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Review

Review of Cosmetics and their Associated Adverse Effects

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ABSTRACT

The word ‘cosmetics’ is taken from a Greek word “kosmeticos” which means to adorn. Since early days materials used for beautification or improvement of appearance comes under the category of cosmetics. People want to look beautiful and the concept of cosmetics is as old as mankind and civilization. The urge to beautify one’s own body and look beautiful has been an urge in the human race since the tribal days. Assorted beauty products such as skincare products, hair products, fragrances, oral hygiene, and nail products, which may contain toxic chemicals that can be harmful to health are used especially by women. Since long time cosmetics have been known to enhance the appearance of the human body. In a society obsessed with beauty, people are lured to fake their appearance as a cure for their insecurities. The estimated value of cosmetic industry today is around 20 billion dollars globally. As a consumer, we are constantly attracted in using beauty and personal care products. But these products, which are supposed to make us feel healthy and look beautiful, have a deep dark side. Various toxic ingredients and hazardous chemicals used in cosmetics are incorporated in beyond acceptable limits. These chemicals may cause serious ill effects on skin and may also enter skin and other organs causing carcinogenicity. Cosmetics have not only seeped into the fashion world but are also playing a prominent role in one’s day-to-day life. Thus, it becomes a necessity to make people aware of various harmful effects of cosmetics and chemicals used in cosmetics.

Keywords: Cosmetics, Chemicals, Health, Skin, Foundation, Lipstick, Creams,Nails

INTRODUCTION

Cosmetics are substances that are applied to the body with the intention of boosting attractive traits and beautifying, cleaning, or improving appearance. Cosmetics include a variety of items like tooth paste, shampoo, conditioners, mascara, after-shave lotion, styling gel, creams, lotions, powders, lipsticks, fingernail and toenail polish, eye and facial makeup, hair wavers, hair dye, hair spray, deodorants, and antiperspirants. According to the definition of "make up," it is a type of cosmetic that generally refers to coloured items used to change a person's appearance. Schneider et al defined skincare items or cosmetics as combinations of artificial or natural chemical substances intended to enhance the body's look or odour. They fall into two categories: - They are items designed to be injected into, rubbed on, poured, sprinkled, sprayed, or otherwise administered to the human body or any part thereof for without damaging the body's structure or functioning, enhancing attractiveness, cleaning, beautifying, or changing the appearance [(1)]. According to the World Health Organization (WHO), adverse drug reaction is defined as an unintended and noxious response to a cosmetic that normally occurs after a correct application of a cosmetic, whereas an adverse cosmetic event (ACE) is an anticipated noxious injury hypothetically related to a cosmetic use. It is a known fact that the use of cosmetics can sometimes evoke adverse reactions. A large body of research evidence reported severe cosmetic reactions such as hair loss, blistering, breathing problems, loss of consciousness, dizziness, skin burns, and nausea. Søsted (2007) found 17 respondents (1.4%) had edema and suppuration/ulceration and 67 respondents (5.3%) had either eczema with or without edemaand/or suppuration/ulceration after hair colouring. It should be noted that the occurrence of an allergic reaction to cosmetics is found to be caused more frequently by preservatives [(3)].

Common cosmetics products and associated toxicities

Most women choose the skincare products they use based on influences including advertising, peer pressure, and societal acceptance. Robertson et al. did a study and came to the conclusion that women who wear makeup are uneasy, insecure, and

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lacking in confidence. A variety of hazardous or dangerous compounds used in cosmetic items can have negative effects on skin.

Skin Lightening Agent

One of the most hazardous compounds is determined to be skin-lightening treatments like hydroquinone (HQ). Reports of ochronosis and possible mutagenicity have been discovered. Ochronosis is a rare side effect of HQ that includes characteristics like a gradual darkening of the area where the cream with high concentrations of HQ is administered for many years. A hydroxy phenolic substance called hydroquinone prevents the production of melanin by inhibiting the tyrosinase enzyme. It also prevents the development or breakdown of melanosomes and prevents the creation of DNA and RNA in melanocytes.

