promoted in hair salons as a harmless and convenient hair dye.



**INECTO
RAPID
NOTOX**

Gray Hair Banished in 15 minutes

Hundreds of thousands of American women are regaining the youthful glory of their hair by using INECTO RAPID NOTOX. And the success of these is guiding thousands more to use this, the one tint that is perfectly natural and perfectly safe. INECTO RAPID NOTOX is a strictly scientific hair tint. It conforms with the most exacting laboratory standards. It is specifically guaranteed to impart to gray, streaked or faded hair all its former harmonious beauty of lustre, of silken texture and shade. Its use cannot be detected. It is guaranteed permanent; its coloring will withstand any condition or treatment that Nature's will—brushing, rubbing, shampooing, sunshine, salt water, perspiration, Turkish and Russian baths, permanent waving, marceling and curling.

The majority of high class hairdressers, from coast to coast use and recommend it. It is safe, it cannot injure texture or growth. It contains no Paraphenylene Diamine. The ease of application enables anyone to apply it with invariable success, in the privacy of the home. You can obtain INECTO RAPID NOTOX at your Beauty Shop or Hairdresser's or at the best Drug and Department Stores.

If you are concerned about your hair, Jeanne Ruere, expert of the greatest hair coloring manufacturers in the world, is ready to give you confidential advice on your particular problem. SEND NO MONEY. Merely drop a card to Inecto, Inc., asking for Beauty Analysis Chart, M 23—which will enable you to select unerringly the shade precisely suited to you.

INECTO, Inc., Laboratories and Salons, 33-35 West 46th Street, New York
HAROLD F. RITCHIE & CO., Inc., 171 Madison Avenue, New York

Inecto Rapid Notox hair dye advertisement, USA, 1925, Picture Play Magazine³⁴

Advertising text from Inecto Rapid Notox from “Picture Play” magazine, 1925:

“Gray Hair Banished in 15 Minutes

“Hundreds of thousands of American women are regaining the youthful glory of their hair by using INECTO RAPID NOTOX.

“And the success of these is guiding thousands more to use this, the one tint that is perfectly natural and perfectly safe.”³⁵

³⁴ Author’s private collection, Catherine Cartwright-Jones PhD

³⁵ Inecto Rapid Notox was not safe: it contained undeclared para-phenylenediamine and other coal tar dyes, and was sued many times for injuries to clients.

“INECTO RAPID NOTOX is a strictly scientific hair tint. It conforms with the most exacting laboratory standards.

“It is specifically guaranteed to impart to gray, streaked or faded hair and all its former harmonious beauty of lustre, of silken texture and shade. Its use cannot be detected. It is guaranteed permanent; its coloring will withstand any condition or treatment that Nature’s will – brushing, rubbing, shampooing, sunshine, salt water, perspiration, Turkish and Russian baths, permanent waving, marceling and curling.

“The majority of high class hairdressers, from coast to coast use and recommend it. It is safe, it cannot injure texture or growth. It contains no Paraphenylene Diamine.³⁶ The ease of application enables anyone to apply it with invariable success, in the privacy of the home.

“You can obtain INECTO RAPID NOTOX at your Beauty Shop or Hairdresser’s or at the best Drug and Department Stores.

“If you are concerned about your hair, Jeanne Ruere, expert of the greatest hair coloring manufacturers in the world, is ready to give you confidential advice on your particular problem.

“SEND NO MONEY. Merely drop a card to Inecto, Inc., asking for Beauty Analysis Chart M 23 – which will enable you to select unerringly the shade precisely suited to you.

INECTO, Inc., Laboratories and Salons, 33 – 35 West 46th Street, New York
HAROLD F. RITCHIE & CO.³⁷ Inc. 171 Madison Avenue, New York

In Britain, Inecto placed similar advertising in women’s magazines, with some cultural adjustment to the audience. The UK had suffered tremendous troupe losses in WWI,³⁸ which put British women in intense competition with each other to find a husband. The advertisement again

³⁶ This is false and misleading statement. Inecto Rapid Notox contained para-phenylenediamine.

³⁷ Harold F. Ritchie died in 1933, claiming the title “World’s Greatest Salesman.”

“Last week Death came to a squeaky-voiced Canadian named Harold F. Ritchie as he lay on a Toronto operating table. His name is not found on many rosters of the business great, yet he had good claim to the proud title of "World's Greatest Salesman." His Harold F. Ritchie & Co., Ltd. is a globe-embracing network of sales agencies through which such commodities as Rubberset brushes, Tanglefoot fly paper, Glover's Mange Cure and Fralinger's Salt Water Taffy have been broadcast over six continents.” Time Magazine, Monday, March 6, 1933

“Harold F. Ritchie & Co Ltd were manufacturing agents. So while they didn’t actually manufacture anything, they sold practically everything under the sun. This was a fairly new concept at the time as salesmen generally traveled around pushing just one product.” ... Before long he had earned the nickname “Carload” Ritchie and was described as a “doctor of salesmanship.” Taylor, K., July 30, 2015., 14 McCaul St. and Harold “Carload Ritchie” *One Gal’s Toronto*
<https://onegalstoronto.wordpress.com/2015/07/30/14-mccaul-st-and-harold-carload-ritchie/>

³⁸ Of 8,904 forces mobilized from the British Empire for WWI, 908,371 were killed, 2,090,212 were wounded, 191,652 were prisoners or missing, with a total of 3,190,235 casualties, or 35% of all troops. Source: Encyclopedia Britannica.

implied that if a woman had begun to gray, she could dye her hair in secret to appear more youthful, thus be more competitive with other women in securing a mate.



Inecto Rapid advertisement from 1925, “Her Secret” from “The Sketch,” a woman’s magazine based in London.

The text of the advertisement from “The Sketch”:

“Her Secret is her own, for hair that is re-coloured with INECTO never betrays that fact. The colour restored is positively permanent and unchanging under all conditions. The fiercest sun will never bleach it; the longest sequence of Turkish or Vapour baths can never cause it to “run.”³⁹

³⁹ This is a reference to henna. Superficial lawsone, not completely bound into keratin, may rinse out for the first few shampoos or from steam or perspiration.

“For this and other equally important reasons, INECTO is the only means of hair recolouration the woman of refinement can adopt without misgiving. It is quite impossible for hair recoloured with INECTO to take on that dead-looking, hard, metallic appearance inseparable from the use of evil-smelling hair “paints” and so-called progressive dyes.⁴⁰

“With INECTO there is no odour⁴¹ and no waiting period for the color to “develop.”⁴² One brief sitting of thirty minutes or less is enough to effect the transformation from greyness and age to glorious colour and a fascinating appearance of youthfulness. The recapturing of a youthful appearance is aided by the fact that INECTO greatly improves the natural softness, sheen and elasticity of the hair, making it far easier to dress becomingly.

Ask your hairdresser why, in company with 90 per cent of leading Salons, he uses and recommends INECTO. Alternatively, write for a little booklet (gratis and post-free, of course) telling how INECTO can be self-applied in the privacy of your own home. Provided the simple directions are followed, a wholly satisfactory result is assured.

INECTO RAPID
ADVICE BUREAU,
15, NORTH AUDLEY STREET,
(Near Selfridges), LONDON, W.I.
Telephones: Mayfair 3046 (3 lines).

Inecto Notox produced a promotional booklet of instructions for their hair dye. Most of the booklet was occupied by application instructions and warnings about applying the dye over what seem to have been compound henna and metallic progressive dyes. The introductory pages speak of “reclaiming youthful glory” and refer to hair graying as a disease.

“HOW TO APPLY NOTOX

“Your mirrored reflection best bespeaks the incomparable beauty of a NOTOX application.

