This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 264, 265, and 271

[FRL-3075-9]

Hazardous Waste Management System; Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: Under authority of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Resource Conservation and Recovery Act (RCRA), EPA is proposing rules to minimize the presence of free liquids in containers holding hazardous waste that are disposed in hazardous waste landfills. The Agency is proposing to prohibit the disposal of containers holding liquid hazardous wastes and free liquids while continuing to exempt certain containers that are specifically designed to hold small quantities of liquid hazardous wastes. Today's proposed rule would require that if hazardous liquids or free liquids in containers are solidified by the use of an absorbent, the absorbent material must not be biodegradable and the absorbent/waste mixture must not release liquids when compressed under pressures experienced in landfills. EPA is also proposing a test protocol in order to determine whether a waste containing hazardous liquids or free liquids when solidified by the use of a non-biodegradable absorbent, would release the free liquids under pressures experienced in landfills. These rules do not apply to owners and operators of landfills in which only polychlorinated biphenyl (PCB) chemical waste regulated under 40 CFR Part 761 are disposed. However, PCBs mixed with a RCRA hazardous waste must comply with all requirements under both RCRA and the Toxic Substances Control Act (TSCA) (40 CFR Part 761). In cases where applicable requirements of the two statutes differ, the most stringent requirements apply.

DATES: Comment date: Comments on these proposed amendments will be accepted until February 23, 1987.

ADDRESS: The public must send an original and two copies of its comments to: EPA RCRA Docket (S-212) (WH-562), 401 M Street SW., Washington, DC 20460.2

Place the docket #F-86-CLIP FFFFF on your comments. For additional details about the OSW docket see the "OSW Docket" section in **"SUPPLEMENTARY INFORMATION."**

FOR FURTHER INFORMATION CONTACT: For general information and for a copy of today's proposed text, contact the RCRA Hazardous Waste Hotline, Office of Solid Waste (WH-563), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, telephone 800/424-9346 (382-3000 in Washington, DC). For specific information on this amendment, contact Paul Cassidy, Office of Solid Waste (WH-565), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-4654.

SUPPLEMENTARY INFORMATION:

OSW Docket

The OSW Docket is located at: EPA RCRA Docket (Sub-basement), 401 M Street SW., Washington, DC 20460.

The docket is open from 9:30 to 3:30 Monday through Friday, except for Federal holidays. The public must make an appointment to review docket materials. Call Mia Zmud at 475-9327 or Kate Blow at 382-4675 for appointments. The public may copy a maximum of 50 pages of material from any one regulatory docket at no cost. Additional copies cost $.20/page.

Copies of the following documents are available for *viewing only* in the OSW docket room:

1. "Sorbent Pressure Test Development", Report prepared by Research Triangle Institute.
2. "Liquid Release Test for Liquid Loaded Sorbents—Single Laboratory Evaluation of Test Equipment", Research Triangle Institute, April 1986.
3. "Structurally Stable Absorbents", Mason and Hanger-Silas Mason, Co., August 1986.
4. "Development of Criteria to Distinguish Acceptable Absorbents for Containerized Hazardous Liquids", K.W. Brown, March 1986.
5. "List of Commonly Available Absorbents", GCA Corporation, May 1985.
6. Letter and Report to Paul Cassidy from Chemical Waste Management, February 1986.
7. "A Review of Biodegradability Testing of Absorbents", SCS Engineers, January 1986.
8. Letter to Paul Cassidy from Janic F. Artiola, K.W. Brown & Associates, November 12, 1985.

Preamble Outline

I. Background

1. Previous Regulations

On May 19, 1980, EPA promulgated regulations that established most of the basic elements of the hazardous waste management program required by Subtitle C of the Resource Conservation and Recovery Act of 1976, as amended, 42 U.S.C. 6921 et seq. See 45 FR 33066 et seq. (May 19, 1980). Part 265 of those regulations sets forth interim status standards that apply to owners and operators of existing hazardous waste treatment, storage, and disposal facilities pending their receipt of a permit that establishes more detailed requirements under the standards of Part 264. With certain limited exceptions, § 265.314(b), as originally promulgated, would have forbidden the placement in a landfill of a container holding liquid hazardous wastes or free liquids after November 19, 1981.

On February 25, 1982, EPA proposed (1) alternative methods of restricting containerized liquid wastes in landfills, and (2) a paint filter test that was intended to be used to determine the presence of free liquids in containers. See 47 FR 8307 et seq. (February 25, 1982). One method of restricting wastes, the so-called 25 percent by volume method, would have restricted the allowable volumetric fraction of the total volume of the landfill that could have been used for disposal of containers holding free liquids In the

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

other method, EPA proposed that each container be limited to a prescribed maximum percentage of liquid hazardous waste. The Agency also extended the date by 90 days for compliance with § 265.314(b) to allow time for consideration of this new approach.

On March 11, 1982, in response to two petitions for reconsideration of this extension, EPA held a public hearing to consider whether some interim control might be advisable pending full resolution of the issues concerning containerized liquids. On March 22, 1982, EPA imposed interim restrictions on the disposal of containerized liquid wastes in landfills pending full rulemaking on the issue. See 47 FR 12316 et seq. (March 22, 1982). Under these interim rules (§ 265.314(b)) (redesignated as § 265.314(c) in the current regulations), no container holding free-standing liquids could be placed in a landfill.

On July 26, 1982, EPA issued Part 264 standards for use in issuing final permits for facilities that treat, store, or dispose of hazardous wastes. See 47 FR 32274 et seq. (July 26, 1982). These standards are applicable to owners and operators of new and existing hazardous waste land treatment, storage, and disposal facilities. EPA also amended § 264.314(b) (redesignated as § 264.314(d) in the current regulations) by restricting the disposal of containerized liquids in a manner identical to the interim status standards promulgated on March 22, 1982.

