

ILLINOIS POLLUTION CONTROL BOARD
July 19, 1984

IN THE MATTER OF:)
)
DEFINITION OF LIQUID HAZARDOUS) R83-28A
WASTE (Emergency Rule))

IN THE MATTER OF:)
)
DEFINITION OF LIQUID HAZARDOUS) R83-28B
WASTE (Temporary and Permanent)
Rules))

FINAL ORDER. ADOPTED EMERGENCY RULE (R83-28A)
PROPOSED RULE. FIRST NOTICE (R83-28B)

OPINION OF THE BOARD (R83-28A)
PROPOSED OPINION OF THE BOARD (R83-28B) (by J. Marlin):

On November 18, 1983 the Board opened this Docket for the purpose of promulgating a definition of "liquid hazardous waste" in order to facilitate the direct implementation of Section 22.6 of the Environmental Protection Act (Act), which prohibits the landfilling of liquid hazardous waste after July 1, 1984. The Board solicited proposals from the public. On January 5, 1984, P.A. 83-1078 was signed into law. On February 9, 1984 the Board authorized hearings on three proposals, prepared by the Board staff, Citizens for a Better Environment (CBE) and the Illinois Environmental Protection Agency (Agency). Public hearings were held on April 13 and 23, 1984. CBE was represented at the hearings by Howard Learner and Timothy Wright of Business and Professional People for the Public Interest (BPI). CBE and the Agency entered a joint proposal as Exhibit 4. Waste Management of Illinois, Inc. (Waste Management) entered an alternative proposal as Exhibit 12.

The Hearing Officer set a comment period to end May 23, 1984. However, the Board accepted late comments because of delays in the filing of the April 23 transcript. The Board received the following comments:

PC#

- 1 Chem-Clear, Inc., May 9, 1984
- 2 Granite City Steel, Division of National Steel Corporation; Interlake, Inc.; Keystone Steel and Wire Company; North-western Steel and Wire Company; Republic Steel Corporation and United States Steel Corporation; May 24, 1984
- 3 CECOS International, May 30, 1984

PC#

- 4 Citizens for a Better Environment, June 6, 1984
- 5 Illinois Environmental Protection Agency, June 18, 1984

On June 29, 1984 the Board adopted 35 Ill. Adm. Code 709 and 729 as emergency rules in R83-28A, and proposed the same Parts as regular rules in R83-28B. The emergency rules were filed with the Secretary of State and became effective on July 5, 1984. The emergency and proposed rules appeared in 8 Ill. Reg. 11997, 12000, 12668 and 12678, July 13, 1984. Pursuant to the request of participants, an additional hearing will be held prior to preparation of an economic impact study (R.376).

STATUTORY AUTHORITY

Section 22.6 of the Act was added by H.B. 1054, which became P.A. 83-1078 effective January 5, 1984. It reads as follows:

- a. Commencing July 1, 1984, no person shall cause, threaten or allow the disposal in any landfill of any liquid hazardous waste unless specific authorization is obtained from the Agency by the generator and the landfill owner and operator for the land disposal of that specific waste stream.
- b. The Board shall have the authority to adopt regulations which prohibit or set limitations on the type, amount and form of liquid hazardous wastes that may be disposed of in landfills based on the availability of technically feasible and economically reasonable alternatives to land disposal.
- c. The Agency may grant specific authorization for the land disposal of liquid hazardous wastes only after the generator has reasonably demonstrated that, considering current technological feasibility and economic reasonableness, the hazardous waste cannot be reasonably solidified, stabilized, or recycled for reuse, nor incinerated or chemically, physically or biologically treated so as to neutralize the hazardous waste and render it nonhazardous, and that land disposal is not prohibited or limited by Board regulations. In granting authorization under this Section, the Agency may impose such conditions as may be necessary to accomplish the purposes of this Act and which are consistent with Board regulations. If the Agency refuses to grant authorization under this Section,

the applicant may appeal as if the Agency refused to grant a permit pursuant to the provisions of subsection (a) of Section 40 of this Act.

- d. For purposes of this Section, the term "landfill" means a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment or an underground injection well.

Section 22.6 is related to two other provisions: Section 22(g) authorizes the Board to prohibit landfilling of hazardous waste in general; and, Section 39(h) requires specific authorization from the Agency for each hazardous wastestream after January 1, 1987. The Board has pending a proposal to prohibit halogenated solvent wastes pursuant to Section 22(g) (R81-25, First Notice Order and Second Proposed Opinion of March 8, 1984). In addition, Section 22.4(b) of the Act allows the Board to adopt regulations which are not inconsistent with and at least as stringent as the federal Resource Conservation and Recovery Act and regulations (42 USC §6901 et seq. and 40 CFR 260 et seq.).

