



Cosmetology Department

Chemical Relaxer

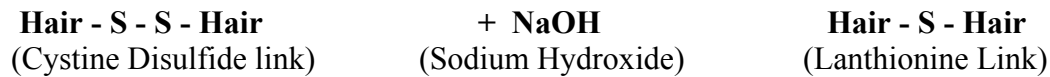
**CERRITOS COLLEGE
TECHNOLOGY DIVISION
COSMETOLOGY DEPARTMENT**

ACTION OF CHEMICALS

I. SODIUM HYDROXIDE

Functions by swelling the fibers and softens the main disulfide bonds which link together the polypeptide chains

ACTION: During the chemical action, the disulfide links lose one molecule of sulfur and after rinsing, rejoin as lanthionine links between the polypeptide chains.

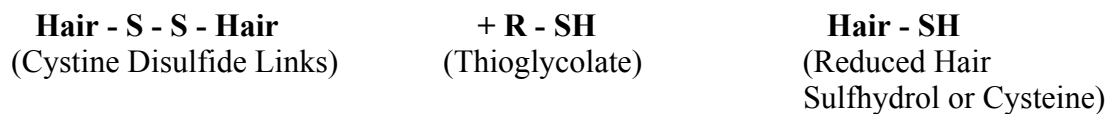


II. AMMONIUM THIOGLYCOLATE:

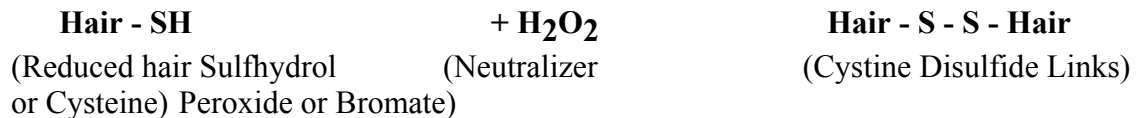
The disulfide links of the keratin are broken down resulting in a softening of the hair.

ACTION: Two steps - during the chemical action, the links are reduced; then during neutralizing, they are reformed.

Reducing or Softening Action



Neutralizing or Oxidizing



NOTE: As the equations show, the hair is returned to its original structure with Thioglycolate method. With Sodium Hydroxide, the hair structure is changed from a disulfide link to a lanthionine link and **does not return to its original structure.**

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TECHNOLOGY DIVISION
COSMETOLOGY DEPARTMENT**

INFORMATION SHEET

CHEMICAL HAIR RELAXING

Introduction:

Hair straightening solutions are alkaline. The more alkaline the solution is, the stronger the action on the hair fiber. There are a variety of hair straighteners available, and all will give some measure of good results depending on the skill of application, texture and condition of hair and most important, following manufacturer's specific instructions:

I. Types

1. Ammonium Thioglycolate products
2. Ammonium Sulfite products
3. Sodium Hydroxide products

II. Chemical Reaction

1. Disulfide linkages of the keratin are chemically broken down.
2. Chemical softens the hair by breaking the cystine cross-links within the hair shaft.
3. When the action of the solution is completed, and the hair is completely straightened, the chemical process must be reversed to hold the fiber in its new form.

III. The Oxidizing Agent or Neutralizer or Stabilizer

1. Failure to neutralize completely will result in rapid reversion. The oxidizing solution must reach every hair strand and in sufficient volume to work properly.
2. The cystine cross-links are restored, and the hair is hardened to hold the new shape.

IV. Combing

1. In the uncurling process hair must be kept straight.
2. Pulling of the comb causes tension: straightens the hair.
3. Hair in its weakest conditions at this stage; breakage can occur.

V. Sodium Hydroxide

1. Sodium hydroxide was the first chemical used to straighten hair. The pH is 10 to 14.
2. Chemically, sodium hydroxide is caustic soda (NaOH).
3. A protective cream must also be applied to the scalp to prevent scalp damage or burns.

VI. Timing

1. If left on too long, hair becomes brittle, may turn red and breakage at the scalp occurs.
2. Lighter and more porous hair will absorb the chemical faster.
3. **NOTE:** It is important that these products are not left on longer than the time prescribed by the manufacturer of the product being used. Otherwise, the hair will begin to disintegrate and become extremely fragile.

VII. Ammonium Sulfite

1. Some sulfite relaxers have a pH of 7.0 to 7.5.
2. Ammonium Sulfite is an inorganic chemical salt derived from a mixture of sulfurous acid and ammonium hydroxide.
3. The hair is softened, reshaped and neutralized to hold the new form.

VIII. Ammonium Thioglycolate (Thio)

1. pH factor of a "thio" solution is 9.2 to 9.5.
2. Failure to neutralize completely will result in rapid reversion.
3. Hair is kept straight in the uncurling process by combing.
4. Neutralizer is carefully combed through the hair.

XI. Precautions

1. Carefully and explicitly follow the manufacturer's instructions.

2. Question the client regarding the use of bleaches, tints, general health, allergies, and medical history.
3. Examine the scalp for abrasions (if any, wait until healed).
4. Be familiar with the chemicals used.
5. Check the caustic ability of sodium hydroxide product before using.
6. If required, give gentle shampoo.
7. With some methods the neutralizer remains in the hair as a setting lotion.
8. **Do not** leave the solution on longer than necessary.
9. Suggest conditioning treatments.
10. Wear **protective gloves.**
11. Directions for a Sodium Hydroxide product will read: **Do not shampoo** before applying the straightener.
12. Directions for a "thio" will read: **Shampoo before** applying the hair straightener.
13. Advise client to comb hair from ends, working from nape upward. Use large teeth of comb.
14. Damaged, bleached and tinted hair require a solution of low alkalinity.

