

PLASTICA: UNA SFIDA GLOBALE

Dott.ssa Eva Alessi

Resp. Consumi sostenibili e risorse naturali

WWF Italia

per One Planet School

WWF Italia

Un pianeta di plastica

Credit: Staino | Mostra vignette su inquinamento da plastic, 2020





Credit: Mainichi

Un operaio tra la plastica che ha colmato il fiume Taimur Nagar, in un distretto di New Delhi, 12 Giugno 2018

Un pianeta di plastica



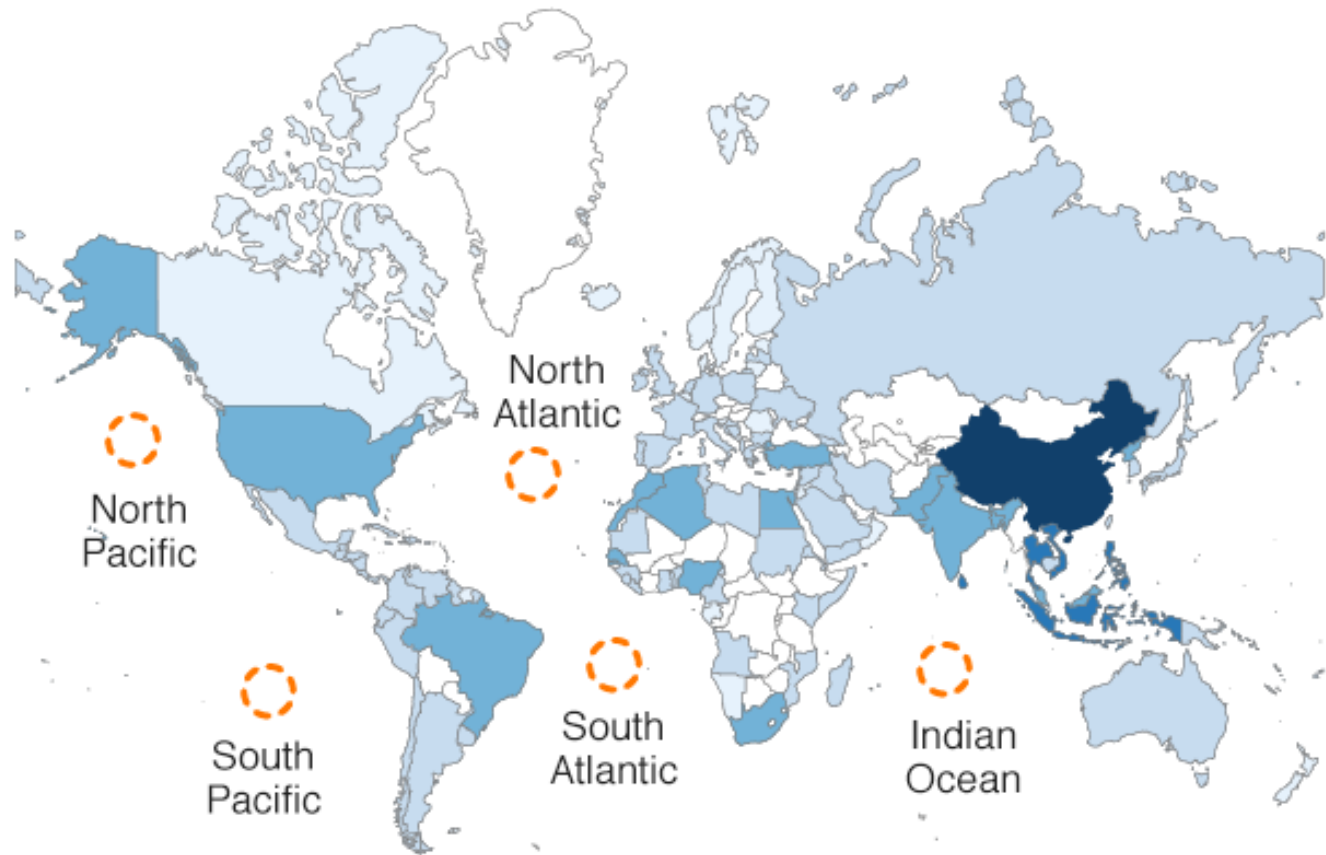
Credit: Getty Images – Source: www.scientificamerican.com

Foce del fiume Yangtze, Shangai



Affluente fiume Pasig, Manila, Filippine

5 enormi isole di plastica



Mismanaged plastic waste, tonnes

0  > 5 million



Gyres - Whirlpools of water which trap huge collections of waste in their currents

Fossa delle Marianne





Credit: Mauro Lanfranchi

Nel Ghiacciaio dei Forni gli scienziati dell'Università degli Studi di Milano e di Milano-Bicocca hanno trovato milioni di particelle di plastica



U.S. Department of the Interior
U.S. Geological Survey

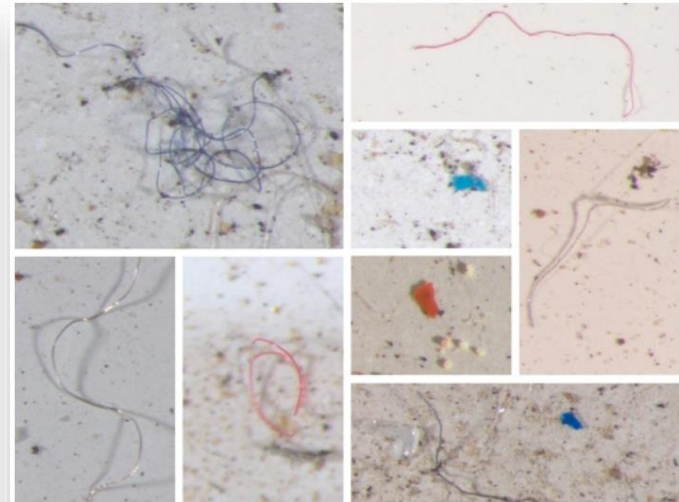
It is Raining Plastic.

