

Cosmetics: Are they safe to use

Prof. M.D.P. de Costa



According to Plautus, the renowned Roman philosopher, “A woman without paint is like food without salt.” From ancient days of history there have been numerous evidences as to how cosmetics have been routine requirements in the day to day lives of people. Chinese people began to stain their fingernails with gum arabic, gelatin, beeswax, and egg while Grecian women used to paint their faces with white lead and apply crushed mulberries as rouge. European women also used white lead paint, including a variety of other products, in an attempt to lighten their skin.

Among traditional cosmetic trends which are applicable within various countries in the modern context, the application of fake eyebrows, often made of oxen hair, as well as mehndi which is an art form originating from India are still prevalent. “Mehndi” is painted in complex and ornamental designs on hands and feet, particularly on brides at Hindu weddings. Cosmetic trends such as these, also comprise of “henna” which is used in India

as a hair dye and in some North African cultures as well. Just as salt is an essential ingredient in order to relish delicious Sri Lankan cuisine, women have used natural and organic dyes throughout the years in order to beautify themselves. At present using hair dyes and other diverse facial cosmetic products are not only common among women but also among men. People use

artificial dyes nowadays to colour their hair, at times even to match the garments that they wear. It has particularly become a popular fashion trend among women to use bright colours which directly contrast with their natural hair as well as to dye their hair in muted rainbow coloured pastel dyes. Grey hair is merely a change which manifests within the natural cycle of life. However, as human beings



Theme article - Cosmetics: Are they safe to use?

almost every individual feels the need to retain even a semblance of their youth. The age of men and women appear young forever, is one of the chief reasons why using hair dye to hide grey hair has become common place among both men and women.

All the materials so far mentioned in this article are commonly known as Cosmetics.

Cosmetics in general are classified as substances that are used to enhance the appearance, or dispel the odor of the human body.

How many times do we use cosmetics per day? From morning after you wake up to do your daily hygienic morning routine, till the moment you go to sleep, how many cosmetic products do you generally use? An average person uses cosmetics at least seven times a day, which is in fact a higher number of times than for daily food consumption. This confirms the importance we place on cosmetics in order to carry on with our daily routines. Thus it is necessary that we accumulate more information about these products, and to know how they affect us. Many of us are very concerned about our daily food consumption, since unsuitable, unhygienic and bad quality food can be a threat to our health. In doing so we overlook on how cosmetics can have an impact on our health, and continue to utilize cosmetics without paying

much attention to its quality and proper use.

According to the US Food and Drug Administration (FDA), cosmetics are defined as “articles 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”. The FDA definition for drugs is, “articles that alter the structure or function of the body. Intended to diagnose, treat, care, mitigate or

prevent disease”.

Thus, the FDA clearly defines the difference between cosmetics and drugs. According to this definition shampoo, toothpaste, skin cream, lotions, hair dye, face uplift product, nail beautifying product etc. are some examples of cosmetics. On the one hand, it is important to note that drugs are used to cure illnesses and are mostly prescribed by medical practitioners to use for a temporary period. In addition to this, many authorities dedicate an exceedingly high amount of time and effort in researching into

these drugs, and to guarantee their safety, for the purpose of lowering the risk against the health of the consumer as much as possible. On the other hand, cosmetics are used daily and frequently. Also unlike drugs most cosmetics come to the market without many barriers against them. Therefore, consumer risk for cosmetics is always high.

These facts clearly focuses our attention to consider the safety and use of many cosmetics which are available at the market. Cosmetic manufacturing companies in the world spend just 2–3% of their sales on research and development, compared to the 15% spent by pharmaceutical companies.

However Cosmetic manufacturing companies spend 20–25% on advertizing and promotion. It is apparent that cosmetic companies spend much money in order to advertise their products. It should be able to understand that safety should be the priority in using these products. In this article many facts will be presented which can be used to decide on how we can use cosmetics both safely and effectively.