TEST:

1. After you have examined the client's scalp and hair, what is the next best step?
2. If you gave a client a permanent wave and it was tighter than it should be, what chemical would you use to remove some of the curl?
3. What is the strongest chemical used to straighten the hair?
4. What type of hair will take the longest time for relaxing?
5. In your opinion, what type of hair will take the fastest?
6. What would you apply on the scalp as a protection, from possible burns, when using a caustic product?
7. What is another name for stabilizer?
8. What type of solution would you use for fine, wooly hair?
9. What action on the hair shaft is hair straightening (uncurling process)?
10. What is the chemical reaction of the neutralizer?
11. What is the pH of Ammonium Sulfite?
12. What could be the result to the hair if failure to neutralize completely?
13. Which product required shampoo prior to application?
14. What stage of the operation is the hair the weakest?
15. Because of the rapid action of the chemical, timing is very important, if left on too long, what could be the result of the hair?
16. - 20. Name five (5) safety precautions you would take for a chemical hair relaxing operation.

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HAIR STRAIGHTENERS

THE METHODS OF HAIR STRAIGHTENING ARE:

1. Thermal (The heated comb or “Pressing”)
2. Chemical Straightening solutions.

BASICALLY THERE ARE TWO TYPES OF CHEMICAL HAIR STRAIGHTENING SOLUTIONS:

1. Ammonium Thioglycollate Products
2. Sodium Hydroxide Products

CHEMICAL REACTION:

As in Cold Waving, the Disulfide linkages of the Keratin are chemically broken down, the Thioglycollate chemical softens the hair by breaking the cystine cross-links within the hair shaft. As the cross – links are broken, the protein molecules move apart from one another, as the lotion penetrates and swells the fiber. The hair fiber must be swollen so the position of the protein molecules can be changed.

When the action of the Thioglycollate solution is completed, and the hair is completely straightened, the chemical process must be reversed to hold the fiber in its new form. This is the function of the Oxidizing (Neutralizer) agent.

THE OXIDIZING AGENT or NEUTRALIZING:

The reducing or softening action of the Thioglycollate solution is stopped, the softening action is reversed, the cystine cross-links are restored, and the hair is hardened to the new shape.

INSUFFICIENT OXIDIZING or NEUTRALIZING:

Failure to neutralize completely will result in rapid relaxation. The Oxidizing solution must reach every hair strand and in sufficient volume to work properly.

COMBING:

In the uncurling process hair must be kept straight.

Carefully comb the neutralizer through the hair.

Pulling of the comb causes tension, straightens the hair.

Hair in its weakest condition at this stage breakage can occur.

Hair straightening solutions are alkaline. The more alkaline the solution, the stronger the action on the hair fiber.

The pH factor of a “Thio” solution: 9.2 to 9.5.

A solution for tinted hair contains approximately 2% to 5% Thioglycollate acid plus distilled water and other chemicals.

A regular solution contains approximately 5% to 10% Thioglycollate, distilled water and other chemicals.

Chemically Ammonium Thioglycollate is an organic chemical salt derived from Thioglycolic acid and Ammonium Hydroxide.

There are a variety of hair straighteners available, and all will give some measure of good results depending on the skill of application, TEXTURE and CONDITION of hair. Fine hair reacts to a mild solution. Tight curly hair requires stronger alkalies. Chemical straighteners should not be used on damaged, brittle, fragment hair, or hair colored with a peroxide product.

SODIUM HYDROXIDE HAIR STRAIGHTENERS

Sodium Hydroxide was the first chemical use to straighten hair. Because of the greater degree of straightness obtained by the Sodium Hydroxide chemical, the hair does not revert to its original shape. However, there is danger of chemically burning the hair and scalp and breakage is not unusual.

PATRON PROTECTION:

Skin at hairline, forehead, ears and nape of neck should be protected with a petroleum base, applied freely and evenly. Keep chemical from contact with the eyes, during the rinsing operation.

HYDROXIDE CONTENT:

Chemically Sodium Hydroxide is Caustic Soda (NaOH). The percentage of Sodium Hydroxide in straightening solutions varies from 5% to 10%. The amount of Hydroxide present governs the straightening action. The more Hydroxide the quicker the action. When the percentage reaches about 10%, greater precaution must be exercised to prevent scalp burns, breakage and discoloration.

TIMING:

Because of the rapid action of the chemical, timing is very important. If left on too long, hair becomes brittle may turn red and breakage at the scalp may occur. The degree of straightness can be determined by operator...more time, more straightening...less time of application, less straightening. Lighter and more porous hair will absorb the chemical faster.

TINTED, BLEACHED HAIR:

Color treated hair straightens rapidly. Observe test closely. Know the Hydrogen and pH value of the product used. Make strand test before using the straightener. (Protect area around strand with protective conditioning cream).

The pH factor:

10 to 14.

The higher the pH the more alkaline.

Alkalinity swells hair, acidity reduces swelling of hair and cuticle.

All chemical relaxers swell the hair shaft to some extent.

OXIDIZING AGENT of NEUTRALIZER:

The neutralizer reverses the chemical reaction that takes place between the lotion and the hair. The neutralizer causes the hair to return to about 80% to its natural condition. This is accomplished by allowing the neutralizer to remain in the hair as a setting lotion.

