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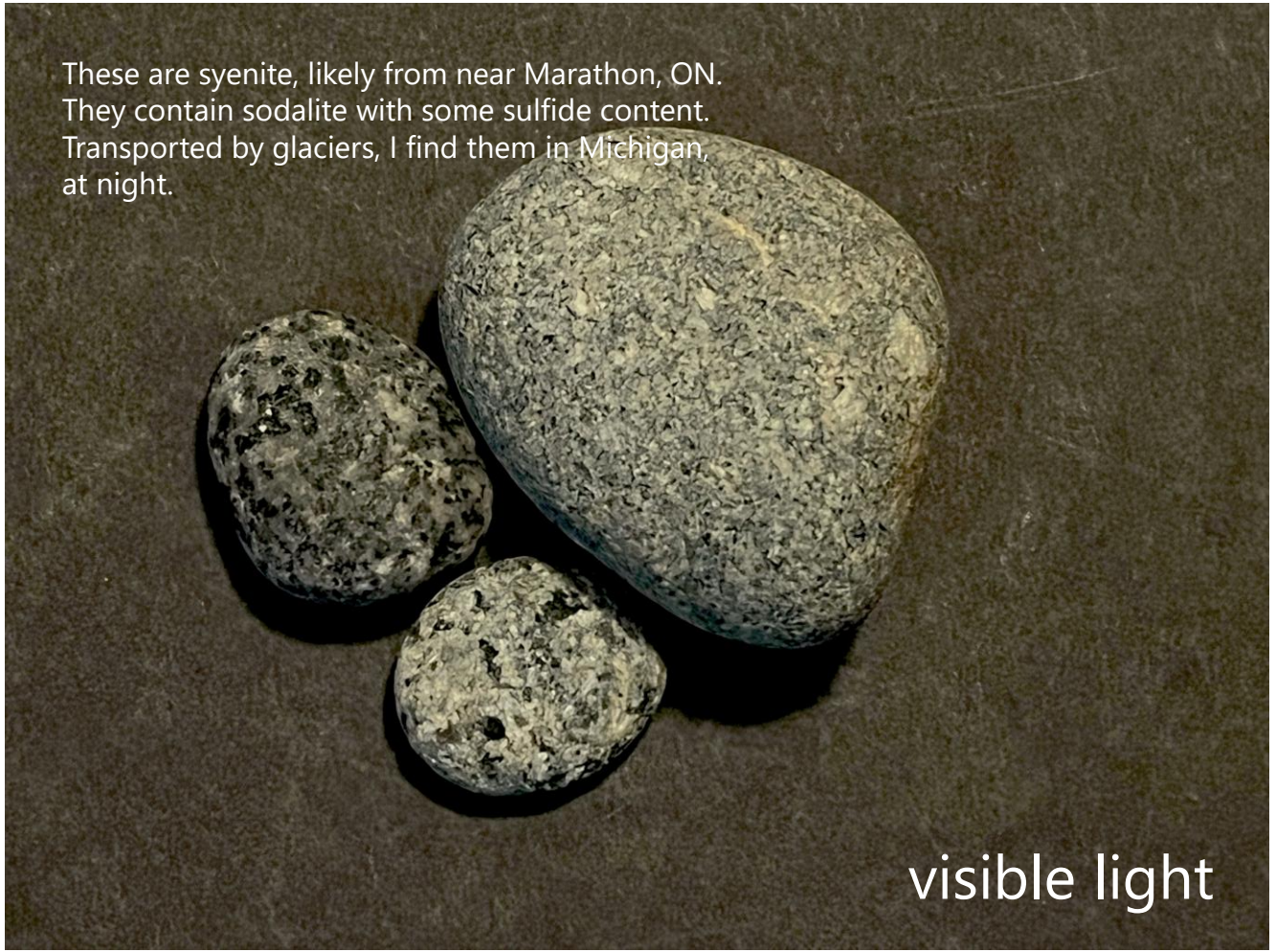
How Wrong Is Too Wrong:
Retirement Can Be Fun

