**PARAPHENYLENEDIAMINE**

*also called*...4-phenylenediamine, 1,4-diaminobenzene, 1,4-benzenediamine, 4-aminoaniline, or *p*-diaminobenzene. Some very closely related agents are *p*-toluenediamine, *p*-aminodiphenylamine, 2,4-diaminoanisole, *o*-aminophenol, and *p*-aminoazobenzene.

### What is it?
Paraphenylenediamine (PPD) is the major allergen in hair dye. It is present in most two-bottle type hair dyes, and also in some tints and rinses. Allergy may produce scalp swelling, blistering, or scaling. Sensitivity may show up instead as swelling of the eyelids or ears, or a rash on the forehead, neck, or side of the face. Hairdressers may develop rash on their hands and arms.

### Where might it be found?
- hair dye, coloring rinse
- comb-in hair tint
- shampoo-in highlight, lowlights
- skin paint, dark makeup
- dark lipstick
- henna tattoo
- dye for socks, support hose
- shoe dye
- textile, rubber, and fur dyes
- violin chin-rest stain
- antioxidant in antifreeze, fuels
- corrosion inhibitor in oils
- gasoline sweetener
- plastic manufacture
- rubber antioxidant
- printing ink
- antiozonant
- milk testing reagent
- water testing reagent
- retarder in acrylate production
- lithography, photocopying
- photo or x-ray film developing

### Let your doctor know that a generalized reaction could occur from taking closely related saccharin sweeteners, thiazide diuretics, sulfonamide antibiotics, sulfonyleurea antidiabetic agents, PAS, or celecoxib.

### How to avoid this allergen:
Do not use products that contain paraphenylenediamine. Check the complete ingredient list of everything you use for one of the names highlighted at the top. For products already at home that do not list ingredients, go to the store and inspect the original box or package. Some products’ ingredients are found on the internet at the manufacturer’s or store’s website, or at [http://householdproducts.nlm.nih.gov](http://householdproducts.nlm.nih.gov), [http://www.cosmeticsdatabase.com](http://www.cosmeticsdatabase.com), or [http://www.drugstore.com](http://www.drugstore.com).

Caution your beautician, hairdresser, barber, physician, nurse, and caretaker to avoid using products that contain paraphenylenediamine or closely related chemicals in your care.

To identify possible workplace exposure, check the Material Safety Data Sheet (MSDS) and complete ingredient list of each product you encounter. Wear long rubber or vinyl gloves to protect against contact with PPD at work, or ask your employer to substitute an alternative product.

(continued)
In case of a severe reaction to PPD hair dye,

- Wash your hair and scalp well with a mild shampoo or soapless cleaner to remove the excess dye.
- Then apply a compress of old cotton cloths moistened with either a 2% hydrogen peroxide solution or a 1:5000 dilution of potassium permanganate to completely oxidize the dye. [Once PPD is fully developed or oxidized, it no longer stimulates the allergic response.]
- You may apply cool olive oil or lime to help ease tightness and soften crusts.
- Your doctor may prescribe a topical cortisone oil or lotion.
- Your doctor may give you an injection of cortisone or a course of pills to take by mouth.

Safe alternative non-PPD hair coloring agents:

Always check the labels!

Elumen by Goldwell
(uses acid dyes) [www.elumen-haircolor.com](http://www.elumen-haircolor.com)

Clairol Loving Care (original—uses disperse dyes)
temporary rinses (use lead acetate) (for example some Grecian Formula; best for gray)
henna (vegetable product; best for red)
hair bleaches and highlights
vegetable hair dye (e.g. walnut shell juglone)