Wide open

#04 - May 2022

"What is it to talk
of Love, and never
to make love,
But to see the Sun
and not to love
its light?"

Pierre de Ronsard

| A word from Sonia,

Since the 1930s, before the protection index was even invented, filters have been at the heart of the "solar system" in cosmetics.
Yet today, this central notion of protection is being challenged, renewed and widened. Because sun care is no longer simply a matter of an efficient screen that protects our vulnerable bodies from our sometimes unconscious habit of exposing ourselves to the sun. It is also a question of movement, light, warmth and energy, the open air, the seasons, the environment, our moods, colours and power, freedom...
Many things are related to the Sun.
The Sun is life!

In this issue, WIDE OPEN invites you to take a careful look the Sun...
This fourth issue is structured in three sections:

#Look: What's new under the sun?

#Explain: Jasmine and mangosteen, the Sun Queens

#Respect: Best/worst enemy

Happy reading, keep your eyes wide open!

Sonia GUILLAUME, MARKETING & SALES

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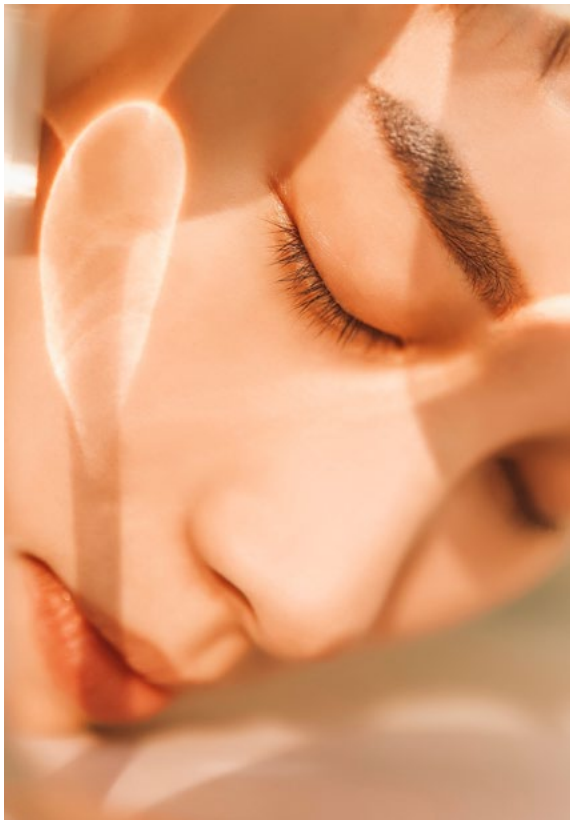
What's new under the sun?

In an industry in which the production and consumption of sunscreens increases every year, disruptive innovation does not seem to be frequent, but some trends are emerging...



The prowess displayed a few years ago by an Asian brand that stood out by turning a constraint into a strength, thus perfectly meeting the definition of innovation, is not seen very often. The aim was to reinforce the effectiveness of the protective sunscreen emulsion when it came into contact with water or perspiration in order to intensify skin protection instead of diluting it. Thanks to **"ionic mineral collectors"** in their stable form, containing negative ions that bind to the positive mineral ions contained in the water and perspiration, the protective layer was made more uniform and its anti-UV effectiveness optimized.

Today, the cream, which has become a convenient, travel-friendly stick, offers increased protection thanks to a new **"shield technology"** which is reinforced not only by water and perspiration but also by heat. This UVA/UVB and dryness protection is complemented by several botanical ingredients that help prevent UV damage such as photo-ageing and blemishes. Its formula is both anti-pollution (preventing pollutants from being deposited on the skin and therefore from their harmful effects) and highly water-resistant so as to adhere to the skin and reduce ocean pollution. In addition, its packaging is made from **72% certified biodegradable materials**...

