HAIR & BEAUTY COSMETICS

Persulfat and the effects in terms of Allergy and Asthma

Paloma Rodriguez Bonilla

Introduction

Cosmetics,what are we talking about?

Preparations and substances applied on hair and skin to improve its appearance and/or scent.

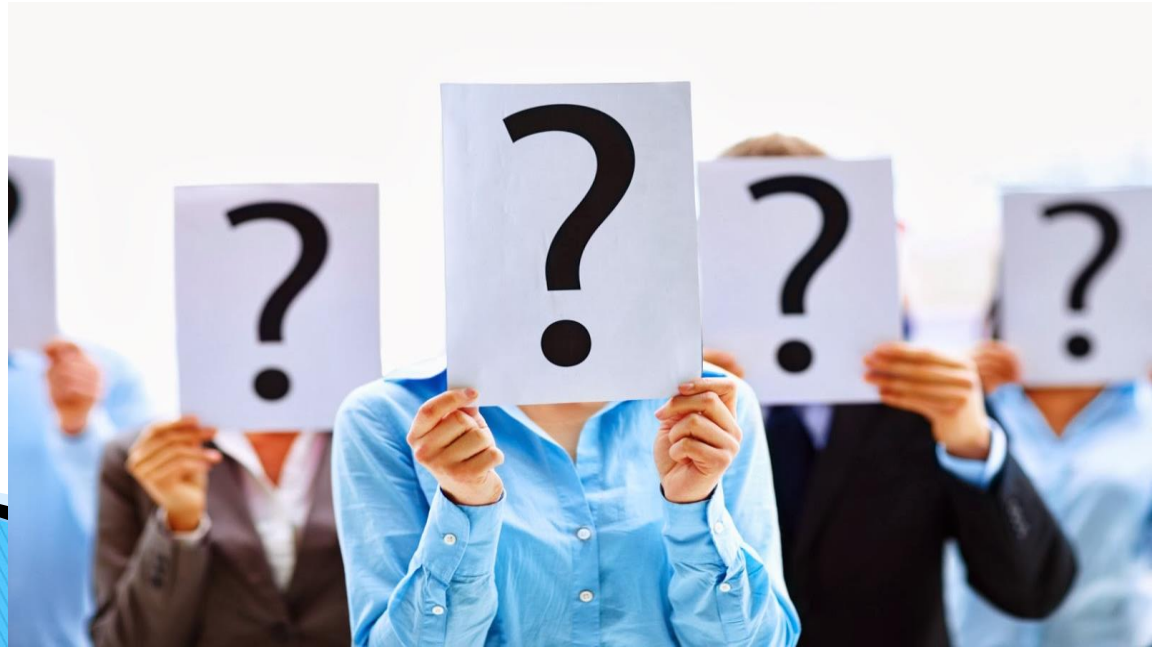
They are generally mixtures of chemical compounds, some being derived from natural sources and some being synthetics.

In the U.S., the Food and Drug Administration (FDA), defines cosmetics as:

"intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, or altering the appearance **without affecting the body's structure or functions**"

That is the question

Without afecting body's structure or functions ??



Ordinary People´s Opinion

- ✓ It is just a marketing campaing towards the sale of “natural” cosmetics.
- ✓ It is an exaggeration. Cosmetics are safe though millions of people use them daily without problem.
- ✓ Only if you are previously allergic, you have problems.
- ✓ We are overexposed to chemicals and we should avoid them. They cuase cancer, allergy and many other diseases.