RELATIONSHIP TO OTHER LANDFILLING BANS

In addition to proposed ban pursuant to Section 22(g) of the Act, there is a presently existing prohibition on liquids adopted in Parts 724 and 725 pursuant to the "identical in substance" provisions of Section 22.4(a) of the Act (R81-22, 6 Ill. Reg. 4828, April 23, 1982; R82-18, 7 Ill. Reg. 2518, March 4, 1983; and, R82-19, 7 Ill. Reg. 14015, October 28, 1983). Section 724.414 applies to hazardous waste landfills with RCRA permits, while Section 725.414 applies to interim status landfills. These Sections allow the landfilling of bulk liquids only in landfills with liners and a leachate collection and removal system meeting the requirements of §724.401(a). Alternatively bulk liquids may be mixed with absorbent and placed in a landfill meeting the interim status standards of Part 725, or the final standards of Part 724. With three exceptions discussed below in connection with Section 729.301 containerized liquids are prohibited from all RCRA landfills unless "free-standing liquid" has been removed or mixed with absorbent (R.340).

The Agency can authorize wastes pursuant to Section 22.6(c) only if the landfilling is not prohibited or limited by Board regulations. Thus, the Agency can authorize liquids to be landfilled only in conformance with the RCRA requirements of Parts 724 and 725. Bans adopted pursuant to §22(g) of the Act will also limit the Agency's discretion in authorizing wastestreams pursuant to §22.6(c).

PROPOSALS

As noted above at the time of decision there were two documents with proposed language before the Board: Exhibit 4, submitted by the Agency and CBE; and Exhibit 12, submitted by Waste Management. Exhibit 4 was ambiguous on the following points, which will be discussed with the relevant elements of the first notice proposal:

1. Procedures by which the Agency was to issue a waste-stream authorization.
2. The difference between authorization of a liquid and a residual from the treatment of a liquid.
3. The definitions of "absorbed" and "solidified".
4. The distinction between addition of absorbents or solidification and treatment through addition of material which renders waste nonhazardous.
5. The distinction between solidification and removal of liquids.
6. The distinction between the duty of the generator or treater of the waste to solidify the liquid and the duty of the disposer to prevent the landfilling of liquids.
7. The relationship to the landfilling bans in Parts 724 and 725.
8. The duration of the authorization.
9. Transitional rules.

The first notice proposal was based on Exhibit 12, although it was rearranged and modified in many ways.

Development of the first notice proposal proceeded from Exhibit 1, to Exhibits 2 and 3, to Exhibit 4, to Exhibit 12 and to the first notice Order. The practice of comment and counter-proposal produced a regulation in a very efficient manner. These Exhibits were all necessary steps in development of the rule.

TESTIMONY

Witnesses at the hearings who testified on technical and economic issues included the following:

1. Larry Eastep, from the Agency, concerning the overall rationale of the ban and the Agency's procedures for implementation (R.12).
2. Dale Helmers, from the Agency, concerning methodology of the paint filter test (R.71)
3. Michael Nechvatal, from the Agency, concerning the quantities of waste involved (R.112)
4. Eugene Theios, from the Agency, concerning treatment and recycling capacity (R.136)
5. William Webster, from the Hazardous Waste Treatment Council, concerning the definition of solidification (R.156)
6. Dr. Robert Ginsburg, from CBE, concerning potential problems associated with addition of absorbents (R.210)
7. Jeffrey Diver and Edward Fochtman, from Waste Management, concerning the penetrometer test (R.271)

WHY PROHIBIT LIQUID HAZARDOUS WASTE?

Liquid hazardous wastes have been prohibited by legislative action. However, it is useful to set forth the reasons for this ban. Liquid hazardous wastes pose two basic problems: first, they tend to migrate within a landfill, creating a potential for contamination of groundwater; and, second, they make daily operations more difficult, and create subsidence problems after closure (R.16).

SUMMARY OF EMERGENCY AND PROPOSED RULES

The emergency and proposed rules are discussed in detail below. The following is a short summary intended to aid the reader. Details have been omitted and particulars simplified for clarity.

Section 22.6 of the Act prohibits landfilling of liquid hazardous waste after July 1, 1984. The regulations define "liquid hazardous waste", set criteria used to determine what is acceptable treatment, or "solidification", of the liquid hazardous waste and provide procedures by which wastestream authorizations are to be issued by the Agency.

Part 729 contains the actual prohibition; while Part 709 contains the procedures by which wastestream authorizations are issued.

The regulations utilize the paint filter test to determine whether something is a "liquid" in the first place. Landfilling of a liquid hazardous waste, as such, may be authorized by the Agency only after a showing involving technical feasibility and economic reasonableness pursuant to Section 22.6 of the Act and Section 709.401(a).

Residuals from the treatment of liquid hazardous waste may be landfilled if they meet one of three standards:

1. The residual is no longer a hazardous waste; or
2. If the treatment involves removal of liquids, such as by filtration, the residual meets the paint filter test; or
3. If the treatment involves addition of solidifying materials, the residual meets the paint filter test and exhibits a load-bearing capacity of at least two tons per square foot as judged by a soil penetrometer.

The third standard is intended to distinguish residuals which result from a "solidification" process, as opposed to addition of "absorbents", although the rules do not use either of these terms. "Solidification" is allowed, while "absorbed" wastes may be landfilled only after the economic and technical showing pursuant to Section 22.6(c) of the Act and Section 709.401(a).

The first standard allows landfilling of residuals which are not hazardous. However, Section 729.311 prohibits placement of non-hazardous liquids in hazardous waste trenches.

