

Hair Coloring The Lightening Process

*Developed by
Western Massachusetts Coalition for
Occupational Safety and Health*

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Hair Coloring

The Lightening Process

- *Lightening Processes*
- *Types of Lighteners*
 - *Health Concerns*
- *Health and Safety Precautions*

Lightening Process

The ingredients and process used to lighten:

- **hydrogen peroxide** (*the oxidizing agent*)
- **is mixed with ammonia** (*the alkali, a high pH*)
- **to create a chemical reaction** (*the oxidation/lightening process*)

Role of Hydrogen Peroxide in the Lightening Process

- *As a Softener* – helps to **swell** the hair cuticle when added to an alkali to **allow penetration** of dyes and some of the hydrogen peroxide.
- *As an Oxidizer* – when mixed, it creates an **oxidation** process that **releases** oxygen, which **generates** enough **heat** and **force** into the cortical layer of the hair shaft to **crash** into the hair color (*melanin*) and **break it down** (*diffuse it*). The *diffusion* of the *melanin* makes the hair appear lighter.
- *As a Developer* – releases oxygen when added to dye that combines with the color molecules to **develop** them and **deposit** color into the hair shaft.

Concentrations of Hydrogen Peroxide

- **20% peroxide** **2 lifts**
- **30% peroxide** **3 lifts**
- **40% peroxide** **4 lifts**

Three Types of Lighteners

1. Oil Bleaches

- **Mildest, has the least amount of lightening action – for only one or two levels of color lift.**
- **Used for the entire head. Least hazardous.**
- **Shampoo-based product containing hydrogen peroxide and ammonia solution to open the hair cuticle and gently diffuse the melanin. Contains sulfonated oils to slow down the bleaching process.**

Three Types of Lighteners

2. Cream Lighteners

- **Strong enough for pastel blonding but mild enough to be used on scalp.**
- **Used for all kinds of lightening services.**
- **Similar to Oil Bleaches as it is a shampoo-based product with sulfonated oils, a hydrogen peroxide solution of up to 6% solution (20% by volume) and ammonia.**
- **Uses a protinator or activator that contains an alkali or an oxidizer for extra lightening power.**
- **Have an average pH of 10.**

Health Concerns

Protinators and Activators

- **They can contain:**
 - sodium metasilicate which has a high pH, or
 - potassium persulfate, ammonium persulfate, or urea peroxide which are oxidizers and can cause respiratory irritation.
- **When ammonium persulfate is heated to speed the bleaching process, it can produce toxic fumes.**



Three Types of Lightener

3. Powder Bleaches

- **Strong enough to do pastel blonding.**
- **It is similar to Oil and Cream Bleaches as it contains ammonia and hydrogen peroxide.**
- **Here the ammonia is in dry form which begins the oxidation process when it is mixed with the liquid or cream hydrogen peroxide.**

Health Concerns

3. Powder Bleaches

- **Does not have conditioners.**
Too strong to be applied to scalp, and could cause severe skin irritation and chemical burns.
- **Only to be used for off-scalp applications – foil wrapped weaving, highlighting with plastic caps, hair painting.**



Health Concerns

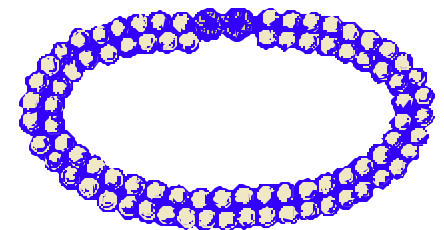
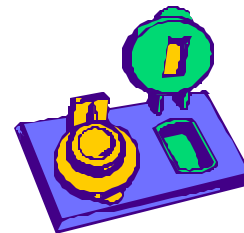
Hydrogen Peroxide – OSHA PEL – 1 PPM

Routes of Exposure and Health Effects

- **Inhalation**
 - Odor is not present until high concentrations
 - Heavier than air
 - Respiratory Irritant – acute and chronic
 - Rapidly broken down by the body, thus unlikely to cause systemic or chronic toxicity
- **Skin and eye absorption**
 - Poorly absorbed through intact skin. Skin that is defatted, broken, or dry allows the faster absorption of chemicals.
 - Can cause burns, irritations, and bleaching depending on the concentration.

Safety Preparation for Client

- Ask client to remove glasses, contact lenses, necklaces and earrings.
- Give client a cape and a towel.
- Protect client's skin and clothing with towel & cape. Replace these when saturated.



Safety Preparation for Client

- **Analyze scalp and hair. Do not perform procedure if client has abrasions or inflammation of the scalp.**
- **Check patch test.**
- **Apply protective cream around hairline and over ears.**



Milady's Standard
Textbook of Cosmetology, 2000

Prepare Yourself & Your Tools



Wash your hands before and after servicing a client.

