

MICROPLASTICS in the GREAT LAKES



5GYRES

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Microplastic by design





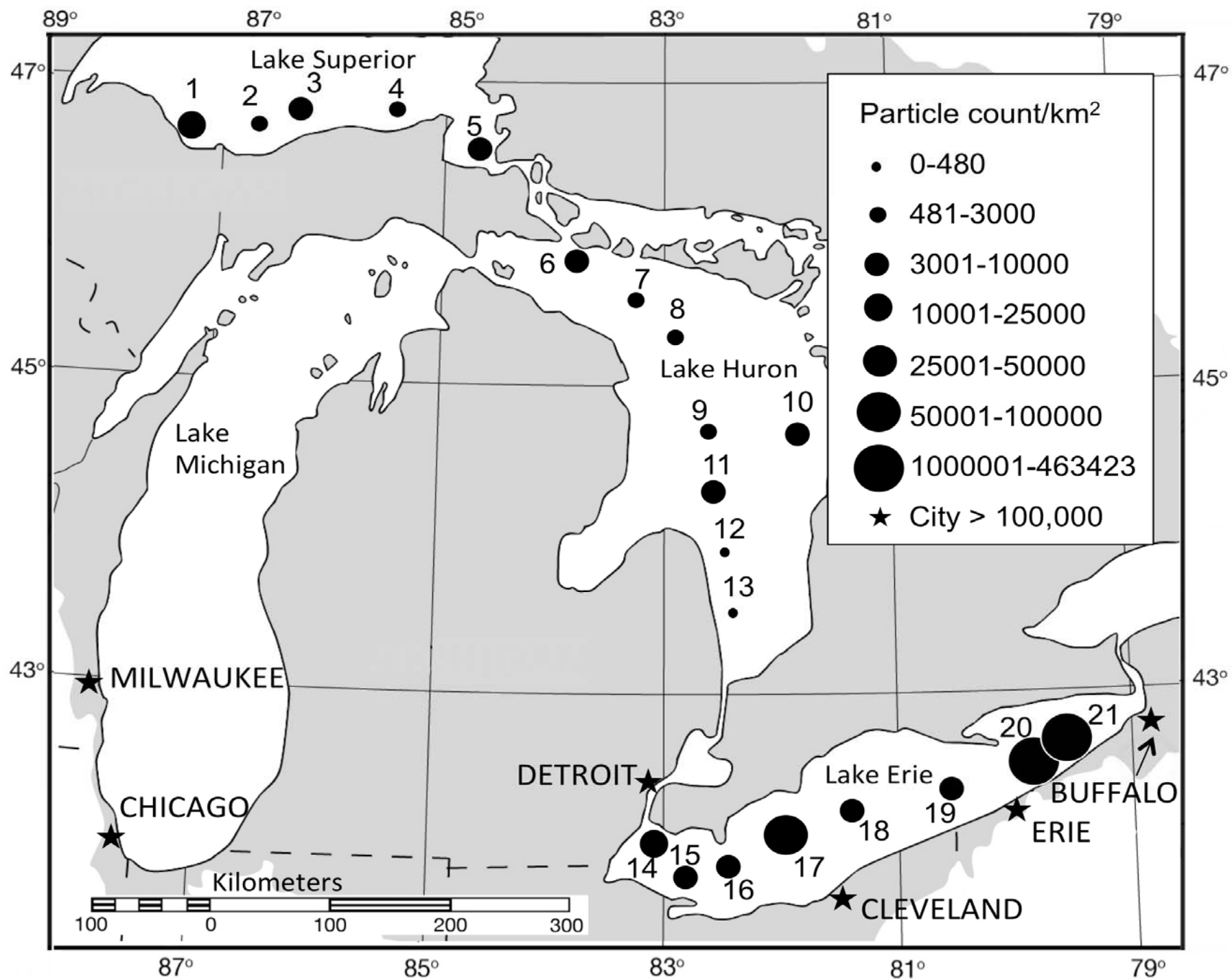
0.1 gram = >6000 microbeads or estimated 330K in product

