

SmartGreen

News from the environment

Post

A WORLD WITHOUT PLASTIC: IS IT POSSIBLE?

■ CORONAVIRUS WASTE EMERGENCY

How to decide what mask works best for you and the environment

Gloves and masks create more damage than plastic

Stop microplastics in cosmetics

■ GREEN IDEAS

Cingomma, craftsmen of recycling: from bike wheels to fashion accessories

■ TRAVELLING

Alternative holidays to discover the most beautiful paths in Italy

 EDITORIAL

Did coronavirus really make us better? Environment says no



Piera Vincenti

Editor of SmartGreen Post, she has many years of experience as a journalist and copywriter, alongside which she has added new skills in the digital and social media management sectors. With SmartGreen Post she expresses its true ecological nature.

Those who thought that coronavirus would make us better people were wrong. Finding ourselves in fragility, discovering that we can be attacked by a creature invisible to the naked eye, experiencing disease and forced isolation has not changed us for the better. The lesson we could learn to make a change in our lifestyle has unfortunately been left unheard and, as always, the environment is the expense.

In the first weeks of lockdown, we welcomed the drop in pollution levels and the reduction of CO2 in Italian and foreign cities. We rejoiced in seeing finally lipid skies, clean rivers and seas teeming with fish, returned to claim the place that belongs to them and that, instead, we humans have assigned to waste.

We will dedicate the second issue of our Magazine to the new waste that is invading our planet. We will do this by denouncing situations that have become common - latex gloves and masks abandoned everywhere, which crowd our sidewalks and our seas - but we will also and above all do it constructively, as is our style, providing advice and suggestions on which devices to protection used to avoid contagion from Covid but also to protect the environment from plastic pollution. We will do this by informing about the devastating effects of microplastics, which through the rivers reach the sea and end up on our table through the food chain. We will also do this by talking about sustainable initiatives, of those who strive to find alternatives to plastic and recycle materials that would otherwise end up in landfills.

Because the world we like is not what we see daily, where hundreds of disposable gloves flutter happily in the air, where masks are recovered from the bottom of the sea, or garbage accumulates in front of the bins, often in a confused way.

The world we like is made of clear skies and fresh air, of animals basking in the sun in a clean meadow and fish free to swim without the risk of ending up trapped in a net or a glove that someone has recklessly abandoned. This is the world we want to promote, a green world in which man and nature live in harmony. A utopian idea? Perhaps, but it is only by pursuing high ideals that we can invest to create a better world.



Founder



Mario Telesca

Computer scientist, sensitive to environmental issues, he has carried out various green projects including SmartRicicla, the app for separate collection. He is fascinated for the perfect union between science and art, that he applies in each of his projects.

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How to decide what mask works best for you and the environment

How to choose the right mask, how to take care of it and how to protect yourself from coronavirus

Piera Vincenti



To exit the health emergency caused by the spread of coronavirus it is essential to wear personal protective equipment such as masks. Therefore, it is good to know the various types on the market to orient yourself in purchasing.

Washable cloth masks – The most ecological solution, which prevents the new form of pollution that is spreading all over the world, are the cloth masks. They are the easiest to find, made of fabric, are washable and reusable several times, avoiding waste and the accumulation of waste which must then be properly disposed of. These masks are certainly not the safest, as they are not equipped with a filter, but guarantee a minimum of protection, allow you to breathe easily and prevent the propagation of potentially contagious droplets.

The only caveat is to wear them correctly, making them adhere to the face and completely covering the nose and mouth. These masks, like all the others except the PPE ones,

can be used to go out but always respecting the safety distances and all the hygiene prevention prescriptions indicated by the World Health Organization.

Since the pandemic began, many companies have converted their production by starting to make cloth masks in various colors and fabrics. The most common are certainly those of cotton, but it is also possible to find them in hemp and bamboo, which are decidedly more eco-friendly. Also pay attention to the thickness. When choosing a fabric mask, in fact, it is good to make sure that they are not excessively thin or wide because this greatly reduces their effectiveness.

It is possible to wash all the masks in fabric by hand by adding a sanitizing additive to hot water, or in the washing machine at 60 °. They must not be ironed in order not to damage the fabric and must not be put in the dryer. If they are worn for many consecutive hours or in environments with a high risk of infection, they must be disinfected every evening. If, on the other hand, they sell, they are used only for a short time, such as for shopping, you can wear them 3-4 times before washing them. After each use they must be placed in their plastic bag, avoiding that they come into contact with other surfaces.



Filter Masks – This is a new type of mask recently on the market, it is made of fabric and combines filtering capacity, comfort and environmental sustainability. This type of mask, in fact, is equipped with replaceable filters lasting 12 hours that can be easily changed. The mask, on the other hand, can be washed comfortably by hand with warm water and neutral soap or in the washing machine. It is built in three different overlapping layers of fabric and uses breathable nanofiber, ensuring a bacterial filtering capacity and harmful fine dust equal to 95%. Each of the three layers of the filter mask forms an advanced mechanical barrier against micro particles, to protect the wearer and those around them.

Surgical masks – They are the most common ones, with a classic light blue color, worn by doctors and dentists. They consist of two or more layers of non-woven fabric (Tnt) made of polyester or polypropylene fibers and are disposable. These masks filter the outgoing air very well but do not do the same with the inlet ones and for this reason they are called “altruistic”. They have an external filtering capacity of 95% so those who wear them can hardly infect others, but they are only 30% effective against the virus coming from the outside. If you choose this type of mask, you must pay attention to the certification, which must guarantee breathability, bacterial filtration and resistance to liquid splashes.

