Summary: Small Group on Disposal Phase Out
Negotiated Outcomes Process for Carpet
May 11, 2001
Atlanta, GA

Members in Attendance: Facilitator: Werner Braun, CRI; Sherry Enzler, MNOEA; Henry Ferland, U.S. EPA; Steve Long, MADEP; Larry Moots, PCA; Rick Muller, CIWMB; John Wiley, Solutia

Members not in Attendance: Frank Hurd, CRI

Graphs

The group developed a draft set of numeric goals for the disposal phase-out of carpet over a ten-year period. The group provided two graphs that illustrated the disposal phase out (Werner's Bar Graph and Henry's Graph). The graphs included the major types of carpet (Nylon 6, Nylon 6,6 and PET), but did not break the goals out by carpet type. While these graphs could not be included here, during the ten-year disposal phase-out, the graphs illustrated the following:

- Increase value-added recycling as much as possible.
- Allow for the short-term growth and gradual decline of cement kilns as a recovery option.
- Eliminate landfill disposal to the maximum extent possible, but allow for disposal of the minor types of carpet (wool, etc.).
- Gradually reduce waste-to-energy recovery.
- Completely phase out incineration, without any energy recovery.

Numeric Goals

The group discussed which factors should be considered when making a disposal phase-out agreement based on numeric goals. These factors include the following:

- Numeric goals must be set or nothing will happen.
- Clarify which types of carpet should be included in the agreement and their numeric goals. (E.g. the agreement could include only Nylon 6, Nylon 66 and PET and exclude all other types of carpet).
- Anticipate future markets without being constrained by the current situation.
- Take into account the difficult to recycle components of the major types of carpets (6, 66 and PET).
- Carpet has many of the same characteristics as plastic recycling, so we should look to plastic recycling for lessons learned.

State Policies

The group discussed state policy initiatives, with the understanding that what works for some states may not work for others. The group had a strong preference for voluntary initiatives and cooperative arrangements between states and the carpet industry. These state policies include:

- Waste bans
- Tipping fee adjustments
- Financing (grants and loans)
- Expedited permitting or exemptions from permitting
- Flexible end uses for carpet (e.g. daily cover for landfills)

Collection and Processing Efficiencies

The group also discussed at which point of the process collection and processing could be most effectively conducted. The group had a preference for low or no-cost options, including consideration of cost factors such as ease of delivery and transport. Points of consolidation and/or processing could include: landfills, transfer stations, and/or collection enters. The group thought that carpet would have a better chance of being processed at construction and demolition (C&D) landfills rather than municipal solid waste landfills. C&D landfill operators have more relevant experience with difficult to manage materials and better equipment to process carpet.

Follow-Up Conversation

Based on comments to the original copy of this meeting summary memo, Rick Muller of California Integrated Waste Management Board forwarded comments that were part of a sidebar conversation with Werner Braun of the Carpet and Rug Institute that happened during the meeting. The workgroup will discuss these issues at a later meeting.

1. Burning carpet in cement kilns has been proposed as an interim option while recycling technologies and infrastructure are ramped up. This option is attractive based on the energy value of carpet and the coinciding need to develop a carpet collection, sorting, processing infrastructure which is sorely needed if carpet is to ultimately be recycled. This option is unattractive if burning carpet results in increased emissions, toxicity concerns, and/or the requirement of a substantial economic investment by the cement kiln industry in either emission controls, processing equipment, or furnace modifications. As John Wiley points out, the cement kiln industry will be unwilling to make a substantial investment if carpet is not a long-term guaranteed feedstock. However, the primary goal is to recycle carpet, not burn it, and that means that a phase out will occur and needs to be part of the plan.

2. There are reasonable emission and toxicity concerns about burning carpet that need to be addressed. Perhaps the greatest concern is related to carpet containing chlorine, e.g. PVC backed carpet, which has the potential to produce dioxins when subjected to combustion. (Additionally, there are some recent studies that show concern over flame retardants and the potential to form brominated dioxins in a combustion environment.) There has been much scientific study done on the formation of dioxins in a combustion environment that warrant our attention since we are advocating burning carpet and some carpet contains chlorine. Although combustion zone temperatures and retention times in a cement kiln are very high, dioxins can form in the region of cooler gas temperature known as the "post combustion zone" when the precursors are present (chlorine and hydrocarbons). A preliminary risk assessment study on dioxins called "Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCD) and Related Compounds" is available on the US EPA Web site and includes a discussion on the combustion mechanisms. http://www.epa.gov/NCEA/pdfs/dioxin/part1/volume2/chap2.pdf.

   At the very least, emission source tests and permit modifications would likely be required of a cement kiln in California before it would be allowed to burn carpet and dioxins would be among the surrogate compounds that would be tested for as potential pollutants. If burning carpet is to be an interim alternative, it may be wise to avoid the dioxin potential altogether and specify burning of all NON-PVC carpet.

3. While the significant content of CaCO3 in carpet is a plus for cement kilns, I'm not sure that I would agree with the statement that it has "no value" in a recycling process. I plan to call my contact with the Evergreen recycling program to see what they do with their byproducts in the recycling loop of Nylon 6.

Idea Bin

The Group also developed some ideas that did not necessarily fit into disposal phase-out, but are important to the overall success of the Negotiated Outcomes Process, which included the following:

1) Procurement

- Provide rewards for meeting specifications or preferable options, such as recycled content.
- Make a level playing field recognizing other environmental initiatives other than recycled content.

2) Labeling

- Product labeling (e.g. labels identifying the type of carpet) may not be necessary as automated scanners provide identification and sorting at centralized facilities (mush like plastics recycling).

3) CARE needs other stakeholders to provide input.