An Overview

Electronic cigarettes (also known as e-cigarettes or “vapes”) are the most used commercial tobacco product among young people. In 2022, 3.3 percent of U.S. middle school students and 14.1 percent of U.S. high school students reported vaping. In New York State, as of 2020, the e-cigarette use rate among high school students was even higher, at 22.5 percent. The federal government, New York State, as well as other states and localities have all implemented laws raising the minimum legal age of purchasing tobacco products to 21 years, yet vaping devices still end up in the hands of far too many youth, including middle and high school students.

There are significant individual health consequences of vaping, including nicotine addiction, lung injury, impact on developing brains, and exposure to carcinogens and toxic chemicals. Exposure to secondhand vaporized aerosols may also damage health through exposure to nicotine and an aggravation of allergies. In addition to impacts on individual physical health, the issue has even greater significance for wider public health because of the collateral damage that electronic smoking devices cause to the environment. Vaping devices contain plastic that encases lithium batteries, metals, and toxic nicotine.
salts. All these components can harm the environment if not disposed of properly. Lithium batteries are prone to causing fires when discarded in trash or recycled. Vaping devices do contain recyclable metals, but the amount of metal is so small that it is difficult to actually extract and recycle. Schools may confiscate e-cigarette devices from students who possess them, but must then figure out how to properly dispose of the devices, something the schools themselves are not equipped to do. E-cigarette waste quickly adds up, and schools that accumulate this toxic waste must adhere to Environmental Protection Agency (EPA) regulations on the proper storage and disposal of these items.8

The environmental waste aspect of the fight against tobacco is gaining more attention nationally and in states like New York. This brief is designed to help communities in New York State address the problem of e-cigarette waste. It describes legislation recently introduced to address the issue, policy options communities can consider, and ways to increase public awareness about the environmental harms of e-cigarettes.

The Problem of E-Cigarette Toxic Waste

Like communities across the U.S., localities in New York State are facing the challenge of how to dispose of e-cigarettes. Contrary to industry claims of sustainability, disposable e-cigarettes are not environmentally friendly.9 These devices end up as litter in landfills or collect dust in storage at institutions not properly equipped to dispose of them, like schools.10 Most consumers do not realize that vaping devices cannot be thrown in the trash because they are both toxic and flammable. Despite being encased in plastic, e-cigarettes are not easily recyclable, either. To recycle e-cigarettes safely, they need to be dismantled, and manufacturers make that difficult, if not impossible, to do.11 Individuals cannot dismantle these products themselves without risk of exposure to dangerous chemicals. Municipal recyclers are unable to recycle these devices because the recyclable material is small and hard to remove with current technology. Further, this process is not profitable for most recycling companies.12

Pharmaceutical return programs in New York State used to accept disposable e-cigarettes for recycling, but those programs now have reduced capability to accept devices containing lithium
batteries. Lithium batteries require special handling as they are prone to explode and leach toxic chemicals. The way in which e-cigarettes are currently manufactured makes it difficult to separate the battery from the rest of the device. Without pharmaceutical return programs, local governments and schools are looking for new methods to dispose of the e-cigarettes that they continually collect or confiscate.

Given the prevalence of youth vaping, schools are on the front lines in addressing the disposal of e-cigarettes. School officials confiscate e-cigarettes from students regularly, and then are left to determine how to dispose of the devices properly according to government guidelines. Because the EPA lists nicotine as acute hazardous waste, schools that collect and store e-cigarettes qualify as generators of toxic waste. Schools and local communities need support to properly dispose of e-cigarettes without violating hazardous waste rules.

Evidence suggests that schools accumulate a significant amount of e-cigarette waste. For instance, in 2019, researchers from the University of California in San Francisco went to twelve Bay Area middle and high school parking lots and collected 172 disposable e-cigarette devices. Also in 2019, Colorado’s Boulder School District collected more than 2,500 e-cigarette and vaping devices. Disposing of e-cigarette waste is a growing problem that schools across the country are facing – along with increased numbers of young people using e-cigarettes and vapes. This is a statewide problem in New York, ranging from New York City to Monroe County. In August 2022, Monroe County became one of the few jurisdictions in the nation – and the first county in New York – to accept vape devices, e-cigarettes, and cartridges for waste disposal. Monroe partners with waste disposal company Clean Harbors. Located at an ecopark, the company accepts e-cigarettes with batteries intact and flavor pods removed.

