9523.00-12

SUMMARY OF PERMIT ASSISTANCE TEAM (PAT) COMMENTS

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

MAR 30 1987

MEMORANDUM

SUBJECT: Summary of Permit Assistance Team (PAT) Comments

FROM: Bruce R. Weddle, Director
Permits & State Programs Division

TO: Hazardous Waste Management Division Directors
Regions I-X

Attached is the second in a series of periodic reports which summarize major issues that PAT members have addressed in their reviews of specific Part B applications, permits, and closure plans. (The first PAT Summary Report was issued on March 14, 1986.) These reports cover issues that are of generic, national interest rather than strictly site-specific interest. The attached report includes reviews conducted by the Land Disposal PAT in the first half of 1986. In order to ensure that the report reflects current EPA policy and guidance, we obtained review comments from all divisions in OSW and from the Office of General Counsel.

We are in the process of preparing another series of documents which will summarize PAT reviews of proposals for Alternate Concentration Limits (ACLs). These "ACL Fact Sheets" will describe the setting, issues, and recommendations at sites where the pat reviews ACL proposals. The first ACL Fact Sheet was issued by Ken Shuster on December 4, 1986. The Fact Sheets are being prepared in response to the ACL Implementation Strategy. For more information, contact Mark Sales at FTS 382-4755.

We hope that the recommendations provided in this document will be helpful for permit writers encountering similar situations at other RCRA facilities. By sharing the PAT's suggestions from a few sites, we hope that permit decision-making will be somewhat easier and faster at many more sites nationally. We encourage you to distribute this Report to your staff and State permit writers. To make that easier, I have enclosed multiple copies of the report.

Attachment A to the report lists the facility names, Regions, PAT Coordinators, and dates for the reviews summarized in this report. Attachment B provides a list of guidance documents and directives used in preparing the PAT reviews. Attachment C is a current roster of the members, expertise, and telephone numbers of the Land Disposal PAT staff.

If you have any questions, comments, or suggestions on the PAT Summary Report, please contact Terry Grogan at FTS 382-4692.

Attachments

cc: RCRA Branch Chiefs, Region I-X
Permit Section Chiefs, Region I-X
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SUMMARY OF PERMIT ASSISTANCE TEAM (PAT) COMMENTS

Exemption Requests from Minimum Technology Requirements

1) Exemption Requests under HSWA _3005 (j)(2)

An existing facility applied for a waiver from the surface impoundment double liner requirement of _3005(j)(l) under the exemption provided in

_3005(j)(2). The waiver was requested for a holding basin constructed by excavating a depression in natural, low permeability (1.0 x 10-7 cm / sec or less) site soils. To receive a waiver under _3005 (j)(20, a surface impoundment must have at least one liner that is not leaking and meet certain other requirements. The facility contends that the impoundment's native soil foundation constitutes a liner for purposes of satisfying _3005 (j)(2).

Section 3005 (j)(12)(A) of HSWA defines "liner" for purposes of the _3005 (j)(2) waiver as follows:

> A liner designed, constructed, installed and operated to prevent hazardous waste from migrating beyond the liner to adjacent subsurface soil, ground-water, or surface water at any time during the active life of the facility.

A literal interpretation of _3005 (j)(12)(A) precludes the use of a native soil foundation as a liner because such a liner is neither "installed" nor "constructed". This reading is supported by the legislative history indicating that the liner must satisfy EPA's current regulatory standards. See 129 Cong. Rec. H8142 (daily ed., Oct. 6, 1983). Based upon the above statutory language and legislative history, only facilities with an "installed" liner will be eligible for this exemption and no "in-situ" liners will be permitted (note that a liner constructed by emplacing and recompacting excavated native soils may meet this definition if it prevents migration during the active life of the activity).

