

Glyceryl Monothioglycolate

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Permanent-wave solutions are cosmetics that alter the disulfide bonds of hair keratin so that the hair may be curled or "waved." Once the disulfide bonds are broken and the hair is curled in the form desired, the second step, neutralization, reforms the disulfide bonds so that the hair remains fixed in the new configuration.¹

The majority of these salon "perms" utilize acid or heat along with glyceryl monothioglycolate. These permanent solutions also contain reducing agents that can cause irritant reactions on skin as well as contribute to hair breakage.²

Generally, the scalp is very resistant to contact dermatitis, and reactions to hair care products often spare the scalp, instead involving the forehead, eyelids, tops of the ears, and neck. Glyceryl monothioglycolate reactions, however, are often intense scalp reactions with scaling, edema, and crusting. One can expect to see reactions on the hands, forearms, and face and neck of a professional stylist.

"Cold waves" used for home permanents and older-style salon permanents contain thioglycolic acid combined with ammonia and rarely cause allergic contact dermatitis. When allergic contact dermatitis from these products is expected, other ingredients (such as fragrances) or even other hair care products used at the time may be the culprit.³

Neutral hair permanents that use cysteamine hydrochloride have been used in hair salons in North America since 1993 and are safe for use on individuals who are sensitive to glyceryl monothioglycolate. The Contact Allergen Replacement Database (CARD) recommends Goldwell Definition h2/s perm as a suitable alternative.⁴

Unfortunately, glyceryl monothioglycolate persists on permed hair for months so that sensitized hairdressers may

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Allergen Avoidance provides clinicians with high-quality up-to-date practical information to supply to patients about specific contact allergens.

react while cutting permed hair. Often, a glyceryl monothioglycolate allergy necessitates a career change for a hairdresser.²

References

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Glyceryl Monothioglycolate

What is it?

Glyceryl monothioglycolate is a compound used to permanently curl hair in a process known as a permanent wave or “perm.” Allergy to this product is more commonly found among hairdressers than among their clients, but sensitization is known to occur in both.

Glyceryl monothioglycolate may cross-react with the ammonium thioglycolate used in “hot” permanent-wave procedures.

Synonyms for glyceryl monothioglycolate include acid permanent wave, glycerol monomercaptoacetate, glyceryl thioglycolate, hot permanent wave, mercaptoacetic acid monoester with 1,2,3-propanetriol, and glycerol monothioglycolate.

Where is it found?

Glyceryl monothioglycolate is found in “acid” permanent-wave formulations mainly for use in hairdressing salons. It continues to be released from processed hair for up to 3 to 6 months after hair is permed with this method.

How can it be avoided?

Whenever skin contacts glyceryl monothioglycolate, it reacts with a red, scaly, and sometimes itchy and blistering rash.

Hairdressers should avoid contact with hair that has been permed in the previous 3 to 6 months. Also, care must be taken not to touch surfaces (such as countertops, telephones, sink edges, and faucet taps) that may be accidentally contaminated with this allergen.

The only glove known to be protective against glyceryl monothioglycolate is the 4H glove (North safety Products, 2000 Plainfield Pike, Cranston, RI, USA), which is a plastic laminate glove, and the Barrier glove, a chemical protective glove manufactured by Ansell (Ansell Healthcare, 200 Schulz Dr, Red Bank, NJ).

Often, a career change is required of professional hairdressers because glyceryl monothioglycolate can persist on permed hair for months (causing a flare in hand dermatitis even when permed hair is cut) and because the use of gloves makes the precision work of cutting hair difficult.