INCINERATION OF HAZARDOUS ORGANIC WASTES

YEN-HSIUNG KIANG
Trane Thermal Company
Conshohocken, Pennsylvania

Discussion by

Miro Dvirka
W. F. Cosulich Associates, P.C.
Woodbury, New York

The title of the paper and the introductory chapters, discussing "waste classification" and various types of incinerator systems, indicate a rather broad study of the subject matter.

Only after a lengthy introduction, it becomes apparent that the discussion is limited essentially to the performance of a specific tangentially or radially fired liquid waste incinerator.

The author attempted to highlight the importance of one of the three "Tees" of incineration (Time, Temperature, Turbulence) but neglected to relate the turbulence factor to time and temperature as they may apply to various combustible compounds. One of the most important pieces of information, the ultimate analysis of the test waste, is not mentioned at all and no discussion is offered with regard to chemically similar types of hazardous compounds with possibly varying combustion characteristics.

The definitions of "combustible waste" and "noncombustible waste" are used erroneously and actually apply to "autogenous" and "nonautogenous" substances. Similarly, "the distinction between combustible (autogenous) and noncombustible (nonautogenous) wastes" does not depend on the incinerator type selection but the incinerator selection depends on the waste characteristics.

Although the paper presents some novel data which are of considerable interest, the form of the presentation makes the proof of the validity of the data and their general applicability rather difficult.

Discussion by

Donald K. Walter
U.S. Department of Energy
Washington, D.C.

This paper presents the state of the art in incineration of organic hazardous wastes. It is organized into classification of waste, systems hardware and design parameters.

As so often occurs, the paper has a lesson to be used in much wider application than the author's intent. I believe this lesson is in the test program. By designing the location of the burner in a combustion chamber and the spray pattern of particles to be combusted, more efficient and complete combustion was attained. The test data and test methodology is quite useful.

Significantly, only high Btu content waste in a C configuration could achieve the required emission rates even though an auxiliary fuel was used to achieve combustion temperatures. The type equipment is specified as an available incinerator. If the point is only to demonstrate that mixing is an important parameter, then the tests were successful. However, the tests cited do not support the main premise that incineration is a practical and
efficient method to dispose of hazardous organic wastes. Of 43 data points, only seven meet standards.

The remainder of the paper is basically a review of known information and except for someone almost totally unfamiliar with the field, does not expand one's knowledge. The description of wastes as being combustible or noncombustible depending upon the type of furnace is particularly confusing and unnecessary.

The paper should include some discussion of temperatures and residence times to destroy certain of the more hazardous organic wastes such as PCB.