Land Treatment Facilities

1) Compatibility Test for Combined Waste Disposal

A demonstration of compatibility is required under _264.282 for any new waste that is to be added to an existing land treatment unit. This requirement applies even if the new waste has been treated to render it non-hazardous prior to placement in the land treatment unit. The demonstration of compatibility must demonstrate that the new waste will not inhibit the land treatment unit from transforming, degrading or immobilizing the waste currently being applied per 264.273(a) in addition to showing successful treatment of any newly applied hazardous waste in the presence of existing wastes. See guidance reference 7.

2) Waste Minimization Requirements

Sludge applied to land treatment units must conform to the waste minimization requirements of HSWA. For sludge, waste minimization usually requires dewatering. The optimum operation of units located in arid climates, however, may require the application of sludge with more water than normally remains after dewatering. Since the owner/operator must comply with the HSWA waste minimization requirements only to the extent economically practicable, the PAT has interpreted this to mean that the owner/operator must dewater sludge only when the water content is in excess of that required for optimum operation of the land treatment unit. The water fraction, once it has been removed, among other options, can be delisted (if derived from a listed waste), or tested against the characteristics, or treated and discharged via a NPDES permitted system.

3) Principal Hazardous Constituents

When identifying Principal Hazardous Constituents (PHC) of land treated wastes, which may be required for unsaturated zone monitoring under 264.278(a)(2), it is important to identify all constituents that may enter the hazardous waste stream(s) to be land treated. This is particularly true at petroleum processing facilities where solvents used in cleaning process equipment may enter the waste streams to be land treated. Solvents used for equipment cleaning can vary

considerably within a facility and between facilities; the selection

of PHCs for individual monitoring programs should reflect these differences, based on actual solvents used. Trichloroethylene, a common solvent, can be of particular concern due to its high mobility.

4) Land Treatment Unit Performance

The performance of a land treatment unit is measured in large part by its ability to degrade, transform or immobilize all hazardous wastes applied. For wastes containing both organic and inorganic hazardous constituents, performance cannot be determined based solely upon the ability to immobilize heavy metals. The ability of the unit to degrade and treat organic constituents must also be monitored, and the analyses should include all the principal organic constituents in the waste. The Land Treatment Demonstration Guidance (reference 7) can assist in determining land treatment unit performance.

5) Unsaturated Zone Monitoring--Soil Pore Liquid Sampling Frequency

The Purposes of a lysimeter system at a land treatment unit are (1) early detection of the transport of constituents or degradation products through the unsaturated zone to the ground water, and (2) to help monitor the unsaturated zone to the ground water, and hazardous constituents are migrating out of the treatment zone, the waste treatment system parameters, typically including waste application rations, need to be corrected.
Guidance on Unsaturated Zone Monitoring (reference B) is available. A sug gested approach for scheduling the sampling of soil pore liquid at land treatment units is to sample one or two weeks after significant rainfall events based upon the long term, site-specific meteorology. Alternately, because the timing of sampling is critical, a better approach is to use a tensiometer to identify the arrival of the wetted front created by the rainfall or waste application. This instrument can be used with the actual lysimeter system. As water moves through the soil profile, a tensiometer located next to the lysimeters will indicate when the wetting front is at the depth of the lysimeters. Samples should be collected at this time to ensure that the sample is of water and waste constituents moving through the soil profile and not stagnant soil pore water.

Ground-Water Monitoring

1) Screening of Monitoring Wells

The proper screening of monitoring wells is critical in order to determine the presence of contamination. Heavier constituents tend to migrate and accumulate in the lower parts of an aquifer. Sampling and well design must be able to detect this condition. Clay and silty clay layers in the saturated zone should also be monitored since studies have show that some organic constituents can migrate in some types of clay soils. The RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (reference 9) is finalized and covers monitoring well design and construction.

QA/QC Methodologies

1) Additional Verification by GC/MS

QA/QC methodologies are crucial to assure that the analytical data collected for land treatment demonstrations are as accurate as possible. See guidance reference 7. When preparing a QA/QC plan for organic principle hazardous constituent analysis by the alternative method which uses a gas chromatography/flame ionization detector (GC/FID) instead of the GC/MS method, the laboratory or owner/operator should verify a certain percentage (e.g., 10%) of the initial run (and future runs, as necessary) by GC/MS. This approach will corroborate and justify the use of the GC/FID.