By Gregory Wetherbee,¹ Austin Baldwin,² James Ranville³

¹USGS, Hydrologic Networks Branch, Denver, Colorado; ²USGS, Idaho Water Science Center, Boise, Idaho; ³Colorado School of Mines, Golden, Colorado

Overview

Atmospheric wet deposition samples were collected using the National Atmospheric Deposition Program/National Trends Network (NADP/NTN) at eight sites (see map) in the Colorado Front Range. Plastics were identified in more than 90 percent of the samples. The plastic materials were mostly fibers that were only visible with magnification, approximately 20–40 times (X). Fibers were present in a variety of colors; the most frequently observed color was blue followed by red>silver>purple>green> yellow>other colors. Plastic particles such as beads and shards were also observed with magnification. More plastic fibers were observed in samples from urban sites than from remote, mountainous



A collage of microplastics (threads, beads, shards) discovered by U.S. geologists on the mountain slopes of the Rocky Mountain National Park GREGORY WETHERBEE

ScienceAdvances

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White and wonderful? Microplastics prevail in snow from the Alps to the Arctic

Melanie Bergmann^{1,*,†}, Sophia Mützel^{1,*,†}, Sebastian Primpke¹, Mine B. Tekman¹, Jürg Trachsel² and Gunnar ...
+ See all authors and affiliations

Science Advances 14 Aug 2019:
Vol. 5, no. 8, eaax1157
DOI: 10.1126/sciadv.aax1157

Article Figures & Data Info & Metrics eLetters PDF

Abstract

Microplastics (MPs) are ubiquitous, and considerable quantities prevail even in the Arctic; however, there are large knowledge gaps regarding pathways to the North. To assess whether atmospheric transport plays a role, we analyzed snow samples from ice floes in Fram Strait. For comparison, we investigated snow samples from remote (Swiss Alps) and populated (Bremen, Bavaria) European sites. MPs were identified by Fourier transform infrared imaging in

nature geoscience

Article | Published: 15 April 2019

Atmospheric transport and deposition of microplastics in a remote mountain catchment

Steve Allen, Deonie Allen ✉, Vernon R. Phoenix, Gaël Le Roux, Pilar Durántez Jiménez, Anaëlle Simonneau, Stéphane Binet & Didier Galop

Nature Geoscience 12, 339–344(2019) | Cite this article

11k Accesses | 110 Citations | 1766 Altmetric | Metrics

1 An Author Correction to this article was published on 18 June 2019

1 This article has been updated



Anthropocene

Volume 13, March 2016, Pages 4-17



Review

The geological cycle of plastics and their use as a stratigraphic indicator of the Anthropocene

Jan Zalasiewicz ^a ✉, Colin N. Waters ^b, Juliana A. Ivar do Sul ^c, Patricia L. Corcoran ^d, Anthony D. Barnosky ^e, Alejandro Cearreta ^f, Matt Edgeworth ^g, Agnieszka Gałuszka ^h, Catherine Jeandel ⁱ, Reinhold Leinfelder ^j, J.R. McNeill ^k, Will Steffen ^l, Colin Summerhayes ^m, Michael Wagemann ⁿ, Mark Williams ^a, Alexander P. Wolfe ^o, Yasmin Yonan ^a

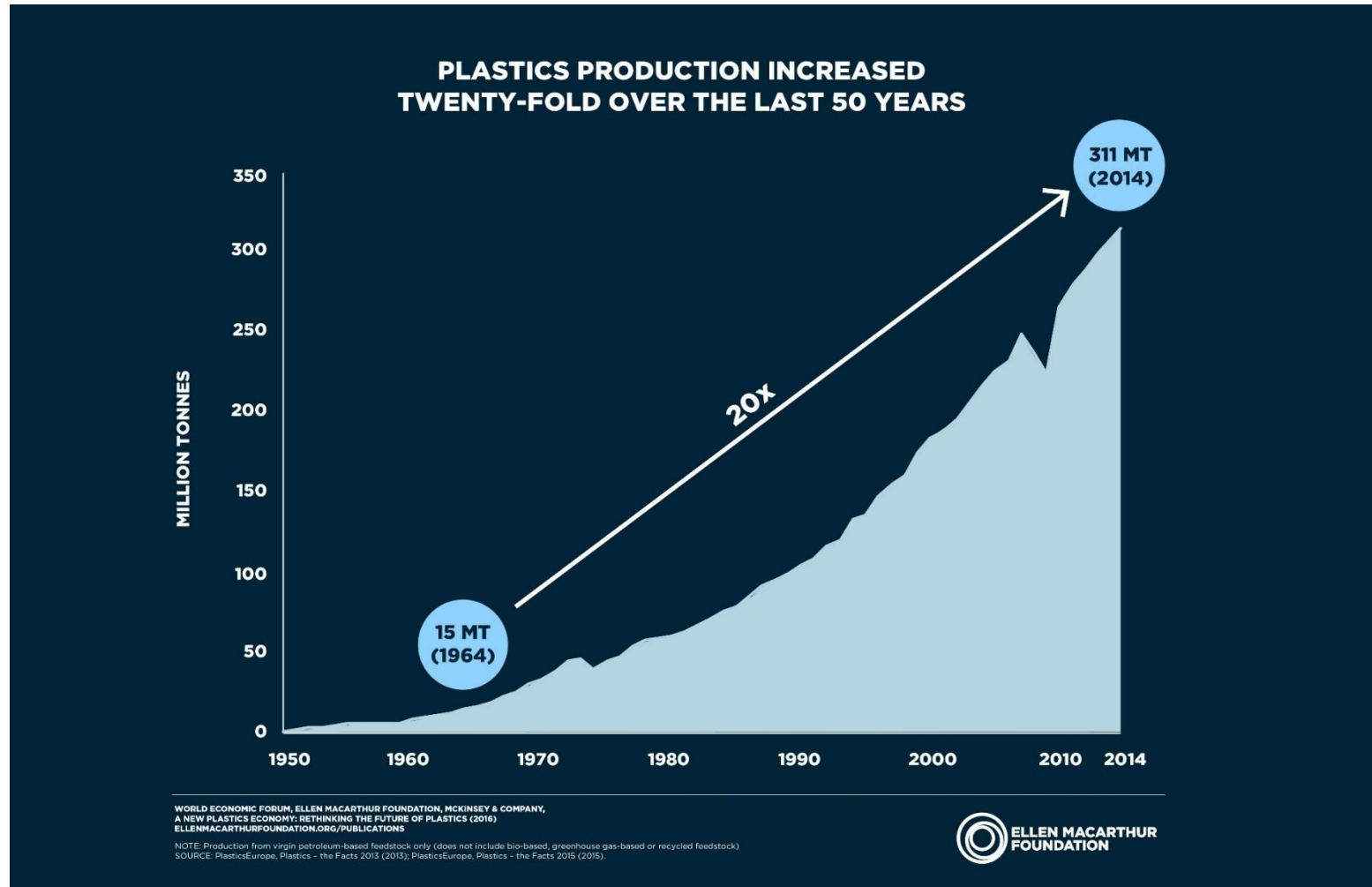
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<https://doi.org/10.1016/j.ancene.2016.01.002>