STYLING:

Use mesh rollers with end papers.

Rollers should move back and forth.

Advise patron to comb hair from ends, working from nape upward.

Use large teeth of comb.

Avoid tight braiding – pony tails.

(No general directions for application are given here. Carefully and explicitly follow the manufacturer's directions which accompany the specific product being used).

AMMONIUM SULFITE

The lesser degree Ammonium sulfite products are used to “relax” hair. Curl relaxers and Cold waving solutions are chemicals basically the same; the hair is softened, reshaped and neutralized to hold new form.

Curl relaxing is the process of removing excess curl from hair. Damaged, Bleached and tinted hair requires a solution of low alkalinity. The higher degree of alkalinity, the greater the damage of to hair: therefore, the degree of acidity or alkalinity of each product should be known. Normal hair has a pH of 5. Some relaxers have a pH of 7.4

(Ammonium Sulfite is an inorganic chemical salt derived form a mixture of sulfurous acid and ammonium hydroxide).

HEATED COMB or "PRESSING" (Thermal Method)

The principal of the Thermal or Pressing method is the removal of tight curl by straightening the hair strands. The hydrogen bonds are broken, the hair is temporarily relaxed with a warm comb, and the hair is then curled with a curling iron. Heat does not permanently relax hair.

Skillful operators can prevent burning or over pressing, which causes brittleness, fragmentation and possible baldness. Repeating the treatment too often may cause burning and possible dermatitis from the iron or from the oils and perfumes used.

The hair is shampooed pressing oils are applied to the hair to minimize burning. Pressure is applied to the strands of the hair with a heated comb, which straightens the hair so it can then be curled.

Heat from the irons used in the press and curl method of hair dressing can cause loss of hair elasticity. Curling Irons: "C" - 1/2" in diameter "G" - 3/4" in diameter.

QUALIFICATIONS REQUIRED:

Hair straightening is not a simple process. Knowledge of the chemistry of hair, the ingredients used in the different types of straighteners are essential. Good judgment in the selection of the proper chemical. The ability to analyze Condition, Texture, Elasticity and Porosity of hair are all skills required to better perform hair-straightening services.

PRECAUTIONS

When using a Thio, or a Sodium Hydroxide hair straightening product:

1. Carefully and explicitly follow the Manufacturer's instructions which accompany the SPECIFIC product being used. Methods of application differ with different preparations.
2. Question the patron regarding the use of bleaches, tints, general health, allergies medical history, and any special hair treatments. Many problems can be avoided if precautions are taken **BEFORE** the hair straightening service.
3. Have patron sign a release statement before the service.
4. Examine the scalp for abrasions. (If any, wait until healed).
5. Examine hair. Note condition, elasticity, porosity and texture. (The selection of a chemical product designed to remove the natural curl and cause a structural change in the hair, should be based on the **CONDITION** of the hair, rather than **TEXTURE**, or the amount of curl in

the hair). Follow the Manufacturer's directions in regard to the application to hard, dry brittle, over porous hair.

6. Check the caustic ability of the **SODIUM HYDROXIDE** product before using, Sodium Hydroxide has a pH of 10 -14. (pH indicator papers can be used). Be familiar with the chemicals used.
7. Make strand test before proceeding with the service. Make test at front of the head. Apply the complete relaxing treatment to a small section of hair.
8. **IF REQUIRED**, give gentle shampoo: **DO NOT BRUSH**, avoid brisk rubbing, or use of comb or brush.
9. Follow the Manufacturer's directions regarding application of the solution to **DRY** or **DAMP** hair.
10. Follow the Manufacturer's directions regarding regarding rinsing of the Oxidizing agent or Neutralizer. With some methods the neutralizer remains in the hair as a setting lotion. **SODIUM HYDROXIDE** products are rinsed with **TEPID WATER**.
11. Make a complete record of the service, condition of the hair and its reaction.
 - A. Do not over straighten hair. Do not leave the solution on longer than necessary.
 - B. Do not pull and stretch hair.
 - C. Do not confuse over curled hair with over processed hair.
 - D. Do not attempt to remove curl from over processed hair (Suggest conditioning treatments.)
 - E. Proper hair conditioning is an important part of all chemical straightening.

*****WEAR PROTETIVE GLOVES:**

If hair is in a damaged condition, "abused", bleached or straightened with a thermal method, a conditioner should be used for a period of 10 to 30 days. (Over bleached hair is spongy, rubbery, slippery, feels gummy when wet, brittle when dry. Bleached hair is weakest when wet).

If hair is very resistant, a second application might be necessary. It is advisable to wait about 10 days before the second straightening service.

To accurately determine the hair condition, examine hair under a microscope. If a client has used a **CAUSTIC** product and wishes to change to a **THIO** product, a strand test must first be made to determine if breakage will occur.

Specifically follow the Manufacturer's directions for the product being used.

1. **The directions for use of a *SODIUM HYDROXIDE* product will read:**
DO NOT SHAMPOO the hair **BEFORE** applying the straightening lotion.
2. The directions for use of a ***THIOGLYCOLLATE*** product will read:
SHAMPOO the hair **BEFORE** applying the straightening solution...then Rinse...use neutralizer.