“when one recalls the prejudice that, only a few years ago, attached to hair colorings; and then when one considers the fact that now a woman thinks no more of reclaiming the youthful glory of her hair than she thinks of using a pat of powder or a touch of rouge, this conclusion is obvious:

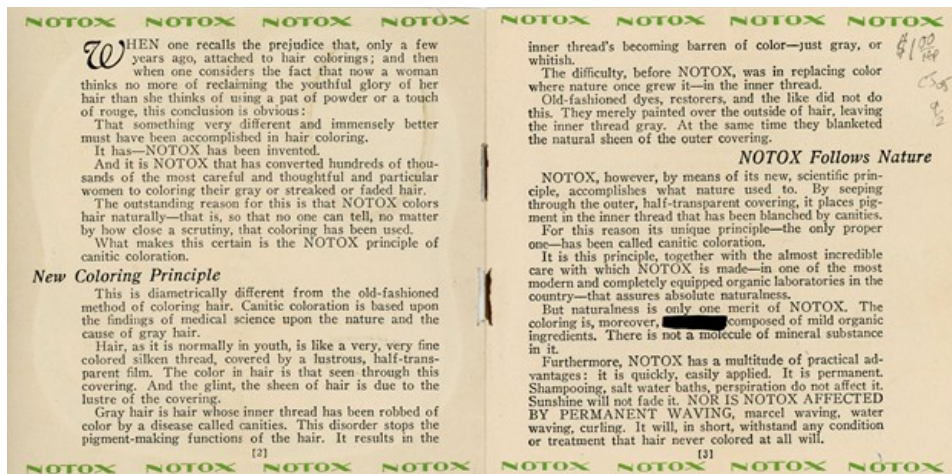
⁴⁰ This refers to “hair restorers” and progressive dyes which darkened the hair through repeated applications of lead acetate or other mineral salts.

⁴¹ Yes, henna does have a distinctive odor.

⁴² This may refer to either henna or metallic progressive dyes. A henna pack requires several hours for the aglycone to migrate from the henna to the keratin and bind. Progressive dyes require multiple applications of the metallic salt to gradually darken the hair.

“That something very different and immensely better must have been accomplished in hair coloring.

“It has – NOTOX has been invented.



Promotional booklet and package insert of Inecto Notox, late 1920's

“And it is NOTOX that has that has converted hundreds of thousands of the most careful and thoughtful and particular women to coloring their gray or streaked or faded hair.

“The outstanding reason for this is that NOTOX colors hair naturally – that is, so no one can tell, no matter by how close a scrutiny, that coloring has been used.

“What makes this certain is the NOTOX principle of canitic coloration.

“New coloring Principle

“This is diametrically different from the old-fashioned method of coloring hair. Canitic coloration is based on the findings of medical science upon the nature and cause of gray hair.

“Hair, as it is normally in youth, is like a very, very fine colored silken thread, covered by a lustrous, half-transparent film. The color in hair is that seen through this covering. And the glint, the sheen of hair is due to the lustre of the covering.

“Gray hair is hair whose inner thread has been robbed of color by a disease called canities.⁴³ This disorder stops the pigment-making functions of the hair.⁴⁴ It results in the inner thread’s becoming barren of color – just gray or whitish.

“Old-fashioned dyes, restorers, and the like did not do this. They merely painted over the outside of the hair, leaving the inner thread gray. At the same time they blanketed the natural sheen of the outer covering.

“NOTOX Follows Nature

“NOTOX, however, by means of its new, scientific principle, accomplishes what nature used to. By seeping through the outer, half-transparent covering, it places pigment in the inner thread that has been breached by canities.

“For this reason its unique principle – the only proper one – has been called canitic coloration.

“It is this principle, together with the most incredible care with which NOTOX is made – in one of the most modern and completely equipped organic laboratories in the country – that assures absolute naturalness.

“But naturalness is only one merit of NOTOX. The coloring is, moreover [word obscured by ink] composed of mild organic ingredients. There is not a molecule of mineral substance in it.⁴⁵

“... (NOTOX) is more than the best coloring: it is the one coloring.”

⁴³ Canities, noun, is from the Latin word for ‘gray hair or old age’, (genitive cānitiē); fifth declension).

⁴⁴ Authors note: the body’s reduction in producing pigmentation in the core of hair is neither a disease, nor a disorder. It is a function of maturation, largely controlled by heredity and possibly accelerated by smoking.

⁴⁵ This comment refers to progressive dyes, which used metallic salts, particularly lead acetate, to dye hair.



*For a smart woman
Heartbreak Age begins with her first gray hair
and ends when she finds NOTOX*

YOU know—every woman knows—the deep little ache that comes when you think that your youth is slipping away. You are *young*, until one day you see a first gray hair. And the sight of it makes you feel suddenly that heartbreak age has begun for you.

A nice woman shrinks from the thought of using the kind of hair dye that coats the hair on the outside. It looks so artificial. And seems so crude and cheap in these modern days. But Notox is not that kind of hair-coloring agent.

Inecto Rapid Notox is as modern as calories and vitamins. It is as different in its method of coloring faded or gray hair, as inoculation is different from wearing a rabbit's foot to prevent disease. Modern scientists have shown that gray hair is a disease, called "canities," characterized by an exhaustion of the coloring matter in the hair. And Notox was developed, in a modern

research laboratory, to replace the coloring *inside* the hair, where nature had it. The result is that a Notox treatment leaves your hair with its own sheen, its own lively variation of high-lights and shadows in its mass, its own youthful luster on every hair surface. Heartbreak age will end for you when you have your first Notox treatment.

There are 18 distinct shades of Inecto Rapid Notox, a complete range to reproduce every gradation of natural coloring for the hair. Notox is permanent; it is not affected by shampooing, marcelling, permanent waving, sunlight, salt or fresh water, steam baths or perspiration.

The best beauty shops use Inecto Rapid Notox; ask for a Notox treatment when you make your beauty shop appointment. Or you may use it at home; it is on sale at beauty shops, drug stores and department stores everywhere.

Mfg. by INECTO, INC., 33 W. 46th St., N. Y. C. and Notox, Ltd., 10 McCaul St., Toronto, Can.—Sales Rep., Harold F. Ritchie & Co., Inc., N. Y.

NOTOX

Woman's Home Companion April 1928

Advertisement for Inecto Notox, April 1928, Women's Home Companion

The advertising text for Inecto Notox, April 1928, "Women's Home Companion" continued to play on women's insecurities related to loss of youth, and the need to keep one's age a secret, the longing for a refined and sophisticated life. This strategy must have been effective because it is a recurring theme in Notox advertising. This ad implies that gray hair is "Heartbreak," perhaps intending to resonate with the vulnerabilities of women suffering from anxiety and depression:

"For a smart woman
Heartbreak Age begins with her first gray hair
And ends when she finds NOTOX

"You know – every woman knows – the deep little ache that comes when you think that your youth is slipping away. You are *young*, until one day when you see a first gray hair. And the sight of it makes you feel suddenly that heartbreak age has begun for you.

“A nice woman shrinks from the thought of using the kind of hair dye that coats the hair on the outside. It looks so artificial. And seems so crude and cheap in these modern days. But Notox is not that kind of hair-coloring agent.

“Inecto rapid Notox is as modern as calories and vitamins. It is as different in its method of coloring faded or gray hair, as inoculation is different from wearing a rabbit’s foot to prevent disease. Modern scientists have shown that gray hair is a disease, caused “canities” characterized by an exhaustion of the coloring matter in the hair. And Notox was developed, in a modern research laboratory, to replace the coloring *inside* the hair, where nature had it. The result is that a Notox treatment leaves your hair with its own sheen, its own lively variation of high-lights and shadows in its mass, its own youthful luster on every hair surface. Heartbreak age will end for you when you have your first Notox treatment.