Scientific´s Studies

The effects of cosmetics on people´s health depends on several circumstances:

- Kind and amount of Ingredients
- Time and frequency of exposure
- Personal condition
- Enviromental conditions

Highlights

- During the 21th century, the popularity of cosmetics increased rapidly. Cosmetics are increasingly used by girls at a young age and men.
- The worldwide cosmetics and perfume industry currently generates an estimated annual turnover of US$170 billion (according to Eurostat – May 2007). Europe is the leading market, representing approximately €63 billion.
- **Numerous reports have raised concern over the safety of cosmetic ingredients and the damages they cause on health.**

Some medical evidences on health damages caused by cosmetics in general population:

Study	Authors	Research Institute	Website
Contact dermatitis due to Cosmetics	Javier Domínguez Ortega y Daniel Muñoz Lejarazu (Pages:257-270)	Allergy Unit. Hospit Virgen de la Concha(Zamora) and Hospital Santiago Apóstol. (Vitoria),Spain	http://www.seaic.org/wp-content/plugins/download-monitor/download.php?id=11_Contactantes_Cosmeticos.pdf
Facial Dermatitis due to contact sensitisation. Case sample	AL Iparraguirre Castro, T Fadeeva, JM Soler Escoda,C Barbero.	Allercen Private Unit in Allergies and Immunology. Barcelona, Spain	
P-Phenylenediamine and other hair dye sensitizers in Spain	Yazar K1, Boman A, Lidén C.	Institute of Environmental Medicine, Karolinska Institutet, SE-171 77 Stockholm, Sweden	http://www.ncbi.nlm.nih.gov/pubmed/22085034
Assessment of the sensitization potential of persulfate salts used for bleaching hair.	Cruz M-J, De Vooght V, Muñoz X, Hoet PHM, Morell F	CIBER de Enfermedades Respiratorias (CIBERES), Barcelona, Spain	http://www.ncbi.nlm.nih.gov/pubmed/19207378

Report from Spanish Institute for Occupational Safety and Health at work

- This review document summarizes the main occupational health risks that hairdressers are exposed to. Hairdressers suffer from work-related skin disorders (dermatitis, eczemas) and respiratory disorders such asthma.

- Also, these disorders are consequence of occupational exposures to many chemicals contained in hairdresser products. Many of them are probably carcinogenic to humans. This applies to shampoos and care products, hair colourant products, permanent wave liquids, nails products and styling products.

- The main chemical products listed in the review are: **Persulphate salts (potasium, ammonium)**, ammonia, p-phenylendiamine, p-toluendiamina, 4-aminophenol, resorcinol, Tetrahidrofurfurílic alcohol, Ammonium Tioglycolate, glicerolmonotiogliyolate, Formaldehíde, Hydroquinone.

For further information: http://stp.insht.es:86/stp/basequim/013-tratamientos-del-cabello-en-peluquer%C3%ADas-exposici%C3%B3n-agentes-qu%C3%ADmicos

Allergy to ammonium persulfate

What is ammonium persulfate and where is it found?

Ammonium persulfate is a strong oxidizing agent and can be found in a wide variety of industrial and consumer uses. It appears as a white crystalline powder but may be formulated into cream preparations.

Consumer uses

- disinfectants and bleaches
- bleaching agent for hair colourant and lightener formulations
- bleaching and strengthening agent for flour in the baking industry

Industrial uses

- activation of copper and aluminum surfaces
- paper and textile cold bleaching and desizing
- decontamination for circuit water system
- accelerated curing of low formaldehyde adhesives
- cleaning agent for laboratory glassware
- additive to industrial starch

Alternative names for ammonium persulfate

- ammonium peroxydisulfate
- diammonium peroxodisulfate
- diammonium persulfate
- diazanium sulfonatooxy sulfate
- peroxydisulfuric acid (((HO)S(O)2)2O2) ammonium salt (1:2)
- peroxydisulfuric acid diammonium salt

