

nutmeg newsletter



Q2 2023

SAVE THE DATE: CTSCC'S SUMMER SOCIAL EVENT

Hartford Yard Goats Baseball Game



June 11th, 2023

Dunkin' Donuts Park
1214 Main Street
Hartford, CT 06103

1:10 PM – 4:10 PM



Registration

Online at www.ctscc.org
Email Cynthia at
cynthia.valovich@henkel.com

Early Bird Rate!

\$45 until May 11th!

Join us for our first-ever baseball event!

We've rented out space at the ConnecticutCare Picnic Pavilion of Dunkin' Donuts Park - home of local Minor League team, the Hartford Yard Goats for the game on June 11th!

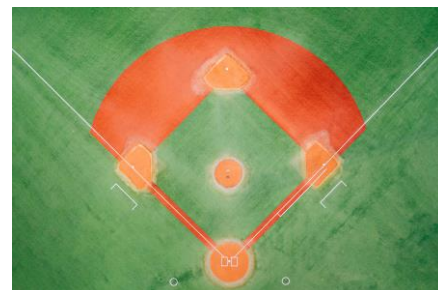
The Picnic area is located in left/left center field and will include a 2.5 hour buffet as well as soft drinks and waters served until the 9th inning.

Please join us with your family and friends for this fun summer social event! Take advantage of the early bird rate available until May 11th!



Inside this issue:

- Letter from the Chair
 - 2023 Board
- Technical Corner: Silicone Alternative Solutions for Hair Care
- March Dinner Meeting Photos
 - Trivia Question
 - Upcoming Events
- FREE SCC membership for undergrad students
- FREE on-demand webinars



Letter from the Chair

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Dear CTSCC Members and Friends,

Happy Spring! The weather has been gorgeous lately. I hope everyone is enjoying the warmer days along with the blooming flowers and budding trees.

The CTSCC has a couple of upcoming events:

- Kyle Ryder of CHT will be presenting “Silicones: A Great Match for Sustainability and Performance... Debunking the Myths!” on Tuesday, April 18th at The Water’s Edge at Giovanni’s in Darien. Registration is still open for this event. Come and learn about an important and hotly debated class of ingredients in our industry.

- We are hosting a social event on Sunday, June 11th! Come join us in Hartford for a Hartford Yard Goats baseball game. The event will be held in the picnic pavilion section of the stadium. Bring your family and enjoy the game plus a 2 hour lunch buffet. Registration for this event will be opening soon. Tickets purchased by May 11th will be discounted.

We’ve also had a strong start to the events for this year:

- Our first in person dinner meeting since 2020 was held at The Water’s Edge at Giovanni’s in Darien on Tuesday, February 7th. Susan Sperring of Symrise presented on “Sensitive Skin”. We had a great turnout and the presentation was well received. Attendees asked insightful questions and it was obvious that the topic was of interest to many.

- Peter Rousso of Helen of Troy gave a talk about his career on Tuesday, March 21st at Old Towne Restaurant in Trumbull. It was fascinating to hear about the opportunities and events in his life that led him to where he is today. Everyone, from those advanced in their careers to those just starting out, found his talk enlightening and informative.

Some upcoming SCC events for other chapters:

- The NESCC is hosting their 2nd “The Colors of Chemistry” Tech Talk series in Burlington, VT on Wednesday, April 19th. It’s a beautiful time of year to visit northern VT.

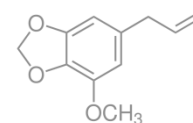
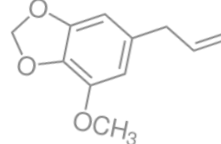
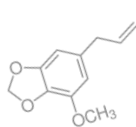
- NYSCC Suppliers’ Day is May 2nd and 3rd at the Jacob Javits convention center. If you have never attended or it’s been several years, I highly recommend attending this year. It’s always a great event and is free to attend.

It looks like it’s going to be busy the next few months. I hope to see everyone very soon at a CTSCC event.



Faith Corbo

2023 Chair, Connecticut Chapter
Society of Cosmetic Chemists

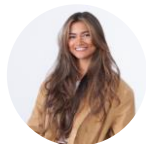


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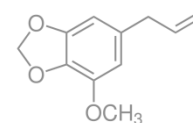
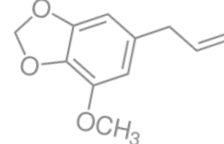
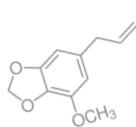


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Interested in volunteering? Reach out to any board member or ctscnews@gmail.com to learn more!



