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# Scientific Evidence Supports a Ban on Microbeads

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# Scientific Evidence Supports a Ban on Microbeads

*Growing scientific evidence indicates that synthetic plastic microbeads (hereafter, microbeads) are a threat to the environment and should be banned from all personal care products. Microbeads pollute the environment, adding to the increasing abundance of microplastic debris. Too small to be efficiently filtered by wastewater treatment processes, microbeads are found in aquatic habitats and fish. Microplastic debris, and its inherent cocktail of chemical pollutants, has been found in the stomachs of hundreds of species of wildlife. The ingestion of microplastic may cause bioaccumulation of hazardous chemicals and adverse health effects in wildlife and people.*

## Background on the bead

***Microbeads are a form of microplastic[1]. Thus, scientific evidence related to the sources, fate and effects of microplastic inform our understanding of microbeads.*** In particular, microbeads are fragments or beads of plastic, ranging from roughly 5µm to 1mm in size and do not biodegrade in nature. Microbeads are used in hundreds of products including cosmetics, sunscreen, body wash, toothpaste, skincare, and industrial and household cleaning products[1-3]. They are used for several reasons, including as cleansing materials or exfoliants (often replacing naturally biodegradable alternatives) to hide wrinkle lines in cosmetics and to improve the feel of formulated products such as lotions.

## What's the problem?

***Microbeads are found in aquatic habitats[4,5] and in wildlife[6] adding to the growing quantities of microplastic debris. Microbeads, like all microplastic, have the potential to contaminate food chains[3], including seafood products consumed by people.*** Microbeads in personal care products are designed to be discarded down the drain during normal use[1,3,7]. Due to their small size, it is not feasible for wastewater treatment plants to screen microbeads, which are then littered via final effluent or sewage sludge into the environment[8].


## Policy Recommendations:

1. State and federal legislation should ban synthetic plastic microbeads from all personal care products, including "over the counter drugs" and cosmetics.
2. Legislation should define "synthetic plastic microbeads" as any intentionally added synthetic plastic particle that escapes wastewater treatment processes and is not marine biodegradable, and thus is bioavailable to wildlife.


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***We support legislation banning microbeads from personal care products, a position supported by the weight of scientific evidence regarding the fate, persistence and toxicity of microplastic debris.***

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## Microbead contamination and harm

***Although their small size makes them difficult to detect, microbeads have been found in inland and coastal aquatic habitats[4,5] and in fish[6]. Experiments have demonstrated harm in fish[9,10] from plastics that are the same type, size and shape as common microbeads.*** Microbeads pass through water treatment facilities, are released into natural waterways and become microplastic debris. Microplastic is ubiquitous in aquatic habitats, including bays[11,12], estuaries and shorelines[13,14], coral reefs[15], the deep-sea[15], freshwater lakes[16], rivers[5] and Arctic Sea ice[17]. Microplastics persist in aquatic and terrestrial habitats for decades where they accumulate hazardous chemicals. Microplastic has been reported in hundreds of species globally, including marine mammals, turtles, seabirds, fish and invertebrates[18]. Microplastics cause physical and chemical harm to animals[9,19]. Physically, microplastic can cause cellular necrosis, inflammation and lacerations in the digestive tract[20]. Chemically, microplastic is associated with a complex mixture of chemicals, many of which are priority pollutants under the US EPA Clean Water Act for being persistent, bioacummulative and/or toxic[21]. Chemicals associated with this ‘cocktail’ can accumulate in animals that eat them[9,10,19,22-27] and cause liver toxicity and disrupt the endocrine system[9,10].

## Current Progress

62 NGOs from 31 countries support the ban.

Multinational companies, including Unilever, L’Oreal, Procter and Gamble and Johnson & Johnson, have pledged to stop the use or sale of microbeads.

Bans have been proposed federally and in many states, including AK, CA, CT, CO, HI, IA, IN, MD, ME, MI, MN, NJ, NY, OH, VA, VT, WA, WI, & WY.

IL passed a ban on microbeads.