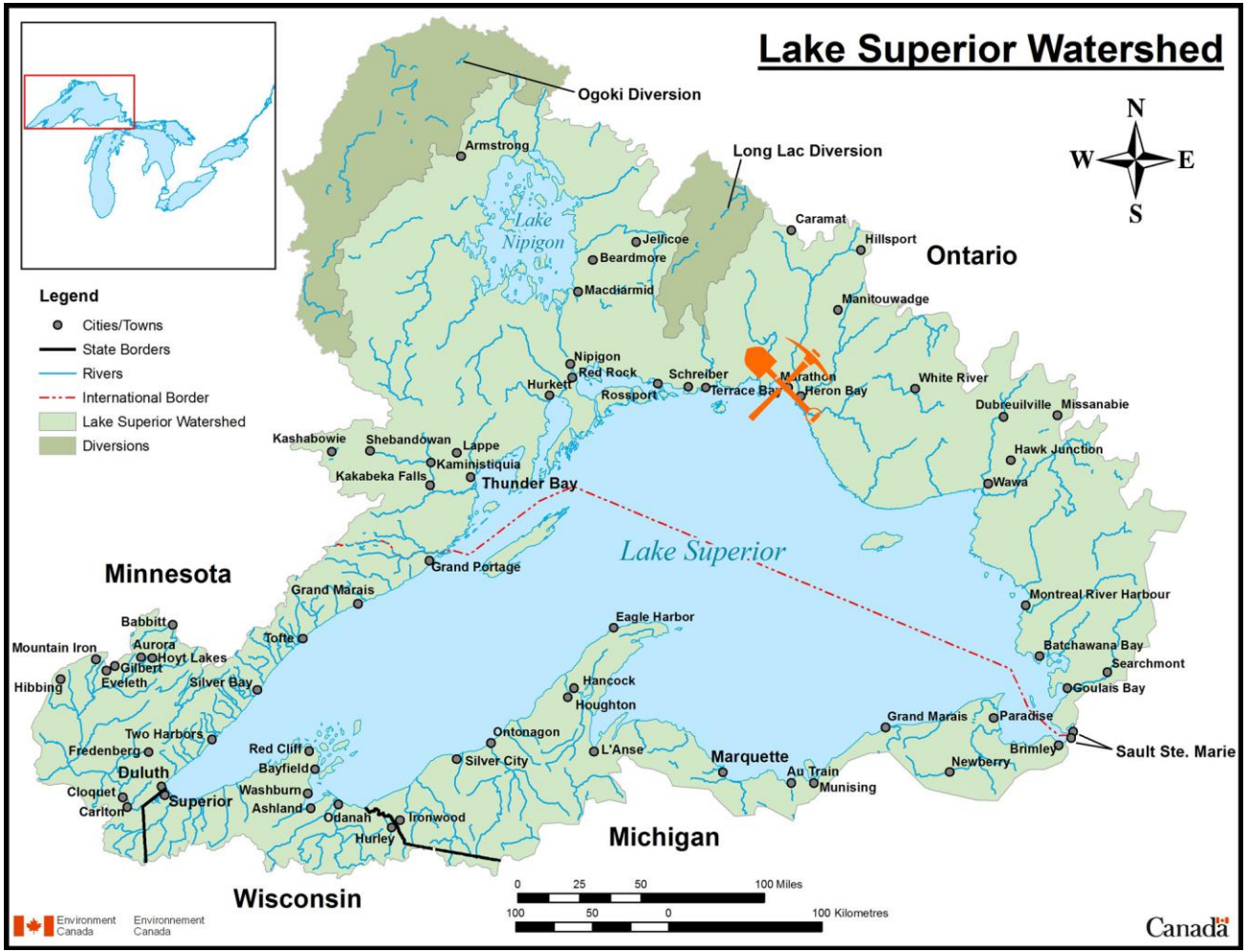
Mark Jones
Creative Director
MJPhD, LLC

26 June2025

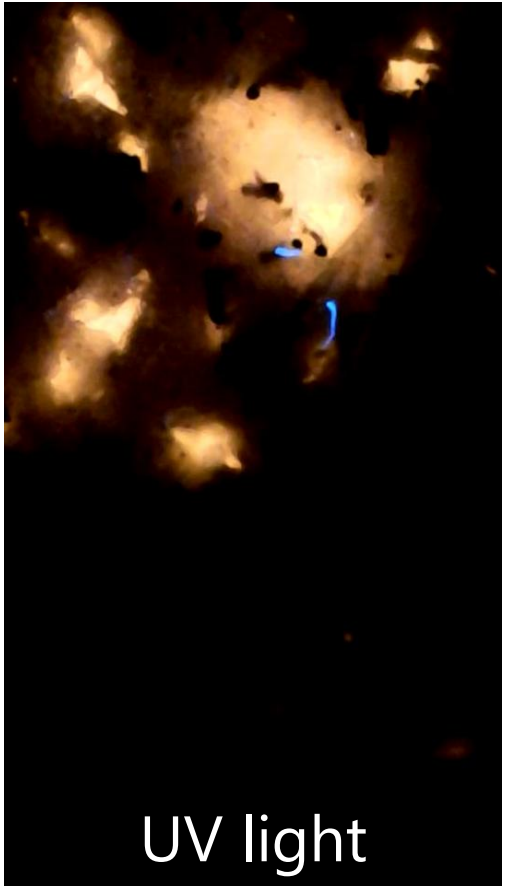

These are syenite, likely from near Marathon, ON.
They contain sodalite with some sulfide content.
Transported by glaciers, I find them in Michigan,
at night.
visible light


