



COCAMIDE AND ITS DANGERS

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Article Received on 24/07/2015

Article Revised on 16/08/2015

Article Accepted on 08/09/2015

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ABSTRACT

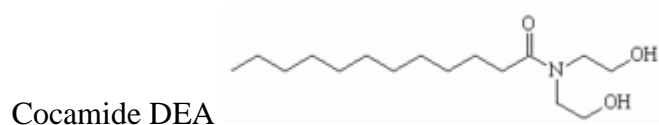
Cocamide is a mixture of amides of the fatty acids obtained from coconut oil. As coconut oil contains about 50% of lauric acid, in formulas only the 12-carbon chains tend to be considered. Therefore the formula of cocamide can be written as $\text{CH}_3(\text{CH}_2)_{10}\text{CONH}_2$, though the number of carbon atoms in the chains varies (it is always

even). Cocamide is the structural basis of many surfactants. Common are ethanolamines (cocamide MEA, cocamide DEA), or betaine compounds (cocamidopropyl betaine). These are commonly found in most personal care products that foam, including bubble baths, body washes, shampoos, soaps and facial cleansers. Cocamide DEA is originally derived from natural coconut oil, but is extensively refined and processed with harsh, powerful chemicals that leave the final product thoroughly unnatural. Even though it is manufactured regularly in cosmetics, Cocamide DEA can have negative and lasting effects on your skin, hair, and overall health. DEA and MEA are usually listed on the ingredient label in conjunction with the compound being neutralized. Thus look for names like Cocamide DEA or MEA, Lauramide DEA, etc. These are hormone disrupting chemicals and are known to form cancer causing nitrates and nitrosamines. There are also other consequences of Cocamide DEA which can affect the body badly, thus it should be avoided so as to stay as happy and healthy as possible.

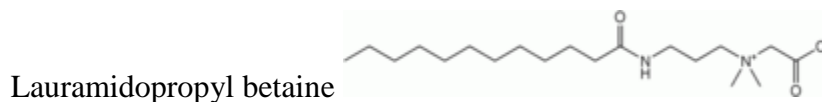
KEYWORDS: Cocamide derivatives-synonyms-properties-uses-cocamide products-side effects-precautions and prevention.

Cocamide DEA, or cocamide diethanolamine, is a diethanolamide made by reacting the mixture of fatty acids from coconut oils with diethanolamine. It is a viscous liquid and is used as a foaming agent in bath products like shampoos and hand soaps, and in cosmetics as an emulsifying agent. See cocamide for the discussion of the lengths of carbon chains in the

molecules in the mixture. The chemical formula of individual components is $\text{CH}_3(\text{CH}_2)_n\text{C}(=\text{O})\text{N}(\text{CH}_2\text{CH}_2\text{OH})_2$, where n typically ranges from 8 to 18.



Lauramide DEA, the major component of cocamide DEA.



Synonym(s)

AMIDES, COCO, N,N-BIS (2-HYDROXYETHYL) -; AMIDES, COCO, N,NBIS (HYDROXYETHYL) ; COCO AMIDES, N,N-BIS (2-HYDROXYETHYL) -; COCO N,N-BIS (2-HYDROXYETHYL) - AMIDES; COCONUT DIETHANOLAMIDE; COCONUT FATTY ACID DIETHANOLAMIDE; COCONUT FATTY ACID DIETHANOLAMIDE; COCOYL DIETHANOLAMIDE; DIETHANOLAMINE COCONUT FATTY ACID CONDENSATE; N,N-BIS (2-HYDROXYETHYL) - AMIDES, COCO; N,N-BIS (2-HYDROXYETHYL) - COCO AMIDES.

PROPERTIES

- **Chemical formula**

$\text{CH}_3(\text{CH}_2)_n\text{C}(=\text{O})\text{N}(\text{CH}_2\text{CH}_2\text{OH})_2$, $n \sim 8-18$.