GREAT LAKES EXPEDITIONS 2012-13





21 samples collected in lakes Superior, Huron and Erie





Lake Huron sample with plastic film from a cigarette pack

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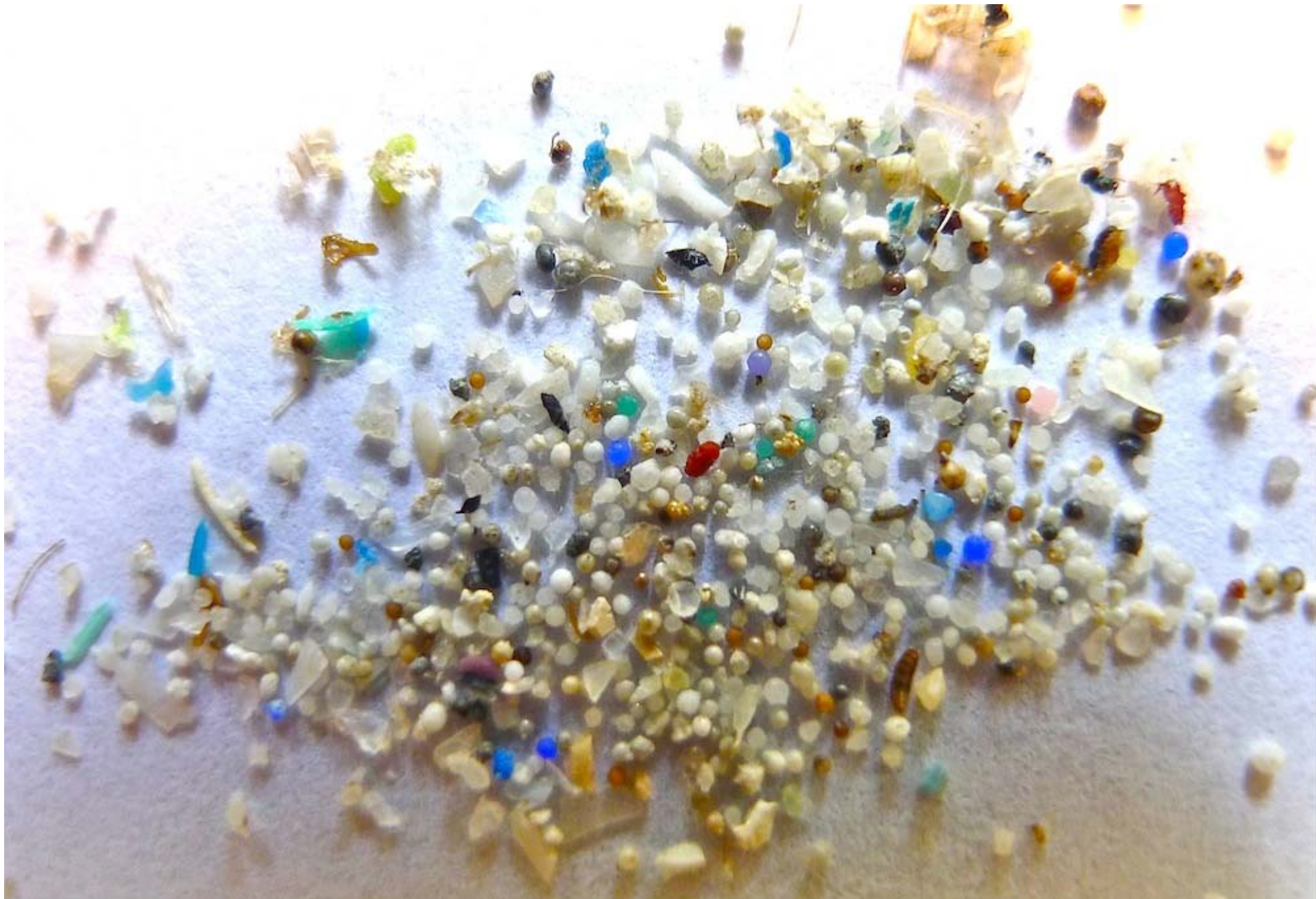


