Safe Disposal of E-cigarettes

Kristin Fitzgerald, US EPA
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Outline

1. Why e-cigarettes are a difficult wastestream
2. Summary and scale of the waste problem
3. Federal agencies with a role
4. Solutions under RCRA
    1. Recommendation for HHW vapes
    2. Collection of HHW vapes at alternate locations
    3. EPA's recent memo about recycling HHW vapes

Why E-cigarettes are a Difficult Wastestream

Section 1

E-cigarettes come in many shapes, sizes, and types.



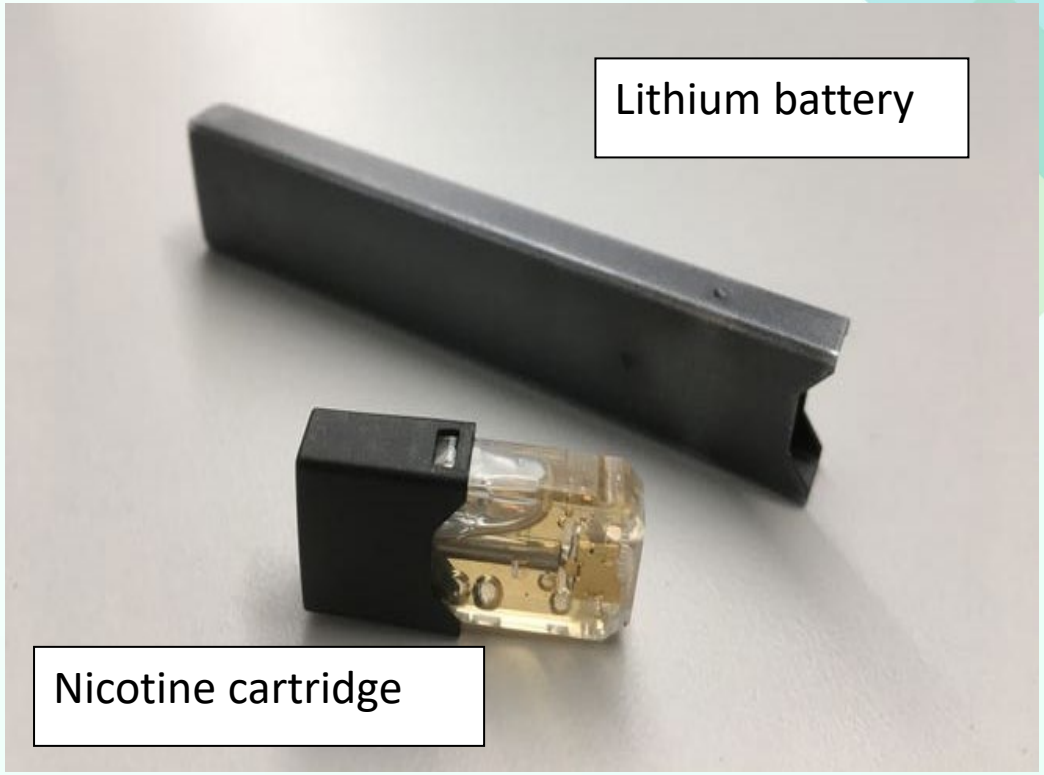
e-cigarette = vape

CDC.gov/Vaping

CDC

E-cigarettes are Hazardous Waste

1. **Nicotine e-liquid** is acutely toxic
   - Poisonings and death have occurred from ingestion of nicotine e-liquids
   - Nicotine is also dermally absorbed
   - RCRA acute hazardous waste
     - HW Code P075
2. **Lithium-ion batteries** can catch fire, especially when damaged
   - Likely RCRA HW
     - D001 (ignitable)
     - D003 (reactive)





Credit: Boise Fire Department

A discarded vape's lithium-ion battery caused a fire within a garbage truck, which had to be dumped onto the street.

Summary & Scale of Waste Problem

Section 2

Summary of the Waste Problem

- The multiple hazards of e-cigarettes correspond to **high costs** to manage the e-cigarettes at end of life (i.e., incineration or recycling)
- Higher costs for managing e-cigarettes provides a disincentive for collecting them
- When they are collected, these higher costs are often borne by municipalities and schools, which are ill-equipped to afford the costs
- Not collecting e-cigarettes means more e-cigarettes in the municipal waste stream, thus increasing fire risks
- Recycling of e-cigarettes is frustrated by **illegal vapes**, with non-removable/embedded batteries, thus making recycling expensive and losing the opportunity to recover critical minerals

Scale of the Waste Problem

- In the US, we throw out
  - 5.7 disposable vapes per second
  - 500,000 disposable vapes per day
  - 182,000,000 disposable vapes per year
- The lithium in the batteries in the disposable vapes sold every year weighs **30 tons**
  - Enough to produce batteries for 3,350 EVs

