

# Li-Ion Battery Fires in Waste Collection

Protecting our people and our environment

March 2025

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GREEN  
GORILLA

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**Rethink your waste**

I'm here for your rubbish

Protect our land. Waste

Auckland  
Council  
Te Kaitiaki o Tāmaki Makaurau



# Questions

- How many fires have we had?
- What are we doing to mitigate this?
- What are the unintended consequences?
- How do we safely fight Lithium-Ion(Li-Ion) battery fires?



# Batteries and e-waste from 2 weeks at the Waitakere refuse transfer station



# How many fires have we had?

2020 – 9 Fires

2021 – 16 Fires

2022 – 12 Fires

2023 – 19 Fires

2024 – 20 Fires

13 Fires in Auckland Council rubbish trucks in 2025

How many more will we have this year?





# Car batteries and gas bottles also continue to be incorrectly disposed of.



## **NO** Gas bottles or batteries in your roadside collections

A recent truck fire in this neighbourhood highlighted the dangers of putting gas bottles and batteries in rubbish and recycling bins. They can cause explosions and fires in the trucks which damages the truck machinery and could seriously injure the driver.

We are all responsible for our own rubbish.

Gas bottles, batteries, items containing batteries, and anything that plugs in must be taken to your local transfer station or community recycling centre for disposal. Charges may apply.

You can also take your gas bottles from barbecues and heaters to the following places for disposal at no cost:

- Matagas, 31 Victoria St, Onehunga
- Tank Test Laboratories - 26 Glasgow Ave, Papatoetoe

Bunnings accept batteries for disposal at no cost.

For more information, search '**how to get rid of unwanted items**' at [aucklandcouncil.govt.nz](https://aucklandcouncil.govt.nz)

Together we can protect our land and waste nothing  
Visit [aucklandcouncil.govt.nz](https://aucklandcouncil.govt.nz)



# 1,940+ laptops in recycling



Hazardous Waste	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25
LPG	44	14	18	31	21	25	20	36	45
Battery 12v	168	55	120	161	176	317	98	122	166
Laptop	172	48	106	173	368	589	142	150	192
Phones	122	36	3	0	0	0	0	5	0
Canisters	0	0	170	5	4	20	6	9	17

## 22 fires



**Lithium-ion batteries are causing more than 10,000 fires a year in Australia. Waste chiefs say an 'urgent' management plan is needed**

**'OVER 600 FIRES IN BIN LORRIES AND RECYCLING CENTRES' CAUSED BY BATTERIES INSIDE ELECTRICALS**

## **Lithium ion battery causes trash fire in Tampa**

The city of Tampa is asking residents to properly dispose of lithium-ion batteries after fires that have occurred in garbage trucks. The batteries are often found in cell phones, e-scooters, laptops and other personal electronics.

Posted August 2, 2023 9:14am EDT | 

**Lithium-ion batteries discarded in household rubbish caused 1,200 fires in the waste system over the past 12 months, new research shows, up from 700 just two years ago.**

England

**Lithium-ion batteries are exploding in NYC's garbage trucks. Only you can stop them.**







NEW ZEALAND

# Auckland Council monitoring health, environmental effects of Abilities Group fire

8:06 pm on 26 April 2025

Share this



## See a garbage truck's CNG cylinders explode after lithium-ion battery fire

It happened recently in Arlington Heights, Illinois.

NATE ANDERSON - FEB 21, 2025 11:21 AM | 178



➤ The explosion, as captured by a bodycam.



# What we do now

- Find a safe location to offload
- Have Fire and Emergency NZ extinguish the fire
- Clean up the mess
- The load goes to landfill







# What are we doing to mitigate this?

- Fire exercise on February 19<sup>th</sup> 2025.
- Development of early warning system
- Drawing attention to the issue through media
- Options for the safe disposal of Li-Ion batteries.





# Early warning system

- Sensor mounted inside the bin up against the top of the front wall between the hopper and the bin
- Alerts the driver – Audible alarm and visual message
- Alerts operations





# How do we safely fight Li-Ion battery fires?

- Water - sprinklers
- F500EA
- Dry Solid Powder Aerosol - DSPA
- Gel – Firelce
- Potassium Smoke
  - (was not available for testing at the time)





# Factors to consider for each product.

- Availability
- Effectiveness
- Cost for installation
- Cost of restocking
- Lifespan
- Weight
- How it fits
- Fit Side, Front and Rear loaders
- Non-toxic/Non corrosive
- Environmentally friendly

