

AEROSOL CANS AS UNIVERSAL WASTE & VAPES GUIDANCE UPDATE

**Council on Recycling
September 5, 2025**

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Agenda

Introduction

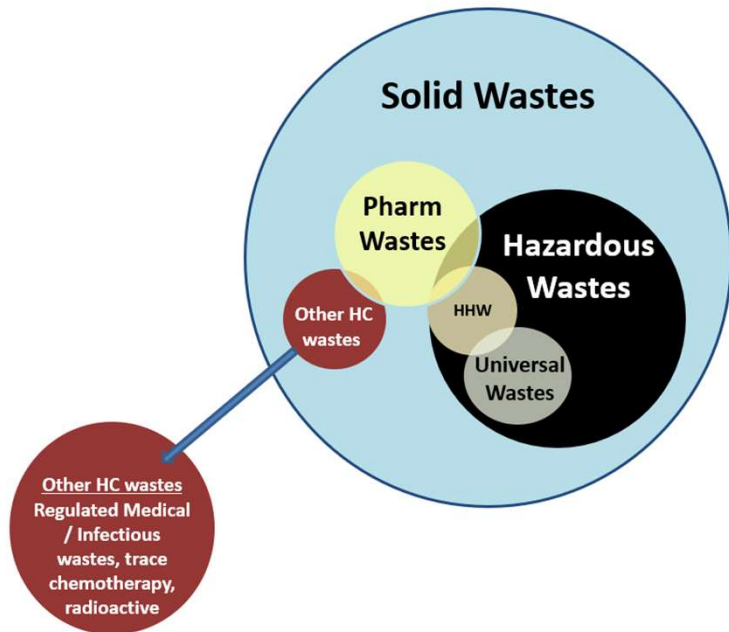
Background on universal hazardous wastes

Regulations

Scenarios

Vaping Devices – regulatory challenges

Introduction



The WDNR Hazardous Waste Section implements NR 600-679, Wis. Adm. Code, and is authorized by U.S. EPA as an equivalent program to their Resource Conservation and Recovery Act (RCRA) program.

Staff includes a coordinator, policy specialist, licensing staff, regional inspectors and reporting support staff.

In Wisconsin there are over 12,000 RCRA hazardous waste generators, transporters, recyclers, licensed treatment and storage facilities, transfer facilities, used oil collection (markers, burners, processors) facilities, PCB transporters and more.

Why we are talking today

Compressed aerosols are predominantly made up of volatile organic compounds, linked to the generation of toxics in smog.

When released to the environment they create pollutants that impact human health, wildlife and agriculture

Worldwide more than 25 billion cans are used per year



<https://www.citronhygiene.co.uk/resources/are-aerosols-bad-for-the-environment>

In the UK: aerosol products now emit more harmful VOC air pollution than all the vehicles in country combined

Why we are talking today

E-cigarettes or electronic nicotine delivery systems (ENDS) go by many names — the most common name is “e-cigarette,” but other terms include e-cigs, vapes, vape pens, mods, and tanks.

They contain nicotine and lithium batteries which make them a fire hazard, a health hazard, and difficult to manage and recycle.

Current e-cigarette use among high school students (2011-2024)

