

# An Update on Landfill and Recycling Industry Fires

presented by:  
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**Environmental Solutions** for *More Than 50 Years!*

Landfills • Waste Planning/Diversion • Industrial Compliance  
Brownfields • Industrial Wastewater/PFAS • Site Cleanups  
Carbon Sequestration

A large yellow excavator is shown working on a massive pile of trash at a landfill. The excavator's arm is extended, and it appears to be moving or sorting through the waste. The background is a clear blue sky, and the overall scene is brightly lit, suggesting a sunny day.

**SCS ENGINEERS**

# Agenda

- Recent Fire Trends
- Industry Impact
- Causes of Fires at Landfills and Recycling Facilities
- Safety Risks
- Fire Prevention Strategies

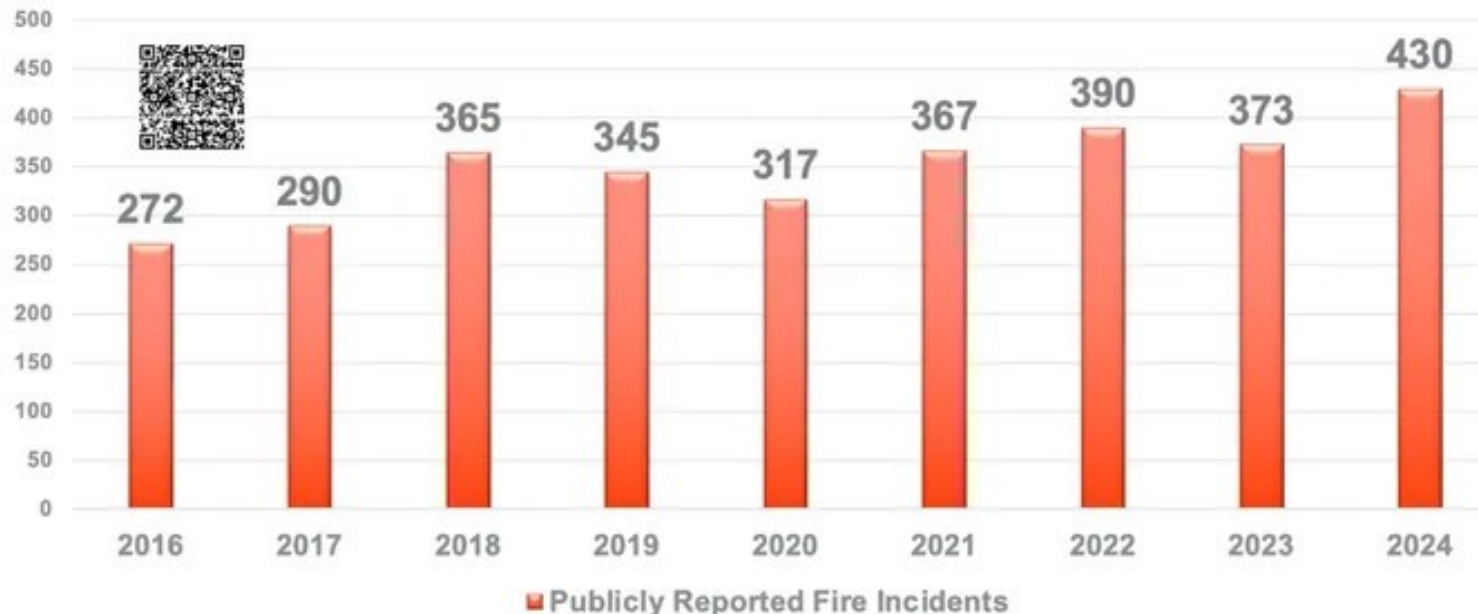


# Recent Fire Trends

- Record number of waste and recycling facility fires in 2024
- Most go unreported – small fires on the working face that are handled internally



## ANNUAL REPORTED WASTE & RECYCLING FACILITY FIRES US/CAN 2016-2024



Source: Ryan Fogelman, [rfogelman@firerover.com](mailto:rfogelman@firerover.com)

# Recent Fire Trends

- As we go into 2025...