Sunscreen Product

Today's sunscreen products may trigger allergic, phototoxic, irritating, or photoallergic reactions. A lot of people are sensitive to benzophenones. While cinnamates, Para aminobenzoic acid (PABA), and debenzoyl methanes could result in photoallergic dermatitis. The aroma or other components are the main culprits in allergic responses linked to deodorants, antiperspirants, and fragrances. Fragrances can enter the body through the skin (absorption), lungs, airways, ingestion, and pathways from the nose straight to the brain, which can result in symptoms such as headaches, weariness, eye, nose, and throat irritation, forgetfulness, and others. Airborne contact dermatitis can be brought on when scents are sprayed into the air or are detected in the air [(2)].

Foundation

People use foundation to even the skin tone; cover the pores, blemishes, and wrinkles and improve skin lightness and undertone. Various textures have been introduced to the users such as cream, liquid, cushion, and powder. Among them, the liquid foundation provides better coverage and lasts for a whole day. The formulation includes water, Oils or Waxes, Talc, Pigments and Fragrances, etc. The preservatives and fragrances are added to increase the shelf life of the product and to have a good odour and appearance to the users. The most common preservative is paraben and formaldehyde releaser. Parabens have relatively low toxicity, good stability and nonvolatility. Formaldehyde and paraformaldehyde are toxic preservatives that result in an great potential risk to cancer and allergy.

Lipstick

Lipstick is one of the forms of cosmetic used by the women to give an attractive colour and appearance to the lips. Lipstick can change the apparent facial characteristic of women. These are usually formulated as molded sticks and consist of colouring pigments dispersed in a fatty base consisting of a suitable blend of oils, fats and waxes and perfumes. Lipstick is classifying as lip balms, glosses, crayons, pencils, liners, and stains. Balms and glosses are more translucent and not as dark or vibrant. Continuous use of lipstick may cause serious adverse effects like skin irritation, skin discoloration, cancer etc. Colorant or pigment plays an important role in the formulation as it determines the esthetical value of lipstick. Colorant is derived from synthetic and natural sources. The synthetic dyes that give colour to the lipstick are dangerous to human on consumption and may cause adverse effect such as allergy, dermatitis, skin discoloration, drying of lips, etc. Sometimes they may be carcinogenic and even fatal. This limitation leads to the use of natural colorants which is derived from natural sources such as plants, insects, and algae.

Eyeliner and kohl

Kohl (a form of cosmetic product) is applied around the eyelid Margins. It is the earliest forms of eye cosmetic products, and its use is documented since the Early Bronze Age (c. 4000–1500 BC). This form of kohl contains a natural lead compound called as galena. There are two famous forms of eyeliner such as infallible pencil eyeliner and water-based eyeliner (Colour Stay liquid eyeliner). The branded eyeliner product contains over 20 ingredients such as hydrogenated olive oil esters, candelilla wax, Aloe barbadense leaf juice, etc.

Mascara

Mascara is used to enhance the eyelashes to appear thicker, darker, and longer. Mascara is used to enhance the natural beauty of eyelashes and mimic the youthful

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characteristics of the eye with age. Mascara is sold in liquid form in tubes having an application wand. Mascara classifies as both non-water resistant and water-resistant formulas. Mascara poses some health-related issue for users such as bacterial infections and allergic reactions in the periorbital region. Bacterial contamination of the mascara increases with certain period of time, as preservatives loses its efficiency and increase the risk of bacterial contact of the wand. The most common cause of bacterial infection is Pseudomonas aeruginosa and Staphylococcus aureus which leads to the development of blepharitis, chalazions, conjunctivitis and also dry eye syndrome [(4)].

Sr. no.	Beauty product s	Ingredients	Role	Replacement
1.	Eyeliner	Propylene glycol	Humectant	-
		Pigments	Coloring agent	-
		BHA and BHT	Preservatives and antioxidant	Papaya seeds, coffee leaves and chestnut
2.	Mascara	Alcohol denaturized	Antimicrobial, solvent	-
		Cyclopentasiloxn e (CD5)	Carcinogenic compound, Persistence and bioaccumulation	-
		Phenoxyethanol	Preservatives	-
		Shellac	Curling agent	-
3.	Foundation	Formaldehyde	Preservatives	-
		Talc	Absorbs moisture	Fumes silica, corn starch
4.	Lipstick	Iron oxides and Mica	Coloring agent	Lycopene (Red), Carotenoids (Orange)

Table1: Some commonly used ingredients with their adverse effects in beauty product [(4)]

Dioxane

1,4-dioxane is an ether with an emulsifying, detergent and solvent function commonly found in products such as shampoo, toothpaste and mouthwash Although this compound is not listed as a cosmetic component, this substance is a contaminant in the manufacturing ethoxylation step, creating other ingredients such as polyethylene glycol, polyethylene and polyoxymethylene. Thus, high levels of this contaminant can be observed in cosmetic products, being such chemical substance a potent carcinogen, capable of triggering cancer of breast, skin and liver [(5)].