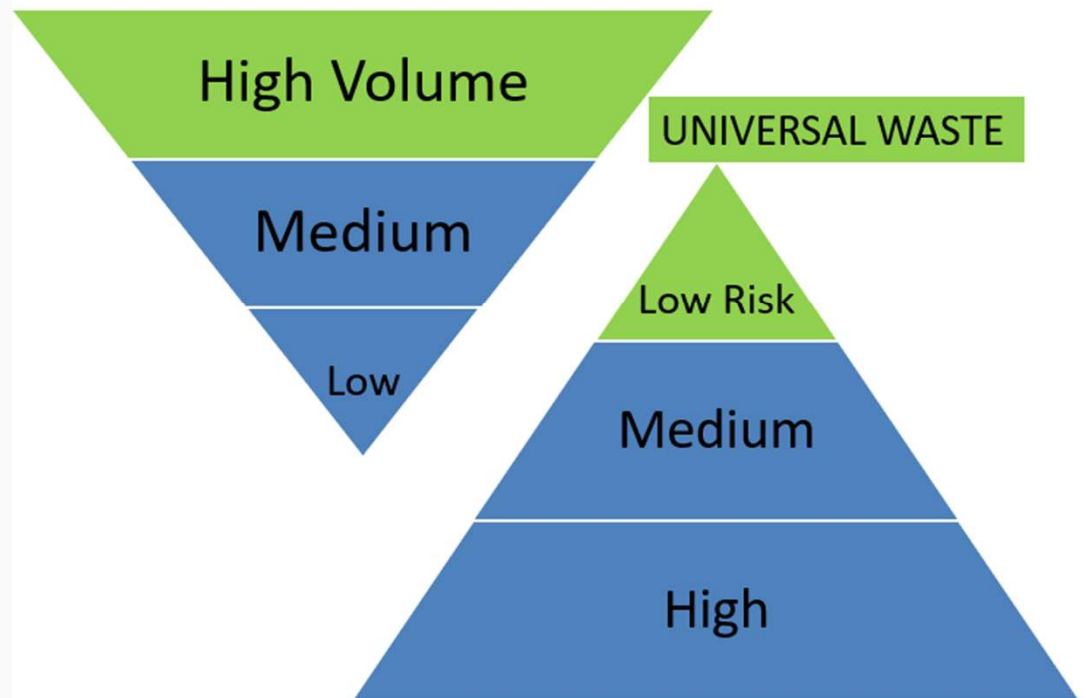


Source: National Youth Tobacco Survey (2011-2024), which includes responses from middle and high school students.

<https://truthinitiative.org/research-resources/emerging-tobacco-products/e-cigarettes-facts-stats-and-regulations>

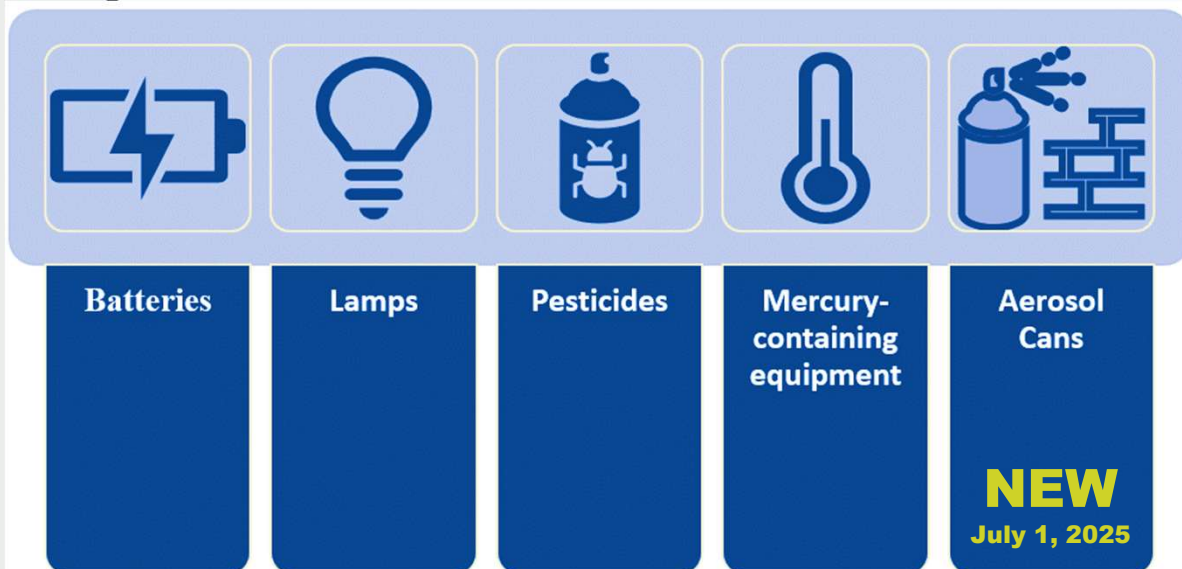
Poison centers receive around one call every three hours per day about a child who has been exposed to an e-cigarette or liquid nicotine.

