

**Should We Worry About Microbeads?**  
Ray Gordon, NH Dept. of Environmental Services

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**Microbeads**  
Polyethylene microspheres 10 um to 1000 um (1mm)



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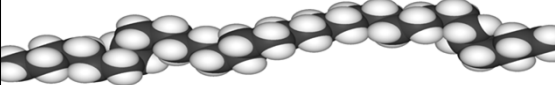
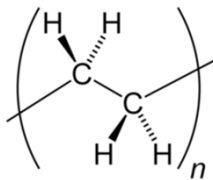
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**Polyethylene (PE)**

- not biodegradable
- lasts forever
- most common plastic  
80 million tons/year
- specific gravity  
0.941 — 0.965



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### Microbeads

Microplastics (now commonly used) to describe tiny pieces of plastic under 5mm in diameter.

Widely used in:

- scrapbooking
- cosmetics
- skin care
- personal care industries
- biomedical and health science research
- microscopy techniques
- fluid visualization and fluid flow analysis
- process troubleshooting



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### Microbeads

- face wash
- body scrub
- toothpaste



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### Microbeads

They are cheaper than natural options for exfoliants in personal products such as walnut husks or pumice.



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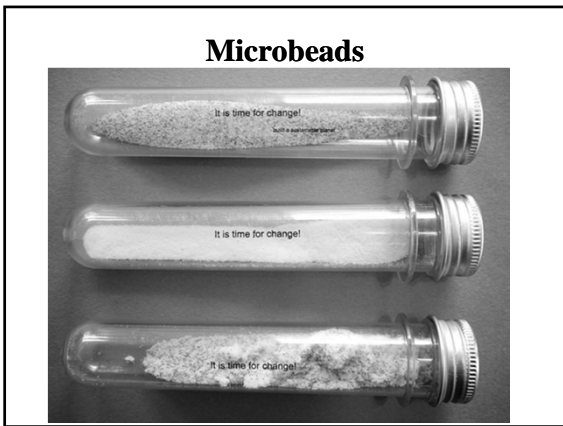
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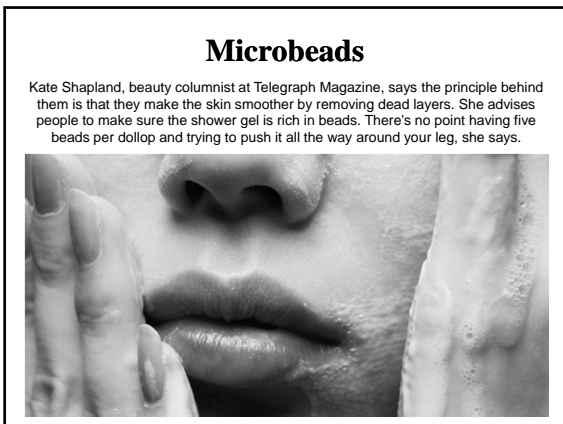
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### Problem with Microbeads



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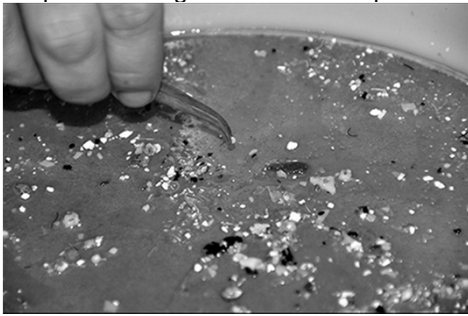
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### Problem with Microbeads

Microplastics mingle with sand in a petri dish



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### Problem with Microbeads?

Lake Erie acts as a bottleneck for all of the Great Lakes – and for the runoff from sewage treatment centers that are unable to contain the tiny plastic beads before they empty into the Saint Lawrence Seaway. 5 Gyres, an organization aimed at reducing plastic ocean pollution worldwide, recently found a large number of microplastics in the Great Lakes. They estimate that one single care product, like Neutrogena's Deep Clean, contains 360,000 microbeads in a single package.

Stiv Wilson, associate director for 5 Gyres, says that they discovered the Great Lakes plastic by accident. The group was looking for photo-degraded micro-plastics, similar to those found in the ocean. Instead, they found microbead concentrations of 450,000 per square kilometer in Lake Erie.



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### Problem with Microbeads?

- Fish feed on the beads mistaking them for fish eggs



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### Problem with Microbeads?

The plastics attract waterborne toxins (including pesticides and flame retardants) that can attach themselves to fish tissue when consumed. This may contaminate food.



There is no definitive scientific evidence to verify this, according to Rachael Miller, executive director of the Granville-based nonprofit *Beak & Fin*.

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### Problem with Microbeads?

SUNY Fredonia researchers performing food web surveys are finding plastic in the stomachs of some Great Lakes fish species, including perch. If fish or birds eat the inert beads, the material can deprive them of nutrients from real food or get lodged in their stomachs or intestines, blocking digestive systems.



Birds eat fish which eat microbeads.

