ILLINOIS POLLUTION CONTROL BOARD
July 7, 1995

IN THE MATTER OF:	)	
	)	
PETITION OF CONVERSION	)	AS 93-5
SYSTEMS, INC. FOR ADJUSTED	)	(Adjusted Standard-Land)
STANDARD FROM 35 ILL. ADM.	)	
CODE PART 811 (Monofill)	)	

OPINION AND ORDER OF THE BOARD (by C.A. Manning):

This matter is before the Board on a petition for an adjusted standard filed by Conversion Systems, Inc. (CSI) on July 2, 1993. CSI seeks adjusted standards from the requirements of 35 Ill. Adm. Code Part 811, standards for new solid waste landfills, Sections 811.105, 811.306-309, 811.313, 811.314, and 811.321, as they apply to its Poz-O-Tec® (Poz-O-Tec) materials. These materials are produced through a patented stabilization process utilizing flue gas desulfurization (FGD) sludges and ash produced by coal-burning power generation facilities. CSI seeks the adjusted standard in order to allow Poz-O-Tec materials to be disposed of in a monofill without the need for a liner, cap or leachate collection system.

Based upon the record before it and upon review of the factors involved in the consideration of adjusted standards, the Board finds that petitioners have demonstrated that grant of an adjusted standard is warranted. Accordingly, for reasons more fully set forth below, the Board hereby grants CSI an adjusted standard from Sections 811.105, 811.306-309, 811.313, 811.314, and 811.321.

PROCEDURAL HISTORY

CSI originally filed a petition for adjusted standard, docketed as AS 92-9, concerning its Poz-O-Tec materials on August 24, 1992. That petition was dismissed by the Board on March 25, 1993, pursuant to CSI's request to voluntarily withdraw the petition. The petition before the Board in the present proceeding was filed on July 2, 1993. Concurrently with the filing of this petition, CSI filed a separate petition for adjusted standard, docketed as AS 93-4, wherein CSI seeks relief from the requirements of 35 Ill. Adm. Code Part 811 so as to allow owners of chemical waste landfills accepting only FGD sludges and coal combustion wastes to use Poz-O-Tec as a liner and cap material.

Also on July 2, 1993, CSI filed a "Motion Regarding Procedural Matters," wherein CSI requested that it be allowed to incorporate by reference the entire record from AS 92-9. CSI also requested that the Board rule upon the issue of whether its

failure to include site-specific information would make adjusted standard relief unavailable. On July 20, 1993, the Illinois Environmental Protection Agency (Agency) filed a response to this motion and a motion to dismiss, which argued that the Adjusted Standard process was an inappropriate vehicle for the relief requested by CSI. CSI filed a reply to the Agency's response. The Board issued an order on July 22, 1993, which granted CSI's motion to incorporate the record in AS 92-9. On August 26, 1993, the Board issued an order, with two Board Members dissenting, which allowed CSI's petition to proceed as an adjusted standard. (*See* Board Order of August 26, 1993, B. Forcade and C.A. Manning dissenting.) In its August 26, 1993 order, the Board expressed no opinion as to the merits of the petition.

The Agency filed two motions for extensions of time to file its response in order to allow the Agency to substitute counsel, and in order to allow negotiations between the parties. The Board granted both extensions of time, the second of which granted the Agency an extension until May 23, 1994 to file its response.

The Board received CSI's Certificates of Publication on August 2, 1993, which indicated that notice of the proposed adjusted standard was published in the *State Journal-Register* on July 5, 1993, and in the *Chicago Sun-Times* on July 3, 1993. No requests for public hearing were received, and no hearing was held in this matter. However, on May 19, 1994, the Board assigned a hearing officer to this matter, and directed the parties to hold a pre-hearing conference, which was held June 22, 1994. Subsequently, because the parties wished to continue negotiating, the hearing officer issued an order directing the parties to file status reports on or before November 1, 1994.

The Agency filed its response to the petition for adjusted standard on November 3, 1994, recommending that the adjusted standard be granted, subject to certain additions and amendments. On November 14, 1994 CSI filed a motion for leave to file a reply to the Agency response which the Board granted. The reply indicates that CSI is in agreement with the Agency's proposed amendments to the adjusted standard.