This sun care product remains an excellent example because it has evolved by ticking (almost) all the boxes of current trends (galenic, naturalness, increased protection, environmental awareness), with, as a bonus, a touch of incremental innovation:

Its galenic form: a stick

The stick follows the trend of solid cosmetics. And like sprays, also on the rise, it is a more practical format, especially for use during outdoor activities.
While many consumers replaced exotic holidays with more local activities during the pandemic, UV protection is still necessary for hiking, running and cycling.

> "High on the rebel cliff
> Provoking and duelling you
> Gives me a fever in the sun"
>
> *Duel au soleil ("Duel in the sun"), Etienne Daho*

Its naturalness enables extended protection

While this sunscreen highlights its shield technology with a special registered high-tech name, it is less boastful of a plant complex. There is also a trend towards plant and plant-derived active ingredients and additives that serve a dual protection strategy, both chemical and physical: long-term anti-ageing effects (reduction of visible wrinkles and improved skin firmness) by protecting, for example, the fibroblasts from oxidative stress and, consequently, the collagen fibre network from damaging processes, anti-blue light and anti-pollution effects, along with an instantaneous, long-term tightening effect. Natural, water-resistant, biodegradable, SPF-boosting film-forming agents are also emerging that can help improve the naturalness of formulations.
In addition, there are solubilizing and dispersing agents to maximize the action of both mineral and organic sunscreens without increasing the dose. All this while ensuring a soft, pleasant, cushiony feel on application, as the application and reapplication of the product is integral to its performance. And the icing on the cake, these actives are COSMOS approved, preservative-free, certified **"GMO-free"**, **"vegan"**, **"compatible with organic and inorganic ingredients"**, etc., so as to be able to use the magical word for sunscreen formulations, **"natural"**.

Environmental awareness

Consumer interest is increasingly focused on logic, ecology and ethics. Consequently, brands are embracing an **"anti-waste"** approach, reducing packaging (using cardboard rather than plastic), respecting the planet's limited natural resources and offsetting CO_2, eutrophication, acidification and ozone depletion. Among the new products are refill systems, waterless and upcycled formulas, and most noticeably in the sunscreen market, formulas claiming to be **"microplastic-free and compliant with the Hawaiian reef bill"**, **"with no impact on marine biodiversity"** or **"ocean-friendly"**, etc.

However, this perfect example neglects another major trend: "skun care"

A combination of SUN and SKIN care, skun care describes new skin care products that, in addition to UV protection, offer benefits such as hydration, soothing of sensitive skin, firming and radiance. The launches of these hybrid products are exploding with a craze for combinations such as sun protection and oxidative stress.

SUN, for or against?

A star that is essential for life on Earth and enables our daily activity,
it has to be said that the Sun has many more advantages than disadvantages.
A short, non-exhaustive list of the pros and cons..

FOR, the sun is good for

- Photosynthesis
- The synthesis of vitamin D
- Melanin, the skin pigment that protects the skin from photo-radiation
- The "healthy glow": a tanned complexion synonymous with good health
- Regulation of moods and behaviour
- The spectacle and vibration of colours
- An alternative to polluting, non-renewable energy sources
- Natural ageing and ripening. For example, the drying of vanilla pods, the solarization of Bach Elixirs or the ageing of Noilly Prat (a vermouth which spends 12 months in barrels outside, battered by sea winds and the scorching sun of the South of France)

AGAINST, in high doses, the sun is a danger for

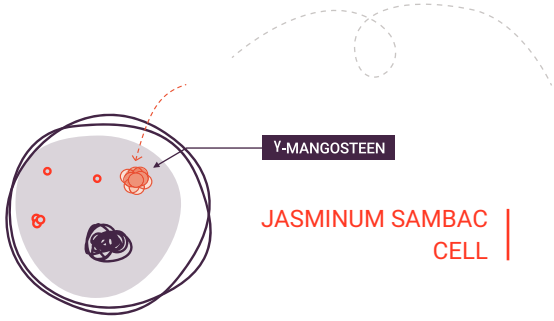
- The climate because of the thinning of the ozone layer, for example.
- Skin: from premature ageing to allergies, sunburn, burns and ultimately cancer
- Discolouring dark objects
- Ocean life: fish and corals damaged by sunscreen

It is often thoughtless human behaviour that results in damage caused by harsh environments or overexposure, for in this instance "the dose makes the poison".