These types of masks are disposable so once they become wet, after about 4 hours of use, they must be disposed of. However, indications have been disseminated on how to sanitize them with sanitizing substances or water vapor in order to reuse them for a few days. At the end of their life, they must be thrown away and not left lying around or thrown on the street, as has often been the case in recent weeks.



FFP3 and FFP2 masks – Medical personnel wear them in hospitals. They are considered PPE (personal protective equipment), and for this reason they guarantee a high filtering capacity of the inhaled and exhaled air. The progressive numbering (FFP1, FFP2, FFP3) indicates precisely the progressive air filtering capacity of the different types of device. The abbreviation FFP stands for “facial filters for individual protection” and indicates that the mask was produced in compliance with the European standard EN 149-2001 which sets the standards of efficiency, breathability, stability of the structure, as well as the technical tests of biocompatibility and the performance of the masks.

N95 and KN95 masks – These masks have been produced and certified in China (KN95) and America (N95) according to quality standards similar to those that certify European FFP2 masks, but not identical for this reason it is necessary that the CE mark has been affixed.



Coronavirus, Plastic Free: no more gloves or we risk environmental disaster

Finger pointed at the use of disposable gloves, which pollute and do not stop the spread of the virus

Editorial board



Throwing anti-Covid 19 gloves and masks not only pollutes our planet but can help spread the virus. The complaint is from the Plastic Free association which in recent days has documented, photographing, gloves and masks thrown on the ground, out of commercial activities, on the sidewalks, behind parked cars.

The association led by Luca De Gaetano and active in the fight against plastic, in its social pages has in fact published sadly eloquent images that in just 48 hours have reached the indignant display of over 2 million users. Images, which immediately went viral, which immediately triggered the protest of some mayors who promptly called their fellow citizens to order by threatening complaints to the prosecutor.

“We must not become the new virus of Planet Earth - underlines the President of Plastic Free, Luca De Gaetano -, because in such a difficult and emergency moment like this, throwing gloves and masks on the ground as well as being unhygienic, is a form of selfishness and a lack of respect for others, not only for the planet. In such a difficult period we have to pay more attention to our daily actions as we will find the damage we cause today”.

Images of streets, squares, sidewalks, gardens invaded by gloves thrown on the ground after being used are increasingly frequent. Images that must make you think because if it is true, as a certificate, that the virus survives up to 72 hours on plastic and throwing them on the ground could contribute to the spread of the pandemic, it is also true that the same use does not protect us from contagion.

“To think that plastic gloves, or even latex ones, are really useful if we touch everything is wrong - says Luca De Gaetano - Especially when we go shopping, with the same gloves we go out at home, we drive the car, we touch the cart, then the phone to read the shopping list, then the shopping, the money or the credit card for payment. Once removed, we touch the shopping and the cell phone again without problems. So do we really think that the use of plastic gloves is really effective? Unfortunately, it is not. Their use does not prevent the spread of the virus because with the same gloves with which we can touch a potentially infectious object, maybe we take the phone to answer a call, or we touch the steering wheel of the car we use”.

The most useful and effective thing is to wash your hands often and use gel disinfectants. It is much more hygienic, in fact, to go out of the supermarket and sanitize your hands with a gel disinfectant before touching the car steering wheel or picking up the phone. Getting used to this measure can certainly put us much more sheltered than using plastic or latex gloves.



Furthermore, according to the President of Plastic Free, there is a problem of pollution due to the use of plastic gloves. "In most cases, - says De Gaetano - their use is limited within shopping malls where they are eventually left in trolleys, thrown into uncovered rubbish bins or left on the ground. Our complaint about plastic gloves is also due to their weight, in fact, with a gust of wind they end up everywhere. Precisely for this reason we have already asked them to clean the yards in front of the entrances several times and we have asked them to put suitable rubbish bins and not open containers without shelter from the wind".

The situation is really getting out of hand. "Man and plastic don't get along. The coronavirus was supposed to make us reflect on the importance of our planet but it did not happen. Pollution and incivility has increased, the sense of responsibility for having a better world has disappeared. Disposable plastic gloves, often similar to sachets, are everywhere and will soon reach rivers and seas becoming food for marine fauna. What does this mean? Environmental disaster and extermination of many innocent creatures. If we do not reverse the disposable trend, we will find ourselves with billions of plastic gloves that flutter in the environment, until reaching the sea".

How to reduce water and energy consumption: ecotips

Wash your hands very often, clean surfaces well: essential actions in this moment of great difficulty, but there has been a 20-30% increase in drinking water consumption. This was revealed by the WWF which has drawn up a series of useful tips to reduce water and energy consumption.

In the bathroom – We turn off the tap while we soap our hands (carefully). The same for teeth and beard. At least 6 liters of water are saved per minute. We do not use the toilet as if it were a rubbish bin: do not throw plastic (such as contact lenses, wipes, floss or scraps from tempered pencils), oils and substances harmful to the environment. This avoids polluting the waters and seas and having to use the toilet more often. We take quick showers (considering that we consume at least 10 liters per minute). Finally, always remember that when we save hot water, we are also saving CO₂.