“There are 18 distinct shades of Inecto Rapid Notox, a complete range to reproduce every gradation of natural coloring for the hair. Notox is permanent; it is not affected by shampooing, marcelling, permanent waving, sunlight, salt or fresh water, steam baths or perspiration.

“The best beauty shops use Inecto Rapid Notox; ask for a Notox treatment when you make your beauty shop appointment. Or you may use it at home; it is on sale at beauty shops, drug stores and department stores everywhere.

“Mfd. By Inecto, Inc. 33 w. 46th St. N.Y.C., and Notox Ltd, 10 McCaul St., Toronto, Can.
– Sales Rep., Harold f. Ritchie & Co., Inc., N.Y.
NOTOX”

Legal Action Against Inecto Rapid Notox for Injuries Caused by Para-phenylenediamine

Inecto Notox Rapid was promoted in the USA from 1924. The first recorded injury caused by Inecto Rapid Notox occurred on March 31st, 1924, when drips of the dye got on a hairdresser’s finger and immediately stained the skin black. Twelve hours after black dye stained her skin, a severe hypersensitivity reaction began. “That night at two o’clock the plaintiff awoke. Her finger was red, swollen, and painful. She called a doctor. The finger grew worse. Several operations were performed on it. The plaintiff has never regained the full use of the finger.”

This injury was certainly caused by unacknowledged para-phenylenediamine and other coal tar derivatives in Inecto black hair dye, and Pauline Karr sued Inecto Inc. in court in 1926.⁴⁶ The initial judgement was that “the user’s evidence was sufficient to make out a prima facie case.

⁴⁶ Pauline Karr, v. Inecto, Inc.: The initial judgement was that “the user’s evidence was sufficient to make out a prima facie case.”

On appeal, Inecto⁴⁷ was able to successfully argue that Karr could not prove the black stain and injury was caused by their product.⁴⁸ Despite winning on appeal and often arguing their innocence on the same basis of insufficient proximate evidence, dozens more injury suits followed until Inecto was eventually forced out of the hair dye business in the USA.

Inecto's defense in *Karr v. Inecto, Inc.*, 220 App. Div. 621., set a precedent for the dismissal of injury lawsuits caused by corporations for the next ninety years. A summary of the sequence is as follows:

1. A person suffered injury or death after using a product, and believed that the product caused the injury/death.
2. The corporation impugns the victim personally and states that their claims are not to be taken seriously.
3. The corporation claims that the victim cannot prove that the product caused the injury/death.
4. The corporation claims that many other clients are unharmed, so that if there was an injury, the victim must have used their product incorrectly.
5. The corporation claims that their formula is a trade secret that they cannot divulge.
6. The corporation claims that they are so popular, so large, and so widely purchased that their products must be harmless.

This defense tactic has been used successfully by hundreds of other cosmetic, food, and dye companies as well as tobacco and other products where there is a time lapse between use and evidence of injury. In the case of para-phenylenediamine, dose-time relationships and the delayed hypersensitivity reaction⁴⁹ always played in the corporations' favor: it was difficult to prove in a court of law direct cause and effect.

Pauline Falk's suit against Inecto Rapid Notox was one of the few that was settled in favor of the plaintiff in particular, and the protection of public health in general. July 30th, 1926, plaintiff, Pauline Falk visited the beauty parlor conducted by Lillian Wall, "Miss Lillie," who ran Lillie Beauty Parlor at No. 994 Amsterdam Ave, Borough of Manhattan, City and State of New York. "Miss Lillie" applied Inecto Rapid Notox to dye Pauline's hair. Pauline suffered intense itching

⁴⁷ Pauline Karr, Respondent, v. Inecto, Inc., Appellant, Court of Appeals of New York, 247 N.Y. 360; 160 N.E. 398; 1928 N.Y. LEXIS 1080, January 12, 1928, Argued, February 14, 1928, Decided

⁴⁸ The manufacturer argued that evidence in the record did not warrant the inference that the hair dye it manufactured was the proximate cause of the injuries suffered by the user. The court reversed the appellate court's judgment. The court found no direct evidence of the nature of the dye and noted that it was being asked to draw the inference that the chemical poison which was said to have caused injury to the user was contained in the manufacturer's chemical product merely because an injury occurred on the finger which was stained by the dye 12 hours before, though possibility of other cause was not excluded and there was no direct evidence that the chemical product contained any chemical poison. The court also noted that it was being asked to find that the dye not only caused the injury but was so inherently dangerous that the manufacturer was negligent when it put the bottle on the market though dye from exactly the same bottle produced no harmful effect upon another person. The court concluded that the evidence did not sustain such inferences.

⁴⁹ Hextall, J. M., Alagaratnam, N. J., Glendinning, A. K., Holloway, D. B., Blaikie, L., Basketter, D. A., McFadden, J. P., (2002) "Dose-time relationships for elicitation of contact allergy to para-phenylenediamine" *Contact Dermatitis* 6 November 2002

and pain all over her body, and her eyelids became painful and swollen, which she attributed to the chemicals in Notox hair dye.

Pauline Falk commenced legal action against Inecto Rapid Notox and the hairdresser in August 2, 1927 for compensation for injuries. Plaintiff Falk claimed⁵⁰ that ‘the chemical product known as Inecto Rapid (Notox) ... was inherently dangerous and poisonous to the skin and scalp.’⁵¹ “The ... defendant corporation was careless, negligent and reckless in manufacturing and/or in putting upon the market a dangerous and poisonous product and in representing to the public that the said product aforesaid may be used as a hair dye and applied to the head.” “The admitted manufacturer of a hair dye known as NOTOX was negligent in putting chemicals inherently dangerous and poisonous into the hair dye and selling the hair dye to the public as a safe hair dye for normal people, and that the plaintiff suffered personal injuries by the use of the hair dye, for which damages in the sum of Ten thousand Dollars (\$10,000)⁵² are demanded.”⁵³

Inecto’s lawyers, having defended a previous injury claim,⁵⁴ countered that they were so large a corporation that they could not be harming anybody, and that they did not have to be compelled to declare their ingredients; to do so would compromise their business. “The product of the defendant is sold, of course, upon a highly competitive market,” “their product has succeeded in this competition because it has by a method of its own succeeded in introducing a product free from the dangers attendant upon the use of numerous other hair dyes. This achievement is secret and the defendant’s business depends upon maintaining the secret.”⁵⁵

⁵⁰ SUPREME COURT APPELLATE DIVISION—New York City, New York, Supreme Court, Appellate Division – First Department. Pauline Falk, Against Inecto, Inc., and Lillian Wall. DANIEL A. SHIRK, Attorney for Plaintiff-Appellant, No. 225 Broadway, New York City. HULBERT & HEERMANCE, Attorneys for Defendant-Respondent, No. 551 Fifth Avenue, New York City. The Court Press. Inc. in google digitized document. Supreme Court Appellate Division-First Department. From Google Digitized document <https://books.google.com/books?id=OrJPvEkh3ZkC&pg=RA1-PA54&lpg=RA1-PA54&dq> (accessed March 25, 2018)