Jasmine and mangosteen, the Sun Queens

Native to South-East Asia, widely used in traditional Asian pharmacopoeia and mainly cultivated in Thailand, the mangosteen is a fruit with very delicate flesh that is highly concentrated in antioxidants. Legend has it that Queen Victoria promised a substantial reward to anyone who could bring her this precious fruit. This is why it is known as the "Queen of Fruits".

While the queen of flowers is jasmine. In India, it is offered at weddings, the statues of the goddesses are bathed in its scent and its harvest is a unique spectacle; in the fields, the women start to pick it at three o'clock in the morning, gathering the pearly, swollen, fragrant buds before they open in the daylight. Indian jasmine thus has a special relationship with the sun, as its sacred flower only opens at the end of the day so as to better protect its powerful scent.



To develop a biological protection for the skin against harmful light, Naolys combined these two plants in an active plant shell or synergistic complex, composed of Indian jasmine cells that potentiate the bioavailability of γ-mangosteen, called **LightWaves Defense [JS+M]**.

Benefits of **LightWaves** Defense [JS+M]

ANTI-AGEING

reinforces the skin's firmness, suppleness and elasticity by maintaining the level of major components in the dermis

RADIANCE

revives the complexion's radiance, making it brighter and more uniform

FIRMS

maintains the skin's degree of firmness

ANTI-REDNESS, WELL-BEING

reduces redness by stimulating skin microcirculation

PROTECTION

protects DNA and reduces damage caused by UV, IR and blue light

The perfect ingredient for the "skun care" trend, ***LightWaves Defense [JS+M]*** *complements the physical and bio-protective filters in sunscreen formulations with its biological action.*
This hybridization with skincare also applies to make-up.

Glowing Light, the foundation containing **LightWaves Defense [JS+M]**, is an example of this intelligent combination of make-up and skin-care for a uniform complexion and skin that is protected inside and out. This formula, which is **94% natural and as biodegradable as possible**, restores the skin's radiance and youthfulness thanks to a triple action WO4 version (acting against redness, firming and protection against UV, IR and blue light).

For more about
LightWaves Defense [JS+M]:
click here

Best/worst enemy

The sun is naturally the central element in the development of sun care products, but more broadly, through climate change and environmental awareness, it has impacted the entire beauty industry, and much else besides...

Cosmetic eco-anxiety

Nowadays, even beauty products are suffering from the fear of climate change. They offer solutions to help the skin fight the ravages of extreme weather. As these tend to become the new normal, hair and skin care brands are revising their formulas and concepts. Heat, humidity and dryness have been shown to alter the quality of make-up and skincare products with formulations breaking down at high temperatures, and humidity encouraging bacterial growth. Similarly, sunscreens become less effective when exposed to stronger UV rays. However, beyond adjustments to formulations, the very identity of some brands is based on the fight against skin damage (premature ageing, irritation, skin stress, etc.) caused by intense cold and extreme heat, UV rays, smoke from forest fires, violent winds and urban pollution, or even a lack of sunlight. Hyperpigmentation and inflammation are the result of an overdose of sun, conversely, there is a serum for skin that is deprived of it, presented as **"drops of sunlight containing a stimulating vitamin D3 type active for dull and lifeless skin"**, a saviour during the winter.