**Cerritos College
Technology Division
Cosmetology Department**

**Ammonium Thioglycolate Relaxers
Soft Permanent Wave**

Ammonium Thioglycolate (Thio) is a chemical that will curl straight hair. It is the same chemical found in Cold Permanent wave solutions (to make hair curly permanently). Instead of using Thio in liquid form manufacturers developed a cream form of Thio for relaxing purposes. The cream adheres to the hair giving the operator more control of the chemical.

Ammonium Thioglycolate when applied to the hair softens expands and penetrates the cuticle layer to the cortex. The curly sulfur bonds in the cortex (protein molecules), are broken down, softening the hair. The hair is then smoothed into a new relaxed shape using the comb or hand technique. When the hair is sufficiently relaxed the action of the Thio is stopped by the use of a neutralizer containing an oxidizing agent. This is a permanent process.

Ammonium Thioglycolate relaxers are not as popular in many salons that cater to the client of African descent as Sodium Hydroxide. Thio does not leave super-curly and kinky hair in a very soft and pliable condition. It is drying to super-curly and kinky hair. This dry condition can cause kinky and super-curly hair to break. **I do not advise using Thio for relaxing purposes, on kinky and super-curly hair unless the a client is going to wear a Soft Permanent wave for overly curly hair.**

(A Soft Permanent wave, overly curly hair will be explained and demonstrated later in this chapter). Curly and wavy hair can be successfully relaxed with Thio if the curl pattern is approximately ½ to 1 inch or larger with good elasticity and porosity. The chemical neutralizer for Thio relaxers also has a hardening effect on super-curly and kinky hair. Thio should only be used on kinky and super-curly hair in **conjunction** with a soft permanent wave for over-curly hair where the hair will be kept moist on a daily basis.

Strengths of Thio Relaxers:

Manufacturers of Thio relaxers package them in different strengths for different hair textures and conditions. The strengths are Mild, Regular, Super and Maximum Strength.

1. ***Mild*** is for fine super-curly hair with little elasticity and a great amount of porosity. Mild is also for lightening (bleached) and color treated hair.
2. ***Regular*** is for curly hair with normal elasticity and normal porosity. Regular strength should not be applied lightened and color treated hair.

3. **Super** is for coarse curly hair with good elasticity and little porosity. It is not for lightened and color treated hair.
4. **Maximum** strength is for the extremely resistant coarse curly wavy hair with little porosity and a great amount of elasticity. Manufacturers of Thio relaxers make a maximum strength is limited.

Note: Before giving and Thio relaxer strand test the hair for strength of relaxer needed and for condition and strength of the client's hair.

Analyzing the hair:

Hair must be analyzed for its texture, condition, elasticity, porosity and its strength. Do not give the relaxer if hair is not strong enough to take the relaxer without damage.

Understanding the structure of the hair:

Factors to be considered before a Thio relaxer is given are the same when giving a Sodium Hydroxide relaxer. Some of these important factors are as follows: The operator should understand the structure of the hair and how Thio will effect in structures before a Thio relaxer is given.

Condition of the client's hair.

The condition of the client's hair lets the technician know whether the relaxer should be given.

Hair elasticity.

The elasticity of the hair will let the technician know when to remove the relaxer from the hair. If hair lacks elasticity, the relaxer should not be given.

Virgin hair or Chemically treated hair.

Virgin hair is much stronger than artificially treated hair. Chemically treated hair is porous (*absorbs moisture quickly*), and can be damaged easily with Thio. Milder strengths should be used on chemically treated hair

Client's health.

Certain medication may prevent a successful thio relaxer. Some medication will interfere with the penetration of the solution. Be sure to get a complete history of all medications that the client is taking, and give a **pre-strand test** before the Thio is given.

Hair Conditioners.

The technician should understand the type of conditioners to be used on the hair to maintain its health after the Thio relaxer. Advise the client on these conditioners and how often they should be given. Moisturizing conditioners should be given each time the hair is shampooed.

Age of client.

Young children should not have Thio relaxers. Their hair is too weak; it hasn't received its full structure. Be sure the elderly client can return to the salon on regular basis for shampooing and conditioning after a Thio relaxer is given.

Procedure for a Virgin Thio Relaxer:**Materials needed:**

Shampoo cape	Towels	Hair Clamps
Thio relaxer	Neutralizer	Large tooth comb
Rat-tail comb	Protective gloves	Tint brush & bowl
Neck strips (sanex)	Record card	Application brush

1. Wash and dry hands. (Sanitizing hands)
2. Double drape patron.
3. Examine scalp and analyze hair. If there are abrasions or scalp lesions, do not give the relaxer.
4. Gently comb tangles out of hair using a large tooth comb.
5. Shampoo hair with a low pH shampoo, using *gentle manipulations* so as not to irritate scalp.
6. Towel dry hair.
7. Gently comb tangles out of hair starting in the back and at the ends working towards the scalp. ***Do not scrape the scalp with the comb.***
8. Divide hair into four sections.
9. Apply protective base to hairline, ears and nape, (if manufactures' directions require a base to the scalp), apply the base on the scalp by using 1/4th inch sub-partings making sure that the entire scalp is covered.
10. Put on protective gloves.
11. Beginning in the back area (nape or crown), apply Thio from scalp down to the porous ends, using 1/4th inch sub-partings. Apply relaxer to both sides of the strand.
12. Apply relaxer to back sections first, then the front sections.
13. Return to back section, apply relaxer to the ends, apply to the back sections first, then the front sections.
14. Begin the straightening process, using a large tooth comb and starting in the back sections, making 1/4th inch sub-partings comb from scalp to ends. (always follow manufactures directions)

15. Using the fine comb, comb through the hair again, beginning in back making 1/4th inch sub-partings. Comb back sections first then front sections.
16. Strand test.
17. When hair is relaxed sufficiently, hair should be soft and pliable. Rinse hair thoroughly with tepid water.
18. Towel dry the hair.
19. Apply neutralizer. ***Follow manufacturer's instructions.***
20. Rinse neutralizer from hair.
21. Condition the hair with moisturizing conditioner.
22. Wash, rinse and disinfect all soiled equipment.
23. Fill out record card.