In the kitchen – It is essential to wash fruit and vegetables thoroughly, but as a first step, let them soak in warm water for 10 minutes and then rinse them under running water.

With appliances – We carry out full load washes for washing machines and dishwashers, saving water, energy and therefore money (up to 30 euros per year and emissions reduced by 50%). We avoid pre-washing, we clean the gaskets and filters. We use fast cycles and at low temperatures. No drying, neither for dishes nor for cloths. We pay attention that the "half load" washing programs do not halve the consumption, they only reduce them by 20-30% (a full load washing costs less than two half load washing). Among the virtuous behaviors for the use of the refrigerator, we place it in the coolest part of the kitchen, away from heat sources (from the stove, from the oven) and at least 5 cm from the wall. We do not overload the refrigerator with foods that would prevent proper air circulation. Attention also to the thermostat. For the iron, a trick to save money is to use the water from the dehumidifier or air conditioner as this is limestone-free.



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Discarded coronavirus masks and gloves rising threat to environment

Abandoning masks on the street creates harm the environment: the complaint from OceanAsia

Piera Vincenti

Soon there will be more gloves and masks than jellyfish in the Mediterranean. The alarm was raised by Opération Mer Propre, a French ecologist organization that denounced the appearance of these wastes on the country's coast and seabed.

The photos, which make you shiver, were taken during several cleaning operations on the beaches and seabed made in Antibes and in the Golfe-Juan bay, on the French Riviera. The organization has collected not only the classic plastic and aluminum waste (especially bottles and cans, but also a table and numerous cigarette butts) but also a worrying amount of surgical masks and disposable latex gloves.

"We were waiting for them, they arrived, but not in the right place ... The first masks appeared in the Mediterranean", reads the post published on the Facebook page of Opération Mer Propre.

Unfortunately, after having positively welcomed the lowering of the levels of air pollution due to the lockdown, we now find ourselves dealing with the increase in plastic waste or in any case of disposable objects which, instead of being disposed of correctly, are abandoned to their own destiny and end up polluting our roads and our seas.

Recently, an analysis by Ispra has revealed that the daily need for masks of the so-called Phase 2 is around 35/40 million pieces. Consequently, the daily waste production in Italy will be between 250 and 720 tons.

"Using the average weight of 11 grams (which takes into consideration all types of masks) and an intermediate requirement of 37.5 million, there would be a daily production of about 410 tons. The production calculated up to the end of 2020 (about 240 days) would therefore amount to between 60,000 and 175,000 tons of waste, with an average value of around 100,000 tons".





This type of waste represents significant damage to the environment and is contributing decisively to the increase in marine littering, as documented by the images taken by the French environmental organization. According to the association, the personal protective equipment used against coronavirus populates the seabed together with plastics and cans, increasing the problem of water contamination.

In the photos taken by the association's founder, Laurent Lombard, you can clearly see how much coronavirus and people's incivility are contributing to the deteriorating situation in the Mediterranean.

Foto: © Opération Mer Propre



Separate collection: how to recycle plastic waste

How is plastic made and what are its advantages? How can we recycle it properly?

Piera Vincenti



Plastic has entered our daily life. Every day we use dozens of disposable and non-disposable plastic objects, that we have to throw away. But how to recycle plastic waste? What goes in the appropriate container and what does not? We will answer this and many other questions with our section in collaboration with SmartRicicla. The first thing to know is that there are different types of plastic, each with different physico-chemical properties, which are used in sectors and for even very different purposes.

If properly recycled, plastic can be a great resource because it allows you to create new products without the need to produce virgin plastic and therefore with a lower environmental impact. According to the Corepla report, around 643,500 tons of plastic packaging waste from recycling was recycled in 2018. To this number must be added 376,000 tons deriving from independent recycling. In addition, over 383,000 tons of packaging were recovered.

If left to its fate, however, plastic is a big problem because it disperses into the environment, from rivers it reaches the sea up to our food chain. The biggest problem is microplastics, small particles that derive from the degradation of larger objects, and which represent a danger not only for the marine ecosystem but also for human health.

Plastic is not biodegradable and is not a naturally occurring element but is made in special plants using a mix of elements and in particular from the processing of oil and its polymers, namely propylene, ethylene, butadiene and finally styrene. All these elements are then processed together with gas, coal and common salt, which allow the creation of plastic materials, of which there are at least 50 varieties, all different from each other. For each type of plastic that is made, precise formulas have been studied that require a certain amount of heat for certain periods of time.

There are several plastic families on the market, each of which exploited in equally different areas. The first step to make a correct separate collection is to know the codes and symbols assigned to the plastic materials, which we list below:



	Code 1 – PET polyethylene terephthalate – transparency, resistance and gas barrier make it suitable for the production of carbonated drinks bottles and trays.
	Code 2 – HDPE high density polyethylene – resistance and rigidity are functional characteristics for the production of cans and rigid containers.
	Code 3 – PVC polyvinyl chloride – in its pure state it is very rigid, but it can be mixed with other materials. It is used as a food container.
	Code 4 – PE-LD low density polyethylene – it is particularly flexible for this reason it is ideal for the production of bags for frozen foods or for food film.
	Code 5 – PP mopen – it can be both rigid and flexible and is used for example as a bottle of ketchup or mayonnaise or for pasta bags.
	Code 6 – PS polystyrene – it is used for the production of disposable plates, glasses and cutlery, clothes hangers, trays and packaging of household appliances.
	Code 7 – other plastics – all other polymers, or even their combinations, fall into this category.