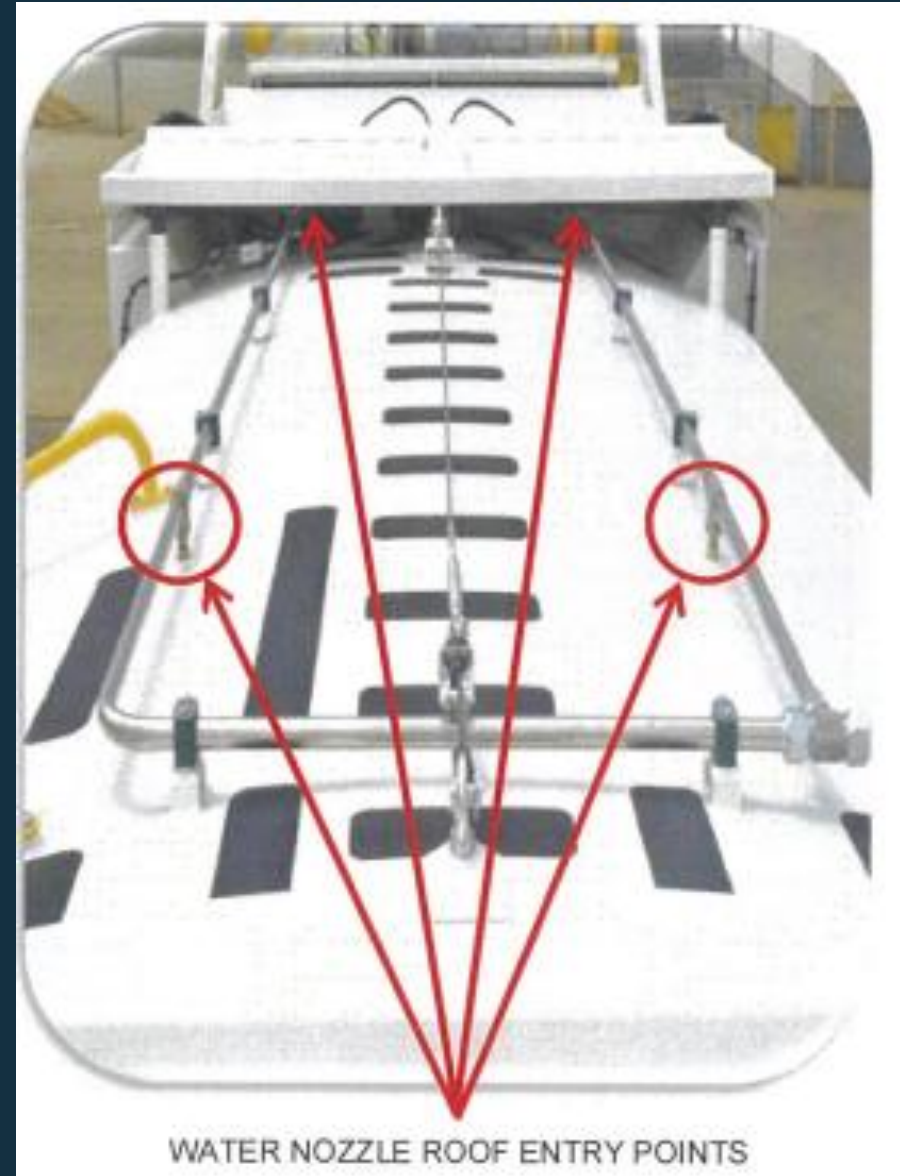






# Sprinkler systems

- Connects to fire line
- 4 sprinklers externally mounted
- Stainless steel lines



# F500EA

- Carried onboard and injected into sprinkler system
- Or
- Injected via a doser at the appliance.





# DSPA

- Available as fixed or hand held and thrown
- Lasts for around 5 years



# Firelce

- Extinguisher or mist system
- Gel based
- Cools the fire





# Maus

- Potassium smoke
- Handheld stick
- Grenade



# What are the unintended consequences?

- Vapour Gas Explosion
- Creation of Hydrofluoric Acid
- Poisonous Environment







REC TC: 01:01:15:19





# The explosive results of battery failure.





# What worked?

- Crushing the batteries
- Collection of the contaminated wastewater
- Collection of the air samples
- The thermal imaging





# Learnings

- **Crushing – most common cause of battery ignition**
- **Most rubbish truck fires are ignited by a battery- but are not battery fires**
- **Most batteries/devices are discharged and do not ignite**
- **Higher voltage E Bike and Scooter batteries pose the most danger.**
- **Massive temperature rise when in Thermal Runaway**





# Air and Water Testing Results

by

## Professor Saeid Baroutian



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Executive Director of Circular Innovations (CIRCUIT) Research Centre





# What's in the mix?

## Air

Hydrogen Cyanide – low

Flouride

Hydrogen Flouride –high

Bromide – high

Formaldhyde

Acetaldehyde – high

Carbon Monoxide

Nitrogen Oxides – low

Carbon dioxide

Sulphur Dioxide



# What's in the mix?

## Water

Lead  
Nickel  
Copper  
Manganese

Aluminum  
Fluoride  
Phosphorus  
Phosphate



# Next Steps?

- New Test
- Verify our results
- Share what we know and have learnt





# Other Tests?

- Battery discharge in water
- Handheld extinguishers in hopper
- Extinguisher bombs
- Activation of smoke alarm



# Media

- You Tube – Mini Documentary

<https://youtu.be/7F1rW7D-FOM>

- National Media channels
- WasteMINZ National Conference (Chch)
- WasteMINZ Networking event (AK)
- LinkedIn



# Supporters



econowaste





## Supporters



**BUCHER**  
municipal



**CIRCA**  
CLEANTECH

# Thank you.

Know where to throw:

- Auckland Council - Where it goes
- Community Recycling Centres
- WasteMINZ website