BACKGROUND ON UNIVERSAL HAZARDOUS WASTE



Universal waste regulations, found in ch. NR 673, Wis. Adm. Code, can relieve regulatory burden for the management of wastes that may be hazardous wastes.

Typically generated in larger volumes across many types of businesses or industries.



Can be managed protectively under reduced regulations.

Collection and management requirements are designed to promote the recycling of these waste streams.

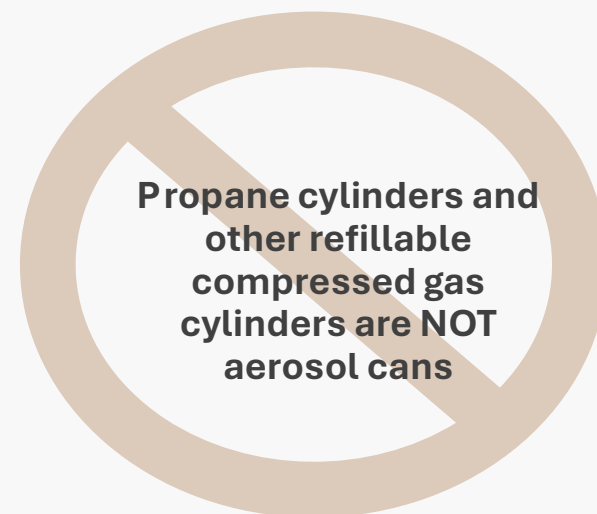
All universal wastes are hazardous wastes

UNIVERSAL WASTES in WISCONSIN

Surrounding states that have adopted aerosol cans as a UW: Ohio, Michigan, Indiana, Iowa, Illinois

What is an Aerosol Can?

“Aerosol can” means a non-refillable receptacle containing a gas compressed, liquefied, or dissolved under pressure, the sole purpose of which is to expel a liquid, paste, or powder and fitted with a self-closing release device allowing the contents to be ejected by the gas.



Not all aerosol cans are a hazardous waste

Aerosol cans may be hazardous wastes only when:

- They are **non-empty** and **will no longer be used**.
- When the propellant is ignitable or toxic.
- The product itself is ignitable, corrosive, or toxic.

Aerosol cans containing paint, pesticides, and cleaning products are several examples of materials that may be hazardous when discarded. Additionally, most aerosol cans use ignitable propellants such as propane, butane, or liquefied petroleum gas (LPG) making most non-empty waste aerosol cans ignitable hazardous wastes.

REGULATIONS

(NR 673, WIS. ADM. CODE)



How are Universal Hazardous Wastes Regulated?

BUSINESS-GENERATED

- Must manage these wastes as either hazardous waste or as universal waste
- When managed as a universal waste they must follow all requirements of NR 673

(Labeling, dating, containers standards, preventing and addressing leaks, training staff, tracking shipments, and shipping within one year of generation.)

HOUSEHOLD-GENERATED

- Can be disposed of in the solid waste stream
- Can be taken to a Household Hazardous Waste/Very Small Quantity Generator (HHW/VSQG) Collection Site (operating under subchapter HH of NR 666, Wis. Adm. Code).

Household Hazardous Waste: When segregated

THE FOLLOWING SOLID WASTES ARE NOT REGULATED HAZARDOUS WASTES:

Household waste, *including household waste that has been collected, transported, stored, treated, disposed, recovered, such as refuse-derived fuel, or reused, except if the hazardous waste in this waste stream is separated for management at a collection facility regulated under subch. HH of ch. NR 666, Wis. Adm. Code.*

WHAT DOES THIS MEAN?