On May 5, 1995, CSI filed a motion requesting that the Board follow its August 26, 1993 order. The Board finds the motion moot for the reasons set forth below in the opinion.

THE ADJUSTED STANDARD PROCESS - SECTION 28.1 OF THE ACT

The Board's responsibility in this matter arises from the Environmental Protection Act (Act) (415 ILCS 5/1 et seq.). The Board is charged therein to "determine, define and implement the environmental control standards applicable in the State of Illinois" (Section 5(b) of the Act) and to "grant . . . an

adjusted standard for persons who can justify such an adjustment" (Section 28.1(a) of the Act). More generally, the Board's responsibility in this matter is based on the system of checks and balances integral to Illinois environmental governance: the Board is charged with the rulemaking and principal adjudicatory functions, and the Agency is responsible for carrying out the principal administrative and enforcement duties.

Section 28.1 of the Act provides that a petitioner may request, and the Board may adopt an individual adjusted standard different from the standard that would otherwise apply to petitioner pursuant to a rule of general applicability. Such a standard is called an adjusted standard. The general procedures that govern an adjusted standard proceeding are found at Section 28.1 of the Act and within the Board's procedural rules at 35 Ill. Adm. Code Part 106.

Where, as here, the regulation of general applicability does not specify a level of justification required for a petitioner to qualify for an adjusted standard, the Act at Section 28.1(c) specifies four demonstrations that must be made by a successful petitioner:

1) Factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;

2) The existence of those factors justifies an adjusted standard;

3) The requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and

4) The adjusted standard is consistent with any applicable federal law.

Instead of seeking relief that is specific to an individual, or a site, CSI is requesting that an adjusted standard be granted from certain sections of Part 811, so that those facilities which produce FGD sludges and ash (approximately 45 coal burning power generation facilities), may purchase CSI's Poz-O-Tec process and dispose of Poz-O-Tec material without having to comply with the existing Part 811 liner and leachate requirements.

As stated previously the Board denied an Agency motion to dismiss the instant petition and that of AS 93-4. Since that time, the Agency and CSI have come to agreement as to the requirements that would be imposed on the purchasers of the Poz-O-Tec process, and the Agency has filed a recommendation to that

effect with the Board.

However, in reviewing the language of the proposed adjusted standard, the Board finds that it imposes requirements on the purchasers and users of the Poz-O-Tec process, and not strictly upon CSI, the individual company who sought and to whom we grant this adjustment to the rules of general applicability. Therefore, in order to ensure that the users of the Poz-O-Tec materials for which the adjusted standard is granted, clearly understand and are legally and regulatorily committed to proper use of the Poz-O-Tec process product, the Board will also open a rulemaking docket to consider incorporating this adjusted standard into a rule of general applicability governing the Poz-O-Tec process of CSI, pursuant to Sections 27 and 28 of the Act.

The Board intends to use this docket to adopt the language of the adjusted standard, as agreed to and drafted by CSI and the Agency, as a new Part 816, entitled "New Utility Waste Landfills." Additionally, we will propose amendments to Part 807, 810, and 811 in order to provide for consistency with a proposed, new Part 816. We also believe that it is appropriate for the Board, and we note that it is within our discretion, to consider a rule of general applicability for the Poz-O-Tec materials pursuant to Section 27 and 28 of the Act.

The following is the Board's examination of the technical merits of the adjusted standard.

APPLICABLE REGULATIONS FROM WHICH CSI SEEKS AN ADJUSTED STANDARD

CSI seeks an adjusted standard from the requirements of 35 Ill. Adm. Code Sections 811.105, 811.306-309, 811.313, 811.314, and 811.321. These rules are contained in Subpart C of Part 811 of the Board's landfill rules. Part 811 prescribes the standards applicable to new solid waste landfills, and Subpart C of Part 811 prescribes those standards specifically applicable to chemical and putrescible waste (chemical waste) landfills. Section 811.105 sets forth the compaction requirements. 811.306 prescribes the liner requirement. 811.307-309 prescribes the standards and protocol for leachate. 811.313 and 811.314 set forth intermediate and final cover requirements. Each of these is discussed in greater detail below.

Section 811.105 provides, among other requirements, that wastes shall be deposited at the lowest part of the active face and compacted to the highest achievable density.