⁵¹ PAPERS ON APPEAL FROM TWO ORDERS, Granting Defendant’s Motions to Extend Time of Defendant Inecto, Inc., to Move Under Rules 102 and 103 After Issue Joined and Striking Out Paragraphs 6 to 26 Inclusive from the Amended Complaint, ON THE GROUND THAT SAID ALLEGATIONS ARE EVIDENTIARY. New York City. New York Supreme Court, Appellate Division – First Department. Pauline Falk, Against – Inecto, Inc., and Lillian Wall. DANIEL A. SHIRK, Attorney for Plaintiff-Appellant, No. 225 Broadway, New York City. HULBERT & HEERMANCE, Attorneys for Defendant-Respondent, No. 551 Fifth Avenue, New York City. THE Court Press. Inc. pages 154 –p 265. Google Digitized document <https://books.google.com/books?id=OrJPvEkh3ZkC&pg=RA1-PA54&lpg=RA1-PA54&dq> (accessed March 25, 2018)

⁵² \$142,499.42 in 2018 \$USD

⁵³ PAPERS ON APPEAL FROM TWO ORDERS, Granting Defendant’s Motions to Extend Time of Defendant Inecto, Inc., to Move Under Rules 102 and 103 After Issue Joined and Striking Out Paragraphs 6 to 26 Inclusive from the Amended Complaint, ON THE GROUND THAT SAID ALLEGATIONS ARE EVIDENTIARY. New York City. New York Supreme Court, Appellate Division – First Department. Pauline Falk, Against – Inecto, Inc., and Lillian Wall. DANIEL A. SHIRK, Attorney for Plaintiff-Appellant, No. 225 Broadway, New York City. HULBERT & HEERMANCE, Attorneys for Defendant-Respondent, No. 551 Fifth Avenue, New York City. THE Court Press. Inc. page 168

⁵⁴ Under the decision in the Court of Appeals in a previous injury suit against Inecto, *Karr v. Inecto, Inc.*, 247 N. Y. 360, the plaintiff was required to show “by direct or circumstantial evidence at least that the bottles of dye manufactured by the defendant and used by the plaintiff contained a poisonous and dangerous liquid.”

⁵⁵ *Ibid*, p.172

Inecto's lawyers claimed that the victim's claims could not be taken seriously because, "The plaintiff not being a chemist and familiar with the manufacture of hair dye, her allegations with respect to the chemical composition of hair dye must not only necessarily, but honestly be on information and belief."⁵⁶ That is to say Inecto's lawyers alleged that the plaintiff's claims could be taken seriously, because she was not a chemist. Her lawyer, Daniel Shirk, however, did have a degree in chemistry. Mr. Neal R. Andrews, the President of the defendant corporation, was not chemist or familiar with the chemistry of hair dyes. Deponent was informed that Mr. Andrews was an advertising man with no chemical or scientific training.⁵⁷

Inecto's lawyers further objected to being responsible for Falk's injuries because it was possible that their product had been improperly mixed⁵⁸ or that she had a bad bottle of the product, and that she could not prove what might have been in the bottle because the contents had been used up.⁵⁹

Though the defendant corporation offered Inecto Rapid (Notox) for general sale claimed that it was a safe hair dye, the product was "inherently dangerous and poisonous to the skin and scalp."⁶⁰ Shirk stated that Inecto Rapid, Notox contained, among other ingredients, paraphenylene diamine, meta-diamino anisole, ortho amino-phenol, para amino phenol, para methyl amino phenol sulphate, para amino di phenylene amine, para tolulene diamine, meta-diamino anisole, meta-diamino phenetole, and "That on information and belief defendant corporation was careless, negligent and reckless in manufacturing and/or in putting upon the market a dangerous and poisonous product and in representing to the public that the said product aforesaid may be used as a hair dye and applied to the head."

The attorney for the plaintiff stated that Inecto Rapid Notox permanently disabled Pauline Falk, and that the company was at fault for presenting the hair dye as harmless. Notox was "was careless, negligent and reckless in manufacturing and/or in putting upon the market a dangerous and poisonous product and in representing to the public that the said product aforesaid may be used as a hair dye and applied to the head."

Shirk, the attorney for the plaintiff stated,

"... when this plaintiff had the product of the defendant corporation applied to the hair on her head as aforesaid, the said chemical product Inecto Rapid Notox, when so applied, caused intense itching of the head and body of the plaintiff; caused the eyelids of the plaintiff to grow inflamed and swollen; caused the plaintiff to become sick, sore and disabled, and to suffer from rashes and burns and other physical pains; caused the plaintiff to be unable to attend to her regular course of duties, and upon information and belief, some of the injuries received by plaintiff as aforesaid, are of "a permanent nature." That the foregoing injuries were caused solely and exclusively by reason of the carelessness, recklessness and negligence of the defendant corporation as aforesaid, and

⁵⁶ Ibid, p. 206

⁵⁷ Ibid, p. 207

⁵⁸ Ibid, p. 203

⁵⁹ Ibid, p. 204

⁶⁰ Ibid, p. 208-13

without any negligence on the part of the plaintiff contributing thereto. That by reason of the foregoing, the plaintiff has been damaged in the sum of Ten Thousand (\$10,000) Dollars.”⁶¹

“If I may be permitted to use the word adopted by the defendant’s president, in the defendant’s position, is in the fact that it seeks refuge from manufacturing a hair dye which deponent verily believes contains highly poisonous chemicals, inherently dangerous. The defendant seeks under the guise of secrecy, to prevent its product from being exposed to the Courts of this state. I hope no Court shall ever say that a person, firm or corporation, shall under the cloak of secrecy, be permitted to manufacture a product containing dangerous and poisonous substances affecting the health of a great portion of our people.”⁶²

The Appellant’s Brief statement, argued by Daniel Shirk, declared that Defendant Inecto, Inc. should be ruled guilty of inexcusable laches and bad faith,⁶³ and that Inecto be required to disclose injuries caused by their product, noxious chemicals in their product, and not be allowed to circumvent the Code of Ordinances, 128, Article 8, Chapter 20, Sanitary Code through claims of corporate secrecy.

According to the Annual report of the Federal Trade Commission for Fiscal Year Ended June 30, 1932 United States Government Printing Office, Washington, 1932, Inecto Notox was required to withdraw from the State of New York, and to file with the Secretary of State its certificate surrendering its authority to do business here, pursuant to section 216 of the General Corporation Law. The defendant sold and disposed of its business and assets in New York.

“ANNUAL REPORT OF THE FEDERAL TRADE COMMISSION FOR FISCAL
YEAR ENDED JUNE 30, 1932
UNFAIR COMPETITION IN THE SALE OF HAIR DYE:

“Inecto (Inc.), New York.—The order to cease and desist issued against this corporation prohibits the use of False and deceptive representations in promoting and effecting the interstate sale and distribution of a hair dye or hair or hair coloring manufactured by the company and designated “Inecto Rapid Notox.” Represented to be the largest manufacturer of hair coloring in the world, the respondent promoted the sale of the product, national advertising expenditures running at times as high as \$300,000 a year. The dye was sold for home use through drug stores, department stores, hairdressing establishments and other dealers, direct by mail order. It was also sold for use by beauty parlors and hairdressers throughout the country for the treatment or coloring of the hair of their patrons.

“In addition to applying the word “Notox” to the product, the respondent promoted its purchase and use by the trade and consuming public on numerous representations to the effect that the dye is nontoxic, safe, and harmless without any poisonous or toxic

⁶¹ Ibid p. 214

⁶² Ibid p.178

⁶³ Ibid p. 232

ingredients and that it will not produce or cause any harmful or deleterious effects upon the body' and that no instances of harmful or deleterious effects have arisen or been reported.