## Q1 FIRE INCIDENTS HIT ALL TIME HIGHS

Year	Publicly Reported Fires US/CAN	Year End
	January - March	
2025	104	NA
2018	83	365
2024	81	430
2023	75	373
2022	71	390
2021	69	367
2019	65	345
2020	61	317
2017	48	290
2016	44	272

Source: Ryan Fogelman, [rfogelman@firerover.com](mailto:rfogelman@firerover.com)

# Fire Causes

## What causes these fires?






- Waste reactions
- Equipment sparks
- Lithium-ion batteries thermal runaway
- AA and AAA lithium metal batteries
- Lighting
- Arson
- Burn barrel management
- Hot loads
- Fluids in scrapped equipment (gasoline, diesel, hydraulic oil, ect.)
- Propane cylinders
- Oily rags
- Dry vegetation



# Fire Causes

## Lithium-ion Batteries

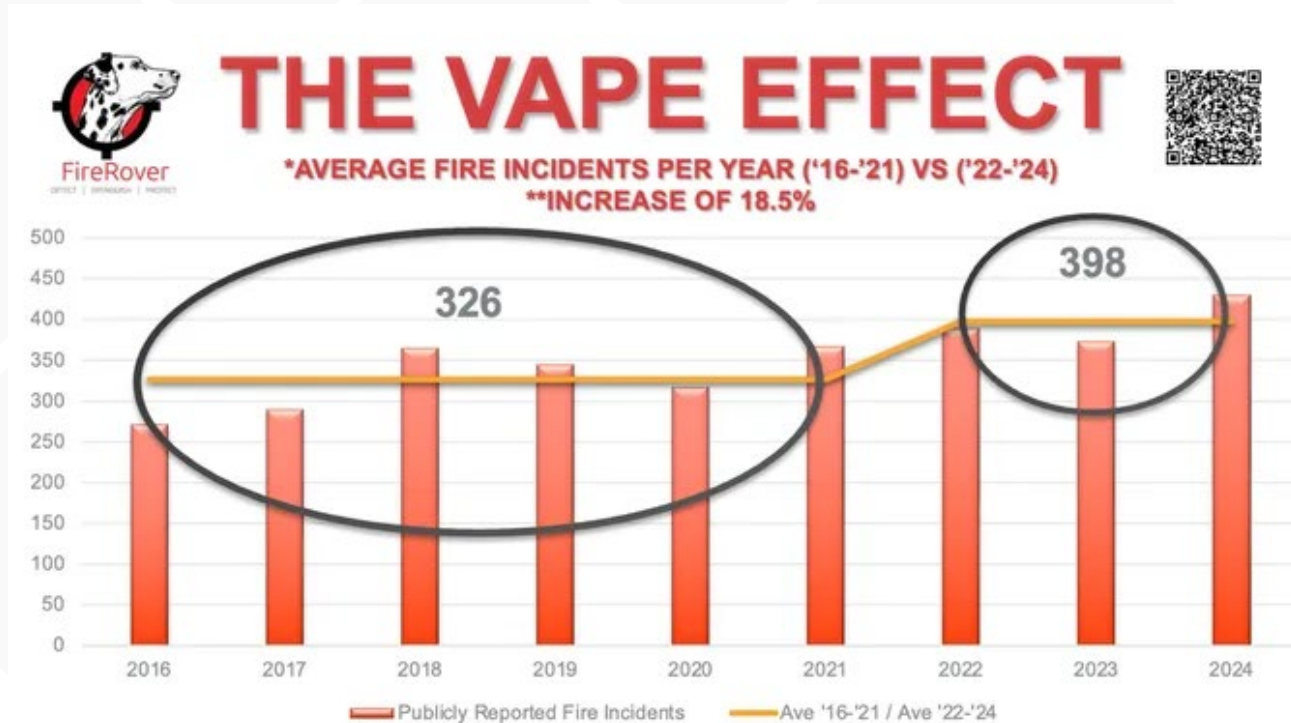
Examples of common electronic devices containing lithium cells or batteries