If segregated for management at a HHW/VSQG Collection facility, the collected hazardous waste and universal waste must then be managed in accordance with NR 666 requirements.

Resource Recovery Facility

A resource recovery facility managing municipal solid waste may not be deemed to be treating, storing, disposing of or otherwise managing hazardous wastes for the purposes of regulation under chs. NR 660 to 673, if the facility does all of the following:

Receives only the following:

- **Household waste** from single and multiple dwellings, hotels, motels, and other residential sources.
- **Solid waste** from commercial or industrial sources that **does not contain hazardous waste**.

AND

- The facility does **not accept** hazardous wastes, and
- The owner or operator of the facility has **established contractual requirements or other appropriate notification or inspection procedures** to assure that hazardous wastes are not received at the facility.

SCENARIOS

- 1 When you are the generator (business)
- 2 When you are the HHW/VSQG Collection Facility
- 3 When you are not an HHW/VSQG or a generator



1

When you are the generator

Any person or site whose act or process produces hazardous waste identified or listed in NR 661, Wis. Adm. Code, or whose act first causes a hazardous waste to become subject to regulation



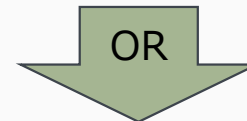
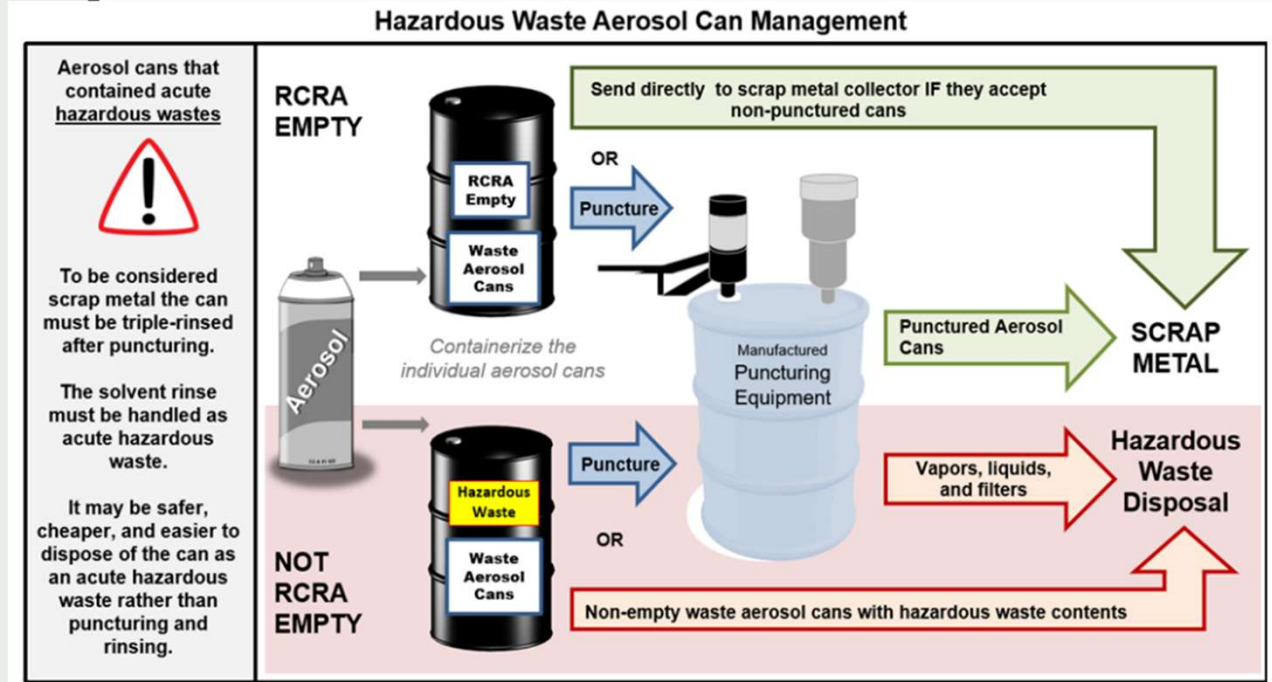
An aerosol spray can is a waste when it can no longer be used for its intended purpose.



