



ERIE COUNTY LEGISLATURE

92 Franklin Street - 4th Floor
Buffalo, New York 14202

TO: Members of the Erie County Legislature

FROM: Karen M. McCarthy, Clerk

DATE: July 20, 2015

SUBJECT Documents Submitted for the Public Hearing on LL Intro. 8-2 (2015)

Please see attached

Thank you.



PERSONAL CARE PRODUCTS COUNCIL

July 20, 2015

Erie County Legislature
Old County Hall
92 Franklin Street
4th Floor
Buffalo, NY 14202

Re: Oppose - Local Law No. 8-2 (microbeads)

Members of the Erie County Legislature:

On behalf of the Personal Care Products Council (Council), we wish to oppose local law 8-2.

The Council is the leading national trade association representing the cosmetic and personal care products industry. The Council's more than 600 member companies manufacture, distribute, and supply the vast majority of finished personal care products marketed in the U.S. As the makers of a diverse range of products millions of consumers rely on every day, from sunscreens, toothpaste and shampoo to moisturizer, lipstick and fragrance, personal care products companies are global leaders committed to product safety, quality and innovation.

Many cosmetic and personal care product manufacturers have their corporate headquarters or manufacturing facilities located in New York. The industry contributes \$16 billion to the state's annual economy and \$4 billion to the state in taxes annually. The overall industry employs over 190,000 workers- including jobs in manufacturing, distribution and sales.

Microbeads are used in some personal care cleansing products because of their safe and effective exfoliating properties and excellent safety profile, as they present no adverse events such as allergic reactions. They are gentle on skin, especially for consumers with acne or sensitive skin conditions.

The industry makes decisions not only based on health and safety concerns, but also based on the potential environmental impact of our products. Council members voluntarily committed to discontinue formulating with microbeads in favor of other viable alternatives. Our members have elected to move ahead with reformulation ahead of any peer reviewed science.

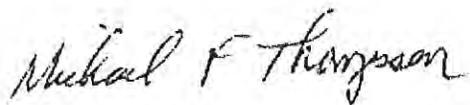
In 2014, a wide range of environmental, governmental and business stakeholders came together to negotiate phase out legislation in Illinois. All stakeholders supported the bill which passed both houses unanimously and was signed into law. The Illinois law was subsequently accepted by the Council of State Governments (CSG) Committee on Suggested State Legislation. In 2015, the CSG model language has become law in an additional seven states.

The CSG language provides clear definitions and adequate time for manufacturers of all sizes to reformulate with alternative ingredients that are safe for consumers, the environment, and meet all requirements of the Federal Food, Drug and Cosmetic Act.

The nation's personal care products companies are pleased to support efforts that demonstrate their longstanding commitment to the global stewardship of their products. Our industry remains firmly committed to producing products that are safe for consumers, their families, and the environment.

We appreciate your consideration of our views on this issue.

Sincerely,

A handwritten signature in cursive script that reads "Michael F. Thompson".

Michael F. Thompson, Senior Vice President of Government Affairs

July 17, 2015

Honorable Mark Poloncarz
Erie County Executive
Edward A. Rath County Office Building
95 Franklin Street, 16th Floor
Buffalo, New York 14202

Dear County Executive Poloncarz:

We, the undersigned, are writing to express our collective support for local law intro 8-2, a local law to ban the sale of plastic microbeads in personal care products in Erie County. Over the past decade, manufacturers of personal care products have been adding microplastic particles (microbeads) to products like facial scrubs, soaps, and toothpastes. Microbeads can range in size from about a millimeter to as small as a grain of sand, and the 5 Gyres Institute estimates that a single product may contain as many as 350,000 plastic microbeads.¹ Scientific studies demonstrate that these microbeads are polluting New York's waterways, including Lake Erie.

Products containing microbeads are *designed* to be washed down the drain. A report by the NYS Attorney General estimates that 19 tons of plastic microbeads can potentially enter the wastewater stream in NY annually.² Sewage treatments plants have not been designed to screen tiny microbeads. The NYS Attorney General recently studied 34 treatment plants across the state, and found that 74% were discharging microbeads. In Erie County, the study looked at the Southtowns Advanced WWTP, Town of Grand Island WWTP, Lackawanna WWTP, and Big Sister Creek WWTP, and found that all were discharging microbeads.³ Further, microbeads can enter into the environment through sewage overflows or by passing through septic systems.

Recent studies demonstrate that microbead pollution is a significant problem in New York's waters. In 2012, scientists found microbeads numbering more than 460,000 per square kilometer in Lake Erie.⁴ A subsequent study in 2013 found as many 1.1 million microbeads per square kilometer in Lake Ontario.⁵ Samples collected in November of 2014 have confirmed the presence of microbead pollution in other New York waters, including Cayuga Lake, Oneida Lake, the Erie Canal, Mohawk River,⁶ and Hudson River⁷.

Microbeads are pervasive in the environment, adsorb persistent organic pollutants (long-lasting toxic

¹ 5 Gyres Institute. "Microplastics in consumer products and in the marine environment" Position Paper, 2013. Available at http://5gyres.org/media/5_Gyres_Position_Paper_on_Microplastics.pdf

² Office of NYS AG Eric Schneiderman. "Unseen Threat: How Microbeads Threaten New York Waters, Wildlife, Health, and Environment." (2014) Available at http://ag.ny.gov/pdfs/Microbeads_Report_5_14_14.pdf.

³ New York State Office of the Attorney General. "Down the Drain: Microbeads in Western NY." (2015) Available at http://www.ag.ny.gov/pdfs/Western_NY_Combined.pdf

⁴ M Erikson et al. "Microplastic pollution in the surface waters of the Laurentian Great Lakes." *Marine Pollution Bulletin* 77.1-2 (2013): 177-182. Available at: <http://www.sciencedirect.com/science/article/pii/S0025326X13006097>.

⁵ Casler, Andrew. "Water contamination brings A.G. microbead ban proposal." *The Ithaca Journal*, Feb 19, 2015. Available at <http://www.ithacajournal.com/story/news/local/2015/02/19/state-ag-proposes-microbead-ban/23674637/>.

⁶ Ibid

⁷ Valentio, Steven. "The Hudson Is Full of Tiny Plastics. And You May Be Too." *WNYC News*, March 24, 2015. Available at <http://www.wnyc.org/story/microplastics-hudson/>

chemicals like DDT, PAHs, PCBs, and other industrial chemicals), and are consumed by a variety of aquatic life, including fish that are harvested for food. Microplastic particles have been found in fish⁸, marine mammals⁹, mussels¹⁰, and worms¹¹. Recently, it has been demonstrated that those toxins transfer to fish tissue.¹² Toxins can bioaccumulate and biomagnify up the food chain, with apex predators such as whales and humans potentially susceptible to the greatest accumulation of toxins.¹³

Plastic microbeads are not essential to personal care products. Safer, natural, non-polluting alternatives such as apricot shells and cocoa beans are used as abrasives in personal care products instead of plastic microbeads. Companies like Burt's Bees have never used plastic microbeads. Other companies, such as Procter & Gamble, Johnson & Johnson, L'Oreal, The Body Shop, Unilever, and Colgate/Palmolive have agreed to phase-out microbeads. While voluntary phase-outs are a good first step, some companies have not made a commitment to a phase-out deadline, while other companies remain unresponsive. Additionally, voluntary efforts will not ensure that companies will switch to a truly biodegradable and environmentally friendly alternative.

Local law 8-2 will ensure that all manufacturers phase-out the use of plastic microbeads in a timely manner. The law will also ensure that manufacturers are not merely switching to other non-biodegradable abrasives as a replacement, thereby continuing the cycle of damage to our environment.

Thank you for your consideration of this critically important law to protect the health of the Great Lakes and other waters in Erie County. If you have any questions, please feel free to contact Brian Smith of Citizens Campaign for the Environment at 831-3206.

Sincerely,

See attached list of organizations

cc: Honorable Patrick Burke, Erie County Legislator
Honorable John Mills, Erie County Legislature Chairman

⁸ C. Anela Choy, Jeffrey C. Drazen. Plastic for dinner? Observations of frequent debris ingestion by pelagic predatory fishes from the central North Pacific. *Marine Ecology Progress Series*. (2013)

⁹ Secretariat of the Convention on Biological Diversity and the Scientific and Technical Advisory Panel—GEF (2012). *Impacts of Marine Debris on Biodiversity: Current Status and Potential Solutions*, Montreal, Technical Series No. 67, 61 pages.

¹⁰ Cole, M., et al. Microplastics as contaminants in the marine environment: A review. *Mar. Pollut. Bull.* (2011)

¹¹ Browne, M.A., Niven, S.J., Galloway, T.S., Rowland, S.J., & Thompson, R.C. (2013). Microplastic moves pollutants and additives to worms, reducing functions linked to health and biodiversity. *Current Biology*, 23, 2388-2392.

¹² C. Rochman, et al. "Ingested plastic transfers hazardous chemicals to fish and induces hepatic stress." *Scientific Reports* 3 (2013). Available at: <http://www.nature.com/srep/2013/131121/srep03263/full/srep03263.html>.

¹³ U.S. Environmental Protection Agency. "Persistent Organic Pollutants: A Global Issue, A Global Response." Available at: <http://www.epa.gov/international/toxics/pop.html#affect>.

Nate Drag
Watershed Project Coordinator
Alliance for the Great Lakes

Loren Smith
Executive Director
Buffalo Audubon Society

Jill Jedlicka
Executive Director and Riverkeeper
Buffalo Niagara Riverkeeper

Brian Smith
Associate Executive Director
Citizens Campaign for the Environment

Chuck Godfrey
President
Erie County Federation of Sportsmen's Clubs, Inc.

Antoinette Grote
President
WNY Chapter of NY Trout Unlimited

Ryan McPherson
Chair
Western New York Environmental Alliance



ERIE COUNTY WATER QUALITY COMMITTEE

C/O ERIE COUNTY SOIL & WATER CONSERVATION DISTRICT
50 COMMERCE WAY

EAST AURORA, NEW YORK 14052

(716) 652-8180

(716) 652-8506 FAX

*A multi-organizational team to protect and enhance the water resources
of Erie County*

July 16, 2015

Chairman John J. Mills
Erie County Legislature
92 Franklin Street, Fourth Floor
Buffalo, N.Y. 14202

RE: Local Law Intro. 8-2 (2015) A Local Law in relation to prohibiting the sale of personal cosmetic products containing microbeads in Erie County.