“After trial and hearing the commission entered findings of fact covering the case, it found that such representations were false, misleading, and deceptive and that the dye is in fact a dangerously toxic, deleterious, and harmful product containing a toxic dye base and poisonous and injurious ingredients or properties’ that in its use and application harmful to dyeing or coloring of the human hair it is not safe or harmless and that in many instances it has caused and produced toxic, deleterious, and harmful physical effects upon the Scalp and other parts of the body of users, including irritation and toxic poisoning of the scalp. The corporation also disseminated as trade promotional literature a large number of testimonials or endorsements purporting to be written statements by users or patrons praising and commending the respondent’s brand of hair dye. Upon the evidence, the commission found that practically all of such testimonials or endorsements were false and as used by the respondent had the capacity and tendency to mislead and deceive the purchasing public into the erroneous believe that they were genuine unsolicited testimonials or endorsements of its brand of hair dye received by respondent from patrons or users thereof. The commission also found that the tendency and effect of the false and deceptive practices of the corporation were to injure the public and the business of the competitors; and that such misrepresentations operated as an unfair competitive advantage to the corporation and a detriment to and burden upon the legitimate hair-dye manufacturing and marketing industry in this country. Upon concluding that the practices constituted an unfair method of competition in violation of the statute, the false representations were prohibited in the order to cease and desist (Commissioner Humphrey dissenting).”⁶⁴

Inecto Notox did not cease operations during the injury lawsuits. Injuries continued, as were filed in *Simons v. Inecto, Inc.* “On December 16, 1931, the plaintiff purchased a quantity of Inecto Notox from a merchant in California, for the purpose of applying it to the hair of other persons in the conduct of her business, as well as to her own hair. The complaint alleges that Inecto Notox is a chemical substance containing ingredients improperly mixed, and which, when so mixed, are dangerous and poisonous to the human body when applied thereto; and that she applied it to her own hair, and as a result of such use was poisoned and injured, through the negligence of the defendant.”⁶⁵

Inecto left New York where the Sanitary Code was in effect and relocated in California, resuming business, without acknowledging the use of para-phenylenediamine in its formula, though with some cautionary warnings on the packaging. By the ruling of November 2, 1934, FDA could not take action against a coal-tar hair dye, as long as the label included a special

⁶⁴ ANNUAL REPORT OF THE FEDERAL TRADE COMMISSION FOR FISCAL YEAR ENDED JUNE 30, 1932. UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON Page 84 – 5
http://www.casewatch.org/ftc/annual_reports/1932.pdf

⁶⁵ Appellate Division of the Supreme Court of New York, Third Department. 242 App. Div. 275 (N.Y. App. Div. 1934) *JESSIE SIMONS, Respondent, v. INECTO, INC., Appellant*. Appellate Division of the Supreme Court of New York, Third Department.”

caution statement and the product comes with adequate directions for consumers to do a skin test before they dye their hair. The caution statement is as follows:

“Caution – This product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows; to do so may cause blindness. (FD&C Act, 601(a))

“FDA may take action if a harmful coal-tar hair dye product if— it does not have the caution statement on its label or come with adequate directions for a skin test, or an ingredient other than the coal-tar hair dye itself is harmful.

Inecto’s new packaging removed the word Notox, and included the required warnings.



Package, contents and insert of Inecto hair dye, mid-1930’s.

Though pure para-phenylenediamine is clear, the liquid or solid dye darkens with exposure to oxygen, as seen in spillage on the package insert.



Revised Inecto package and contents after the courts ruled that the word “Notox” was false, misleading, and deceptive and that the dye is in fact a dangerously toxic, deleterious, and harmful product containing a toxic dye base and poisonous and injurious ingredients in 1932.



The text on the package produced after 1934, in accordance with updated FDA regulations stated:

“Caution: this product contains ingredients which may cause skin irritations in certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows; to do so may cause blindness. Read directions carefully. Contents 4 fl. Ozs. Distributed by Sales Affiliates, Inc. New York City.”

The FDA Regulates Henna and Para-Phenylenediamine

Cosmetics and medical devices were overseen by the Post Office Department and the Federal Trade Commission prior to 1938, came under FDA authority after 1938. The 1938 act required colors in food, medicine, cosmetics, and hair dye to be certified as harmless and suitable by the FDA. Pure henna (*lawsonia inermis*) was deemed so completely safe as a hair dye that it was permanently exempted from certification.⁶⁶ Though pure henna had been used as a fingertip and fingernail dye in the USA through the 1920’s, it was not approved for skin, either an oversight or

⁶⁶ TITLE 21 – FOOD AND DRUGS, CHAPTER I – FOOD AND DRUG ADMINISTRATION, DEPARTMENT OF HEALTH AND HUMAN SERVICES, SUBCHAPTER A—GENERAL, PART 73 – LISTING OF COLOR ADDITIVES EXEMPT FROM CERTIFICATION, Subpart C—Cosmetics, Sec. 73.2190 Henna.

(a) Identity. The color additive henna is the dried leaf and petiole of *Lawsonia alba* Lam. (*Lawsonia inermis* L.). It may be identified by its characteristic odor and by characteristic plant histology.

(b) Specifications. Henna shall conform to the following specifications:

It shall not contain more than 10 percent of plant material from *Lawsonia alba* Lam. (*Lawsonia inermis* L.) other than the leaf and petiole, and shall be free from admixture with material from any other species of plant.

Moisture, not more than 10 percent.

Total ash, not more than 15 percent.

Acid-insoluble ash, not more than 5 percent.

Lead (as Pb), not more than 20 parts per million.

Arsenic (as As), not more than 3 parts per million.

(c) Uses and restrictions. The color additive henna may be safely used for coloring hair only. It may not be used for coloring the eyelashes or eyebrows, or generally in the area of the eye.

paternalistic judgement of “foreign customs” with long-reaching and unfortunate consequences by the late 1990’s.⁶⁷ Compound henna was not addressed specifically in this legislation, nor was indigo, nor were other plant additives to henna.

The Federal Food, Drug, and Cosmetic Act of 1938.

1938 further increased government oversight of food and drugs and, for the first time, passed legislation for the regulation of cosmetics and medical devices. The FDA acknowledged that there were allergic reactions to coal-tar hair dyes, that could result in skin irritation and hair loss, but reached an agreement with the corporations which produced hair dye, if the formula limited the para-phenylenediamine content to an amount less than 6% and there were warnings of injury:

“FDA cannot take action against a coal-tar hair dye, as long as the label includes a special caution statement and the product comes with adequate directions for consumers to do a skin test before they dye their hair. This is the caution statement:

“Caution – This product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows; to do so may cause blindness. (FD&C Act, 601(a))⁶⁸

“For color additives, the 1938 FD&C Act mandated the listing of those coal-tar colors (other than coal-tar hair dyes) that were "harmless and suitable" for use in foods, drugs, and cosmetics. In addition, the act: contained adulteration and misbranding provisions for the use of coal-tar colors in foods, drugs, and cosmetics.⁶⁹

In 2006, para-phenylenediamine was named “contact allergen of the year,” though phenylenediamine (PPD) has been the leading permanent oxidative hair dye since the 1920’s, following its invention and use in fur, textile and leather dye, and causing injuries agent since its release into commerce. Because of its allergic potential, it was banned in France and Germany from 1906 until the 1980s to 1990s, when it was again allowed for use in member states of the European Union⁷⁰ Para-phenylenediamine (PPD) became one of the five chemicals labeled as “strong sensitizers” by the Consumer Product Safety Commission in 1961. Currently, para-phenylenediamine in cosmetics that would be in contact with skin is prohibited, though eyelash

(d) Labeling. The label for henna shall bear the information required by 70.25 of this chapter and the following statements or their equivalent:

"Do not use in the area of the eye."

"Do not use on cut or abraded scalp."