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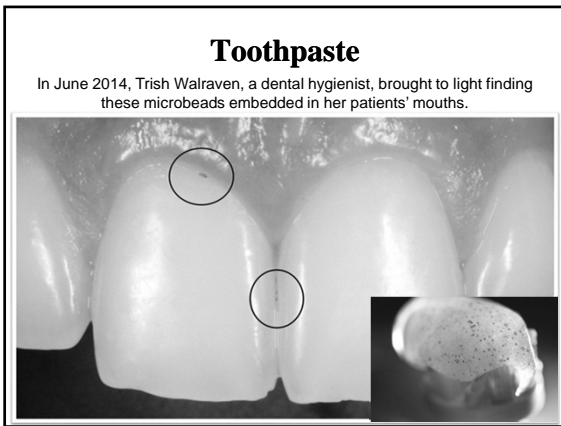
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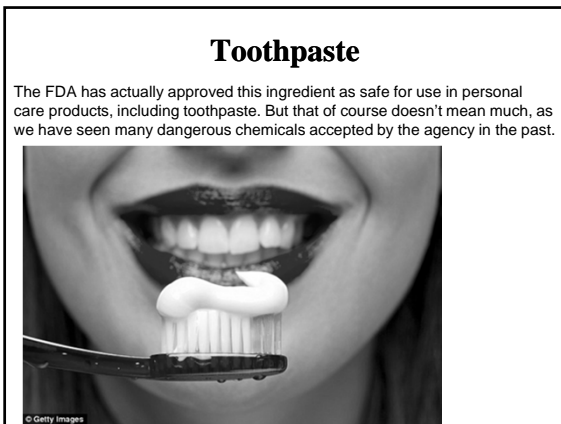
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### Toothpaste

It's not clear what happens when plastic gets buried in the gum line. There is no scientific proof yet that plastic starts gum problems, but many dentists are expressing their concerns and warning that these foreign objects could start an inflammation or infection in the mouth.

- It doesn't dissolve in your mouth
- Stays in the gum channels around the teeth



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### Toothpaste

Manufacturers explain that they are adding plastic microbeads to toothpaste to make it look more appealing. Plastic has no cleaning benefit whatsoever.



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### Toothpaste

Some manufacturers have now removed plastic from their toothpaste. Colgate vouches their products are microbead-free. Procter and Gamble, on the other hand, still use it in the Crest toothpaste, including 3D White and Crest ProHealth, and claim it's completely safe. They are working on removing it though, due to public concerns. The company spokesperson announced that they are planning to make all their products plastic-free by March 2016.



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At this point "there are more questions than answers," says Richard Thompson, a professor of marine science and engineering at England's Plymouth University. Thompson coined the term "microplastics" in 2004 and later undertook a three-year study of these particles in the marine environment for the UK's Department of Environment, Food, and Rural Affairs. (2011-13) "From a human perspective," he says, "at the moment I think there's cause for concern rather than cause for alarm."



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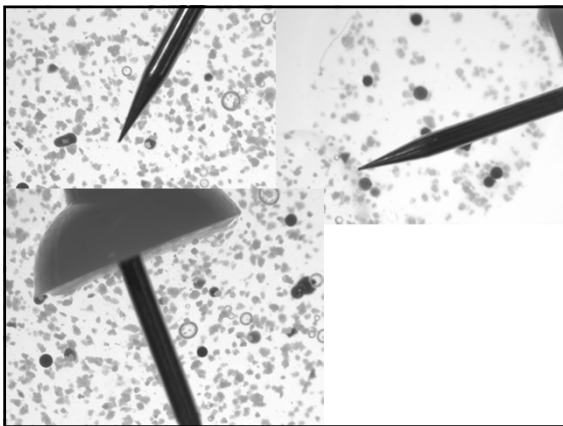
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### Solutions

**Buy Alternatives** - There are plenty of great biodegradable alternatives out there that will exfoliate your skin, including:

- rice,
- apricot seeds,
- walnut shells,
- powdered pecan shells
- bamboo



"polyethylene" is plastic

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**Download the App**

More and more cosmetics contain microbeads, tiny plastic beads. These microplastics are a hazard to our environment.


It can be hard to determine if a product contains these microbeads. The North Sea Foundation (Stichting de Noordzee) and the Plastic Soup Foundation have developed an App to easily check if a product contains microbeads.

With this App you can check if a product contains microbeads by just scanning the barcode with your smartphone camera.

This new version of the App recognizes many more products and has localised product listings. New countries are continuously added, so chances are that your country is included or will be included soon. Beat the Microbead is now a truly worldwide campaign!

For more information go to the website: [www.beatthemicrobead.org](http://www.beatthemicrobead.org)

**Get the App**




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**Solutions**

Legislation- states have started to ban microbeads

<p><b>Ban Proposed</b></p> <ul style="list-style-type: none"> <li>• Maine</li> <li>• Vermont</li> <li>• Ohio</li> <li>• California</li> <li>• Colorado</li> <li>• New Jersey</li> <li>• Minnesota</li> </ul>	<p><b>Ban in Place</b></p> <ul style="list-style-type: none"> <li>• Illinois (2018 and 2019)</li> <li>• New York (2016)</li> </ul>
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The Netherlands is the first country in the world to announce its intent to be virtually free of microbeads in cosmetics by the end of 2016

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**Solutions**

- Johnson and Johnson claims they have already started phasing out microbeads in their products.
- Unilever plans on eliminating microbeads in 2015.
- Proctor and Gamble plan on eliminating them no later than 2017.
- While some others have plans to do so within the next two to five years.




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**Contact Info**



**FISH NEED  
CLEAN WATER  
DON'T  
POLLUTE!**

Ray Gordon  
NHDES Septage Coordinator  
Wastewater Engineering Bureau  
(603) 271-3571

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