On April 30, 1985, EPA issued a final rule requiring that the Paint Filter Liquids Test be used to determine the presence of free liquids in either a bulk or a containerized waste. The requirement was added in §§ 264.314(c) and 265.314(d). See 50 FR 18370 (April 30, 1985).

On November 8, 1984, the Hazardous and Solid Waste Amendments (HSWA) to RCRA were signed into law. Section 3004(c)(2) of the HSWA requires the Agency to "promulgate final regulations which minimize the disposal of containerized liquid hazardous waste in landfills, and minimize the presence of free liquids in containerized hazardous waste to be disposed of in landfills." The statute also directs EPA to ensure that these regulations specifically prohibit the disposal in landfills of liquids that have been absorbed in materials that biodegrade or that release liquids when compressed as might occur during routine landfill operations.

2. Minimizing The Disposal Of Containerized Liquid Hazardous Waste In Landfills

The recent Amendments to RCRA (HSWA) require that the Administrator of EPA promulgate final regulations that minimize the disposal of containerized liquid hazardous wastes in landfills. The legislative history to section 3004(c)(2) shows that when Congress developed this amendment, they gave serious consideration to prohibiting outright the disposal of all containers of liquid hazardous wastes into any landfill. However, the legislative history suggests that Congress intended to allow EPA to provide an exemption from the ban for the disposal of very small quantities of liquid wastes, particularly for the disposal of lab packs specifically desinged for very small quantities of laboratory wastes. The use of the term "minimize" in section 3004(c)(2)(A) reflects this intent. See, e.g., S. Rep. No. 284, 98th Congress, 1st Session 22 (1983); 129 Cong. Rec. H8141 (daily ed. Oct. 6, 1983) (statement of Rep. Breaux).

The Agency construes the provision to mean that free liquids will be prohibited from being placed in a landfill, except if the free liquids meet certain exemptions or are properly treated (solidified). It is evident that the amendment language allows hazardous liquids to be absorbed under specific conditions in a container and then placed in a landfill. The language states that the disposal of containerized liquid hazardous waste in landfills is to be minimized. One way to minimize the disposal of containers holding hazardous liquids or free liquids is to effectively treat the hazardous liquids (i.e., convert them to solids). Once converted to solids, the amendment does not permit the disposal of the nonliquid waste in a landfill.

Currently §§ 264.314(d) and § 265.314(c) prohibit the placement of containers holding free liquids in a landfill unless certain exemptions are met. The current regulations allow exemptions to the above liquids requirements as follows: (1) All free-standing liquid has been removed by decanting or other methods, has been mixed with an absorbent or solidified so that free-standing liquid is no longer observed, or has been otherwise eliminated; (2) the container is very small, such as an ampule; (3) the container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or (4) the container is a lab pack and is disposed of accordingly.

"Free liquids" are liquids that readily separate from the solid portion of a waste under ambient temperature and pressure. See 40 CFR 260.10. "Free-standing liquids" are those that form a distinct layer above the solid layer in the container, usually during transportation. Free-standing liquids are a subset of free liquids.

In today's rule, the Agency is proposing to eliminate the exemption regarding free-standing liquids in §§ 264.314(d)(1) and § 265.314(c)(1) in order to minimize the disposal of containerized liquid hazardous waste. (See Section 3 of this preamble for further details.) Thus, today's proposal will prohibit the landfilling of certain free liquids that have been disposed in landfills in the past. The Agency will allow containerized liquids to be treated (i.e., converted to a solid) by the use of non-biodegradable absorbents under specific conditions. The Agency will regulate the disposal of liquids to ensure that they are treated in such a manner as to prevent the future release of the liquids due to landfill pressures.

In today's proposal, the Agency will continue to allow exemptions for only the containers discussed below: Lab packs, ampules, batteries, and capacitors. These exemptions are currently codified in § 264.314(d)(2), (3), and (4), and § 265.314(c)(2), (3), and (4). In restricting the exemptions to only these containers, the Agency is indeed minimizing the disposal of containerized liquid hazardous wastes in landfills since most hazardous liquids are disposed of in 55-gallon drums rather than in these containers.

Congress mandated that the Agency minimize rather than eliminate disposal of containerized liquids; therefore, the Agency is not prohibiting all liquids from being placed in a landfill. Containers that are specifically designed to hold small quantities of liquid hazardous waste (i.e., lab packs, ampules, batteries, and capacitors) will continue to be allowed as the only exemptions to the prohibition of landfill disposal of containers holding liquid hazardous wastes. The intent behind these exemptions is not only to uphold the general restriction on the disposal in landfills of containers holding liquid hazardous wastes, but also to allow the disposal of specific containers, such as lab packs that are carefully designed and prepared for relatively safe management of such liquids, and ampules, batteries, and capacitors that contain a small quantity of free liquids. These types of containers, owing to their size and their packaging requirements, will not contain large amounts of liquids and thus can be landfilled without needing to eliminate the liquids.