(e) Exemption from certification. Certification of this color additive for the prescribed use is not necessary for the protection of the public health and therefore batches thereof are exempt from the certification requirements of section 721(c) of the act.

⁶⁷ Basas, C. G. (2007) “Henna tattooing: cultural tradition meets regulation.” *Food and Drug Law Journal*, 2007;62(4):779-803.

⁶⁸ <http://www.fda.gov/Cosmetics/ProductsIngredients/Products/ucm143066.htm#law>

⁶⁹ <http://www.fda.gov/ForIndustry/ColorAdditives/RegulatoryProcessHistoricalPerspectives/>

⁷⁰ DeLeo (2006) Contact Allergen of the Year: p-Phenylenediamine Dermatitis. 17 (2): 53-55

and eyebrow dye containing para-phenylenediamine have recently appeared on the market. It is limited in hair dye to 6%, though it is moot that one can dye hair without touching the scalp.⁷¹ Kligman found that a 10% patch test of para-phenylenediamine will sensitize 100% of people in five applications or fewer.⁷² People who use commercial oxidative black hair dye limited to 6% para-phenylenediamine frequently become sensitized in a matter of years, if not months. However, “black henna” hair dye products produced in India and Pakistan range up to 30% and are readily available worldwide.⁷³ Higher para-phenylenediamine content increases the rapidity and certainty of health consequences. Every application of para-phenylenediamine increases the likelihood that the dyer will become allergic, just as every year of smoking increases the likelihood that the smoker will develop lung and pulmonary disease.

Since sensitization to para-phenylenediamine increases over time and exposure, it is possible to have suffered an allergic reaction even if you have dyed your hair without consequence in the past. A patch test is required for every use, and even if you don’t see a reaction to the skin test in 48 hours, it is still possible to have a reaction when you dye your hair. Delayed type 4 hypersensitivity reactions to para-phenylenediamine may take up to thirty days to appear. A company’s hair dye formulations may change over time and provoke an allergic reaction to a new formula. Persons changing from one brand to another marketed as “PPD-Free” or “Non-Allergenic” in hope of avoiding an allergic reaction may find that, through cross-sensitization to similar oxidative dyes, they still have an allergic reaction.⁷⁴ Potent contact sensitizers are nearly universal in oxidative hair dyes sold in the United States. Although para-phenylenediamine is a common allergen, resorcinol and m-aminophenol were found more frequently. All but one of one hundred seven oxidative hair dye products (99%) contained at least one potent sensitizer, and the average product contained six. Para-phenylenediamine was found in 83 products (78%), resorcinol (89%), m-aminophenol (75%), p-aminophenol (60%) and toluene-2,5-diamine (21%) were also frequently included in hair dye formulations.⁷⁵ If PPD is in hair dye, how can it not be in prolonged skin contact? If repeated applications of PPD increase the probability of contact dermatitis to life-threatening illness, why would a company put it in a product for graying hair knowing that a monthly application to the base of the hair, in contact with the scalp, would be necessary for upkeep?

⁷¹Goldenberg, A., Jacob, S. E. (2015) Paraphenylenediamine in black henna temporary tattoos: 12-year Food and Drug Administration data on incidence, symptoms, and outcomes *Journal of the American Academy of Dermatology*, April 2014, Volume 72, Issue 4, Pages 724 – 726

⁷² Kligman, A. M. (1966) “The Identification of Contact Allergens by Human Assay. III, The maximization Test: A Procedure for Screening and Rating Contact Sensitizers.” *Journal of Investigative Dermatology*, The Williams and Wilkins Co.

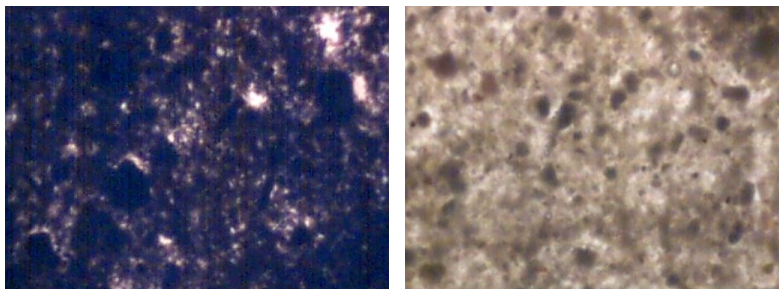
⁷³ Weiyang Chena, Thobile. A.N. Nkosia, Sandra Combrinck, Alvaro. M. Viljoen, Catherine Cartwright-Jones. (2016) “Rapid analysis of the skin irritant p-phenylenediamine (PPD) in henna products using atmospheric solids analysis probe mass spectrometry” *Journal of Pharmaceutical and Biomedical Analysis*, Volume 128, 5 September 2016, Pages 119–125

⁷⁴ Ingram, John R., T. Meirion Hughes, and Natalie M. Stone. (2014) “Potential danger of hair dyes marketed as free from para-Phenylenediamine.” *International Journal Of Dermatology* 53, no. 4: e257-e258.

⁷⁵ Hamann, D., Yazar, K., Hamann, C. R., Thyssen, J. P., Lidén, C. (2014) “p-Phenylenediamine and other allergens in hair dye products in the United States: a consumer exposure study.” *Contact Dermatitis*. 2014 Apr;70(4):213-8.

Para-phenylenediamine Sold as ‘Henna’ and ‘Black Henna’

By the 1980’s powdered para-phenylenediamine mixtures were marketed as “black henna” in India and in the Arabian Peninsula. Pure henna, *lawsonia inermis*, is always a dull green color, as shown in the microscopy, below, right. Para-phenylenediamine is initially colorless, but darkens to black when oxidized by air or another oxidizing chemical. If any powder labeled ‘henna’ is dark brown or black, it is NOT pure henna. There is no ‘black henna plant,’ nor is there any part of the henna plant that is black or which dyes hair black.



Left: 30% para-phenylenediamine powder sold as “Black Henna.”

Right: pure henna leaf powder

Microscopy by Catherine Cartwright-Jones PhD

In the many brands of oxidative dye marketed as ‘henna’, the para-phenylenediamine may be undeclared, or it may be declared under another name. The following are other names for para-phenylenediamine.⁷⁶

- PPD or PPDA
- Phenylenediamine base
- p-Phenylenediamine
- 4-Phenylenediamine
- 1,4-Phenylenediamine
- 4-Benzenediamine
- 1,4-Benzenediamine
- para-Diaminobenzene (p-Diaminobenzene)
- para-Aminoaniline (p-Aminoaniline)
- Orsin™
- Rodol™
- Ursol™

In packages of para-phenylenediamine-adulterated henna, the word ‘henna’ is generally featured prominently on the front of the package. Often, the ingredient para-phenylenediamine is much smaller than word ‘henna,’ in an obscure place on the package, or only inside a sealed package so that the purchaser will only see the word ‘henna’ at point of purchase. The customer is deceived to believe that they are purchasing a harmless, natural henna product.

⁷⁶ Ngan, V. (2002) “Allergy to paraphenylenediamine” DermNet NZ



The declaration of para-phenylenediamine is not on the exterior of the package shown above; it is only on the package insert sealed within the package, shown below, so it cannot be read by the consumer before purchase:

**HENNA POWDER
FOR HAIR**

Henna a leaf of a small shrub of an Indian Plant, dried and powdered used as hair dye.