E-cigarette waste compounds environmental justice problems caused by the tobacco industry. Non-white and low-income communities have disproportionately high numbers of tobacco retailers and thus larger amounts of tobacco product waste. These communities are at a greater risk for individual health issues given the proliferation of tobacco products in their communities.
The waste from tobacco products, especially combustible tobacco products, leads to the poisoning of the soil, groundwater, and air. E-cigarette devices carry additional environmental risks. Liquid flavor packets used in e-cigarettes contain nicotine salts, which leach higher amounts of toxins than regular cigarettes. Chemicals in batteries and degrading plastic, which is eventually reduced to microplastics, can contaminate the water, air, and soil. Disposable plastic packaging from flavor pods and cartridges exacerbates the problem. Low-income communities and communities of color already suffer from air, water, and soil pollution and other contaminants from transportation, manufacturing, or other industries. These environmental problems are compounded by the high density of tobacco retailers and greater amount of tobacco waste.

**Legislative Opportunities**

New York State localities can combat e-cigarette waste in several ways. One approach considered in New York and other U.S. jurisdictions is Extended Producer Responsibility (EPR) laws that address plastic generation. These types of laws make the manufacturer responsible for waste at the end of a product’s life. States that have or are looking to pass EPR laws have traditionally considered products like paint, batteries, carpets, and electronics. A growing number of states are looking at how to increase manufacturer responsibility for the end of life in additional categories of consumer products, including e-cigarettes. New York State is one of the states that has recently introduced EPR laws focusing on packaging to reduce instances of single use or hard to recycle plastics.

Another potential legislative option is to impose responsibility for disposables, such as plastic packaging, on manufacturers. Manufacturers could be required to reduce the amount of disposables they use in the first place (origination restrictions), pay a fee for the amount of disposables used in packaging, and handle the proper disposal and/or recycling of such materials, which would make it feasible for consumers to return the materials to the manufacturer.

Laws specifically addressing e-cigarettes could impose similar restrictions and require manufacturers to make it easy for consumers to return used vapes to them for proper disposal. Another option would be to tackle waste at the root, by imposing restrictions on the sale of disposable e-cigarettes. All these legislative options could significantly reduce e-cigarette waste by creating more accessible recycling programs or by limiting the sale of these products in general.
Such strategies recognize that consumers cannot bear the sole responsibility for proper disposal of e-cigarettes. While these strategies could reduce e-cigarette waste, they do have potential pitfalls if not comprehensively implemented. Legislation should create clear requirements for manufacturers to implement recycling plans, according to environmental standards, and create a clear oversight strategy. Otherwise, the onus would be on the industry to develop a sustainability plan for a product it wants to sell. Without the need to meet a clear industry standard, a manufacturer – especially a tobacco product manufacturer – has little incentive to create an environmentally sustainable product.

Instead of relying on the tobacco industry to solve the tobacco product waste problem, lawmakers could focus instead on developing a comprehensive framework for a state-managed waste management program for residents. Such a framework could, for instance, incentivize waste management companies throughout the state to develop a method for proper disposal of e-cigarettes, resulting in safe disposal sites that consumers could access, like the ecopark in Monroe County. The funding should come from the tobacco industry, but the state or another third party with expertise in such matters should implement the program to ensure transparency and maximum adherence to environmental guidelines.

A comprehensive bill could also address the origin of e-cigarette waste through sales restrictions. Sales restrictions on e-cigarettes and flavored tobacco products have been shown to reduce initiation and aid in smoking cessation. (For instance, a proposed bill introduced in the New York State Legislature on February 3, 2023, seeks to amend the flavored vape restriction law to include all flavored tobacco products.) Lack of access to a product could also have the downstream impact of reducing waste generation of these products. However, even if product sales are restricted, there still needs to be proper disposal of devices already in circulation.