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

Lab packs (discussed in §§ 264.316 and 265.316) are most commonly used by laboratories that produce small amounts of many different wastes. These wastes are commonly collected in small containers that range in size from an ampule to 5-gallon pails. The small containers must be a design and constructed of a material that will not react dangerously with, be decomposed by, or be ignited by the waste contained therein. (See §§ 264.316(a) and 265.316(a).) The small containers are usually placed within a 55-gallon drum (the regulations require the outer container to be no more than 110-gallon capacity) and surrounded by a sufficient amount of compatible absorbent material before the drum is placed in a landfill. Containers holding incompatible wastes are prohibited from placement in the same drum (lab pack) in case of possible ruptures. Furthermore, reactive wastes other than cyanide- or sulfide-bearing wastes are prohibited from disposal in lab packs unless the waste is rendered non-reactive prior to packaging. See §§ 264.316 and 265.316. The American Chemical Society reported that the average lab pack contains 3 gallons of hazardous liquid with a maximum of 15 gallons. Approximately 100,000 lab packs are used each year in the U.S. with a cost to the user of $200 to $350 per pack to dispose.

The disposal of lab packs in landfills will therefore continue to be allowed because the Agency believes that such disposal is safe because of the small quantities of waste involved. However, the final Land Disposal Restrictions rule published on November 7, 1986, does not exclude from the land disposal restrictions lab packs if they contain solvents designated as F001–F005 or other restricted wastes. See 51FR 40584 (November 7, 1986).

The concept of lab packs was developed for the disposal of small containers of laboratory wastes. The disposal of a lab pack is a costly alternative for a generator that has a large quantity of liquid wastes to be disposed. Since the cost of lab pack disposal is high, it is not economical for large volumes of liquid wastes to be lab packed. Lab packs are generally used for small amounts of wastes generated by chemistry or hospital laboratories or other small quantity generators, who wish to employ environmentally safe disposal methods. Incineration costs for bulk liquids range from $0.30 to $4.20 per gallon whereas the average cost of lab pack disposal ranges from $67 to $117 per gallon.

The prohibition on landfilling containerized liquid hazardous waste applies to 55-gallon drums and other similar containers, but does not apply to devices that function as containers for hazardous materials during their useful lives, such as batteries or capacitors, or to very small containers, such as ampules. 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 by such action.

For the reasons discussed above, the Agency believes that the continued exemption for lab packs, ampules, batteries, and capacitors results in a minimization of the disposal of containerized liquid hazardous wastes in landfills. Based on this relief, the Agency is continuing to allow an exemption for these types of containers.

The Agency is requesting comments on two issues concerning the disposal of batteries and lab packs. The Agency is aware that lead acid batteries can be disposed of in hazardous waste landfills; however, a large percentage of lead acid batteries are being reclaimed. The Agency is concerned that disposal of lead acid batteries, without proper drainage, could cause problems in the landfill environment, namely, the release of the lead into the environment. The Agency has not in today's proposal required that batteries be drained prior to landfill disposal because we feel that batteries only contain small quantities of hazardous wastes. The Agency, however, specifically seeks comments on whether the current regulations should require the proper drainage of batteries prior to landfill disposal or remain unchanged (i.e., not require drainage.).

The second issue concerns the disposal of lab packs. The Agency has not proposed any rule changes to the lab pack requirements today. However, today's proposal prohibits use of biodegradable absorbents for all other non-exempt containers. The Agency is requesting comments on whether or not the elimination of biodegradable absorbents should apply to lab packs also, or whether biodegradable absorbents should still be allowed to be used in lab packs, since lab packs contain an average of only three gallons of hazardous liquids.

3. Minimizing The Presence Of Free Liquids In Containers Holding Hazardous Waste

Section 3004(c)(2)(B) requires that the Agency minimize the presence of free liquids in containerized hazardous wastes to be disposed of in landfills. The intent of Congress in requiring the Agency to minimize the presence of free liquids in containers is to reduce the risk of cover subsidence and groundwater contamination due to the collapse of metal drums from decay and subsequent release of liquids. If the drums collapse or leak after the post-closure period, significant uncontrolled releases and subsidence of the cover could occur at a time when the leachate collection and removal system (if present) is no longer operated, the ground water may no longer be routinely monitored, and the final cover is no longer maintained. The presence of liquids can dramatically affect the integrity of the landfill as well as increae the mobility of wastes leaving the landfill. Furthermore, hazardous liquids can cause liner failure by contributing hydraulic pressure on the liner as well as weakening the liner through chemical interactions. After a liner is breached, the liquid hazardous wastes can present a serious threat to groundwater resources below the landfill because they react with other wastes in the landfill and enhance the mobility of hazardous wastes leaving the landfill. Congress was very clear both in its desire to minimize the presence of free liquids in containerized wastes and in its rationale for its concern regarding such disposal.

The current regulations (§§ 264.314(d) and 265.314(c)), promulgated prior to the HSWA and in effect until today's proposal becomes final, allow containers holding free liquid to be placed in a landfill if all "free-standing liquid" is removed, mixed with an absorbent, or solidified so that free-standing liquid is no longer observed or is otherwise eliminated.

Prior to the HSWA, the Agency was aware of an inconsistency between the disposal requirements for containerized liquids and for bulk liquids. The March 22, 1982, interim control measure for container created an inconsistency in the Agency's regulations that carried over into the July 26, 1982, regulations. The inconsistency was that for bulk (or non-containerized) liquids, the disposal of "free liquids" in a landfill was prohibited (with certain exemptions), whereas for containerized liquids, the disposal of "free-standing liquids" was prohibited. This inconsistency allowed owners or operators who landfilled containers to treat the liquids in the containers to an endpoint (i.e., removing "free-standing liquids" rather than free liquids) that was less stringent than that for bulk liquids.

Because of Congress' concern over free liquids in landfills, the Agency is proposing new requirements that would

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

regulate the disposal of "free liquids" as opposed to "free-standing liquids." Today's proposal will require that (with the exception of ampules, batteries, capacitors, and lab packs) all containerized free liquids be solidified by a non-biodegradable absorbent prior to being placed in a landfill. The waste/absorbent mixture must not release liquids as determined by the Liquids Release Test (LRT) (Method 9096). The Agency believes that the proposed change regulating free liquids will accommodate Congress' concern about the disposal of free liquids.