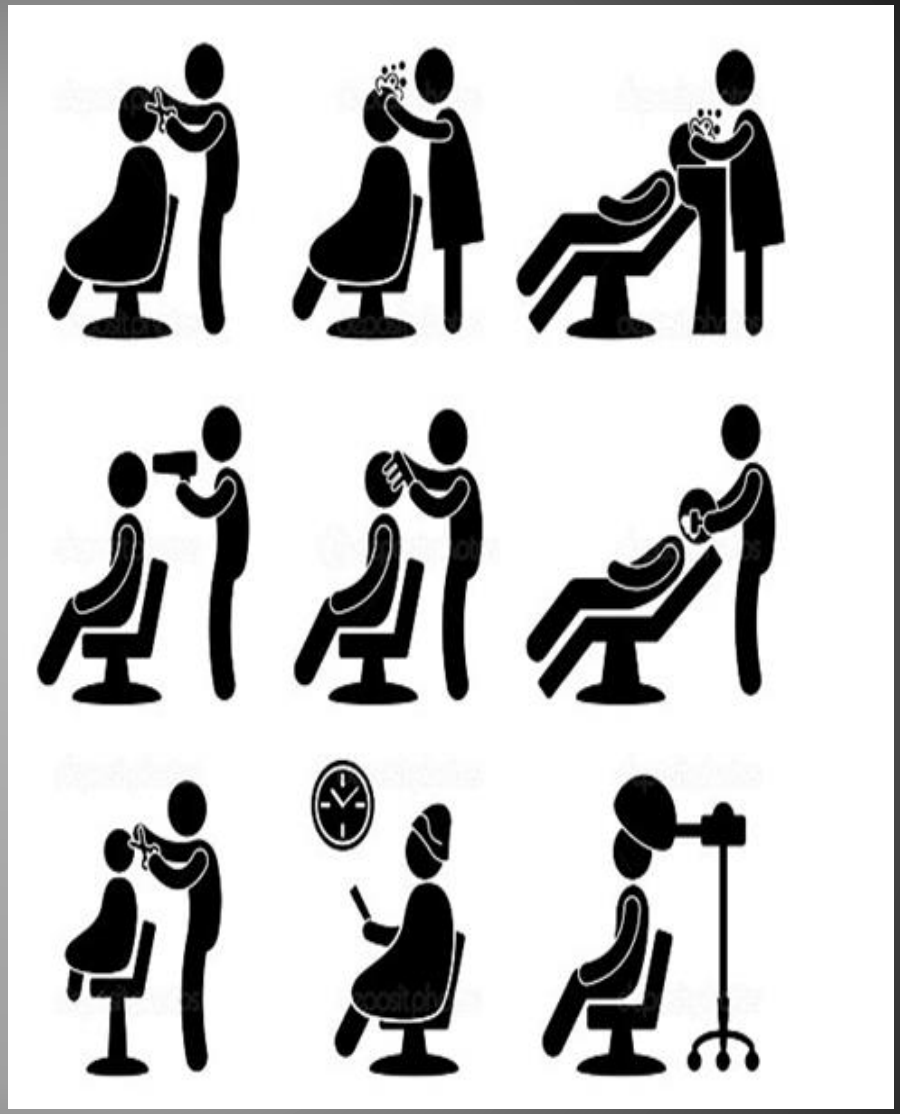
Is ammonium persulfate safe to use?

- Ammonium persulfate is relatively easy and safe to handle. The Cosmetic Ingredient Review (CIR) Expert Panel has reviewed the use of ammonium persulfate and other persulfates as oxidizing agents in hair colourants and lighteners and has deemed them **safe for brief discontinuous use** followed by thorough rinsing from the hair and skin.
- However, it has stated that manufacturers of these products should be aware of the potential for urticarial reactions at concentrations greater than 17.5%.

- Persulfates can cause health effects by being swallowed, breathed or coming in contact with the skin.

- Contact with persulfate dust can cause **skin and eye irritation, contact dermatitis, asthma or rhinitis.**

- Hairdressers are likely to be exposed to persulfates by skin contact and breathing in dust
- It is also evident from the study of hairdressers, that repeated exposure may result in increased sensitivity to the substance, and that allergic reactions may not become apparent until after many years of exposure.



