Ingesting microscopic plastic affects the ability of mussels to grow and reproduce

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Microplastics travel from our bathroom sinks to the ocean, where they are easily confused with algae or seaweeds. Credit: Dr Charlene Trestrail

Mussels in Port Phillip Bay near Melbourne are ingesting microscopic pieces of plastic used in cosmetics. And it's affecting their ability to grow and reproduce, an RMIT University eco-toxicologist has found.

The microplastics travel from our bathroom sinks to the ocean, where they are easily confused with algae or seaweeds. Because they cannot tell the difference, the mussels take in the plastic along with their normal diet of algae.

But, says researcher Dr. Charlene Trestrail, the plastics affect the action of four of their key digestive enzymes which means the mussels then struggle to break down starch into the simple sugars they need to survive.

"We don't think the plastic affects mussels directly, but it does reduce their ability to digest the real food in their gut, which means they miss out on energy and nutrients," says Dr. Trestrail.

If they can't digest food effectively, the mussels cannot grow, so they end up smaller overall. They also need energy to mate and reproduce, which could have serious ramifications for biodiversity in the Bay.

"Besides being a tasty treat for humans, mussels play an important role in keeping marine ecosystems healthy," Dr. Trestrail says. "And because plastic affects their ability to breed, we could see a drop in mussel populations in Port Phillip Bay, with knock-on effects for other marine wildlife."

While environmental campaigners have worked hard to reduce the

amount of plastic in the oceans from easily visible things like shopping bags and packaging, most people are not aware of the impact of microbeads and other hidden plastics in products like toothpaste or bath scrubs.

"We know lots about how plastics affect animals externally—we've all seen photos of birds and turtles entangled in plastic—but this is one of the first studies to investigate how tiny plastics affect animals' stomachs," says Dr. Trestrail.

There has been a push in recent years for new legislation to reduce microplastic pollution, from microbeads in bathroom products to fibers in synthetic fabrics. But while the Federal government has supported the cosmetics industry to start phasing out microbeads, the 2021 National Plastics Plan stopped short of banning or regulating their use.

"We need to take pollution from microplastics and microbeads seriously," says Dr. Trestrail. "Because they're so small, once they're in the ecosystem they are impossible to remove. The only solution is not to use them in the first place."

Provided by Freshscience

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