Today's proposal does not impose any requirements on the number of containers that must be opened and tested for the presence of free liquids. Curently, containers are being inspected for the presence of "free-standing liquids" in accordance with a facility's written waste analysis plan (see §§264.13(b) and 265.13(b)). Those containers that were previously inspected for free-standing liquids will now be tested for the presence of free liquids. The number of containers that must be opened and inspected for the presence of free liquids will depend upon the specific language in the facility's general waste analysis plan.

In order to check for the presence or absence of free liquids (in cases that do not require the use of LRT), the Paint Filter Liquids Test (Method 9095), as promulgated on April 30, 1985, must be used (see Section 10). The Paint Filter Liquids Test is the appropriate test to use in meeting the Congressional intent to minimize the presence of free liquids because that test was specifically promulgated in order to determine the presence or absence of free liquids in either a containerized or a bulk hazardous liquid waste.

4. Biodegradable Absorbents

Section 3004(c)(2) of RCRA provides that the final regulations concerning containerized hazardous liquids shall prohibit the disposal in landfills of liquids that have been absorbed in materials that biodegrade.

Congress has prohibited the disposal of liquids that have been absorbed in materials that biodegrade because when they biodegrade, they collapse and release free liquids, creating the very situation that Congress is attempting to avoid. Congress mandated that the Agency promulgate regulations minimizing the presence of liquids in landfills in order to reduce the potential migration and leaching of hazardous constituents and the potential for subsidence. The use of biodegradable absorbents in the attempt to minimize or eliminate liquids before landfilling is counterproductive because the effects of gravity or of flushing actions within the landfill would eventually transport constituents that have been released by the biodegraded absorbent. See, e.g., 130 Cong. Rec. S9177 (July 25, 1984) (section-by-section analysis of Chafee amendment).

The current regulations for the disposal of containerized liquids do not prohibit the use of biodegradable absorbents. Agency policy, however, has been to promote the use of non-biodegradable absorbents as a good management practice for the reasons stated above.

The Agency is today proposing to allow containerized liquids to be solidified by only non-biodegradable absorbents. Under today's proposal, a material is defined as biodegradable if its total organic carbon content is greater than one (1) percent. A material that has a total organic carbon content greater than one percent will be prohibited from being used as a solidification material for containerized hazardous liquids.

At present, the Agency is proposing the use of total organic carbon as a criteria to distinguish between biodegradable versus non-biodegradable materials. Carbon is an element that forms organic compounds in combination with hydrogen and oxygen. If an absorbent material has carbon present in its elemental composition, it will then be susceptible to breakdown or biodegradation. The Agency proposes using a limit of one percent (1%) or more total organic carbon content as the criteria to determine whether a material is biodegradable. If the total organic carbon content is less than one percent, the Agency considers the absorbent to be inorganic and thus non-biodegradable.

The threshold of one percent total organic carbon was based upon the best scientific judgment of several experts in the field of soil chemistry. Obviously, a material containing no organic carbon would be considered inorganic and therefore nonbiodegradable. The allowance for up to one percent of total organic carbon allows for the realities of commercial production of absorbents. It is likely that small amounts of organic contamination may occur in the production of absorbents. Likewise, some manufacturers may purposely add very small quantities of organic materials as additives in order that their products may be packed or otherwise handled more easily. These additives are not related to the materials' absorbent properties.

Any biologically synthesized carbon-based (organic) sorbents such as wood fiber, corn cobs, and cellulose are considered biodegradable. Man-made organic sorbents are considered biodegradable given sufficient time. On the other hand, sorbents derived from secondary minerals, such clays and zeolites, of which most common aggregate sorbents are composed, have silicon-aluminum structures with no carbon present, and would therefore be considered inorganic and thus non-biodegradable.

In order to calculate the organic carbon present in an absorbent, the Agency recommends that the regulated community use the modified Mebius procedure (Page, A.L., ed., 1982. Methods of Soil Analysis. Part 2. Chemical and Microbial Properties, Second edition. Number 9 (Part 2). American Society of Agronomy, Inc., Madison). This procedure is a standard soil test using an acid dichromate digestion of the sorbent material followed by a titration to determine the amount of organic carbon oxidized. Owners/operators should obtain the absorbent they plan to use from the manufacturer and perform the test to see if the particular absorbent is non-biodegradable, i.e., contains less than one percent total organic carbon. In lieu of performing this test, the owner/operator can obtain the necessary testing data directly from the manufacturer. Testing for organic carbon need be done only once. A new test will be required only if there is a change in the manufacturing process that will affect carbon content. EPA specifically requests comments on the total organic carbon approach, and on the appropriate test for total organic carbon. EPA also requests comments on the procedure for obtaining proof that the absorbent is non-biodegradable (i.e., whether the owner/operator or manufacturer provides the testing data) and whether it matters who supplies the testing data.