Figures to reflect on

- In a small study of hairdressers, occupational asthma (OA) was found in 51.1% and allergic occupational dermatitis in 36.2% of study participants.
- Ammonium persulfate was the responsible agent in 87.5% of OA cases.
- The average overall duration of exposure in the group of hairdressers with OA was 7 years and the average time from start of exposure to onset of symptoms was 5.3 years.
- Whilst just over 30% had a family history of allergic disease, none of the patients had previous occupations with possible risk factors for asthma, rhinitis, or dermatitis prior to the becoming hairdressers.

Research	Authors	Conclussions
• **Occupational asthma due to persulfate salts: diagnosis and follow-up**	Muñoz X, Cruz M-J, Orriols R, Bravo C, Espuga M, et al (2003) Chest;123(6):2124–9. http://www.ncbi.nlm.nih.gov/pubmed/12796198	1. Persulfate salts have been identified as a cause of occupational asthma . 2. In this study, they have demonstrated that, despite avoiding exposure, patients continued with symptoms and required treatment for the control of symptoms. 3. A dependent IgE mechanism appears to be implicated in the pathogenesis of occupational asthma due to exposure to persulphate salts.
• **Diagnostic approach and management of occupational asthma by persulfate salts in a hairdresser.**	**Gala Ortiz G1, Gancedo SQ, Ordóñez RF, Camo IP, Mancebo EG, Agustín MC, Cosmes EL** http://www.ncbi.nlm.nih.gov/pubmed/11552674	1. Clinical and functional control performed 12 months later exposure demonstrated an increase in nonspecific bronchial responsiveness. 2.This finding represents more scientific evidence for the notion that the hiperresponsiveness persists long after the end of the exposure to the persulphate salts in the salon.
• **Course of bronchial hyperresponsiveness in patients with occupational asthma caused by exposure to persulfate salts.**	Muñoz X, Gomez-Olles S, Cruz MJ, Untoria MD, Orriols R, et al (2008) Arch Bronconeumol;44(3):140–5. http://www.ncbi.nlm.nih.gov/pubmed/18361885	1. Although asthma symptoms and bronchial hyperreactiviness may persist for patients with occupational asthma due to persulphate salts, their condition seems to improve if they avoid exposure.
• **Persistence of asthmatic response after ammonium persulfate-induced occupational asthma in mice**	Ollé-Monge M1, Muñoz X2, Vanoirbeek JA3, Gómez-Ollés S4, Morell F4, Cruz MJ4. http://www.ncbi.nlm.nih.gov/pubmed/25303285	1. This is the first study to assess the persistence of systemic and ventilatory responses in an animal model of occupational asthma due to persulfate salts after the end of exposure to the causal agent. This condition may mirror that in patients with occupational asthma when exposure to the causal agent ceases . 2.Taking into account that many of these patients do not completely recover from their asthmatic symptoms , this study supports the notion that complete removal from the workplace is not more likely to avoid symptoms than continued exposure.

What should we do to avoid ammonium persulfate allergy?

- Mix bleach in a well-ventilated area.
- Where possible use cream-based formulations. In its **powdered form is most harmful** as it can be breathed in.
- Avoid skin contact by wearing vinyl or nitrile rubber gloves during mixing and applying of formulations of ammonium persulfate.
- Use a moisturising cream to protect the hands.
- Dryness between the fingers is an early sign of contact dermatitis. Remove jewellery and watches to prevent dust collecting under them.
- Train hairdressing staff in the safe use of hairdressing chemicals.