Either the original generator or a treater of a liquid hazardous waste will have to obtain a wastestream authorization from the Agency (§709.201). The authorization will be issued for a liquid pursuant to the technical and economic showing, or for a residual pursuant to one of the standards listed above (§709.401).

Wastestream authorizations will be deemed issued for residuals which meet one of the above standards and for which a supplemental permit exists. The generator will have to file an application for an authorization by September 3, 1984 to continue the deemed issued authorization.

WASTES AFFECTED

There is no complete estimate of the volume of waste affected by the liquid ban. The Agency presented an estimate based on waste descriptions taken from supplemental permit applications. However, the liquid ban also applies to on-site disposal, which is not subject to the supplemental permit or manifest system.

A supplemental permit application describes waste in terms of whether it is solid, semi-solid, liquid, powder or gas (R.123). The Agency has estimated the amounts of solid, semi-solid and liquid wastes which are subject to the ban (Ex.8).

In 1983 commercial hazardous waste disposal facilities accepted 1.6 million gallons of waste described as "liquid", which is assumed to fail the paint filter test (R.123). In 1983 these facilities accepted 4.8 and 14.5 million gallons of "semi-solid" and "solid" wastes, respectively (Ex.8). The Agency has conducted a sampling program to estimate what percentage of these wastes will fail the paint filter test. A relationship has been established between the percent of samples failing and the percent solids reported in the application. Based on this, around 3.4 and 4.9 million gallons of "semi-solid" and "solid" wastes will fail the paint filter test. Thus, a total of about 10 million gallons of waste disposed off-site will fail (R.125).

TREATMENT AND RECYCLING CAPACITY

Much of the waste affected by the ban consists of aqueous wastes and solvent wastes. The Agency believes there is an existing capacity of 84 million gallons per year for aqueous waste treatment facilities and 7 million gallons per year for solvent wastes. Of this capacity, the unused portion amounts to some 57 million gallons per year for aqueous waste and 5 million gallons for solvent wastes (R.140). The solvent reclaimers do not receive a very high percentage of the waste which would be going to landfills (R.143). Other options for avoiding the landfilling of liquids include process changes, substitution of materials, incineration and solidification (R.143). The Agency estimates that 90% of affected waste could be handled by some sort of treatment or recovery (R. 146). This appears to leave about 1 million gallons per year of off-site waste which may require authorization pursuant to the Section 22.6(c) showing.

DISCUSSION OF EMERGENCY AND PROPOSED RULES

The following is a detailed discussion of the emergency and proposed rules. Part 729, containing the substance of the ban, will be discussed before the procedural requirements of Part 709.

PART 729: PROHIBITED HAZARDOUS WASTES

Section 729.100 Purpose Scope and Applicability

This Section was proposed in R81-25 (Order of March 8, 1984). It has been adopted in this Docket mostly to state the intent to supplement and supercede the landfilling requirements [§729.100(e)1]. Note that paragraph (b) states the scope of the Part as proposed in R81-25 pursuant to §22(g) of the Act. This includes a broader definition of "landfill" than utilized in Subpart C.

Because of the time constraints on the emergency rules the Board has not modified the provisions of Parts 724, 725 and 807 to make them consistent with the liquid ban (Ex. 14). The Board solicits comments itemizing the needed amendments.

Section 729.301 "Landfill"

This definition is taken from §22.6(d) of the Act. The definition in the Act defines landfill as "a disposal facility or part of a facility..." This seems to allow the possibility that two trenches at a site could each be a landfill. The Board has changed the term "disposal facility" to "disposal unit" to agree with the terminology in Parts 720-725. The primary effect of this interpretation is to allow nonhazardous liquids into nonhazardous trenches at facilities with a hazardous waste trench (§729.311).

The statutory definition and that adopted differ from Part 720 in the exclusion of surface impoundments intended for waste disposal and land treatment facilities. The liquid hazardous waste prohibitions will apply to true landfills and waste piles intended for waste disposal (R.275, 352).

Section 729.301 "Liquid Hazardous Waste"

A liquid hazardous waste is a hazardous waste which yields any fluid through a paint filter in five minutes (R.275).

The Board has excluded three types of liquid hazardous waste from the definition: labpacks, ampules and waste in

containers such as batteries. These are identical to the exclusions in the landfilling bans in Parts 724 and 725.

The RCRA rules prohibit containers holding free liquids with three exceptions [Sections 724.414(b) and 725.414(b)]. Ampules are very small containers, holding only a few grams of waste. Labpacks are containerized liquid wastes in "overpacked drums": drums to which sufficient absorbent material has been added to completely absorb all of the liquid contents of the inside containers [Sections 724.416 and 725.416]. The third exception is containers designed to hold free liquids for use other than storage, such as batteries or capacitors [Sections 724.414(b)(3) and 725.414(b)(3)].

The inclusion of the exceptions was proposed by Waste Management. If liquids in containers such as batteries were prohibited, equipment would be required to shred or puncture the containers prior to disposal. Waste Management presently has such an operation in Kansas, but not Illinois (R.290, 366). There appears to be no such operation in Illinois. Capacitors and transformers containing polychlorinated biphenyls are prohibited by regulations pursuant to the Toxic Substances Control Act and could not be landfilled regardless of this proposal (R.289).