UV light
(365 nm filtered)


visible light
filter


Lake Superior Watershed
Ogoki Diversion
Long Lac Diversion
Armstrong
Lake Nipigon
Jellicoe
Beardmore
Macdiarmid
Caramat
Hillsport
Ontario
Manitouwadge
Nipigon
Red Rock
Schreiber
Hurkett
Rossport
Terrace Bay
Marathon
Heron Bay
White River
Dubreuilville
Missanabie
Hawk Junction
Wawa
Kashabowie
Shebandowan
Lappe
Kaministiquia
Kakabeka Falls
Thunder Bay
Lake Superior
Grand Portage
Minnesota
Grand Marais
Babbitt
Aurora
Hoyt Lakes
Gilbert
Eveleth
Mountain Iron
Hibbing
Silver Bay
Tofte
Eagle Harbor
Hancock
Houghton
Ontonagon
Silver City
L'Anse
Marquette
Au Train
Munising
Grand Marais
Paradise
Brimley
Newberry
Sault Ste. Marie
Montreal River Harbour
Batchawana Bay
Searchmont
Goulais Bay
Two Harbors
Fredenberg
Duluth
Superior
Cloquet
Carlton
Red Cliff
Bayfield
Washburn
Ashland
Odanah
Ironwood
Hurley
Michigan
Wisconsin
Legend
Cities/Towns
State Borders
Rivers
International Border
Lake Superior Watershed
Diversions
N
W
E
S
0 25 50 100 Miles
100 50 0 100 Kilometres
Environment Canada
Environnement Canada
Canada


visible light


UV light

OBX Beach Sand

OBX Beach Sand

Midland Local Section

CENTRAL MICHIGAN UNIVERSITY

Water Chemistry in the Great Lakes Region

https://www.cmich.edu/academics/colleges/college-science-engineering/centers/cmu-biological-station/h2o-q-in-the-classroom

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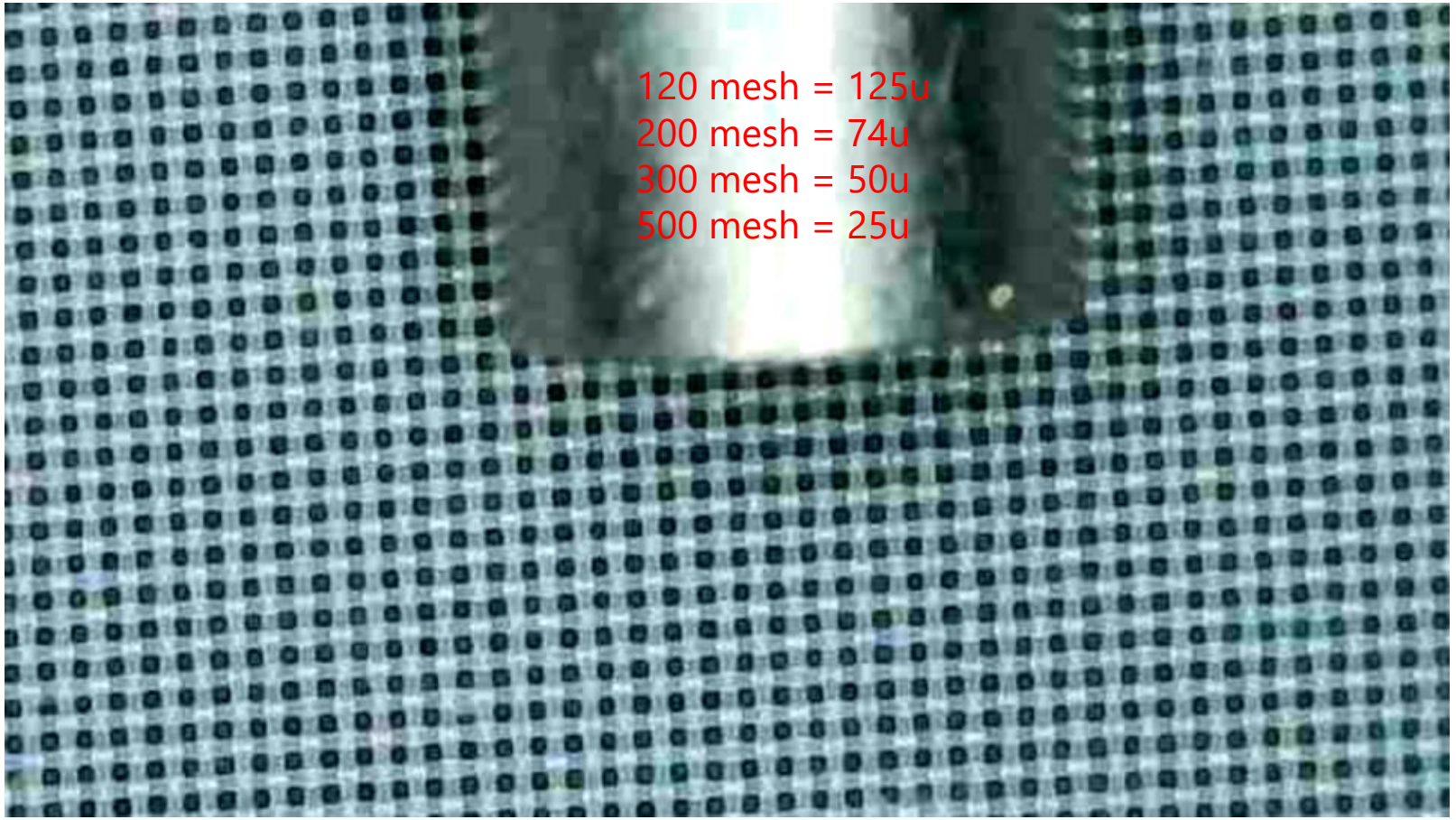
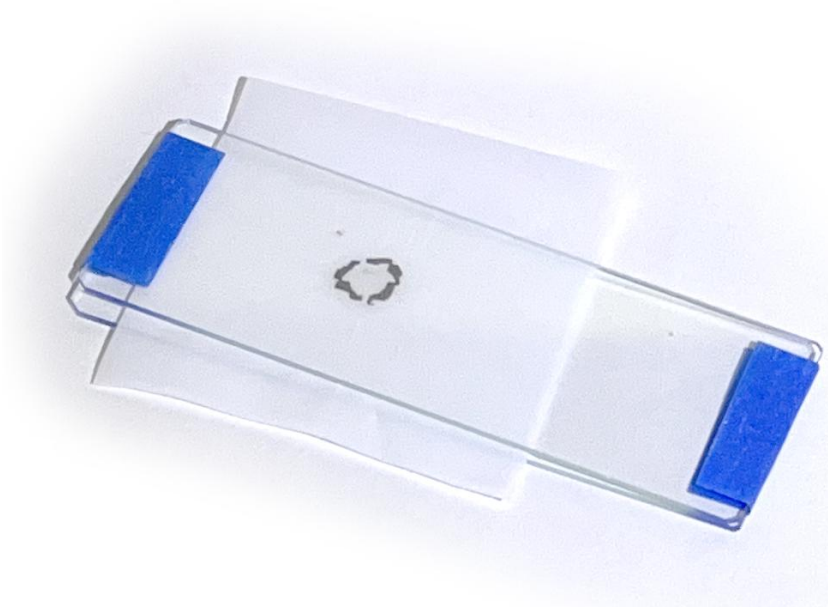
LED
UV light
filter