Note: If client is to receive a Soft Permanent Wave, for over curly hair, give the above Thio procedure omitting steps 19 through 23.

Thio relaxer retouch application:

Hair grows approximately one-half inch per month. Client's hair will require a re-touch relaxer when the hair grows out to approximately one and one half inch. (1 ½ "). Materials needed and all client and technician safety protection are the same as for a virgin Thio relaxer. Thio is applied to the new growth of hair only. Using comb or hand technique, smooth new growth until it is sufficiently relaxed. Hair is rinsed thoroughly and neutralized for required time designated by the manufacturer. Hair is conditioned with a cream moisture and proteins that have been taken out of the hair by the Thio relaxer. Conditioner is rinsed out and hair is ready for styling.

Soft Permanent wave for overly-curly hair:

As stated earlier in this packet. Thio relaxers are extremely drying on kinky and super-curly hair. They should only be used as the first step of a Soft Permanent Wave. In soft permanent waving, super-curly and kinky hair is relaxed first to remove the original curl pattern and prepare the hair for a larger and smoother curl. Permanent wave rods are used to give the hair a new permanent curl. Soft permanent waves are commonly referred to as a "Jerry Curl". **The size of the permanent wave rods should be at least twice as large as the original curl pattern.** Hair should be long enough to wrap around the rod at least two and one half times (2 ½). Wrapping the hair around the rod less than two and a half times will achieve an insufficient curl.

Soft permanent wave procedure:

Materials needed:

Shampoo cape	Thio cream or gel	Cotton
Hair clamps	Wrapping lotion	Moisturizer
Neutralizer	Neck strips	Combs
Gloves	Plastic cape	End papers
Protective Base	Curl Activator	Applicator brush
Record card	Scissors	Shampoo
Towels		

Note: The client's hair has been relaxed with Thio in cream form. The Thio has been rinsed out and hair has been blotted.

Proceed as follows:

1. Double drape client.
2. Using a large tooth comb, gently comb tangles out of hair beginning in back of head from ends to scalp and working to the front hairline.
3. Check scalp for any abrasions.
4. Section hair in eight or nine sections.

Note: Some manufactures require the pre-wrapping lotion to be placed on the entire head before sectioning. Use plastic clamps to hold sections in place if pre-wrap lotion is used before the partings. **Follow manufacturer's directions.**

5. Apply wrapping lotion to one section, wrap that section, and complete this process until all sections have been wrapped.
6. After wrap is completed, apply protective cream and cotton around hairline to protect client's skin.
7. Apply Thio curling lotion to each rod.
8. Replace saturated cotton with clean cotton.
9. Place a plastic cap over client's head. If manufacturer requires heat for processing, place client under a pre-heated dryer for required time. Do not revise heat. A plastic cap is placed on client's head and the body heat activates the curling lotion.
10. Take a test curl. If curl has not developed, rewind test curl, replace plastic cap and have client process until curl pattern develops.
11. When desired pattern is reached, take client to shampoo bowl, rinse hair thoroughly with warm water.
12. Towel blot each curl.
13. Apply neutralizer making sure that each rod is saturated twice. Leave neutralizer on required amount of time designated by the manufacturer.
14. Unwind each rod carefully. Apply remaining neutralizer to hair and gently work it through the hair.
15. Rinse hair with lukewarm water and gently towel blot hair.
16. Apply a small amount of moisturizing conditioner to newly curled hair to restore its moisture content.
17. Carefully section hair for a hair cut. Trim ragged ends or give a style cut depending on clients' wishes. Use scissors to cut the hair.
18. Apply curl activator and gently work it into the hair.
19. Arrange hair into a style by using a wide tooth plastic pick,
20. Let hair air dry.
21. Wash, rinse and disinfect all soiled equipment.
22. Complete record card.

Note: Advise client on how to care for the hair after the Soft permanent wave. Client should return to the operator for a shampoo and conditioner as often as necessary. At least every two weeks. A moisturizing acid balanced shampoo and a cream protein moisturizing conditioner should be used each time the hair is shampooed. A lifting plastic pick should be used to style the soft permanent wave. A non-oily curl activator

should be used as often as necessary to maintain a healthy sheen and to keep the permed hair soft and pliable.

Soft permanent wave retouch:

When client's soft permanent wave has grown approximately 1 ½ to 2 inches it is time for a re-touch. Follow the above procedure for a Thio relaxer re-touches omitting the neutralizer and conditioner. Proceed with above procedure for Soft permanent waving.

Safety rules for Thio relaxers and Soft permanent waves.

