



Project Summary

The Use of Portable Instrumentation for the Monitoring of Fugitive Organic Emissions from Hazardous Waste Incinerators

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The thrust of this task was to evaluate and test currently available portable instrumentation used to monitor fugitive organic emissions generated by the transfer and storage of liquid wastes during the operation of hazardous waste incinerators. One subtask involved evaluating relevant current methodology. The other involved testing results and recommendations of the evaluation.

The evaluation of current methodology for portable volatile organic compound (VOC) monitors, with regard to their applicability in monitoring fugitive organic emissions from hazardous waste incinerators, has been completed, and is documented as Appendix A of the full report. The recommendation was to perform a limited field test with two photoionization analyzers (PIDs) at an operating liquid waste incinerator. A portable flame ionization detector (FID) (for which considerable prior data exists) was to be used as reference. The second portion of this task, constituting the bulk of this report, consists of results of field tests at the Cincinnati Municipal Sewer District's incinerator. The data indicate that, for this application, either a PID containing a 10.2 eV light source or a FID is suitable.

This Project Summary was developed by EPA's Industrial Environmental Research Laboratory, Research Triangle

Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

Fugitive organic emissions from trucks off-loading wastes, pump packing glands, valve stems, flanges, tank vents, etc. are of concern at liquid waste incinerators because they can be hazardous to the continued good health of those nearby, as well as of others (to a lesser degree) farther away. The extent of these emissions is neither known nor routinely monitored. Federal Register Method 21, Determination of Volatile Organic Compound Leaks, addresses fugitives from organic process equipment but is not really suitable for use on hazardous waste incinerators. The wastes delivered to, and combusted by, a liquid waste incinerator vary widely in composition, making any attempt at quantification of fugitive emissions in real time difficult, if not impossible.

A compromise is to utilize an instrument that will respond well to most (or all) organic vapor in real time, with little operator skill needed, and be sufficiently portable so as not to be an encumbrance when carried up or down ladders, or along narrow walkways. The PID was considered as a potential candidate to meet these requirements.

Conclusions and Recommendations

The response observed using the 10.2 eV PID was far greater than the response observed using the 11.7 eV PID. The variety of response observed also indicates the wide variety of wastes delivered for incineration.

The 11.7 eV lamp is reported to have low PI sensitivity for many of the compounds for which the 10.2 eV lamp has considerable utility. The calibration standard used is among these, as evidenced by the low maximum setting of 20 for the 900 ppm concentration mixture of 1,3-butadiene in air. The wastes delivered to the incinerator during the test period were evidently not of any type for which the 11.7 eV lamp has even moderate sensitivity.

The 10.2 eV PID is recommended over the 11.7 eV PID for walkthrough surveys in liquid waste incinerators of this type. The FID (such as the OVA-128 used as the reference instrument in this study) is also quite suitable. Note, however, that the wide variety of both waste type and composition made quantification of the response data virtually impossible, and that no one portable survey instrument should be considered as "best" for this application.

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The complete report, entitled "The Use of Portable Instrumentation for the Monitoring of Fugitive Organic Emissions from Hazardous Waste Incinerators," (Order No. PB 84-206 523; Cost: \$10.00, subject to change) will be available only from:

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