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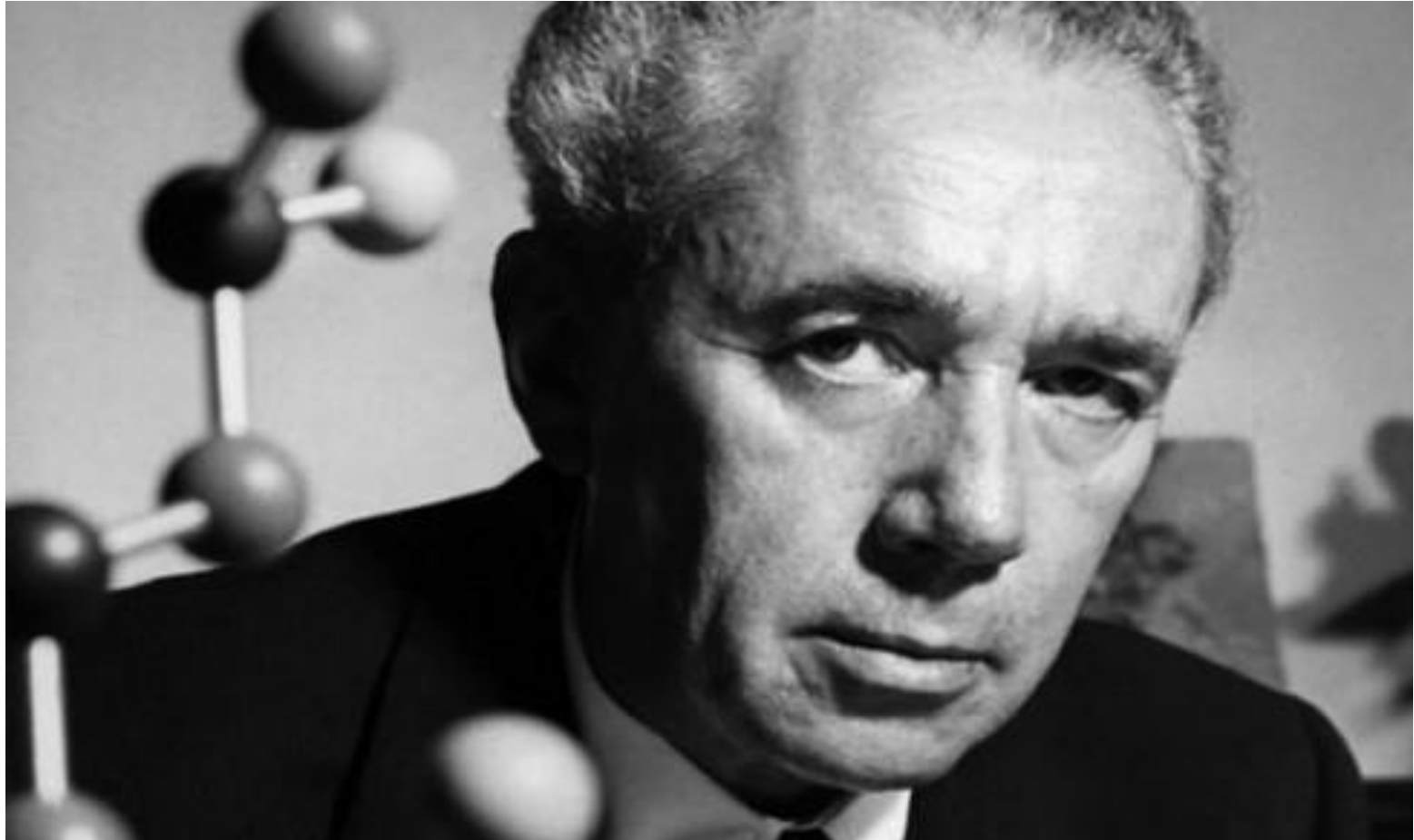


La plastica: nuovo indicatore stratigrafico

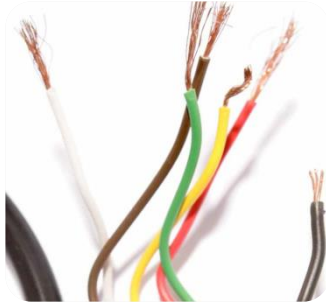


Giulio Natta e il Moplen (la prima plastica)

