PERCUTANEOUS PENETRATION OF COSMETICS

Howard I. Maibach, M.D.
University of California / Department of Dermatology

At the beginning of time for quantification of percutaneous penetration (the late 1960’s), utilization for cosmetic ingredients/formulations was a non sequitur: dogma emphasized that these chemicals didn’t penetrate. In the intervening decades, the formulator/strategist – with a cursory knowledge of the literature/science teaches the opposite. This presentation succinctly summarizes the methodology, and how and why leading cosmetic companies have learned to utilize the technology – to the advantage of the consumer.

SOLUBILIZATION OF SODIUM COCOYL ISETHIONATE

James Sun
McKenna Labs INC.

The article of “Solubilization of Sodium Cocoyl Isethionate (SCI)”, J Cosmet Sci. 2003 Nov-Dec;54(6):559-68, published over a decade ago. There have been many commercial liquid detergents products containing SCI as primary surfactant or secondary surfactant since then. The affordably luxury skin after-feel and milder detergency of SCI are the benefits for general consumers. However, some chemists are still encountering the challenge of applying the technology. This presentation is to show how we had achieved this technical understanding in the technology and may help chemists at grasping the cores of the technology.
MEETING DETAILS

LOCATION:
Manhattan Beach Marriott Hotel
1400 Parkview Avenue
Manhattan Beach, CA 90266
(310) 546-7511

RESERVATIONS:
The reservation pricing deadline is at 5pm on the Friday before the monthly meeting. Non-reservation pricing must be paid after this deadline. Reservations are not refundable after the reservation deadline. Please register and pay online at www.caliscc.org or call Sara Benoit at 714-521-5222 ext.141. Call-in registrations must be guaranteed with credit card and will be charged for no-show.

COSTS:
- Members with reservations ($40)
- Members without reservations ($65)
- Non-members with reservations ($65)
- Non-members without reservations ($70)
- Emeritus members with reservations (FREE)
- Emeritus members without reservations ($65)

MENU:
Each meal choice comes with a farmers market salad that includes organic greens, roasted vegetables, goat cheese with a champagne vinaigrette and gluten free double fudge chocolate cake for dessert.

- Pan seared Mexican sea bass, carmalized polenta and lemon sauce
- Braised beef cheek, smashed parmesan potatoes and refined braising jus
- Roasted vegetable wellington in a San Marzano tomato sauce

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CLARIANT

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Clariant's extensive portfolio includes: Hostapon® SCI 85 and a family of Hostapon® and GlucoTain® mild surfactants; Aristoflex® AVC and a broad range of Aristoflex® rheology modifiers; Plantasens® Olive LD and an innovative range of Plantasens® natural ingredients; and Genamin® KDMP and other high performance grades of Genamin® quats.

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In addition, a formulation tip beyond the article disclosure will be elucidated for the first time. The research focuses on the understanding of enthalpy of solubilization, equilibrium of solubilization, and the structures and properties of sodium cocoyl isethionate and various surfactants. The purpose of this exercise is to help the formulator to find appropriate surfactant systems to keep sodium cocoyl isethionate in aqueous solution. The solubility of SCI in water is unfavorable in terms of enthalpy of solvation. When setting up equilibrium of solubilization, there are three possible phases, and three methods have been developed to prevent SCI from recrystallizing in aqueous solutions. The first focuses on tying CI ions within micelles made of secondary surfactants. The second focuses on the exchange of sodium ions with ammonium ions (and/or triethanolammonium). The third centers on emulsification of SCI and the subsequent change of micelles into emulsified oil drops. A combination of two or three of these methods will enable the formulator to use SCI as the primary surfactant in liquid detergents systems.

Dr. Howard Maibach is an expert in contact and occupational dermatitis and sees patient at the Environmental Dermatosis Clinic, which is part of the Dermatology Clinic. His specialty is dermatotoxicology, or skin exposure toxicity; allergies and skin disorders; and dermatopharmacology or the study of medications for skin disorders. Maibach has been on the editorial board of more than 30 scientific journals and is a member of 19 professional societies including the American Academy of Dermatology, San Francisco Dermatological Society and the Internal Commission on Occupation Health. He is a professor in the Department of Dermatology at UCSF.

James Sun earned his Doctor of Philosophy in chemistry from University of California at San Diego. Dr. Sun started his cosmetics career from Advanced Research Labs (Henkel Corp). Now he is the vice president of technical services at McKenna Labs INC. His experiences in cosmetic formulation range from skin care, hair care and cosmetic OTC products. He has authored multiple articles in Journal of Cosmetic Science and Cosmetics & toiletries. He has given podium presentations at IFSCC and National SCC meetings. Dr. Sun has been an often speaker at California SCC monthly meetings. His research results, such as Refractive Index Matching and Clear Emulsions, Non-aqueous Emulsion, Solubilization of Sodium Cocoyl Isethionate, Improving Solubility of Benzoyl Peroxide, Stable Conditioning Shampoos Containing High Molecular Weight Dimethicone, and Formulating Scrubs are widely cited by peers in the cosmetics literatures. Dr. Sun has also been granted for several patents.
# 2017 Calendar

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<td>October 25th &amp; 26th</td>
<td>Suppliers Day</td>
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<td>November 28th</td>
<td>Chapter Meeting</td>
<td>Warner Center Marriott</td>
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INTERVIEW:

1) How long have you been in the Cosmetics/Personal Care Industry?
30 years

2) Where did you study? What major(s)?
University of Montpellier (FRANCE). Major in Phyto-chemistry

3) What is your biggest personal accomplishment/what are you most proud of since joining the SCC/industry in general?
Creating Sublimage line for CHANEL

4) Special Interests/Hobbies?
Traveling and trekking

5) Hometown?
Dijon (France)

6) One thing no one knows about you?
I met the Queen of Bhutan (a small kingdom in the Himalayas) and I realized that she was already using some of the beauty products that I made.

