

Polluting plastic particles invade the Great Lakes

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Floating plastic debris—which helps populate the infamous "Great Pacific Garbage Patch" in the Pacific Ocean—has become a problem in the Great Lakes, the largest body of fresh water in the world. Scientists reported on the latest findings from the Great Lakes here today at the 245th National Meeting & Exposition of the American Chemical Society (ACS), the world's largest scientific society.

"The massive production of <u>plastic</u> and inadequate disposal has made <u>plastic debris</u> an important and constant pollutant on beaches and in oceans around the world, and the Great Lakes are not an exception," said Lorena M. Rios Mendoza, Ph.D., who spoke on the topic at the meeting. It continues here through Thursday, with 12,000 presentations on new advances in science and other topics.

Fish and birds could be harmed from accidently eating the <u>plastic</u> <u>particles</u>, or absorbing substances that leach out into the water, Rios said. Her team knows from analyses of fish stomachs that fish are consuming the plastic particles. Fish also could pass such substances to consumers, but Rios said research on that topic is just beginning.

Much of the plastic pollution in the oceans and Great Lakes goes unnoticed by the casual observer because it is so small. In the samples Rios' team collected in Lake Erie, 85 percent of the particles were smaller than two-tenths of an inch, and much of that was microscopic. Her group found between 1,500 and 1.7 million of these particles per square mile.



Fish, however, often mistake these bits of plastic for food. "The main problem with these plastic sizes is its accessibility to freshwater organisms that can be easily confused as natural food and the total surface area for adsorption of toxins and pseudo-estrogens increases significantly," Rios said. It is not yet understood whether these toxins enter the food chain in harmful amounts.

Rios also pointed out that the problem of ocean plastics is quickly growing. Plastic production has increased 500 percent since 1980, and plastics now account for 80 to 90 percent of ocean pollution, according to Rios. Some of this comes from plastic bags, bottles and other trash, or from fishing lines. Another source is household products like abrasive facial cleaners or synthetic fibers shed by clothes in the washing machine. The researchers also found large numbers of plastic pellets, which are shipped around the world to be melted down and molded into everything from plastic milk jugs to parts for cars.

The plastic pollution problem may be even worse in the Great Lakes than in the oceans, Rios said. Her team found that the number of microparticles—which are more harmful to marine life because of their small size—was 24 percent higher in the Great Lakes than in samples they collected in the Southern Atlantic Ocean. With a volume equal to 1.65 million Olympic swimming pools, the <u>Great Lakes</u> are the largest group of freshwater lakes in the world, and this is the first time that scientists have looked there for plastics.

The problem of <u>plastic pollution</u> in the oceans, however, has been widely known since at least 1988, when the National Oceanic and Atmospheric Administration first described the so-called "Great Pacific <u>Garbage</u> Patch," an area in the North <u>Pacific Ocean</u> where currents have concentrated plastics and other pollution. The patch varies in dimensions, but estimates indicate that at times it has been twice the size of the state of Texas.



Provided by American Chemical Society

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