DIRECTIONS FOR USE :

1. Unpack Henna pouch into a bowl and pour water in it to make the paste. Knead it well breaking all lumps.
2. Apply the paste with a brush and thin toothed comb to hair, from root to top parting hair to small bunches. Leave no hair untinted. Apply repeatedly to the borders of the hair on brow. Do not let the paste remain unused for long, as its efficiency reduces.
3. Let the pasted hair absorb colour thoroughly and go completely dry. For quick results, Hair Dryer may be used. Then wash the hair with water and soap or shampoo until rinsing water becomes clear and entirely colourless. After drying hair with a towel or a dryer. set in required style Brillint shine appears on hair.
4. Use the contents of the pouch on single application and do not preserve balances. This product is for external use only . it should not be used for dyeing eyelashes or eyebrows. To test allergy, please first apply. Henna within inside your elbow. Let it dry for sometimes and watch the reaction. In case of reddening, burning, itching or irritation in or around that portion, consider yourself allergic to the product. Otherwise go-ahead safety with the use of Henna.

Paraphenylene-diamine content after dilution not more than 2 %
for Black 0.2% for Brown/Chestnut Henna.

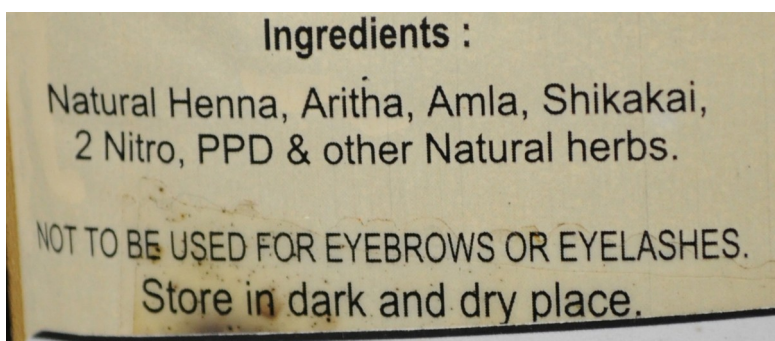
POISON : Not for Internal use.
Do not use to dye eyelashes or eyebrows.
Avoid contact with eyes.
Keep out of reach of children
Caution : This preparation may cause skin irritation in certain person and should be used only in accordance to this leaflet.

<p>INGREDIENTS : Herbal Henna Powder Para Phenylene Diamine . Citric Acid. Herbal Amla Powder Magnesium Sulphate.</p>
--

The package insert for “Export Quality” Eagle Black Henna declares para-phenylenediamine, but not the percentage in dry powder, and gives no indication of the dilution required to reduce the para-phenylenediamine content to 2%.

Ingredient Declarations of “Henna Hair Dye” from India Which Include Up To 30% Para-Phenylenediamine

The Bureau of Indian Standards has set a maximum permissible limit of 30% para-phenylenediamine content for dry henna hair dye powder. However, many manufacturers do not comply with these standards.⁷⁷ The following images are ingredient declarations of ‘black’ and ‘brown’ ‘henna’ hair dye products purchased online and in Indian food markets between 2008 and 2018.⁷⁸ None included a declaration of para-phenylenediamine content, though tests showed that the para-phenylenediamine content ranged in these dry powders from 3% to 35%.⁷⁹



Sold as ‘herbal henna mehandi,’ declared to contain para-phenylenediamine (PPD) and 2-nitro para-phenylenediamine



Sold as ‘real herbal mehndi,’ declared to contain para-phenylenediamine, dilution proportion unspecified

⁷⁷ Gupta, M., Mahajan, V., Mehta, K., and Chauhan, P. (2015) Hair dye dermatitis and p-phenylenediamine contact sensitivity: A preliminary report” *Indian Dermatology Online J.* 2015 Jul-Aug; 6(4): 241–246. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4513401/> accessed March 29, 2018

⁷⁸ Author’s private collection, Catherine Cartwright-Jones PhD

⁷⁹ Weiyang Chena, Thobile. A.N. Nkosia, Sandra Combrincka, Alvaro. M. Viljoen, Catherine Cartwright-Jones “Rapid Analysis of the Skin Irritant p-Phenylenediamine (PPD) in Henna Products using Atmospheric Solids Analysis Probe Mass Spectrometry” *Journal of Pharmaceutical and Biomedical Analysis*, Volume 128, 5 September 2016, pp. 119–125

Key Ingredients: Natural Henna, Amla Powder, Methi Powder, Reetha Powder, Shikakai Powder, Coffee Powder, Tartaric Acid, Sodium Perborate, Para Amino Phenol & Para-Phenylenediamine.

Sold as 'henna natura,' declared to contain Para Amino Phenol, Para-phenylenediamine

Contains : Powder Hair Dye
Mehandi Powder, Amla Powder, Shikakai Powder, Reetha Powder, Neem Leaves Powder, Barium Peroxide, 2-N-Paraphenylenediamine & Citirc Acid

Sold as 'henna,' declared to contain 2-N-Paraphenylelnediamine

POISON. For external use only.
INGREDIENTS : Natural Henna, Amla, Shikakai, Barium Peroxide, Citric Acid, Phenylenediamine.

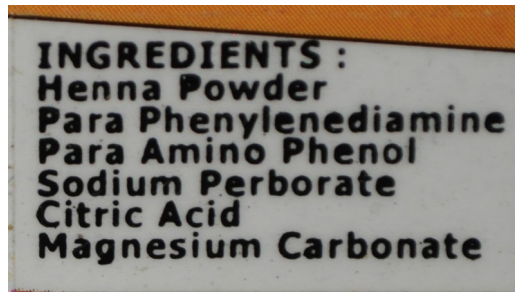
Sold as 'henna,' declared to contain Phenylenediamine

Key Ingredients : Henna Powder, Sodium Perborate, P-Phenylene Diamine, Tartaric Acid, Indigofera Tinctoria, Hibiscus.

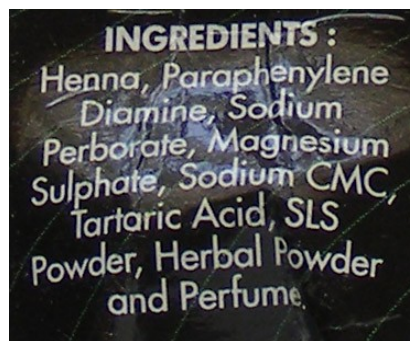
Sold as 'herbal black henna,' declared to contain P-Phenylene Diamine

POISON : STRICTLY FOR EXTERNAL USE ONLY.
INGREDIENTS : HENNA POWDER, PARA-PHENYLENEDIAMINE
BARIUM PEROXIDE, CITRIC ACID.

Sold as 'mehandi,' declared to contain Para-phenylenediamine



Sold as ‘ammonia-free brown henna,’ declared to contain of para-phenylenediamine and para amino phenol, with sodium perborate as the oxidizer rather than peroxide. This declaration is a sticker which appears to have been added to comply with export regulations. The box for domestic use did not include the declaration sticker.



