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**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

January 29, 1998

Mr. Theodore Taylor, Project Manager  
Los Alamos Area Office  
Department of Energy  
528 35<sup>th</sup> Street  
Los Alamos, New Mexico 87544

Mr. John Browne, Director  
Los Alamos National Laboratory  
P. O. Box 1663, Mail Stop A100  
Los Alamos, New Mexico 87545

**RE: Hazardous and Radioactive Materials Bureau Position Papers**

Dear Mr. Taylor and Dr. Hecker:

In recently held workshops, representatives of the Hazardous and Radioactive Materials Bureau (HRMB) of the New Mexico Environment Department (NMED), Environmental Protection Agency (EPA) Region 6 and the Department of Energy/Los Alamos National Laboratory (DOE/LANL) developed the following Position Papers:

- Toxicity Characteristic Leaching Procedure (TCLP)
- Compositing of soil Samples During Site Characterization
- Site-specific Background
- Field Screening/Field Analytical Technologies
- Filtered vs. Unfiltered Ground Water Samples
- Variations from Approved Workplans

These Position Papers have been incorporated as standard operating procedures within the HRMB. These position papers are consistent with EPA policy and guidelines and have been reviewed and commented on by other Bureaus within the NMED. DOE/LANL is requested to utilize the strategies outlined in these position papers to perform the activities required by the Resource Conservation and Recovery Act.



13143

HS800 LANL GM/S/98

2

Mr. Taylor and Mr. Browne  
January 29, 1998  
Page 2

Should you have any questions regarding this letter, please contact me or Ms. Stephanie Kruse, HRMB's DOE Team Supervisor at (505) 827-1558.

Sincerely,



Benito J. Garcia, Chief  
Hazardous and Radioactive Materials Bureau

BJG:kth

attachment

cc w/ attachment:

- J. Canepa, LANL EM/ER, MS M992
- R. Dinwiddie, NMED HRMB
- T. Glatzmaier, LANL DDEES/ER, MS M992
- K. Hill, NMED HRMB
- M. Johansen, DOE LAAO, MS A316
- J. Kieling, NMED HRMB
- S. Kruse, NMED HRMB
- M. Leavitt, NMED GWQB
- H. LeDoux, DOE LAAO, MS A316
- D. McInroy, LANL EM/ER, MS M992
- D. Neleigh, EPA 6PD-N
- J. Parker, NMED DOE OB
- G. Saums, NMED SWQB
- J. Vozella, DOE LAAO, MS A316
- S. Yanicak, NMED DOE OB, MS J993

File: Reading and HSWA LANL G/M/S/98  
Track: LANL, doc date, NA, DOE/LANL, HRMB/Garcia, RE, file

**HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU**  
**New Mexico Environment Department**



*Position Paper*

*Position Paper*

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**TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)**

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**The use of TCLP is inappropriate for the purposes of site characterization.**

TCLP is used for the following activities:

- simulating the leaching a waste will undergo if disposed of in a landfill (SW-846)
- characterizing waste for determining if a solid waste exhibits the characteristic of toxicity and is, therefore, a characteristic hazardous waste (40 CFR 261.24)
- determining disposal options - solid waste versus hazardous waste

TCLP **should not** be used for the following activities:

- site characterization in determining the nature, rate and extent of contamination (screening action levels, standards, etc.)
- release determination
- risk assessment
- soil screening action levels
- confirmation sampling

## REFERENCES

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846, 3rd Edition.

40 Code of Federal Regulations (40 CFR) 260.11, 261.24, and 261 Appendix II.

RCRA Corrective Action Training manual, U.S. EPA, September 1996.

RCRA Facility Investigation (RFI) Guidance, EPA 530/SW-89-031, May 1989.

# HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU

## New Mexico Environment Department



*Position Paper*

*Position Paper*

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### COMPOSITING OF SOIL SAMPLES DURING SITE CHARACTERIZATION

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**Without prior New Mexico Environment Department Hazardous and Radioactive Materials Bureau approval, the appropriate method of sample collection for the purposes of site characterization is to obtain discrete samples by depth intervals.**

Compositing is one of the sampling methodologies which may be appropriate for evaluating average waste characteristic properties for disposal purposes. Composite sampling should **not** be used as the only input to risk assessment; discrete soil depth intervals are needed to characterize site contaminants to determine or predict exposure.