- **Appearance**

Yellowish to yellow viscous liquid

Except where noted otherwise, data is given for materials in their standard state (at 25 °C (77 °F), 100 kPa).

USES

An emulsifier, thickener and foaming agent. Surfactant - Foam Booster; Viscosity Increasing Agent - Aqueous; Emulsifying Emulsion Stabilising; Foam boosting; Viscosity controlling.



- **Use in Cosmetics**

DEA (diethanolamine) and DEA compounds are used to make cosmetics creamy or sudsy. DEA also acts as a pH adjuster, counteracting the acidity of other ingredients. DEA is mainly found in moisturizers and sunscreens, while cocamide and lauramide DEA are found in soaps, cleansers, and shampoos. Industrial applications of DEA include its use in oil refineries to "scrub" hydrogen sulphide from process gas emissions. This ingredient has the ability to increase the foaming capacity and/or stabilize the foam of a surfactant, most often a bath product such as shampoo or bubble bath. It can also increase the viscosity of an aqueous (water based) solution.

Because Cocamide *DEA* is both water soluble and oil soluble, it enables both water and oil to be evenly dispersed in a solution. It also traps the oil based dirt of the hair so that it can be rinsed away. While traditional cleansing surfactants (i.e. soap) have a drying effect, this ingredient effectively cleans the hair and conditions it with its natural fatty acids derived from coconut oil. It also has the ability to enhance the performance of other ingredients, namely cleansing agents and conditioners. You'll mostly find this ingredient in shampoo, body wash, cleanser, liquid soap, bubble bath, dandruff treatment, hair dye exfoliant/scrub and bath oil.



- **As an Antiseptic**

The compound Cocamidopropyl betaine remains stable within a wide range of pH values, and in most cases it has a mild germicidal and antiseptic effect. Manufacturers often use this to their advantage when making certain personal sanitary products. For example, it often is included as a mild disinfectant ingredient in facial scrubs and exfoliants designed to eliminate skin breakouts like acne. The compound can dry the skin slightly while cleansing the surface, reducing irritation and ideally preventing new breakouts. The ingredient's pH level also makes it compatible with other cationic, anionic, and nonionic surfactants, and for this reason it's a common ingredient in things like hair dye, too.

POSSIBLE HAZARDS

Emergency Overview

Liquid amber color

May cause irritation to the skin, eyes and respiratory system

Potential Health Effect

Eye Contact: May cause irritation.

Skin contact: May cause irritation.

Inhalation of vapors: May cause irritation.

Below is a list of companies and the products they sell that contain cocamide DEA. Companies in italics have agreed to eliminate the chemical.

COMPANY	BRANDS	PRODUCT
<i>ABACO Partners LLC Lander</i>	<i>Lander</i>	<i>Green Tea Shampoo</i>
<i>Accessory Zone, LLC</i>	<i>Fresh Sweet</i>	<i>Lemon Verbana Hand Wash Gel</i>
<i>Added Extras LLC</i>	<i>Lalaloopsy</i>	<i>Cotton Candy Bubble Bath</i>
<i>AFAM Concept, Inc</i>	<i>Vitale</i>	<i>Neutralizing Shampoo (with DL Panthenol)</i>
<i>Alberto-Culver USA, Inc</i>	<i>Folicure</i>	<i>Dandruff Moisturizing Shampoo</i>
<i>Alberston's LLC</i>	<i>Equaline</i>	<i>Medicated Dandruff Shampoo with Menthol</i>
<i>Aspire Brands; Bonne Bell, LLC</i>	<i>Formula 10.0.6</i>	<i>Best Face Forward Daily Foaming Cleanser Passion Fruit+Green Tea</i>
Advanced Healthcare Distributors L.L.C	Bioluxe	Smoothing Shampoo
Amerifoods Trading Company LLC	Simply VALUE	Antibacterial Dishwashing Liquid & Hand Soap
Caswell-Massey, LLC	Dr. Hunter's	Rosemary & Glycerin Hair Wash
Commonwealth Soap & Toiletries, Inc.	CST	Eucalyptus Aloe Hand Soap
Evergreen Consumer Brands	Silcience Hair Care	2 in 1 Shampoo & Conditioner
HotHouse Partnerships Limited	Brown & Harris England	Lavender Conditioning Handwash
Macy's West Stores, Inc.	Kera Care	Anti-Dandruff Moisturizing Shampoo
Save Mart Supermarkets	Palmolive Caprice Especialidades	Anti-Ceramidas Shampoo

