POTENTIAL OF RECYCLING ASH FROM RESOURCE RECOVERY FACILITIES IN CALIFORNIA

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Discussion by
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The paper presented by the author is commendable in that it brings to light a neglected topic which is the optimum solution to the ash disposal problem—materials recovery.

The author describes a comprehensive review of ash processing in the United States, and a somewhat less comprehensive review of activity abroad. His material in some cases is severely dated. For example, the Smith and Mahoney processing technology, which the author touts, never operated for any length of time, had no definitive markets and is currently shut down.

The author correctly concludes from his literature review that residue utilization in bituminous paving mixtures is presently the most viable application. However, he fails to highlight the fact that the major work in the country was performed in the late 1970's by the Federal Highway Administration which made this recommendation at that time.

The author points out in his marketing assessment the positive response of industry representatives to his inquiries of the potential use of residue in place of aggregate. An important point which he overlooks, however, is the major institutional problems which need to be overcome in arranging for intergovernmental agreements and agreements between governmental agencies and private industry to establish the acceptance of residue as an aggregate substitute. These include the approval by State and Local Transportation and Highway Departments for the use of residue in paving mixtures, and the agreements for the processing and sale of residue, as well as potential liabilities if long term durability of roadwork proves unsatisfactory.

In his review of the literature and his commentary on bituminous paving mixtures demonstrations the author fails to point out the relative percentage of aggregate and residue utilized in any of the previous paving mixture investigations. This is a critical part of any plan for design since the lower the percentage of residue added to the mix, the less the impact of some of the negative characteristics of residue, such as increased asphalt requirements as well as potential stripping in wearing pavements.

Finally, the author makes several recommendations for further study the first of which includes the need for "carefully designed and documented research programs". The City of New York in conjunction with the New York State Energy Research and Development Authority, recognizing this requirement, have embarked upon a 12 month sampling, characterization and testing program, investigating the use of incinerator residue and fly ash for use in bituminous paving mixtures.

Discussion by
Kenneth L. Woodruff
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I was disappointed in this paper since the author went through a great deal of discussion regarding methods of processing ash and potential uses and markets for residue without apparent awareness of a major resource recovery plant which sells the bulk of its fly ash and
bottom ash to the Portland Cement industry. This plant is the 3000 TPD Resources Recovery (Dade County), Inc. Facility. As a result of preprocessing for metals and glass recovery, as well as the sale of a substantial portion of the ash to Portland Cement manufacturers, only about 6% by weight of the incoming waste is landfilled.

Based on this experience, it would appear that the approach to be taken in California should be the preprocessing of refuse to recover metals and glass in a high quality, marketable form, while producing a higher Btu content, more easily handled refuse fuel. Combustion of this material will result in lower ash production with significantly lower lead and cadmium content than in mass burn ash. The ash will then be usable by the Portland Cement industry. Only a minimum of residue must be disposed in landfill.

The author needs to update his study to include more current information which I believe will present a more positive potential of recycling ash in California as well as the rest of the country.

Discussion by

Anthony R. Nollet
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Tom Vence has prepared a comprehensive summary of ash recycling, and has highlighted some of the difficulties associated with several processes.

One of the big question is whether it pays to remove most incombustibles before burning — or after. I believe that George Boyhan of Waste Technology International (Parsons & Whittemore) has shown the benefits of pre-combustion removal of many incombustibles in Dade County. Most of the items removed before burning are marketable — yet these very items, if burned, would tend to foul the ash to make the ash less marketable — by causing slagging.

The preremoval of most incombustibles (i.e., the manufacture of RDF) seems to us to result in a better ash that is at least useful as clean fill — and is probably nontoxic, or at least less toxic than would be comparable ash from a mass burn system. We have observed this in Albany during test burns involving burning the nearly ferrous-free shredded output of the Albany Shredding Plant — vs the burning of an air-classified product that contains 94% of the ferrous-free shredded output of the plant. The air-classified product produces a good looking relatively uniform ash that contains little slag and less than 1.5% unburned carbon. The 6% of material that reports to the Heavy Fraction could easily be separated into its components, and most of it could be marketed.

We are generally opposed to a dry ash processing system, because we are wary of possible toxic dusts that might be associated with a dry system.

AUTHOR'S REPLY

To Kenneth F. Woodruff and Anthony R. Nollet

I agree with Messrs. Woodruff and Nollet that removing non-combustibles prior to combustion (i.e., RDF processing) results in a more acceptable ash.

Perhaps the paper should have clearly stated the fact that since most of the projects planned for California involve mass burning, the emphasis was focused on this approach to waste-to-energy conversion.

California needs to deal with the kind of ash residue it is expected to get, i.e., mass burn, in the near and mild term from these facilities. Although ash residue is more marketable from the combustion of RDF, I believe the decision on the waste conversion process should be left to the project proponents since their ultimate decision must be based on many factors including ash utilization.

I believe an update in the paper is in order; it can serve to provide information on the advantages of RDF processing insofar as ash utilization is concerned. This update would provide information for future decision-makers in selecting the optimal waste conversion approach.