7) If you could take a vacation right now, where would you go?
Madagascar

8) What sound or noise do you hate most?
Firefighters siren

9) What sound or noise do you love?
Showers in the rainforest

10) What is your favorite word?
Overseas

11) What is your favorite TV show or book/periodical?
Book: (the Penguin book of) Indian Journeys (Author: Moraes)

12) Who is your favorite musician?
My son (piano)

13) What is the strangest thing you’ve ever eaten?
Fried scorpions (in China)
When is a plastic not a plastic?
This may seem to be a strange question, but in light of all of the enforceable Microbeads regulations and budding legislation, it is strangely relevant.

Plastic microbeads: how this started
A little background: An article in the Los Angeles Times (http://www.latimes.com/science/la-me-0126-microbeads-20140126-story.html) publicized the questionable presence of microbeads, theoretically from cosmetics, found in the Great Lakes. It has not been determined precisely if they are indeed coming from Cosmetics/personal care products. However, cosmetics were easy to target as a source, since they are perceived to be frivolous products.

In an unlikely turn of events, Illinois was the first area to legislate the removal of microbeads in Cosmetics. Illinois, which borders the Great Lakes, passed legislation while working closely with the Industry through the Personal Care Products Council, negotiating a reasonable timeline for all concerned. The immediate problem of a short-term ban was abated, and a coherent, relevant definition of a microbead was created.

California
California also unsurprisingly presented legislation along the same lines as the Illinois bill, AB 888. Governor Brown signed the Bill into law in October 2015. It prohibits for “sale or offering for promotional purposes….

“a personal care product containing plastic microbeads that are used to exfoliate or cleanse in a rinse-off product”.

The U.S.
The Microbead-free Waters Act passed in December 2015, whose purpose is “to ban rinse-off cosmetics that contain intentionally-added plastic microbeads beginning on January 1, 2018, and to ban manufacturing of these cosmetics beginning on July 1, 2017.” If the microbeads are in a product that is categorized as an OTC Drug, there is an additional year to comply with the aforementioned deadlines.

Europe
The activity in the U.S. created interest in Europe, and as a pre-emptive measure, the EU cosmetics trade association, Cosmetics Europe, published recommendations to the industry for the phase-out of microbeads, by recommending “discontinue, in wash-off cosmetic products placed on the market as of 2020: The use of synthetic, solid plastic particles used for exfoliating and cleansing (i.e. microbeads) that are non-biodegradable in the marine environment.” Industry was committed to this responsible and reasonable guideline. Cosmetics Europe surveyed the industry in 2016, and found an 82% reduction in the number of products in Europe containing microbeads by the end of 2015.

The European Commission is also currently developing proposals to ban them in cosmetics across the EU, following calls from a number of member states.

India
Other areas have heard of this activity and India, of all places, has requested a report on the use of microbeads, based on a petition from a lawyer from Delhi, requesting a ban on microbead-containing cosmetic products. At this time, there has been no proposed date for the ban.

Australia and New Zealand
New Zealand’s Ministry of the Environment has released a consultation document on a ban of microbeads on rinse-off products, which potentially would begin July 1, 2018.

The Australian government has a recommended ban of July 1, 2017. If significant amounts of product are still on the market at that time, the government will likely issue a mandatory ban for 2018.

And that’s not all, folks….
The consumer action group Greenpeace has also said that “Marine life doesn’t distinguish between plastic from a face wash and plastic from a washing detergent, so the ban should be extended to microplastics in any product that could be
flushed down the drain.”

The Environmental Working Group, a nonprofit who is no stranger to our industry, also stated: “Taking action on microbeads was an important first win. But it’s even more important to make sure we are really addressing environmental plastic pollution.” The net is beginning to widen for definitions of “marine waste”, or physical contaminants in waterways.

The BBC encourages consumers to look for specific ingredients on the label, since “microbeads” is not an INCI name. “Instead, look for the words polyethylene, polypropylene and polymethylmethacrylate - the chemical names for plastics. Nylon may also be listed as well as the abbreviations PET, PTFE and PMMA.”

This can serve to confuse the consumer, as they may misinterpret an ingredient name that contains “polyethylene” as part of its INCI designation, which may not fit the definition of a microbead. It would be categorized chemically as a polymer, and would not be what a consumer would consider to be “plastic”.

**Action by Industry**

Industry must be clear on the definition of microbeads and work with legislators, since some pending legislation now refers to microplastics, which may include materials which are simply chemically related, such as liquid polymers, and should not be considered as “marine waste”.

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