Use only sanitized applicators and towels.

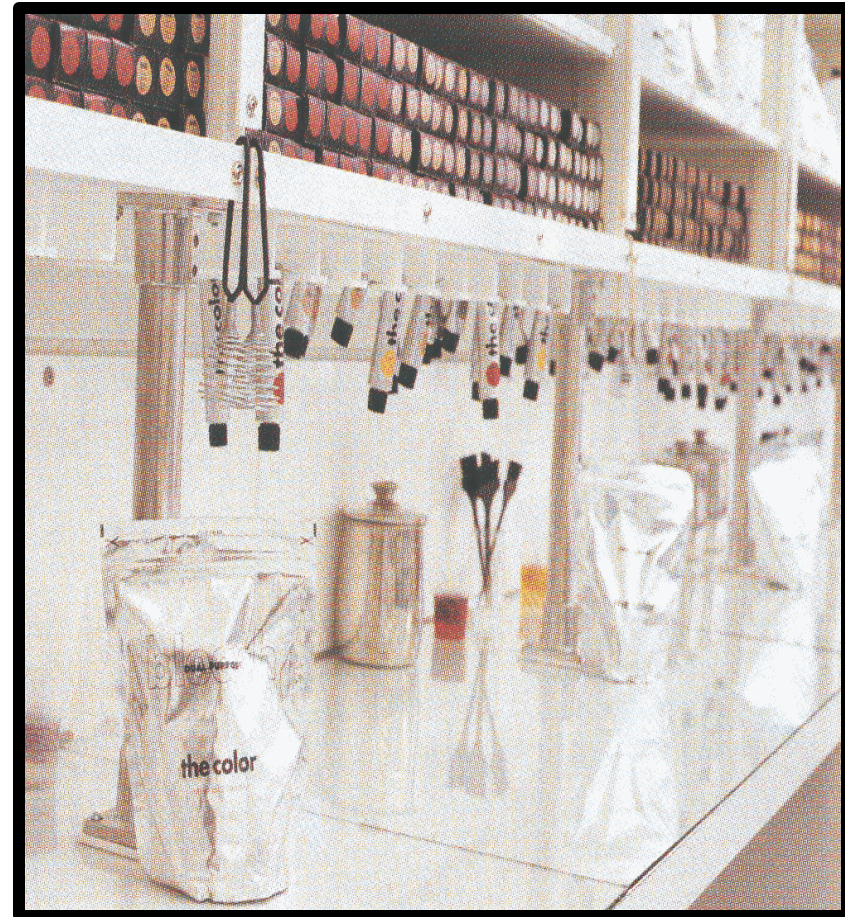


Put on nitrile gloves, chemical resistant apron, and chemical splash glasses.

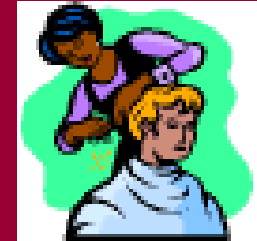
Lightening Procedure

Safely Mixing the Lightener

- Read directions before preparing.
- Prepare in a closed container whenever possible.
- Prepare in the dispensing room where there is ventilation or near an open window if there is inadequate ventilation.



Lightening Procedure



Applying the Lightening Formula

- **Do not brush hair which would scratch the scalp.**
- **Section hair and apply lightener.**
- **Rinse lightener with cool water.**
- **Shampoo with acid-balanced shampoo.**
- **Neutralize the alkalinity with an acid or a normalizing rinse.**
- **Examine scalp for abrasions.**

Lightening Procedure

Safe Use of Lightening Formula

- **Cap all bottles immediately to prevent fumes from escaping and minimize product contamination.**
- **Use immediately to prevent deterioration.**
- **Discard leftover lightener.**

Safe Storage of Lightening Products

- **Close all bottles securely.**
- **Make sure all bottles are labeled.**
- **Do not store next to**
 - **Acids**
 - **Bleach (chlorine)**
 - **Flammables**

Less Toxic Alternatives

- *Boosters*
 - Use bleach without the boosters.
 - If using boosters, try potassium persulfate boosters instead of ammonium persulfate boosters.
- *Milder Product or Less Concentration of Hazardous Ingredient*
 - Although higher percentages of hydrogen peroxide create more lift, they also pose more of a hazard.
 - Although the stronger products such as the powdered bleach work faster, they pose more of a hazard.
- *Products Posing Minimal Exposure*
 - Dustless bleaching powder

Alternative Lightening Processes

- **Try blonding instead of bleaching.**



- **Highlight instead of bleaching the entire head.**