Technical Corner

This article was originally published in the NYSCC blog.

Silicone Alternative Solutions for Hair Care

Author: Mythili Nori



Introduction

Silicones have been widely used in the cosmetic industry for decades. They are exceptionally versatile and impart multifaceted benefits across a wide range of beauty and personal care products. Not all silicones have been created equal, however, and some of these materials are now limited by regulatory restrictions on their use. Due to an increasing focus on their toxicological and environmental impact, consumers are now gravitating towards natural, safe, and sustainable alternatives. This article provides an overview on how silicones have shaped the hair care industry and the continuous research necessary to find innovative and environmentally friendly alternatives to silicones.

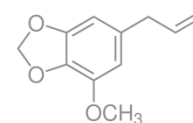
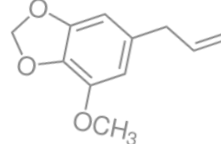
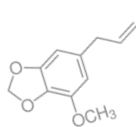
Influence of Silicones in the Hair Care Industry

Silicones have been important ingredients in hair care products since the 1950's. Silicones or silicone derivatives are widely used in shampoos, conditioners, colorants, or styling products where they act as either emollients, humectants, film formers, antifoaming, anti-static, or binding agents [1]. These materials range from basic cyclic or linear polydimethylsiloxane (PDMS) to polyether-and amino-based fluids and silicone resins [2]. All silicones have a natural origin (silica), but synthetic processes are used to create the plethora of silicone ingredients used in cosmetics [3].

Linear PDMS, also known as dimethicone, is available in a range of molecular weights and viscosities and is most used in hair care applications. They provide excellent conditioning and performance which increases with higher viscosity. Use of dimethicone reduces combing forces, provides great sensory benefits like gliding, and adds suppleness to hair.

Phenyl trimethicone is also based on linear PDMS with the addition of phenyl groups [4]. This combination results in a higher refractive index that effectively coats the hair enhancing its shine and leaving hair soft. PDMS polymers are also highly water resistant which makes them effective agents in reducing tackiness of the formulations.

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Technical Corner

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Influence of Silicones in the Hair Care Industry (cont.)

Cyclic polydimethylsiloxane (cyclic PDMS) or cyclomethicones fluids are characterized by ring structures typically containing three to six groups per ring [2]. These fluids decrease combing forces by reducing friction and surface energy [4]. Due to their volatility and fast spreading properties, they provide transient gloss to hair, leaving hair weightless and without any build-up. Cyclomethicones are more compatible with a wider range of ingredients versus linear PDMS.

Silicone gum/fluid blends provide a high level of substantive conditioning and frizz control while imparting a soft and lubricious feel [4]. There are silicones that are modified, like amodimethicones (amine-functionalized silicones) or alkylmethicones (replacing methyl groups on PDMs with alkyl chains) which are widely used in hair care applications as well. Amodimethicones impart specific benefits like color protection, heat protection, repair, reduced flyways, and deep conditioning.

The above-mentioned silicones are non-water soluble, whereas silicone polyethers are a family of water and/or alcohol soluble materials commonly used in shampoo formulations. They provide light to medium conditioning. In addition to acting as emulsifiers or co-emulsifiers, they can be used as resin modifiers to aid curl retention [2].



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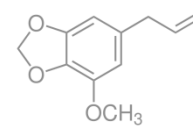
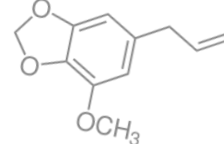
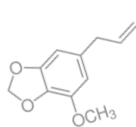
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Technical Corner

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Moving Away from Silicones

While silicones have been highly effective hair care ingredients providing both functional and enhanced sensorial benefits, there is a movement away from their use due to a variety of reasons. There are long-term effects of silicone such as causing build-up, greasiness, and scalp accumulation [5]. Furthermore, concerns have been raised about their toxicity and effects on the environment.

The Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) assessed the potential environmental effect of cyclic silicones: cyclotetrasiloxane (D4) and cyclopentasiloxane (D5). Based on the evaluation, D4 meets the criteria for identification as a persistent, bio accumulative and toxic (PBT), very persistent, very bioaccumulative (vPvB) substance and D5 meets the criteria for a vPvB substance [6]. After January 31st, 2020, the concentration of D4/D5 in rinse-off cosmetic products placed on the market should be less than 0.1% by weight of either substance. This has now been amended to include cyclohexasiloxane (D6) and is expected to be further restricted to include leave-on products [7].

Linear silicones are also not completely in the clear. They are suspected to be an environmental toxin and to be bioaccumulative. Dimethicone, Dimethicone Copolymer, Polysilicone-15 and other silicones are commonly considered to be microplastics [8,9]. In addition to being non-biodegradable, silicone oils also have an impact on the environment due to their industrial production process which has a high carbon footprint [10].

High performance, Natural and Sustainable Solutions

According to Mintel's GNPD, between 2016 and 2021 the incidence of "silicone-free" claims for hair care products increased by over 200%. With regulations to control the usage of silicones in hair care products and a growing emphasis on naturality and sustainability, companies are looking for ingredients that serve as silicone alternatives. There is a huge focus on developing efficient and innovative ingredients that offer similar or better functional performance and with a better sensorial profile than silicones. A few ingredient solutions currently offered are highlighted below:

C13-C15 Alkane (plant-derived) is a sustainable natural silicone replacement developed via the fermentation of renewable sugar and grown sustainably without irrigation. This ingredient meets the performance of dimethicone in frizz reduction and color protection. It also matches the performance of amodimethicone in terms of wet/dry combability and provides an excellent sensorial profile. Ethyl Macadamiate is another silicone alternative of macadamia esters. It is biodegradable and provides the same silky, smooth after feel as cyclopentasiloxane [8]. A highly viscous, hydrogenated polyfarnesene presents interesting properties to replace Dimethiconol-based blends [11].

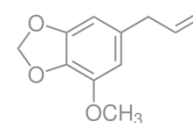
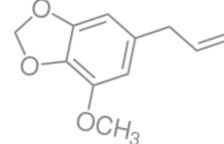
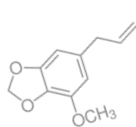
Three Winners of the 2022 C&T Allès Award



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Technical Corner

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High Performance, Natural and Sustainable Solutions (cont.)

A prime function of silicones is to act as emollients. A vegetable emollient that is readily biodegradable and reduces significant carbon footprint is a perfect ally to protect hair from repeated mechanical stress and perform superior to cyclopentasiloxane [10]. An example is Hydrogenated Olive Oil which is an unsaponifiable squalene from olive oil and hydrogenated castor oil. It is yet another emollient offering to replace silicone and mineral oils that has great application in anti-frizz haircare products [12].

Reduced Silicone Solutions

It is not necessary to exclude all silicone products; cyclic free or synthetic silicones that meet REACH requirements can still be used as alternative solutions. Using low viscosity dimethicone and a mixture of C13-C14 isoparaffin can be considered as a replacement for cyclomethicones delivering a similar sensory profile [7]. Use of terminal hydroxy amino-modified silicone (THA) chemistry provides long-lasting conditioning and protects hair against breakage [13]. As for synthetic offerings, combining quaternary conditioning properties of cetrimonium chloride with a carboxylated silicone provides thermal protection and enhances the manageability of hair, while a complex of cetrimonium chloride with a water-soluble silicone provides great hair care benefits in different formats [7]. A combination of natural oils and a synthetic polymer can enhance and extend the benefits of natural oils to smooth and restore damaged hair and protect and reduce hair damage from different grooming regimens [12].

The industry also offers some unique solutions like quat-free polymeric conditioning additives that can provide multi-functional benefits to hair which are ideal for amodimethicone free formulations. Lastly, to reduce the carbon footprint, manufacturers are cutting down the high use of energy to produce dimethicones of various viscosities by using methanol obtained from biomass instead of fossil fuels [7].

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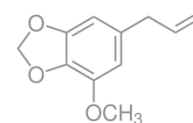
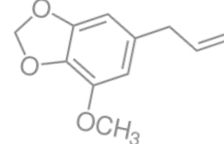
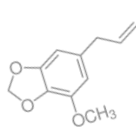
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Technical Corner

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Using Digital Tools to Source Ingredients

In the quest for clean and sustainable ingredients, Artificial Intelligence (AI) is playing a critical role in research and development. Machine learning is a powerful tool that can collect large amounts of data and provide detailed information about ingredient sourcing [11]. AI will be further integrated to explore unmet needs and help screen and identify innovative ingredients for various applications. Companies are also developing apps, using QR codes to trace ingredients, and promote ingredient transparency by providing origin and sustainable properties [11].

