



# Earth Engineering Center

Columbia University

New York City, N.Y. 10027, U.S.A.

December 1, 2000

Patrick F. Mahoney  
President  
Energy Answers Corporation  
87 Avenida de Diego, Suite 114  
San Juan, Puerto Rico 00646

Dear Mr. Mahoney:

In the course of a collaborative effort between the School of Engineering and Applied Science and the School of International and Public Affairs of Columbia University, related to the problem of disposal of NYC waste when the Fresh Kills landfill closes at the end of 2001, several solid waste management options have been evaluated including the SEMASS Resource Recovery Facility at Rochester, Massachusetts. We have identified SEMASS as being one of the most viable options, both from the economic and environmental points of view, for the processing of very large amounts of municipal solid waste (MSW) and the recovery of energy and materials.

As Director of Columbia's Earth Engineering Center, I have visited and inspected the SEMASS facility as well as several traditional "mass burning" plants in the U.S. and Europe. I have found the SEMASS process to be superior to mass burning plants on several counts:

1. The shredding of MSW within a day of delivery to the plant blends, partially dries, and physically converts the wastes to a mixture that can be stored for some period prior to combusting without emitting the unpleasant odors and aqueous effluents associated with waste storage.
2. The pre-combustion separation of ferrous materials enriches the processed refuse fuel and recovers a marketable material.
3. Pre-shredding results in fine size particles of the light materials (paper, plastics) that are introduced in the combustion chamber in a way that results in high-rate, high-temperature combustion ("flash" combustion) at temperatures that I observed to be much higher than those attained in mass burning plants. The rest of the material is subjected to combustion on a traveling grate where the large objects burn at a slower rate. Less excess air is required and better heat transfer is accomplished by this suspension-burning approach.
4. The quality of ash produced in the SEMASS boiler is much more granular and

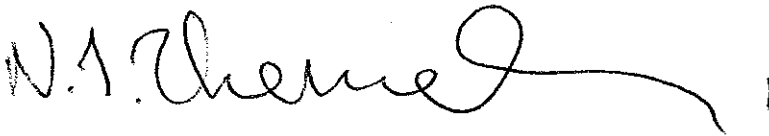


uniform with very low-unburned organics, as compared with "mass burn" ash.

5. The emissions control system of the SEMASS third and newest unit is as good as the best available technology presently applied only to some of the U.S. power plants.
6. The SEMASS plant processes nearly one million tons of materials per year, similar to a heavy industry steel plant or metal smelter, and is a well managed and very clean plant, from the inside, and in harmony with a very scenic area of Massachusetts, from the outside.

From the public policy side, the Columbia joint study has shown that due to dirty and inefficient incineration of wastes in the past (at one point NYC had seventeen thousand residential incinerators and nearly thirty municipal incinerators), the public opinion is against the burning of wastes as a disposal method. However, the cleanliness, safety, efficiency and generation of electricity successfully accomplished at SEMASS should help to allay public concerns and worries and enable implementation of a Waste-to-Energy / Resource Recovery Facility based on the SEMASS Technology. Such a facility would have obvious environmental and economic advantages over landfilling. These findings are described in a technical paper submitted to an international journal on waste management (*Themelis, Kim, and Brady, Energy Recovery from New York City Wastes*).

Sincerely,



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