As this table suggests, the types of plastics are numerous and each one, based on its physico-chemical properties, finds a field of application in very different sectors. But what happens when the time comes to dispose of them?

First of all, it is good to know which plastic objects go in the appropriate container to be recycled and which, instead, end up among the non-recyclable materials. The first rule to know is that all packaging can be recycled: bottles, jars, bottles, bags, envelopes, transparent films, disposable plates and glasses and trays can all be placed in the plastic container. On the other hand, toys, buckets, slippers, inflatable boats, balls, glasses, ballpoint pens, markers, flasks and garden or kitchen tools are not recyclable.

Recycling codes are applied to the packaging, which are functional for the correct identification of recyclable materials. They can therefore represent a great help in the event that the possible recyclability of an object is not known. Meanwhile, below we offer a more detailed list of what can be thrown into the plastic container and what is not.

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What you can throw in plastic (packaging):

- bottles (e.g. water, soft drinks, oil, juices, milk, etc ...)
- bottles, dispensers (e.g. shampoo, shower gel, soap, detergents, home hygiene products, syrups, creams, sauces, yogurt etc ...)
- cans for distilled water
- bottles of bleach or other substances used in the home (provided they are rinsed)
- plastic bags
- food trays (e.g. fruit, vegetables, snacks, etc ...)
- newspaper and magazine films
- bags and sacks for food products
- plastic pots
- films and films
- plastic plates and glasses

What you can't throw in plastic

- various plastic objects
- dirty plastic containers
- toys
- plastic cutlery
- syringes
- coffee pods



About 8 million tons of plastic
end up in the oceans each year.

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Plastic, from Brescia a new technology for recycling

From NextChem also a new technology that transforms waste into energy

Piera Vincenti

Efficiency in recycling and circular economy are the keywords of NextChem, a plant for green chemistry by Maire Tecnimont, a group that develops and produces industrial plants for the production of hydrocarbon polymers. The plant is located in Bedizzole, Italy, and represents an excellence in Europe. It is capable of producing 40 thousand tons of recycled polymers a year, as well as turning waste into new energy, hydrogen and methanol, reaching 95 percent of recycling efficiency.

The innovation introduced by NextChem is the division of plastic polymers by color gradation, as well as by weight and type. The company's commitment confirms a thesis already widely supported by environmentalists: secondary raw materials represent the market of the future.

"Waste is the oil of the third millennium," says Pierroberto Folgiero, CEO of the Maire Tecnimont group. The aim of the company is investing in recycling and bioplastics production, with a view to decarbonising the economy. This is the "new plastic economy", in which the NextChem is engaged with about twenty technological projects.

In the new Bedizzole plant, the mechanical polymer selection process was improved thanks to the use of a new technology developed by Tomra Sorting Recycling, a leading company in the optical sensors market. The sensors used, a combination of RGB cameras and high definition infrared sensors, are able to select plastic fractions from 2 to 12 millimeters per color and type of polymer at the same time. In this way, it is also possible to recover those polymers that previously ended up in plasmix and therefore were destined for incinerators or landfills. The second step is grinding: the polymers are recovered and transformed into a second raw material.

From this process they can also obtain the compound, recycled plastic granules that possess physical, chemical and technical characteristics comparable with virgin materials obtained from the fossil raw material. The applications are the most varied, from packaging to household items, from automotive to electronics.

The commitment of NextChem does not end here. The company has partnered with Eni to study and implement a conversion technology, using high-temperature gasification and very low environmental impact, of solid urban waste and non-recyclable plastics for the production of hydrogen and methanol.

The agreement, with which Eni is co-developer of the NextChem technology, will give a second life to hundreds of thousands of tons of non-recyclable waste through the production of chemical and fuel products, thus contributing to the environmental sustainability of industrial sites as part of an increasingly integrated and efficient system aimed at containing and reducing CO² emissions into the atmosphere.

Cingomma, craftsmen of recycling: from bicycle to fashion accessories

The Turin-based company gives new life to old tires, neoprene waste and discarded advertising signs, transforming them into belts, key holders and bags

Piera Vincenti



Fashion accessories and furnishing accessories produced by recycling bicycle tires, industrial neoprene waste and advertising posters in PVC. This is the mission of Cingomma, a made in Italy company born just over ten years ago in Turin during a dinner with friends and which has become a point of reference for the circular economy in Italy.

The founders' challenge was to transform a passion into a business by launching belts, wallets, bags and key rings made on the market, giving new life to tires and inner tubes of bicycles destined for disposal.

"Our philosophy is based on the awareness that many materials addressed to the landfill can still represent a resource if you recycle them and give them a new shape – explains Ivan Sartorio, marketing manager of Cingomma –

We started making belts from old bicycle tires and then we went on to produce wallets and bags, also recovering old disused billboards and neoprene scraps".

The company recovers approximately 20 thousand tires per year from which it obtains the belts, 4,000 m² of PVC advertising sheets and 2,000 m² of neoprene waste. "A great advantage for us and the environment. By recovering old materials we save them from the landfill, we reduce waste and reduce CO₂ emissions, also saving on the cost of the raw material to be supplied to our craftsmen for processing".

Cingomma does not have an industrial plant but relies on local laboratories, creating jobs in the area and enhancing local artisans. "In this way we ensure that we have original products and we guarantee the quality of life of those who work with us," continues Sartorio.