1. Never use Thio on hair treated with sodium hydroxide. To do so will cause extreme damage and the hair will break off.
2. Never use Thio over metallic dye or compound henna. Applying Thio over metallic dye and compound henna will cause breakage.
3. Never use Thio if the scalp has abrasions, cuts or if scalp contains a contagious disease.
4. If hair has been lightened (bleached), or tinted with an aniline derivative tint (peroxide tint), give a pre-test to curl or pre-strand test with a mild strength of Thio to determine if hair is strong enough to take the Thio relaxer without damage.
5. Always analyze hair and scalp before applying Thio to guard against scalp and hair damage.
6. Always complete clients record card when Thio service is completed.
7. Always take frequent test curls during the soft permanent wave to determine exact processing time.
8. Always protect client's skin with a protective cream when giving a Thio relaxer and use cotton to protect the skin when giving a soft permanent wave.
9. Thio is drying on kinky and super-curly hair. It is not advisable to use Thio for relaxing purpose on this hair. Thio should only be used when the hair is to be soft permanent wave.

Summary:

Ammonium Thioglycolate is an alkaline chemical designed to relax curls, kinks and waves from the hair or it will put curls into straight hair when permanent waving. Thio softens and swells the sulfur bonds in the cortex layer making the straightening and curling process permanent. The hair must be neutralized with a chemical neutralizer after the straightening and curling process is complete to reharden the hair in its new form.

The client's hair must be analyzed for its strength and condition before Thio is applied. The scalp must be free from abrasions, cuts and contagious diseases when giving Thio relaxers.

The hair is shampooed with a low pH shampoo before the relaxer is given, Although Thio is lower on the pH scale than sodium hydroxide it is drying to the kinky and super-curly hair and should not be used for relaxing purposes alone. Kinky and super-curly hair should be given a "Soft Perm" after the Thio relaxer. Hair is wrapped on a

permanent wave rod at least twice the size of the natural curl pattern of the hair when soft permanent waving. After the newly restructured curl is neutralized hair is moisturized, cut into a style, a curl activator is applied and hair is air dried into its new curly form. Moisturizers and curl activators keep kinky and super-curly hair from becoming dry, brittle and breaking. A pre-strand test and a pre-test curl should be given before attempting to relax and soft perm lightened and color treated hair with a mild strength of Thio to determine hair strength and condition.

Review Quiz

1. What are the two chemicals used in Thio relaxing and soft permanent waving?

2. Should the hair be shampooed before a Thio relaxer is given? _____
3. How is the client's skin protected from the chemical when giving a soft permanent wave? _____
4. What should the technician do to insure client's hair is strong enough to soft perm without damage? _____
5. How is the hair rehardened after a Thio process is given?

6. When should the hair cut be given, in soft permanent waving?

7. How can the operator prevent the clients hair from being dry and brittle after a soft permanent wave?

8. How large should the permanent wave rods be when giving a soft permanent wave? _____
9. What will happen to the hair if Tho is applied over metallic dye?

10. Should Thio be applied over a compound henna?

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PROCEDURE SHEET

STRAND TESTING HAIR WITH SODIUM HYDROXIDE

Materials Needed

Wax Paper	Chemical Relaxer
Cotton Swab	Small Bowl
Shampoo Cape	Shampoo
Rubber Gloves	Sanex
Towel	Clips

Introduction

Strand testing a section of hair in the curliest area is an absolutely necessary procedure. It will indicate the ultimate results of a complete treatment as to whether or not service can be given. More often than not, this special service can save the client's entire head of hair. Be sure it is safe before you render a complete treatment.

Procedure

1. Take a small section of hair and thread through a hole in wax paper.
2. Apply relaxer with swab. Base is not necessary.
3. Allow relaxer to remain on hair for five minutes, smooth hair gently. Allow another five minutes.
4. Rinse hair in small bowl of neutralizer shampoo.
5. Set stand and dry.
6. If test is satisfactory and there is no breakage, proceed with treatment.

SODIUM HYDROXIDE CHEMICAL RELAXER

INTRODUCTION

This is a basic application for normal (not color treated) virgin (not previously relaxed) hair. Always follow manufacturer's directions.

1. Select and arrange supplies
2. Evaluate test results.
3. Examine scalp and hair.
4. Clients privilege and record card. (*List any medication client is taking.*)
5. Double drape.
6. **DO NOT SHAMPOO** -- If moisture or perspiration is present, dry hair first.
7. Section in 4 sections.
8. Apply protective base to scalp, entire hairline and ears, using 1/4-inch sub-partings. (*Apply protective base with the rattail comb*)
9. **Apply Sodium Hydroxide relaxer**
 - a. Use gloves
 - b. Place paper towel on front two sections. (*This is to protect the hair when applying the back section.*)
 - c. Use 1/4-inch sub-partings.
 - d. Begin in the curliest or most resistant area. (*Usually the nape or crown.*)
 - e. Apply 1/2-inch from scalp out to porous ends. (*Crisscross each sub-partings.*)
 - f. Brush on hair, not rubbed in.
10. **Straighten hair (*spreading relaxer*).**
 - a. Begin in nape area.
 - b. Brush product up to the scalp, but not on it. (*All four sections*) (**Do not stretch the hair.**)
 - c. Begin at crown and brush product through porous end.
 - d. Do not bring sections down once completed.
11. **Physically straightening the hair.**
 - a. Begin in nape.
 - b. Straighten each sub-section (*Crisscross each sub-section*)
 1. Straighten scalp hair with finger.

2. Straighten hair by "scissor method", or placing hair between hands and smoothing with palm, or by "milking method". (*From scalp through ends.*)
- c. Use fingers to keep hair smooth and straight.