Ampules and labpacks tend to be produced by research and analytical laboratories. The existence and efficient operation of laboratories to characterize hazardous wastes and monitor compliance is necessary for the success of this and related hazardous waste regulatory proposals. These laboratories produce small quantities of hazardous waste. There is presently no capacity to treat these wastes, and immediate prohibition would result in severe hardship for Illinois laboratories (R.337).

Waste Management has asked the Board to consider the rationale of the federal RCRA regulations on which the exclusions were based: 40 CFR 264.314, 264.316, 265.314 and 265.316. Section 22.4(a) of the Act required the Board to adopt these provisions as State rules, which it did in the Sections quoted above (R81-22, R82-18 and R82-19). The Board was required to accept the rationale of the federal rules in adopting regulations pursuant to Section 22.4(a). The Board takes official notice of USEPA's supporting materials, particularly 45 Fed. Reg. 33215 (May 19, 1980) and 46 Fed. Reg. 56592-56596 (November 17, 1981). The rationale of USEPA in adopting these rules in no way controls the Board's action in implementing Sections 5(b), 22(b) and 22.6(b). However, the Board takes notice of this rationale.

Ampules and containers such as batteries were excluded from the federal RCRA regulations when they were originally adopted (45 Fed. Reg. 33066, 33250, May 19, 1980). USEPA stated that:

These types of containers are not likely to contribute substantial volumes of liquid to most landfills, and the difficulty of opening and emptying them appears to outweigh the small benefit gained.

(46 Fed. Reg. 33215, May 19, 1980)

Labpacks were excluded by a later amendment (46 Fed. Reg. 56592, November 17, 1981). USEPA stated that disposal of hazardous wastes in labpacks was a common practice for many small volume generators (not necessarily small quantity generators). These include government, commercial and school laboratories. Disposal in labpacks is preferable to dumping these wastes into sewers. Even schools which are small quantity generators under the federal RCRA rules preferred to dispose of their wastes in labpacks in permitted hazardous waste landfills (46 Fed. Reg. 56592). The Illinois ban would prohibit disposal in all landfills even by small quantity generators.

Laboratories generate a large number of wastes in small quantities, often thousands of wastes per month in quantities less than one gallon. Commercial treatment, recycling or incineration typically accept only reasonably sized lots of well-characterized wastes. The cost to characterize lab wastes is often prohibitive (46 Fed. Reg. 56593).

USEPA believes that disposal of labpacks in landfills is an environmentally sound practice. The requirement of sufficient absorbent to completely absorb all liquids will prevent labpacks from contributing significant volumes of liquid to landfill leachate (46 Fed. Reg. 56593).

Dropping the labpack, container and ampule exemptions appears to involve bringing a large number of generators, and an even larger number of wastestreams, into the landfill prohibition system; yet, this would involve only a small quantity of waste. The statutory ban was signed into law on January 5, 1984, and the implementing procedures finalized on June 29, 1984. The Agency will face a formidable challenge in administering the ban in a timely manner even with the labpacks, containers and ampules excluded (R.20, 28). Exclusion will allow the Agency to initially concentrate on fewer generators producing a larger volume of waste.

There are three statutory bases for adoption of these exclusions. First, Section 5(b) of the Act provides that the Board "shall determine, define and implement" environmental control standards. Second, under Section 22(b), the Board is to adopt standards for the "handling, storing, processing, transporting and disposal of hazardous waste." Thirdly, under Section 22.6(b) the Board is to adopt regulations which "prohibit or set limitations on the type, amount and form of liquid hazardous

wastes that may be disposed of in landfills based on the availability of technically feasible and economically reasonable alternatives to land disposal."

Based on limited, but unrebutted evidence, sufficiently persuasive to include the exclusion in the emergency rules, the Board has exercised its authority to exclude these wastes from the definition of liquid hazardous waste for purposes of the emergency rules. This action will ease administration of the emergency rules, preserve the status quo and allow further inquiry into the legislative intent.

The Board solicits additional comment, both in support of and in opposition to the retention of the exclusions.

The Board does not view adoption of these exclusions in the emergency rules as a precedent or as a bar to their subsequent modification or deletion in the temporary or permanent rules.

Section 729.301 "Original Generator"

The original generator is a person who generates hazardous waste through a production process, as opposed to a treatment process. Subsequent handlers of the hazardous waste may also be "generators", but not "original generators".

Section 729.301 "Residual"

A "residual" is a material which remains after treatment of hazardous waste. "Residuals" may be landfilled if they have been treated or solidified as judged under §729.310(b) (R.277).

Section 729.301 "Treater"

A "treater" is a person who engages in treatment of hazardous waste. Either the "treater" or the "original generator" must obtain a wastestream authorization.

Section 729.301 "Treatment"

"Treatment" is as defined in Part 720 (R.276, 299). A person who treats hazardous waste is required to have a RCRA permit under §21(f) of the Act.

Addition of absorbents to waste at the time the waste is first placed in a container is exempted from the RCRA permit requirement and Part 724 standards [§703.123(h) and §724.101(g)(10)]. This definition specifically includes addition of absorbents for purpose of application of this Part (R.276, 291, 354). The result of addition of absorbents is a "residual" which must meet §729.310(b)(3), or §709.410(a), before it can be landfilled.