While preventing or repairing the effects of extreme weather on the skin may seem like a gimmick, there are real correlations between rising global temperatures and skin health. Scientific modelling predicts that ***an increase in ambient temperature of 3.6 degrees Fahrenheit*** *could increase* ***the incidence of skin cancer worldwide by 11% by 2050****.*

The influence of climate change on skin cancer incidence - A review of the evidence (International Journal of Women's Dermatology
Volume 7, Issue 1 January 2021, Pages 17-27)

Environmental awareness

And when it comes to the environment, today's sunscreen products, like all cosmetics, are developing an ecological conscience. Many brands are making an effort to design sun products that are as eco-smart as possible.

As a start-up specializing in waterless cosmetics admits, "**today the cosmetics industry represents 146 million tons of plastic, i.e. 40% of the world's consumption, of which only 9% is recycled"**, but many new brands are opting for packaging made of recyclable materials. One of them, designed by surfers, claims that their tubes of sun cream are **"partially made of PCR (Post Consumer Recycled) plastics, currently the best alternative on the market in terms of impact and life cycle"**. It has done away with **80%** of its secondary packaging and all samples. Taking a more environmentally-friendly approach, it only uses cardboard without any specific marking and with **"sustainable development" certification**. While other ocean lovers are launching sunscreen products specially designed to respect marine life, with the development of a certified organic sunscreen range, with biodegradable ingredients whose formulas aim to protect humans from the environment, while also protecting the environment itself. Run by surfing and sailing enthusiasts, and thus aware of the ravages of pollution on the balance of marine ecosystems, they are particularly keen to preserve them by working with associations on several fronts, such as fighting against marine plastic pollution, saving turtles, protecting the sea and the coastline, preserving marine biodiversity and restoring coral reefs. They also provide proof of the non-ecotoxicity of their sun-care products on marine life and reefs.

Oxybenzone, a marine environment contaminant

A study was conducted on its effects on the larval form (planula) of coral, as well as its in vitro toxicity on the cells of this coral and six other species. Oxybenzone is a photo-toxicant whose adverse effects are exacerbated by light. In both dark and light, oxybenzone transformed the planulae from a mobile state into a deformed and sessile state. The planulae showed an increasing rate of coral bleaching in response to increasing filter concentrations. Oxybenzone is genotoxic for coral, showing a positive relationship between DNA-AP lesions and increasing concentrations. It is also an endocrine disruptor of the skeleton; it induced ossification of the planula, enclosing it entirely in its own skeleton.

Oxybenzone therefore poses a threat to the conservation of coral reefs and threatens their resilience to climate change.

Toxicopathological Effects of the Sunscreen UV Filter, Oxybenzone (Benzophenone-3), on Coral Planulae and Cultured Primary Cells and Its Environmental Contamination in Hawaii and the U.S. Virgin Islands. Arch Environ Contam Toxicol 70, 265–288 (2016).

In this respect, the positioning of brands with regard to sunscreens ranges from a considered choice to the total avoidance of chemical filters. Some formulas favour mineral filters (non-nanoparticulate) such as titanium dioxide and zinc oxide, with exceptions for the use of certain chemical filters considered to be **"clean"** and indispensable for extending the protection spectrum or for specific sensory characteristics for the use (e.g. hair care). Others ban octocrylene, homosalate and benzophenone on a precautionary basis. Favouring **100% mineral**, the UK's largest retailer is banning the sale of sunscreens containing oxybenzone and octinoxate, following Thailand and Hawaii, which have already announced a total ban on these ingredients, reputed to be responsible for coral bleaching *(legislation applicable since January 2021 in Hawaii)*. While the announcement is being heeded, the destruction of coral seems to be more due to the effects of global warming, i.e. the increase in temperature and acidification of waters

(study by the Monaco Scientific Centre, 2009, Science magazine).

"

Of all the false gods, I have a soft spot for the sun. The place it holds in my life seems exaggerated to most of my friends. Pushing my Copernican convictions to the point of absurdity, I am not far from making my entire existence revolve around it.