SIDE EFFECTS

Cocamide-DEA was listed under carcinogenic toxicant in June 2012, but companies cannot be sued until a year after a chemical is listed. The substance is commonly used as a foaming agent in soaps, shampoos, hair dye, cosmetics and household cleaning formulas. Though on the priority list for the Office of Environmental Hazard Assessment to determine a “safe harbor” level of the chemical, one does not exist. This means that a plaintiff can currently sue for any amount of the chemical being present in the product and negotiate settlements with companies agreeing to reformulate products such that this agreed amount becomes the de facto safe harbor in the absence of the state creating one. We have seen this before in many other listed chemicals. The other option for companies who believe their products do not require a warning is to conduct their own exposure assessments and litigate, allowing a judge to decide if a warning was required. OEHHA decided to list cocamide-DEA after considering a 2011 International Agency for Research on Cancer (IARC) research that found the chemical “possibly carcinogenic to humans” based on animal testing by dermal exposure. Interestingly, the study noted an increase in liver and kidney tumors in test using mice, but not in tests using rats. Public comment failed to convince OEHHA not to list the chemical. Groups expressing their opposition included the Consumer Specialty Products Association (CSPA), which noted that a chemical listing based on a two-page news article would be premature. The CSPA also objected to OEHHA’s use of the Labor Code to list cocamide-DEA, a mechanism it contended was purely ministerial and did not allow for consideration of alternative scientific arguments.

- **It dries out your skin**

Cocamide DEA is used as a surfactant, which means it helps soaps and shampoos to lather and foam. Unfortunately, if a surfactant is too strong it can strip away your body’s natural oils, leaving your skin dried out. Without this natural protection against microbes and other environmental factors, your skin might get flaky and itchy. Your skin also becomes more prone to infection. Other strong surfactants that can cause dry skin include sulfates, commonly sodium laureth sulfate and sodium lauryl sulfate, and betaines (usually cocamidopropyl betaine).

- **It can cause cancer**

Aside from drying your skin out (which we all know is bad enough), Cocamide DEA has been implicated in much more serious and long-term health risks. Cocamide DEA can

combine with preservatives to form very dangerous chemicals called nitrosamines. One such chemical is called NDELA, a compound that has been shown to cause cancer in rats. NDELA is readily absorbed through the skin, especially when it's applied to large areas of your body. Do yourself a favor and steer clear of these toxins. They're often found in less expensive skin care products, but nothing is more valuable than your health.

No Warning Labels

An independent laboratory commissioned by the Center for Environmental Health (CEH) tested the products to determine how much cocamide DEA was present. CEH purchased these products after June 2013 from online and local California retailers, such as Trader Joe's, Walmart, Kohl's, and Babies R Us.

Many of the products tested contained more than 10,000 parts per million (ppm) of cocamide DEA. In all, CEH identified 98 products with cocamide DEA among the ingredients, none of which carried the warning required by state law.

The state has not set a [safety] level specific to cocamide DEA, but the levels we found exceed levels typical for carcinogens."

To comply with California's Proposition 65, companies are still required to provide a "clear and reasonable" warning to consumers when products they sell or produce contain chemicals listed by the state as harmful. This includes compounds known to cause cancer or birth defects.

Cocamide DEA was added to the California list of harmful chemicals in 2012 after the International Agency for Research on Cancer (IARC) published its review of the chemical's safety, which was based upon skin exposure tests in animals. There is sufficient evidence in experimental animals for the carcinogenicity of coconut oil diethanolamine condensate.