Station #14 lake Erie

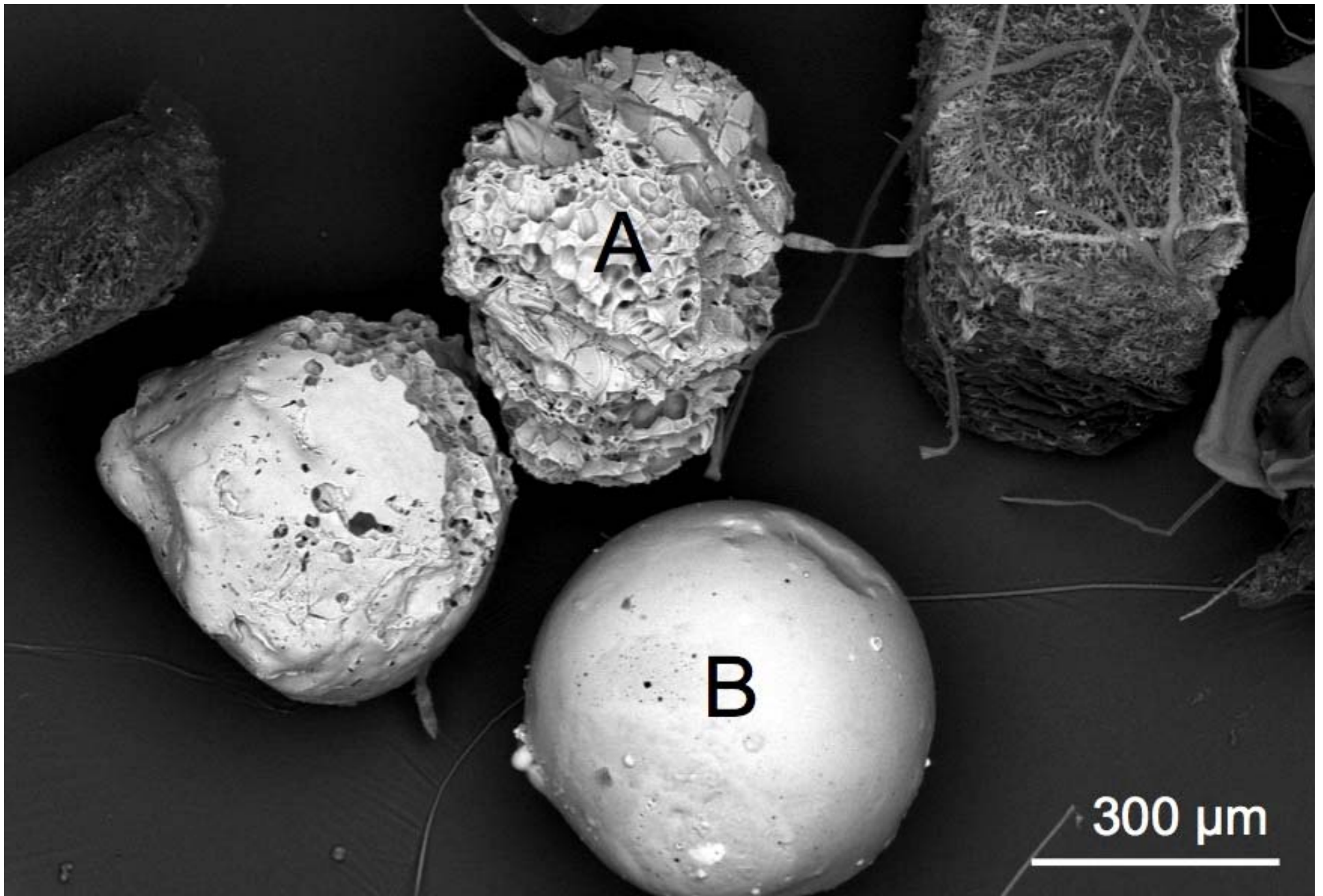




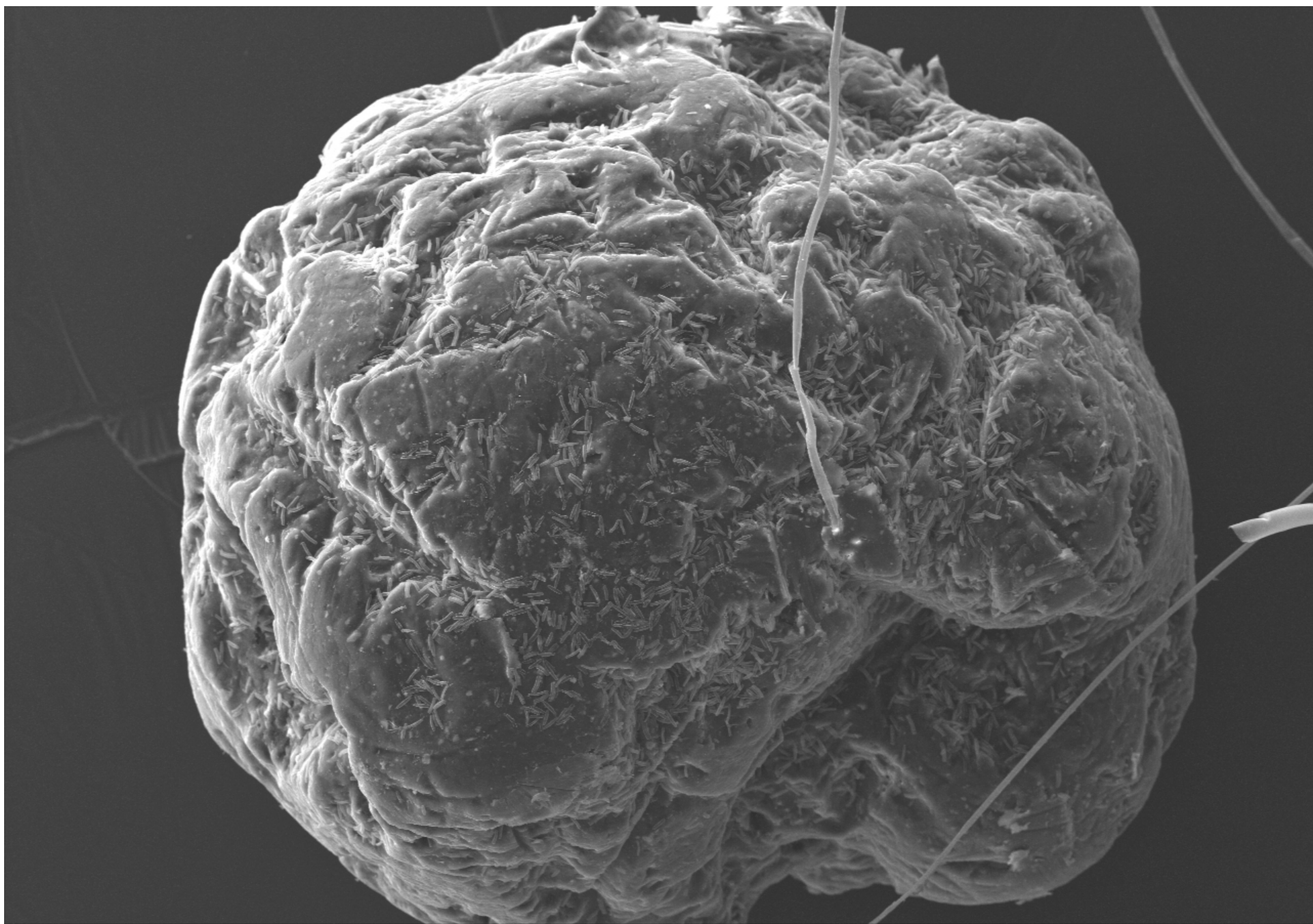
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Station #20 Lake Erie