current iteration designed to filter at microscope resolution

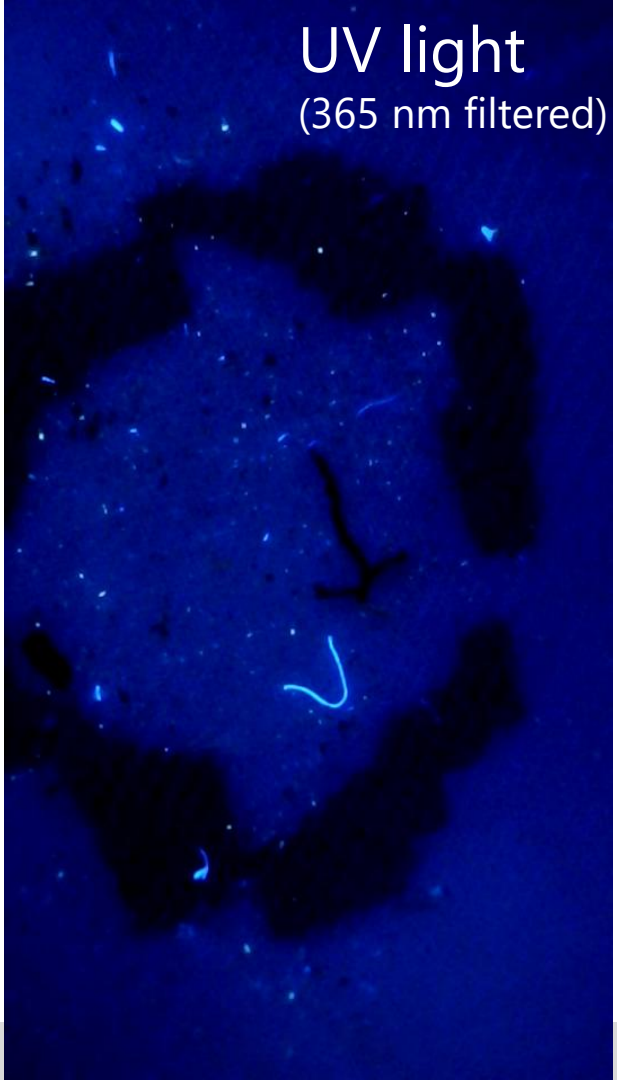
Silk Screen Fabric as Filters

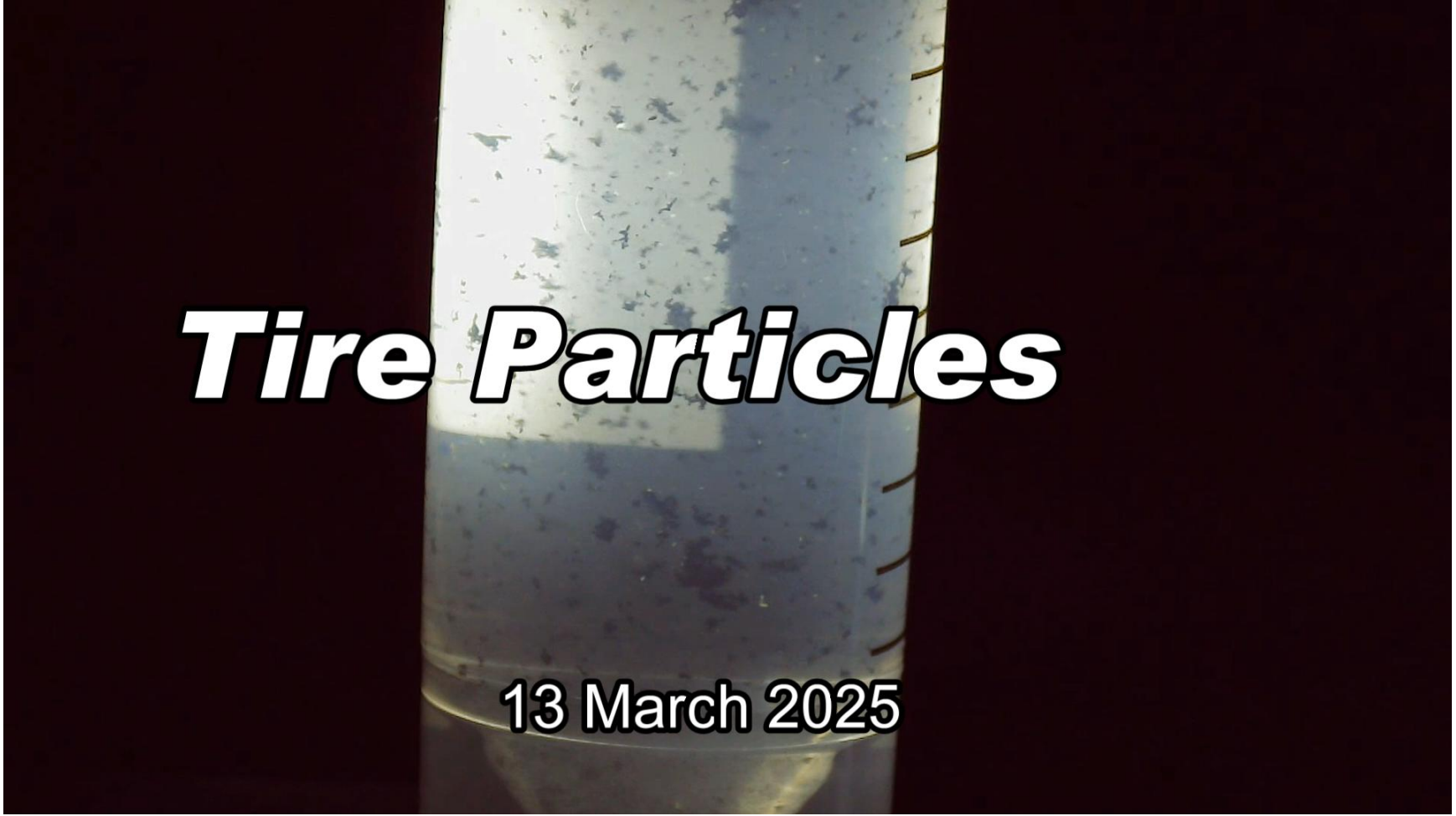