Section 729.302 Waste Analysis Plan

The landfill operator must develop a waste analysis plan. This should describe the frequency and methods of sampling and analysis which the operator will follow to insure that prohibited wastes are not placed in the landfill. The operator will initially be required to submit a copy of the plan to the Agency and to follow the plan (R.278, 317, 359). The Board solicits comment on whether and how the plan should be incorporated into RCRA permits, interim status waste analysis plans and Part 807 permits.

Section 729.310 Liquid Hazardous Waste Prohibitions

Paragraph (a) prohibits landfilling of liquid hazardous wastes which fail the paint filter test; paragraph (b) prohibits landfilling of certain treatment residuals.

Paragraph (a) prohibits the landfilling of liquid hazardous waste without a wastestream authorization issued by the Agency pursuant to §22.6(c) of the Act and §709.401(a). This authorization is based on a showing that, considering current technological feasibility and economic reasonableness, the waste cannot be reasonably solidified, stabilized, recycled, incinerated or treated (R.277, 348).

The prohibition of paragraph (b) involves two acts: first, the treatment of a liquid hazardous waste; and, second, causing, threatening or allowing a residual from such treatment to be landfilled. Both of these must be shown to establish a violation (R.279, 348). A disposer would not be in violation of paragraph (b) unless he were involved in the treatment of the waste.

Paragraphs (b)(1), (b)(2) and (b)(3) contain standards which residuals must meet to be landfilled: that the residual is nonhazardous; that liquids have been extracted; or, that the residual has been solidified.

The first standard applies when materials are added to the waste. The residual may be landfilled if it is no longer a hazardous waste (R.27, 226, 229, 234, 258, 280, 305). An example would be the addition of alkali to neutralize an acidic waste. Note, however, that the nonhazardous liquid residual could not be placed in a trench permitted to receive hazardous waste (§729.311).

The second standard applies when the liquid is extracted, evaporated or otherwise removed from the waste. The residue can be landfilled if it passes the paint filter test (R.32, 48, 184, 225, 280). An example would be removal of liquids

from a sludge by centrifugation or filtration. The sludge could be landfilled if it passed the paint filter test.

The third standard, like the first, applies when material is added to the waste. If the residue is still hazardous, it can be landfilled if it meets the paint filter test and possesses a load-bearing capacity of at least two tons per square foot (R.282).

For purposes of this discussion, a waste which meets the paint filter and load-bearing capacity tests is said to be "solidified", as opposed to "absorbed". These terms are not used in the rule. Solidified wastes may be landfilled, pursuant to a wastestream authorization, as non-liquids, while absorbed wastes may be landfilled only pursuant to the technical feasibility and economic reasonableness showing of §22.6(c) of the Act and §709.401(a).

Section 22.6(a) of the Act prohibits liquid hazardous wastes and allows them to be landfilled on a showing, in part, that they cannot be "solidified". The paragraph (b)(3) test for residuals is the other side of this: a residual can be landfilled if it has been solidified.

Absorption of a liquid is not the same as solidification. Absorption is a temporary state which may be reversed, indirectly placing free liquid into the landfill in violation of Section 22.6 of the Act. On the other hand, solidification is a process which involves chemical reaction between the waste constituents and the fixing material, and/or entrapment of constituents in a permanent matrix (R. 159, 167, 174, 216). The main issue in this rulemaking is how to tell the difference between absorption and solidification.

Examples of common absorbents include municipal refuse, sawdust, shredded paper and clay materials (R.216, 242). On the other hand, solidification processes are chemical reactions comparable to the setting of portland cement (R.160, 216). However, it is not possible to differentiate absorbents from solidifying agents by listing: what could be an absorbent when used with one waste could be an ingredient in a solidification or other treatment operation. For example, lime is commonly used to neutralize acidic wastes with no intent to solidify the waste. It could also be used in a cement-like reaction to solidify a waste, yet the solidification reaction could fail because of the presence of interfering waste constituents (R.244). What is needed is a standard to evaluate the residual without reference to the materials which go into the process (R.167).

Many of the commonly used absorbents are expected to degrade faster than the hazardous constituents in the waste. This would result in release of the liquid (R.159, 174, 216).

One difference between absorbed and solidified waste is the load-bearing capacity of the residual. A solidified waste should have load-bearing strength. If the residue loses volume as a result of compression, the result could be that liquid would be squeezed out (R.217, 238). Furthermore, the load-bearing capacity is an indication that a chemical reaction has taken place in the solidification process (R.297). A residual from a solidification process should show a load-bearing capacity in excess of 25 pounds per square inch or approximately two tons per square foot (R.162, 170).

The load-bearing capacity of the waste is also important to landfill operations and maintenance of cover. Operations are simplified if wastes can withstand the pressures of equipment moving over them when the next lift is filled. Waste Management testified that equipment typically exerts pressures of less than one ton per square foot or 14 pounds per square inch (R.282, 293, 296, 328). After the landfill is closed, wastes support the cover; excessive shifting causes subsidence, resulting in entry of water through the cover and generation of leachate (R.350).

The ideal test of load-bearing capacity is a compression test: a sample of the residual is molded into a block which is crushed in a press, with the pressure recorded directly. This is the way concrete is tested (R.187).

