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## Nylon Cooking Bags, Plastic-Lined Cups Can Release Nanoparticles into Liquids

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Nylon cooking bags and plastic-lined cardboard cups are conveniences many people rely on, but a new study in ACS' Environmental Science & Technology suggests that they are an underappreciated source of nanoparticles. They report that the plastic in these products release trillions of nanometer-sized particles into each liter of water that they come in contact with. That sounds like a lot, but the team notes that these levels are under the regulatory limits for consumption.

Food-grade plastics come into contact with a variety of foods and drinks that people consume every day. For instance, nylon cooking bags help keep food moist in the oven and make clean-up easier for slow cookers. Likewise, plastic-lined paper cups are designed to keep liquids hot and prevent them from leaking out.

Previous studies have shown that some plastic materials, including polypropylene baby bottles and polyethylene terephthalate tea bags, can shed microscopic and nanoscale particles into heated liquids, though the human health implications of ingesting these particles are unclear. So, Christopher Zangmeister and colleagues wanted to see whether food-grade plastic films can also be a source of small plastic particles.

The researchers poured room temperature or hot water into nylon slow cooker bags and low density polyethylene-lined cardboard cups from different retailers. After keeping the slow cooker hot for an hour, the researchers found that 35 trillion plastic nanoparticles leached into the liter of water in each bag. When the team put hot liquid in 12-fluid-ounce cups for 20 minutes, 5.1 trillion plastic nanoparticles per liter leached out. Both materials released considerably fewer nanosized particles into room temperature water.

Finally, the researchers [calculated](#) that a person would have to drink 13 cups of hot water from a plastic-lined cup or half a liter of water from the cooking bag to consume the equivalent of one nanoplastic particle for every seven cells in a person's body. But they also note that the number of particles that migrated from the food-grade plastics into both the

room temperature and hot water are still well below the levels for safe human consumption, according to U.S. Food and Drug Administration limits.

Read the [original article](#) on American Chemical Society (ACS).