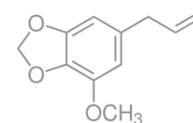
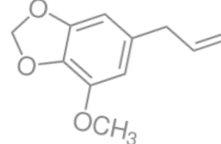
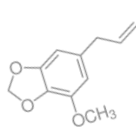
Conclusion

Over the last decade, there has been a strong shift in consumer product preferences with emphasis on personal wellbeing and the environment. The cosmetic industry has made great progress in offering many eco-friendly, clean, and sustainable solutions not only to replace silicones but also other ingredients that are currently being challenged. Companies are tasked to continue their efforts in developing eco-friendly and sustainable products that are highly effective in functional and sensorial performance to meet consumer needs.

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Technical Corner

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About the Author



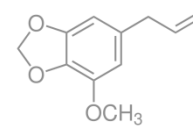
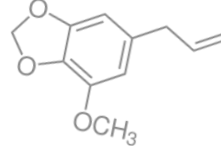
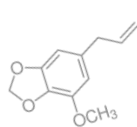
Mythili Nori has worked in the Personal Care industry for over a decade. Her expertise is in Product Claim Substantiation and Data Science. In her current role at BASF, she is responsible for Physical Claim Substantiation & Sensory testing for Hair & Skin Care. Prior to joining BASF, she spent 5 years at TRI/Princeton as a Senior Research Associate, supporting claim substantiation and fundamental research activities for textile and hair surfaces. She earned a Bachelor of Technology in Chemical Engineering from India and received Master of Science in Chemical Engineering at North Carolina Agriculture & Technical State University focusing on purification of drinking water.

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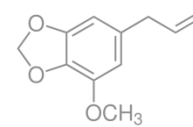
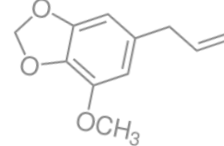
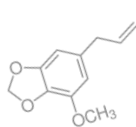


March Dinner Meeting Photos



Peter Rousso shared stories with attendees about his career path, recounted pivotal moments and mentors, and offered insightful advice for chemists

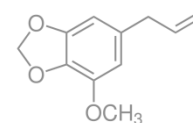
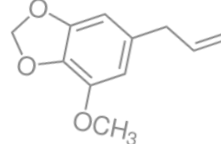
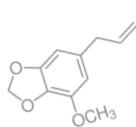




March Dinner Meeting Photos



The night included a delicious dinner buffet and dessert, and lots of laughter from Peter's personal stories!



Trivia Question

On December 29, 2022, MoCRA was signed into law to expand the Food and Drug Administration's authority over personal care products. What does MoCRA stand for?

- A. Modification of Cosmetic Regulatory Affairs
- B. Modification of Cosmetic Regulatory Administration
- C. Modernization of Cosmetics Regulation Act
- D. Modernization of Cosmetic Restrictions Act

Check page 14 for the correct answer!

CTSCC'S Upcoming April Meeting

Silicones: A Great Match for Sustainability and Performance

April 18, 2023

The Waters Edge at Giovanni's

2748 Boston Post Rd Suite B, Darien, CT 06820

Summary

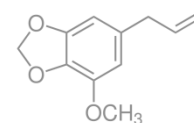
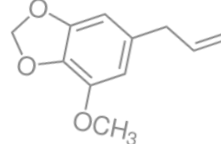
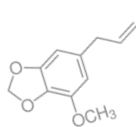
In recent years, many cosmetic raw materials have been negatively portrayed by fearmongering and misinformation. Silicones have been near the top of the list of products under attack. The categories of negative comments include product safety, environmental impact, and product performance. As cosmetic formulation chemists and as scientists, it is our responsibility to educate consumers on what is and is not safe and effective. In this presentation we will debunk each myth surrounding the use of silicones in Personal Care products. There will also be focus on the use of silicones in combination with or in place of natural materials. Finally, there will be an introduction to the first recycled, sugar modified silicone for Hair Care.

Speaker Bio

Kyle Ryder is an Application Chemist for CHT USA's Consumer Care business and is part of a global CHT Applications team that focuses on Personal Care. CHT is a global producer of specialty silicones for a wide range of markets, with US manufacturing in Cassopolis, Michigan.