A simpler test is a soil penetrometer, which consists of a steel shaft mounted on a spring with a slip ring to record the maximum compression of the spring. The shaft is pushed into soil a certain depth, and the pressure on the shaft read from the slip ring.

The soil penetrometer does not actually measure the load-bearing strength of the material. However, it is related to load-bearing capacity (R.294, 297).

The other two tests for solidification are leachability and permeability. These are related to the amount of contaminants which would be yielded if water percolated through the waste (R.162).

Leachability is measured by the EP toxicity test specified in 40 CFR 261 and 35 Ill. Adm. Code 721.124 or by ASTM D-3987 (R.163, 187). These measure the concentrations of contaminants in water which result when a sample of the waste is shaken with water. Recommended ranges are one to 100 times drinking water standards (R.163, 191).

Permeability is measured by the Corps of Engineers falling head test (R.153, 170). It measures the rate at

which liquid passes through a unit area of a material. The recommended standard is 5×10^6 cm/sec (R.164). However, solidified materials exhibit permeabilities which go as high as 10×10^6 cm/sec (R.199).

The Board must actually have copies of these procedures in order to incorporate them by reference into regulations (§6.02 of the Administrative Procedure Act).

The maximum acceptable leachability and permeability are related. If a material is not very permeable, one could accept a higher leachability, and vice-versa (R.164, 189, 198). Indeed, it appears that the mass of contaminants released per unit time should be proportional to the product of the leachability times the permeability. This suggests that one could express the leachability/permeability criterion as a graph on log-log paper of permeability versus leachability. The graph suggested by this record could be a straight line connecting a permeability of 10×10^6 and one times the drinking water standard to a permeability of 5×10^6 and 100 times the drinking water standard (R.200). The Board solicits comment on this.

Solidified wastes require three to four weeks to set before these properties are measured (R.193, 299). Testing plans should allow this time.

The Board has decided for purposes of the emergency rules to utilize the penetrometer test at two tons per square foot as a criterion for solidification. As noted, it bears a relation to the compression test which is more reliable. The residual from common absorbents fails the penetrometer test at one ton per square foot (R.298). The test appears to be sufficiently reliable for application pending completion of this rulemaking, yet it appears to be simple and inexpensive, with readily available equipment. The Board solicits comment on whether any residuals are found under the emergency rules which pass the penetrometer test, but which would fail the more detailed test outlined above.

For purposes of the final rules, the Board also solicits the following information:

1. Copies of testing protocols for compressive strength, leachability and permeability.
2. Estimates of the costs and availability of equipment to perform these tests.
3. Suggested language recognizing the interrelationship between permeability and leachability.

To summarize, the proposal contains two tests: the paint filter test and load-bearing capacity test. The paint filter test is used as an initial screen to determine whether a waste from an original generator is a liquid hazardous waste (R.172, 180, 183, 347). If treatment is performed, other than removal of liquid, the hazardous residual can be landfilled if it passes the paint filter test and the load-bearing capacity test. It should be noted that the latter test does not apply to wastes from original generators who perform no treatment. If such waste passes the paint filter test, it can be landfilled even though it has no load-bearing capacity. However, one cannot add absorbents to get the waste to pass the paint filter test without becoming subject to the load test (R.183).

Section 729.311 Prohibition of Liquids in Hazardous
Waste Landfills

The present state of the law appears to allow the placement of non-hazardous liquid wastes in hazardous waste trenches. These liquids would be expected to come into contact with hazardous wastes in the trench and become liquid hazardous wastes after disposal. This would have the same effect as disposal of the liquid hazardous waste. The Board has therefore prohibited landfilling of any liquids in hazardous waste landfills. Note that the definition of "landfill" in §729.301 allows for the possibility of hazardous and nonhazardous landfills, or trenches, on the facility (R.42, 351).

Landfilling of nonhazardous liquids in hazardous waste landfills cannot be authorized pursuant to the technical and economic showing of §22.6(c) of the Act and §709.401(a). At first sight this seems to regulate nonhazardous liquids more strictly than hazardous liquids. However, there is no shortage of landfills permitted to receive nonhazardous wastes.

Section 729.320 Test for Liquids

The test for liquids is the paint filter test. A similar test has been proposed by USEPA for the landfilling bans in 40 CFR 264 and 265 (47 FR 8311, February 25, 1982) (R.76). The test is widely employed although it has apparently never been stated in rule form.

Paint filters are available in most paint stores. They are used to filter paints before spray painting. A paint filter is made of light card stock cut and glued to form a cone with a diameter of about six inches across the top. There are two holes near the bottom, or point, of the cone. These are roughly triangular, with the points and top side

rounded. The holes are about 2 1/2 inches wide and 1 3/4 inches high. There is a hole at the point about 1/2 inch diameter. A cloth gauze mesh has been glued across the holes. The mesh is a nominal 400 microns, although it is very irregular (Ex.5). Irregularities are not thought to be important to the test (R.87, 116, 128).

The card stock has a hard surface which appears to be designed to resist wetting. This appears to be essential for a filter to work without being supported by a funnel. It is essential to the test that the filter not absorb much liquid from the waste sample (R.127).