Dear Legislator Mills:

The Erie County Water Quality Committee represents municipalities and stakeholders working together in the interest of protecting and enhancing Erie County's water resources. Through the years, the Committee has worked together to address water quality issues including failing infrastructure, non-point source pollution, and habitat restoration.

The Committee has been closely following the research on microbeads in the environment and fully supports the local law referenced above in relation to prohibiting the sale of personal cosmetic products containing microbeads in Erie County. The necessary upgrades to wastewater treatment plants would be too costly for the region. Discouraging the use of these harmful products is a more immediate solution to the problem that is negatively impacting aquatic wildlife and may potentially negatively impact the citizens of Erie County.

We encourage the adoption of this local law in order to safeguard Erie County's waterways. We need strong leadership to take action on this important issue and hope that Erie County's lead will pave the way for a statewide ban on microbeads in the near future.

Sincerely,

Leonard K. Pero, Chairman
Erie County Water Quality Committee

Good morning, my name is Jennifer Nalbone, Environmental Scientist in Attorney General Eric Schniederman's Buffalo office and I am speaking in support of the Erie County legislation banning microbeads in personal care products.

Right now, the lasting health of our waters is threatened by a little-known form of plastic pollution, called microbeads. The Attorney General is working to address this threat through the introduction of state legislation, the "Microbead-Free Waters Act" to prohibit the sale in New York of personal care and cosmetic products, like face scrubs, body scrubs and toothpaste, that contain tiny plastic particles less than 5 millimeters in size. Unfortunately, the 2015 New York State session concluded without seeing this important legislation passed.

When products containing microbeads are used in the home by unsuspecting citizens, the plastic abrasives are rinsed down the drain and into our sewer systems – in a 2014 OAG report we determined that almost 19 tons of microbeads are rinsed down the drain annually across New York State, over 1,700 pounds annually in Erie County alone. In 2015 we released a first-of-its-kind study documenting that sewage treatment plants across the state are not designed to filter out microbeads, and microbeads were subsequently slipping past treatment at 74% of the facilities participating in the study. All 4 participating facilities from Erie County are inadvertently releasing microbeads into Lake Erie and the Niagara River during normal operations.

We know that environmental pollution found in Great Lakes waters, such as PCBs, gravitate and attach to the surface of plastic. The National Oceanic and Atmospheric Association states that plastic can accumulate PCBs up to a million times more than the levels they are found in water. And if fish and wildlife at the base of the food chain eat contaminated plastics, the chemicals can be passed up the food chain on to larger birds and the fish that people eat.

But fortunately we can stop this problem before it gets any bigger. We don't need plastic in our personal care and cosmetic products. Not in our fish, or the recovering Buffalo River, Lake Erie or the Niagara River. Prevention is the best defense we have, and the Office of the Attorney General applauds your effort to ban microbeads at the county level. We also thank you for your support the Microbead Free Waters Act, which will make New York State a model for the nation, and just this morning Attorney General Schniederman stood with New York State Senator Kirsten Gillibrand as she announced federal efforts to do the same. Leadership on the local and state level is critical to moving towards a phase out of these harmful and unnecessary plastic abrasives nationally and even worldwide, and a transition to safe and effective alternatives.

Thank you for the opportunity to speak before you today. I've attached to my statement copies of the OAG report, *Unseen Treat: How Microbeads Harm New York Waters, Wildlife, Health and Environment*, documenting the science behind this form of plastic pollution, as well as the OAG study *Discharging Microbeads to Our Waters: An Examination of Wastewater Treatment Plants in New York*. Both documents lay the solid foundation for decisive legislative action on local, state, and federal level.

For more information please contact the NYS Attorney General's Buffalo Regional Office:

- Jennifer Nalbone, Environmental Scientist, Environmental Protection Bureau, Ph: (716) 853-8417; email: Jennifer.Nalbone@ag.ny.gov
- Joseph Malczewski, Intergovernmental Affairs Liaison, Ph: (716) 853-8488; email: Joseph.Malczewski@ag.ny.gov

Discharging Microbeads to Our Waters:

An Examination of Wastewater Treatment Plants in New York



NEW YORK STATE OFFICE

of the

**ATTORNEY
GENERAL**

April 2015



Acknowledgements

The Office of Attorney General Eric T. Schneiderman performed this study through its Environmental Protection Bureau. The study was led by Environmental Scientist Jennifer Nalbone. The Office of the Attorney General extends its appreciation to all participants who made this study possible.

The Environmental Protection Bureau of the New York State Attorney General's Office works to protect New York's environment and public health by vigorously enforcing both the State's and Nation's environmental laws. If you are aware of any activities or conditions which may violate environmental laws or significantly harm the environment, please call the New York State Office of the Attorney General's Environmental Protection Bureau at (518) 776-2400.

Executive Summary

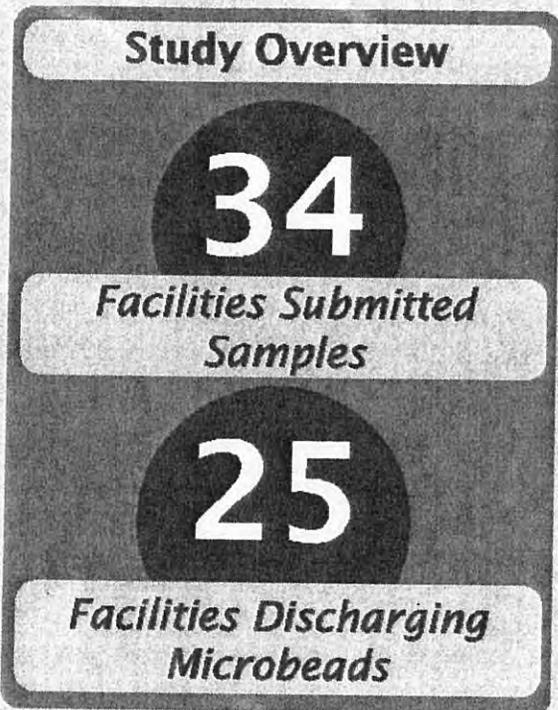
In late 2014, the Office of the Attorney General ("OAG") initiated a study to determine whether plastic microbeads, small plastic abrasives commonly found in personal care products, are being discharged from sewage and wastewater treatment facilities ("treatment plants") into waters across the state.

With assistance from the State University of New York at Fredonia, the New York Water Environment Association, and operators at 34 municipal and private treatment plants located across the state, the OAG study confirms that microbeads are passing through treatment plants and entering New York waters.

The OAG detected microbeads in the effluent samples from 25 of the 34 treatment plants participating in this study, suggesting that microbeads are being discharged at the majority of treatment plants operating across New York State. As such, the study provides evidence that microbeads are released into numerous waterbodies across the state including the Great Lakes, the Finger Lakes, Lake Champlain, Hudson River, Mohawk River, Delaware River, Long Island Sound and the Atlantic Ocean.

An estimated six percent of plastic microbeads used in personal care products are easily-identifiable spherical or speckled microbeads, while the overwhelming majority are irregular microbeads. As this study used only spherical and speckled microbeads to verify microbeads in effluents, the results suggest that irregular microbeads are also passing through treatment plants. For this reason, the true contribution of microplastic pollution from personal care products to surface waters is likely under-represented by the abundance of spherical microbeads alone.

Treatment plants are not designed to remove microbeads from the wastewater stream, and treatments potentially effective at removing microbeads are unproven. Even if effective treatment technologies are found to be available, the potential cost and time necessary to retrofit wastewater treatment plants with such technology is likely to be substantial. Prevention of use in personal care products is a more efficient approach to address the emerging problem of microbead pollution in New York's waters.



What are Microbeads?

Microbeads are microplastic particles, usually less than one millimeter ("mm") in diameter, produced for use as abrasives in personal care products such as toothpaste and face and body scrubs. While the term "microbead" may conjure an image of a tiny, colorful, perfectly spherical plastic bead, the personal care product industry uses the term to describe any plastic particle, regardless of size, shape or color, added to personal care products for use as an abrasive. Microbeads vary in size, with a median ranging from 0.2 to 0.4 mm in scrubs,¹ while those found in toothpaste are about 100 times smaller, around 2 to 5 micrometers in size.²

Most of the microbeads used in personal care products are fragments, not easily identifiable spheres or speckled pieces. In fact, spherical or speckled microbeads averaged less than six percent of the microbeads found in 16 different personal care products examined, according to data from the State University of New York at Fredonia ("SUNY Fredonia").³ Using data from these 16 products as an industry proxy, this means, of the 19 tons of microbeads washed down New York drains annually, about 1.1 tons (6%) are the easily identified spherical or speckled microbeads. The remaining microbeads in personal care products are the irregular microbeads (see Figure 1) resembling "angular quartz grains"⁴ that are difficult to distinguish from microplastic pieces originating from the breakdown of larger plastic products. To date, the attribution of microplastic pollution to personal care products is based upon finding "multi-colored spheres" less than 1 mm in diameter in environmental samples.⁵ The abundance, distribution, and fate of irregular microbeads in the environment has not yet been examined.

Figure 1: Types of Microbeads

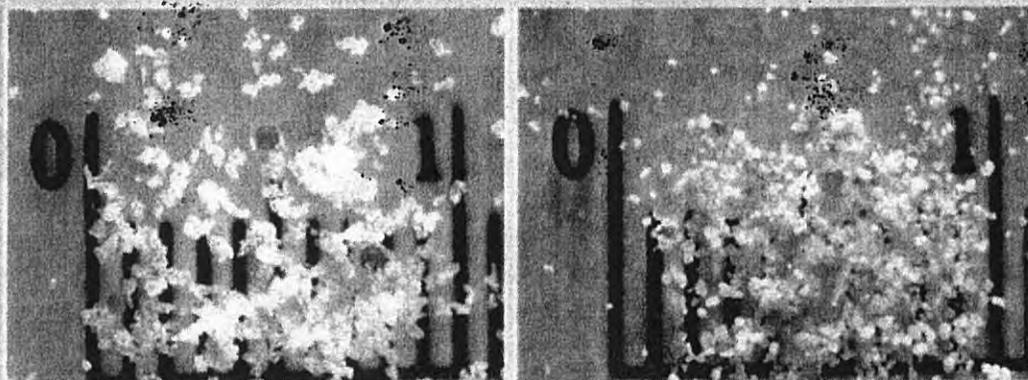


Photo Credit: OAG

Scale: 10 millimeters

These photographs highlight two different facial scrubs with the three distinct types of microbeads commonly found in personal care products:

- *Irregular* - the irregular, opaque microbeads shown in both photos.
- *Spherical* - the larger, blue and round microbeads, as shown in the photo on the left.
- *Speckled* - the larger, pink and uniformly speckled microbeads, as shown in the photo on the right.