#### BACKGROUND

Composite samples are combinations of more than one sample collected at various sampling location and/or different times. Analysis of composite samples yields a value representing an average over the sampling locations which may not accurately describe the distribution of contaminant concentrations or identify hot spots. Compositing can mask problems by diluting contaminants through mixing samples of higher concentration with samples of lower concentration resulting in dilution of contaminant concentrations below limits of concern or detection.

Compositing does not allow the spatial variability of data to be determined and the confidence in a composite value may be impossible to discern (*EPA, 1997*). Furthermore, chemical changes may occur in a composite sample due to mixing of different chemicals. Compositing will cause the volatilization of organic constituents resulting in sample degradation.

As discussed in the RAGS document (*EPA, 1989b*), one of the major problems in sampling soil (and other solid materials) is its generally heterogeneous nature (due to the heterogeneous soil matrix and/or contaminant soil distribution) which makes collection of representative samples difficult. Thus, a number of grab soil samples are required to obtain sufficient data to characterize the spatial and vertical distribution of contaminants in soil and to identify areas with similar (homogeneous) contaminant patterns. Grab samples represent a single unique part of a medium (in this case soil) collected at a specific location and time.

Because composite samples combine sub-samples from different locations and/or times, composite samples may dilute or otherwise misinterpret contaminant concentrations by masking hot spots (areas of high contamination relative to other areas of the site) as well as areas of low contaminant concentrations. Therefore, hot spots or areas of low contaminant concentration cannot be determined using composite samples. If a hot spot is located near an area which is visited frequently, exposure to the hot spot should be assessed separately.

After appropriate site characterization (i.e., the nature and extent of contamination determined) and with prior Administrative Authority approval, compositing can be an acceptable and a cost-effective soil sampling method to determine the exposure concentrations in areas of homogeneous contaminant soil distribution and when the soil matrix is homogeneous.

## REFERENCES

EPA, 1987. *Data Quality Objectives for Remedial Response Activities. Volume 1 - Development Process. EPA 540/G-87/003A (OSWER Directive 9335.0- ). March, 1987.* U.S. Environmental Protection Agency, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, Washington, D.C.

EPA, 1989a. *RCRA Facility Investigation (RFI) Guidance, Interim Final, Volume I of IV, Development of an RFI Work Plan and General Considerations for RCRA Facility Investigations. OSWER Directive 9502.00-6D, EPA 530/SW-89-031, May 1989.* U.S. Environmental Protection Agency, Waste Management Division, Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1989b. *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, EPA/540/1-89/002,* U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, D.C.

EPA, 1996. *Soil Screening Guidance: Technical Background Document. 9355.4-17A EPA/540/R-95/128, PB96-963502, May, 1996.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1996. *Federal Facilities Forum Issue: Field Sampling and Selecting On-Site Analytical Methods for Explosives in Soil. EPA/540/R97/501, November 1996.* U.S. Environmental Protection Agency, Office of Research and Development and Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1997. *RCRA Sampling Procedures Handbook.* U.S. Environmental Protection Agency, Region 6, Austin, Texas.

**HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU**  
**New Mexico Environment Department**



*Position Paper*

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**SITE-SPECIFIC BACKGROUND**

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**The New Mexico Environment Department Hazardous and Radioactive Materials Bureau shall approve all site-wide and/or site-specific background values.**

A background value is defined as a naturally-occurring concentration of inorganic constituent in an environmental medium (sediment, soil, air and water) not affected by facility operations.

# HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU

## New Mexico Environment Department



*Position Paper*

*Position Paper*

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### FIELD SCREENING/FIELD ANALYTICAL TECHNOLOGIES

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**The facility must develop standard operating procedures (SOPs) for each field screening or field analytical technique. The New Mexico Environment Department Hazardous and Radioactive Materials Bureau (HRMB) shall approve each field screening or field analytical technique SOP prior to implementation by the facility if the technique is to be utilized for substantiating information to HRMB.**

Each SOP must include the following information at a minimum:

- Name of the field screening or field analytical technique
- Application and limitations of the field screening or field analytical technique
  - Situations in which the technologies will be utilized
- QA/QC procedures specific to that particular field screening or field analytical technique
  - Intended use or application of the data (site characterization, risk assessment, etc.)
- Sample collection methodologies specific to that particular field screening or field analytical technique, and
- Available correlation and/or validation of the new field screening or field analytical technique

# HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU

## New Mexico Environment Department



*Position Paper*

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### FILTERED VS. UNFILTERED GROUND WATER SAMPLES

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Those inorganic ground water samples obtained for site characterization must be unfiltered.