Video cameras	Walkie talkies (2 way radio)	GPS devices	Radio controlled toys
			
Cameras	Scanner	Cellular Phones	MP3 players
			
Bluetooth headsets	Smartphones/mobiles	Laptop computers	Shavers
			
Power Drills	Tablets	Portable DVD players	Measuring equipment
			

# Recent Fire Trends

## The Rise of Disposal Vapes

- Per the CDC 58.1% of all e-cigarette sales were disposable vapes in 2024

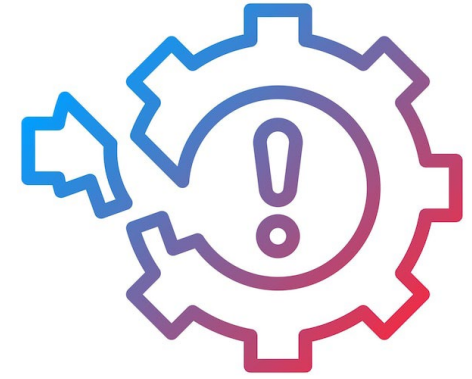


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# Industry Impact

## Operational Disruptions

- Temporary or long-term closure of facilities
- Delays in waste collection, processing, and disposal
- Loss of waste diversion capacity (e.g., recycling, composting)
- Damage to sorting lines, compactors, and other key equipment
- Increased pressure on surrounding facilities and services



# Industry Impact

## Financial Costs

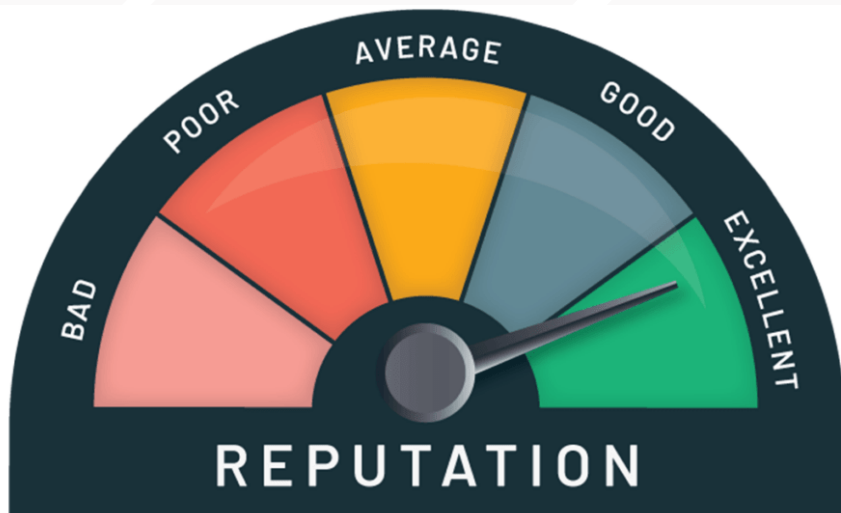
- High cost of repairs or complete rebuilds
- Downtime losses and reduced productivity
- Increased insurance premiums or denial of future coverage
- Legal liabilities from regulatory fines or lawsuits
- Cleanup and remediation expenses for fire-damaged areas



# Industry Impact

## Reputational Impact

- Negative media coverage and community backlash
- Damaged relationships with municipalities and regulators
- Loss of public trust in waste services and sustainability efforts
- Increased scrutiny from environmental agencies and watchdogs



# Industry Impact

## Additional Impacts

- Disruption to supply chains (e.g., material recovery for recycling markets)
- Increased operational costs due to added fire prevention measures
- Decreased morale among staff and higher turnover
- Resource reallocation—time and money spent on fire response instead of system improvements

# Recent Fire Event

## Timeline of Events

1. November 2022 - Fire was first reported at the landfill, which was designated for vegetative waste disposal
2. December 2022 – Nearby residents begin reporting respiratory problems due to smoke exposure, and a class action lawsuit is filed
3. January 2023 – The county commission declares a state of emergency, asking for federal assistance
4. January 2023 – EPA takes over response efforts after detecting elevated levels have hazardous chemicals in the air
5. March 2023 – EPA reported that most of the fire was out, and only isolated hotspots remained