12. Timing

- a. Pre-determined by strand test
 - b. Degree of straightness desired
 - c. Strength of hair (elasticity)
 - d. Manufacturers directions
12. Rinse thoroughly and rapidly with the flow of the water. (*Do not use hands to remove the relaxer from the hair.*)
13. Shampoo with a neutralizing shampoo. Avoid strong manipulations.
14. Set hair, keeping hair wet and smooth. Hair must be completely dry before removing rollers.

NOTE: Always include application time when timing.

AMMONIUM THIOGLYCOLATE CHEMICAL RELAZER

INTRODUCTION

This is a basic application for normal (*not color treated*) virgin (*not previously relaxed*) hair. Always follow manufacturers directions.

1. Select and arrange supplies.
2. Evaluate test results.
3. Examine scalp and hair.
4. Clients privilege and record card. (*List any medication client is taking*)
5. Double drape.
6. Shampoo hair with neutral shampoo. Towel dry. Hair should be slightly damp.
7. Section into 4 sections.
8. Apply protective cream to hairline and ears.
9. **Apply relaxer.**
 - a. Use gloves
 - b. Place paper towel on front two sections. (*This is to protect the hair when applying the back section.*)
 - c. Use 1/4 inch sub-partings.
 - d. Begin in the curliest or most resistant area. (*Usually the nape or crown.*)
 - b. **Apply from the scalp to the porous ends.** (*Criss-cross each sub-partings.*)
 - f. Brush on hair, not rubbed in.
10. **Straightening hair (*spreading relaxer*).**
 - a. Begin in nape area.
 - b. Brush product **through porous end**. (*All four sections*) (**Do not stretch the hair.**)
 - c. Put sections up once completed.
11. **Physically straightening the hair.**
 - a. Begin in nape.
 - b. Straighten each sub-section (*Criss-cross each sub-section*)

1. Straighten scalp hair with back of comb.
 2. Straighten hair by combing first with the large teeth of the comb, then combing with the small teeth.. (*From scalp through ends.*)
- c. Be sure to keep hair smooth and straight.

12. Timing

- a. Pre-determined by strand test
- b. Degree of straightness desired
- c. Strength of hair (elasticity)
- d. Manufacturers directions (usually not over 35 minutes) including application time.

13. Rinsing

- a. Rinse 50% of relaxer with warm water
- b. Comb hair smooth and straight with remaining relaxer left in hair, comb about five minutes or (per manufacturers time guide) to change cystine linkage into a straight position.
- c. The remaining relaxer is totally rinsed from the hair with warm water, keeping hair straight while rinsing.

**CERRITOS COLLEGE
TECHNOLOGY DIVISION
COSMETOLOGY DEPARTMENT**

PROCEDURE SHEET

SODIUM HYDROXIDE OVER CURLY HAIR

SET-UP

1. Wash hands
2. Sanitize work area
3. Table set-up and SMA
4. Double drape
5. Consultation
6. Scalp and hair analysis
7. Section hair (4)
8. Protective cream (hairline & ears)
9. Base the entire head with $\frac{1}{4}$ inch sub-sections
(with fingers, or back of a comb)
10. Apply gloves

Finishing the service

22. Finish the service by styling by wet styling, blow drying, or curling
23. Fill-out client recorded card
24. Clean-up
25. Sanitize work area

First Application -

11. Start application in back
12. $\frac{1}{4}$ inch sub-partings
13. Apply $\frac{1}{2}$ **inch from** the scalp **up to** porous ends
14. Strand test by removing product (*not with water*) or with the back of the comb to hair

Second Application -

15. Apply **almost to the scalp and through ends**
16. Strand test (if necessary)
17. **STRAIGHTENING TECHNIQUE**
 - a. Using $\frac{1}{4}$ inch sub-section using the back of the comb with even pressure (*entire head*)
 - b. **OR** scissors or milk with palms, each sub-section with even pressure (*entire head*)
18. Stand test (*not with water*)
19. Rinse with warm water and using only the pressure of water beginning at nape (*without manipulations until all product is removed*)
20. Apply **Neutralizing Shampoo (or stabilizer or fixative shampoo)** (2 or 3 times gently)
21. Rinse without heavy manipulation

**CERRITOS COLLEGE
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PROCEDURE SHEET

SOFT CURL PERMANENT WAVING OVER CURLY HAIR

SET-UP

1. Wash hands
2. Sanitize work area
3. Table set-up and SMA
4. Double drape
5. Consultation
6. Scalp and hair analysis
7. **Light shampoo**
8. Section hair (4)
9. Protective cream (hairline & ears)
10. **Apply gloves**

PART I - Thioglycolate Breakdown Cream

11. Start application in **back**
12. $\frac{1}{4}$ inch sub-partings
13. Apply **on** the scalp **up to** porous ends
14. **Strand test** by removing product (*not with water*) or pressing with the back of the comb to hair
15. **Apply through ends**
16. Strand test
17. **STRAIGHTENING TECHNIQUE**
 - a. Comb **each sub-section** first with **wide tooth** comb (*entire head*)
 - b. Then comb **each sub-section** with **smaller tooth** comb (*entire head*)
18. Stand test
19. Rinse (*without heavy manipulations*)
20. **Towel blot**
21. Remove all tangles gently