- **Miscarriages**

Studies also show that DEAs (including cocamide DEA) directly inhibits fetal brain development in laboratory studies by blocking the absorption of choline, a nutrient required for brain development and maintenance. University of North Carolina at Chapel Hill researchers have discovered that when DEA was applied to the skin of pregnant mice at concentrations similar to those found in shampoos, the fetuses showed inhibited cell growth and increased cell death in an area of the brain responsible for memory – the hippocampus.

DEA is also associated with miscarriages in laboratory studies. This agent not only affects brain development, but at higher doses probably affects some other development in a way that is fatal to the fetus.

So that's what diethanolamine does to animals. But what about humans? An average bottle of shampoo contains up to 10 ml diethanolamine. When we use this shampoo, we massage the diethanolamine into our scalp, pouring in hot water to increase absorption. After 30 shampoos, we are exposed to 10 ml (0.3 oz) of pure, undiluted diethanolamine – more than poor lab mice were! So stop thinking like a mouse. Just because it appears on a bottle with the word “organic” on it, it's not organic. What's worse, it's carcinogenic and it damages your brain. Be proactive and shield yourself and your loved ones from harmful chemicals like cocamide DEA – they aren't doing you any good!

- **Health and Environmental Hazards**

DEA and its compounds cause mild to moderate skin and eye irritationⁱ. In laboratory experiments, exposure to high doses of these chemicals has been shown to cause liver cancers and precancerous changes in skin and thyroid. The European Union classifies DEA as harmful on the basis of danger of serious damage to health from prolonged exposure. DEA compounds can also react with nitrites in cosmetics to form nitrosamines, which the International Agency for Research on Cancer classifies as a possible human carcinogen. Nitrites are sometimes added to products as anti-corrosive agents or can be present as contaminants. The degradation of some chemicals used as preservatives in cosmetics can release nitrites when the product is exposed to air.

The Danish Environmental Protection Agency classifies cocamide DEA as hazardous to the environment because of its acute toxicity to aquatic organisms and potential for bioaccumulation.

- **Allergic Reactions and Sensitivity Concerns**

Though the compound is generally regarded as a mild and safe ingredient, there have been some cases of allergic reactions reported. This is most likely a result of the manufacturing by products amidoamine and dimethylaminopropylamine, two impurities that have been commonly associated with skin irritation and dermal allergies. Studies have shown that this problem can potentially be avoided if manufacturers keep the levels of these by-products low. It can be nearly impossible to discern this simply from a product package in a store, though;

concerned consumers usually need to do a bit of research about brands and manufacturing processes to ascertain any personal risks.

In recent times, more and more new surfactants have been introduced with the hopes of being milder and less irritating. Some hair and body cleanser manufacturers are now replacing cocamidopropyl betaine with cocamidopropyl hydroxysultaine, a similar product that is also derived from coconut oil but has a different chemical makeup. Some experts say that this alternative is milder and more effective, though it tends to be a more expensive ingredient.

PRECAUTIONS AND PREVENTION

Cocamide DEA is found all over, especially in shampoos, hand soaps, and cosmetics. The good news is it's easy to avoid. All you need to do is check the label for it and other like chemicals. Look out especially for any ingredient containing the phrase DEA, TEA, and MEA. These are all compounds similar to Cocamide DEA that carry similar risks (skin irritation and increased cancer risk). You can rest assured that all of my products are completely free of Cocamide DEA and similar toxins. Avoid a product if any of these appear in its ingredients list:

Cocamide	DEA
Cocamide	MEA
DEA-cetyl	phosphate
DEAoleth-3	phosphate
Lauramide	DEA
Linoleamide	MEA
Myristamide	DEA
Oleamide	DEA
Stearamide	MEA
TEA-lauryl	sulfate
Triethanolamine	

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