The operational part, which involves about ten people, is always located in Turin. This is where the planning and design of Cingomma fashion accessories are taken care of. To date, the company has over 300 dealers in Italy and distributors abroad, in France and Poland.

Unlike many others, who rely on e-commerce to maximize profit, Cingomma made a counter-current choice. "We want to enhance and support those merchants who believed in us by selling our products. For this reason, when the customer comes to the site to place an order we direct him to the nearest shop so that he can buy directly there. If your area is not served, then proceed with the shipment. "

A 360-degree sustainable company, therefore, that enhances not only waste but also the work of small artisans and shopkeepers. An aid to the environment and the economy, which we want more and more circular and green.



Microplastics, what they are and why they are dangerous for the environment and for health

Plastic waste degrades turning into small fragments harmful to nature and human being

Piera Vincenti



It is estimated that around 8 million tons of plastic end up at sea every year, and these numbers are destined to increase if no drastic policies are taken to promote the correct disposal of waste, especially those in plastic that most threaten the seas around the world.

The objects that are found most frequently are disposable: bags (of all uses and sizes, from those of the garbage to bags for handkerchiefs), bottles and bottles of drinks and their caps, ear sticks, cigarette butts, balloons, sanitary towels. Many containers: various bottles, jerry cans, baskets. And above all many, many plastic fragments, a sign that many of these objects have already started to disintegrate. These are the so-called microplastics, small particles of pla-

stic material with extremely small dimensions. These are normally millimeter-sized fragments, although specimens of micrometric levels have also recently been discovered, so much so that we speak more properly of nanoplastics.

Microplastics can have a greater impact on the environment than their size suggests and for this reason they are considered one of the six global emergencies of the environment. In fact, these fragments are easily ingested even by more minute aquatic organisms, with the risk of accumulating along the food chain until they end up on our tables. But much more often the result is fatal for the animals themselves. There are at least 135 Mediterranean marine species that ingest plastic objects or end up trapped in them: some die of suffocation, others from gastrointestinal blockage, still others are no longer able to absorb food from food.

At the European Union level, microplastics are cataloged according to their size and origin:

1. Primary microplastics: they are directly released into the environment and mostly come from the washing of synthetic garments (35%), from the abrasion of the car tire (28%), from cosmetic products such as scrubs (2%). In total, the primaries represent about 15-21% of all the fragments dispersed in the ocean;



2. Secondary microplastics: they are formed by the degradation of larger plastic objects, including packaging, boxes, plastic bottles, shopping bags, nets and fishing gear. It is estimated that 68-81% of all the microplastics present in the seas are of secondary origin.

These fragments have very long degradation times once released into the environment, completely analogous to those of larger plastic: we speak of hundreds of years, a longevity often made even more extensive by the presence of special chemical treatments.

The EU directive that will ban disposables from 2021 is a step towards change but moving from “disposable traditional plastic” to “disposable biodegradable and compostable plastic” does not solve the problem. In fact, the impacts of the life cycle (from the extraction of the raw material, to the production, use and final disposal, not neglecting the transport) of disposable objects in biodegradable and compostable material, based on scientific studies, can be higher than those of matching traditional objects.

The main problem, therefore, is the excessive use of disposable objects and their incorrect start to recover material and energy. It is necessary to invest in recycling and reuse policies, focusing on ad hoc technologies to give new life to the materials used, especially those in plastic, so that they do not deteriorate and decompose in the environment causing serious damage to man and nature.

Microplastics problem extends beyond the ocean



“Microplastics are a global phenomenon that can’t be adequately understood or addressed in the context of the marine environment alone,” says Professor Rob Hale of William & Mary’s Virginia Institute of Marine Science, VIMS. “Plastics are produced, used, and discarded on land, and disperse through soils, rivers, and the atmosphere. The cat’s already out of the bag if you’re talking about dealing with these materials after they’ve reached the ocean.”

Used in manufacturing, industry, and 3D printing, microplastics are manufactured for consumer products such as synthetic fabric, toothpaste, and cosmetics, and they also are formed when larger plastics break apart into tiny beads. When microplastics wash down a drain, they are not removed by wastewater treatment and create problems in the environment. Microplastics are now found everywhere in the ocean and coastal waters, shorelines,

ocean seabed, and sea surfaces. Major sources of microplastics include agricultural runoff, aquaculture, cruise ships, ocean dumping, stormwater, the shipping and fishing industries, urban runoff and waste management. Microfibers shed from synthetic clothing and fishing nets are a form of microplastic. These fibers, beads, and microplastic fragments can all absorb harmful pollutants like pesticides, dyes, and flame retardants, only to later release them in the ocean. Scientists have even found microplastic particles in rain.

“People often assume that all plastics are the same and behave identically in the environment,” says Hale, “but that isn’t the case at all. To resolve key questions and mitigate possible impacts, everyone – manufacturers, scientists, health-care specialists, engineers, economists, policymakers, and others – must collaborate to better understand the composition and nature of plastic products and their additives.”



Record of microplastics in the Tyrrhenian Sea: the data on pollution in the Mediterranean

Up to 1.9 million fragments in one m², the highest concentration ever recorded

Piera Vincenti



The highest concentration of microplastics ever discovered in the Tyrrhenian Sea. The alarm was launched by the “Seafloor microplastic hotspots controlled by deep-sea circulation” study, published in *Science*, according to which the Tyrrhenian Sea hosts a much higher quantity of waste than estimated to date. In the area between Tuscany, Lazio, Sardinia and Corsica, scientists counted up to 1.9 million fragments in a single square meter.