1954



Uso della plastica



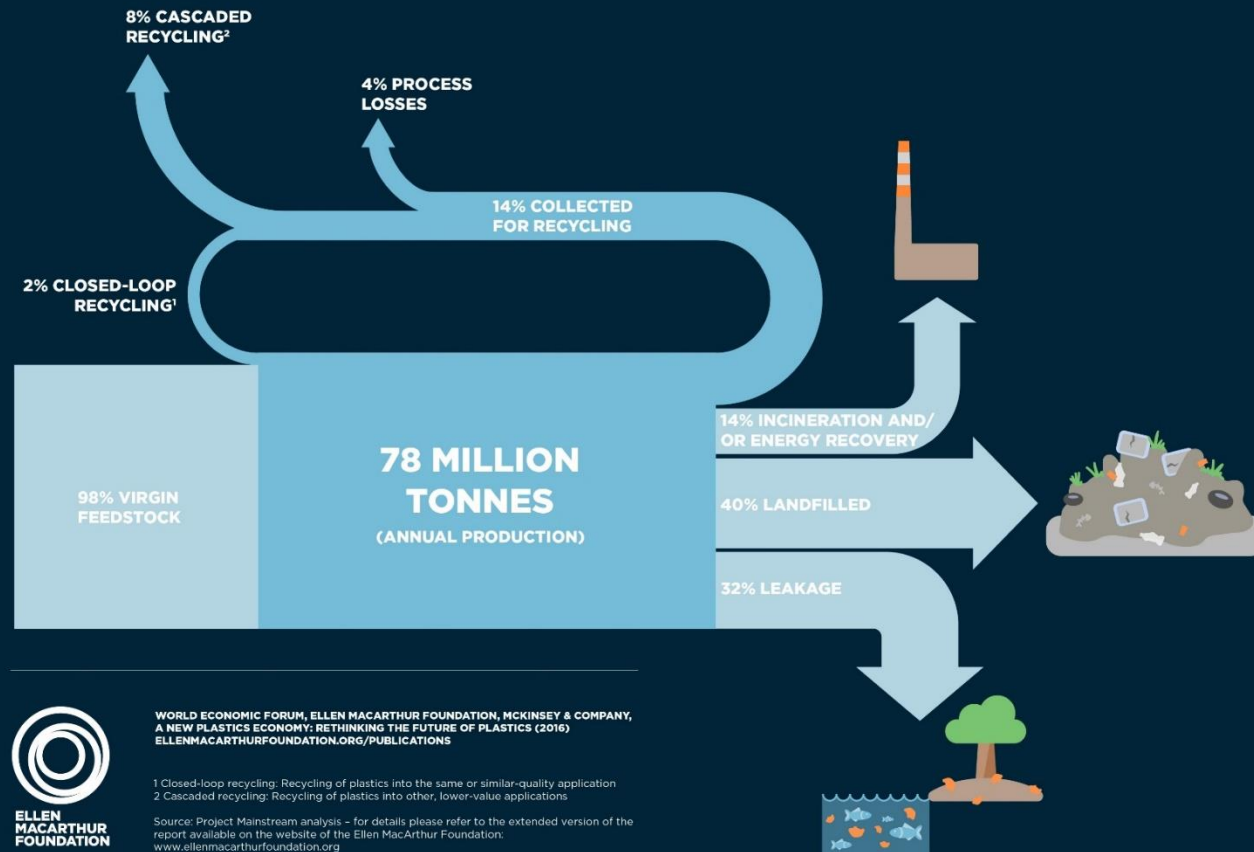
MEDICINA
MODA & TESSUTI
AGRICOLTURA
EDILIZIA & ELETTRICO
TRASPORTI
ELETTRONICA



Packaging



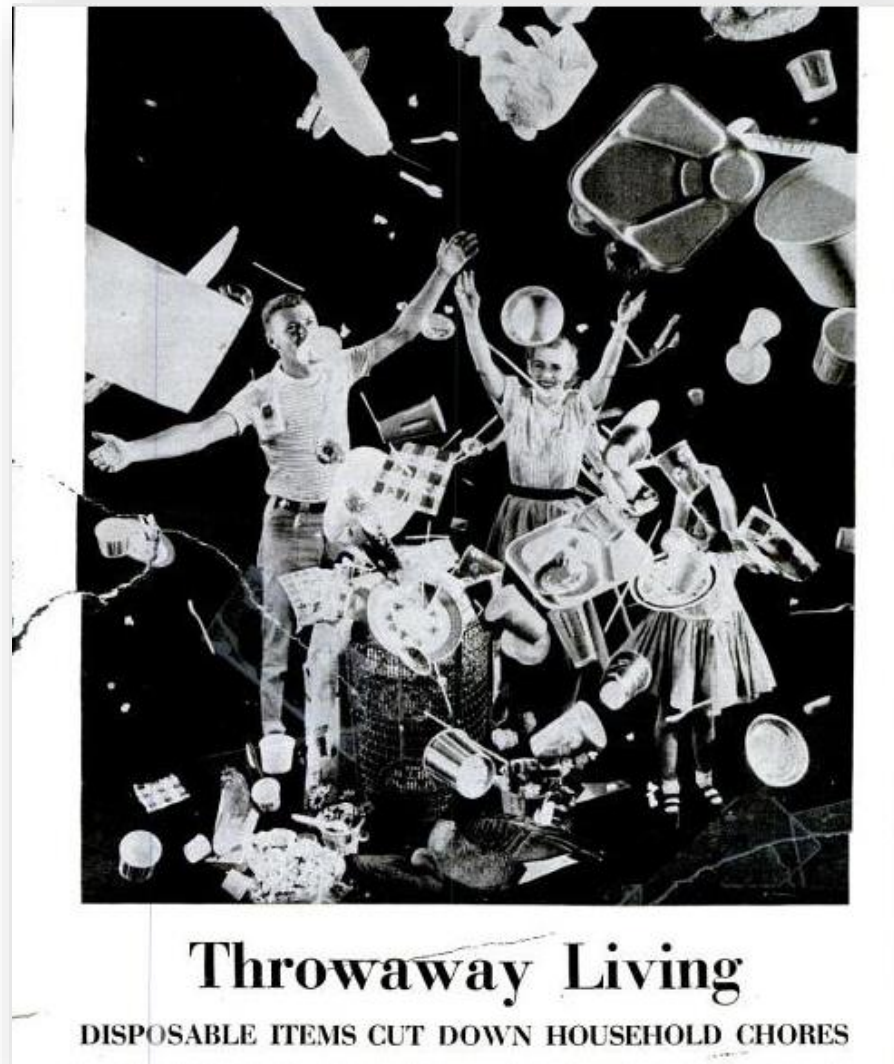
TODAY, PLASTIC PACKAGING MATERIAL FLOWS ARE LARGELY LINEAR



SOCIETÀ DELL'USA E GETTA

LIFE

August 1, 1955



2014

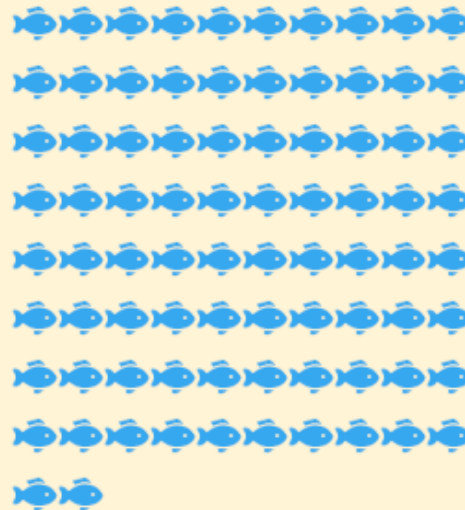
Plastics in ocean

150 million
metric
tons



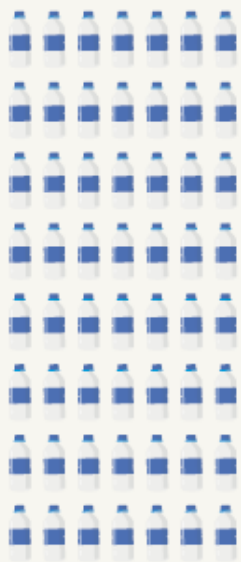
Fish in ocean

812 million
metric
tons



Source: World Economic Forum, Ellen MacArthur
Foundation and McKinsey & Company

...e nel Mediterraneo?

