Response to NAS Questions for NMED
NAS CH Waste Characterization & Transportation Committee

January 28, 2003

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Santa Fe, New Mexico

Does NMED consider costs in its requirements for waste characterization?
☞ No.

Is NMED constrained from considering costs under the provisions of RCRA?
☞ No.
☞ Primary consideration is protection of human health and environment.
☞ If a modification is protective and saves money, great!
☞ While cost savings may be Permittees’ primary motivation, it has only been cited in prior modification requests in a very cursory manner (i.e., as “unsubstantiated conclusory statements”)

How does NMED interpret “representative sample” language in 40 CFR §264.13(a)?
☞ Need characterization information that is representative of the waste
☞ What’s in the permit is what the Permittees proposed in the permit application
☞ Homogeneous waste sampling for RCRA constituents has always been statistically-based representative sampling

How does NMED interpret “representative sample” language in 40 CFR §264.13(a)?
☞ Debris waste has always been a challenge to identify what constitutes a representative sample
☞ Public comment proposed destructive sampling of debris waste
☞ Headspace gas sampling viewed as reasonable alternative to destructive sampling while reducing worker risk

How does NMED interpret “representative sample” language in 40 CFR §264.13(a)?
Permit has already been modified to reflect Permittees request to reduce sampling from 100% to much lower percentage
- Thermally processed waste (Solids/soils & gravels)
- Waste with AK supporting no VOCs (Solids/soils & gravels)
- Compositing headspace gas samples

NMED is open to further modification requests addressing representative sampling issues
Waste Characterization at New Mexico’s Commercial Hazardous Waste Disposal Facility

Outline of Presentation
- Introduction
- Regulatory standard
- Waste characterization program
- Differences between WIPP and commercial disposal facility
- Conclusions

Introduction - Triassic Park (TP) Facility

Background
- Commercial facility permitted to receive hazardous waste generated off-site
  - Storage
  - Treatment
  - Disposal
- Located 43 miles east of Roswell, NM
- Not yet constructed

Introduction - TP History and Program Development
- Original application for disposal submitted 1994, revised application submitted 1997
- Application included a general waste characterization approach
- NMED assisted applicants in developing program through meetings and correspondence
- Program in draft permit was subject to public involvement (comment and hearing) in 2001
- Final permit issued 2002

Introduction - Basis for Waste Characterization Program
- Demonstrate compliance with RCRA waste characterization requirements of 40 CFR §264.13
- Demonstrate compliance with environmental performance standards of 40 CFR §264 Subpart N (Landfills) and 40 CFR §268 (Land Disposal Restrictions)
- Ensure NMED’s ability to enforce permit
- Bottom line - protect human health and the environment

Regulatory Standard
- 40 CFR §264.13 provides basis for an approvable WAP:

(a)(1) Before an owner treats, stores, or disposes of any hazardous waste... he must obtain a detailed chemical and physical analysis of a representative sample of the
waste. At a minimum, the analysis must contain all the information which must be
known to treat, store, or dispose of the waste...

(b) The owner and operator must develop and follow a written waste analysis plan which
describes the procedures which he will carry out to comply with paragraph (a) of this
section...

Regulatory Standard (cont.)

40 CFR §264.13 provides basis for an approvable WAP:

(c) For off-site facilities, the waste analysis plan required in paragraph (b) of this
section must also specify the procedures which will be used to inspect and, if
necessary, analyze each movement of hazardous waste received at the facility to
ensure it matches the identity of the waste designated on the accompanying
manifest or shipping paper...

Existing TP Waste Characterization Program

Identification of acceptable wastes

- Only waste in Part A of permit application allowed
- Specifically prohibited wastes
  - Explosives
  - Compressed gases, unknown/unidentified waste
  - PCBs
  - Dioxins
  - Radioactive/nuclear materials
  - Certain hazardous debris, lab packs
  - Medical waste
  - Packing house and killing plant offal
- Waste must meet LDR standards or must be treatable at the facility to meet these
  standards

Existing TP Waste Characterization Program

Pre-acceptance procedures

- Off-site generators provide complete waste characterization info
  - Completed Waste Stream Profile Form (WSPF)
  - Documentation to support WSPF
  - Description of waste generation process
  - LDR notification
  - All required certifications
  - Waste analysis data/paperwork or process knowledge documentation
  - A representative sample of the waste
- Permittee must evaluate all waste char info in great detail
- Permittee must also analyze a sample of the waste

Existing TP Waste Characterization Program

Pre-acceptance procedures (continued)

- Permittee evaluates suitability of waste at facility
  - Ignitability, reactivity, incompatibility
  - Special requirements for bulk/containerized liquids
  - Absence of biodegradable sorbents
- Permittee resolves all discrepancies in generator characterization

Existing TP Waste Characterization Program

Pre-acceptance procedures (continued)

- If waste meets pre-acceptance requirements, Permittee notifies generator
  - Waste is acceptable for shipment
  - Assign unique identifier to waste stream to be used on all paperwork
  - Requirement to notify 24 hours before shipping
  - Instructions to ensure safe management of waste
If waste is treated to LDRs prior to shipment, generator must develop and follow written WAP.

Generator must retain all paperwork for 5 years.

Once pre-acceptance completed, Permittee must design S&A protocol specific to each waste stream.