The filter is to be mounted in a ring stand without a funnel, which could impede movement of fluids through the mesh. Fluids could also be trapped by capillary action between the filter and the funnel.

It is possible that certain wastes could attack the mesh in the filter. Such action in the time frame of the test would be expected only where free liquids are present (R.89, 133).

The test is based on a 100 ml representative sample which is brought to room temperature, thoroughly mixed and poured into the filter (R.76). The sample is covered with a watch glass of an appropriate size. The sample "fails" the test if one drop, or more, of fluid drops from the bottom of the filter within five minutes.

Some wastes may include finely divided solid material which would move through the mesh. The waste "passes" the test if no fluid moves through (R.76).

Section 729.321 Load-bearing Capacity Test

This test is conducted with a soil penetrometer with a range of 0 to 4.5 tons per square foot. The shaft of the penetrometer is pushed into the sample to the line scribed in the point. The pressure is read on the low side of a slip ring on the shaft.

The shaft should be pushed into the sample at a constant rate over a period of two to three seconds. The instrument would give an erroneous reading if it were struck against the sample or pounded in with a hammer.

Granular samples should be compacted to densities typically found in landfills (100 lbs. per cubic foot) prior to testing (R.343). The Board solicits comments as to whether a maximum compaction pressure should be specified.

PART 709: WASTESTREAM AUTHORIZATIONS

Section 709.102 "Wastestream"

Section 22.6(a) of the Act requires an authorization for a "specific waste stream". The definition of "wastestream" is critical to the scope of the wastestream authorization requirement: wastes which are not "wastestreams" do not require an authorization, but they must comply with the substantive prohibitions of Part 729.

A "wastestream" is:

1. A waste as defined in Part 721,
2. Which is routinely or periodically produced,
3. By a certain generator
4. As a result of a certain activity, production process or treatment process.

A wastestream is a waste which is periodically produced. This could be a barrel per minute or a barrel per decade. However, it does not include a waste which is produced only one time (R.372). Examples of wastes which are not wastestreams would include single loads of wastes produced from construction, non-routine maintenance or dismantling of equipment or buildings. However, there is no site-specificity: if a contractor moved from site to site rebuilding equipment, his waste could be a wastestream. Another example of a waste which might not be a wastestream would be a waste produced by an unusual accident or unusual spill.

A wastestream is produced by a certain generator. If two persons produce an identical waste, there are two wastestreams.

A wastestream results from a certain production or treatment process. Waste constituents may be mixed as a result of the process. However, wastes from multiple processes which are mixed simply for convenience constitute multiple wastestreams. The Agency may allow such combination if the combination does not limit the possibilities for treatment, recycling or disposal of the wastes. For example, one could not mix a non-incinerable wastestream with an incinerable wastestream, and then get authorization to landfill the waste pursuant to §22.6(c) because the mixture could not be incinerated.

A wastestream could also be defined in terms of the disposer of the waste. The result of this would be to

require separate authorizations for each waste recipient from a generator. The definition has been written to allow this, but also to allow a list or classification of disposers. This is possible since the wastestream authorization is centered on the generator of the waste, unlike the supplemental permits under Section 807.210, which are addenda to the disposer's permit. Increasing the generator's disposal options should tend to hold disposal costs down.

Section 709.103 Continuation of Existing Authorizations

Generators of treatment residuals are deemed to have a wastestream authorization if there is a supplemental wastestream permit for the wastestream and the generator submits an application within 60 days after the effective date of the emergency rules. The residual will also have to meet one of the standards of §729.310(b): it will have to be non-hazardous, or the result of liquid removal or solidification. Wastestream authorizations are not deemed issued for residuals which result from addition of absorbents, or for direct landfilling of liquid hazardous wastes.

Section 709.104 Supplemental Permits

Supplemental wastestream permits which have been issued for prohibited wastestreams are void immediately. The Agency is authorized to review outstanding permits which appear to authorize disposal of prohibited wastes. The Agency should give notice to the permittee and the opportunity to file a new application showing compliance with the new rules (R.20, 28, 44). The Agency may modify or deny the supplemental permits as a result of its review. The Agency's actions may be appealed to the Board pursuant to Part 105.

The Board solicits comment as to whether the supplemental permit requirement of §§807.210 and 807.310 should be modified to allow generic approval of wastestreams for disposers. The Board also solicits comment on the need for similar procedures to be added to Parts 703, 724 and 725.

Section 709.201 Liquid Hazardous Waste Authorization

Paragraph (a) states the requirement of a wastestream authorization for landfilling a wastestream which is still a liquid, or which is a liquid to which absorbents have been added. This requires the economic and technical showing in §22.6(c) of the Act and §709.401(a)(R.344).

Paragraph (b) states the requirement for residuals. This requires a showing that the residual is non-hazardous, or results from removal of liquids or a solidification process, as set forth in §709.401(b) and §729.310(b).

Section 22.6(a) imposes a wastestream authorization requirement on generators who landfill liquid hazardous waste. The Board has construed this to include those who are successfully treating the liquid, as well as those who are landfilling the liquid directly or absorbed. However, the generator of a residual has the option of making the simpler showing that the treatment is successful, rather than the difficult technical and economic showing of §22.6(c). It could be argued that the Legislature intended only to require the authorization for the direct landfilling of liquids and absorbed liquids. However, the distinction between successful treatment, or solidification, and addition of absorbent is a subtle one which requires prior review by the Agency on a case-by-case basis, rather than after the fact review by the Board in an enforcement action.