2) Construction Quality Assurance Plans

A rigorous construction quality assurance plan should be developed and implemented to insure that a completed hazardous waste facility meets or exceeds all design criteria and specifications. Draft Guidance is available for construction quality assurance for land disposal facilities (reference 1).

Any proposed plan should describe how the required limits of permeability will be achieved and maintained during the construction of clay layers in liners and caps. The guidance recommends the construction of a test fill using the soil, equipment, and procedures

to be used in the final construction of the clay layer in order to assure that permeability limits will be met. The construction of the test fill must be as stringent as the actual liner for the facility.

Each construction quality assurance plan should identify who will conduct (i.e., oversee and perform) the quality assurance measures. It is important that the person(s) be qualified and independent of the construction contractor to ensure proper placement and representative sampling of the liner during placement.

Chemical Compatibility Testing

1) Method 9090

The Method 9090 chemical compatibility test exposes the membrane liner materials to the waste or leachate being managed at a facility and simulates the conditions expected during the actual use of the liner material. After exposure, the liner material must be compared to an unexposed sample of liner material using the physical testing described in method 9090. The parameters being compared include changes in thickness, mess, area, and hardness, and the retention of physical properties such as tear resistance and tensile properties. The comparison should address any change in the properties of the liner material when compared to the unexposed sample.

Method 9090 was originally developed to test only liner material; however, it is important that all other man-made materials that come in contact with waste or leachate be subjected to the immersion test portion of Method 9090. Other materials that potentially come in contact with waste or leachate are geotextiles, geogrid and piping used in the leachate collection systems. Directive 9480.00-13 (reference 10) addresses Method 9090 and provides references for the individual tests that these other materials must undergo after the immersion test.

2) Obtaining and Maintaining Representative Leachate

Halogenated organics are one of the most deleterious chemical families to high density polyethylene (HDPE). When performing compatibility testing on HDPE, the owner/operator must demonstrate that the sample of waste or leachate used is representative of the waste or leachate

from their facility and that the proposed methodology is capable of maintaining the concentrations of halogenated and other volatile organics actually found in a facility's leachate throughout the test. Because these organic compounds are volatile, care should be taken not to aerate the leachate sample. Since Method 9090 requires long exposure time (120 days), loss of volatiles may occur. This change

in waste composition may require the waste or leachate to be replaced at least monthly in order to maintain representative conditions throughout the exposure period. (Replacement of leachate does not trigger the beginning of the 120-day period again.)

Waste Pile Liner Equivalency

1) The Use of Concrete Pad as a Liner

A facility maintains that a concrete pad under a waste pile meets the definition of "equivalent protection" under HSWA _3015(a) and can be substituted for a liner requirement. A concrete pad, however, fails to meet this definition and the performance requirements of _264.251. Concrete is not impervious. It has a calculable permeability and operations on the pad will likely degrade any relatively impermeable coating that may be applied. Concrete has a tendency to expand the crack, allowing the escape of leachate. Also, the chemical compatibility of leachate with the concrete must be demonstrated. Certain leachate constituents (e.g., sulfates, acids) may be corrosive to concrete.

Landfill Design

1) Final Cover Slope

Final cover with slopes that exceed the recommended grade may experience erosion problems and slope instability. If the design slope exceeds 3-5%, the applicant should demonstrate that soil erosion will not exceed 2 tons/acre using the USDA Universal Soil Loss Equation and may be required to perform slope stability analysis. (See reference 3 for slope guidance.)

2) Waste Settlement

When calculating settlement of a landfill for final cover design, allowances must be made for the settlement of the waste itself. Most waste materials settle and decompose at a greater rate than natural soils used in the final cover. Organic decomposition will consolidate waste layers regardless of operational techniques.