There are more than 5000 chemicals used in cosmetic industries, and according to regulations these chemicals are either permitted or restricted. In a given cosmetic the list of ingredients is very long with many chemicals. Why is it necessary to use so many chemicals in a particular cosmetic product? When a cosmetic item is placed in the market, it should fulfill the customer's expectations. The stability of the product, the attractive colour in the contents, the pleasant odour of the product and the ease of application (the correct reology and viscosity) are

necessary in addition to what is expected after using the product. To satisfy all these requerements, the cosmetic product will contain many chemicals other than the active ingredients that are needed in the product. Other than that the customer expects a multipurpose utility in the cosmetic product they purchase. For example, a moisturizing cream that is purchased has an attractive colour as well as a distinguishable smell. According to regulations there are chemicals designated as prohibited chemicals, and these should not be used in cosmetics. These include heavy metals like Hg, Pb or their compounds.

How does one identify a given product as a drug or a cosmetic? The legal classification is based on three criteria identified as purpose of use, site of application and composition of the product. The purpose of use of a cosmetic product would be to clean, to perfume, to change appearance, to correct body odour, to protect, and keep the body in a good condition. If the main purposes of the

product are not to perform at least one of these functions, it is unlikely to be an effective cosmetic item. For example, a product intended to be applied as a treatment for blemish is not a cosmetic, but a product intended to be applied to a blemish in order to conceal it, then it is considered a cosmetic. On the other hand a product offered to conceal a blemish, but also has the secondary purpose of preventing the formation of further blemishes is also a cosmetic.

The site of the application shall be epidermis, hair system, nails, lips, external genital organs, teeth or mucous membrane of the oral cavity. If not, the product is unlikely to be regarded as a cosmetic. For example, eye drops, vaginal douches, nose drops and orally ingested tablets intended to improve appearance, are not cosmetics.

The composition of the product should conform to the Cosmetic Directive and the Cosmetic Products (Safety) Regulations. According to regulations there are



certain chemicals used in cosmetics which are either prohibited or restricted, and such chemicals should not be used or used within permitted levels. For example, teeth-whitening products are cosmetics. However, there is a limit of 0.1% of Hydrogen Peroxide permitted in the product released for use. A tooth-whitener with

hydrogen peroxide present in excess of this limit is an illegal cosmetic. Cosmetics represent a global industry with their main markets found in the European Union (EU), United States (US) and Japan. The rapid development of cosmetic products has forced the authorities of different countries to regulate these products to ensure consumer safety. Thus to ensure safety and efficacy, cosmetic products are regulated and controlled worldwide.

These regulations change from time to time. For some examples, due to the concerns about organ-system toxicity and endocrine disruption, led the European Union to prohibit the preservative butylatedhydroxyanisole (BHA) from cosmetics. This was also true with Diethanolamine (DEA)

widely used in cosmetics. The European Union prohibited use of DEA in cosmetics due to concerns about formation of carcinogenic nitrosamines. Toluene found in nail polish and hair dyes, is now restricted in the European Union, but not in the United States.

Triclosan, which has been linked to hormone disruption and antibiotic resistance, is found in soaps, detergents, toothpastes, deodorants, and more. However,

How many users of these cosmetics go through the list given in the container? When one selects a cosmetic product it is customary to look at its appearance such as homogeneity, colour and its odor, but we never look at the list of the chemicals known as ingredients given in the label. It should also be mentioned that, some individuals are allergic to certain classes of compounds; therefore they should take special attention to go through

this chemical is not used by many cosmetic industries at present.

By regulations all the chemicals used in a particular cosmetic product should be given in the label. But they are usually in very small fonts, and could not be read easily unless a magnifying glass is used. Companies however do not make it any easier by cramming 84 ingredients into one tiny 8pt paragraph. Anyhow very few people take the trouble to go through these labels when

purchasing a cosmetic product. It is very important to know what chemicals are being applied on your body. Certain people tend to show allergic reaction when certain chemicals come in contact with their body. Therefore it is very important to know the chemicals present in the cosmetic product that is being used.