Among the requirements of Section 811.306, this section sets forward the regulatory requirements for liner systems including that units shall be equipped with a leachate drainage and collection system and compacted with an earth liner. The earth

liner standards are to have a minimum allowable thickness of 1.52 meters (or five feet) and that it shall be compacted to have a maximum hydraulic conductivity of $1x10^{-7}$ centimeters per second.

Sections 811.307 through 811.309 provide the requirements for the leachate drainage, collection and treatment and disposal systems. These requirements provide for drainage layers overlaying a liner system. They set forth the drainage layer thickness. The rules provide for the design of the collection pipes of the leachate collection system, how the system shall be constructed and of what material. Section 811.309 provides for leachate storage and treatment standards for on-site treatment, disposal, for the facilities' tank, pond, lagoon and basin design, recycling, monitoring, discharge to off-site treatment works, and leachate management systems.

Sections 811.313 and 811.314 set forth the requirements for intermediate and final cover. The intermediate cover rules consists of grade and thickness requirements. The final cover rules contain standards for thickness, area to be covered, permeability, compaction standards, material requirements and timing for placement.

Section 811.321 contains the waste placement rules at a landfill requiring that waste be placed at the lowest portion of the landfill and shall be moved to the highest portion. The rule also allows for placing the waste in other areas depending the existence of certain conditions such as climate, topography and the placement of groundwater monitoring wells.

PROPOSED ADJUSTED STANDARD

In this petition, CSI seeks an adjusted standard to allow Poz-O-Tec materials to be disposed of in a monofill without the need for a liner, cap or leachate collection system. Poz-O-Tec materials are produced through a patented stabilization process which uses forced-oxidized flue-gas desulfurization scrubber sludge and coal combustion ash as raw materials. (Pet. at 1.) The scrubber sludge is directed to a scrubber blowdown tank, and then to primary and secondary dewatering systems. (Pet. at 7.) The dewatered sludge is then directed to a mixer where fly ash and lime are added. The materials are mixed and then stabilized, producing a highly impermeable monolithic mass (Pet. at 7), with a high unconfined compressive strength and load-bearing capacity, and the capability for autogenous healing of small cracks and fissures (Pet. at 2-3). The material continues to cure over a period of years, becoming stronger. The Poz-O-Tec materials meet the classification criteria for inert waste, with the exception of concentration of total dissolved solids (TDS) and sulfates in the leachate produced. (Pet. at 2.)

Poz-O-Tec materials have been used since 1977 as bases for highways, parking lots and airport runways. (Pet. at 3.) They have been used to construct aquaculture ponds, artificial ocean reefs, and have been formed into construction blocks and used as a substitute for aggregate or stone for the production of concrete blocks. (Pet. at 3) They have also been used to prevent erosion along coastlines and railway embankments, as a monolithic fill material, and to reclaim strip mines from coal mining. (Pet. at 3.)

CSI is seeking this adjusted standard in order to market the Poz-O-Tec process to approximately 45 coal combustion power generation facilities in Illinois. There presently no such purchasers in Illinois (Pet. at 4); however, this may be because such use may not be permitted pursuant to current Board regulations, and due to the cost differential between surface impounding and landfilling FGD waste subjected to the Poz-O-Tec process pursuant to the chemical waste landfill rules. CSI believes this is because surface impoundments are largely unregulated under current law. (Pet. at 4.)

In this petition, CSI does not seek an adjusted standard applicable to a specific site; rather, it seeks to allow an adjusted standard applicable to its Poz-O-Tec process wherever used throughout the state. (Pet. at 8.) All potential users are all coal burning facilities that have either baghouses or electrostatic precipitators, and would be required to operate FGD systems in order to use the Poz-O-Tec process made available by this adjusted standard. (Pet. at 8.) The proposed adjusted standard would allow each of the coal burning facilities that produce combustion waste and FGD to monofill Poz-O-Tec material. The adjusted standard would not affect any of the other requirements in the chemical waste landfill rules of Part 811 other than those rules from which CSI's Poz-O-Tec process and material is receiving an adjusted standard today in AS93-4.

