

Recycling Online



The state of mixed-waste processing – part 2

by Roger Guttentag

waste processing must be used for achieving these recovery goals within the timelines adopted by these policies.

Reports issued in 2015 by the American Chemistry Council (ACC) and the American Forest and Paper Association (AF&PA) buttress these claims with data.

For example, the ACC report uses 2014 waste composition data for the City of Fort Worth, Texas to show how a combination of both source separation and mixed-waste processing could increase the diversion rate in the municipality from its current 19 percent level to as high as 54 percent if organics are included.

The AF&PA report presents an engineering cost analysis of four possible collection and processing scenarios involving a community with a total annual mixed-solid waste flow of 325,000 tons. The results show a system using both single-stream with mixed-waste processing would yield the highest recycling rate, though costs would be significant. See the feature story on page 40 of this issue for more information on the AF&PA effort.

Another assessment of mixed-waste possibilities came in 2013 when SWANA's Applied Research Foundation One sponsored a study comparing single-stream and mixed-waste systems, basing results on actual data from Seattle and San Jose, Calif. This comparison assessed the cost and economics of material recovery from multi-family buildings since multi-family is acknowledged to be one of the more challenging demographics for materials recovery.

Seattle provides single-stream recycling and organics collections to multi-family residents, and San Jose encourages multi-family residents to use single-stream recycling services while also sending trash collected from multi-family properties to a mixed-waste facility. The SWANA report noted the Seattle multi-family system produced a 30 percent diversion rate for recyclables and a 3 percent diversion rate for organics. The recycling rate for San Jose multi-family, meanwhile, was 19 percent through source

separation and 18 percent through mixed waste processing for a total of 37 percent. The system saw a 39 percent recovery rate for organics through mixed-waste recovery only.

Material quality

Arguments that note the lower quality of recovered materials from mixed-waste systems are driven by the fact that MSW mass flows have higher moisture and putrescible (and possibly toxic) material levels. Certain materials, such as metals and plastics, are less affected when mixed into that environment. The ACC report, for example, notes that additional steps will need to be taken to clean metals and plastics in mixed-waste systems but that this cost will be offset by the significantly higher recovery rates that can theoretically be achieved.

On the other hand, major trade organizations representing fiber consumers and processors such as AF&PA and the Institute of Scrap Recycling Industries (ISRI) are now vigorously voicing concerns about the quality of paper coming out of mixed-waste operations. Interviews conducted with AF&PA members and summarized in the organization's report found respondents believed such fiber to be inferior in quality or were very resistant to consider mixed-waste facilities as a fiber source due to perceived quality and contamination issues. These findings are mirrored in a 2016 online survey conducted for ISRI of recovered fiber buyers.

Furthermore, a presentation by Pratt Industries at a 2016 New York SWANA conference made it clear that the company has no interest in using mixed-waste-sourced fiber, especially for food product packaging, because of contamination concerns. Pratt is the largest U.S. consumer of mixed paper from residential recycling programs.

Final thoughts

Evaluating the claims over the pros and cons

Last month I discussed the early development of mixed waste processing facilities and the resurgence of the approach in the last 10 years. In that time frame, the industry in the U.S. and Canada has seen the construction of a new generation of mixed-waste plants that utilize better screening and sorting technologies.

The question to be considered in this month's column is why this trend has occurred.

Recovery rates

A very good summary of the pros and cons of mixed-waste processing can be found in JD Lindeberg's presentation on the subject at the 2015 US Composting Council conference. Of the six factors listed in support of the practice, perhaps the most salient one is the potential for increased recovery rates, thanks in part to the capture of some waste organics. Lindeberg's cons, however, include higher moisture and greater contamination risks, and these represent the darker flip side to the higher recovery rates mixed-waste facilities have claimed they can achieve. Lindeberg, president of consultancy RRS, describes this relationship as a tension between quantity and quality.

This tension is exacerbated by recent decisions by state and local governments to adopt aggressive waste diversion policies. For example, California law mandates 75 percent recycling, composting or source reduction of solid waste by 2020, despite a current plateau of the national recycling rate around 34 percent. Presentations by mixed-waste equipment vendors and facility operators such as Infinitus Energy and Zero Waste Energy make the case that mixed

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ACC's "The Evolution of Mixed Waste Processing Facilities: 1970–Today," June 2015	tinyurl.com/RR-ACC-MixedWaste
AF&PA's "Mixed Waste Processing Economic and Policy Study," September 2015	tinyurl.com/RR-AFPA
Eco-Cycle's "What Is the Best Option for the 'Leftovers' on the Way to Zero Waste?"	tinyurl.com/RR-Eco-Cycle
Infinitus Energy presentation at NERC conference, April 2015	tinyurl.com/RR-Infinitus
ISRI report on survey of paper mill buyers, June 2016	tinyurl.com/RR-ISRI-MixedWaste
ISRI presentation at New York SWANA conference, February 2016	tinyurl.com/ISRI-SWANA
JD Lindeberg (RRS) presentation at US Composting Council conference, January 2015	tinyurl.com/RR-Lindeberg
Pratt Industries presentation at New York SWANA conference, February 2016	tinyurl.com/RR-Pratt
SWANA's "Source-Separation and Mixed Waste Recycling Systems: A Comparative Analysis," 2013	tinyurl.com/RR-SWANA-MixedWaste
Zero Waste Energy presentation at New York SWANA conference, February 2016	tinyurl.com/RR-ZWE

of mixed-waste processing depends a great deal on how the industry resolves three key issues:

- To what degree will source separation and mixed-waste processing each be used in the overall materials management of MSW in the years ahead?
- What will the future composition of MSW be, especially in regard to fiber, plastics and metals?
- Which strategy will be the most effective for reducing greenhouse gases, particularly methane?

To illustrate the importance of these points,

consider that both the ACC and AF&PA reports support both single-stream and mixed-waste processing for maximizing recovery rates. Similarly, a recent report by Boulder, Colo.-based zero waste advocate Eco-Cycle argues that even with maximum recycling, there will still be "leftover materials" that should undergo further processing to remove recyclables.

This combined approach, however, strips away potential mixed-waste benefits, including reduction of collection costs and increases in resident participation. In addition, the concerns voiced by fiber consumers are very difficult to ignore unless

it is assumed that the fiber content of future MSW streams will continue to decline and what remains can be easily and economically handled through alternative methods such as composting.

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