

Q&A on Lithium Battery Fires at Material Recovery Facilities (MRFs)

Why are lithium-battery fires happening at MRFs?

The fires at MRFs are primarily caused by lithium-ion batteries that are inappropriately included in curbside recycling bins and mistakenly transported to MRFs. These batteries are more prevalent due to the increased use of consumer electronics and are igniting during normal material sortation processes. These fires have also increased in frequency in trash trucks, at transfer stations, and in other disposal facilities, underscoring that this is a problem with handling the discarded batteries and not an issue specific to recycling.

How does a lithium battery fire happen at a MRF?

When a piece of recycling equipment or machinery rubs against, crushes, or otherwise physically damages a lithium-ion battery, a fire can occur. This most commonly happens at the beginning of the recycling process when materials are moved and sorted. (Note: these fires can occur at any waste management facility, in a garbage truck, or even in a landfill.)

How does a lithium-ion battery cause these MRF fires?

Trucks bring the recyclable materials into the recycling facility and drop the materials off into a large pile. There is commonly a front-end loader that pushes and scoops the materials into a large bucket and conveyor belt (called a “metering bin”). The loader bucket scrapes the floor of the facility and mixes around the materials, and if a battery is present, it can be crushed or physically damaged. This causes the battery to short circuit and become super-heated. Batteries can also jam in the sorting equipment at the MRF, similarly crushing or damaging the battery, again potentially sparking a fire.

But do PET bottles make these fires worse?

No. The amount of plastic at the recycling facility has no correlation with either the number of fires at recycling plants or the severity of the fires. Even if all plastics were removed from recycling, lithium-ion batteries would still cause fires both at recycling plants and in trash trucks, at landfills, and other facilities. [According to EPA](#), “When fires do start, they may spread quickly due to the large amounts of paper and cardboard present.” That’s because paper (cardboard, newspaper, and junk mail) is

more combustible than plastic and makes up between 50% and 80% of the materials at recycling facilities. Plastic only makes up approximately 10-15%.

Are these fires preventable?

The single most important intervention in reducing battery fires at MRFs is to eliminate any lithium-ion products from getting into the recycling stream. This includes building out a dedicated system to properly collect and manage products containing lithium-ion batteries at their end of life. States such as California are adopting legislation to develop battery recovery programs to address this substantial safety risk and to increase battery recycling.