3) Flexible Membrane Liner in Final Cover

An interim status facility proposes to use a flexible membrane liner in the final cover of a landfill with steep slopes approaching 2=1 and a waste depth of several hundred feet in some places. Membrane liners are unstable when used as a component of a final cover system on steep slopes and may fail catastrophically under seismic and other stresses in such situations. Additionally, this unusually deep landfill is subject to extreme settlement that will effect numerous tears in any conventional flexible membrane liner.

Therefore, a flexible membrane liner is not recommended under these conditions. Given the site-specific climatic and geophysical conditions, an adequately designed and constructed soil-only cover should be used for closure of this facility under _265.310.

4) Foundation Layer of the Final Cap

A facility proposed a final cap design with a low permeability layer constructed out of either contaminated or clean soil. Since this layer must provide long term minimization of the migration of liquids, it must be carefully designed and constructed. Assurance of a consistently low permeability soil requires that the soil be relatively homogenous. Soil Contaminated with hazardous constituents will likely not be uniformly low in permeability. In order to achieve and maintain consistent low permeability, clean soils should be used in this layer.

5) Leachate Collection System Design

In order to satisfy the requirements for landfill design specified in _2.64.301(a), the leachate collection system design should generally be based upon realistic infiltration rates (based upon actual daily precipitation data for the area), not the annual average rate of infiltration. This is because landfill cells are open depressions during their active life.

6) Geotextile Materials

When geogrid and geotextile materials are specified as part of the

leachate collection system in place of a conventional drainage material, they should be evaluated to assure that they have the equivalent drainage capacity of a one-foot layer of compacted sand.

7) Use of Berm Material for Manufactured Slag

A facility wishes to construct berms for manufactured slag. This material should be investigated for the presence of hazardous constituents. Based on the design presented, if any hazardous constituents are found, the facility should be discouraged from using this material. These constituents may be detected in the ground-water monitoring system, obscuring any releases from the wastes in the unit.

8) Use of a Composite Primary Liner

Several facilities have proposed using a "composite" primary liner. Directly below the primary synthetic liner, these facilities have proposed adding an additional layer of either clay or chalk. This addition is not specifically required by the Minimum Technological Requirements of _3004(o)(1) of HSWA nor is it recommended in the "Double Liner Guidance" (reference 6). The extra layer has the advantage of providing a reduction in leachate movement and extra long-term reliability. Since the extra layer is not prohibited, it can be allowed to remain in the design.

Closure

1) Closure of a Land Treatment Unit with Vegetative Cover

Owners or operators of land treatment units must make their best effort to establish a vegetative cover. This can involve the use of soil conditioners, fertilizers and irrigation to supply the necessary growing conditions. If the unit is closing under _265.280 requirements and the owner or operator can show that they have tried to implement the vegetative cover without success, they are justified in the use of another closure procedure (e.g., clean closure or addition of another cove soil) for the site.

2) Extended Closure Period

A facility has requested an extended closure period so that the facility can continue to receive non-hazardous solid waste in order to bring the disposal area up to design grade. Extended closure periods may be approved if: (1)(i) the partial or final closure activities will, of necessity, take longer than 180 days to complete; or (ii)(A) the hazardous waste management unit or facility has the

capacity to receive additional hazardous wastes and (B) there is reasonable likelihood that the owner/operator or another person will recommence operation of the hazardous waste management unit or the facility within one year, and (C) closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and (2) the owner/operator has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but not operating hazardous waste management unit or facility, including compliance with all applicable interim status requirements (_265.113(b)).

The facility in question does not meet the criteria in _265.113(b); extending the closure period for the purpose of receiving additional non-hazardous waste is not necessary to proceed with closure nor will it provide any environmental benefit.

Exposure Information and Evaluation

1) Role of the Agency for Toxic Substances and Disease Registry (ATSDR)

The role of ATSDR is to evaluate human populations with known or suspected exposure, not to determine if a release has occurred and has migrated to potential human exposure points. It is not necessary to refer a facility to ATSDR unless a release has occurred and human exposure is either suspected or confirmed. All referrals to ATSDR for health assessments under RCRA _3019 must be approved by Headquarters. Candidates for referral should be forwarded with the appropriate summary report as described in reference 2. ATSDR can provide less formal technical assistance or consultation as also described in reference 2.