When personal care products containing microbeads are used by the consumer, microbeads are washed down bathroom drains into the sewage collection system on route to treatment plants. From there, the widely held assumption is that many pass through the treatment plants and discharge with the post-processing effluent into a receiving surface water.⁶ These facilities are designed to capture and treat sewage, not microbeads. The OAG's 2014 report on microbeads – *Unseen Threat: How Microbeads Harm New York Waters, Wildlife, Health And Environment* – reviewed 610 New York State wastewater treatment plants and found only one-third employ advanced treatment technologies - tertiary screens and filters - that may be effective at removing microbeads, suggesting some microbeads were passing through most of the facilities across the state.^{7,8}

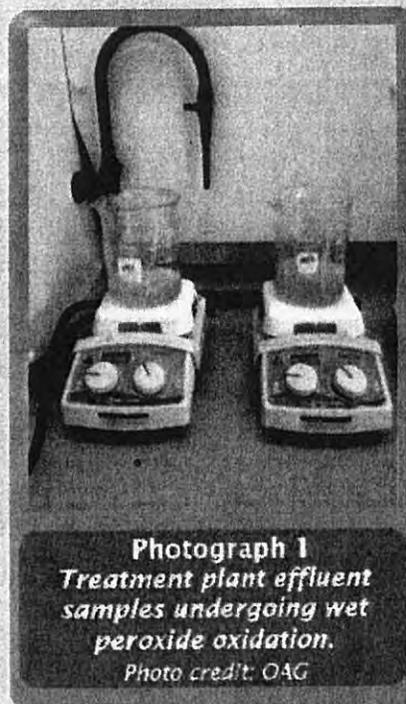
When microbeads enter bodies of water, they can persist for decades, accumulating toxic chemical pollutants on their surface, and transporting pollutants as they float with currents. When mistaken for food by small aquatic organisms, microbeads may serve as a pathway for pollutants to enter the food chain and contaminate the fish and wildlife, including fish and wildlife we eat.⁹ High counts of spherical microbeads were initially found in the New York open waters of Lake Erie¹⁰ and Lake Ontario¹¹ in 2012 and 2013. They have subsequently been found in the open waters of Cayuga Lake, Oneida Lake, Erie Canal, and Mohawk River¹² and St. Lawrence River sediments.¹³

Wastewater Treatment Plant Effluent Sampling and Analysis Methods

In September 2014, the New York Water Environment Association¹⁴ notified member treatment plant operators of the OAG study and asked them to participate. Operators from treatment plants supplied post-processing effluent samples for this study between October 2014 and January 2015. The range of volumes of wastewater treated and the types of advanced treatment unitized by treatment plants that participated in the study are similar to the range of facilities found across New York State as outlined in the 2014 OAG report. Ten of the facilities (29 percent of participants) use an advanced filter that may be effective at removing microbeads. The volume of wastewater treated at the facilities ranged, on average, from 30 thousand to 92 million gallons per day.

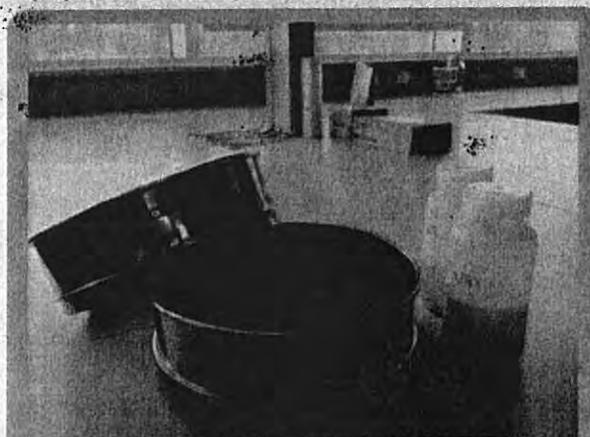
Dr. Sherri Mason, Professor of Chemistry at SUNY Fredonia, developed a sampling protocol based on a National Oceanic and Atmospheric Administration ("NOAA") sampling protocol entitled "Laboratory Methods for the Analysis of Microplastics in Wastewater Treatment Plant Effluent." In addition to the sampling protocol, participating treatment plant operators were also provided an eight-inch diameter, 0.355 mm Tyler sieve and three sample bottles. Participating operators collected between one and three post-processing effluent samples from a sampling port, or from an effluent pipe, well or flume using pump and tube equipment. Post-processing effluent is treated wastewater obtained after all processing has occurred, but just prior to being released into the receiving water body. Participating operators collected the samples through a sieve at a recommended flow rate of approximately 10 to 20 liters per minute, with the sieves left in place between 2 to 24 hours. For each sample, all contents collected on the sieve were transferred into one clean sample container.

The treatment plants mailed their samples to SUNY Fredonia for analysis. Under the oversight of Dr. Mason, the samples were processed and analyzed using an established laboratory methodology based on microplastic surveys conducted in the oceans and the Great Lakes.^{15,16,17,18}



Photograph 1
Treatment plant effluent samples undergoing wet peroxide oxidation.

Photo credit: OAG



Photograph 2
A small portion of treatment plant post-treatment effluent is sieved at the facility and sent to SUNY Fredonia for analysis.

Photo credit: OAG



Photograph 3
*SUNY Fredonia student technician
looks for microbeads in a pro-
cessed sample under a dissecting
microscope.*

*Photo credit: Dr. Sherri Mason,
SUNY Fredonia*

Excess water and organic material in the sample was removed using wet peroxide oxidization. Microplastic pieces remaining in the sample were then removed physically with the help of a dissecting microscope. To confirm the passage of microbeads through treatment plants, this study only used spherical and speckled microbeads detected in effluent samples, rather than trying to also include irregularly shaped microbeads to avoid possible confusion with irregularly shaped fragments from other sources. Identification of spherical and speckled microbeads was performed by comparing size, texture and shape of microbeads removed from the effluent samples to microbeads obtained directly from various personal care products. Spherical and speckled microbeads collected from effluent samples were also verified as being of the same chemical composition (polyethylene) as those obtained directly from personal care products using a Bruker Alpha FT-IR spectrometer.

Study Results

The New York Wastewater Treatment Plant Microbead Study detected microbeads in samples of post-processing effluent from wastewater treatment plants located across New York State. Spherical and speckled microbeads, as shown in Figure 2 below, were detected in 25 of 34 (74%) of the sampled treatment plants. A map and full list of the studied treatment plants are found in Figure 3 and Table 3.

While collection and analysis of irregular microbeads was not a goal of this study, microplastics closely resembling irregular microbeads were detected in effluent samples.

Figure 2: Microbeads from Treatment Plants

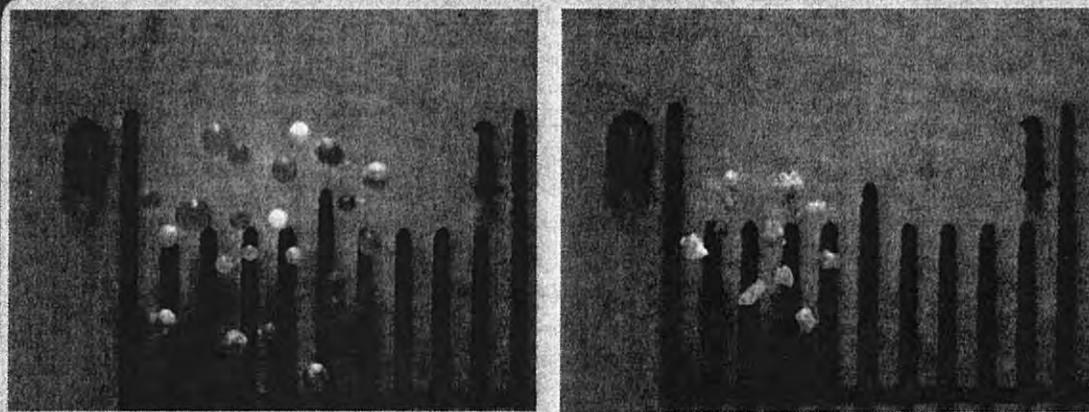


Photo Credit: OAG

Spherical (left) and speckled (right) microbeads were collected from the effluent samples of participating treatment plants and verified as the same size, shape and chemical composition as spherical and speckled microbeads removed from personal care products.

The study did not verify microbeads in the effluent at nine of the 34 facilities sampled. Of these nine facilities, six employ a form of advanced filtration that may increase efficacy of microbead removal from the wastewater stream. These include treatment units classified as membrane microfiltration, continuous backwash upflow dual sand (CBUDS) microfiltration, and rapid sand filters. The nine facilities were predominantly smaller in size, with the largest self-reporting an average annual flow rate of 16 million gallons per day. Of the 25 facilities where microbead release was verified, four did employ an advanced treatment unit that may increase efficacy of microbead removal, such as a rapid sand filter, continuous backwash sand filter, or unspecified type of tertiary filtration. See Table 1 below for an overview of treatment plant results and Table 2 for a list of results from facilities using advanced filters.

Table 1:
Treatment Plant Results by Size, Microbead Detection and Advanced Treatment Use.

