## RRS �

#### Georgia Recycling Coalition Webinar Lithium Batteries in MRFs A Primer



Michael R. Timpane Vice President/Principal









#### LITHIUM BATTERIES ARE EASILY DAMAGED IN THE WASTE AND RECYCLING SYSTEMS





# SOLID WASTE FIRES LINKED TO LI BATTERIES ARE INCREASING BUT ARE NOT ALWAYS REPORTED



#### MATERIAL RECOVERY FIRES LINKED TO LI BATTERIES

**RRS STUDY FOR NWRA** 

#### MRF INDUSTRY PERCEPTIONS ON THE CURRENT THREATS FROM LITHIUM BATTERIES

- 1. Broad sampling representing over 60% of MRF fleet and a survey of Solid waste insurance providers
- 2. Each MRF has more than 18 fires per year
- With just under 300 operating single stream facilities nationwide, it is estimated over 5,000 MRF fires occur annually, much bigger than initially thought
- Most fires are due to lithium batteries, well over 60%
- Due to oxidation of the source, root causes are hard to find
- No other vector can explain the increase to MRF fires, which were well under five fires annually just ten years ago
- 3. More than 1% of MRFs experience a catastrophic loss every year!
- The rate of catastrophic losses has increased by 41% in the last five years. With lithium batteries increasing by six-fold, this number could increase significantly over the next decade.
- 4. Industry is now measuring threat more accurately but conflicting fears may reduce actual reporting

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#### MATERIAL RECOVERY FIRES LINKED TO LI BATTERIES RRS STUDY FOR NWRA

#### MAJOR IMPACTS

- 1. Small MRF fires are handled by staff without calling the fire department and cost around \$2,600 for each
- 2. Catastrophic MRF fires can destroy facilities completely and cause over \$50 million in damage
- 3. The damage from the average catastrophic fire- \$22 million
- 4. Property Insurers are leaving the MRF market
- 5. On the open market, stand-alone MRF property insurance has increased over tenfold between 10-50 times due to fires, from a range of \$.15 to \$.18 dollars per hundred insured value, to a range of \$1.80 to \$10 per hundred dollars value. Equates to an annual cost between \$7.50-\$40 per ton of recyclables processed

## **DETECTION AND INSPECTION OF MATERIAL**

- 1. Train for identification throughout supply chain
  - a) Enforcement on collection routes
  - b) Drivers- during tarping and initial inspection
  - c) Tipping area inspection
  - d) Sorters
  - e) Forklift operators
  - f) Include general awareness of battery presence

#### 2. include:

- a) labeling and different types of battery
- b) Recognize and respond to LI battery discovery & follow written procedures
- c) Hold same training for municipal customers so they understand the threat
- d) Use of safe removal supplies (i.e., storage, terminal tape)
- e) Fire Response for battery fires, including drills

3. Battery management in toolbox safety meetings



## **FIRE RESPONSE**

- 1. Have a written fire prevention and response plan in place
- 2. Rapid fire brigade trained on battery management each shift
- 3. Fire Suppression check/upgrade-
  - 1. Company
  - 2. Insurance
  - 3. First Responders
  - 4. Sprinkler system and equipment changes
- 4. 24-hour Watch- Manned or automated

## **PUBLIC PROCUREMENTS**

- 1. Clear language that batteries are not accepted: • residential waste or commercial waste or
  - recycling bins
  - trucks delivered to a contracted waste, MRF, or scrap facility;
  - If not stated in procurement, make sure it is in procurement response.
- 2. Requirements for handling batteries explained by Proposer
- 3. Require a monthly report on batteries found, in inventory and disposed (i.e., count, tons or pounds for documentation of issue).



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## INBOUND FEEDSTOCK MATERIAL INSPECTION & CONTROL

Actively manage batteries between discovery, sorting, storage & shipping:

- 1. Develop metrics and identify potential trends- counts, spend on disposal, fires
- Written posted list of materials that are prohibited & materials that will be accepted but require special handling procedures.
- 3. Consequences when prohibited materials are brought to the facility.
- 4. Employers should make available plastic tongs, welding gloves and heat/spark masks to all employees handling batteries.
  - . 5-gallon metal buckets containing vermiculite or sand
- 6. Encourage transparent reporting of all battery-related incidents
- Dedicated temporary short-term and long-term storage—include signage, barriers and painted identification of areas (demarcations).









### ISRI SWANA NWRA GUIDE

HTTPS://WWW.ISRI.ORG/NEWS-PUBLICATIONS/NEWS-DETAILS/2020/10/14/NEW-GUIDE-HELPS-MRFS-MANAGE-LITHIUM-BATTERIES-SAFELY

- Focused on MRFs but applicable to waste facilities and scrap operations
- Two (2) Year Effort, safety experts, operations experts, review from MRF operators and association staff & legal
- We will cover some of the highlights



## CAN BATTERY THREAT BE MANAGED IN MID TERM?

- Battery electronic controls are making batteries safer especially from top tier manufacturers (holy grail given energy produced uses volatile chemical reaction and energy is increasing)
- Awareness and alignment between supply chain and common goals
- Embedding batteries in devices (armor)
- Regulations increasing and battery mfrs./associations are motivated and engaged
- With power comes responsibility