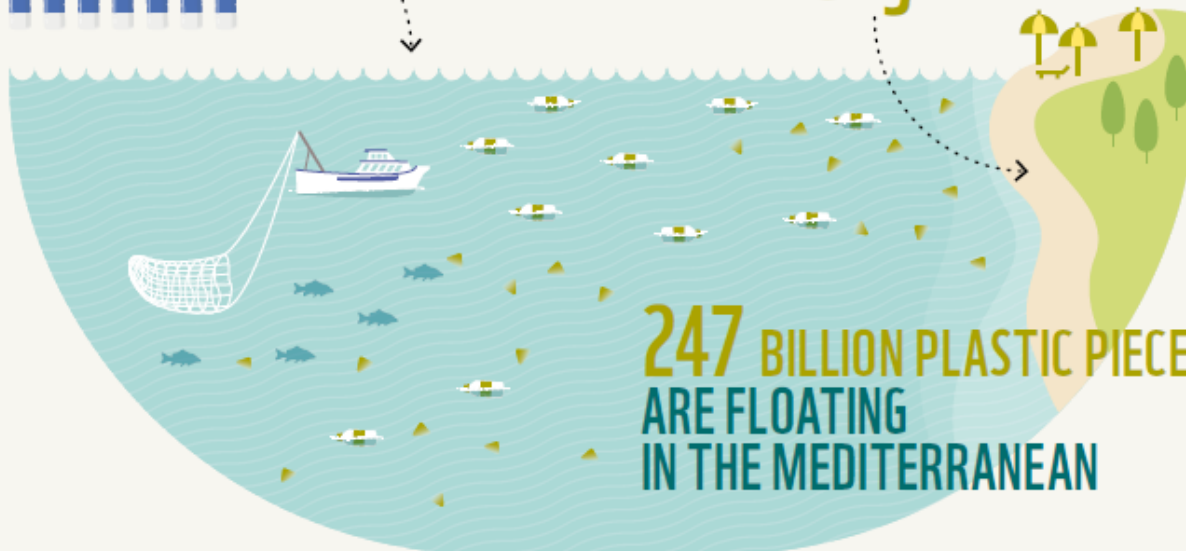


THE EQUIVALENT OF
33,800
PLASTIC BOTTLES
ARE **DUMPED**
INTO THE SEA
EVERY MINUTE

ONLY 72%
OF PLASTIC WASTE
ENDS IN A **CONTROLLED SYSTEM**

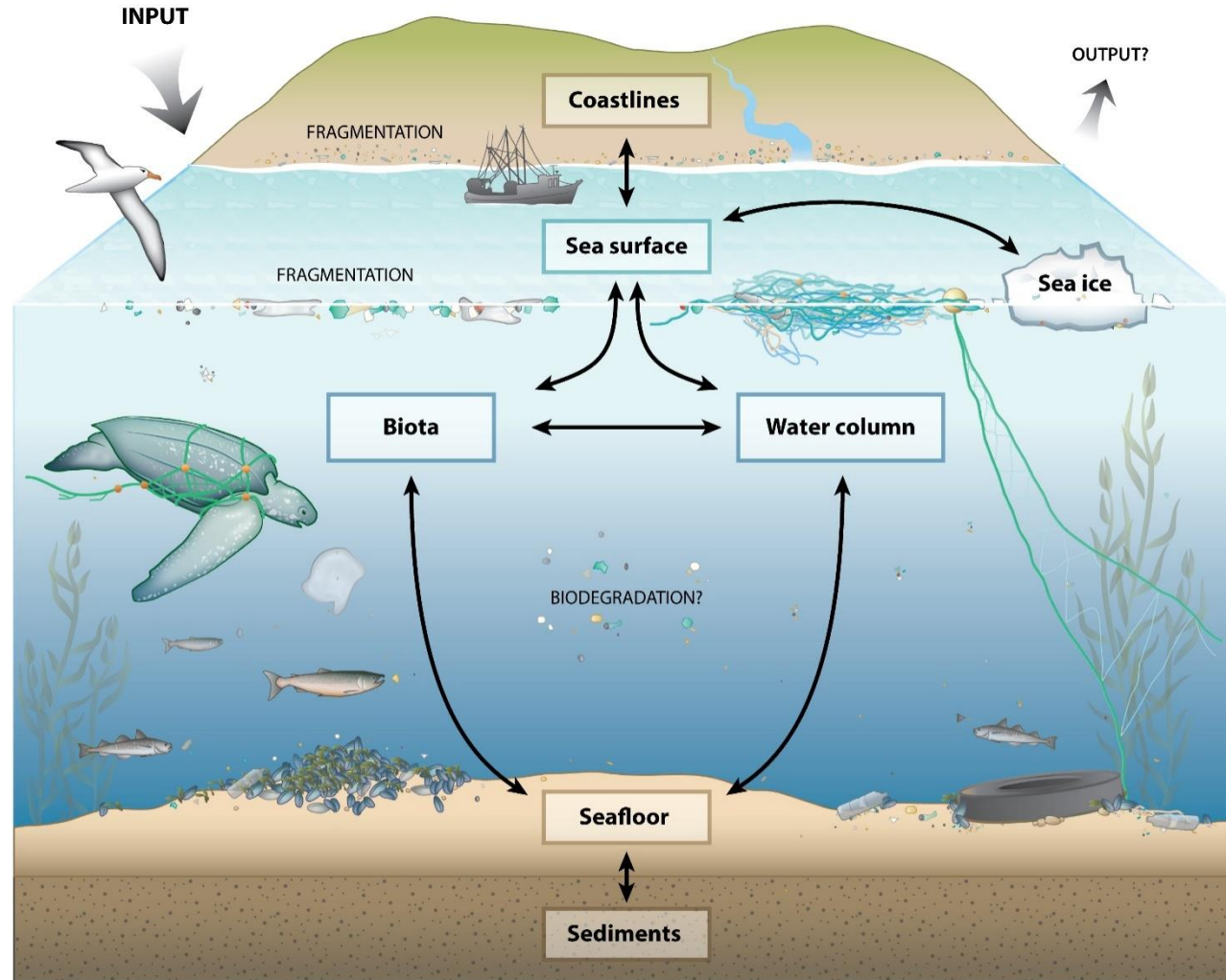
EVERY km OF COASTLINE
RECEIVES EVERY DAY
CA. **5kg** OF MARINE PLASTIC

247 BILLION PLASTIC PIECES
ARE FLOATING
IN THE MEDITERRANEAN





La plastica entra nella catena alimentare...



...con effetti imprevedibili per l'ambiente



Credit: ben Adams

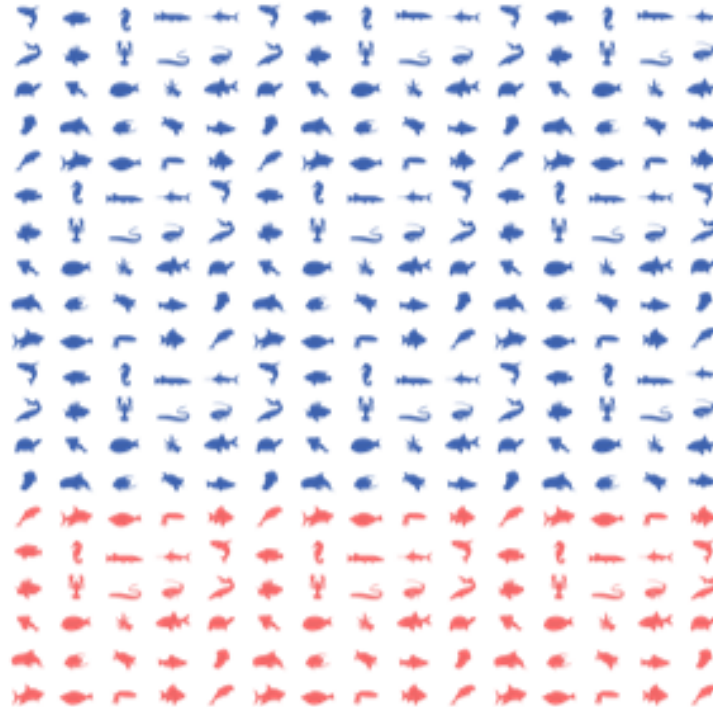
...con effetti imprevedibili per l'ambiente