The Agency is also requesting comments on how organic polymers and pozzolanic materials should be treated in regard to the criteria for biodegradation. The Agency's proposed criteria for biodegradation would eliminate from use as absorbents any organic polymers or pozzolanic material that are now used or are under consideration for use if their TOC is greater than one percent. Polymers would be eliminated due to their high total organic carbon content. However, some polymers may not release the absorbed liquid waste even under pressure. Pozzolanic materials such as

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

fly ash may have a TOC greater than one percent. The amount of carbon remaining in the ash is likely a function of the efficiency of the combustion process. Therefore, the Agency is willing to accept comments on how organic polymers and pozzolanic materials should be included in the Agency's approach (i.e., using TOC as an indicator of biodegradation). If commenters believe that organic polymers and pozzolanic materials should be allowed to be used, even if the TOC is greater than one percent, can the Agency be certain that these materials will not release liquids under pressure? Should today's proposed Liquids Release Test be used? Should the Agency allow materials (organic polymers and pozzolanic materials) with a TOC greater than one percent to be used without evaluating the material's resistance to biodegradation? If the Agency were to evaluate a materials resistance to biodegradation, what test method and what period of time (years) should be used?

Another issue that the Agency is requesting comments on is the use of absorbent pillows. The Agency is interested in gaining knowledge concerning when and how often absorbent pillows are used. The Agency also specifically requests comments on how absorbent pillows can be tested using the Liquid Release Test. Can a representative sample be obtained from an absorbent pillow, or does another pressure test need to be specified in order to test absorbent pillows? Would absorbent pillows (i.e., their contents) be considered biodegradable by today's proposal? Are absorbent pillows used only to clean up spills that must be absorbed quickly?

A biodegradable material is a material that is capable of being decomposed by microorganisms (i.e., natural biological processes). The rate of biodegradation (i.e., over what time should a material be evaluated in order to determine whether it is non-biodegradable or biodegradable) is not taken into account for the reasons discussed below.

Virtually all organic materials will be degraded sooner or later by the action of the biological environment, since (1) organic materials contain one or more components that can be utilized as a food source by organisms, (2) organic materials will be affected by the chemical actions of organisms, and (3) most earth environments are mild enough to support some biological activity.

The statutory language requires that EPA prohibit the disposal of liquids that have been absorbed in materials that biodegrade. EPA construes this language to mean that Congress was concerned with materials that biodegrade in a hazardous waste landfill environment. Unfortunately, the concept of biodegradability is complex when related to the disposal of containerized liquids that have been solidified by the use of an absorbent material. No standard test exists for determining whether an absorbent material is biodegradable. The number of absorbent materials that are used, and those that are being developed, to solidify liquid wastes is large, and determining rates of biodegradation for these absorbents would be extremely complex since there is no standard test. Another issue affecting biodegradation rates is the environment in which an absorbent material is tested. The rate of biodegradation under anaerobic conditions may be different from the rate under aerobic conditions. Therefore, the Agency believes that a uniform rate of biodegradation would be difficult to set. The Agency, however, specifically solicits comments on whether the Agency should use a biodegradation rate as a method of determining when an absorbent should be considered biodegradable.

5. Structurally Stable Absorbents

Section 3004(c)(2) further states that the final regulations shall prohibit the disposal in landfills of liquids that have been absorbed in materials that release liquids when compressed as might occur during routine landfill operations.

In order to implement this provision, EPA is today proposing that the waste absorbent mixture must not release liquids as determined by the Liquid Release Test. The Agency had considered another option when implementing the section 3004(c)(2) mandate. That option was to develop a test to determine whether certain absorbents alone (i.e., as a pure product) were to be considered "structurally stable." For the liquids in landfills issue, a structurally stable material is one that does not release liquids when compressed. Since most materials (absorbents) are in a dry state before they are used, testing a dry material before it has been used in the field does not necessarily provide information about whether these materials will release liquids in a hazardous waste landfill when compressed.

EPA therefore developed a test procedure that could be used in determining if liquids could be released from liquid/sorbent mixtures when subjected to compressive forces as experienced in landfills. This effort has resulted in the development of a test, known as the Liquids Release Test (LRT), which EPA is proposing for use in the evaluation of liquid/sorbent mixtures for potential liquid release. This test is set forth in Appendix A to this regulation. EPA is also proposing incorporation of this test into its Solid Waste Testing Manual (SW-846) as Method 9096. The text of the test is available from EPA through the RCRA Hotline at 800/424-9346, (382-3000 in Washington, DC).

The LRT has been evaluated in a single laboratory evaluation of ruggedness and precision, and is currently being evaluated in a multi-laboratory collaborative study. A discussion regarding the LRT's development and evaluation appears below.

6. Development of Liquids Release Test (LRT)

EPA began its development of the LRT with a number of general objectives. It was determined that the test should be qualitative (pass or fail), sensitive to liquid release, easily adapted to indicating release of liquids over a range of pressures, reproducible, easily conducted in the field, and relatively quick and easy to run.

In order to meet these objectives, EPA began investigating two different types of tests that could be used to detect liquid release under pressure (Ref. 1). These were a centrifugation test and a confined compression test. The centrifugation test uses centrifugal action to apply compressive forces on samples of the liquid/sorbent mixture. Specially designed centrifugation tubes were used to physically separate the sample from any liquids that may be forced out of the sample due to the applied compressive forces. This was necessary, as using common centrifugation tubes would allow re-absorption of any released liquid phase back into the sorbent (Ref. 1).

Centrifugation was initially investigated as a quick prescreen to perhaps a more elaborate test. Such a test could be conducted in minutes, was fairly simple, could accommodate a wide range in pressures, and had several other distinct advantages. For example, almost all facilities that have laboratories also have a centrifuge. However, centrifugation also suffers from a number of overwhelming disadvantages.

For example, centrifugation is severely limited by the relatively small sample size that can be accommodated in most readily available (and reasonably affordable) centrifuges. This can contribute to variability, primarily

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

because of the difficulty in obtaining representative samples. Variability can also be caused by the great variety in centrifuges that are commercially available. In addition, centrifugation suffers other problems. For example, when evaluating dark liquids such as oils, it may not always be possible to see a distinct liquid phase in the centrifuge tube. Finally, field application of centrifugation would be difficult.