- Remember not only the **Ammonium, Persulfates are harmful ingredients.**
- **There is a long list of hair and beauty products we should be aware of.**

12 Toxic Ingredients To Avoid in Shampoo and Conditioner

www.livelovefruit.com

Sodium Lauryl Sulfate (SLS) Cancer, liver damage, skin rashes, depression	**Fragrance** Clogs the lymphatic system, major organ system toxicity	**Cocamidopropyl Betaine** Eye & skin irritation, allergic contact dermatitis	**Triclosan** Skin, eye and lung irritation, endocrine & organ disruption	**Polysorbates** Skin, eye and lung irritation, endocrine & organ disruption	**Polyethylene Glycol (PEG)** Direct link to CANCER, organ system toxicity
Potassium Sorbate Causes skin and organ system toxicity	**Phenoxyethanol** Irritant of skin, eyes & lungs, vomiting, contact dermatitis	**Retinyl Palmitate** Carcinogen, causes reproductive & organ system toxicity	**Dimethicone** Irritation of the skin, scalp & eyes, traps impurities in skin	**Behentrimonium Chloride** Damages the eyes, inflammatory agent, irritates skin	**Quaternium-15** Contains carcinogenic formaldehyde, major toxin to body

Erasmus+ Green Salon IES El Palo

Real Case:

22 years old female with atopic skin.

Hairdresser.

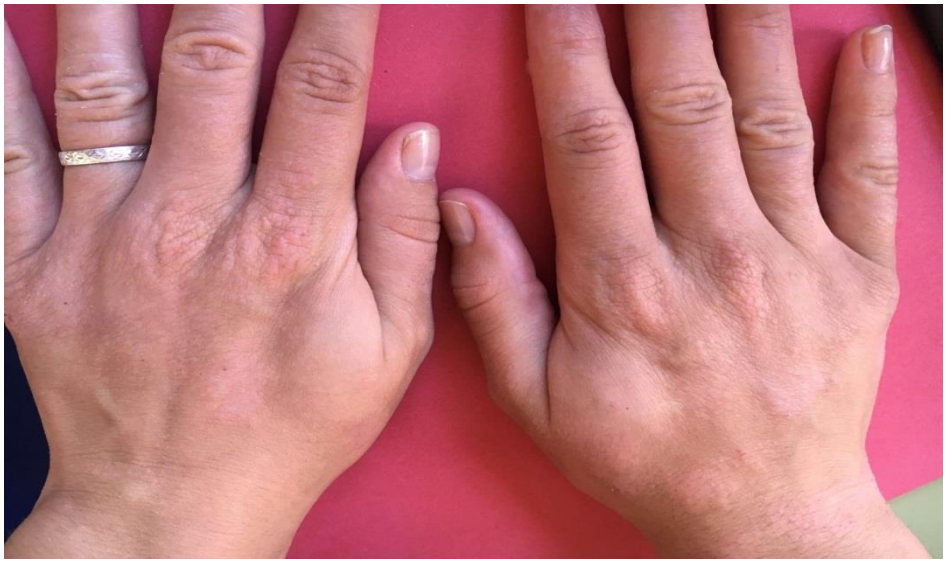
Graduated in IES El Palo in June 2015.

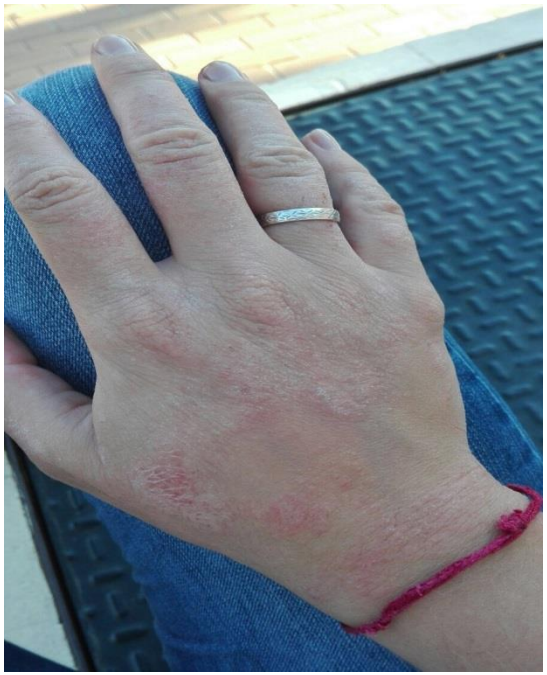
Part-time worker in a Hairdressing Salon.