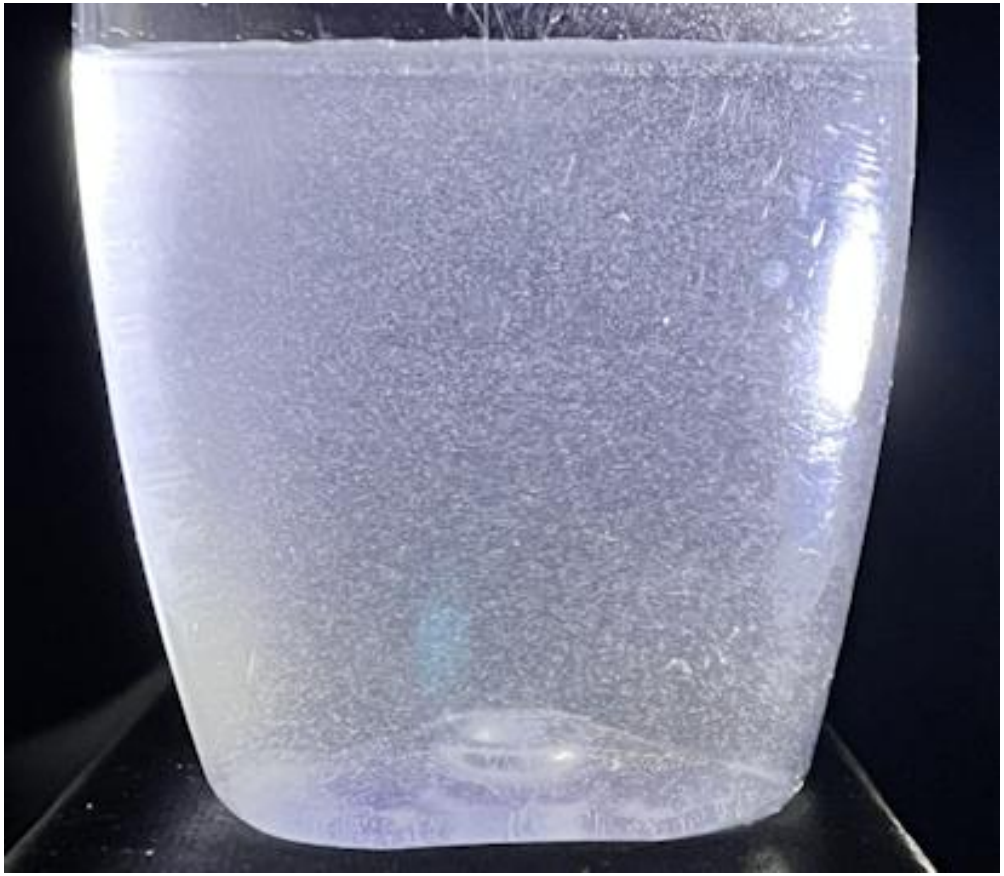


slide sandwich showing traced outline of funnel on filter media


visible light

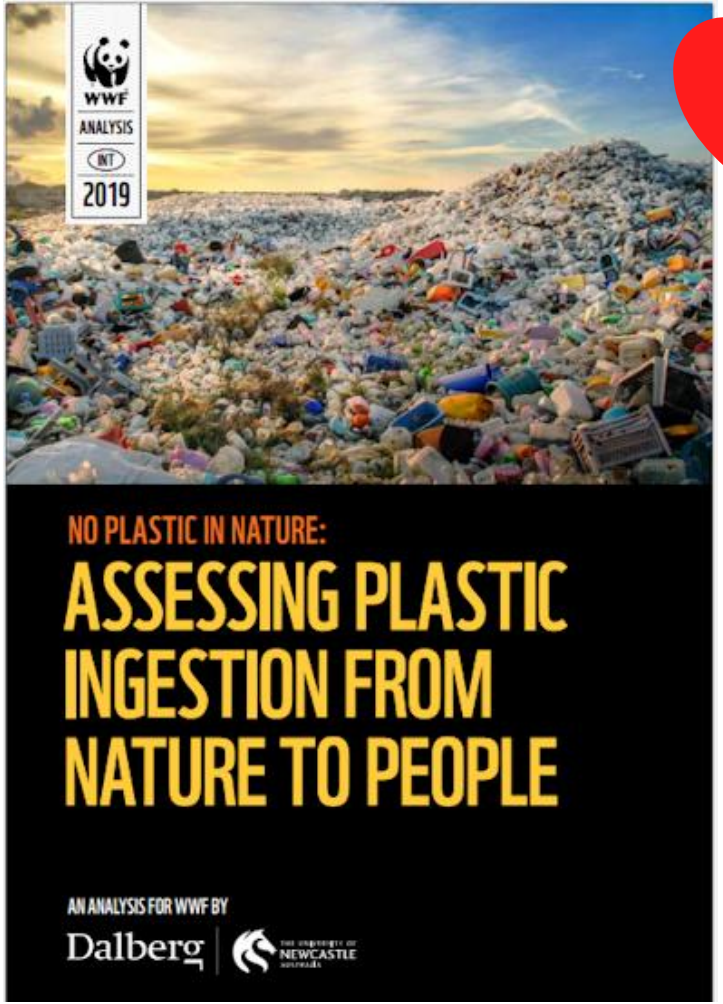

UV light
(365 nm filtered)