Legislation to address e-cigarette waste could have significant impact if the focus is on limiting access and sale of the products. Legislation focused on manufacturers should clearly state the rules that manufacturers must follow in product packaging and e-cigarette disposal. With clarity in these laws, it may be less likely for e-cigarette manufacturers and retailers to pass the responsibility for disposal on to customers.
Policy Implementation Opportunities

Changing laws is a long process to get various stakeholders on board with new comprehensive rules. While legislative change may be ideal, better policy implementation or enforcement of current laws may bring more immediate relief to a community. Community-led policies can result in collaboration among localities as they each seek to limit waste from e-cigarettes. When communities propose or promote new programs or strategies to address their challenges, these approaches could be codified into law in the future.

In the absence of new laws, different localities can coordinate regionally and explore agreements that would allow them to share resources to create local waste management programs. Tobacco control units within a locality would do well to engage with the environmental department in their jurisdiction. The state of California, for example, does this through its Certified Unified Program Agencies (CUPA). The purpose of the CUPA is to enforce hazardous waste laws on businesses, vape shops, and schools that generate, store, collect, or dispose of hazardous waste products like used e-cigarettes.36 Local jurisdictions in New York State could create a similar partnership between local waste management leaders and public health and environmental officials to develop an appropriate action plan to dispose of e-cigarettes. Components of such a plan could include coordinating collection times across different jurisdictions; entering into joint agreements with private recycling companies to dispose of e-cigarettes; and enforcing hazardous waste laws on e-cigarette retailers, distributors, and manufacturers.

In Monroe County, mentioned above, officials entered into an agreement with Waste Management and Clean Harbors to collect e-cigarettes twice a week in the county.37 Entering into a contract may not be feasible for every county on their own. However, collaborations or partnerships between cities and counties could lead to similar agreements with Clean Harbors or other private waste managers. These partnerships might also provide an opportunity to request additional funding from the state to support e-cigarette disposal programs.

Counties and localities could also impose the responsibility of e-cigarette waste on retailers. For instance, they could increase local tobacco retail licensing fees to offset the costs of entering into a partnership with a waste management company. Another option might be to increase local sales taxes on these products to offset disposal costs.

In addition, coordinated policy should focus on supporting individual schools and school districts because of the large numbers of e-cigarettes they collect from students. Educational institutions now bear significant responsibility for safe disposal of e-cigarettes because middle
and high school students make up a disproportionately large number of e-cigarette users.\textsuperscript{38} Schools fall under federal regulations for hazardous waste because entities that are not households are subject to uniform standards to treat hazardous waste.\textsuperscript{39} By collecting e-cigarettes that contain hazardous and toxic materials, schools technically qualify as waste generators that should follow EPA regulations to properly dispose of e-cigarettes. Schools have limited options; either they confiscate e-cigarette devices or they allow students to keep them and remove the deterrent effect of confiscation.

Schools qualify as Very Small Quantity Generators (accumulating less than 1kg/month of acute hazardous waste) or Large Quantity Generators (accumulating more than 1kg/month of acute hazardous waste). Very Small Quantity Generator schools are still required to dispose of this waste but need to comply with fewer time constraints or registration requirements beyond local waste disposal laws. Most schools will likely qualify as Large Quantity Generators and must adhere to the following requirements:\textsuperscript{40}

- Notifying the local hazardous waste regulatory entity and filling out a form to obtain an EPA identification number;
- Storing nicotine waste in properly constructed and labeled/marked storage containers that clearly identify the material and hazard and indicate the accumulation start date;
- Ensuring that this hazardous waste is not stored with other types of toxic or hazardous waste with which it could potentially interact or react;
- Carefully storing the container so that it does not rupture or leak, and ensuring that it remains closed except for when additional hazardous waste is added to the storage container;
- Training all employees involved in the management and/or documentation of hazardous waste activities on the job and through classroom/online hazardous waste classes, covering job duties during normal operations and emergencies;
- Inspecting the hazardous waste weekly to ensure that there is no leakage and that labeling and handling requirements comply with federal standards; and
- Removing waste from the grounds within 90 days and either delivering or shipping it to a properly permitted waste treatment, storage, or disposal facility.