Pursuant to the relief requested by CSI in the instant petition and the related petition of AS 93-4, facilities which have decided to utilize the Poz-O-Tec process would have two available disposal options: monofilling pursuant to the relief requested by CSI herein, or constructing a liner and cap of Poz-O-Tec materials, pursuant to the adjusted standard relief we are granting in AS93-4. A facility's decision as to which option to use would be dependent upon the ratio of flyash and sludge in its waste stream. CSI asserts that most facilities will be able to consistently produce high quality Poz-O-Tec materials with a permeability less than or equal to $1x10^{-7}$ cm/sec. (Pet. at 11.) These materials could be disposed of in a monofill and would ultimately result in a large, monolithic block of disposed

material.[1]

According to the petitioner, upon the Poz-O-Tec materials' production, the material would be placed into a stockpile where it would begin to cure and form into a cementitious material. (Pet. at 9.) It would then be placed upon or adjacent to Poz-O-Tec materials already in the landfill. (Pet. at 10.) The materials would be spread into lifts, rolled to smooth, compacted and graded so that rainfall would run off and be collected without puddling. (Id.) The monofill would be designed to allow for surface run-off from the monofill toward an open end of the fill. (Pet. at 6.) The Poz-O-Tec materials, which under AS 93-4, are predicted to allow for no leachate permeation would substitute as a liner, and therefore no liner or leachate collection system is required. (Pet. at 6.) CSI also seeks relief from the requirement that a soil cover be placed on the landfill because one of the benefits of Poz-O-Tec materials is that it forms bonds with new material as it is added to the landfill, and does so without seams. (Pet. at 6.) Therefore, leachate pathways are avoided which would otherwise form between lifts of other types of materials. Placing an intermediate cover over the materials would jeopardize the structural integrity of the monofilled material and create a leachate pathway in itself. (Pet. at 6.) CSI also requests relief from the requirement that there be final cover placed on the landfill because the material itself will serve as a low permeability layer. (Pet. at 7.)

JUSTIFICATION IN SUPPORT OF THE ADJUSTED STANDARD - THE SECTION 28.1(c) FACTORS

In support of its petition for adjusted standard, CSI states that the chemical waste landfill rules in Part 811, which are general rules covering a wide range of wastes, are designed to

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[1]Some facilities will not generate sufficient fly ash to consistently produce materials with a permeability less than or equal to $1x10^{-7}$ cm/sec. and it is these facilities which would instead be producing a sufficient quantity of Poz-O-Tec materials to construct a liner and cap meeting the $1x10^{-7}$ cm/sec. standard. This would be accomplished by storing fly ash until an adequate supply is available to produce high quality Poz-O-Tec materials. (AS93-4 Pet. at 8.) The landfill would then be constructed and operated in accordance with the chemical waste landfill rules. The adjusted standard relief in AS93-4 allows facilities to use a Poz-O-Tec liner which is at least five feet thick, which has a permeability of $1x10^{-7}$ cm/sec. or less and an unconfined compressive strength of 150 psi or greater. The permeability and unconfined compressive strength must be verified through the construction and field testing of a test pad. The landfill must receive for disposal only FGD sludges and coal combustion wastes, and must be constructed at least five feet above the water table. The cap could be constructed of the same material as the liner, and must be at least three feet thick. Site owners would be required to do site-specific contaminant modelling, groundwater modelling and assessment and remedial action.

protect the environment regardless of the degree of hazard of the wastes. CSI points out the adjusted standard it seeks applies only to generally inert wastes. According to CSI, requiring a monofill consisting of Poz-O-Tec materials, to comply with the liner, cap and leachate collection and treatment requirements would impose a unreasonable burden upon coal combustion power generation facilities. (Pet. at 27.) As part of demonstrating the unreasonable burden, CSI has also set forth the compliance alternatives available to coal burning power generation facilities that produce FGD sludges and ash for disposal.