These factors led EPA to reject centrifugation and to develop a confined compression type test. After a review of available equipment and test methodologies for potential application, it was determined that fabrication of test equipment would be required (Ref. 1).

Laboratory testing, including both development and subsequent evaluation of the test, focused on two typical sorbent materials, Fuller's Earth and Floor Dry, and two liquids, 0.01 N aqueous calcium sulfate and a 5 percent acetone/water solution. The sorbent materials were selected to provide a range in sorbent characteristics used commercially. The calcium sulfate solution was selected because it is widely relied on by researchers and practitioners as a standard liquid for investigation of landfill liner permeability. When mixed with sorbent materials, this solution can serve as a benchmark against which other liquids can be compared. The acetone solution was selected as a representative solvent solution found at hazardous waste landfills (Ref. 1). Additional sorbents and liquids (including oils) were also investigated (Ref. 2). ... EXT. 023 (PART 2, PROPOSED RULES)...A24DE2 62640 Mealey 12-22-86 J. 94-999 F. 1079-1082 —A24DE2.023

Testing of these sorbent/liquid combinations centered around the liquid loading (weight/weight percent liquid), at which a liquid-loaded sorbent might be expected to just begin to release liquid. This was necessary as it is likely that most of the testing conducted in response to today's proposed regulation would be at or near this critical point. Generators and owner/operators of TSD facilities, for obvious economic reasons, would wish to load sorbent materials with the maximum amount of liquid, and the majority of their testing would likely be focused on determining the maximum allowable loading.

The majority of the initial testing was conducted at a pressure of 15 to 45 psi (Ref. 1). Because of resource constraints, evaluation of the test (i.e., single laboratory precision and ruggedness) was conducted at a pressure of 45 psi (Ref. 2). The value of 45 psi was chosen because EPA believes it to be typical of most landfill pressures. The pressure to which landfilled sorbent materials may be subjected depends on a number of factors, including the depth of the facility, the nature and depth of the cover material, and the type of equipment used during landfilling operations. The Liquid Release Test was designed to be applied over a range of pressures. In other words, the test was developed independent from the manner in which the standard test pressure was determined, and would be appropriate for any reasonable pressure chosen for the test.

The concept of a confined compression test involves subjecting materials in a confined (rigid wall) apparatus, to a compressive force and examining various effects on the material. Several types of equipment, involving the same general design, but different means of pressure application were examined. The first device examined, known as a consolidometer, was designed and used at Duke University for measuring the permeability of soils under various degrees of consolidation. This device was modified slightly for use in the LRT and appears in Figure 1.

The top and bottom of the unit were constructed of polyvinyl chloride (PVC) while the cylinder and piston were made of transparent cast acrylic. A ceramic filter stone was used to distribute pressure evenly over the surface of the sample. While EPA recognized that the final equipment used for the LRT must be chemically resistant, this device served as an inexpensive means of investigating and consolidometer-type apparatus.

The apparatus employs two perforated TEFLON® disks to physically separate the sample from absorptive filter papers, which are used to detect liquid release. The TEFLON® disks serve to prevent the filter paper from collecting liquid by capillary suction. Pressure is applied to the sample from a vertical load piston, which is driven by a hydraulic press.

Consolidation of the sample is measured at 15-second intervals for the first minute of the test, and at one minute intervals thereafter. The pressure is continued until equilibrium conditions are achieved. Equilibrium was defined as a consolidation rate of less than 0.001 cm per minute. This equilibrium was achieved for all samples within 10 minutes from initial application of the pressure. Selected long-term (i.e., $>$ 10 minutes) tests were also run to confirm that consolidation had reached a steady value within ten minutes. Following termination of the pressure, the test units are dismantled and the filter papers are examined for the presence of liquid (Ref. 1).