Data per US PIRG and CDC Foundation

Federal Agencies with a Role

Section 3

FDA's Role

- FDA has authority to authorize e-cigarettes/vapes as products
  - PMTA = Premarket Tobacco Product Application
  - 39 e-cigarettes/vapes and components have FDA authorization
  - Only tobacco and menthol flavors have been authorized
    - No fruity flavors or designs that are attractive to kids have been authorized
  - All but one of the legal e-cigarettes/vapes that are authorized by FDA have removable batteries
- 86% of the e-cigs/vapes currently on the market are **ILLEGAL***
  - They are not authorized by FDA to be marketed in the US
  - They are manufactured overseas (e.g., China)
  - Many have fruity flavors and designs that are attractive to kids
  - Most do not have removable batteries

* per Truth Initiative study

Illegal e-cigarettes marketed to kids





Source: New York Post

EPA's Role

- EPA has authority to regulate e-cigarettes/vapes as hazardous waste under Resource Conservation and Recovery Act (RCRA)
- EPA does not have the authority to institute extended producer responsibility (EPR) for any waste stream, including e-cigarettes
- The Infrastructure Investment and Jobs Act (IIJA) directs EPA and Department of Energy (DOE) to develop a voluntary EPR framework for batteries, including batteries removed from e-cigs.
  - Not intended to be a model bill
  - Aimed at supporting states in EPR design and implementation

Solutions Under RCRA

Section 4

RCRA Is Not the Best Tool

- Solutions outside RCRA's authority would likely provide more effective and comprehensive approaches for e-cigarette management
- That said, RCRA is what we have to work with for the time being
- EPA has developed guidance materials to encourage the safe management and disposal of e-cigarettes from households

Residence



Not regulated

Whether RCRA regulations apply to the disposal of any hazardous waste depends on **WHERE** the hazardous waste is generated

Non-residence





Regulated

How to Safely Dispose of E-Cigarettes: Information for Individuals

Do NOT put e-cigarettes in your household trash or recycling

- The lithium batteries can become damaged and cause fires.
- Nicotine is toxic and poses a risk to both workers and the environment.



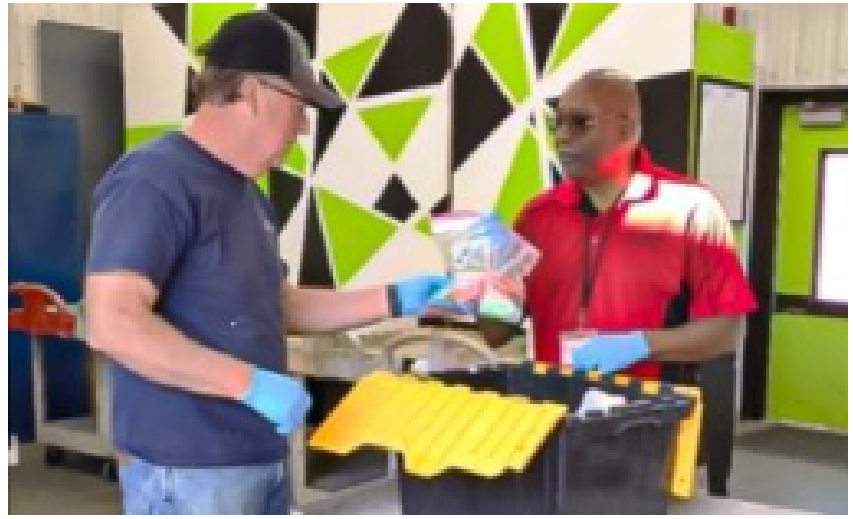


https://www.epa.gov/hw/how-safely-dispose-e-cigarettes-information-individuals

How to Safely Dispose of E-Cigarettes: Information for Individuals

DO take e-cigarettes to your household hazardous waste collection site

- Many towns and counties have collection programs for household hazardous waste. Search online for household hazardous waste collections near you or contact your local solid waste agency.
- Typically, household hazardous waste collections are free for residents.
- The e-cigarettes will be managed safely and prevent fires and releases of harmful chemicals to the environment.



A customer carefully disposing of multiple vape pens at an HHW collection site. Photo courtesy of Mesa County, Colorado HHW.

Alternative HHW E-cigarette Collection

- HHW collection has traditionally been conducted by local governments (counties, municipalities)
- EPA is developing guidance that offers best practices for alternative locations that might want to offer collection of HHW e-cigs (e.g., vape stores)
  - Vape stores should contact local and state government agencies to be aware of any licensing, registration, or permitting that may be needed in order to collect waste
  - Vape stores should identify a funding mechanism to pay for the recycling or hazardous waste incineration

EPA Memo for Recycling HHW Vapes

- The household waste exclusion applies to the **entire collection and recycling supply chain** for household waste, provided the exempt household waste is kept separate from regulated hazardous waste.
- Pre-consumer and post-consumer e-cigarettes from households are excluded from RCRA Subtitle C hazardous waste regulation when collected, stored and transported and treated, e.g., recycled.
- Likewise, the various wastestreams that are generated from the disassembly, including the non-recyclable components that are sent for disposal, remain exempt from RCRA Subtitle C hazardous waste regulations as household waste, so long as they are kept separate from regulated hazardous waste
- Quotes from RCRAOnline Memo #14974; January 27, 2026

Thank You for Attending

QUESTIONS?

Kristin Fitzgerald, US EPA
Fitzgerald.Kristin@epa.gov