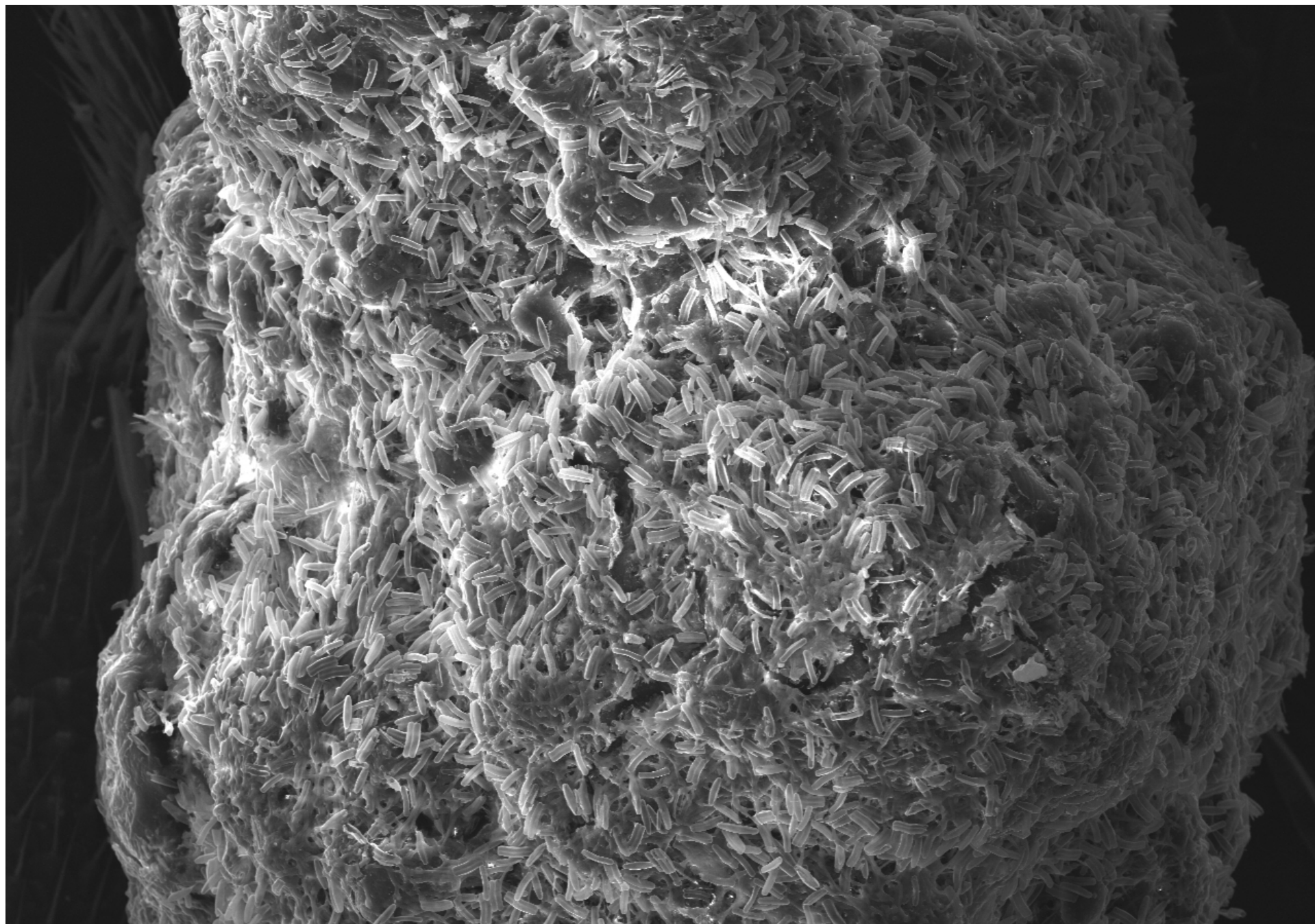


Count, location and abundance of plastic pollution in the Great Lakes					
Sample id.	Latitude	Longitude	Count total	Tow length (km)	Abundance (count/km ²)
Lake Superior					
1	46.5737	-87.3413	15	1.94	12645
2	46.6872	-86.6649	8	3.70	3541
3	46.7772	-86.4405	3	3.85	1277
4	46.8487	-85.2473	6	3.76	2616
5	46.5860	-84.7222	16	3.82	6875
Lake Huron					
6	45.8682	-83.7218	11	3.80	4750
7	45.6372	-83.3776	3	4.00	1229
8	45.3463	-83.0087	4	3.87	1694
9	44.7287	-82.5399	5	3.70	2213
10	44.7676	-81.9475	15	3.76	6541
11	44.3480	-82.5583	13	3.98	5352
12	43.9240	-82.5130	1	3.59	456
13	43.4134	-82.3994	0	3.93	0
Lake Erie					
14	41.8979	-83.0498	26	3.78	11282
15	41.7523	-82.9450	9	3.15	4686
16	41.7830	-82.7569	20	3.85	8511
17	41.8953	-82.3409	131	3.76	57122
18	42.1425	-81.5131	13	3.52	6056
19	42.2441	-80.7501	21	3.78	9112
20	42.3938	-79.9536	1101	3.87	466305
21	42.3000	-80.0259	657	3.83	280947