Tire Particles
13 March 2025



Commercial Bottled Water

19 March 2025

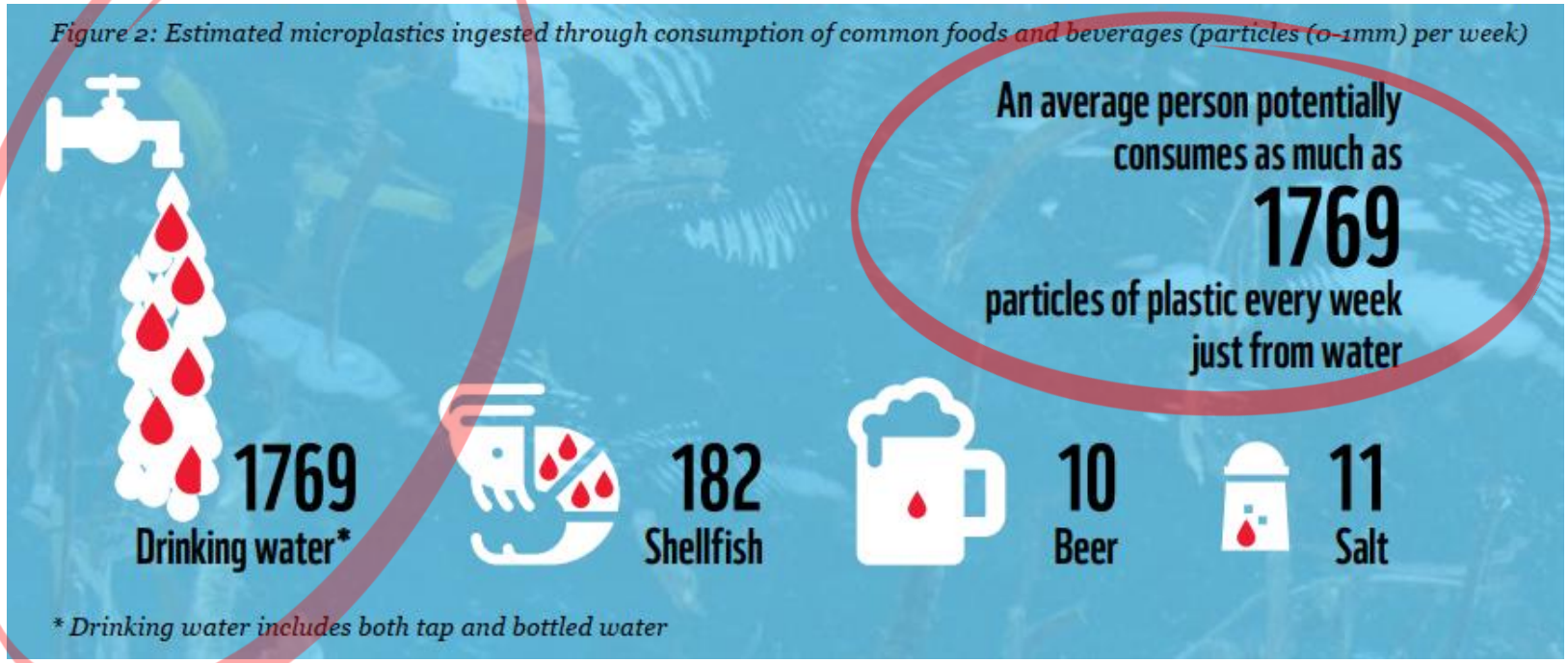


"A new study by the University of Newcastle, Australia suggests that an average person could be ingesting approximately 5 grams of plastic every week. The equivalent of a credit card's worth of microplastics. This summary report highlights the key ways plastic gets into our body, and what we can do about it."

wwfint.awsassets.panda.org/downloads/plastic_ingestion_web_spreads.pdf

wwf.panda.org/wwf_news/?348337/Revealed-plastic-ingestion-by-people-could-be-equating-to-a-credit-card-a-week

2.5 mg average particle to reach 5 grams.



Journal of Hazardous Materials 404 (2021) 124004

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journal homepage: www.elsevier.com/locate/jhazmat

Research paper

Estimation of the mass of microplastics ingested – A pivotal first step towards human health risk assessment

Kala Senathirajah [a], Simon Attwood [b], Geetika Bhagwat [c], Maddison Carbery [c], Scott Wilson [d], Thava Palanisami [a,*]

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[b] The World Wide Fund for Nature (WWF), 354 Tanglin Road, Singapore, Singapore
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ARTICLE INFO

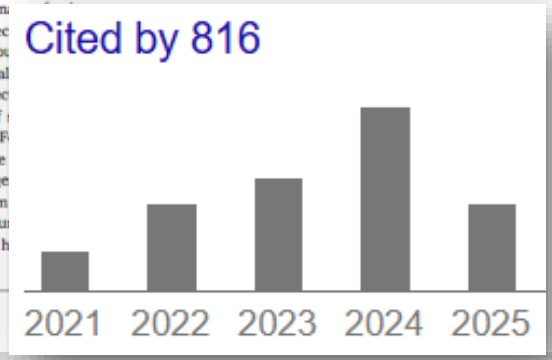
Keywords:
Exposure pathways
Human health
Ingestion
Microplastics
Plastic pollution
Risk

ABSTRACT

The ubiquitous presence of microplastics in the food web has been established. However, the ma
plastics exposure to humans is not defined, impeding the human health risk assessment. Our objec
extract the data from the available evidence on the number and mass of microplastics from variou
determine the uncertainties in the existing data, to set future research directions, and derive a global