Schools that do not comply with these requirements are potentially exposed to liability and enforcement from the EPA, as well as risks such as a fire or leakage from the toxic liquids.
inside the devices. These requirements may be burdensome for individual schools that lack the resources to properly handle hazardous waste under federal law. The state or municipality implementing these policies and programs could support schools by including consultations from hazardous waste experts to help schools meet these regulatory requirements and develop a network of disposal options.

A collaborative approach on waste collection and disposal could also have a positive impact on health equity. The hazardous and toxic waste included in e-cigarette devices should not be in landfills where they can leach into the soil and waterways. With proper disposal, these devices will be less likely to end up in waste facilities near low-income communities or communities of color. A stronger systemwide waste disposal program can have a positive impact on environmental justice and the health benefits that flow from a healthier environment.

**Public Education Opportunities**

A public education program can be an effective way to inform people about the environmental harms of e-cigarettes. Efforts to restrict the sale of tobacco products may find more support when the public is also aware of the environmental harms of tobacco products. Internal tobacco industry documents show that the industry is wary of the public making a strong connection between tobacco use and environmental impact, fearing that public awareness may reduce smoking rates. Public health officials are finding that when students who use e-cigarettes understand that they are harming the environment in addition to their health, it encourages more young people to stop using e-cigarettes.

The New York State Department of Environmental Conservation has an education program known as Green Schools, which offers a curriculum that schools can use to engage students on environmental issues in their community. The department also has specific curricula related to recycling and hazardous waste management. Schools could partner with public health and tobacco control and prevention experts to influence the curriculum and teach young people about environmental hazards related to tobacco.

Media engagement strategies about the dangers of smoking and vaping should also include information about the environmental hazards of tobacco products. A specialized media program could help tobacco and e-cigarette users as well as nonusers understand the varied negative consequences of vaping and e-cigarette devices. A broader media engagement effort could influence and educate decision-makers by creating a sense of urgency on this issue.
Many young people are concerned about the environment and want to do their part in supporting environmental and climate causes. Educational programs tailored through social media to students and young people could counteract the targeted advertising youth receive from the tobacco industry. For instance, in addition to encouraging youth not to vape, educational materials could focus on how young people can do their part to help the environment and how there are no environmentally friendly e-cigarette devices. This type of education could also enhance health equity if it explains how tobacco and environmental harms can have a disproportionate impact on low-income communities or communities of color.

Conclusion

E-cigarette waste is a growing problem with long-term adverse environmental consequences. Young people are at a high risk to start vaping, and they will also suffer the environmental harms. A variety of policy approaches can help address this emerging problem. For instance, sales restrictions can help stop the proliferation of e-cigarettes by limiting the number of new devices that enter the commercial stream. Addressing the waste issue will require lawmakers and decisionmakers to hold tobacco producers accountable for their devices. One method could be through Extended Producer Responsibility (EPR) laws. To be effective, these laws must ensure that the tobacco industry acts with transparency and does not continue to lay the responsibility for the waste issue on the consumer. States and localities should also continue to engage in education and awareness programs. Raising public awareness of the environmental hazards of e-cigarettes has the potential to lead to greater support for tobacco control policies that protect both youth and the environment. An environment free of tobacco pollution and waste is integral to public health and leaving behind a hospitable planet for future generations.