The study confirms the data on microplastic pollution in the Mediterranean, and in particular in the Tyrrhenian Sea. According to new research, conducted by scientists from the universities of Manchester, Durham and Bremen, in collaboration with colleagues from the British Oceanographic Center (Noc) and the French Research Institute for the Exploitation of the Sea (Ifremer), the concentration of microplastics in the Tyrrhenian Sea it has the

highest values ever recorded in the deep seabed: up to 182 fibers and 9 fragments were found per 50 g of dried sediment at the base of the Sardinian continental slope.

The study focused on microplastic hotspots in the seabed, that is, in areas where, or carried by the deep currents, most of the plastics that end up in the ocean accumulate.

The microplastics found on the seabed are mainly made up of fibers from clothing and other textile products. They explained to the *Infremer* that “these fibers are not filtered effectively in wastewater treatment plants and easily penetrate rivers and oceans.”

Once the microplastics reach the sea two scenarios open. Whether they settle slowly or are quickly transported by currents of powerful submarine “avalanches” that descend through submarine canyons to the bottom. “Once in depth, microplastics are easily captured and transported by the bottom currents that can concentrate the fibers and fragments in large into large sedimentary banks.”

Thanks to the upwelling phenomenon, these depth currents transport water rich in oxygen and nutrients and this means that the seabed microplastic hotspots can also host important biological communities capable of consuming and absorbing microplastics.

This study reveals for the first time the direct link that exists between the behavior of bottom currents and the concentrations of seabed microplastics. These results will help predict the establishment of other large-depth microplastic hotspots and thus guide research on the impact of microplastics on marine life.





Stop microplastics in cosmetics: the listo of the ingredients to avoid

The entry into force of the law marks the end of an era for cosmetics: victory for the environment and the seas but some doubts remain

Ste Vi

With the beginning of the year in Italy the rule that bans all rinsing cosmetic products containing microplastics, components that do not exceed 5 mm but which are highly polluting, became law. Every year only in Italy 320 tons of microplastics are released into the sea, which are punctually found everywhere, even in the fish.

The entry into force of the law closes (almost) definitively an era of cosmetics. With a period of two years, from the day of the modification of the REACH regulation (11 January 2018), the houses responsible for placing cosmetic brands on the international market had to adapt and limit the use of products in a percentage of less than 0.10% finished by rinsing two silicones: Cyclopentasiloxane and Dimethiconol.

REACH is a European Union regulation adopted to improve the protection of human health and the environment from the risks of chemicals. REACH also establishes the European Chemicals Agency (ECHA) which plays a central coordinating and implementing role in the whole process. ECHA is based in Helsinki (Finland) and is responsible for managing the registration, evaluation, authorization and restriction processes of chemicals in order to ensure their consistency across the European Union.

This restriction, which practically renders these raw materials unusable in rinsing products – since in order to carry out their function they must be present at much higher percentages – effectively declares the end of an era. An era of more than twenty years during which silicones have played a central role in the research and development of new products.

Without wishing to enter into the merits of the war on silicones that has raged for years in the



cosmetic and communication field, we try to understand that silicones have made the fortune and success of many cosmetic products of renowned brands and global distribution. As always, research and development in the cosmetic field tends to improve the finished products making them more dermo-related and eco-compatible. This has led in the most recent past to ban an anti-bacterial (Triclosan) in cosmetic products present up to a few years ago in 90% of the toothpastes on the market.

There is nothing wrong with improving cosmetic products by making them safer, in case it is wrong to take sides emotionally for or against a certain raw material. Silicones have been said about everything in one sense or another. From being carcinogenic, comedogenic and nesting in the liver to the fact that, being used for prostheses, they are compatible with human biology, which do not go rancid, make the skin silky and velvety and shiny hair. In short, there is something for all tastes; a little common sense tells us that being raw materials allowed in the manufacture of cosmetics and not included in the list of banned substances, they are not dangerous for human health. Another discussion is whether they are dangerous for the environment and harmful to the skin and hair.



Focusing on the environment, we know that these substances have been classified as PBT and vPvB. This classification is relevant for the effects on the environment: PBT substances are Persistent, Bioaccumulative and Toxic substances; vPvB substances are very Persistent and very Bioaccumulative substances.

Persistence (P): indicates that the substance is able to resist degradation processes, remaining unaltered for long periods; Bioaccumulation (B): indicates that the substance has a tendency to accumulate in living organisms and this tendency can concern ecosystems that are located at a great distance from the source of release of the substance itself and Toxicity (T) for biological organisms is generally identified through specific studies that allow to determine harmful effects on organisms.

It is here, based on this knowledge, that the idea that the era of

silicones in cosmetics has closed is insinuated. Maybe. It remains a legislative mystery how a long process has led to limit (practically ban) the use of the two silicones only in rinsing products. What does it mean? Given the fact that Cyclopentasiloxane is a volatile silicone (i.e. it evaporates on contact with the skin) and Dimethicone is a dense silicone, experts intended to limit their release to water as much as possible.