Cosmetic	Chief Chemical ingredients	Harmful health effects
Shampoo	Sodium lauryl sulphate, Parabens, polyethylene glycol, phthalates, formaldehyde, triclosan, Dimethicone, 1,4 dioxane, retinyl palmitate, alcohol, fragrances, colour, toluene, resorcinol, selenium sulphide, Quaternium-15	Irritation and possible eye damage
Eye Shadow	Polyethylene terephthalate, formaldehyde, titanium dioxide, heavy metals, mineral oils, parabens, carbon black, ethyloxylated ingredients, paraffin wax, polyacrylamide, talc, polybutene and octyldodecyl stearoyl stearate, teflon	Infertility, hormonal disruptions and damage to body's organs, Cancer,
Lipstick	Polymethylmethacrylate, methylparaben, polyparaben, retinyl palmitate, dyes, tocopheryl acetate, lead, propylene glycol, methylparaben	Allergies and cancers

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Nail paint	Phthalates, Xylene, triphenylphosphate, nitrocellulose, methylacrylate, camphor, triphenylphosphate, ethyl acetate, butyl acetate, acetone, toluene, formaldehyde, ethyl tosylamide, parabens	Affects reproductive systemand poses problems for developing babies
Perfume	Benzaldehyde, benzyl alcohol, acetone, linalool, ethanol, ethyl acetate, benzaldehyde, camphor, formaldehyde, methylene chloride, limestone, phthalates, stearates, parabens.	Kidney damage, irritation to mouth, throat, eyes.
Hairspray	Octinoxate, isophthalates, carboxymethylcellulose, denatured alcohol, hydrofluorocarbon, plasticizers including esters of citric acid, adipic acid, polyvinylpyrrolidine, polydimethylsiloxane, gum Arabic, alcohols, polyvinyl alcohol, propylene glycol	Hormone disruption, change the cell structure, Allergies, irritation of eyes, nose, throat
Blusher	Ethylparaben, propylparaben, formaldehyde, carbon black, talc, phenoxyethanol, Butylated hydroxyl toluene, parabens, ethanolamine compounds	Irritation, rashes and hormonal disruptions
Foundation	Polymethylmethacrylate, heavy metals	Allergies, cancers, disrupts immune system
Deodorant	Isopropyl Myristate, Parfum, triclosan	Headaches, dizziness, respiratory problems, irritation of eyes, skin and lungs
Body Lotion	Methylparaben, propylparaben, polyethylene glycol	Rashes, irritation, hormonal disruptions
Make up remover	Formaldehyde, quaternium-, DMDM hydantoin, urea, bromopol, glyoxal	Human carcinogen
Sunscreen	Retinol, retinyl acetate, retinyl palmitate, all- trans retinoic acid, tretinoin, octinoxate	Linked to cancer, developmental and reproductive toxicity
Moisturizer	Butylparaben and isopropyl paraben	Early puberty, certain parabens cause breast cancer.

Table 2: Different types of commonly used cosmetics, their chief chemical constituents and ill effects on health [10].

Risks with Heavy Metals in Cosmetics Cadmium

The environment naturally contains cadmium present cadmium although it can be found in body and hair creams, the body absorbs them through dermal contact and stores them in the liver and kidney in the majority of adult tissues. It is regarded as "carcinogenic to humans and its compounds, classified as known human carcinogens by the United States Department of Health and Human Services," according to the IARC. High doses can cause severe stomach discomfort, vomiting, and diarrhoea, while prolonged exposure to low doses can harm the kidneys, cause bone deformation, and make bones more brittle and prone to breaking.

