

TECHNICAL GUIDELINES
FOR
ON-SITE THERMAL DESORPTION
OF
SOLID MEDIA AND LOW LEVEL MIXED WASTE
CONTAMINATED WITH MERCURY AND/OR
HAZARDOUS CHLORINATED ORGANICS

-FINAL-

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Low Temperature Thermal Desorption Work Team

EXECUTIVE SUMMARY

The legal and regulatory uncertainties surrounding the cleanup of waste sites can discourage the testing and use of innovative technologies as well as innovative applications of accepted technologies. Technology developers often have difficulty gaining regulatory approval for the use of new technologies and may be required to demonstrate a technology's performance in each state targeted for technology deployment. In response to this concern, the Western Governors' Association convened a meeting of western regional regulators during the summer of 1994 to discuss ways to increase cooperation among states on the review, permitting, and evaluation of promising new remediation technologies. This group, the Interstate Technology and Regulatory Cooperation Work Group (ITRC), has been expanded to states outside the region and includes federal, industry, and stakeholder advisors as well. The ITRC is continuing in its work to recommend mechanisms to be incorporated into state policy to facilitate interstate cooperation, in order to shorten the time it takes technologies to go from demonstration to widespread application.

The ITRC Low Temperature Thermal Desorption (LTTD) Work Team previously developed a document which blends diverse state technical requirements for a proven technology, low temperature thermal desorption, used for treatment of nonhazardous soils. The work team considered requirements from nine states to develop their draft document, circulated the document for review and comment to all member states of the ITRC, and then distributed the document for concurrence among the ITRC states.

Using its first document as a template for two additional documents, the Work Team greatly reduced the time required to produce the subsequent documents. The second document, which deals with solid media contaminated with hazardous chlorinated contaminants, is currently undergoing the ITRC concurrence process. The third document goes a step further by addressing mercury and low level mixed waste issues. **However, because the use of thermal desorption to treat radioactive mixed waste is less well developed than for other applications, the LTTD Work Team chose to provide “guidelines” as opposed to “requirements” for this document.** Although this document touches on some regulations regarding hazardous waste, it is **not intended to summarize or interpret existing state or federal regulations.**

In keeping with the full ITRC, the LTTD Work Team views stakeholder involvement as a key element, when selecting new technologies for the cleanup of contaminated sites. The Work Team has adopted, in principal, the concepts put forward in “A Guide to Tribal and Community Involvement in Innovative Technology Assessment”, developed by the participants of the DOIT Tribal and Public Forum on Technology and Public Acceptance.

In producing this product, the general goals of the LTTD Work Team were:

- to produce a model set of technical guidelines which would serve as a format for states;
- to improve market conditions for thermal desorption technology providers by providing a degree of consistency in technical guidelines;

- to further the process of interstate cooperation directed toward enhancing implementation of innovative technologies;

Thermal desorbers remove organic constituents from solids by raising the temperature of the contaminated material to a sufficiently high level to effect contaminant volatilization and transfer to a gas stream. Technical guidelines focus on achieving contaminant removal, fugitive emissions control, mechanical operability of the primary treatment equipment and efficient fuel combustion (where appropriate). These areas can be particularly complex when dealing with radioactive mixed waste.

It is important to note that state regulations may be more restrictive than the technical guidelines included in this document and that compliance with those more restrictive regulations is required unless a specific waiver pursuant to CERCLA or some other state statute is involved. Therefore, approval of the use of a thermal desorption unit at a site in one state should not be construed as approval to use the technology at another site in either the same or a different state. As in the two previous ITRC thermal desorption documents, **this document does not attempt to address whether any particular thermal desorption unit/or afterburner is classified as an incinerator.** There is great disagreement among states on this issue and individual states have varying policies on which type(s) of thermal desorbers are acceptable for use in their states.

Technical guidelines in this document are provided for the following areas:

- Pre-treatment Sampling
- Feed Limitations
- Treatment Verification Sampling
- Soil/Waste Handling and Stockpiling
- System Operating Guidelines
- Process Monitoring
- Automatic Shutdown
- Proof of Process (POP) Performance Testing for Air Pollution Control Systems
- POP Testing Frequency for Units Treating Contaminated Media
- Emissions Monitoring
- Water Discharge Monitoring
- Record Keeping
- Quality Assurance/ Quality Control
- Health and Safety
- Cost and Performance Reporting Guidelines

On some sites, states may choose to go beyond this set of guidelines. It is the responsibility of operators to find out from regulators whether there are additional or alternate guidelines applicable; and it is in the states' best interest to allow variances from these technical guidelines based on specific technology applications. Variances also should be considered to allow for the use of appropriate alternative sampling or analytical methods.