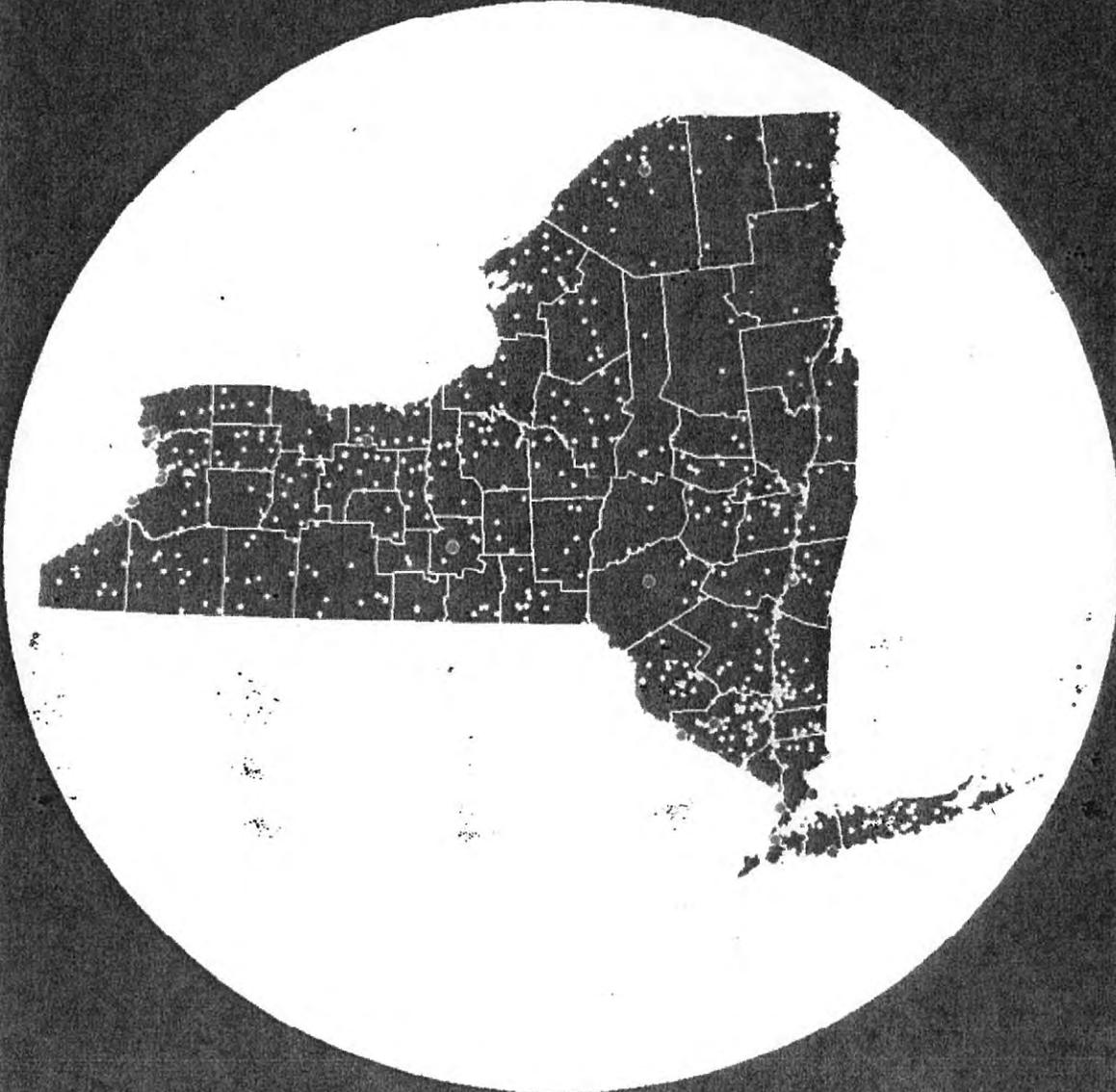
Treatment Plant Design Size (Gallons/day)	Number of Treatment Plants in NYS*	Plants Participating in OAG Study	Plants with Microbeads Detected in Effluent	Advanced Filter in Use	Microbeads Detected in Effluent with Advanced Filter in Use
0 - 100,000	178	4	1	2	0
101,000 - 1,000,000	251	9	5	4	1
1,001,000 - 10,000,000	132	13	11	2	1
10,001,000 - 100,000,000	39	7	7	2	2
100,001,000 - 999,000,000	10	1	1*	0	0
TOTAL	610	34	25	10	4

Table 2:
Filter treatment units as reported by participants of this study, as listed by categories defined by the NYS DEC report, *Descriptive Data of Municipal Wastewater Treatment Plants*.

Treatment Unit	Plants Sampled in OAG Study and Microbeads Detected	Plants Sampled in OAG Study and Microbeads not Detected
<i>Filtration, unspecified</i>	2	-
<i>Microfiltration (CBUDS)</i>	-	3
<i>Microfiltration (Membrane)</i>	-	2
<i>Rapid Sand (High Rate) Filters</i>	1	1
<i>Continuous Backwash Sand Filter</i>	1	-

Figure 3: Sampled Locations where Microbeads were Detected

Microbeads were detected in the effluent samples provided by treatment plants denoted by the green dots. Out of 34 participating facilities, a total of 25 had microbeads present in the samples submitted. The gray dots on the map are locations of over 600 untested treatment plants across the state.



The detection of microbeads in effluent samples from 25 treatment plants confirms that microbeads are being released into numerous waterbodies across the state, including into the Great Lakes, Finger Lakes, Lake Champlain, Hudson River, Mohawk River, Delaware River, Long Island Sound and the Atlantic Ocean. Refer to Table 3 for a complete list of results by facility, county and receiving waterbody.

Conclusion

The OAG study detected microbeads in small samples of post-processing effluent from wastewater treatment plants located across New York State. Microbeads were detected in samples submitted by 25 of the 34 participating treatment plants (74 percent), and suggests that microbeads from personal care products are passing through the majority of the additional 600+ untested wastewater treatment plants operating across New York State.

Microbead release was confirmed only if spherical or speckled microbeads were detected in treatment plant effluent. These easily identifiable microbeads make up only six percent of the microplastic particles used in personal care products. The discovery of spherical and speckled microbeads in effluent samples strongly suggests irregular microbeads from personal care products are also passing through treatment plants, and these products' total contribution of microplastic pollution to the environment is likely under represented by the abundance of spherical microbeads collected in open-water surveys.

The absence of spherical or speckled microbeads in the one-time samples from nine treatment plants is not conclusive evidence that all microbeads are captured at those facilities during wastewater processing. Factors such as possible temporal fluctuation in microbead concentrations in effluent, the potential for some specific primary or secondary treatments to capture microbeads, or samples taken at the bottom of effluent pools where microbeads may be floating at the surface, could contribute to the reasons why microbeads were not found. Our results also indicate the absence of microbeads in discharges from some facilities may be explained by the use of an advanced filter more commonly used by facilities treating relatively small volumes of water. This finding, however, is based on limited sampling and a small dataset and should be considered preliminary.

Treatment plants are not designed to remove microbeads from the wastewater stream, and treatments potentially effective at removing microbeads are unproven. Even if effective treatment technologies are found to be available, the potential cost and time necessary to retrofit wastewater treatment plants with such technology is likely to be substantial. Prevention of use in personal care products is a more efficient approach to address the emerging problem of microbead pollution in New York's waters.

Table 3: Results of Sampling from Wastewater Treatment Plants

Microbeads were detected in the samples submitted by facilities with a ✓ below.

Microbeads	Treatment Plant Facility	County	Receiving Waterbody
✓	Albany County Sewer District	Albany	Hudson River
✓	Mohawk View Water Pollution Control Plant	Albany	Mohawk River
	Village of Endicott Water Pollution Control Plant	Broome	Susquehanna River
✓	Village of Silver Creek Treatment Plant	Chautauqua	Lake Erie
✓	City of Hudson Wastewater Treatment Plant	Columbia	Hudson River
✓	Village of Delhi Wastewater Treatment Plant	Delaware	West Branch of the Delaware River
	Town of Andes Sewer District	Delaware	Tremper Kill
	Village of Walton Sewage Treatment Plant	Delaware	West Branch of the Delaware River
	Erie County Sewer District No. 3 – Southtowns Advanced Wastewater Treatment Plant	Erie	Lake Erie
✓	Town of Grand Island Wastewater Treatment Plant	Erie	Niagara River
✓	Erie County Sewer District No. 6 – Lackawanna Wastewater Treatment Plant	Erie	Smokes Creek, tributary to Lake Erie
✓	Erie County Sewer District No. 2 – Big Sister Creek Wastewater Treatment Plant	Erie	Big Sister Creek, tributary to Lake Erie
✓	Village of Lake Placid Sewage Treatment Plant	Essex	Chubb River, tributary to the Ausable River
✓	Town of Westport Wastewater Treatment Plant	Essex	Lake Champlain
	Village of Chateaugay Wastewater Treatment Plant	Franklin	Chateaugay River
	Village of Hunter Wastewater Treatment Plant	Greene	Schoharie Creek
	Town of Windham Wastewater Treatment Plant	Greene	Batavia Kill
✓	Village of Athens Wastewater Treatment Plant	Greene	Hudson River
✓	Newtown Creek Water Pollution Control Plant	Kings	East River
✓	Frank E. VanLare Wastewater Treatment Plant	Monroe	Lake Ontario
✓	Northwest Quadrant Wastewater Treatment Plant	Monroe	Lake Ontario
✓	Cedar Creek Water Pollution Control Plant	Nassau	Atlantic Ocean
✓	Niagara County Sewer District No. 1	Niagara	East Branch of the Niagara River
✓	City of Middletown Wastewater Treatment Plant	Orange	Wallkill River
✓	Port Jervis Sewage Treatment Plant	Orange	Neversink River
	Villa Roma Resort & Conference Center	Sullivan	Jones Brook
✓	Village of Potsdam Water Pollution Control Plant	St. Lawrence	Raquette River
✓	Ithaca Area Wastewater Treatment Facility	Tompkins	Cayuga Lake
	Lake Mohonk Mountain House	Ulster	Tributary to Coxing Kill
	Pine Hill Wastewater Treatment Plant	Ulster	Birch Creek
✓	City of Glens Falls Wastewater Treatment Plant	Warren	Hudson River
✓	Village of Palmyra Wastewater Treatment Plant	Wayne	Erie Canal
✓	Westchester County DEF- Yonkers Joint	Westchester	Hudson River
✓	Westchester County DEF- Port Chester Wastewater Treatment Plant	Westchester	Long Island Sound