Lead

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Lipsticks can include lead as an impurity thanks to the use of using colours that are polluted by raw materials lead might be present. Daily skin contact with lead has been observed to cause some lead to be absorbed via the skin. The Blood-lead levels in children and women have been linked to the use of leaded eye powders (such Surma and Kohl). Because it can easily pass the placenta and enter the fetus's brain, pregnant women and young children are more at danger. Additionally, it can be stored in bones and passed on to infants through breastfeeding mothers' milk. Miscarriages, hormonal abnormalities, decreased fertility in men and women, irregular menstruation, and delayed onset of puberty in girls have all been linked to lead exposure.

Nickel

Everyone is exposed to nickel in minute amounts through food, air, portable water, soil, household dust, and skin contact with products that contain it, such as cosmetics. Nickel is abundant in nature. Depending on the route and the type of nickel exposed to, high exposure levels can have major health impacts. Metallic Nickel and its alloys have been identified as potentially carcinogenic to humans, despite the fact that some forms of nickel are regarded as "toxic" due to their ability to induce cancer. In addition to being allergenic, nickel can also induce severe contact dermatitis. Even though 1 ppm of nickel can cause an allergy [(6)].

Nail Cosmetics and Associated Adverse Events Shellac Nails

Shellac nail polish is a combination of two different types of polishes, with gel polish providing durability and traditional nail polish for the colour. Similar to traditional gel
nail polishes, shellac nails are polish-gel hybrid formulation that also require UV lamps for curing and may be performed in a salon or at home. A case series describes 4 patients who experienced acrylate-related ACD to shellac gel nails. Der matitis involving the surrounding skin was reported.

Acrylic Nails

While acrylic nails are typically applied at a nail salon due to the skill involved, they may also be applied at home. They are formed by mixing a liquid monomer with a polymer powder to create a mixture that is applied and sculpted onto the nail. The acrylic nails harden through air-drying and do not require UV or light-emitting diode lamps. Acrylic nails are extremely durable and strong. For certain professionals, including flamenco guitarists, having strong nails is essential. Presentation includes onychodystrophy, onycholysis, and paronychia. Much like gel polish, acrylic nails require acetone soaking or use of a mechanical nail drill for removal. Using a nail drill, without proper training or when overly aggressive may damage the nail bed or matrix. A similar outcome may occur in individuals who file their nails with a nail buffer. “Worn down nail syndrome” characterized by the thinning of the distal nail plate due to over-filing nails may develop.

Nail Hardeners

Nail hardeners are used to promote nail strength and protection. They may also be used as a deterrent for nail biting habits, in both adults and children. Similar to certain gel polishes, nail hardeners often contain tosylamide/formaldehyde resin, with reported cases of ACD as early as 1988. Presentations of ACD secondary to tosylamide/formaldehyde resin in nail hardeners include erythema, edema, and scaling of the face and neck. Angioedema involving the eyelids and lips with tongue swelling as well as onycholysis has been reported.

Nail Art Additions

With the abundance of different products available for nail adornment, some individuals mix and match different products during application. Engaging in recreational nail art as a hobby, individuals may seek out products that offer various finishes, such as glitter, which can also trigger sensitivity. Eczematous periungual and palmar lesions may develop, with negative patch testing to acrylates in gel polish and positive patch testing to cobalt chloride polish. Brands and nail art enthusiasts lacking professional training may overlook the importance of identifying product chemical composition [(8)].

REGULATION AND SAFETY EVALUATION OF COSMETICS

The Role of Industry in Safety Evaluation and Testing

Although the U.S. Food and Drug Administration (FDA) has a key role in the regulation and management of cosmetics

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in commerce, guided by scientific input provided by an independent science review board (the Cosmetic Ingredient Review or CIR), it is the cosmetic industry that is responsible for insuring the safety of its formulations and products for consumers Safety testing is an essential requirement if a company expects to con duct business in the U.S. without the burden of product recalls, consumer complaints, and lawsuits over alleged injury. As a part of product stewardship, companies are obliged to ensure the safety of their products and ingredients for use as specified on the product label. Cosmetic companies typically strive to accomplish this through several mechanisms, including (a) industry standards for good manufacturing practice, (b) use of ingredients that have undergone safety testing and whose inclusion in cosmetic formulations for decades without evidence of adverse effects has demonstrated their safe use(c)worldwide regulatory standards, and (d) continued evaluation and testing of currently used and new ingredients. Cosmetic companies typically approach safety evaluation by focusing on the route and duration of potential exposure, as well as the chemical structures of ingredients, as key components that drive subsequent activities in the process. For example, experiments in laboratory animals using the oral route of exposure are of less relevance than studies employing dermal applications and exposures. Similarly, relative to duration of exposure, concerns about a shampoo that might inadvertently splash into the eye do need to be evaluated using laboratory animals that are continually exposed to that product (or ingredient) for hours per day and often for multiple days.