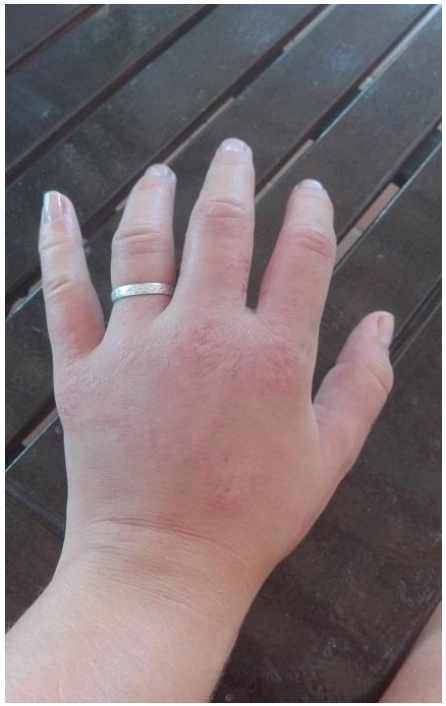
Using vinyl gloves.

Suffers a severe contact dermatitis and wrist tendinitis due to the swelling of hands and wrists.

Eyes irritation and respiratory problems.



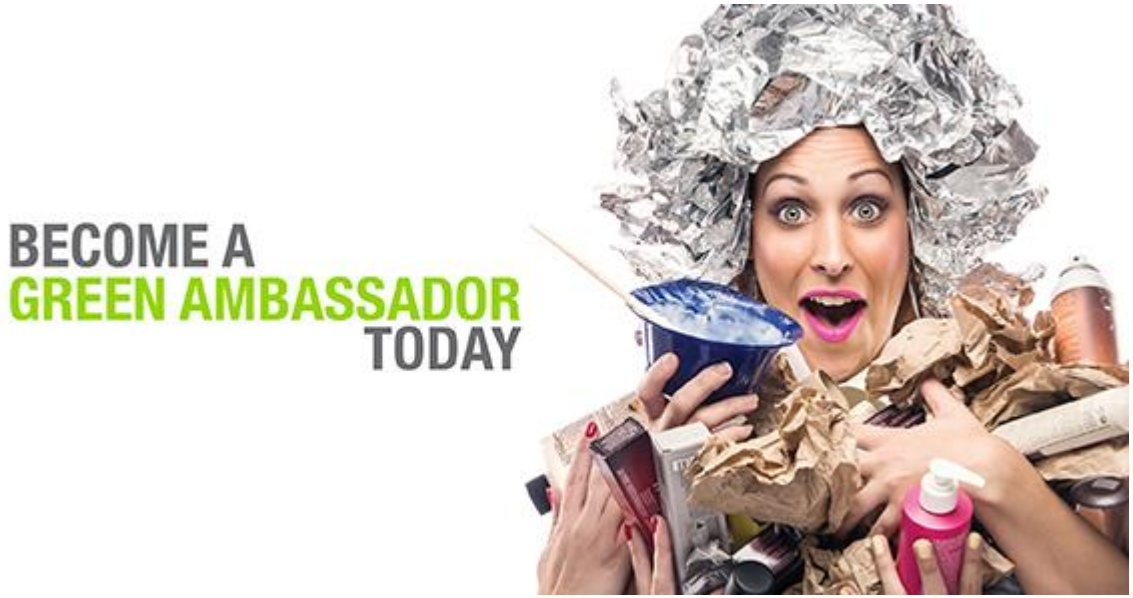




Just remember:

For every problem there is always a solution

GREEN SALONS ARE THE ANSWER !!



Paloma Rodríguez Bonilla