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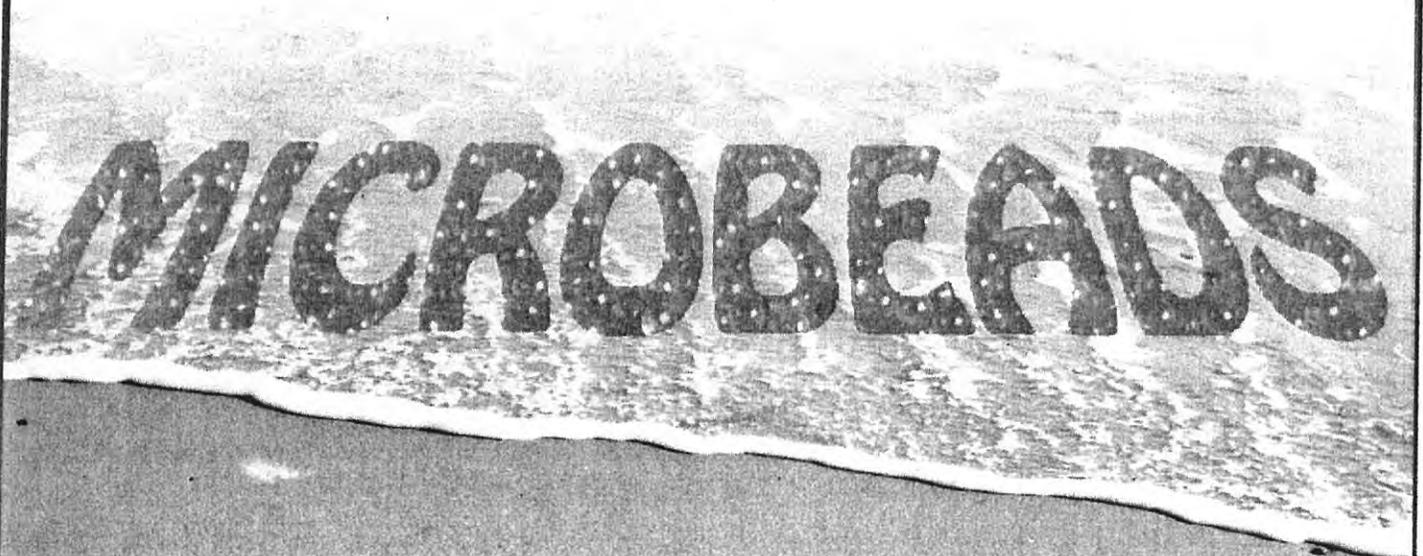
Unseen Threat:

How Microbeads Harm New York Waters, Wildlife, Health And Environment



From the Office of:

New York State Attorney General
Eric T. Schneiderman



EXECUTIVE SUMMARY

New York waters are being polluted with microbeads: tiny plastic beads produced for use as abrasives in cosmetics and personal care products. Buoyant, multicolored and often spherical, these plastic microbeads are washed down bathroom sinks, pass through wastewater treatment plants, and end up discharged into New York's waters. In our waters, microbeads persist for decades, acting as sponges for toxic chemical pollutants. Mistaken for food by aquatic organisms, microbeads serve as a pathway for pollutants to enter the food chain and contaminate the fish and wildlife we eat.

The most effective way to address this problem is at the source—the consumer products that contain microbeads. Fortunately, plastic is not an essential ingredient in cosmetics and personal care products and several major producers have already committed to replacing plastic abrasives with natural alternatives to address this new source of pollution. Attorney General Schneiderman's "Microbead-Free Waters Act" will ensure the entire industry follows suit. In fact since introduction of the Microbead-Free Waters Act, one of the largest cosmetics companies in the country has announced that it will replace plastic microbeads in its products with natural alternatives such as minerals and ground seeds.

By prohibiting the sale of cosmetic or personal care products containing microbeads in New York, Attorney General Schneiderman's Microbead-Free Waters Act will protect New York's fish and wildlife, and help safeguard New York's long-standing efforts to protect and enhance its water resources.

Part 1 –MICROBEADS IN OUR WATERS

A. Microbeads: A New Threat

In the 80 years since the start of its commercial production,¹ plastic has become an integral part of our daily life. With its tremendous range of uses, from the construction of homes, to health-care, food preservation, transportation, and communication, annual global plastic production has continuously grown from 1.9 million tons in the 1950s to 317 million tons in 2012.² Many of the desirable properties of plastic—low cost, durability, and corrosion resistance—also contribute to the rate at which it is consumed, discarded and is accumulating in our environment.

Plastic has become a ubiquitous symbol of pollution across the globe in the form of recognizable objects, such as detergent bottles washed up on the shore, or supermarket bags and six-pack rings entangling wildlife. Today, our waters are facing a new threat from a lesser-known and much smaller form of plastic pollution known as microplastic. Microplastic is plastic smaller than 5 millimeters, whether intentionally manufactured to be that size or as a result of the fragmentation and breakdown of larger plastic products.³

The cosmetic and personal care product industry uses intentionally manufactured microplastic in products that are designed, when used as intended, to be disposed into municipal sewer systems without regard to our ability to recover, recycle, or otherwise prevent the tiny plastic beads from entering the environment. This industry manufactures products that New Yorkers

use every day containing microplastic used as abrasives, and marketed as “microbeads.” Microbeads are virtually indestructible, often perfectly spherical, multicolored, buoyant, and typically much smaller than 5 millimeters—making them quite distinct from other plastic found in the environment. Unsuspecting consumers discharge these tiny pieces of unrecoverable plastic into New York waters via the bathroom drain when they wash off products—such as facial scrubs, soaps, and toothpastes—that contain microbeads.⁴

B. The Problem of Plastic Microbeads in New York’s Great Lakes



Manta trawl deployed during the first-ever Great Lakes survey to examine plastic pollution in the Great Lakes.

(Photo credit: Dr. S.Mason, SUNY Fredonia)

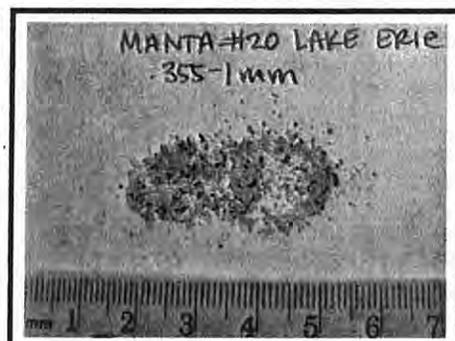
Until recently, research on the magnitude of plastic pollution in the Great Lakes had been sparse, consisting of limited surveys of beaches and shorelines for large plastic litter. Beginning in 2012, a research team that included scientists from the State University of New York at Fredonia and The 5 Gyres Institute⁵, began sampling Lakes Superior, Huron, and Erie to more thoroughly understand the scope of plastic pollution in the Great Lakes.

The 2012 Great Lakes survey revealed that the Great Lakes have some of the highest concentrations of microplastic found in the environment, and microbeads were prevalent.

To examine the Great Lakes for plastic pollution, the researchers modeled their investigations on previous surveys conducted in the Atlantic and Pacific Oceans which examined massive “garbage patches”⁶ of small plastic pieces collecting in ocean gyres⁷ far off the coastline. The Great Lakes researchers collected 21 samples using a mesh collector called a “manta trawl,” capable of collecting debris floating on the surface of the water greater than 0.355 millimeter (mm) in size. The manta trawl was dragged behind the research vessel and time and travel speed were monitored so that estimates of plastic concentrations could be made. As the abundance of microplastic is related to the

opening size of the mesh collector,⁸ open water surveys likely underestimate the concentration of the smallest pieces of microplastic present.

Back in the laboratory, non-plastic materials, such as ash, vegetation and algae, were removed from the samples and remaining pieces were verified as plastic. The plastic was sifted, classified, and quantified by size and type and the resulting concentrations were calculated for each sample taken. After noting high counts of what the researchers called microplastic “pellets” in the Great Lakes samples, two national brands of facial cleansers containing polyethylene microbeads were sifted and examined. The spherical microbeads within these products were compared to the spherical pellets from the open water samples, and the latter were identified as microbeads due to similar shape, size, color and elemental composition.⁹



Microbeads collected from New York waters of Lake Erie in 2012.

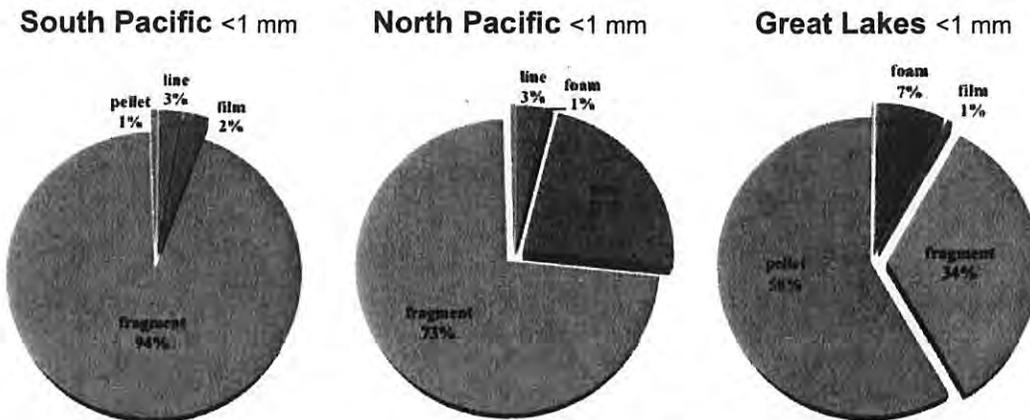
(Photo credit: Dr. S. Mason, SUNY Fredonia)

The concentrations of microplastic from the Great Lakes rivaled the highest concentrations of microplastic collected from the world's ocean garbage patches. A comparison of average and high concentrations from surveys performed across the North Pacific, South Pacific, and North Atlantic subtropical gyres, is presented in the table below. New York's Lake Erie waters accounted for the vast majority of plastic collected in the 2012 Great Lakes survey.