The safety evaluation process, coupled with elements of risk assessment, includes the following steps:

Hazard Identification and Information Review:

The first step involved in safety evaluation is a thorough review of the existing information for a proposed new ingredient. Sources could include public databases, toxicological reviews, testing information from suppliers of the ingredient, results from previously conducted testing, structure-activity analysis to obtain insight from similar materials for which extensive data already exists, and information about the metabolic/kinetic profile of the substance (absorption, distribution, excretion, and metabolism). Once the available information is assessed, recommendations are made including the identification of data gaps relative to testing in order to ensure that all toxicological endpoints and/or concerns have been addressed.

Exposure Assessment: Characterization of potential human exposure is conducted in order to understand the levels, routes, and durations of exposure that are relevant for consumers. The exposures that humans would likely encounter can be estimated from the anticipated use patterns, along with information on dermal absorption in animal models. Total exposure estimates need to include sources other than cosmetics, such as food, water, and inhalation, when applicable to individual substances (e.g., parabens in food).

Safety Testing: Because of the large historical database that the cosmetic industry has acquired over the years, there is a significant amount of information on the effects and toxicological profiles of many commonly used ingredients. As The safety evaluation process, coupled with elements of risk assessment, includes the following steps: Hazard Identification and Information Review: The first step involved in safety evaluation is a thorough review of the existing information for a proposed new ingredient. Sources could include public databases, toxicological reviews, testing information from suppliers of the ingredient, results from previously conducted testing, structure-activity analysis to obtain insight from similar materials for which extensive data already exists, and information about the metabolic/kinetic profile of the substance (absorption, distribution, excretion, and metabolism). Once the available information is assessed, recommendations are made including the identification of data gaps relative to testing in order to ensure that all toxicological endpoints and/or concerns have been addressed. Exposure Assessment: Characterization of potential human exposure is conducted in order to understand the levels, routes, and durations of exposure that are relevant for consumers. The exposures that humans would likely encounter can be estimated from the anticipated use patterns, along with information on dermal absorption in animal models. Total exposure estimates need to include sources other than cosmetics, such as food, water, and inhalation, when applicable to individual substances (e.g., parabens in food). Safety Testing: Because of the large historical database that the cosmetic industry has acquired over the years, there is a significant amount of information on the effects and toxicological profiles of many commonly used ingredients. As a result, the industry can often use existing information or employ in vitro and alternative methods when new information is required. If testing is deemed necessary to fill a critical data gap, then appropriate animal, human or invitro (nonanimal) models can be used. Dermal irritation, dermal sensitization, and the ability of an ingredient or product to move through the skin (transdermal penetration) are key data needs for many products, and it is incumbent on companies to procure this information. Numerous studies, per spectives, and methodologies have been published in the peer-reviewed literature detailing approaches that are used in the safety evaluation process. Dermal studies are particularly helpful since the skin is the primary route of exposure to humans from most cosmetics, toiletries, and fragrances.

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The Role of the Food and Drug Administration

The U.S. FDA Center for Food Safety and Applied Nutrition (CFSAN)is the primary arm of the federal government charged with oversight for programs and policy related to multiple
aspects of cosmetic use and safety. The FDA has authority over (a) cosmetic products and ingredients; (b) labelling requirements and label claims, which serve as key sources of information for consumers; (c) specific guidance on recall policies; and (d) bans on ingredients. Although it is not our purpose to cover all aspects of FDA authority over the cosmetic industry, it is important to understand the breadth of its authority and that cosmetics in the marketplace are not operating in a vacuum without oversight relative to safety. Specifically, the FDA has the authority to:

- ban or restrict ingredients due to safety concerns,
- work with manufacturers to implement nationwide product recalls,
- mandate warning labels on products,
- inspect facilities that manufacture cosmetics,
- issue warning letters,
- seize illegal products,
- prosecute violators