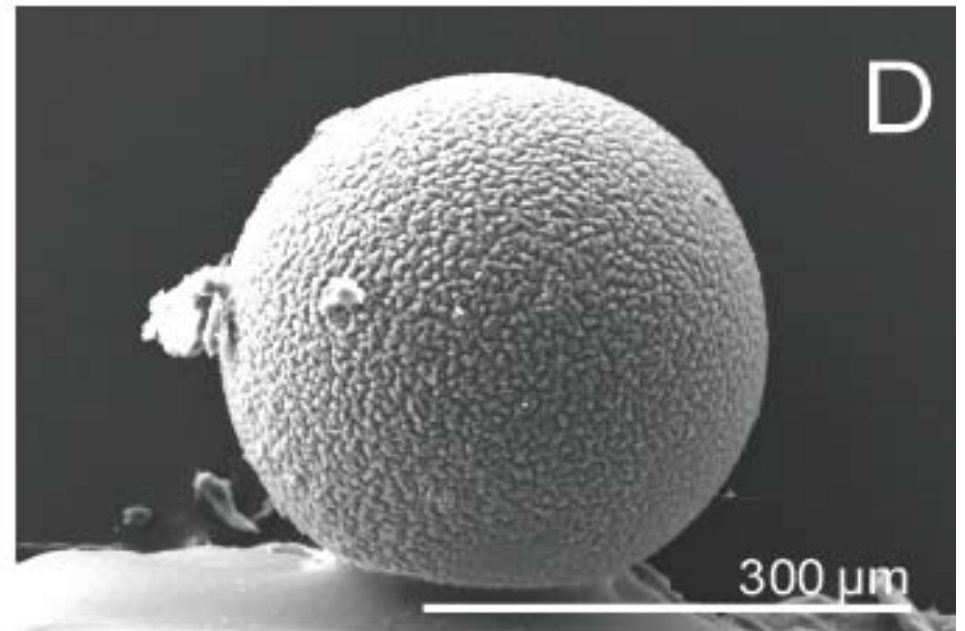
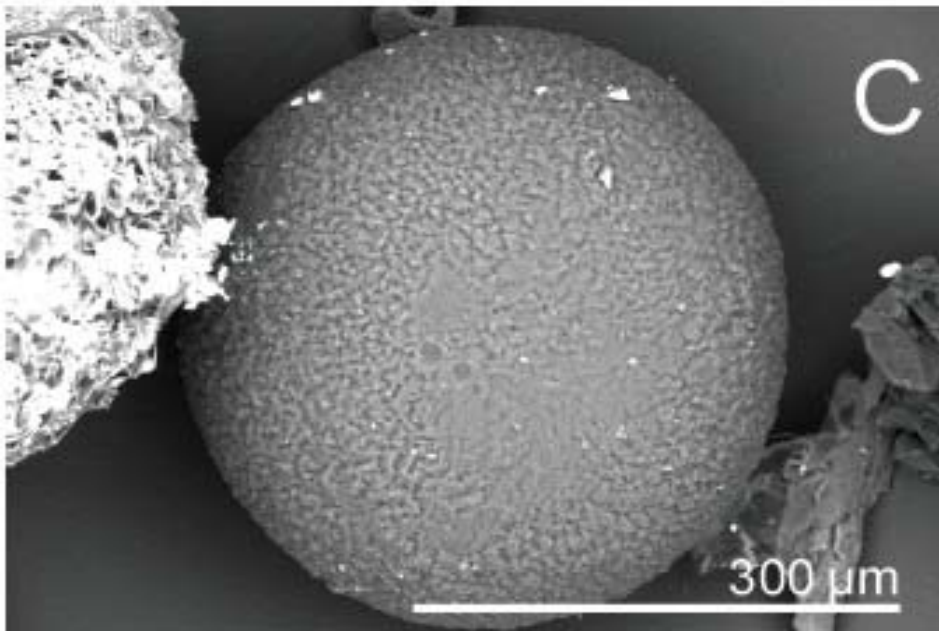