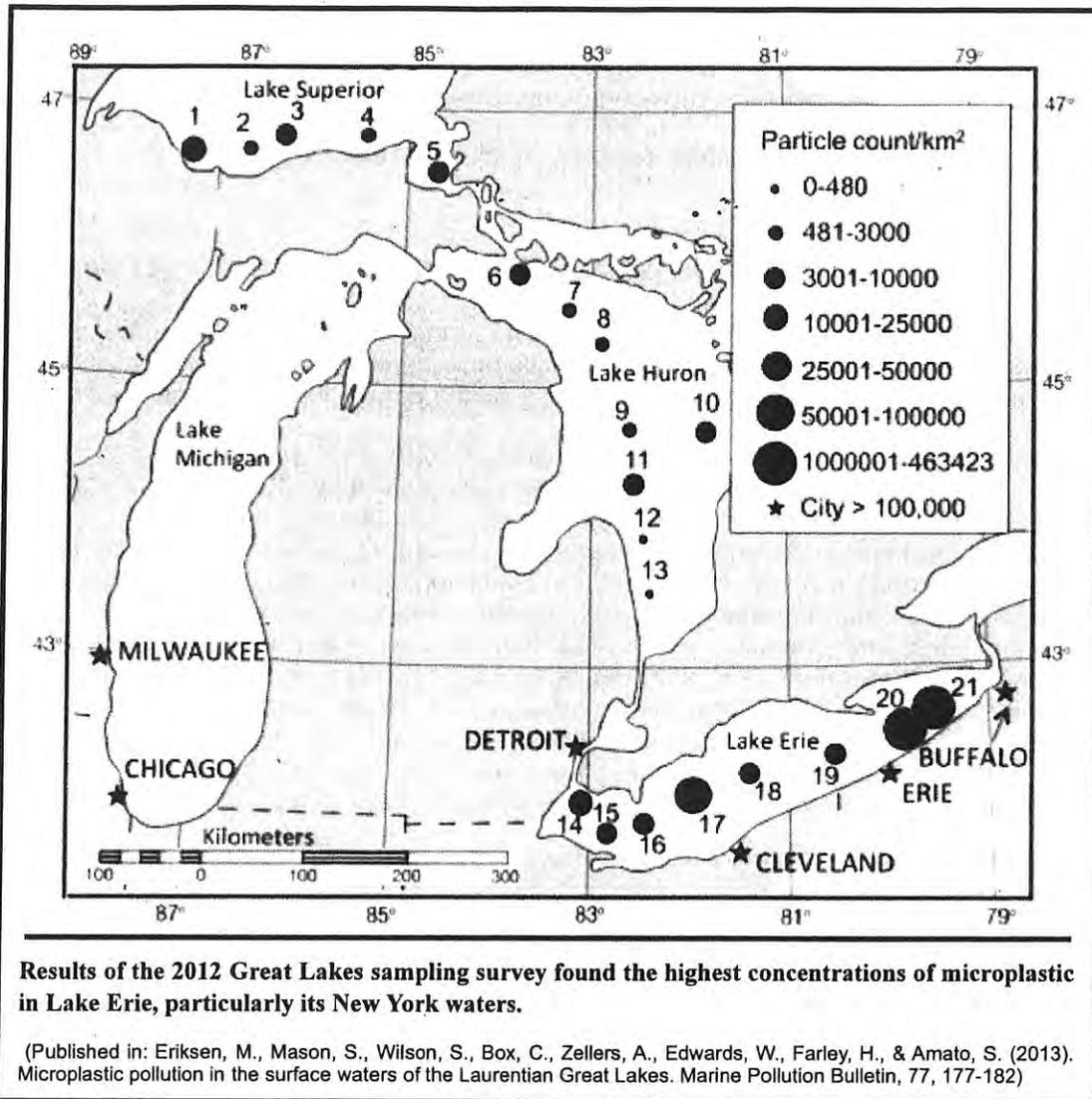
In both the Great Lakes and Pacific gyres, virtually all of the plastic collected was microplastic under 4.75 mm in size. However, as seen the table below, the size of microplastic differed, with most of the Great Lakes microplastic being particularly small—less than 1 mm in size—compared to the Pacific gyres.

Sampling area	Highest concentration (pieces per sq. km)	Average concentration (pieces per sq. km)	Percent microplastic <4.75mm	Percent microplastic <1mm
South Pacific Gyre ¹⁰	396,342	26,898	91%	35%
Great Lakes ¹¹	466,305	43,157	98%	81%
North Atlantic Gyre ¹²	580,000	20,328	n/a	n/a
North Pacific Gyre ¹³	969,777	334,271	93%	53%

Microbeads dominated the Great Lakes samples. Fifty-eight percent of all microplastic less than 1 mm collected in the Great Lakes was spherical, compared to less than one percent in both the North Pacific and South Pacific subtropical gyres. Most microplastic less than 1mm in the North and South Pacific subtropical gyres was a fragment (73 percent and 94 percent respectively), as shown in the diagrams below.



To confirm and expand upon their 2012 findings, SUNY Fredonia researchers led surveys in 2013 and collected 91 manta trawl samples from Lakes Michigan, Erie and Ontario. Preliminary results confirm high concentrations of microbeads collected from New York's waters; in the 2013 samples, the abundance of microplastic fragments increased in relation to microbeads, but microbeads continue to be detected in significant amounts. SUNY Fredonia researchers are now examining whether concentrations of microbeads in relation to microplastic fragments are higher in samples taken closer to shore compared to further offshore.¹⁴



C. The Risks Posed by Microbeads in New York's Waters

Scientists project that plastic can persist in the environment for centuries.¹⁵ Numerous studies have documented the occurrence of plastic debris in the environment and its physical and toxicological effects on aquatic organisms from ingestion. Meanwhile, microplastic concentrations in aquatic environments are increasing rapidly.¹⁶ This accumulation of microplastic is of particular concern because microplastic has the potential to be ingested by a much wider range of organisms than large debris, making it and the chemicals it carries bioavailable throughout the food chain. Additionally, once discharged, there are no known methods to effectively remove microplastics or microbeads from the environment.

Physical Impacts from Wildlife Ingestion

Wildlife of all types and sizes mistake plastic as food and consume it. Hundreds of different species have been documented as ingesting plastics, ranging from tiny creatures,^{17,18} to small fish,^{19,20} to larger species like birds, turtles and mammals.²¹ In the Great Lakes, SUNY Fredonia researchers performing food web surveys are finding plastic in the gastrointestinal tracts of perch.²²

Ingested plastic causes internal abrasions or blockages resulting in reductions in food consumption, stunted growth, and starvation.^{23,24,25,26} Additionally, studies have found microplastics pass from a species digestive tract to its circulatory system,²⁷ and are physically transferred from prey to predator.^{28,29} In mussels, ingestion of plastic pieces so small they are invisible to the naked eye, reduce filter feeding, which could lead to starvation.³⁰

Potential for Toxicity

Wildlife ingestion of plastic also presents the potential for toxicity to both the ingesting species and other species higher in the food chain. Harmful chemicals transferred to wildlife from ingested plastic include chemicals added to plastic during manufacturing, and "hydrophobic pollutants" that collect on the surface of the plastic once in either salt or fresh water, such as polychlorinated biphenyls (PCBs), DDT, and polycyclic aromatic hydrocarbons (PAHs).^{31, 32,33}

Hydrophobic pollutants are chemicals that when in water preferentially adhere to other substances like plastic or sediment. When these pollutants attach to buoyant microplastic they have greater ability to disperse in lakes, rivers and oceans. Hydrophobic pollutants accumulate in the bodies of animals, are passed on to larger predators, and concentrate up the food chain through a process called biomagnification, eventually contaminating the fish and wildlife species that humans like to eat. These pollutants can lead to a host of health problems including birth defects, cancer, and learning and growth deficits in children. The New York State Department of Health has been tracking many of these pollutants in fish, turtles and waterfowl in New York waters including the Great Lakes, Finger Lakes, Lake Champlain, St. Lawrence River and Hudson River. Concentrations of hydrophobic pollutants in many species remain above protective target levels resulting in consumption advisories, especially for children, pregnant women, and women of childbearing age.

Plastic debris accumulates pollutants such as PCBs (polychlorinated biphenyls) up to 100,000 to 1,000,000 times the levels found in seawater.

National Oceanic Atmosphere Association, 2011.

Many plastic products contain chemical additives that leach out, especially when exposed to weathering, heat or ultraviolet light.³⁴ For example, Bisphenol-A, is a chemical additive and a known endocrine disrupting chemical that is banned in certain children products in New York. Endocrine disrupting chemicals produce adverse developmental, reproductive, neurological, and immune effects in both humans and wildlife. They have been linked to a number of common ailments, including heart disease, immune system disruption, brain deterioration, type-2 diabetes, cancer and obesity. They pose the greatest risk during prenatal and early childhood development when organ and neural systems are forming.³⁵

Once ingested, microplastics facilitate the transfer of chemicals to some species low on the food chain,³⁶ where they can be passed on to larger predators. Chemicals from plastic ingestion have also harmed fish³⁷ and lower trophic organisms.^{38,39} Great Lakes scientists are at the forefront of research confirming this toxicological harm in the Great Lakes. Researchers at the University of Wisconsin have verified that microplastic in the Great Lakes is contaminated with films of hydrophobic pollutants, for example, recently measured concentrations of PAH's are approximately twice the levels found on microplastic in the Atlantic Ocean.⁴⁰

The newest environmental threat to the Great Lakes is very, very small... Scientists have worried about plastic debris in the oceans for decades, but focused on enormous accumulations of floating junk. More recently, the question of smaller bits has gained attention, because plastics degrade so slowly and become coated with poisons in the water like the cancer-causing chemicals known as PCBs.

- The New York Times, December 14, 2013

D. Microbeads: Traveling From The Medicine Cabinet to New York's Waters

Plastic Microbead Abrasives in Cosmetics and Personal Care Products

Patented for use in cleansers in 1972, for decades microbead abrasives were rarely used in consumer products and were considered only a minor source of plastic pollution.⁴¹ Starting in the 1990s, manufacturers began replacing more natural materials such as ground almonds, oatmeal and sea salt in personal care products with plastic microbeads,⁴² increasing the likelihood of their discharge to New York's surface waters. An ongoing investigation has identified over 100 cosmetics and personal care products containing microbeads in the United States, including those considered over-the-counter drugs.⁴³



The Bioré and Clearasil products shown were filtered in a laboratory to determine the presence of microbeads. The products contained plastic microbeads in different quantities and of different sizes, shapes and colors, as shown by the vial of microbeads to the left of each product.