2) Exposure Information Reports (EIR)

In order to adequately review a facility's EIR, the Part B application and any other documents pertaining to possible release should be examined. The objectives of these reviews are 1) to identify human exposure to releases which may require ATSDR involvement and 2) to identify potential human exposure to future releases which may be mitigated through permit conditions. Therefore, the EIR review process should be closely integrated with ongoing RCRA Facility Assessments (RFAs). Guidance (reference 2) describing the procedure for reviewing EIRs is available and should be consulted.

Attachment A

PAT Reviews Included in This Summary

Facility	Region	PAT Coordinator	Review Date
Amax Nickel	VI	Chris Rhyne	June 1986
BKK	IX	Chris Rhyne	December 1985
Bob's Home Service	VII	Chris Rhyne	January 1986
Casmalia Resourcee	IX	Chris Rhyne	April 1986
CECOS	II	Chris Rhyne	December 1985
Chemical Waste Management	IV	Chris Rhyne	January 1986
Environmental Waste Control	V	Robert Kayser	December 1985
Fondessy	V	David Eberly	April 1986
Hess Oil Virgin Islands Corp.	II	Nestor Aviles	February 1986
Murphy Oil USA, Inc.	VI	Nestor Aviles	March 1986
RMT Properties, Inc.	VIII	Robert Kayser	April 1986

Attachment B

List of Guidance Documents Used in Preparing the PAT Reviews

1. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, October, 1985, EPJA / 530-SW-85-021.

2. Procedural Guidance for Reviewing Exposure Information under RCRA _3019, September, 1986, Directive Number 9523,00-2A.

3. Draft RCRA Guidance Document: Landfill Design--Liner Systems and Final Cover (Chapter E only); July, 1982.

4. Criteria for Identifying Areas of Vulnerable Hydrogeology Under the Resource Conservation and Recovery Act--Statutory Interpretive Guidance (July 1986, Interim Final) NTIS No. PB-86-224946.

5. Interim Status Surface impoundments, Retrofitting Variances, July 1986,

   NTIS No. PB-86-212263.

6. Minimum Technology Guidance on Double Liner Systems for Landfills and Surface Impoundments--Design, Construction and Operation, Draft May 1985, EPA / 530-SW-85-013.

7. Permit Guidance manual on Unsaturated Zone Monitoring for Hazardous Waste Land Treatment Units, April 1986.

9. RCRA Ground-Water Monitoring Technical Enforcement Guidance, October 1986.

10. Supplementary Guidance on Determining Liner / Leachate Collection System Compatibility, Effective Date 8 / 7 / 86, Directive Number 9480.00-13.

Attachment C

2/27/87

Land Disposal Permit Assistance Team (PAT)

Current Organization and Staff

Assistance Branch
Suzanne Rudzinski, Chief (382-4761)

Land Disposal Permit Assistance Section
Terry Grogan, Chief (382-4692)

_ Chris Rhyne (Civil Engineer, 382-4695)

- Disposal Design & Operating Stds (liners, leachate collection)
- Liner Compatibility
- Closures (clean-up standards)

_ Bob Kayser (Chemist, 382-4536)

- Exposure Assessments
- Chemical Analysis
- Appendix VIII Monitoring

_ Janette Hansen (Geologist, 382-4754)

- Ground-water Monitoring
- RFA Technical Assistance
- Corrective Action Technologies

_ Mark Salee (Environmental Scientist, 382-4755)

- ACL's
- Risk Assessments
- Ground-water Protection Regulations

_ Dave Eberly (Civil Engineer, 382-4691)

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- Disposal Design & Operating Stds
- Construction QA; Liquids in Landfills
- Closures (caps)
- Surface Impoundment Retrofitting and Waivers

_ Amy Mills (Geologist, 382-3298 / 4692)

- Ground-Water Monitoring
- Corrective Action
- RCRA Technical Ground-water Staff Meetings

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