PART II - Curl Reformation

22. **Section** into 8 or 9 sections
23. **Select rod size** (*2 times the diameter of client's natural curl*)
24. **Sub-section = one diameter**
25. **Apply rods $\frac{1}{2}$ off base** (*hair needs to wrap around rod 2 $\frac{1}{2}$ times & no fishhooks or bands on scalp*)
26. Apply **protective cream & cotton**
27. Apply **gloves**
28. **Saturate** solution on each rod
 - a. **Top & bottom of rod**
 - b. **Blot with cotton between rods on scalp**
29. **Remove cotton** (*when dripping stops*)
30. **Test curl**
31. Rinse hair
32. Towel blot hair
33. Apply cotton around hairline
34. **Apply neutralizer**
35. Rinse hair
36. Remove rods gently
37. Fill-out client recorded card
38. Clean-up
39. Sanitize work area

Cerritos College
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THE FINE ART OF HAIR RELAXING

When hair relaxing first became popular, it was referred to as a REVERSE PERMANENT. This term was associated with this service because for years prior to the introduction of relaxers to permanent straightened curly and kinky hair, there were products that were designed to put a permanent curl or kink in straight hair. These were Ammonium Thioglycolate products that were simply referred to as **Permanents**. So, when relaxers came along that were designed to do just the reverse on curly and kinky hair, they were just referred to as REVERSE PERMANENTS for purpose of identification. The term reverse permanent soon gave way to the term HAIR STRAIGHTENER. When it was discovered that so called hair straighteners did not straighten hair in and out by themselves, without a certain amount of physical manipulation on the part of the person applying the straightener, the terminology was changed to hair relaxers.

The very heart of the cosmetic industry is based on the fact that people are not satisfied with the natural state of their physical appearance. Caucasians to the beach or use cosmetics and mechanical devices to achieve a tan, and people of color use bleaching crèmes to lighten their complexion. Caucasians go to beauty salons to have curl or kink put permanently in their straight hair. While Blacks and other

With naturally curly, wavy or kinky hair visit the salon to have this phenomenon, because if it were not for the above facts, there would be no cosmetic products or services, and the third largest industry in America would cease to exist.

THE THREE LAYERS OF HAIR

Hair is basically a protein known as Keratin. It is elastic in texture and insoluble in water. It is resistant to chemical change. Each follicle has a sebaceous gland which secretes sebum (natural skin oil), which provides lubrication for scalp and hair.

THE CUTICLE

The Cuticle is the outer protective layer composed of the same substance as fingernails and has overlapping scales from the scalp up. Although curly, wavy and kinky hair can appear to have twice as much as straight hair, both have the same amount of Cuticle. If you find this to be confusing, we will clarify this later in this chapter.

THE CORTEX

The cortex of the hair shaft is the layer that contains natural color, and adds a protecting the inner structure of the hair from potential harm by ultraviolet sun rays. This is where artificial color is deposited during color changes, by oxidizing the Cuticle with developers (peroxide) that literally punch small microscopic holes in each layer of the cuticle

which allows the color to reach the cortex. The cuticle layer is transparent, which allows you to see the color in the cortex.

THE MEDULLA

The Medulla is located in the center of the hair shaft and is very important to the hair relaxing procedure. Textbooks state the Medulla has very little importance. True for straight hair but false for curly and wavy hair.

All hair has a Medulla, but in some fine straight hair, it is an empty shaft, void of any cells (bonds) or fiber (cystien).

The following information is based on questions asked by professionals over the last 20 years relating to hair relaxing. As stated in the Prologue, some of this information is fact and some is theory, but all is based on logical conclusions that may or may not have been published before.

THE FUNCTION OF THE BONDS AND CUTICLE IN HAIR RELAXING AND COLD WAVE PERMANENT

The BONDS are the FOUNDATION of the hair which support the STRUCTURE of the hair shaft. The CUTICLE is the FRAMING STRUCTURE that DETERMINES THE SHAPE AND DIRECTION OF THE HAIR SHAFT.

1. WHAT SHOULD YOU LOOK FOR PRIOR TO RELAXING?

Check for dryness and brittleness. Do a simple strand test by holding a few strands of hair at the ends between your thumb and forefinger – tug lightly. Check for areas of the hair shaft where breakage may occur. If it breaks in the middle, then possibly it is weak, damaged and/or porous hair. This problem must be conditioned by one or more

conditioning treatments.

If breakage occurs at the scalp area, this could be more serious and beyond your control to correct. The cause could be due to medications, body chemistry, etc. Never attempt to relax when breakage is close to the scalp.

Also, check for cuts, scratches, redness, soreness, pimples or other abrasions on the scalp. These conditions must be cleared up before relaxing. If your patron has pimples, psoriasis or acne around the face and forehead, chances are, the same conditions are hidden in the scalp. You should check the scalp prior to relaxing. This may cause the patron to experience temporary or permanent discomfort as a result of the active ingredients in the relaxer.

2. WHAT TO DO IF HAIR APPEARS TO BE DISSOLVING DURING RELAXING TREATMENT.

More than likely this is hair you should not have attempted to relax. Due to one or more reason mentioned previously; because it is too weak and porous to withstand the active ingredients in the relaxer. This is the reason why pre-relaxing strand testing is so important. You should immediately rinse thoroughly, pour and massage a generous amount of lemon juice and water mixture ($\frac{1}{2}$ and $\frac{1}{2}$) onto the hair. This will instantly stop the action of the active ingredients. Shampoo twice with neutralizing shampoo. Do not attempt to relax.

Do not use this lemon juice formula on hair where there is no problem; to do so could cause premature reversion to the hair. This treatment is only recommended in cases of emergency. At the time when you use the emergency procedure, your interest is to save the hair. Not to maintain straightness.