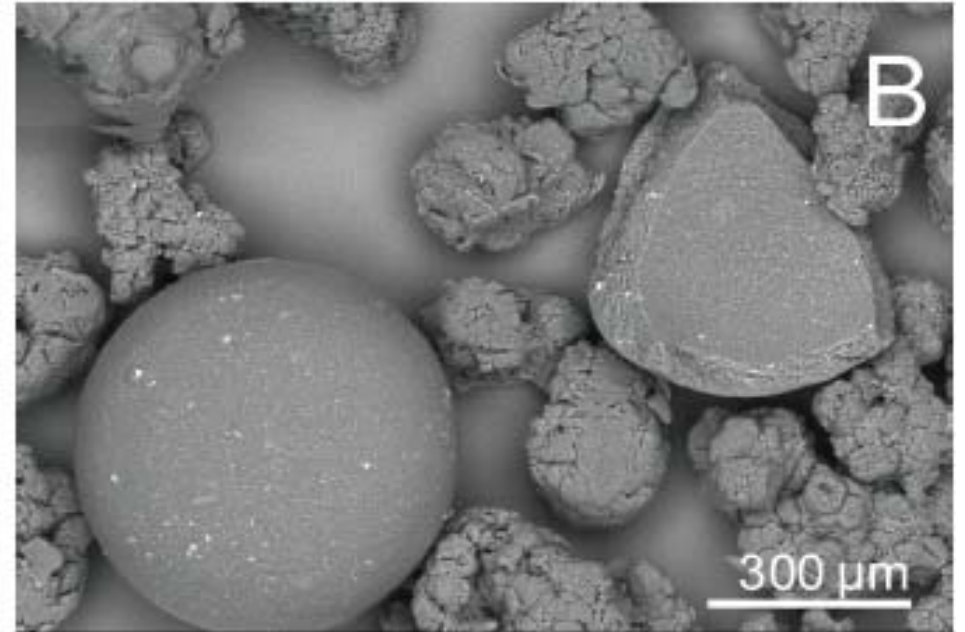
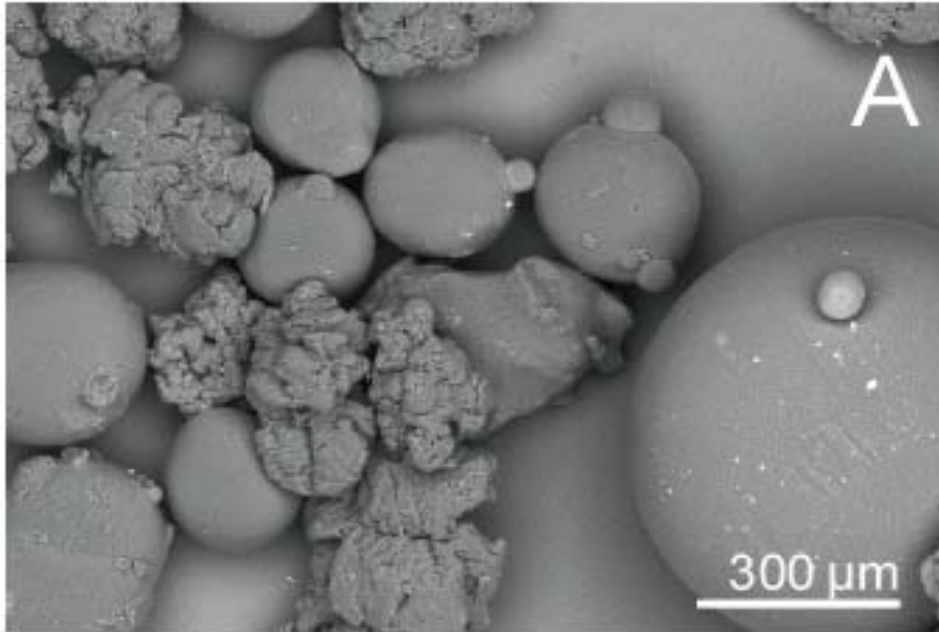
SU70 20.0kV 15.0mm x130 SE(M) 1/8/2013