Justin Hofman

700

SPECIE MARINE SONO MINACCIATE DALLA PLASTICA



15%

DELLE QUALI SONO MINACCIATE O IN PERICOLO CRITICO DI ESTINZIONE

Impatti della plastica sulla fauna marina: Intrappolamento



Source: Alaska Department of Fish and Game

Impatti della plastica sulla fauna marina: Intrappolamento



Source: Internet

Impatti della plastica sulla fauna marina: Intrappolamento



Source: Internet

Impatti della plastica sulla fauna marina: Intrappolamento



Source: Internet

Impatti della plastica sulla fauna marina: Ingestione



1 TARTARUGA MARINA SU 2
HA INGERITO PLASTICA

Impatti della plastica sulla fauna marina: Ingestione



Source: internet



Globicefalo, Thailandia, Giugno 2018:
80 buste condominiali nello stomaco

Plastica nello stomaco: i casi più recenti

- A febbraio 2018 in Spagna (spiaggia di Cabo de Palos), un capodoglio maschio di 10 metri è stato trovato spiaggiato con nello stomaco un enorme bidone di plastica, sporte di plastica, boe, corde, pezzi di rete e immondizia di ogni tipo. In totale, 29 chili di rifiuti prodotti dagli umani finiti nello stomaco di un singolo capodoglio.
- A maggio 2018 in Grecia, un capodoglio con 100 sacchetti di plastica dallo stomaco è stato trovato morto al largo dell'isola di Mykonos.
- A giugno 2018 in Thailandia, un globicefalo è morto nelle acque della Thailandia per aver fatto ingestione di 80 grossi sacchi di plastica abbandonati in mare.
- A novembre 2018 in Indonesia, un capodoglio è stato trovato morto dopo aver ingerito un'inquietante raccolta di rifiuti di plastica, tra cui 115 bicchieri, 25 sacchetti di plastica, bottiglie, due infradito e una busta contenente più di 1.000 pezzi di spago. In tutto, il contenuto di plastica nello stomaco del cetaceo, arrivava a pesare circa 6 chili.
- A dicembre 2018 in Italia, il capodoglio Leopoldo trovato la mattina del 24 dicembre spiaggiato senza vita a Ischia non è morto a causa della plastica. Tuttavia, all'interno del suo stomaco sono state trovate diverse borse di plastica e uno spesso filo di nylon.
- A gennaio 2017, uno zifio è stato soppresso dopo essersi spiaggiato su un'isola norvegese. L'esame autoptico ha rivelato ben 30 sacchi di plastica all'interno del suo stomaco.

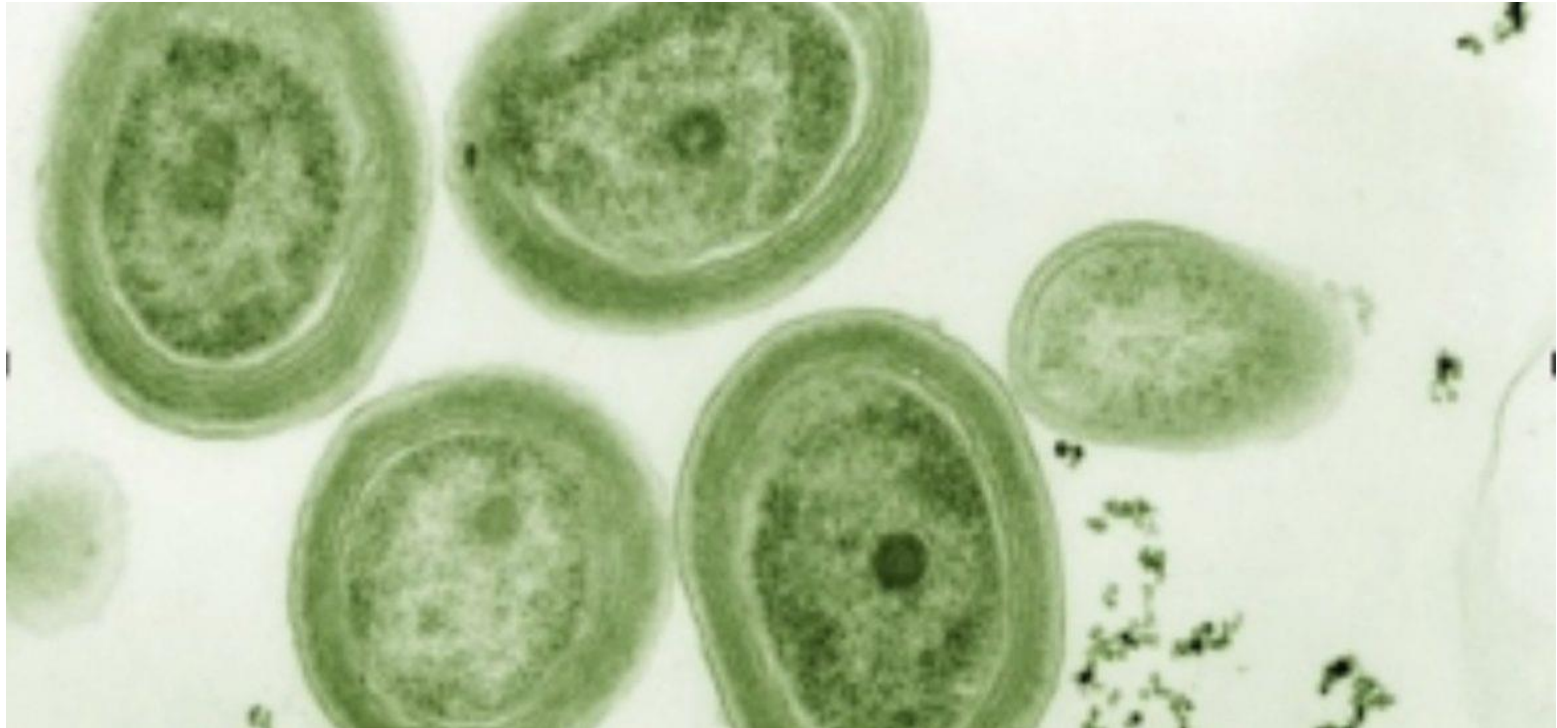
Secondo il Wwf, senza provvedimenti, **entro il 2050, nei mari del mondo ci sarà più plastica che pesce** e il Mediterraneo rappresenta un'area trappola con livelli record di