**Existing TP Waste Characterization Program**

- Review waste shipment paperwork, resolve all discrepancies
- Visually inspect waste inside containers/roll-offs
  - Physically open and inspect waste for color, physical appearance, and physical state
  - Inspect minimum of 10% of all drums of each waste stream per shipment (but not < 1 drum/stream)
  - Inspect each roll-off or tanker truck
- Perform fingerprint analysis to match expected chemical content of waste stream with waste received
- Same frequency as visual inspection
- Perform annual analysis to update characterization
- Accept or reject waste shipment

**Existing TP Waste Characterization Program**

- Waste analysis used by Permittee
  - Ensure all criteria for waste acceptance and management are met
  - Must use EPA SW-846 or ASTM analytical methods, or other pre-approved methods
  - Requirements for WAP include
    - Rationale for selecting parameters
    - Analytical methods used
      - For pre-acceptance analysis
      - For annual analysis
      - For fingerprint testing
      - Requirements specific to storage, treatment, and disposal units
      - For waste generated on-site
  - Analysis includes testing for each hazardous waste constituent and each underlying hazardous constituent

**Differences Between WIPP and Commercial Disposal Facility**

- Land disposal restrictions
  - WIPP exempted by Land Withdrawal Act
  - TP must fully comply with LDRs
- Representative sample prior to acceptance
  - All characterization activities occur at generator site, acting as proxy for WIPP
  - TP performs full characterization of representative sample
- Acceptance of waste at facility
  - WIPP relies on audits, paperwork review
  - TP opens containers, perform fingerprint analysis
- Waste generation
  - WIPP has large population of legacy waste
  - TP generally receiving only as-generated waste

**Conclusions**

- WIPP has a significant advantage over commercial facilities by virtue of LDR exemption (no treatment required)
- Each facility obtains representative sample in different manner
- There is no fingerprinting at WIPP analogous to commercial facility - audit sites instead
Legacy waste (WIPP) vs. as-generated waste (TP) also problematic
Impact AK requirements for WIPP

Further Information

NMED Hazardous Waste Bureau, Triassic Park Permit Information
http://www.nmenv.state.nm.us/HWB/tpperm.html
Information contained in Permit Part 2 and Attachment F

NMED WIPP Information web site
http://www.nmenv.state.nm.us/wipp/

E-mail
Steve_Zappe@nmenv.state.nm.us
NMED Concerns About Using Historical Headspace Gas Data to Argue for Reduced Sampling

Is Waste Disposed of To Date Representative?

- Permittees have used low VOC concentrations in waste disposed of to date to justify reduced or no HSG sampling
- NMED believes Panel 1 waste is not representative of expected future waste from VOC standpoint
  - CAO directed sites in 1998 to focus on characterizing non-mixed waste for disposal
  - Large quantities of residue waste and other thermally processed wastes from RFETS and other sites expected to have minimal HSG concentrations

How Does Current Inventory Compare to Expected?

- WIPP Permit Application provided weighted average concentrations of VOCs in waste based upon expected complex-wide inventory
- Application also identified 9 VOCs of concern based upon health risks to workers and public
- To date, concentrations of VOCs in Panel 1 are one to two orders of magnitude below expected concentrations

What Are Expectations for Future VOC Concentrations?

- If Application weighted averages are accurate, future waste will likely exceed expected VOC concentrations
- Concentrations of 9 VOCs of concern may approach room-based limits, which are generally one to two orders of magnitude above expected concentrations
- Permittees have provided no evidence that Application estimates are wrong
- NMED believes it is premature to reduce HSG sampling requirements based solely upon inventory disposed of to date
## Panel 1 Headspace Gas Concentrations (reported in ppmv) - January 27, 2003

<table>
<thead>
<tr>
<th>Constituent*</th>
<th>Room 1</th>
<th>Room 2</th>
<th>Room 3</th>
<th>Room 4</th>
<th>Room 5</th>
<th>Room 6</th>
<th>Room 7</th>
<th>Panel Average</th>
<th>Application</th>
<th>Limit</th>
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<tbody>
<tr>
<td>Ethyl Benzenes</td>
<td>1.839</td>
<td>1.266</td>
<td>0.375</td>
<td>0.333</td>
<td>0.439</td>
<td>0.374</td>
<td>0.381</td>
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<td>1,2-Dichloroethane</td>
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<td>0.268</td>
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<td>Methyl Isobutyl Ketone</td>
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<td>5.137</td>
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<td>1.663</td>
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<td>1,3,5-Trimethylbenzene</td>
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<td>0.257</td>
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<td>Toluene</td>
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<td>5.76</td>
<td>3.311</td>
<td>3.54</td>
<td>4.008</td>
<td>3.038</td>
<td>3.445</td>
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<td>0.262</td>
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<td>M-P-Xylene</td>
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<td>Cyclohexane</td>
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<td>Tetrachloroethylene</td>
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<td>Cis-1,2-Dichloroethylene</td>
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<td>Carbon Tetrachloride</td>
<td>9.246</td>
<td>2.351</td>
<td>1.548</td>
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<td>Ethyl Ether</td>
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<td>Chloroform</td>
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<td>1.688</td>
<td>0.368</td>
<td>0.334</td>
<td>0.685</td>
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<td>Methylene Chloride</td>
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<td>3.196</td>
<td>1.213</td>
<td>0.856</td>
<td>4.537</td>
<td>2.806</td>
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<td>Bromoform</td>
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<td>0.45</td>
<td>0.247</td>
<td>0.236</td>
<td>0.226</td>
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<td>1,1-Dichloroethane</td>
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<td>1,1,2-Trichloro-1,2,2-Trifluoroethane</td>
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<td>Methyl Ethyl Ketone</td>
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<td>Trichloroethylene</td>
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<td>0.251</td>
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<td>1,2,4-Trimethylbenzene</td>
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<td>0.266</td>
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<td>0.408</td>
<td>0.343</td>
<td>0.383</td>
<td>12.2</td>
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</tbody>
</table>

* Highlighted constituents are the 9 target analytes subject to VOC room-based concentration limits specified in the permit.

Number of containers: 1892  8368  10691  2484  2404  2393  9953  38185