A small percentage of aerosol cans may not contain hazardous materials; however, the majority consist of contents under pressure that are flammable.

1

When you
are the
generator



Manage as a Universal Waste

1

When you are the generator (electing to manage aerosol cans as UW)

UW does not count towards your generator status

- Not managed under full hazardous waste regulations or subject to full hazardous waste fees and related costs
- Can be sent to another universal waste handler or a destination facility

Does not need a hazardous waste licensed transporter for shipments

Labeling requirements are less restrictive, no indication of hazards:

- Used Aerosol Cans
- Universal-Waste-Aerosol Cans
- Waste Aerosol Cans

2

When you are the HHW/VSQG Collection Facility



The collector is classified as a “household and very small quantity generator hazardous waste collection facility” and is regulated under subch. HH of ch. NR 666, Wis. Adm. Code.

1 & **2**

When you are the generator or Collection Facility

Employee Training

- Inform all employees who handle or have responsibility for managing the universal waste.
- Information/training shall describe proper handling and emergency procedures.
- Information shall be appropriate for the types of universal waste generated and managed at the facility

Container requirements

- Structurally sound and compatible with the contents
- No leakage, spillage or damage that could cause leakage

1 & 2

When you are the generator or Collection Facility

Aerosol Can UW container requirements

Accumulate in a container that is in good condition, free from leakage and **away from heat sources**.

If there is evidence of leakage, the cans shall be:

- Packaged in a separate, closed container, or
- Overpacked with absorbents, or
- Immediate punctured and drained.

As long as each individual aerosol can is not breached and remains intact, you may:

1. Sort aerosol cans by type.
2. Mix intact cans in one container.
3. Remove actuators to reduce the risk of accidental release.

1 & 2

When you are the generator or Collection Facility

One year accumulation time limit



Must be able to demonstrate the length of time universal waste has been accumulated.

- Date the container or the individual items
- Maintain an inventory system for each item, or maintain an inventory system for each group of containers
- Place universal waste in a specific area and identifying the earliest date any waste in the area was received or became a waste

Puncturing of UW Aerosol Cans

1 & 2

Once punctured the can must be recycled and a waste determination must be made on the contents.

- Ensure the prevention of fires and release of the contents
- Ensure the work is done in a well-ventilated area
- Immediately transfer the contents from the waste aerosol can or puncturing device, if applicable, to a container or tank that meets regulatory standards.

Puncturing of UW Aerosol Cans

1 & 2

Once punctured the can must be recycled and a waste determination must be made on the contents.

- Any hazardous waste generated as a result of puncturing and draining the aerosol can is subject to all applicable requirements under chs. NR 660 to 670.
- The “**handler**” is considered the generator of the hazardous waste and is subject to ch. NR 662.

Establish or adopt a written procedure to be followed in the event of a spill or leak and provide a spill clean-up kit and promptly clean up all spills or leaks of the contents of the aerosol cans.

3

When you
are NOT a
Collection
Facility or
Generator



Material Recovery Facility (exemption criteria)

- Receives only **Household waste** or **Solid waste** from commercial or industrial sources that **does not contain hazardous waste**
- Does not accept hazardous wastes
- Has **established** contractual requirements or other appropriate notification or inspection procedures **to assure that hazardous wastes are not received**

3

**When you
are a
Material
Recovery
Facility**

What if the MRF receives HHW or
VSQG hazardous waste aerosol cans
AND
they meet all the exemption
criteria?