400um



SU70 20.0kV 15.3mm x250 SE(M) 1/8/2013

200um

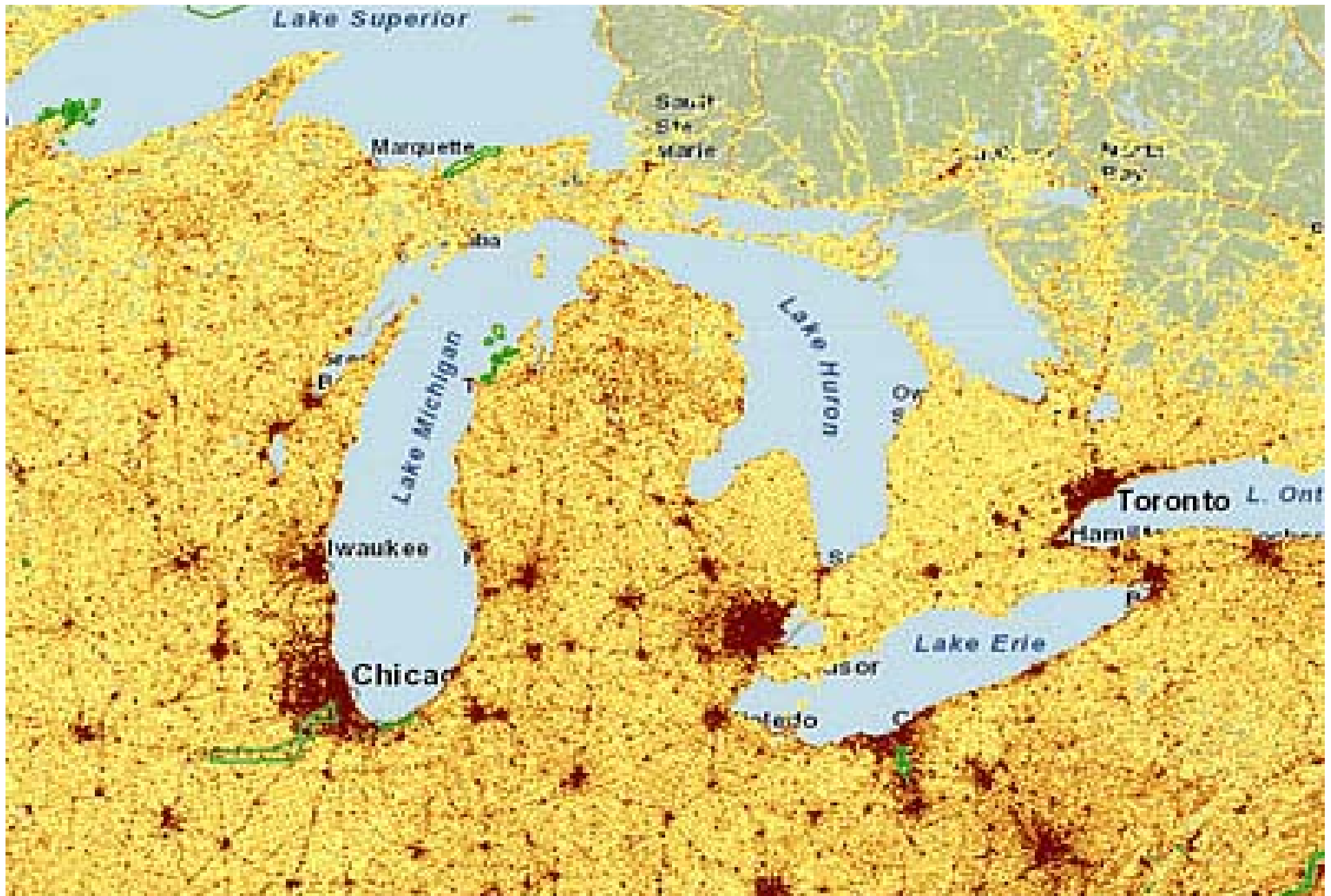


SOURCES of MICROPLASTICS

- Wastewater effluent
- Road abraded plastic
- Resuspension from beaches
- Product design

WASTEWATER EFFLUENT Overflow – Fertilizer - Filtration





Weighted road density in the Great Lakes region of the US and Canada
NP Scape (National Park Service) <http://science.nature.nps.gov/im/monitor/npscape/>

GENTLE

SCRUB

oil free

microbeads gently exfoliate,
Beta Hydroxy cleans deep into
pores for soft, smooth skin

Neutrogena®



SGYRES

Phase out problematic design

MICROBEAD CAMPAIGN



ARE YOU SCRUBBING YOUR FACE
WITH PLASTIC?

Polyethylene
Microbeads

Apricot
Shells

Cocoa
Beans



Alternative products are benign by design