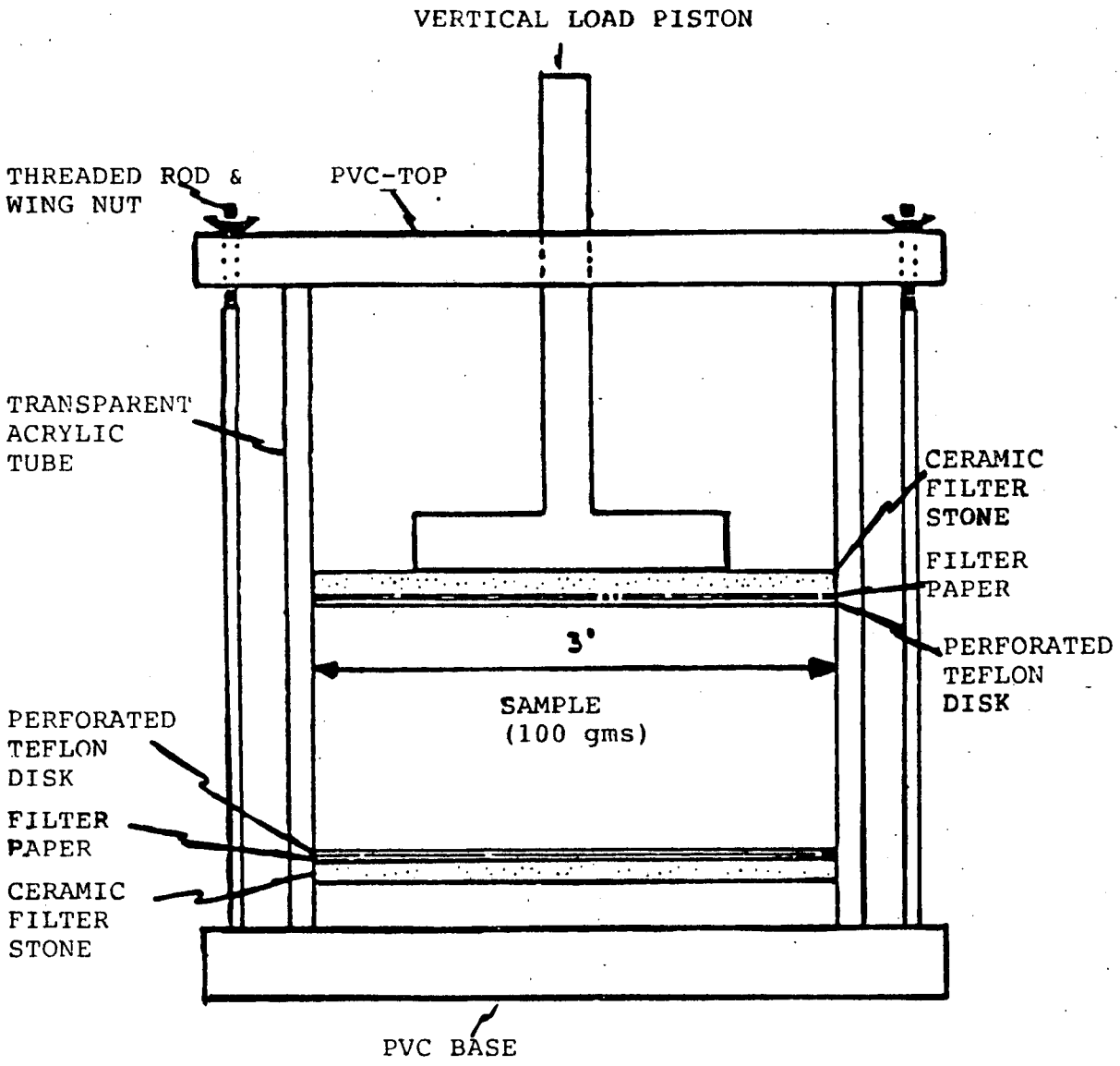
Typical results, in terms of the liquid loading (weight to weight percent) which produces liquid on the filter paper at two pressures are indicated in Table 1 (Ref. 1).

BILLING CODE 6560-50-M

HeinOnline -- 51 Fed. Reg. 46829 1986

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

Figure 1: Modified Consolidometer



BILLING CODE 6560-50-C

HeinOnline -- 51 Fed. Reg. 46830 1986

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

TABLE 1.—LIQUID RELEASE USING MODIFIED CONSOLIDOMETER AT VARIOUS PRESSURES (WEIGHT/WEIGHT PERCENT LIQUID)

Sorbent	Liquids			
	Calcium sulfate (0.01 N)		Acetone (5 percent)	
	15 psi	45 psi	15 psi	45 psi
Fuller's Earth (clay based)	>70	>55	>75	>60
Floor Dry (silica-based)	>160	>140	>90	>90

The consolidometer (see Figure 1) was then modified in an attempt to extend its capabilities. Provision was made to permit the liquid to drain into a collection vessel, which would permit the test to be applied in a quantitative sense (i.e., measuring the amount of liquid released). In addition, modifications were also made to permit the use of standard weights, in lieu of a hydraulic system for application of pressure. It was determined that while the hydraulic system worked well, its potential field application was limited. In addition, most hydraulic systems would be unable to maintain a steady pressure on the sample without constant adjustment (Ref. 1).

While limited testing with the device modified as described above compared well to testing done with the previous design, there is a real drawback to the use of weights that caused EPA to examine yet another approach. Specifically, due to the need to address pressures like 45 psi, and the limitations in the size of the test cell (i.e., it must be large enough to accommodate a reasonable sample size—100 grams), the weights required are excessive (in the neighborhood of 250 to 500 lbs) (Ref. 1 and 2).

The third (and final) approach to pressure application examined was the use of pneumatic or gas pressure. This design would easily accommodate a reasonable sample size (i.e., 100 grams), and allow use of the same general type of devices, with the perforated TEFLON® disks and absorptive filter papers, as shown in Figure 1. The only real difference is in the mode of pressure application, which entails use of a piston driven by compressed gases (e.g., air or nitrogen).

It was about this time that EPA was in the development stages of a device, known as the Zero-Headspace Extractor (ZHE), which was intended for use in evaluating the leaching characteristics of volatile compounds from wastes under conditions of zero headspace. This device was being developed in conjunction with the new Toxicity Characteristic Leaching Procedure (TCLP), which was proposed on January 14, 1986 (51 FR 1602) for use in the Land Disposal Restrictions Rule and on June 13, 1986 (51 FR 21648) for use in expanding the Extraction Procedure (EP) Toxicity Characteristic (40 CFR 261.24).

The ZHE uses gas pressure to force a piston against a sample to, in effect, squeeze any releasable liquid from the material, and lends itself to application in the Liquid Release Test. In addition, the perforated TEFLON® disk and absorptive filter paper set up can be easily accommodated within the ZHE, as depicted in Appendix A—Figure 1. Note that although the TCLP and the LRT use the same device, the two tests are unrelated.

EPA is proposing use of the ZHE for the LRT. Although the device is fairly expensive (i.e., $1200 to $1500), many laboratories already have the device for use in conducting the TCLP. In addition, since the device is powered by gas pressure, the only additional equipment needed to run the test in the field would be a pressure regulator, a balance, tedlar bags or syringes, and a gas cylinder, hand pump, or compressor. The LRT is presented in Appendix A, and the parameters of concern in running the test are discussed in Section 8 of this preamble.