Compliance Alternatives

In its original petition in AS 92-9, incorporated by reference into this proceeding, CSI presented an analysis of existing management alternatives for FGD by-products currently available to coal burning power generation facilities. This analysis was based on a study performed for CSI by Environmental Resources Management (ERM). ERM investigated the following management options for disposal of FGD by-products:

1) Wet Impoundment/Gypsum Stacking - This option consists of directing the FGD slurry from a scrubber system to a settling pond, where FGD solids are settled out. Effluent from the settling pond is either recycled into the scrubber system or treated and discharged, while settled solids are periodically removed. The settled solids can be stacked around the perimeter of the settling pond to increase its height, or can be stored in a reclaim area for subsequent landfill disposal;

2) Macroencapsulation of Dewatered FGD Sludge - This option consists of dewatering the FGD sludge and placing it into a lined landfill. The landfill would be capped upon closure. The landfill could be used for either disposal of the FGD sludge, or co-disposal of the FGD sludge and fly ash;

3) Disposal of Dewatered FGD Sludge in an Unlined Cell - This option is identical to option #2, Macroencapsulation of Dewatered Sludge, with the exception that the materials are disposed of in an unlined cell; and

4) Fixation and Stabilization of FGD Sludge (Poz-O-Tec process) - This option involves treating the FGD sludge with the Poz-O-Tec process and disposing of it in a lined or unlined landfill.

ERM investigated each of these options using a theoretical model power plant generating 600 MW or more of power, burning 3% sulfur coal with 12% ash and a heat content of 11,000 Btu/lb, and using a 90% efficiency scrubber. Options were investigated under scenarios where the disposal site was unlined, singly lined, or

doubly lined, and where the leachate was trucked or piped, and where FGD sludge was disposed of alone or co-disposed with fly ash.

The ERM study analyzed the costs for each disposal option, including total capital cost, total yearly operation and maintenance cost, and total annualized cost. CSI asserts that all options using a double liner are economically unreasonable, and unlined options do not satisfy regulatory requirements.

The ERM study estimated the total annualized cost for each option using a singly-lined landfill and piping for leachate as follows:

Disposal Method	Total Annualized Cost
Wet Pond/Stacking	$22.95 million
Macroencapsulation (gypsum only)	$16.60 million (additional cost of $2.8 million for disposing of fly ash)
Macroencapsulation (gypsum and flyash)	$15.75 million
Poz-O-Tec Process	$17.16 million

The ERM study found that the cost of disposal using the Poz-O-Tec process with no liner was $15.87 million. CSI asserts that disposal using the Poz-O-Tec process and a liner constructed of Poz-O-Tec which meets the $1x10^{7}$ cm/sec standard for permeability would be somewhere between the $17.16 million cost when using a liner and the $15.87 million cost for unlined disposal. The Agency is in general agreement with CSI's discussion of the various disposal options, although the Agency did not conduct a separate investigation of these costs.

In the instant petition, CSI has addressed the issue of compliance alternatives from the perspective of a facility which has decided to use the Poz-O-Tec process. (Pet. at 13.) For these facilities, CSI states that the only cost differential between compliance with the chemical waste landfill rules and the monofill relief sought is that a facility benefiting form the adjusted standard would not be required to construct a liner, a cap or a leachate collection system. Though CSI also requests relief from the compaction, intermediate and waste placement rules, this relief is of a technical nature and has no significant impact on costs. (Pet. at 13, n.5.) Using the ERM report, CSI estimates the savings to be the following: Assuming that waste disposal needs for 30 years, the capital costs for

liner construction would be $4,356,250 (Pet. at 14); A cap, which would be approximately 60% of the liner costs because it would be three feet thick versus five feet for the liner, would then costs $2.6 million (Pet. at 14); and, a leachate system would cost approximately $264,000 (Pet. at 14-15.) CSI thus estimates that these facilities could save approximately $7.2 million under the adjusted standard versus, the compliance alternative. (Pet. at 19.)

Health and Environmental Effects - Section 28.1(c)(3)

According to the petition, allowing for the disposal of Poz-O-Tec materials in a monofill without using a liner, or a cap will provide the following environmental advantages:

1) The Poz-O-Tec process reduces the volume of the total amount of material disposed of by at least 40% through densification as compared to surface impounding of the unstabilized materials, thereby reducing the disposal area;

2) Due to the greater compressive strength and lesser liquefaction qualities of the stabilized material as compared to the unstabilized material, the Poz-O-Tec materials can be stacked higher with steeper slopes than the unstabilized material, again reducing the disposal area needed;

3) There are some viable markets for the sale of stabilized material, thereby reducing the amount of material which must be disposed of, and the in-place stabilized material is more readily available for beneficial uses should more viable markets become available; and

4) It preserves clays which form a natural protective barrier for groundwater where it is naturally located from mining for use as liner or cap material. (Pet. at 22-23.)