The Federal Food, Drug, and Cosmetic Act (FD&C) is an important law pertaining to cosmetic products marketed in the United States. It prohibits marketing of adulterated or mis branded cosmetic products and also tracks violations involving cosmetic ingredients, contaminants, processing, packaging, or shipping and handling. Federal law states that a cosmetic can be deemed to be adulterated if "it bears or contains any poisonous or deleterious substance, which may render it injurious to users under the conditions of use prescribed in the labelling thereof, or under conditions of use as are customary and usual [with an exception made for hair dyes]" (FDA 2005). This statement places the burden of safety directly upon the cosmetic industry, and it is incumbent upon industry members to ensure safety to consumers.

The Role of the Cosmetic Ingredient Review (CIR)

The U.S. FDA, the Consumer Federation of America, and the Cosmetic, Toiletry, and Fragrance Association (CTFA; which serves as the primary industry trade association) established the Cosmetic Ingredient Review (CIR) in 1976. The CIR is an independent scientific body and, although it is funded by the CTFA, this organization has neither editorial nor voting control over CIR opinion. The voting members of the CIR expert panel include scientists who have been publicly nominated by consumer, scientific, and medical groups; government agencies; and industry. By thoroughly reviewing and assessing the safety of ingredients used in cosmetics in an open manner, and publishing those results in a peer-reviewed scientific journal, the CIR process provides an important mechanism for evaluating the ingredients of cosmetics to ensure the safety of consumers who use such products. Through a prioritization process that considers the extent to which consumers may be exposed to a particular ingredient in a cosmetic product, along with potential biological activity, the CIR conducts extensive literature searches on the evaluation of ingredient safety. This includes (a) physical and chemical properties; (b) absorption, distribution, excretion, and metabolism; (c) in vitro data; and (d) animal toxicology test data including acute, short-term, sub chronic, and chronic studies, as well as dermal irritation and sensitization endpoints. Additionally, any clinical data are assessed, including epidemiological studies along with available repeat insult patch (i.e., dermal) tests Although the FDA has banned the use of specific chemicals in cosmetic products, as previously discussed, the CIR has also recommended to the cosmetic industry the restricted use, or limits in concentration, for hundreds of other ingredients. The CIR process and the safety assessment can result in one of four conclusions for a particular ingredient following evaluation.

1. safe in the practices of use and concentrations as described in the safety assessment,
2. safe with qualifications that should be heeded to assure safe use,
3. insufficient data to support safety,
4. unsafe for use in cosmetics.

It is important to note that in reviewing the history of the CIR database, three of the four categories include some restrictions regarding use The CIR has reviewed over 1200 ingredients and has recommended restrictions for hundreds of ingredients. For those ingredients for which insufficient data exist and for those with qualifications around use, the CIR identifies data gaps or restrictions, providing a guideline and impetus for industry to develop the necessary data and recommendations for the safe use of a cosmetic ingredient, or to use their own currently existing data to fill in the gaps. If the industry and individual cosmetic companies would make the results of testing and

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evaluation more transparent, possibly through scientific publication, confusion about safety testing of cosmetics would likely be reduced [7].

Some of the Safety evaluation of cosmetic ingredients is based upon the testing principles of the risk assessment process most typically for multiple days. A part of the PIF is a safety assessment or Cosmetic Product Safety Report, which is a safety assessment that provides:

1. Toxicological profile of each substance in the finished product (including Hazard Identification)
2. Chemical and physical specifications of the substances
3. Exposure level for each substance
4. A risk characterization for each substance

The MB Research Labs has been the premier choice in conducting product safety assessments for the cosmetics, personal care, chemical and pharmaceutical industries for over 45 years. The export has sought out to ensure the safety our partners' cosmetic ingredients. MB Research is a leader in the use and development of in vitro and which is the Alternative toxicology and continue to introduce new testing methods regularly Pathways. The novel pathway exposures through product use as well as post-use emissions and environmental media were quantified based on the chemical mass originally applied via a product. There are novel multi-pathway, mass balance based, and fate and exposure model compatible with life cycle and high-throughput screening assessments of chemicals in cosmetic products.