of microplastic ingestion to assist in the development of human health risk assessments and effec
ment and policy options. To enable the comparison of microplastics exposure across a range of
extraction and standardization was coupled with the adoption of conservative assumptions. F
analysis of data from fifty-nine publications, an average mass for individual microplastics in the
range was calculated. Subsequently, we estimated that globally on average, humans may inge
microplastics weekly through various exposure pathways. This was the first attempt to transform
counts into a mass value relevant to human toxicology. The determination of an ingestion rate is fu
assess the human health risks of microplastic ingestion. These findings will contribute to future h
risk assessment frameworks.

https://doi.org/10.1016/j.jhazmat.2020.124004

> humans may ingest 0.1-5 g of microplastics weekly through various exposure pathways



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Average 2.5 mg particles.

Plastic microparticles, 0.65 grams consisting of 523 particles, in a liter of water equaling the concentration in order to ingest 5 grams per week. Such a high concentration is easily seen both in water and upon drying. The particles are cut from 1.5 mm plastic monofilament.

Bert Koelmans makes point that a week's ingestion is like a grain of salt between chopsticks – mere micrograms.

Picasso, 1955

R&D WORLD

Microplastics are bad, but ignoring science is worse

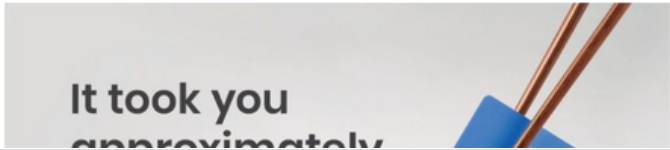
www.rdworldonline.com/microplastics-are-bad-but-ignoring-science-is-worse/

By Mark Jones | March 20, 2024

We all know that 98.6° F is human body temperature … only it isn't. A new **study** reconfirms something extensively covered during the COVID pandemic: Normal human body temperature falls between 97.3° and 98.2° F — with 97.9° F as today's average.