Additionally, when Poz-O-Tec materials are disposed of in monofill material, according to CSI, they provide environmental protection equivalent or superior to earthen or geomembrane liners and caps. (Pet. at 22-23.) A landfill using Poz-O-Tec materials will generate leachate which is similar to that produced under any disposal option investigated by ERM. A landfill which uses Poz-O-Tec would generate leachate which meets the Board's inert waste standards, except for total dissolved solids (TDS) and sulfates. (Pet. at 20.) However, a landfill which uses Poz-O-Tec will generate significantly less leachate than those using other materials. (Pet. at 20.) While Poz-O-Tec materials are less plastic than clay, they are far stronger. (Pet. at 22.) If any small cracks or fissures were to develop, the autogenous healing properties of Poz-O-Tec would heal them. (Pet. at 22.)

Consistency with Federal Law

CSI states, and the Agency agrees, that none of the requirements from which relief is sought were promulgated, in whole or in part, pursuant to federal requirements. (Pet. at 29.) Therefore the requested relief can be granted consistent with federal law.

AGENCY RECOMMENDATION

In its response to the petition for adjusted standard, the Agency generally agrees with the information presented in CSI's petition, and recommends that the adjusted standard be granted. The Agency made several recommendations to CSI's proposed adjusted standard language, with which CSI is in agreement. The recommended language changes are consistent with those adopted by the Board today in AS93-4 and are included herein in our order.

CONCLUSION

CSI has demonstrated that there are factors relating to the disposal of Poz-O-Tec materials in a monofill without the use of a liner, cap or leachate collection system which are substantially and significantly different from the factors relied upon by the Board in adopting the regulation of general applicability. In this case, these factors justify an adjusted standard. CSI's Poz-O-Tec process was not considered by the Board when it drafted the landfill rules (and as an aside, CSI did not participate in that rulemaking proceeding). Further, this adjusted standard may be granted consistent with any applicable federal law.

The Board hereby finds that petitioners have demonstrated that an adjusted standard is appropriate in order to allow the monofilling of Poz-O-Tec materials pursuant to Part 811, without the required use of a liner, cap or leachate collection system. Therefore the Board will adopt an adjusted standard for the use of CSI's Poz-O-Tec materials and process subject to the conditions agreed upon by the Agency and CSI.

This opinion constitutes the Board's conclusions of law and findings of fact in this matter.

ORDER

The Board grants an adjusted standard, pursuant to 415 ILCS 5/28.1, to the Poz-O-Tec process and materials of Conversion Systems, Inc. subject to the provisions and conditions set forth below. The Board directs the Clerk of the Board to open a rulemaking docket to consider incorporating this adjusted standard into a rule of general applicability.

I. Any monofill consisting solely of flue gas desulfurization sludges and coal combustion wastes produced by coal combustion power generating facilities utilizing a lime or limestone scrubber system shall be exempt from the requirements of 35 Ill. Adm. Code 811.105 (solely as it relates to the placement of wastes at the lowest part of the active face), 811.306, 811.307, 811.308, 811.309, 811.313 (solely as it relates to soil cover), 811.314(b)(3)(C) (solely to the extent that it may preclude Poz-O-Tec materials from being used as a landfill cap) and 811.321 (relating solely to waste placement), provided that:

1. The materials have been processed using the Poz-O-Tec stabilization process from Conversion Systems, Inc.;

2. The permeability of the liner material shall be demonstrated to be less than or equal to $1x10^{-7}$ cm/sec after placement and curing based upon a geometric average of those cylinders tested for permeability which were formed from a single sample;

3. The material has an unconfined compressive strength of greater than or equal to 150 psi using an arithmetic average of the strength testing results;

4. The base of the monofill shall be constructed at least five feet above the average historical groundwater table.

5. A monofill liner and low permeability cap shall be constructed from the Poz-O-Tec materials as described in the Board's order in AS 93-4;

6. A drainage layer shall be constructed atop the monofill liner which has a permeability greater than or equal to $1x10^{-3}$cm/sec which extends over the entire liner system of the monofill;