Source: www.internazionale.it Ph. Credit: Very White e Bo Eid

Video: <https://www.internazionale.it/scienza/2015/07/10/plancton-plastica-cibo>

Impatti della plastica sui batteri

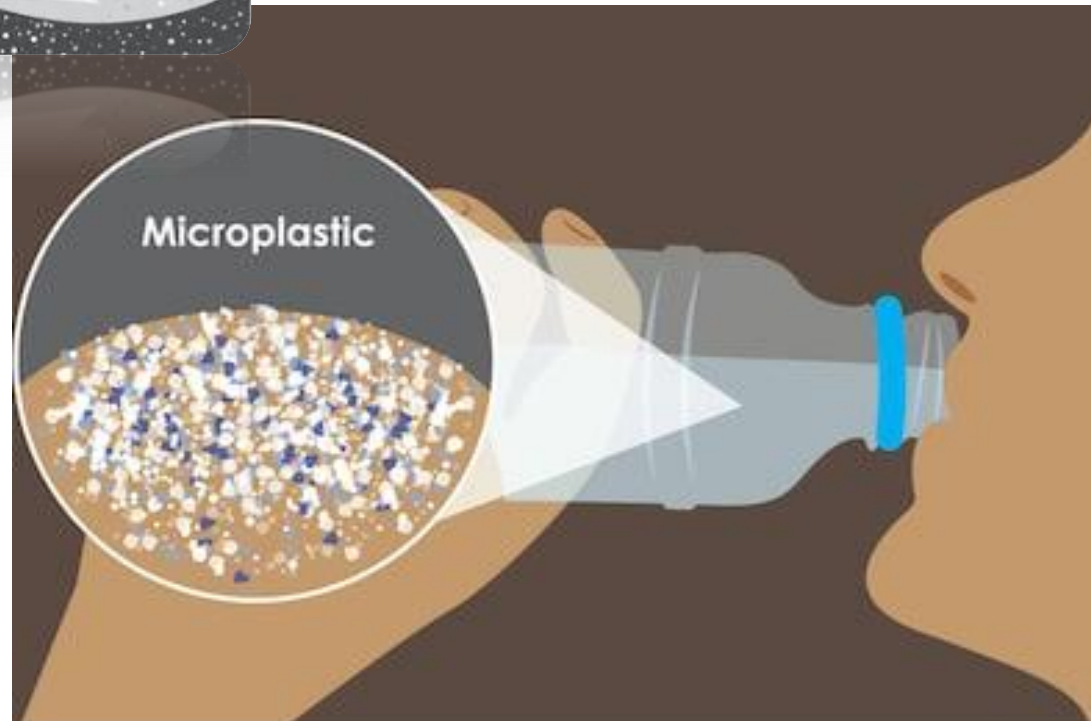


Source: Wikipedia

Impatti della plastica sui batteri



Non solo pesci e molluschi...





Environmental Research

Volume 187, August 2020, 109677



Micro- and nano-plastics in edible fruit and vegetables. The first diet risks assessment for the general population

Gea Oliveri Conti PhD ^a✉, Margherita Ferrante ^a✉, Mohamed Banni ^{b, c}✉, Claudia Favara ^a✉, Ilenia Nicolosi ^a✉, Antonio Cristaldi PhD ^a✉, Maria Fiore PhD ^a✉, Pietro Zuccarello PhD ^a✉

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<https://doi.org/10.1016/j.envres.2020.109677>

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Credit: 25261 | Pixabay

It took you
approximately
1 WEEK
to eat this
credit card



It took
you up to
3 WEEKS
to eat this
comb



Tiny bits of plastic are in our food, water and air.
Find out how much plastic you eat at
YOUR PLASTIC DIET.ORG



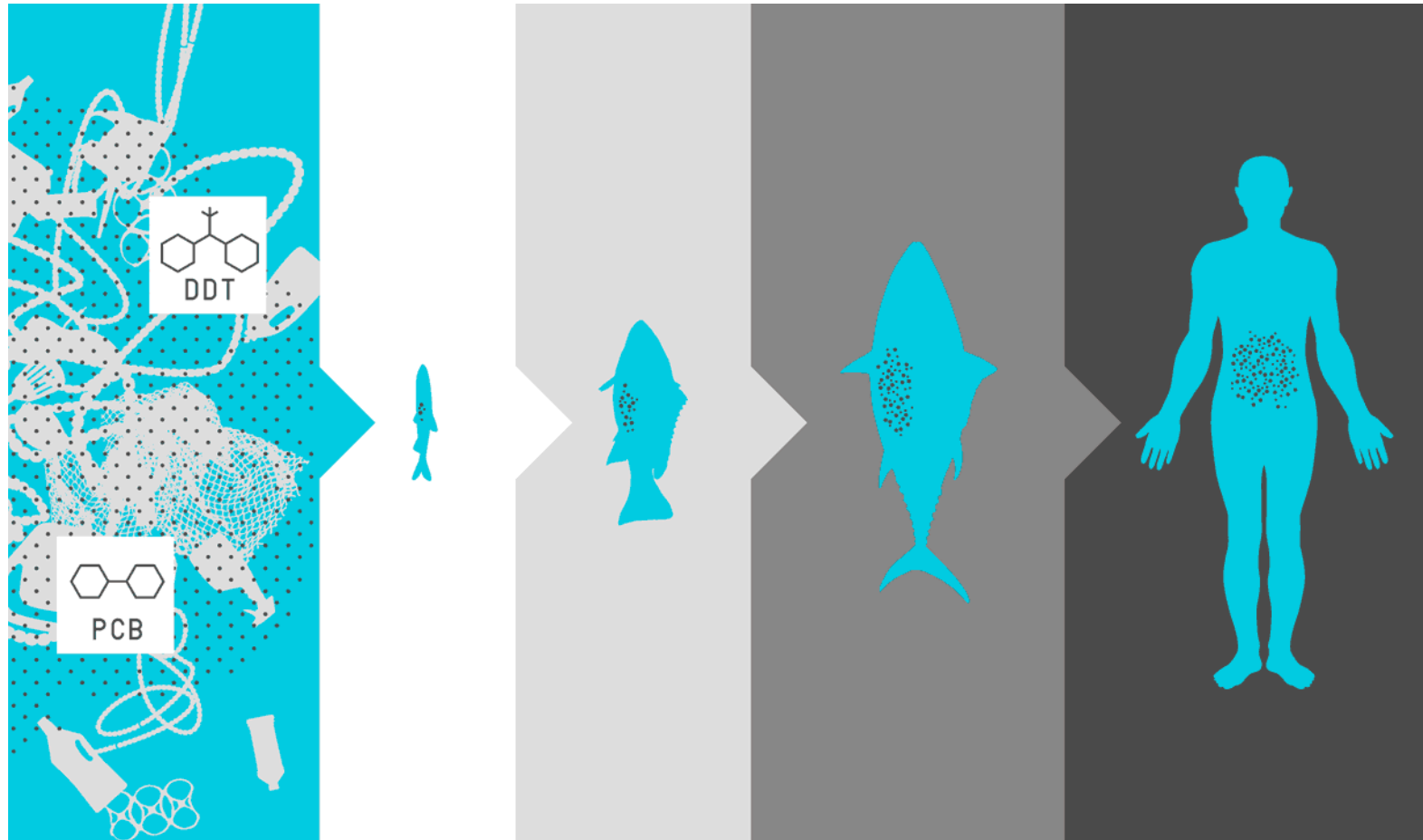
It took you
up to **1 WEEK**
to eat this pen



Tiny bits of plastic are in our food, water and air.
Find out how much plastic you eat at
YOUR PLASTIC DIET.ORG