### Illinois Microbead-free Waters Act

***This legislation contains loopholes allowing continued production and use of microbeads that escape wastewater treatment processes and are not biodegradable in the aquatic environment.***

**Text From the Bill:**

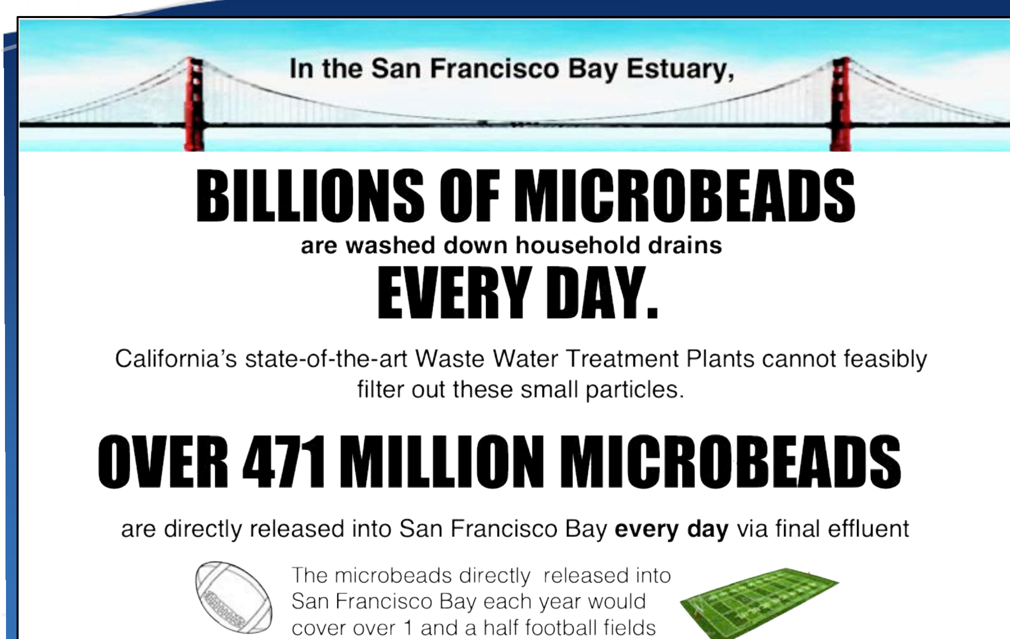
"Plastic" means a synthetic material made from linking monomers through a chemical reaction to create an organic polymer chain that can be molded or extruded at high heat into various solid forms retaining their defined shapes during life cycle and after disposal.

**Loophole:** Defining plastic as those molded at high heat, linking monomers, and retaining their defined shapes after disposal, allows for plastics that degrade **slightly** in an unspecified time period.

**Text From the Bill:**

"Synthetic plastic microbead" means any intentionally added non-biodegradable solid plastic particle measured less than 5 millimeters in size and is used to exfoliate or cleanse in a rinse-off product.

**Loophole:** “Biodegradable” is not defined in terms of % degradation under a specified time frame in the environment, allowing microbeads to be made from plastics like PLA—a material that is not marine biodegradable[28].




Calculations are based upon average estimates of microbeads reported in final effluent[8,6,29], estimates that 99% of microbeads that enter waste water treatment plants are retained in sewage sludge[8] and the total flow of 35 waste water treatment outfalls that release effluent into the San Francisco Bay/Estuary[30]. *It is noteworthy that this capture does not mean it is not released into the environment. Oftentimes sludge is land-applied in agricultural fields and terrestrial environments.*

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# Resolution—


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*Whereas,* microbeads in personal care products are indistinguishable from litter and cause the same problems as microplastic debris; and

*Whereas,* the weight of the scientific evidence regarding the fate and hazards of microplastics leans heavily in support of the ban on microbeads; and

*Whereas,* microbeads qualify as pollution and therefore should be regulated under existing U.S. legislation, such as the Clean Water Act; and

*Whereas,* a clean environment free of pollutants supports healthy populations of wildlife and safe seafood and clean waterways for people; now, therefore,

***We support legislation banning microbeads from personal care products, a position supported by the weight of scientific evidence regarding the fate, persistence and toxicity of microplastic debris.***

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