Permanent Waving

Developed by
Western Massachusetts Coalition for Occupational Safety and Health

Funded by
The Toxics Use Reduction Institute
Permanent Waving Presentation Overview

- Permanent Waving Process
- Health and Safety Concerns
- Health and Safety Precautions
- Safer Product Alternatives
Permanent Waving Process

Products Used

- Processing Lotion
- Neutralizing Lotion
Preparing Yourself to Give a Permanent Wave

- Neoprene gloves are effective.
- Nitrile gloves can also offer some protection and are less expensive.
- Rubber and vinyl gloves were found to not always protect skin.
Preparing Your Client to Receive a Permanent Wave

*Ask client to remove:*

- Glasses
- Contact lenses and
- Neck jewelry

To prevent a chemical reaction to the metal and to prevent gases from being trapped behind the contact lenses.
Preparing Your Client to Receive a Permanent Wave

• Give client a cape or smock.

• Apply a barrier cream around hairline and petroleum jelly on the scalp to protect it from the corrosive perm solution.

• Place a coil or ban of cotton around the entire hairline.

• Keep solutions out of eyes and ears, and off of skin.

•Milady’s Standard: A Cosmetology Textbook, 2000, Figure 11.49
Selecting and Mixing Waving Products

- Select correct product for hair type. Do a strand test.

- Try to find the least hazardous product, such as a lower pH.

- If practical, do not use any previously opened, unused waving lotion.

- Some products require mixing. Do not add anything extra or dilute the products unless directions instruct you to.
Selecting Permanent Waving Product

- The waving lotion uses a form of *thioglycolate* as an alkali to swell and *open* the hair cuticle.

- This allows the lotion to *penetrate* into the cortex and *break down* the disulfide bonds in the keratin.

*Standard Textbook of Cosmetology, Loraine’s Hairstyling Academy*
Waving Solutions can have Thioglycolate in 2 forms:

1. **ATG - Ammonium Thioglycolate**

- Used in Cold Waving and has a high pH.
- The high alkalinity swells the cuticle to allow penetration.
- Is a respiratory irritant.
- Can cause sensitization after prolonged contact.
- Is extremely corrosive, can burn skin and eyes on contact.
Waving Solutions can have Thioglycolate in 2 forms:

2. GMTG
   Glycerol Mono Thioglycolate
   - Used in Acid-Balanced Waving
   - Uses either chemical heat or physical heat to penetrate hair.
   - Developed as an alternative to Cold Waving with a lower pH, to be less damaging to hair. It is not clear whether it is less hazardous. It can cause allergic contact dermatitis to hairdresser, and to the scalp and skin of customer.
Waving Solutions Also Contain pH Adjusters

Avoid pH adjusters & emulsifiers in permanents containing:

- TEA - triethanolamine
- DEA - diethanolamine
- MEA - monoethanolamine

They can react with nitrites in the product to form nitrosamines which cause cancer in animals.
Other Ingredients of Concern in Waving Products

1. *Ammonium Hydroxide* (Ammonia) – eye, skin and respiratory irritant, can burn eyes and skin on contact

2. *Hydrogen Peroxide* – skin, eye, and respiratory irritant, skin and eye burns

3. *Phosphoric Acid* – skin, eyes, respiratory system irritant

4. *Benzyl Alcohol* – moderately toxic through ingestion and inhalation, skin and eye irritant
Applying the Waving Solution

• Select the correct rod size and make the accurate partings for each rod.

• Apply the lotion above and below the rods and saturate the hair.

• Set timer for exact amount of time.

Milady’s Standard: A Cosmetology Textbook, 2000
Processing the Wave Solution

Some low pH solutions processing call for placing client under a hood dryer.
Rinsing the Waving Solution

• Remove the cotton.

• Set timer for rinsing the exact amount of time.

• Rinsing is important to remove the chemical from the internal hair structure, not just the surface.

• Be sure to rinse the rods at the nape of the neck.
Neutralizers serve the same function for acid-balanced and cold waving (alkaline) formulas.

They are at an acidic pH to counteract the alkaline processing.

They chemically rebond the broken disulfide bonds and harden the hair into its new form.
Selecting a Neutralizer to Follow a Waving Solution

- Use neutralizers with *hydrogen peroxide* instead of *bromates*. Bromates are poisonous through swallowing or skin entrance. Can seriously effect body systems such as central nervous system and kidneys.

- *Peroxide-based* neutralizers can contain *phenacetin*, a suspected carcinogen and mutagen.

- Neutralizers can also contain *irritants* such as *Ethalenediamine Tetracetic Acid* and *Isopropyl Alcohol*, *Phosphoric Acid*, and *Perborate* (strong irritant).
Applying Neutralizing Solution After a Wave Solution

- Blot the hair dry first to allow the neutralizer to penetrate the hair.
- Apply a fresh cotton band around the hairline and fresh towel around the neck. Reapply the petroleum jelly around the hairline if needed.
- Apply the neutralizer and allow sufficient amount of time for the neutralizer to rebond the hair.
- Be sure to have gloves on, particularly if you are working the neutralizer in with your hands.

*Photos: Milady’s Standard: A Cosmetology Textbook, 2000*
Permanent Waving Process
Shampoo and Rinse

FIGURE 25.7a — H and S bonds in straight position.
FIGURE 25.7b — H bonds and nearly all S bonds broken.
FIGURE 25.7c — Some H bonds and many S bonds re-formed.
FIGURE 25.7d — Most H bonds and S bonds re-formed.
FIGURE 25.7e — Original S bonds stretched into waved positions.

Milady’s Standard: A Cosmetology Textbook, 2000
Other General Health Concerns of Waving Products

• Skin and eye damage:
  – Irritation
  – Burning/Corrosive
  – Blindness
  – Swelling

• Caused by:
  – High alkalinity
  – Thioglycolates
  – Detergent/surfactant additives that defat the skin and allow skin penetration
Summary of Safer Waving Product Alternatives

- Use Ammonium Thioglycolate instead of Glyceryl Mono Thioglycolate.
- Use Hydrogen Peroxide neutralizer instead of Bromates or Perborate. Beware of phenacetin in the hydrogen peroxide product.
- Use waving solutions that have been buffered to a lower pH of 6.5 – 6.9.