ANSWER:

- The cans and their contents are exempt from hazardous waste regulations
- The cans may be required to be recycled under solid waste regulations

BMP: If the cans are punctured or crushed at the facility the contents should be contained. If not contained, they could generate a release to the environment of a hazardous substance.

3

**When you
are a
Material
Recovery
Facility**

What if the MRF receives HHW or VSQG hazardous waste aerosol cans AND segregates or separates them for management?

ANSWER: Same as previous slide as long as they are meeting the exemption criteria.

However, the facility could elect to then manage the waste aerosol cans as a universal waste (or a hazardous waste).

- The facility is now the generator, and generator requirements apply
- Send off site to a UW handler or a licensed facility

3

**When you
are a
Material
Recovery
Facility**

What if the MRF receives HHW or VSQG hazardous waste aerosol cans and the facility has **not met** all the exemption criteria?

ANSWER:

- The facility would be subject to the hazardous waste regulations, specifically NR 666.
- The MRF would notify and operate as a HHW/VSQG Collection Facility.

3

When you are a Material Recovery Facility

What if the facility receives industrial/business hazardous waste aerosol cans, from small or large quantity generators, and/or there is evidence that the exemption criteria, such as established practices to avoid acceptance of these wastes, are not met?

ANSWER:

- Technically the facility becomes subject to all hazardous waste regulations.
- Receiving hazardous waste from off-site generators and would be in violation of substantial regulations.

Educate your clients

MRFs can accept household and very small quantity generator waste aerosol cans when the facility meets the **exemption criteria**.

Aerosol can management regulations require the capture of vapor and liquids during puncturing or crushing. This is also a **best management practice for material recovery facilities**.

The rules are designed to **promote recycling** while being **protective** of human health and the environment.

Work with department staff if you have questions.



Aerosol Cans - Conclusion

VAPING DEVICES

REGULATORY CHALLENGES



HAZARDOUS WASTE



A vape pen showing the portions that contain the two

E-cigarettes contain nicotine and lithium batteries, making them hazardous waste.

Nicotine is toxic. Liquid nicotine in e-cigarettes can be easily absorbed by the skin, potentially causing nicotine poisoning with symptoms that include difficulty breathing, fainting, or seizures. Nicotine can also harm fish and other aquatic organisms.

Lithium batteries can catch fire, especially when damaged. When placed in household trash and recycling bins, lithium batteries often get damaged by trash compactors and can cause fires during transportation and at waste and recycling facilities.

Why we are talking today

E-cigarettes or electronic nicotine delivery systems (ENDS) go by many names — the most common name is “e-cigarette,” but other terms include e-cigs, vapes, vape pens, mods, and tanks.

An estimated **1.63 million** middle and high school students currently use e-cigarettes.

Thousands of flavored, high-nicotine, and relatively cheap e-cigarette products remain on the market —many of them illegally (not FDA approved).

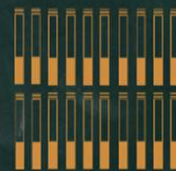
Nicotine in E-cigarettes is Equal to...

1 Pack of Cigarettes

~59 mg/mL of nicotine



= 20
CIGARETTES



1 JUUL Pod

~59 mg/mL of nicotine



= 20
CIGARETTES

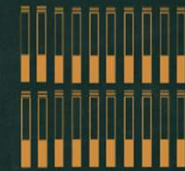


1 Puff Bar

~59 mg/mL of nicotine



= 20
CIGARETTES



<https://extension.usu.edu/be-epic/research/the-truths-behind-vaping-information-for-youth-and-teens>

Resources for the public

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



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

The goal of this fact sheet is to explain to consumers the importance of safe disposal of e-cigarettes, including vape pens.



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.

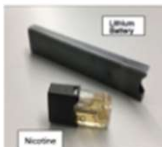


DO take e-cigarettes to your household hazardous waste (HHW) collection site

- Many towns and counties have collection programs for HHW, which can be identified by searching online for HHW collections near you or contacting your local solid waste agency.
- Typically, HHW 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 e-cigarettes at an HHW collection site. Photo courtesy of Mesa County, Colorado, HHW.



