

E-cigarettes: The new hazardous waste

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Single-use plastic straws, bags and coffee pods have captured the attention of the public and legislatures looking to ban products that wind up littering the landscape. But at the same time, e-cigarettes have begun to show up on streets and shores, catching officials off-guard and presenting the challenge of how to deal with litter that is part-recyclable

and part-hazardous waste.

"We started seeing them a number of years ago," said Cindy Zipf, executive director of Clean Ocean Action, a nonprofit organization that compiles biannual beach-cleanup reports from the Jersey Shore. "Most of us didn't even know what they were."

E-cigarettes, first introduced to the U.S. market in 2006, have seen an explosion in growth since 2014, when smaller vaping products hit the market. The sleek-looking products, with their fruity flavors, have helped fuel an epidemic in teen vaping. Now, more than 2 million middle and [high school students](#) are regular users of e-cigarettes.

Unlike the typical tobacco cigarette, which is made of paper, tobacco and a filter, each e-cigarette has five different components—residual nicotine, plastic, lithium batteries, aluminum, and fabric, each of which has to be disassembled and recycled separately. The products come in various shapes and sizes, from large, refillable tank devices to rechargeable devices that incorporate single-use plastic pods that look like USB flash drives.

Philadelphia currently is investigating how to recycle e-cigarette waste, said Scott McGrath, the environmental planning director. The city has contacted its third-party electronic- and hazardous-waste vendors for guidance because the e-cigarettes fall into both categories. Of particular concern, he said, are the [lithium batteries](#) used in some products, which are water-reactive and can start fires if not disposed of properly.

The ideal solution would be for the manufactures to take the parts back, McGrath said.

That seems unlikely to happen—some e-cigarette manufacturers recommend that smokers just pitch the empty products.

Juul has the largest market share in the e-cigarette category, according to a 2017 Business Insider article. It produces about 20 million pods per month.

"Juul pods are closed systems and are not intended to be refilled. They can be thrown away in a regular trash can," the company states on its website. On another part of the site, the company does recommend treating the rechargeable part of the device like a cell phone and following the "local recommendations for disposing of a lithium-polymer rechargeable battery."

Similar trends are found among other manufacturers, such as Blu, which does not offer any recycling guidance. Njoy discontinued a recycling-exchange program in 2016 and instead offers a link to local battery-recycling centers, according to their websites.

TerraCycle, a Trenton-based business that specializes in hard-to-recycle waste, is one of the few companies globally that accepts all parts of e-cigarettes. It has been recycling e-cigarettes since 2014.

"They are far more difficult to recycle than regular cigarettes because of the number of components," said Ernel Simpson, global vice president of research and development for TerraCycle.

The company sells collection boxes that range in cost from \$100 to \$250 and, once filled, can be shipped to TerraCycle for handling. About 50 percent of the business comes from California, which enacted Proposition 65, also called the Safe Drinking Water and Toxic Enforcement Act, in 1986, Simpson said.

"Using it once and tossing it is not sustainable," he said.

If e-cigarette materials are left in the environment, it is possible they will

seep into the soil and eventually into the water table, Simpson said.

The small pieces may be a choking hazard to children and wildlife.

Clean Ocean Action has asked fishermen to open the bellies of their catches to see what plastic materials the fish have swallowed, Zipf said. She has not received any reports that the pods have been found in fish.

"We are hoping it is just a fad," she said. "We are hoping the legislatures step up and start limiting the amount of these, especially for young people"

In the meantime, the group is considering adding e-cigarettes as an individual item to its 2019 beach-cleanup data cards. Currently, they are counted as part of cigarette packaging or as unusual items by the volunteer beach captains, Zipf said.

The increase in e-cigarette waste has come at a time when the number of traditional cigarette butts collected on the beaches has been declining, from the Number One item found in 2008 to the fifth most commonly found item in 2017, she said.

"Now, we have another replacement, unfortunately with the [e-cigarette](#) waste," she said.

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