Unauthorized materials, including scrap tires, C&D waste, auto scrap, and household electronics, were dumped at the site

**The EPA allocated \$2.8 million for cleanup**



# Safety Risks

## Human Health Risks

- **Toxic Smoke Inhalation**

Fires release harmful chemicals like dioxins, furans, VOCs, benzene, and heavy metals that can cause respiratory issues, neurological damage, or long-term cancer risks.

- **Particulate Matter (PM2.5/PM10)**

Fine particles from burning plastics and debris can enter lungs and bloodstream, exacerbating conditions like asthma, COPD, and cardiovascular diseases.

- **Explosion Hazards**

Pressurized containers (aerosols, gas cylinders, lithium batteries) can explode when exposed to fire, causing shrapnel injuries or secondary fires

# Safety Risks

## Firefighter and Worker Hazards

- **Structural Instability**

Large piles of waste can collapse unpredictably during firefighting efforts, trapping or injuring personnel.

- **Toxic Runoff Exposure**

Firefighting water can mix with burned materials and leach hazardous substances, posing skin and eye risks.

- **Unknown Material Hazards**

Workers may be unaware of buried flammable, corrosive, or radioactive materials.



# Safety Risks



## Environmental Risks

- **Air Pollution**

Combustion of waste materials, especially plastics and electronics, releases greenhouse gases and toxic pollutants into the atmosphere.

- **Soil and Water Contamination**

Firefighting runoff can seep into the soil and groundwater, introducing contaminants like lead, mercury, and PFAS (forever chemicals).

- **Wildfire Spread**

In dry conditions, landfill fires can ignite surrounding vegetation, leading to large-scale wildfires.

# Safety Risks

## Unique Safety Risks:

- Egos
- Toxic smoke
- Fire eruptions
- “Get-er Done” operator mentality
- Slippery liners
- Cave-ins
- PPE (emergency personnel as well as operators)
- Confined space
- Close interaction with heavy equipment

# Fire Prevention Strategies

## Fire Prevention Plans

- A list of all major fire hazards
- Proper handling and storage procedures for hazardous materials
- Potential ignition sources and their controls
- Type of fire protection equipment necessary to control each major hazard
- Procedures to control accumulations of flammable and combustible waste materials
- Procedures for the regular maintenance of safeguards installed on heat-producing equipment

# Fire Prevention Strategies

## Fire Prevention Plans

- Open dialogue
- Identifies resource and knowledge centers as well as gaps
- Selects contractors and vendors
- Provides emergency contacts
- Interoperability challenges (i.e., communication, connections, fuel cards, etc.)
- Incident Command Structure – Roles, Responsibilities, Authority, Scalable to manage event, Trainable

# Fire Prevention Strategies

## Training Events

- Train against the plan
- Familiarize operators with emergency responders and vice versa
- Test equipment (i.e., hose connections, communications, potable bladder tanks, etc.)
- Inventory supplies



# Fire Prevention Strategies

## Fire Mitigation

- Soil at working face
  - Have a dedicated soil stockpile nearby
  - How long does it take the site to excavate and place soil?
  - How long to cover the entire working face?
- Designated area for hot loads
- Automated fire monitoring and suppression systems
- Foams and suppressants
- Avoid water if at all possible - amounts of water may actually acerbate the fire potential by increasing the amount of biodegraded matter and heat. The excess water will also increase contaminated runoff and leachate.

# Fire Prevention Strategies

What Fire Departments Typically Want to Know:

- Access to water source (hydrant)
- Access into and around the site (gates, roads, lanes, etc.)
- Who has on-site authority
- What is stored in each building
- Utility shutoffs



# Questions?

- Fires are more common than you might think
- A well-prepared plan leads to a faster, more effective response
- Planning helps uncover resource or knowledge gaps that can be addressed *before* an emergency strikes



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