In fact, if these raw materials were present in a hair conditioner, the Cyclopentasiloxane would not evaporate because not in contact with the skin but on the length of the hair while the Dimethicone, carried out its film-forming power on the hair, would be rinsed off, together with the Cyclopentasiloxane, and would end inevitably in the discharges polluting the environment.



If the product were a non-rinse hair mask it could contain the two raw materials well over 0.10%. A minimum of common sense is always enough to understand that the mask on the hair I will apply it with my hands and a comb which I will inevitably rinse by putting the two raw materials in the drains. So how come the various scientific research committees, various legislators have adopted this choice? The answer is like wanting to distinguish a murder from a massacre: since surely on the hands and on the comb there will be less product, we will pollute less. But the doubt remains

Fortunately, the common sense of balanced consumers will allow us to limit the use of cosmetics containing Cyclopentasiloxane and Dimethicone to the utmost respect for our planet.

This story reminds another story of integration into the eco-system. Many years ago disposable plastic plates were launched on the market and had a hit. Today they don't make any sense: if a consumer is balanced he could know that today a dishwasher uses less water for a full load (12 people) than it would take a person to wash all those dishes by hand; dishwashers consume one fifth of what they consumed thirty years ago and electricity now mostly comes from renewable sources. So what's the point of using disposable plastic dishes? Just don't use them without embarking on emotional wars: the same goes for silicones. If so, the era will be over without any perhaps.

Tanning, how to protect your skin and the environment with natural products



The sun is a source of life. The human body also benefits from the sun. Ultraviolet radiation can damage the anatomical structures exposed therefore our primary barrier (the skin) develops defense tools. By taking on a darker color, it absorbs a more limited portion of the frequencies of the light spectrum. What happens is that the same solar radiation stimulates the melanocytes to synthesize melanin, the pigment that colors the hair, the skin, the hair and the eyes. By depositing in the skin, it is responsible for the accentuated coloring.

To prevent negative effects due to sun exposure, it is necessary to have a correct diet. A particularly useful substance is lutein, a powerful antioxidant of the carotenoid family, it is found in dark green leafy vegetables such as spinach, broccoli, lettuce, peas, watercress, radicchio, parsley, arugula, in various types of fruit, such as papaya, blackberries, raspberries, nectarines, in the wheat, and also in the egg yolk. Many

are the friendly substances of our skin in particular betacarotene and polyphenols are an example of the most suitable substances to defend it from the aggression of the sun's rays. We also remember that vitamins A, C, E, selenium and coenzyme Q 10, important antioxidants, protect the skin from skin aging and damage from UV rays, and we find them in all foods of plant origin.

The use of sunscreens is a valid skin protection system. The classification starts from phototype 1, the most at risk which requires extreme photoprotection (skin and light eyes, ephelids, blond or red hair), at least dangerous, the number 6 (olive skin, eyes and black hair), which requires low photoprotection. Dermatologists recommend, in any case, to gradually expose the first few days and to avoid doing so between 11 and 16, when the sun's rays have a vertical direction and therefore affect the skin with greater aggression.

When we choose sunscreen, we remember that every year we release from the sea from 4 to 6 thousand tons of cosmetic products in the areas of tropical coral reefs and about 14 thousand in the other seas, asking for algae and corals for cleaning of the sea without precedent. To maintain the balance of the marine ecosystem, preferring biodegradable and eco-sustainable sunscreen.





Summer 2020, alternative holidays to discover the beautiful paths of Italy

Coronavirus requires us to rethink our way of doing tourism: less sea and overcrowded places, more nature. In Italy there are many paths and paths to discover step by step

Maria Giuseppina Ferrulli

Thinking about the near future and the coveted holidays, in many of us the negative feelings take over and the sense of difficulty in adapting to a new situation takes the upper hand.

However, one should not despair. History and nature teach us that such devastating events can be a stimulus and a push to improve and reinvent our existence. We will discover a new way to explore the world and enjoy the hot days of our summer, but nothing prevents us from living breathing the air full of scents and flavors of our days.

Our Italy is a land full of paths and paths, not always known, which can be safely traveled even in the current situation. So it might be a good idea to consider a possible itinerary through the mountains and valleys of our peninsula.

And you don't look at all like a makeshift, but a good opportunity to learn to live a different tourism, which already exists and was already practiced by some from earlier times than this epidemic. Among other things, what many are pointing to as a second choice and an unpleasant "content" should, on the other hand, be considered as an alternative tourism also for many other reasons, which are usually not considered in the least.

Sustainable tourism is the possibility of traveling across the world by caressing the streets and places, without causing any strain on our environment. We should remember more often that we are guests in this beautiful planet and, to travel it, it would be right to walk on tiptoe and with respect to what surrounds us.



Slow tourism is the best way to be able to empathize and balance not only with space, but also with our time. The paths must be tackled one bite at a time, savoring with all possible sensory perceptions the smell of the grass, the colors of the landscape, the silk caress of the petal of a flower, the sweet taste of a fruit just picked from the tree or the decisive flavor of a dish made with local ingredients, which still have the smell of the earth and genuineness on them.

Slowness is a dimension that is constantly taken away from too many commitments, from the haste of our existence; being at home during this period has led us to get to grips with the fact that time can be much longer. Even this last observation should not be seen only with the eyes of those who are forced to invent something to fill time. Time must not be filled, but must be lived. Slowing down does not mean not walking, but moving forward with a different speed that allows you to grasp more details, to try deeper experiences.