Kyle has had varied experience in the chemical industry, with a strong focus in Personal Care. After graduating with a B.S. in Biochemistry from Marietta College, Kyle has held roles of increasing responsibility with DuPont Performance Coatings, Avomeen Analytical Services and Magni Coatings. He joined CHT USA in 2022 and is an integral part of CHT's customer facing team. Kyle has been very active with the SCC in the past year, attending many events across the country. He lives in Battle Creek, Michigan where he enjoys golfing, college football, and being an avid foodie.





Upcoming Events

***New England Chapter: Green Chemistry,
Fermented Products***

April 19, 2023

***NYSCC Awards Night: Recharge, Renew, and
Network***

May 2, 2023

NYSCC Acne Care Symposium

June 14, 2023

NYSCC Fishing Trip 2023

August 12, 2023

***New England Chapter: Root 4 Hair: Fighting Against
Color Fading and Aging***

September 21, 2023

Webinar at 12PM



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CHEMISTS

SUPPLIERS' DAY

SUPPLIERS' DAY 2023

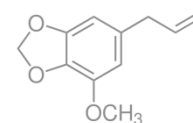
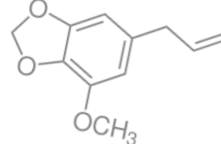
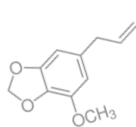
Reimagining Renewal & Wellness

MAY 2-3, 2023

JACOB K. JAVITS CONVENTION CENTER
NEW YORK CITY

SCC77th Annual Scientific Meeting & Showcase

December 12-13, 2023
Sheraton NY Times Square
New York City



Free Undergraduate Student Membership



SOCIETY OF
COSMETIC
CHEMISTS

Membership in the Society of Cosmetic Chemists is now FREE for undergraduate students!

Member must be a fully matriculated undergraduate student at a recognized college/university. Student membership in the SCC is free throughout a student's undergraduate career.

For more information and to join, visit sconline.org/join

Free On-Demand Webinars

Did you know that SCC members can enjoy free access to many educational on-demand webinars?

Keep up to date with latest important scientific advancements, topics, and trends in the industry with these educational offerings!

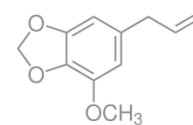
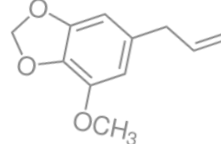
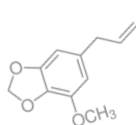
Example topics include natural product formulation, microbiome, professional development, and more!

To browse through current offerings, visit library.sconline.org/webinars

Also check out NYSCC's At Home Live Series 2.0 for other webinar offerings!

Visit nyscc.org/at-home-live-series for more information.





Connect with area professionals through the newsletter!

Do you have an **employment opportunity** in the Connecticut area or beyond?

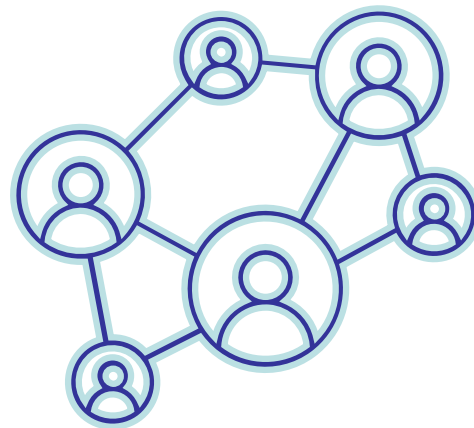
Is there a **technical article**, raw material insight, relevant writing, or other piece you'd like to share with the community?

Have you captured **photos** at CTSCC events?

Please contact Keti Vaso to be featured in the newsletter
(keti.vaso@henkel.com)

Are you interested in supporting CTSCC with a newsletter or dinner meeting **sponsorship**?

Please use the form on our website (ctsc.org/advertising) to inquire.



SOCIETY OF
COSMETIC
CHEMISTS



Photo of Hartford by Ilirjan rrumbullaku (Flickr)

We are a chapter of the National Society of Cosmetic Chemists. The National Organization is dedicated to the advancement of cosmetic science. The Society strives to increase and disseminate scientific information through meetings, continuing education courses and publications. For more information please make sure to visit our website: www.ctsc.org