(Photo credit: State of New York, Office of the Attorney General)

Various personal care products and over the counter drugs listing "polyethylene" or "polypropylene" as an ingredient contain plastic microbeads of different sizes, shapes, colors, and quantities. Johnson & Johnson, the maker of the Neutrogena product pictured, has voluntarily committed to phasing out plastic microbeads as an ingredient in its products.

(Photo credit: 5 Gyres)

Microbead shape, size and composition vary. Studies of products containing microbeads found sizes ranging from 0.004 mm to 1.24 mm.^{44,45,46} Microbeads are most commonly composed of polyethylene or polypropylene,⁴⁷ and are often perfectly spherical in shape, but are also found in irregular shapes.⁴⁸

Overall, the annual per-capita consumption of microbeads from cosmetics and personal care products in the United States is estimated at approximately 0.0309 ounces per person per year.⁴⁹ With over 19.65 million people living in New York State⁵⁰, this adds up to nearly 19 tons of microbeads potentially being discharged into New York's wastewater stream each year.

As of 2011, the leading companies in the personal-care product and cosmetic market include Procter & Gamble, Unilever, Colgate Palmolive, L'Oréal, and Revlon, as shown in the table below. Once alerted that microbeads contribute to environmental pollution, the top three industry leaders made public pledges to remove plastic microbeads from their product lines.⁵¹ L'Oréal followed up with a pledge to remove microbeads from their products after introduction of Attorney General Schneiderman's Microbead-Free Waters Act.⁵² Some companies, such as Burt's Bees,⁵³ chose never to use plastic microbeads in their products.

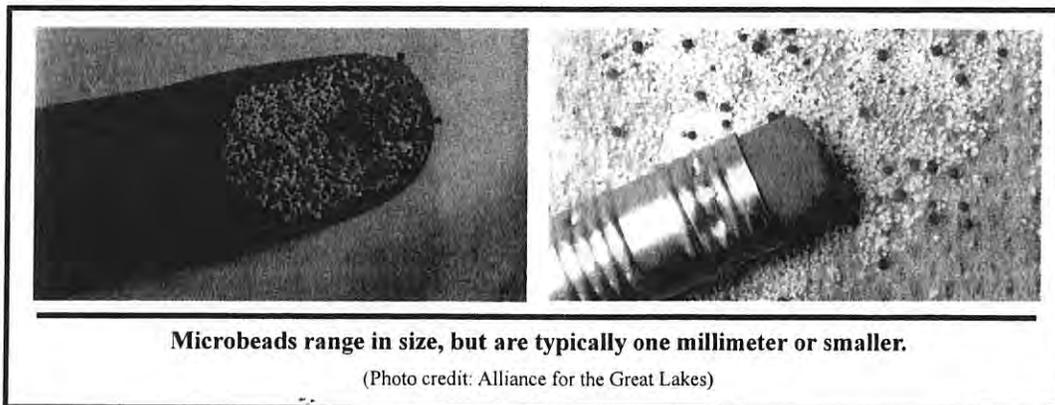
Five Largest Personal-Care Product and Cosmetic Companies as of 2011⁵⁴

Company	Market Share
Procter & Gamble	16%
Unilever	5%
Colgate Palmolive	4%
L'Oréal USA Inc.	3.4%
Revlon, Inc.	2.5%

Most Wastewater Treatment Plants Unable to Prevent Discharges of Microbeads

Cosmetics and personal care products containing microbeads are designed to be disposed of with no possibility of recovery or recycling. Once a product containing microbeads is washed off a person's hands or face, the cleaning agents plus the microbeads are rinsed down the drain and enter wastewater systems. Most wastewater is processed through a wastewater treatment plant, and the ability of a wastewater treatment plant to capture microbeads depends upon its specific treatment capabilities.

Because of their small size and buoyancy, many microbeads escape capture by wastewater treatment plants, which typically filter water through a coarse (greater than 6 mm), or a fine (1.5–6 mm) screen.⁵⁵ Subsequently, microbeads in the treated water are discharged to rivers, lakes, or oceans, where they accumulate and persist. Microbeads were found in the effluent of six of seven New York wastewater treatment plants recently sampled by SUNY Fredonia researchers.⁵⁶



Additionally, microbeads in wastewater can also make their way into our waters during combined sewer overflow events. Combined sewer systems collect and transport storm water runoff, domestic sewage, and industrial wastewater in the same pipe, and are a major water pollution concern. During periods of heavy rainfall or snowmelt, the volume of wastewater in a combined sewer system can exceed the capacity of the wastewater treatment plant. When this happens, combined sewer systems discharge excess wastewater containing untreated sewage, industrial waste, pollution and debris directly into nearby water bodies. There are approximately 937 combined sewer overflow outfalls in New York State.

Taxpayers Would Shoulder Costs to Upgrade Wastewater Treatment Plants

Effective wastewater treatment plants are instrumental in keeping our waters clean. However, most of our current wastewater treatment facilities are unable, without potentially costly retrofits, to remove plastic microbeads. For example, the National Association of Clean Water Agencies, the trade group for publicly owned wastewater treatment authorities, has recently classified microbeads as an "emerging contaminant,"⁵⁷ defined as a material entering the wastewater stream that treatment facilities are not designed to remove or break down.

As of 2004, New York State Department of Environmental Conservation (DEC) data indicate that there are 610 wastewater treatment plants of various sizes across the state, of which 70% serve small populations and handle less than 1 million gallons of wastewater per day (mgd), while the ten largest plants handle flows greater than 100 mgd.⁵⁸

In order for a wastewater treatment plant to effectively remove microbeads, some form of advanced treatment would be required. Based on the DEC data, about one-third, or 207, of the state's wastewater treatment plants—and only one of the state's ten largest plants—currently use some form of advanced screening or filtration.

For example, DEC data shows that Nassau County predominately relies on thirteen wastewater treatment plants of different sizes and capabilities. The two largest of Nassau's wastewater treatment plants service over 1 million of the total 1.349 million county residents. However neither plant employs advanced treatment that may effectively remove microbeads. This means when the residents of Nassau County unknowingly wash approximately 1.3 tons of microbeads down the drain every year, most are entering plants not equipped to stop them from being discharged into the Atlantic Ocean, Reynolds Channel and other surrounding waters.

In Erie County, population 919,000, residents unknowingly discharge almost one ton of microbeads into the wastewater stream each year. Most Erie County residents' wastewater travels to a local plant for treatment. The largest wastewater treatment plant in the county has the capacity to service 600,000 residents in and around Buffalo. It also does not employ advanced screening or filtration, and its effluent discharges into the Niagara River.

Statewide, the DEC data reveals that within the universe of 610 wastewater treatment plants in New York:

- 23 plants use a fine screen or micro-screen, that may be capable of removing microbeads.
- 175 plants use microfiltration, sand or mixed media filtration, or other type of advanced filtration that may be capable of removing microbeads.
- 9 plants use a combination of an advanced screen technology, and some form of advanced filtration, which together should provide the most effective microbead removal.
- 403 plants use no advanced treatment method likely to effectively remove microbeads from the wastewater stream.

Plant-by-plant studies would be required to 1) determine the efficacy of microbead removal at the 207 plants noted above that use advanced treatment methods, 2) calculate the cost of upgrades needed for any of the 207 plants found to insufficiently capture microbeads, and 3) calculate the cost of upgrades needed to capture microbeads at the 403 remaining wastewater treatment plants.

Reasonable cost estimates for necessary upgrades cannot be made without a technical analysis of feasibility and alternatives performed for each specific facility. The cost to upgrade can vary extensively depending on site-specific factors such as, but not limited to, the existing facility size, existing design and treatment capabilities, potential adaptability to modifications, and specific technology selected for installation.⁵⁹

NYS Wastewater Treatment Plants as of 2004 with Advanced Screens and Filters

Plant Design Size (Gallons/day)	Number	Screen	Filters	Screen + Filter	Percent Using Screen and/or Filter
0-100,000	178	2	82	2	48%
101,000-1,000,000	251	10	63	6	31%
1,001,000-10,000,000	132	9	23	1	25%
10,001,000-100,000,000	39	1	7	0	21%
100,001,000-999,000,000	10	1	0	0	10%

PART 2 – THE MICROBEAD-FREE WATERS ACT – A SOLUTION FOR NEW YORK

“Plastic debris is unsightly; it damages fisheries and tourism, kills and injures a wide range of marine life, has the capacity to transport potentially harmful chemicals... and can represent a threat to human health.”

- Scientific and Technical Advisory Panel of the Global Environment Facility, 2011.

“America’s plastics makers agree that litter doesn’t belong in our oceans, waterways or any part of our natural environment.”

- Steve Russell, American Chemistry Council, Vice President of Plastics, February 15, 2013.

“For society to receive the benefits that plastics can provide, it is essential to properly recover them so that litter does not threaten our natural environment, including marine ecosystems. ... [We] are firmly committed to the principle that plastics do not belong in the world’s oceans...”

- Declaration of the Global Plastics Associations for Solutions on Marine Litter, 2011.

“Unilever has decided to phase out plastic scrub beads from personal care products. This is because we believe we can provide consumers with products that deliver a similar exfoliating performance without the need to use plastics. We expect to complete this phase globally by 2015...”

- Unilever, 2013.

A. Scientists and Industry Agree: Plastic Has No Place in Our Waters

Scientists, governments, plastic manufacturers, the personal-care product industry and the public all agree on the fundamental principle that plastic should not litter our lands and waters.^{60,61,62,63}

At least 21 companies around the world that produce or carry cosmetics and personal care products have made some level of commitment to phase out microbeads in their products, or not carry products containing them.⁶⁴ Global alliances are working to curb the use of microbeads in cosmetics and personal care products, and have been instrumental in securing voluntary commitments from companies to phase out microbeads, as well as in launching smartphone apps allowing consumers to scan products to check for the presence of microbeads.⁶⁵

Policymakers are engaging, both on the international and domestic fronts. Internationally, the Dutch parliament is promoting a European ban on microplastic in cosmetics.⁶⁶ Closer to home, the Great Lakes - St. Lawrence Cities Initiative, a binational coalition of over 100 mayors, is calling on companies to phase out the use of microbeads by 2015.⁶⁷

However, with many current industry commitments lacking a phase-out deadline and with many more companies still unresponsive, additional effort is needed to hold the industry to a consistent, protective standard.