Going on long excursions on foot or by bicycle or a holiday in less crowded places was already a way of life for many; for this year it can be a feasible sacrifice to try a new experience. A short research on the net lets you know how many different paths and paths there are in our beloved regions and for each of us there is at least one proposal to consider.

There are itineraries that take place over several days, but still passable for only one part of the stages, or shorter itineraries to be lived in a single day; contact with nature and the presence of small villages to explore and visit remains common to all.

Obviously as soon as we will be able to know something more than the conditions for going to the beach or other places safely, we will be free to consider these other travel prospects too. Living a pandemic is not the best of the possible situations for any of us, but we remain masters of our emotions and our happiness.

One step at a time, one path after another, one conquest and then another towards freedom will guide us towards a better tomorrow. Let's be happy waiting!



CO2 Earth Degassing: the natural contribution to the global warming

Climate change is not only man's fault, it is also influenced by the earth's natural process of releasing gas to the atmosphere

Angelo Rosiello



The climate changes had an increasing interest in the public opinion, just as meteorological events related to the global warming, that always more frequently determine huge damages and human victims. More attentions are dedicated to the growing influx of anthropogenic CO₂ emissions into the atmosphere, causing the uprising of surface temperatures.

Several studies highlighted the “anomalous” increase of the average temperature on the Earth surface since by the half of 18th century, with a further stronger input since about 1980. The Earth has warmed starting from the Industrial Revolution and appears relatively clear the role owning by the anthropogenic emissions about the increasing of the atmospheric CO₂ levels.

But the carbon dioxide concentrations into the atmosphere are not depending only by human emissions. On geological timescale, the CO₂ atmospheric level is controlled by natural processes mainly as the Earth Degassing and the chemical weathering, which respectively adding and consuming carbon dioxide.

The Earth system was ever characterized by the release of endogenous gases, mainly constituted by carbon dioxide. Degassing process transfer volatile species from the solid earth (i.e. crust and/or mantle) into the atmosphere, by the combined actions of two distinct source processes named: volcanic degassing and non-volcanic or tectonic degassing. The first is a localized contribution due to the active volcanoes, showing both during eruptions and during quiescent phases, including also the hydrothermal system's emissions. While the second one represents a more regional contribution related to the active tectonic and geothermal areas not directly due to active volcanism but favoured by crustal and structural conditions (active fault systems) permitting the uprising of fluids CO₂-rich.



The chemical weathering is one of the most important process consuming the atmospheric carbon dioxide and corresponds to the chemical degradation of continental rocks outcropping on the earth surface. The main agent is rainwater, dissolving the atmospheric CO₂ during its formation and being relatively acid and chemically aggressive for erosion of the subaerial continental rocks falling down to earth surface.

Therefore, there is a sort of equilibrium between the CO₂ influxed into the atmosphere and that consumed, which results significantly altered by the anthropogenic emissions during the last two centuries. To better understand this perturbation and to reduce the uncertainties of climate models and future scenarios, it's necessary to improve the knowledge of these geological processes and quantify the CO₂ balance (or inorganic carbon balance).

The volcanic degassing, is relatively more studied than others, also for the abundance of surface evidences. Although an increasing number of researches have permitted flux measurements for some of the major volcanoes in the world, gas emissions both for the majority of volcanic and hydrothermal systems are still unknown. CO₂ flux estimations at a global scale were made extrapolating the available data for all the active volcanoes (i.e. about 15000 that have erupted in the last 10000 years) and are between 110 and 937 Mt/year.

Even less constrained results the non-volcanic degassing, in spite of for long time was been recognized worldwide the relation between active seismic regions and the distribution CO₂ gas emissions. Carbon dioxide may be released directly on the surface, from pointed emission and/or as soil diffuse degassing or released as dissolved CO₂ into groundwaters (springs) and lakes. The first studies at a regional scale were performed in central-southern Italy, allowing to create the catalogue of CO₂-rich gas emissions and the first regional map of non-volcanic CO₂ Earth Degassing. The flux calculated for this area is about 9 Mt/year, corresponding to 2-15% of the global volcanic fluxes estimations. Actually, several studies are performing as for example in the Alps, in Southern Apennines and in some European regions, regarding a research project supported by the Deep Carbon Observatory (DCO), focused on the balance of the degassing Carbon in non-volcanic environments.

World Bank analysis

Global warming is the evil of this century. Human beings are responsible for climate change and for what is happening to the environment. Scientists are all in agreement in blaming human activities and the intensive exploitation of natural resources for global warming, but how do the various countries affect CO₂ production and greenhouse gas emissions?

The World Bank, which has conducted a historical analysis since 1960, has tried to answer this question. If we think only in a current perspective, we know that in absolute terms China is the country that emits more carbon dioxide, and that the Gulf economies are the ones that drive the rankings per capita.

Analyzing data from around 60 years ago, the United States leads the ranking with over 1,100 tons per capita in six decades, followed by Canada with just under a thousand. Among the countries examined in the Info Data, Saudi Arabia ranks third and gradually all European countries, with Germany in the lead.

The analysis conducted by the World Bank serves to analyze the phenomenon "global warming" in historical terms. The production of greenhouse gases, in particular of carbon dioxide and methane, is one of the main causes of global warming and has increased exponentially with industrialization. For a while, the earth's natural resources have managed to absorb excess CO₂ to maintain the delicate balance that regulates the planet's temperature, now the situation is changing.





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