



Food Residue Overview

FOOD RESIDUE IN FOODSERVICE PACKAGING RECYCLING: Overview of FPI Food Residue Studies

Background

The Foodservice Packaging Institute's Paper Recovery Alliance and Plastics Recovery Group have been working on overcoming barriers to recovery of foodservice packaging, and one of the often-cited reasons foodservice packaging is not accepted for recycling is the concern about increased levels of food contamination.

The Studies

To address this concern, two studies were conducted, to learn whether foodservice packaging (such as take-out containers or pizza boxes) set out for recycling were more contaminated than food contact packaging (such as peanut butter jars or pasta boxes) that has traditionally been accepted at single stream material recovery facilities (MRFs). DSM Environmental Services, Inc., conducted the studies in Boston, MA (Sept-Oct 2013) and Delaware (July 2014).

The process for each study included a sampling of materials between approximately 2,600 and 4,700 pounds of randomly selected residential curbside recyclables collected in different areas of the selected locations. For all recycling samples, corrugated, mixed paper, plastic tubs and lids, aluminum cans and foils/pans, were sorted into two categories, foodservice packaging or other packaging in contact with food (e.g. jars, tubs, cans, and boxes from prepackaged grocery items). The sort team then used a visual rating system to assess and record how much food residue was present on the selected categories, ranking all materials from 1 (clean) to 5 (highly contaminated, containing uneaten food remnants in addition to residue).

The Results

In both Boston and Delaware, the majority of the samples of foodservice packaging was rated as low-residue (1-2). In the Boston study, there was no appreciable difference in contamination rates between foodservice and food contact packaging. The overwhelming



majority of the samples were extremely clean. In the Delaware study, the proportion of foodservice packaging in high residue levels (4-5) was small and virtually identical to that of food contact packaging. Accordingly, the total proportion of items rated low and middle residue levels (1-3) was essentially the same among foodservice and food contact packaging and formed the majority, however some of the foodservice packaging material types showed a slight shift from the low (1-2) to the middle rating (3) when compared to the food contact packaging. While tolerance for food residue will vary by material and market, the levels ranked 1-3 are believed to be consistent with what markets are generally accepting today as part of the mix of commodities process by MRFs.

The studies yielded some additional observations that help to place this analysis in perspective.

1. Recyclables at the Boston study were exceptionally clean overall, which led the sort team to conclude that while the study was representative of the Boston area, it may not be representative of recycling set outs in other cities. In contrast, the Delaware study samples contained a higher proportion of commingled refuse and appeared to have more soiling from compaction and cross-contamination with refuse in the trucks. As a result, it was challenging in some cases to determine if the surface contamination on the items originated in the recycling truck or if it was food residue from the original packaging contents. (For the purposes of the sort, residue on the exterior was assumed to be contamination from the truck, and residue on the interior was assumed to be food residue.)
2. The most meaningful comparison associated with both sorts was probably the plastic tubs, cups and clamshells category. The sample size in both studies was robust, and covered a broad range of contamination levels for both food contact and foodservice packaging. Neither the Boston nor the Delaware study found an appreciable difference between food residue levels in foodservice and food contact packaging in this category.



Contractor's Conclusions

Based on the findings of these two studies, it appears that overall, the mix of foodservice packaging items recycled at curbside has comparable levels of food residue to that found in food contact packaging. Commingling with refuse seems to have a significant impact on the cleanliness of recyclables, regardless of how clean the recyclables were the consumer placed them in the recycling cart.

The studies at Boston and Delaware presented great opportunities to gather useful data on the issue of adding foodservice packaging to recycling programs. FPI would like to thank the City of Boston, Casella, the Delaware Solid Waste Authority, and ReCommunity for participating in the study. *More information on FPI's recovery projects may be found at www.fpi.org/stewardship.*