the ingredient list carefully before applying cosmetics. Reading the product label will give a breakdown of individual ingredients, but even this information is ultimately useless unless you know off hand what these chemicals are. As an example, some individuals are allergic to citrus compounds but many cosmetics use citrus compound in order to give better odour, and to provide stability to the product, since most of these compounds are antioxidants. Another example is the whitening cream. Mercury-containing cosmetic preparations have been





used for years as skin-bleaching agents in many countries, but nowadays mercury is no longer permitted, because of the known hazards and its questionable efficacy as a skin-bleaching agent. The same applies for the EU as well because they do not allow the use of mercury compounds. It is however, essential to find out if the whitening products available in the market now contain mercury or not. Who looks after the regulation of these products? Many youngsters in Sri Lanka as well as those of Asian and African countries are very keen to keep their skin fair. This question should draw the attention of the relevant authorities. Another example that can be deliberated upon is the use of Hydroquinone derivatives. These products are considered as pharmaceuticals instead of as cosmetics. In case the toxicity of chemicals in the list of the ingredient given in the label is not known, it can be tested with a spot

test. It is very important to carry out a spot test before applying any cosmetic.

The CDDRA which is an authority to control and regulate the cosmetic products in Sri Lanka in terms of the gazette notification of the Democratic Socialist Republic of Sri Lanka (Extraordinary) No. 378 of 1985, requires the pre-market approval of any product going to the market. According to this Act all cosmetics manufactured, imported, sold and distributed, and



offered for sale in Sri Lanka should be registered under the provisions of the Act. Also the cosmetic manufacturers and importers within or outside Sri Lanka intending to market their products in Sri Lanka should register their products. However, this Act does not prevent fraud or stop illegal products from reaching the market. Registration time often delays the launch of cosmetics, the composition of which are likely to change with new developments in technology and/or fashion. In any case, in-market surveillance is needed to monitor the system, implying a duplication of enforcement procedures. It restricts the availability of new products on the market.

Time-consuming procedures and high-registration costs imply higher cost for companies and consequently more expensive products. Due to the lack of human resources the expected outcome of the Act was not realized. However, in 2015 this gazette was withdrawn and a new gazette was issued. According to this new gazette notification the authority to regulate has been called the National Medical Regulatory, NMR. However, in this gazette notification the cosmetic part has been taken out, and at present there is no authority to regulate cosmetic products in Sri Lanka. Actually Sri Lanka may be the only country without a regulatory body in the world. Recently many injuries, damages and even deaths have taken place due to the misuse of cosmetics. This is a very critical

situation and the authorities should take action immediately to regulate cosmetics in Sri Lanka.

In any street in Sri Lanka how many vendors are present for cosmetics, and how many beauty parlors are available? Are they selling or using quality cosmetic products? Who are the manufactures of the cosmetics that are put out for sale? What is the efficacy of these cosmetics? What is the guarantee that these products are not fraudulent? Who is responsible to answer these questions? Since the beauty industry in Sri Lanka is largely unregulated, it is up to the clients to do their own research to find the safest products. At present in Sri Lanka there are no legal standards for personal care products that are labeled as “pure”, “natural”, “organic,” or “herbal”. So look beyond the marketing claims and read labels carefully. Choose products with simpler ingredient lists and fewer synthetic chemicals. Avoid synthetic fragrance by



skipping products with “fragrance” on the label, and use fewer products overall.

Some personal care products are easy to make yourself, and this can be a great project for a party. Read labels for specific information on a product’s ingredients, rather than relying on claims like “organic” or “natural.” Even though a product claimed to be “natural” or “herbal” there is plenty of room

for inclusion of harmful synthetics. Although it is merely one single word, on the ingredient label, “fragrance” means dozens of chemicals including hormone-disrupting phthalates and synthetic musks. Fragrance manufacturers claim the formulae are confidential business information and therefore these chemicals may not be given in the label. Even fragrances that purport to be natural can contain chemicals of concern, so choose products that disclose every ingredient.

One great way to know exactly what is in your product is to make your own, often out of everyday ingredients you have in your cupboards or refrigerator. Look for natural beauty products or make your own out of common household ingredients. Finally I would strongly like to suggest that, when using cosmetics to make yourself beautiful and attractive, either make them yourself or use them in minimum quantities. In addition do not forget to do the spot test before you use them. Have a beautiful life.



**Prof. M.D.P. de Costa,
Department of Chemistry,
University of Colombo
0112503367**