Multiplied by the product intake fractions the fraction of a chemical in a product that is taken in by exposed persons to yield intake rates. The average for the evaluated chemicals in shampoo ranged from 3×10^{-4} up to 0.3 for rapidly absorbed ingredients. Average intake rates ranged between nano- and micrograms per kilogram bodyweight per day; the order of chemical prioritization was strongly affected by the ingredient concentration in shampoo. Dermal intake and inhalation (for 20% of the evaluated chemicals) during use dominated exposure, while the skin permeation coefficient dominated the estimated uncertainties. The fraction of chemical taken in by a shampoo user often exceeded, by orders of magnitude, the aggregated fraction taken in by the population through post-use environmental emissions. Chemicals with relatively high octanol-water partitioning and/or volatility, and low molecular weight tended to have higher use stage exposure. Chemicals with low intakes during use (< 1%) and subsequent high post-use emissions, however, may yield comparable intake for a member of the general population. The presented based offers a novel and critical advancement for life cycle assessment and high-throughput exposure screening of chemicals in cosmetic products demonstrating the importance of consistent consideration of near- and far-field multi-pathway exposures.

Factor affecting

- Reviews of Latest, Up-To-Date Safety Research
- Determinations of Possible Ingredient Toxicology
- Evaluation & Testing of Human Health Impacts
- Examination of Cumulative Exposure to the Human Body
- Testing & Evaluation Performed by Scientists Trained in Product Safety.

Quality Control (QC)

QC which is the process that strives for business perfection through well-defined controls. A quality control process ensures your business is delivering a consistent product, service, and customer experience. It makes it easier to monitor your operations, delegate duties, and even expand to new locations. The process forms a key component of a well-run business. QA Assurance is a positive declaration on a product or service is which gives confidence. It is certainty of a product or a service, which gives it will work which provides a guarantee that the product will work without any problems as per the expectations or requirements.

Differences between Quality Assurance (QA) and Quality Control (QC)

QA and QC both have important parts of quality management. QA is more to how a product is made of how a process is performed, but quality control is more of the inspection aspect of quality management. Quality assurance gives confidence (both internally to management and externally to customers and other regulators) that the quality requirements will be fulfilled.

Advantages

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These cosmetics speak for themselves. Just like their name connotes, they are all natural. It means that the ingredients used are not chemically or synthetically made. They also contain natural nutrients like Vitamin E Compared with other beauty products, natural cosmetics are safer to use. They are hypo-allergenic and tested and proven by dermatologists to be safe to use anytime, anywhere. Since they are made of natural ingredients, you don't have to worry about getting rashes or experience skin itchiness.

Compatible with all skin types

Natural cosmetics are perfect for all skin types. Whether you are dark or fair, you will find natural cosmetics like foundation, eye shadow, and lipstick.

Wide selection to choose from

Natural cosmetics may still be a new face in the beauty industry but they already offer a wide selection of beauty products for all make up fanatics out there to choose from.

Fits your budget

Mind you but natural cosmetics are not that expensive. As a matter of fact, some of these products are more affordable than synthetics ones. They are offered at discount prices and are sold for a cheap price during sales. Just be resourceful enough to look for great deals.

Not tested on animals

Some cosmetics are tested on animals to ensure that they are safe and effective to use. However, natural cosmetics are not one of them. These natural beauty enhancers are tested by experts in laboratories using state of the art equipment with no animals involved.

No side effects

There are beauty products that can irritate your skin, and cause pimples. Block your pores and make your skin dry or oily. With natural cosmetics, you don't need to worry about these. The natural ingredients used guarantee no side effects; you can apply them anytime you want.

Disadvantages

- Cause Acne,
- Pimples
- Allergic Reactions on skin
- Eye Problems
- Dermatitis
- Thinning eyelashes [9]

CONCLUSION

The cosmetic products may present health risks and recurrent adverse effects are attributed to the toxic substances commonly found in their formulations. Although the various structures for the regulation and quality control of cosmetics around the world are quite complex and comprehensive, they should be more rigorous in the inclusion of new substances with toxic potential in the formulation of cosmetics to avoid damages to human health. To encourage improvements in the manufacture, marketing and use of cosmetic products by the population, it is necessary to apply a unified cosmeto-vigilance around the world. This public health strategy are a genuine means of obtaining information on the safety of cosmetic products and their ingredients, preventing the risks associated with the use of cosmetics become a serious public health problem.

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