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MASSACHUSETTS CHAPTER

Massachusetts Sierra Club
10 Milk Street, Boston, MA 02108-4621
(617)423-5775
office@sierraclubmass.org • www.sierraclubmass.org

Regulating the Use of Microbeads in Personal Care Products

Background information on laws proposing a ban on microbeads

The Massachusetts Sierra Club supports laws that ban microbeads from personal care and cosmetic products. Microbeads are tiny particles of plastic (less than 1mm) used in personal care products like exfoliating cleansers, scrubs, body wash, and even as a toothpaste whitener. Microbeads were introduced only recently but are now found in hundreds of products in the United States from companies such as Johnson & Johnson and Procter & Gamble.¹ Most commonly made of polyethylene (PE), microbeads can also be made of other petrochemical plastics such as polypropylene (PP), nylon, and more hazardous ones, polystyrene, polyethylene terephthalate (PET) and polymethyl methacrylate (PMMA).

While they may be attractive to personal care manufacturers, once they enter the waste stream microbeads are a serious threat to our waterways and oceans. There are several compelling reasons to ban the use of microbeads in personal care and cosmetic products.

- Microbeads wash down the drain after use. It is estimated that **exfoliants release between 5-90 thousand microbeads in a single use.**² Due to their small size a lot of microbeads escape filters in waste water treatment plants and are ultimately discharged into our natural water systems. It is estimated that **8 trillion microbeads** are released from waste water treatment plants into lakes, oceans and rivers in the United States every day.³ Microbeads were found to be a **significant source of pollution** in water samples tested from the Great Lakes.⁴
- **Petrochemical microbeads do not biodegrade.** Already tiny, these spheres of plastic photodegrade in the presence of light into smaller and smaller secondary microplastics making them impossible to treat once they enter our oceans. The average concentration of microplastics in the Great Lakes is 43,000 particles/km².⁵
- **Microbeads are often mistaken for food** by marine animals. Microbeads are more likely to be consumed by tiny marine creatures like zooplankton and filter feeders which are a source of food for larger fish.⁶ Once ingested by marine organisms they remain in the body, limiting natural food intake, impacting their ability to survive. Microbeads have been found in marine sediments, marine invertebrates (mussels, sea cucumber, lug worms), sea birds and various species of fish.^{7,8}
- **Microbeads attract and absorb pollutants** such as polychlorinated biphenols, DDT, polyromantic hydrocarbons, and flame retardants from the surrounding environment. Once ingested by marine animals these toxins can find their way into seafood that people eat.

Microbead Alternatives

There exist several natural, safe, biodegradable alternatives to microbeads such as salt crystals, rice, powdered walnut and pecan shells, crushed seed, pumice, jojoba, oatmeal, crushed bamboo were some of the natural exfoliating agents being used in cosmetics. Many of these have been used for decades prior to the introduction of plastic substitutes.

At this time there is **not enough evidence to support the use of biodegradable plastic microbeads** being promoted as another alternative to existing microbeads. There remain questions as to how fast these other plastics degrade in the marine environment if at all.⁹ Moreover, even as they degrade, bioplastic microbeads continue to endanger the life of marine species.

Microbead Legislation

The U.S., Canada, Australia and several European countries are considering a ban on products that contain plastic microbeads. In 2014, Illinois passed the first the microbead ban. Since then, other states have joined them most recently with a strong law in California. Other states, including Massachusetts, have bills pending in different stages. However, the first ban to go into effect will be Erie County, N.Y., which begins in mid-February, 2016.

Conclusion

While microbeads are a nearly invisible compared to other forms of plastic pollution, they significantly threaten the marine and coastal ecosystem. Microbeads are adding enormously to the growing problem of microplastics, which is currently impossible to mitigate once they enter our aquatic systems. Banning the use of microbeads in personal care and cosmetic products is the only way to help protect water quality, wildlife and public health.

¹ Beat the Microbead, <http://beatthemicrobead.org/images/pdf/RED%20UNITED%20STATES.pdf>

² Marine Pollution Bulletin, "Characterization, quantity and sorptive properties of microplastics extracted from cosmetics," 2015, [<http://www.sciencedirect.com/science/article/pii/S0025326X1500449X>]

³ Rochman, C.M., et al., September 2015, "Scientific Evidence Supports a Ban on Microbeads", Environmental Science and Technology, p 10759 – 10761
<http://pubs.acs.org/doi/pdfplus/10.1021/acs.est.5b03909>

⁴ From the Office of New York State Attorney General, "Unseen Threat: How Microbeads Harm New York Waters, Wildlife, Health and Environment," p. 3 [http://ag.ny.gov/pdfs/Microbeads_Report_5_14_14.pdf]

⁵ 5 Gyres, "5 Gyres Publishes First Scientific Paper on Plastic Pollution in the Great Lakes," [http://www.5gyres.org/blog/posts/2013/10/28/5_gyres_publishes_first_scientific_paper_on_plastic_pollution_in_the_great_lakes]

⁶ Bo Eide, "Plankton Munching Microplastics," <https://www.youtube.com/watch?v=2oQeXhURtgY>

⁷ United Nations Environment Program, "Plastic in Cosmetics", 2015 report, p. 19, 20

⁸ Lisbeth Van Cauwenberghe, Colin R. Janssen, "Microplastics in Bivalves Cultured for Human Consumption", *Environmental Pollution*, Volume 193, October 2014, p 65-70.
<http://www.expeditionmed.eu/fr/wp-content/uploads/2015/02/Van-Cauwenberghe-2014-microplastics-in-cultured-shellfish1.pdf>

⁹ Algalita Marine Research and Education, "Bioplastics: Are they the solution," (<http://www.algalita.org/bioplastics-are-they-the-solution/>)