In the older permit programs in air and water a permit is required when a person discharges or emits a contaminant, or engages in treatment to prevent air or water pollution. (For example, see Sections 9(a), 9(b), 12(a), 12(b) and 12(f) of the Act.) A person cannot avoid the permit requirement by successfully treating the emission or discharge so as to bring the emission or discharge into compliance with standards. Prior approval through the permit process is required to assure that the treatment process will work; and, reporting pursuant to the permit is required to assure that it continues to work. The Legislature obviously intended to establish a similar program of prior approval for treatment or solidification of liquid hazardous waste prior to landfilling.

It should be noted also that the Legislature has established a wastestream authorization requirement for all hazardous wastes after January 1, 1987 (§39(h) of the Act).

Section 709.301 Application

This Section contains minimal information which the generator must provide for the Agency to issue a wastestream authorization. The Agency may promulgate standard forms which will supersede this Section.

Paragraph (f) requires a detailed analysis of a sample of the waste; paragraph (h) requires a plan for sampling by the generator or treater to assure that the wastestream continues to conform to the description in the application. Note that this is not the same as the waste analysis plan to be filed by the disposer pursuant to Section 729.302. However, this Section is not to be construed as prohibiting the transporter or disposer from implementing the generator's or treater's analysis plan.

Paragraph (k) requires the applicant to identify one or more facilities to which it proposes to send the waste. The Agency may identify specific facilities in the authorization, or issue it with a generic authorization.

Section 709.302 Signatures

The original generator or treater of the waste must actually sign the application. However, a permitted transporter or disposer of the waste can act as a broker, preparing the application for the generator. This will allow the wastestream authorization to function more like the supplemental permit system, in which the disposer had to complete the application. However, giving the generator the right to act alone may give generators more choice as to disposal sites, putting downward pressure on costs.

Section 709.401 Standard for Issuance

Paragraph (a) repeats the language of Section 22.6(c), which sets forth the technical and economic showing the generator must make to landfill a liquid hazardous waste, or an absorbed liquid. The final sentence refers to prohibitions or limitations under Board regulations. This could include prohibitions in the RCRA rules adopted pursuant to Section 22.4 of the Act, or prohibitions adopted pursuant to Section 22(g) of the Act, as well as prohibitions or limitations specifically directed at liquid hazardous waste pursuant to Section 22.6(b).

Paragraph (b) requires issuance of an authorization for a residual which meets one of the standards of §729.310(b): that the residual is not hazardous; that liquid has been removed; or, that it has been solidified.

Paragraph (c) allows the Agency to issue authorizations in other situations in which it determines that a wastestream is not subject to prohibition. For example, if there is doubt as to whether a waste is a liquid, a generator can request an authorization. If the Agency determines that the waste is not a liquid, it should issue an authorization to that effect, rather than denying the authorization on the grounds that the waste is not subject to the ban.

This mechanism could also be used to determine whether a wastestream is in fact hazardous. This would provide a more direct determination of waste classification than the variance denial or dismissal mechanism employed in *Safety-kleen v. IEPA* (PCB 80-12, 37 PCB 363, February 7, 1980).

Section 709.501 Duration

Wastestream authorization will last for one to three years. The upper limit of three years will assure expiration of early authorizations during 1987, after which review pursuant to Section 39(h) of the Act will be required.

Section 709.510 General Conditions

This Section implements the second sentence of Section 22.6(c) of the Act which contains general authority for conditions in authorizations.

Section 709.520 Authorized Methods of Disposal

The authorized methods of disposal are the heart of the wastestream authorization. The Agency may list specific landfills, or authorize landfilling by category of landfills. The Agency may also prohibit methods of treatment or disposal which it finds would result in violation of the Act or rules.

Paragraph (c) provides that the Agency may allow or require the addition of absorbent materials to liquid wastes authorized pursuant to the technical and economic showing of §709.401(a). This is to negate any inference that, by banning the use of absorbents to make a waste non-liquid, the Board intends to ban them in a situation in which a liquid must be landfilled. Parts 724 and 725 would often require the use of absorbents. The Board solicits comment on what additional situations the Agency should require the use of absorbents.

Section 709.601 Modification

The generator may request modification of the authorization at any time by filing a new application. On its own initiative the Agency can modify an authorization prior to its expiration date only to make it consistent with newly adopted provisions of the Act or Board rules. The Agency must give notice to the generator that it is reviewing an authorization so that it will have the opportunity to file an application demonstrating compliance with the new provisions.

CONCLUSION

This Opinion supports the Board's Order of June 29, 1984. It serves as a Final Opinion for the emergency rules in R83-28A, and as a Proposed Opinion for the first notice proposal in R83-28B. Additional hearings will be held, and the record will remain open for written comments on the proposal for 45 days after publication in the Illinois Register.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion was adopted on the 19th day of July, 1984 by a vote of 6-0.

Dorothy M. Gunn
Dorothy M. Gunn, Clerk
Illinois Pollution Control Board