B. The Proposal – Ban Microbeads in Cosmetics and Personal-Care Products

Plastic pollution is extensive and long lasting, and New York is committed to preventing the irresponsible release of microbeads into State waters before it occurs.

New York has been a national leader in addressing concerns related to plastic pollution and associated toxic exposure, including enactment of:

- The 2008 Plastic Bag Reduction, Reuse and Recycling Law, which requires retail stores 10,000 square feet or larger to offer a plastic bag recycling option.
- The 2010 Bisphenol A-Free Children and Babies Act, which ended the sale of Bisphenol-A-containing child-care products, such as baby bottles and pacifiers, used by children under three years old.
- The 2013 Returnable Container Act, which expanded the beverage container deposit and collections system to include bottled water, thus increasing plastic recycling quantities.

We can build on this legacy by passing legislation to address the emerging form of plastic pollution threatening State waters—microbeads.

For taxpayers, the Microbead-Free Waters Act represents the most cost-effective approach for eliminating the release of microbeads from cosmetics and personal care products into the environment. The bill is first-in-the-nation bipartisan legislation that would prohibit the sale in New York of any beauty product, cosmetic, or other personal-care product containing plastic less than five millimeters in size.

When they wash their face or brush their teeth, New Yorkers should not have to worry that they may be dumping plastic into the same water they drink, and in which they swim and fish. The Microbead-Free Waters Act will ensure that manufacturers of cosmetics and personal care products quickly phase out the use of plastic microbead abrasives and instead use natural alternatives in their products.

“From the Great Lakes to the Hudson River to Long Island Sound, our commitment to protecting and restoring New York’s waters is among our most important responsibilities. New York’s environmental leadership continues with the introduction of common-sense legislation that will stop the flow of plastic from ill-designed beauty products into our vital waters, preserving our natural heritage for future generations.”

- New York Attorney General Eric T. Schneiderman, February 11, 2014.

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The Office of the Attorney General Eric T. Schneiderman produced this report through the Office's Environmental Protection Bureau led by Bureau Chief Lemuel M. Srolovic. The report was prepared by Environmental Scientist Jennifer Nalbone.

The Environmental Protection Bureau of the New York State Attorney General's Office works to enforce a zero tolerance policy against any environmental threats in New York that imperil the air we breathe, the water we drink, and the land we live on. If you are aware of any activities or conditions which may violate state or federal environmental laws or significantly harm the environment, please call the New York State Office of the Attorney General's Environmental Protection Bureau at (518) 474-8096.



Nate Drag – Erie County Microbead Bill Public Hearing

Thank you, (insert name here). My name is Nate Drag and I am the Watershed Project Coordinator for the Alliance for the Great Lakes. The Alliance works in all eight Great Lakes with tens of thousands of citizens, community groups and businesses dedicated to developing and implementing forward-thinking solutions that protect our unique heritage, the Great Lakes.

Banning the sale of personal cosmetic products that contain plastic microbeads is one of those policies that will help protect the Great Lakes for future generations. Each year, our Adopt-a-Beach™ program volunteers witness first-hand the impact of plastic pollution – large and small – on the Great Lakes. Volunteers collect more than 50,000 pounds of trash from Great Lakes shorelines – with over 75% of that garbage comprised partially or fully of plastic.

Since plastic microbeads are too small to be collected by volunteers, they are another example of potentially harmful plastic pollution that must be reduced at its source. When consumers use personal-care products such as facial scrubs, body washes, and toothpastes containing microbeads, these tiny particles are rinsed down the drain and into our sewer systems. Because of their small size and buoyancy, microbeads escape treatment by sewage plants and are discharged into waterways. 74% of the waste water treatment plants that participated in a New York State Attorney General's Office study were not equipped to filter out these microbeads. Once released into the environment, plastic microbeads may accumulate toxins and may be ingested by a number of native Great Lakes species.

This bill, as well as others introduced and passed in states across the country, are based on research done here in Western New York at the State University of New York at Fredonia. This bill responds to a rising tide of concern among researchers and the public about the impact of microbeads on our waterways and wildlife. It would also raise the bar for future legislation here in New York and across the country by prohibiting all forms of plastic microbeads in these products. With many readily available natural alternatives to plastic microbeads, phasing out the use of this component of personal care products is a common sense step forward in region-wide efforts to keep plastic pollution out of the Great Lakes.

Finally, I would like to thank you Legislator Burke and Legislator Mills for their leadership on this issue and other important environmental legislation to protect and preserve our precious lakes. We're pleased to partner with you to help Erie County pass a strong local ban that would phase out microbeads and to protect our Great Lakes for our children and grandchildren.



July 20, 2015

MEMORANDUM

TO: ERIE COUNTY LEGISLATURE
FROM: Sierra Club Niagara Group, Lynda Schneekloth, Chair
RE: Resolution Supporting "Microbead-free Waters Act" in New York State Senate (S70181-2013)

Thank you for the opportunity to make comment on the Proposed Erie County Law regarding the "prohibition of the sale of personal cosmetic products containing microbeads in Erie County." (Local Law Intro No. 8-2 (2015)). This legislation would prohibit the sale of personal cosmetic products containing microbeads. The Sierra Club Niagara Group fully endorses this effort to protect our citizens and our local waters of Lake Erie and the mighty Niagara River and is disappointed that the State Legislature failed to act on this issue this session.

As we have learned, "microbeads" are tiny beads of plastic less than a millimeter thick that are often added to cosmetics as exfoliants, cleansing agents and even some toothpastes. Apparently, cosmetic companies found that microbeads were cheaper than non-synthetic alternatives and generate a 'smoother' product. The beads themselves are made of polyethylene or polystyrene and because of their size, can pass through filters in water treatment plants and enter the water system.

Microplastics come from a variety of sources besides cosmetic such as degraded plastics and synthetic clothing. Their small size resembles that of plankton, the organisms that make up the base of marine ecosystems. Unknowingly devoured by filter feeders, the plastics migrate up the food chain, bioaccumulating in larger fish, birds and mammals. Researchers are only beginning to study the impact of these substances on living organisms, and we are only beginning to understand the potential for harm to the waterways and human health. What we do know is that as a plastic, microbeads are made from fossil fuels and never biodegrade. This means they are outside the earth's ecological processes and they will never be transformed into a substance used to enhance the life of another organism or ecological process as everything given to us on this planet is.

We also know that micro beads are hydrophobic. They are especially insidious because they bind with persistent organic pollutants already contaminating our waterways such as discarded solvents, pesticides and pharmaceuticals. When these pollutants attach to the plastic microbeads they create a toxic pellet. And we do know that the persistent organic compounds have serious health consequences and can cause deadly illnesses including disruption of the endocrine, reproductive, and immune

systems; neurobehavioral disorders; and cancers. These now toxic microbeads resembles food for fish, amphibians and other aquatic life and these hazardous chemicals bioaccumulate within their flesh over time. If we follow the food chain, fish that are laden with toxins end up in pet food and on the dinner table.

Despite their size, micro beads are having a huge impact on our waterways amounting to as much as 90% of the new plastic waste in the Great Lakes.* Unlike other forms of trash on our beaches, there is no way to clean up these tiny plastic particles once they are introduced into the environment.

We don't need microbeads in cosmetics, there are alternatives. And perhaps more important, we should not be leaving any more toxicity for the next generation to endure. Let's ban microbeads in New York.

*<http://www.sierraclub.org/sierra/2014-4-july-august>

Erie County Environmental Management Council



July 24, 2015

Chairman John J. Mills
Erie County Legislature
92 Franklin Street, Fourth Floor
Buffalo, N.Y. 14202

RE: Local Law Intro. 8-2 (2015) A Local Law in relation to prohibiting the sale of personal cosmetic products containing microbeads in Erie County.

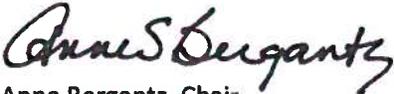
Dear Legislator Mills:

The Erie County Environmental Management Council (EMC), a volunteer advisory group to Erie County, is submitting this letter to express its strong support of the above referenced law to ban microbeads in Erie County.

For the past 2 years, the Council has included a recommendation in its annual report to ban microbeads and we are grateful that the legislature is taking the lead on this important issue. In particular, we appreciate that the County law does not contain an exemption for biodegradable microbeads as there is no legal definition for biodegradability of microbeads in an aquatic environment. Unfortunately, that exemption is included in most other laws that have passed across the country. The fact that Erie County's law does not include a biodegradability exemption makes you a national leader.

We encourage the adoption of this local law in order to safeguard Erie County's waterways and ecosystem, as well as create a path for a strong statewide ban in the near future

Sincerely,


Anne Bergantz, Chair

**Town of West Seneca Environmental Commission
2001 Union Road
West Seneca, New York 14224**

July 29, 2015

Chairman John J. Mills
Majority Leader Joseph Lorigo
Erie County Legislature
92 Franklin Street, Fourth Floor
Buffalo, N.Y. 14202

RE: Local Law Intro. 8-2 (2015) A Local Law in relation to prohibiting the sale of personal cosmetic products containing microbeads in Erie County.

Dear Legislators Mills and Lorigo:

The West Seneca Environmental Commission consists of a group of citizens who volunteer their time in the interest of protecting and enhancing the natural environment of West Seneca. Through the years, the Committee has worked together to educate the public as well as to protect our natural resources and restore habitat in the Town.

Commission members have read news articles and technical papers concerning the effect of microbeads on the environment and fully support the local law referenced above in relation to prohibiting the sale of personal cosmetic products containing microbeads in Erie County. The cost of the necessary upgrades to wastewater treatment plants to treat/capture these tiny particulates would be prohibitive. Discouraging the use of these harmful products is a better solution to this problem, which is negatively impacting aquatic wildlife.

We encourage the adoption of this local law in order to safeguard Erie County's waterways. We need our elected officials to take action on this important issue and hope that Erie County's lead will pave the way for a statewide ban on microbeads in the near future.

Sincerely,



Evelyn A. Hicks, Chair
West Seneca Environmental Commission
Hicks276@gmail.com (716)553-5077 cell/text