Proceedings of the 17th Biennial Waste Processing Conference
ASME 1996

A NEW APPROACH TO CONDUCTING MSW COMPOSITION STUDIES

Anthony Licata
Linda Licata
Louis A. Terracciano, P.E.
Floyd Hasselriis, P.E.
Licata Energy & Environmental Consultants, Inc.
Yonkers, New York

ABSTRACT

Historically, municipal solid waste (MSW) composition studies have been conducted on waste streams using small samples (200-300 lbs.) for analysis. There has been considerable concern that a 200-300 lb. sample would not be representative of the daily waste flow from a typical municipal waste stream. Licata Energy & Environmental Consultants, Inc. was retained to conduct a waste composition analysis for a Town that generates approximately 800 tons of MSW per day. The analysis was used to optimize the design of a materials recovery facility for unsorted MSW (dirty MRF) and determine the quantity of recoverable material in the waste. The study was important to the project economics since the Town already had in place an effective curbside recycling program.

The authors designed and conducted a test program in which a 20 ton daily average sample was sorted into 23 components each day over a 10 day period. Both residential and commercial waste streams were analyzed using an existing MRF and an experienced sorting crew. The use of mechanical and manual sorting of the daily sample took an average of 10 hours per day and resulted in an analysis that had a high level of confidence in the detailed composition of the two streams.

BACKGROUND

In 1993, the Town of Brookhaven issued a request for proposals (RFP) for design, construction, operation, and ownership of a 900 T/D dirty MRF. A dirty MRF is a recycling process that receives raw waste without any source separation at the point of collection. The purpose of the proposed MRF was (1) to reduce the amount of waste going to the Town of Hempstead's waste-to-energy plant at a cost of over $112/ton and thereby reduce the Town's waste disposal cost, (2) to develop a compostable feed stock to comply with the permit condition to expand the Town's current landfill and comply with its Solid Waste Master Plan, and (3) to increase the amount of recycling in the Town to augment their existing curbside recycling program that collects metal and plastic containers, and newspapers (ONP).

The RFP stated that the Town would not take any responsibility for the waste composition or for changes in the composition during the proposed 20 year contract. The Town's RFP provided results of several independent waste composition studies conducted at their landfill. Four of the studies were done by the classical method of taking 200-300 lb. samples and conducting a hand sorting of the components into 12 to 16 categories. These studies were conducted in the late 1980's before the Town set up its curbside recycling program.

A fifth study, using an innovative technique, was conducted in September of 1992 after the Town had fully implemented its curbside recycling program. This survey relied upon a visual inspection supported by photographic backup to make estimates of the waste composition. In this program, the waste from an entire truck (about 8 tons) was spread out over a concrete pad and the engineers for the Town walked through the pile to make their visual estimates. The residential and commercial waste then was broken down into 32 categories. This test was conducted over a 5 day period and by using this method, the Town's engineers could survey 4 or 5 trucks per day.

The principals involved in the project did not believe that the available waste composition studies adequately answered the questions raised concerning the technical and economical viability of this project. In addition, previous survey methods did not