And 5 grams per week is the amount of plastic every person consumes … only it isn't. Like outdated body-temperature assertions, this 5-g value (widely reported in many science and news circles) is flawed. The difference is that data manipulation and memes didn't give us the 98.6° F value … but they did help propel the 5-g-of-plastic assertion. It has shaken my faith in the scientific community.

Now, the world widely accepts the average person consumes 5 g of plastic per week — the weight of a credit card. Thanks to one now-quite-famous picture of a credit card



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Chemosphere

Volume 365, October 2024, 143319

From e-waste to living space: Flame retardants contaminating household items add to concern about plastic recycling

Megan Liu [a], Sicco H. Brandsma [b], Erika Schreder [a]

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https://doi.org/10.1016/j.chemosphere.2024.143319

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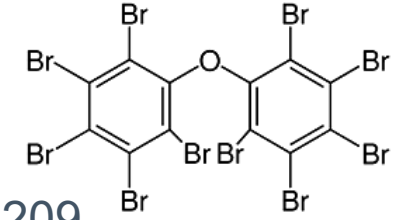
Corrigendum to 'From e-waste to living space: Flame retardants contaminating household items add to concern about plastic recycling'...

Chemosphere, Volume 370, February 2025, Pages 143903

Megan Liu, Sicco H. Brandsma, Erika Schreder

From e-Waste to Living Space

- stated reason for the study was “to determine whether black plastic household products sold on the U.S. market contained emerging and phased-out flame retardants (FRs) and whether polymer type was predictive of contamination”
- looked at Br- and P-containing flame retardants
  - special emphasis on BDE-209, one of the first banned FRs



BDE-209

BDE-209 commercialised in the01970s. Now recognised as a hazardous and persistent pollutant under 2017 Stockholm Convention on Persistent Organic Pollutants meaning that treaty members must eliminate its production and use.

- the study and subsequent press releases address the likely exposures caused by the presence of flame retardants and compare them to reference dose levels in drawing the conclusion that there is significant contaminations.
- *rather than having exposures to BDE-209 nearly identical to intake from dust and diet, they are at least 800 times lower.*

Egregious Errors

- Miscalculated the reference dose by 10X
  - reported typical exposure as 42 μg/day rather than the correct value, 420 μg/day
  - last line of the abstract is “estimation of exposure to BDE-209 from contaminated kitchen utensils indicated users would have a median intake of 34,700 ng/day, exceeding estimates for intake from dust and diet.”
  - topic of first correction
- Authors stand by the paper’s conclusions

Egregious Errors

- Incorrectly converted concentration to exposure
  - used an incorrect correlation to determine exposure
    - correlation for leaching when submerged in hot oil used for all items
  - overstated exposure by at least a factor of 800X
  - I wrote formal letter to the editor suggesting the errors were sufficient to warrant retraction
- How did they mess up the math?
  - collected 203 items and analyzed by XRD retaining only the 20 highest for their analysis
    - “FRs were found in 85% of analyzed products” while analysis ignored 183 items
  - incorrectly reported median value for kitchen items (only 9 of 20) when the value was average value for all 20 subjected to more thorough analysis
  - second correction ignores all samples below the detection limit
- Authors stand by the paper’s conclusions

R&D WORLD

Pull those black plastic spatulas out of the trash

https://www.rdworldonline.com/pull-those-plastic-spatulas-out-of-the-trash/

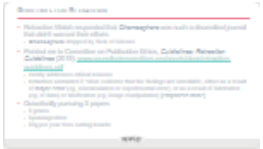
By Mark Jones, Ph.D. | January 23, 2025

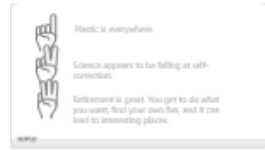
2024 was the year of spatulageddon. Plastic spatulas were trashed due to reports of dangers lurking within. The journal article that raised concern contained an error, **an obvious error**. A **correction was made** but there is more to the story.

[Adobe Stock]

How a recycling study spawned spatula hysteria

The study causing spatulageddon is "**From e-waste to living space:**





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Guidelines for Retraction

- Retraction Watch responded that *Chemosphere* was such a discredited journal that didn't warrant their efforts
  - *Chemosphere* dropped by Web of Science
- Pointed me to Committee on Publication Ethics, *Guidlelines: Retraction Guidelines* (2019). www.councilscienceeditors.org/assets/docs/retraction-guidelines.pdf
  - mostly addresses ethical reasons
  - retraction warranted if "clear evidence that the findings are unreliable, either as a result of **major error** (eg, miscalculation or experimental error), or as a result of fabrication (eg, of data) or falsification (eg, image manipulation) [**emphasis mine**]
- Quixotically pursuing 3 papers
  - 5 grams
  - Spatulageddon
  - 50 grams per year from cutting boards

Plastic is everywhere.

Science appears to be failing at self-correction.

Retirement is great. You get to do what you want, find your own fun, and it can lead to interesting places.

MJPHD.net