

PILOT PLANT STUDY OF A VORTEX INCINERATOR FOR MUNICIPAL WASTE, C. H. Schwartz, A. A. Orning, R.B. Snedden, J.J. Demeter, and D. Bienstock, Bureau of Mines, 4800 Forbes Ave., Pittsburgh, Pa. 15213.

The incineration of a "standard" refuse and a selected municipal refuse from which most of the glass and metal had been separated was studied in a pilot scale vortex incinerator. Designed for a capacity of 150 to 300 pounds of refuse per hour, the incinerator has a refractory lining, a mechanical ram for continuous feeding, tangential-air firing, and provision for injecting additional air to the center of the vortex. Air, admitted tangentially at the top of the incinerator follows a helical path along the wall to the bottom where it contacts the bed of burning refuse. Gaseous combustion products, at high temperature and correspondingly low density, spiral up through the vortex to the furnace outlet at the top. Incomplete combustion experienced earlier was corrected by admitting excess air in the center of the hot ascending gases where temperature ranged from 2200°F immediately above the "fuel" bed to 1600°F at the top of the chamber. Auxiliary fuel (natural gas) was required to stabilize combustion when the moisture content of the municipal garbage exceeded 50%. Particulates in the effluent were 0.07 to 0.99 gr/cu ft for the "standard" refuse and 0.05 to 0.15 gr/cu ft for the municipal refuse. Combustibles in the stack ash ranged from 2.1 to 3.5%.