Filtered inorganic ground water samples must also be obtained if one or more of the following circumstances exists for a particular potential release site or area of concern under investigation:

- barium, chromium or cobalt are suspected site-related contaminants (WQCC standards for these constituents are lower than MCLs),
- aquatic life criteria (which are based on filtered water samples) are needed to perform a risk assessment, or
- contaminant fate and transport (which require dissolved analytical results) are data quality objectives.

#### BACKGROUND

**US EPA Region 6 Position:** Ground water samples must be analyzed prior to filtration based on the following considerations:

- filtration removes colloidal particles which are mobile in ground water and capable of transporting contaminants,
- analyses have generally shown a large portion of metals load associated with the mobile colloidal fraction of ground water,
- low turbidity ground water samples can be obtained from most aquifers using properly constructed wells and appropriate sampling techniques, and
- most domestic wells do not have a filtration system capable of removing the colloidal fraction of ground water.

## REFERENCES

Environmental Restoration Document of Understanding, November 1995. Annex G, Sampling and Analysis Guidelines.

EPA, March 1987. Data Quality Objectives for Remedial Response Activities, Volume 1-Development Process. EPA/540/G-87/0037A. Appendix C, Section C.4, Sample Types.

EPA, July 1987. *Executive Summary, Technical Enforcement Guidance Document*. OSWER-9950.1-a. Section 4.3.3, Special Handling Considerations.

EPA, December 1989. *Risk Assessment for Superfund, Volume 1 Human Health Evaluation Manual (Part A), Interim Final*. EPA/540/1-89/002. Sections 4.5.3 and 6.5.2, Ground Water and Estimate Exposure Concentrations in Ground Water, respectively.

EPA, October 1990. *Guidance for Data Useability in Risk Assessment*. EPA/540/G-90/008. Section 3.2.4, Sample Preparation and Sample Preservation; Section 3.3.6, Sample Preparation; and Exhibit 3-29.

EPA, November 1992. *RCRA Ground-Water Monitoring: Draft Technical Guidance*. EPA/530-R-93-001. Section 7.3.5, Collecting Ground-Water Samples.

EPA, May 1993. *Subsurface Characterization and Monitoring Techniques: A Desk Reference Guide*. EPA/625/R-93/003a. Appendix B, General Ground-Water Sampling and Handling Procedures; Figure B-1, Generalized flow diagram of ground-water sampling protocol.

Hazardous Waste Act, Chapter 74, Article 4 New Mexico Statutes Annotated 1978. Section 4.2.C.

Jacobs Engineering, April 1995. *RCRA Sampling Procedures Handbook*. Section 7.5.2, Sample Preparation & Filtration.

Letter, May 1995. Honker, William (US EPA Region 6) to Vozella, Joseph (US DOE). Regarding Guidance on the Filtering of Ground Water Samples.

New Mexico Water Quality Control Commission, Subpart III, Section 3103.

Safe Drinking Water Act, 42 United States Code 300f to 300j-26.

# HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU

## New Mexico Environment Department



*Position Paper*

*Position Paper*

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### VARIANCES FROM APPROVED WORKPLANS

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The New Mexico Environment Department Hazardous and Radioactive Materials Bureau (HRMB) shall approve all significant/substantial variances from approved Corrective Action (CA) workplans. Upon approval of any CA workplan, the facility must not significantly revise the scope of the workplan without obtaining approval from HRMB. Approved/revised sampling and analysis plans will be documented within the appropriate CA report.

- "Significant" is defined in the Department of Energy/New Mexico Environment Department Document of Understanding annex in progress entitled the *Accelerated Corrective Action Process*. When significant deviations from the workplan are identified prior to the initiation of field work, the facility will formally request HRMB approval of the workplan modifications.
- The reporting requirements for variances from the approved workplan will be as outlined in the document entitled the *Accelerated Corrective Action Process* and the approved *RFI Report Framework* document, if appropriate. A specific section in the RFI report will identify deviations from the approved RFI Workplan or other sampling plan.
- The deviation section within the RFI report will be used to document insignificant variances from the approved RFI workplan.