7. The material shall be placed in such a manner that it will form a monolithic block through placement of the material in one to two foot lifts, which are compacted, rolled to smooth and graded and sloped such that any rainfall rapidly runs off the upper surface without puddling;

8. At all times a berm shall be maintained around three sides of the landfill mass and the grading shall be such that the run-off shall be directed toward the open side where it shall be collected for reuse or treated (if necessary) and discharged pursuant to an NPDES permit;

9. The following material testing procedures will be implemented:

A. Creation and Sampling of Test Pad

(1) The owner/operator of the disposal site shall construct a test pad in accordance with 35 Ill. Adm. Code 811.507(a), unless waived by the Agency pursuant to subsection (b) of that section;

(2) The test shall be allowed to cure for 56 days at 73°Fahrenheit (or equivalent cure);

(3) After curing, fifty samples will be taken using a 4 inch diameter coring bit; and

(4) The specimens will be trimmed to proctor cylinder size utilizing an abrasive blade masonry saw, and tested for unconfined compressive strength and coefficient of permeability and thirty will be analyzed for their unconfined compressive strength.

B. Collection of Production Samples

Samples will be collected from the production of Poz-O-Tec in the following manner:

(1) Utilizing a large scoop, five gallon buckets of freshly produced material will be collected at uniform intervals during construction of the test pad and shipped to a laboratory for analysis.

(2) Five proctor cylinder specimens will be prepared from each bucket of freshly produced material. Three of these five cylinders will be tested for unconfined compressive strength and the other two will be tested for permeability.

(3) Additional uncured samples will be taken as necessary for preparation and testing to determine criteria for moisture content, lime content, the ratio of fly ash to sludge and in-place density. Testing for these parameters shall be conducted in accordance with standard test methods appropriate for the particular parameter. The criteria shall be established so as to reasonably ensure that the material disposed of will achieve the permeability and strength requirements set forth in subsection E, below.

C. Strength and Permeability Testing

(1) Uncured samples will be taken to a laboratory, placed into proctor cylinders, compacted to simulate field conditions (ASTM method D-1557-91), cured in sealed containers for 56 days at 73° Fahrenheit(or equivalent cure) and tested for coefficient of permeability and unconfined strength using the following test methods:

- U.S. Army Corp. of Engineers Engineering Manual 1110-2-1906 Appendix VII, Falling-Head Permeability Test with Permeameter Cylinder.

- ASTM Method D5102; Standard Method for Unconfined Compressive Strength of Cohesive Soils.

(2) Field samples will be tested using the same methods as specified in subsection C(1), above.

D. Data Correlation

Laboratory data and field data will be compared to determine any statistically significant differences using standard statistical correlation methodologies.

E. Subsequent Testing

Upon completion of field verification, as described above, the owner/operator of the site shall conduct QC/QA testing by taking monthly samples of freshly produced Poz-O-Tec materials, and sending those samples to a laboratory where they will be formed into proctor cylinder specimens for testing. Two of those samples will be tested for their coefficient of permeability, three for unconfined compressive strength, and one each for the parameters set forth in subsection B(3), above. Laboratory testing for permeability and strength must be conducted in accordance with the test methods referenced in section C(1) of these procedures. Test results must demonstrate a coefficient of permeability of less than or equal to $1x10^{-7}$ cm/sec using a geometric average of the permeability testing results, and an unconfined compressive strength of greater than or equal to 150 psi using an arithmetic average of the strength testing results.

10. Construction of the full scale monofill may commence immediately upon completion of the test pad.

11. The person or entity using the material in this manner shall prepare an acceptable groundwater impact assessment pursuant to 35 Ill. Adm. Code 811.371(b), 812.316, 813.304, or 815.203, as appropriate for the given facility; and

12. The person or entity using the material in this matter shall comply with the Illinois Environmental Protection Act (the "Act") (415 ILCS 5/1 et seq.) and 35 Ill. Adm. Code 811, to the extent those provisions are not otherwise addressed herein.

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1992)) provides for the appeal of final Board orders within 35 days of the date of service of this order. The Rules of the Supreme Court of Illinois establish filing requirements. (See also 35 Ill. Adm. Code 101.246. "Motions for Reconsideration".)

J. Theodore Meyer, R.C. Flemal and J.Yi concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 7th day of July, 1995, by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board