Sold as ‘henna,’ declared to contain Paraphenylene Diamine



“Henna Stone,”⁸⁰ allegedly ‘natural’ stone from ‘the banks of the Nile’ is sold with henna at apothecary shops in North Africa, the Middle East, and the Levant for the purpose of making ‘black henna’ hair dye or body art. This is 95% + solid pure industrial para-phenylenediamine.⁸¹

⁸⁰ Özkaya E, Yazganoglu KD, Arda A, Topkarci Z, Erçag E. 2013. “The “henna stone” myth” *Indian Journal of Dermatology and Venereal Leprology* 79:254-6

⁸¹ Confirmed solid para-phenylenediamine in author’s private collection, Catherine Cartwright-Jones PhD

Para-phenylenediamine Marketed as “Black Henna” and Applied Directly to Skin



This is a hypersensitivity reaction to para-phenylenediamine sold as ‘black henna’ and applied to skin as body art.⁸²

The image above of a woman’s arm blistering from an application of ‘black henna,’ a paste with little or no henna, but a high content of para-phenylenediamine. ‘Black henna’ temporary tattoos are created with paste containing 12.5%⁸³ to 80% PPD.⁸⁴ This is the same injury as was caused when Pauline Karr got a drip of Inecto Notox Rapid on her finger in 1924. The woman will have the same subsequent health problems as in Falk vs Inecto in 1928, and described by Oscar Levin, MD in 1928.⁸⁵

Para-phenylenediamine has been conflated with henna as ‘black henna’ since the 1970’s and has popularized around the world for celebratory and festival skin adornment. Based on my doctoral research,⁸⁶ as of 2015, I estimated that there were 150,000,000 individuals who had been sensitized to PPD through vacation souvenir ‘black henna’ temporary tattoos, and a much larger number had been sensitized through cultural use. A sensitization test in Manchester, UK, found the sensitization rate among children in had risen from 3% in the 1990’s to 8% in 2005 to 16% in

⁸² Kelley, N. (2017) “Black henna allergy” *Cardiff and Vale University Hospital NHS Trust*

⁸³ Brancaccio, R.R., et al. “Identification and quantification of para-phenylenediamine in a temporary black henna tattoo.” *American Journal of Contact Dermatitis*, v. 13 issue 1, 2002, p. 15-8.

⁸⁴ Almeida, Pablo J., et al. 2012. “Quantification of p-phenylenediamine and 2-hydroxy-1,4-naphthoquinone in henna tattoos.” *Contact Dermatitis* 66, no. 1:33-37

⁸⁵ “Shall I Dye My Hair? The Question that Woman Soon or Late, Answered by a Distinguished Physician, Oscar Levin, MD” (February 1928). *Good housekeeping*: Volume 86, Number 2. Curated by Albert R. Mann Library.

⁸⁶ Cartwright-Jones, C., “The Geographies of the Black Henna Meme Organism and the Epidemic of para-Phenylenediamine Sensitization: A Qualitative History.” PhD dissertation. Kent State University (2015) <http://www.tapdancinglizard.com/dissertation/>

2014,⁸⁷ probably from children acquiring ‘black henna’ temporary tattoos on vacation. The artists, parents, and children seem to have not known that there was para-phenylenediamine in the black paste, nor did they have any idea that it could be harmful.

In other countries where women use products marketed as ‘black henna’ containing para-phenylenediamine for celebrations and weddings, there are far more injuries. “The death toll of henna application (i.e. para-phenylenediamine ‘black henna’) in east Libya has risen to 59 since the registration of the first case in 2011. The town of Marj has hit the highest levels of toxic henna usage where 1022 cases and 44 deaths were recorded.”⁸⁸

In Sudan, where the first injuries from para-phenylenediamine used for ornamental skin decoration were reported in the 1970s, “Many Sudanese brides have collapsed and died on their wedding days after using this blackened henna because henna artists use a highly poisonous crushed-rock powder that they mix with natural henna to produce a deep black colour. In other cases, the use of Para-Phenylene Diamine (PPD), an active ingredient in many black hair dyes, is responsible for the severe allergic reactions.”⁸⁹

The FDA, chemical manufacturers and physicians were aware that para-phenylenediamine dyes caused severe allergic reactions and could be fatal, but people insisted on using them. In the late 1930’s the FDA and hair dye manufacturers agreed that if levels of para-phenylenediamine were kept below six percent in hair dye, then no warning labels would be needed and the manufacturers would be protected from prosecution in injuries. This addressed the immediate problem of people being severely injured from hair dye, but it masked the dangers from allergic reaction, which include multiple chemical sensitivities, asthma, hair loss, blistering, and cross reactions with many other products.

This limiting of para-phenylenediamine levels does not address other health risks from cumulative exposure to these chemicals, to the client and to the cosmetologist. Many cosmetologists find they become so allergic to para-phenylenediamine that they must quit their jobs and find another career. Forty-five percent of cosmetologists are sensitized to para-phenylenediamine and have higher cancer risks than the general population.⁹⁰ Many physicians advise patients with high cancer risks to discontinue using para-phenylenediamine chemical hair dyes, and obstetricians regularly recommend their patients not dye their hair with oxidative dyes during pregnancy. Any person whose physician has recommended that they not use oxidative hair dye can immediately switch to Ancient Sunrise® henna hair dyes; Ancient Sunrise® products are pure plant powders, with no mineral salts, no lead, and no oxidative dyes.

⁸⁷ Smith V, Clark S, and Wilkinson M. “Allergic contact dermatitis in children: trends in allergens, 10 years on. A retrospective study of 500 children tested between 2005 and 2014 in one U.K. centre.” *British Association of Dermatologists’ Annual Conference*. Leeds Teaching Hospitals NHS Trust, Leeds, U.K. (2015).

⁸⁸ AbdullahBenIbrahim, (2017) “Bride dies of toxic henna in east Libya,” *The Libya Observer*, February 27, 2017

⁸⁹ Bathish, H., Fleihan, T., Abdullah, A. A., Zain, A. A., Agarib, A., (2003) Black Sudani henna 'can trigger severe allergic reactions,' *Kaleej Times*. February 4, 2003

⁹⁰ Mukkanna, K. S. Stone, N., and Ingram, J. R., (2017) “Para-phenylenediamine allergy: current perspectives on diagnosis and management” *Journal of Asthma and Allergy* 2017; 10: 9–15.

Testing a Dye of Unknown Content for Para-phenylenediamine

This test for para-phenylenediamine adapted from Heim's test for para-phenylenediamine residue in fur.⁹¹

“Apply hair dye of unknown content to hair harvested from your hairbrush. Prepare the dye according to instructions. Rinse the sample with water after twenty minutes and pat dry. Apply a three percent solution of acetic acid to the dyed hair and warm to 45C. Squeeze the liquid out of the dyed hair sample into a clear glass dish, add one drop of an aniline solution, mix, and add a few crystals of potassium persulfate. The appearance of a blue-green color in about five seconds indicates the presence of para-phenylenediamine or a derivative such as para-toluenediamine. This is a very sensitive test, and can be used to find even trace amounts of para-phenylenediamine. It will not, however, reveal m-phenylenediamine.”

Warnings from DuPont Protection Technologies about Para-Phenylenediamine⁹²

p-Phenylenediamine Technical
(p-Diaminobenzene)
CAS Reg. No. 106-50-3
C₆H₄(NH₂)₂

DuPont advises that para-phenylenediamine should not be used in products that have direct human contact.

“P-Phenylenediamine is:

- Harmful if inhaled.
- May cause skin and eye irritation.
- May cause allergic skin or asthmatic respiratory reaction

“In case of accident:

- Personnel cleaning up solidified spills of industrial p-phenylenediamine should wear chemical splash goggles, rubber boots, rubber gloves, and appropriate respiratory protection. Wearing disposable coveralls or a butyl rubber suit should be considered.
- Avoid contact of p-Phenylenediamine with eyes, skin, and clothing.
- Avoid breathing dust or vapor.
- Use with adequate ventilation, and wash thoroughly after handling
- If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferable mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.”

⁹¹ Heim, O. “A Simple and Sensitive Test for p-Phenylenediamine” March 26, 1935 *Industrial and Engineering Chemistry* Vol 7, No. 3.p 146

⁹² DuPont (2011) <http://www.dupont.com/content/dam/dupont/products-and-services/fabrics-fibers-and-nonwovens/fabrics-fibers-and-nonwovens-landing/documents/PPD%20Tech%20Sheet.pdf>

Ancient Sunrise® Henna for Hair Chapter 3, Compound Henna, Part 3, Para-phenylenediamine and Henna

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