L'Amour est un plaisir
("Love is a pleasure"),
Jean d'Ormesson

"

The solar alternative

While the sun's rays can damage human and ocean health, they are also an alternative source of energy. Some ingenious examples illustrate the beneficial consequences:

The Vaccibox was invented by a Kenyan mechanical engineer: a solar-powered refrigerator, it facilitates the distribution of vaccines in rural areas of the country. Also related to Covid-19 and UV, a Dutch concept purifies the air using far-UV light with germicidal properties.

Closer to home, in the French cosmetics industry, there are solar thermal installations that can heat water to 50°C for washing equipment, and solar energy projects with photovoltaic panels for shade in car parks and electric vehicle charging stations to cover **33%** of the factory's energy consumption.

In the field of plastics, a team of Chinese researchers has developed a new plastic that is biodegradable in air and sunlight. It was by chance, while working on a chemical sensor, that the co-author of the research noticed that the film he was studying had deteriorated after being exposed to the sun for several days, without producing any microplastic waste. This discovery could make electronic products more sustainable (the components currently used in most electronic devices are notoriously difficult to reuse and recycle). Even if this discovery may need five to ten years for an application to be developed, perhaps it could inspire other industries such as beauty product packaging?

A Californian study has proven that natural light boosts productivity by improving concentration and short-term memory, so a little sunshine may not be such a bad idea!

Figures

International Day of the Sun, 3 May
https://www.journee-mondiale.com/50/journee-du-soleil.htm

Solar panels: the sector that has stayed inthe shade
The Sun is our planet's largest source of energy. If we managed to recover all the solar energy that arrives on the planet for two hours, which would be the equivalent of equipping the surface of Iceland with photovoltaic panels, we could supply the whole of all humanity with electricity for a year!
https://www.franceinter.fr/emissions/la-terre-au-carre/la-terre-au-carre-du-mardi-15-mars-2022

The WHO recommends 20 minutes/day to promote natural and progressive skin protection.
"Sunscreens: a sham!" https://ambassadeoceans.com/cremes-solaires-limposture/

20 minutes
are enough for **25%** of the sun cream applied to the body to be absorbed by the sea

500 million people
visit the world's oceans and seas every year

Up to 25,000 tonnes
of chemical residues are dispersed in the oceans!

https://www.febea.fr/fr/vos-produits-cosmetiques/actualites/40-francais-nutilisent-pas-assez-pas-du-protection-solaire

The sun in figures

333,000 times
the mass of the Earth (1.989x10^30 kg)

1,300,000 times
the volume of the Earth

1.392 million km
in diameter (109 times that of the earth)

- Luminosity: **3.85×1023 kWatt**
- Chemical composition (by mass): **Hydrogen: 73%, Helium: 25%, all other elements: 2%**
- Age: **5 billion years**
- Solar core temperature: **15 million degrees Celsius**
- **150 million kilometres** between the sun and the earth

Further reading

For more information and action

- **The history of sun protection products, a relatively recent cosmetic field**
  https://cosmeticobs.com/fr/articles/produits-38/histoire-des-produits-de-protection-solaire-des-cosmetiques-dapparition-recente-3807

- **Every year, the Haereticus Environmental Lab publishes a list of environmentally-friendly sunscreen products.**
  https://haereticus-lab.org/protect-land-sea-certification-3/

- **Wings of the Ocean**
  Wings of the Ocean is a French pollution removal association, founded in 2018. We work on ocean protection, carrying out waste collection operations on beaches and coastlines.
  https://www.wingsoftheocean.com

- **La fondation de la mer**
  Created in 2015 by figures from the maritime world and civil society, the Fondation de la Mer undertakes to protect and study the ocean with, in particular, programmes to combat pollution and protect and restore marine ecosystems.
  https://www.fondationdelamer.org

- **Respect Ocean**
  A network of actors committed to sustainable economic development in favour of the ocean
  https://www.respectocean.com

- **Surfrider**
  For more than 30 years, Surfrider Foundation Europe has been taking action as a recognized authority in three areas of expertise: marine litter, water quality and public health, coastal management and climate change.
  https://surfrider.eu

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