Contact us for assistance! If you’re working on New York State commercial tobacco control issues and need assistance, contact the Public Health Law Center at (651) 290-7506 or publichealthlawcenter@MitchellHamline.edu.
Endnotes

1 The Public Health Law Center recognizes that traditional and commercial tobacco are different in the ways they are planted, grown, harvested, and used. Traditional tobacco is and has been used in sacred ways by Indigenous communities and tribes for centuries. Commercial tobacco is manufactured with chemical additives for recreational use and profit, resulting in disease and death. For more information, visit http://keepitsacred.itcmi.org. When the word “tobacco” is used throughout this brief, a commercial context is implied and intended.

2 Notes from the Field, E-cigarette Use Among Middle and High School Students — United States, 2022, Centers for Disease Control and Prevention, https://www.cdc.gov/mmwr/volumes/71/wr/mm7140a3.htm?s_cid=mm7140a3_w (last updated Oct. 7, 2022).


11 See Hendlin, supra note 10.


16 See Categories of Hazardous Waste Generators, supra note 8.


23 See Yogi Hale Hendlin, supra note 10.


28 In 2022, New York Assemblymember Steve Englebright introduced Assembly Bill A10185, which places the responsibility for plastic packaging on manufacturers. The bill does this by proposing a program for packaging and establishing a packaging responsibility fund. The bill would require manufacturers to change their packaging design to reduce waste; pay for the amount of materials used in packaging; and take responsibility for proper waste disposal by making it easier for consumers to return or recycle the product packaging. Should this bill become law, it could also apply to e-cigarette manufacturers by regulating how they package e-cigarettes and would require them to provide appropriate mechanisms for disposal of these devices. A10185, 2022 Leg. (N.Y. 2022), https://legiscan.com/NY/bill/A10185/2021.
29 New York State lawmakers are also interested in addressing e-cigarette waste directly and have introduced bills to create a policy for e-cigarette recycling. Assembly Bill A8884 would require manufacturers of e-cigarettes to develop a recycling plan that is accessible to consumers. A8884, 2021-2022 Leg. Session (N.Y. 2022), [https://www.nysenate.gov/legislation/bills/2021/A8884](https://www.nysenate.gov/legislation/bills/2021/A8884).


31 For example, Assembly Bill A8884 limits requirements on manufacturers for creating and implementing a recycling plan. The bill does not specify standards to determine if a manufacturer’s recycling plan is satisfactory. Nor does the bill outline a clear oversight strategy.


33 Fortunately, New York State public health law does restrict the sale of flavored vaping products. N.Y. Pub. Health Law § 1399-mm-1. Unfortunately, however, the law has some gaps. It exempts flavored e-cigarette and vaping products that have received marketing granting orders from the U.S. Food and Drug Administration (FDA). However, no flavored e-cigarette has yet to receive such authorization by the FDA. U.S. FOOD AND DRUG ADMIN., *Premarket Tobacco Product Marketing Granted Orders* (2022), [https://www.fda.gov/tobacco-products/premarket-tobacco-product-applications/premarket-tobacco-product-marketing-granted-orders](https://www.fda.gov/tobacco-products/premarket-tobacco-product-applications/premarket-tobacco-product-marketing-granted-orders). Further, New York State has struggled to enforce the flavored vape sales restriction. While retailers can be held accountable for selling illegal products, the law allows manufacturers and distributors an affirmative defense to claim they did not know that their product would be sold illegally. This makes it harder to hold manufacturers and distributors accountable. N.Y. Pub. Health Law § 1399-mm-1. Manufacturers and distributors take advantage of this loophole and continue to sell flavored e-cigarettes to retailers who then end up selling illegal e-cigarettes, because there is currently limited enforcement in New York State. Marnie Eisenstadt, *[A Kid-Saving NY Law Almost No One Enforces: How the Flavored Vape Ban Went Up in Smoke*, SYRACUSE.COM](https://www.syracuse.com/news/2022/09/a-ny-law-no-one-follows-how-the-flavored-vape-ban-went-up-in-smoke.html) (Sep. 26, 2022).


37 [Ecopark](https://www2.monroecounty.gov/ecopark), Monroe County (2022).


43 Id.


46 See #YouthStats: Environment and Climate Change, supra note 44.