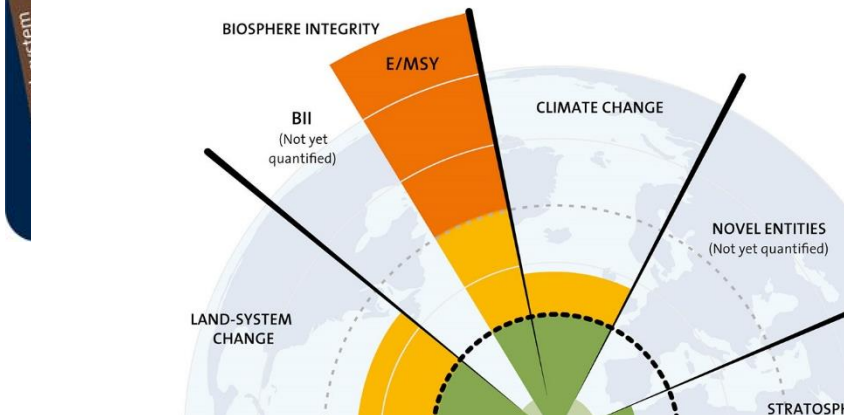
Plastica vettore di contaminanti



Source: Plastic Soup Foundation



<https://www.stockholmresilience.org/research/planetary-boundaries.html>



<https://www.ecologyandsociety.org/vol14/iss2/art32/>

Del 2009 di Rockstrom - La plastica non viene citata. (aggiungo l'articolo alla library)
Andrebbe citato l'anno del cambiamento da chemical pollution a novel entities (vedi schema nero da anthropocene.info qua sotto)

<https://www.stockholmresilience.org/research/research-news/2017-12-21-sea-plastics-planetary-impact.html>

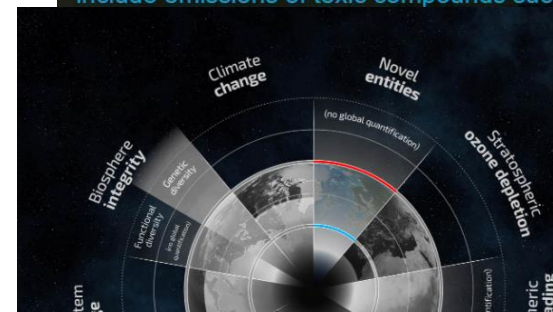
2015

MPP: Marine Plastic Pollution
incontra 2 criteri su 3 criteri per essere considerato un **inquinante chimico da inserire nel planetary boundary framework**, sebbene sia da tenere sotto controllo la sua gestione e

PLANETARY BOUNDARIES

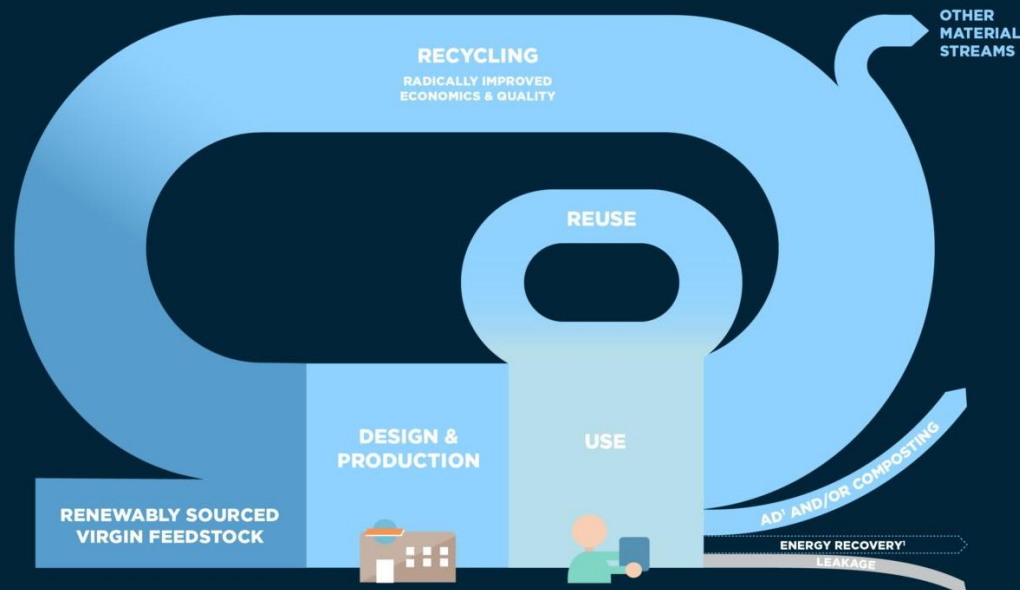
NOVEL ENTITIES

The chemical pollution boundary has been expanded and renamed "novel entities" created entirely by us humans. They include emissions of toxic compounds such as synthetic organic chemicals, pharmaceuticals, and genetically modified organisms. These can persist in the environment and their effects are



THE NEW PLASTICS ECONOMY

1 CREATE AN EFFECTIVE AFTER-USE PLASTICS ECONOMY



3 DECOUPLE PLASTICS FROM FOSSIL FEEDSTOCKS

2 DRASTICALLY REDUCE THE LEAKAGE OF PLASTICS INTO NATURAL SYSTEMS & OTHER NEGATIVE EXTERNALITIES

WORLD ECONOMIC FORUM, ELLEN MACARTHUR FOUNDATION, MCKINSEY & COMPANY,
A NEW PLASTICS ECONOMY: RETHINKING THE FUTURE OF PLASTICS (2016)
ELLENMACARTHURFOUNDATION.ORG/PUBLICATIONS

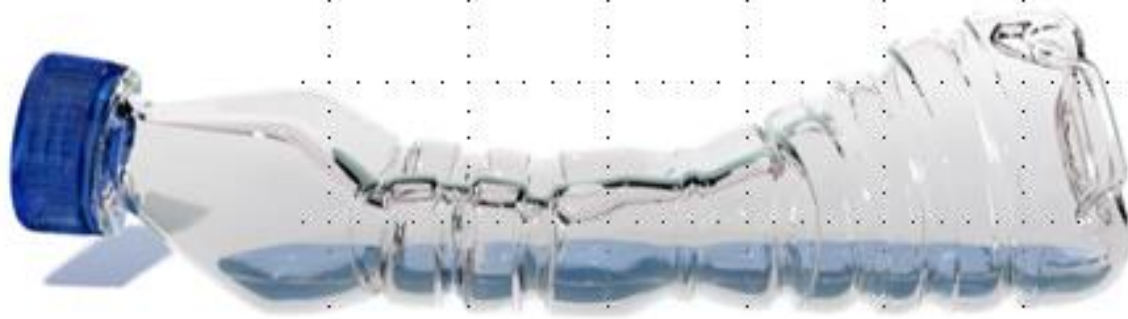
1 Anaerobic digestion

2 The role of, and boundary conditions for, energy recovery in the New Plastics Economy needs to be further investigated.

Source: Project Mainstream analysis



NOW OR NEVER





GRAZIE

Ufficio Educazione e Formazione
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