An e-cigarette showing the portions that contain the two hazards.

E-Cigarettes Contain Nicotine and Lithium Batteries

E-cigarettes contain nicotine and lithium batteries, making them hazardous waste.

Nicotine is toxic. Liquid nicotine in e-cigarettes can be easily absorbed by the skin, potentially causing nicotine poisoning with symptoms that include difficulty breathing, fainting, or seizures. Nicotine can also harm fish and other aquatic organisms.

Lithium batteries can catch fire, especially when damaged. When placed in household trash and recycling bins, lithium batteries often get damaged by trash compactors and can cause fires during transportation and at waste and recycling facilities.

Benefits of HHW Collection

Taking your e-cigarette waste to a HHW collection site is the best way to ensure that your hazardous waste does not:

- Cause a fire.
- Expose first responders and other workers to toxic chemicals.
- Release toxic chemicals into the environment.



Firefighter extinguishing a lithium battery fire after the contraband pile of e-cigarettes was moved outside by a municipal recycling facility operator. Photo courtesy of Larimer County Solid Waste Department, Colorado.



Office of Resource Conservation and Recovery
EPA 530-R-23-011
November 2023

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

HHW Collection Sites

Can vaping devices (ENDS) go to NR 666 collection sites?

Yes, when they are household devices they can be managed as household hazardous waste and the collection site allows this waste stream.

What about business wastes?

Depends. If they are unsold, damaged products the waste determination needs to be made at the business. If they are still a VSQG, then the waste could be taken to a collection site (if allowed).

HHW Collection Sites

How would they be managed?

There are no hazardous waste specific requirements for these devices (at this time) – so they are managed under NR 666 management requirements.

However, there are many **best management practices** that have been established. These BMPs have been discussed with EPA and will be outlined in upcoming guidance for schools.

BEST MANAGEMENT PRACTICES

COLLECTION

1. Store the collection container inside the building.
2. Ensure the device is powered “off.”
3. If damaged or leaking, isolate the device and store in a sealable plastic bag before being placed in the collection container.
4. Do not place any other type of non-vaping waste in the collection container.
5. Use metal fire-resistant containers.
6. Limit access to the container.
7. Store containers in a locked area to control access and prevent damage.
8. Label the collection container with the words “Discarded Household Nicotine Vaping Items Only” or with similar words.
9. Place a start date on the collection container.
10. Keep the collection container closed – except when adding or removing household nicotine vaping items from the container.
11. Avoid an excessive stockpiling of the nicotine vaping devices. When one collection container is full begin arrangements for its proper disposal.

BEST MANAGEMENT PRACTICES

Recommendations to staff:

- Avoid dermal contact with the vaping liquid.
- Tape any exposed battery terminals to prevent shorts that may lead to a fire.
- Avoid damaging the devices during placement or storage.

SAFETY

It is recommended that the collection container storage area be equipped with some or all the following:

- Fire/smoke detection system.
- Fire extinguisher.
- Fire suppression media such as CellBlockEx® or sand.
- Place a non-flammable absorbent (e.g., oil dry, granulated clay, diatomaceous earth) in the collection pail to absorb any nicotine vaping liquids.

Recycling and Recovery?

Lithium in e-cigarette batteries is the same highly sought metal used to power electric vehicles and cellphones.

But the quantities used in vaping devices are too small to warrant salvage. And nearly all disposable e-cigarette batteries are soldered into the device, making it impractical to separate them for recycling.

<https://spectrumlocalnews.com/us/snplus/health/2023/10/19/recycle-trash-e-cigarettes-vapes>

Disposal options

Dispose the nicotine vaping devices with either a licensed TSD facility or licensed solid waste combustor – when they are licensed to accept these devices.

QUESTIONS?

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