

Lifting ALL BOATS

A diverse group of packaging players recently came together to fund a major MRF study that investigated why materials are consistently lost in sortation. The results are now helping each stakeholder make changes that could boost recovery efficiency as a whole. **BY BOBBY ELLIOTT**

In 2013, the Carton Council approached Ann Arbor, Mich.-based consultancy RRS to study the behavior, or “flow,” of cartons at material recovery facilities.

Anecdotal evidence suggested some cartons were getting lost along the way, and the packaging-industry-backed Carton Council was hoping some hard data could point the way toward practical improvements.

Soon, however, it became clear that when it comes to material flows at MRFs, cartons were not the only products that could benefit from research into sorting specifics.

“As we were designing the study with RRS, we said, ‘There’s probably others that would be interested in this,’” recalled Derric Brown, vice president of sustainability at the Carton Council and director of sustainability at Evergreen Packaging. “By adding materials and participants, it added complexity. In the end, having those other materials included helped broaden the scope.”

Shared goals, varying interests

Within months, a quartet of noted industry groups – the American Chemistry Council (ACC), the Association of Postconsumer Plastic Recyclers (APR), the Foodservice Packaging Institute (FPI) and the National Association for PET Container Resources (NAPCOR) – joined onto the study. While the interests and goals of each group varied according to their unique packaging needs, the stakeholders found they were unified by a shared commitment to grasp the flow of modern packaging.

“I think what really brought a lot of folks together was this basic question of ‘What is my stuff doing at the MRF?’” Marty Seaman, RRS executive vice president, said.

Keith Christman, managing director of plastics markets at ACC, explained there was a desire across the industry to better understand both how standard packaging types and “new types” of packaging behaved.

“If it doesn’t end up where it’s supposed to, then it gets lost and we don’t want to see that happen,” Christman said. “We really didn’t know what to expect, so we were very curious about what was happening in that environment and how it could be improved.”

For FPI, the movement of paper and plastic food-service packaging was of top concern. NAPCOR, meanwhile, was focused on the loss rates of the most commonly accepted plastic packaging (PET bottles) as well as PET thermoforms. ACC looked across the plastic spectrum. The Carton Council focused on paper-based aseptic and gable-top cartons. And APR was interested in addressing the suitability of plastic packaging for its downstream members.

“It would be hubris to say a study like this has never happened,” RRS’ Seaman reflected. “But I don’t think it’s ever happened in the same, transparent, collaborative, all-boats-rise way.”

Tracking the flow

With the expanded collection of funders on board, RRS worked with stakeholders to devise a methodology to employ while identifying five MRFs throughout the country that could act as partners.

In the end, one dual-stream facility and four single-stream facilities were chosen, forming a “coalition of the willing,” Seaman said. (Side sidebar for more about those MRFs.)

Because much of the material being tracked was not accepted at all facilities, the RRS team “seeded” a representative array of packaging forms into the incoming stream of each MRF. Once mixed in, the seeded materials accounted for about 1 percent of the overall stream.

“We worked very hard to try to be sure the study mimicked real-world conditions,” Brown, with the Carton Council, said.

The results provided a baseline for what would become the MRF Material Flow Study, published in July of this year.

The findings carried different meanings for each stakeholder. All told, the packaging types tracked were “lost” 3-12 percent of the time. In this context, “lost” refers to materials ending up as residue or contamination in another material stream – a carton ending up in a plastic bale, for instance.

The study showed almost 20 percent of cartons and nearly a third of plastic clamshell containers were improperly sorted. Plastic bottles were lost 5 percent of the time, while plastic cups were lost 10 percent of the time and containers were lost 12 percent of the time.

Actionable findings

Participants said they found the study useful because it helped them better understand why some items are getting lost more frequently than others.

“You see bales and you see the wrong stuff in bales, but now it just makes it a little more obvious how exactly it’s ending up where it is,” Seaman said.

Perhaps the most powerful finding of the study was that “shape matters.” Sortation equipment was found to send crushed and flattened packaging types, especially plastics, to the paper stream at high rates.

“Educating consumers that keeping a

container shaped like a container helps,” Brown said.

“This is not only a helpful finding but an actionable one,” RRS CEO Jim Frey said, “which illustrates that even everyday actions in the home can help boost recovery.”

In addition, the quantity and maintenance of screens and optical sorters had a direct correlation to the success of MRF operations. Findings showed that the MRF with the highest success rate of separating plastic from paper – losing only 3 percent of plastic materials to the paper stream – “was a large MRF with an adequate number of screens for the incoming volume and material type.” The lowest-performing MRFs, meanwhile, did not have a sufficient amount of well-maintained equipment, according to the study.

“It was really key to have this information,” Lynn Dyer, FPI’s president, said. “From a broader standpoint, all MRFs are seeing just a very different stream of materials than they were 10 to 15 years ago. Something like an optical sorter that’s able to identify those different resin types and make sure they get into the appropriate bales is important.”

Steve Alexander, the executive director of APR, said the study also showed that as long as MRFs can do their part, reclaimers downstream will be hungry for high-quality, properly sorted material.

“We’re always looking for ways to get more material into the system that’s available for reclamation,” Alexander said. “How do we capture more material that’s going into the system? This study was a good first step.”

Changes on the ground

With the study results now in, the various packaging interests have set out to make use of it.

The Carton Council, for instance, has already updated its strategy for communi-

The facilities that facilitated

The five MRFs that agreed to serve as test sites for the MRF flow study ranged in throughput from 10 to 35 tons of material per hour. The equipment used at the facilities was manufactured by four different equipment companies. Sites had anywhere from zero to five optical sorters and an array of disc screens and separation equipment.

cating with residents. “What we’ve done is changed our messaging to: ‘Please don’t flatten cartons,’” said Brown.

FPI, meanwhile, is putting the findings to use in dialogues with those MRFs across the country that are considering adding more food-service packaging. In addition, ACC and APR say they’re committed to more research into the behavior of packaging.

NAPCOR’s Resa Dimino thinks the key is in having a unified understanding across packaging types.

“It makes a lot of sense for us as varying material organizations, both within the plastics industry but also with other packaging substrates, to be taking a common view at how things are working and be able to see some of the big picture implications,” Dimino said. “We as NAPCOR can’t just take a look at what the PET solution is – we have to understand how the system is working and come up with a systems solution.” **RR**

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