Note that EPA also considered application of air pressure directly to the sample (i.e., no piston). This approach, however, was not pursued because air would tend to channel through and around the spaces in the material, and would not result in application of the required pressure to the sample.

In addition, to increase the data base for the method, four additional sorbent materials, in combination with three liquids, have been evaluated to determine the range in which the various sorbents/liquid combinations can release liquid. The results are provided in Table 2 (Ref. 2):

TABLE 2: SORBENT LOADING AT WHICH LIQUID WAS RELEASED USING ZERO-HEADSPACE EXTRACTOR AT 45 PSI (WEIGHT/WEIGHT % LIQUID)

Sorbent	Diesel fuel	Trichloroethylene	Xylene
Fly ash (Bituminous Coal)	<10	>42	<10
S-N-D (Silica Based)	>40	>78	>45
Floorco (Silica Based)	>65	>115	>65
Floor Dry (Silica Based)	>80	>140	>80

The Liquid Release Test protocol requires that samples of absorbent/liquid mixtures be tested only once for the detection of liquids being released under pressure. As discussed in section 8 of the preamble, the Agency is concerned that a test duration beyond 30 minutes might result in a significant disruption of offsite commercial landfill operations. This disruption might have the counter-productive effect of encouraging operators to sample fewer barrels of waste for the presence of free liquids, in order to maintain a certain rate of waste processing activities. The Agency is concerned that requiring additional quality assurance procedures (i.e., testing waste/absorbent mixtures a second or third time) to confirm an initial no-release finding would increase this disruption. Such additional testing might result in a total analytical processing time for an individual sample of 60 to 90 minutes, depending upon the number of times that the test needed to be repeated. The Agency is interested in comments concerning quality assurance procedures. What other procedures can the Agency use to increase the probability of detecting liquids in samples that may initially pass the Liquids Release Test (i.e., show no evidence of liquids) without imposing additional time delays for testing?

7. Additional Test Results Obtained During the Development of the Liquids Release Test (LRT)

The Agency conducted two additional laboratory testing programs of liquid-absorbent mixtures that also helped in the development of the Liquids Release Test. The first involved a cylindrical chamber with a plunger that had weights mounted on it. A glass capillary tube was fitted to the conical bottom of the chamber in an attempt to measure the volume of liquid compressed out of the sorbent. A description of this testing program is discussed in reference 3. Disadvantages of the first testing program included the manner in which the initial and final liquid concentrations were obtained (i.e., the modified ASTM ash test). Small sample sizes were used in the ash test which

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

leads to unreproducible results. The glass capillary, although capable of determining whether liquids have been compressed out of the sorbent, did not function in its intended manner. The surface tension of organic liquids tested was not adequate to have a strong meniscus form. Finally, the use of weights was a problem as discussed above.

The second laboratory testing program that contributed to the development of the LRT is discussed in reference 4. The use of different designs and additional liquid/sorbent combinations was accomplished during this work. The sorbents that were used in this testing program and throughout the other laboratory testing are characterized as to their mineralogical content in this report.

8. Evaluation of Liquid Release Test

The proposed LRT was evaluated in a single laboratory for ruggedness and precision, and is presently undergoing evaluation in a multilaboratory collaborative study. The design and results of the collaborative study will be announced in the **Federal Register** when completed. The design and results of the single laboratory evaluation are summarized below (Ref. 2).

Ruggedness testing was done principally to determine the procedure's sensitivity to minor variations in the different test conditions. This testing is necessary to determine which parameters in the test are subject to significant variations and thus need to be controlled or defined more carefully. Single laboratory precision is also determined from the ruggedness data. Table 3 provides the parameters in the test that were evaluated for ruggedness. A discussion of these parameters and the results follow. All testing was done on the floor dry sorbent and with the 5% acetone solution.

TABLE 3: LRT PARAMETERS EVALUATED FOR RUGGEDNESS

Parameter	LRT Specification	Difference tested
(1) Test Duration	30 minutes	30 and 35 minutes
(2) Sample Holding Time.	48 hours	24 and 360 hours
(3) Liquid Loading (weight/weight %).	–	95.5% and 96.6%
(4) Test Pressure	45 psi	45 and 50 psi
(5) Rate of Pressure Application.	within 90 seconds.	within 10 seconds and within 90 seconds
(6) Device Orientation.	piston moving upwards.	right side up and upside down
(7) Sample size	100 ± 0.1 grams.	100 and 105 grams

These parameters are all discussed below.

The proposed procedure (LRT) has been applied to the evaluation of Liquid-loaded sorbents and has been determined to provide results similar to those obtained with the previous devices (i.e., those involving weights) investigated. The test duration of 30 minutes for the LRT was selected to overcome the frictional forces of the piston O-rings against the side-walls of the container (Ref. 2). Also, since the ZHE apparatus has been selected as the device in which liquid/absorbent mixtures are to be tested, 30 minutes is needed to provide results similar to those obtained with the previous devices investigated (i.e., those involving weights), due to the time that appears to be needed to overcome the friction between the internal teflon disks and the walls of the cylinder

Although the Agency has selected 30 minutes as the proposed length of the test, the Agency is concerned with the length of the test. The results of the ruggedness evaluation (Ref. 2) indicated that none of the parameters investigated showed a significant difference at the 5 percent level. The test method may therefore be considered to be rugged with respect to the test conditions investigated. Note, however, that the effect of test duration was significant at the 10 percent level and very nearly so at the 5 percent level. The significance of this observation is that while the test is considered to be adequately rugged with respect to test duration, a longer test duration may provide different results in a small percentage of test runs.

However, a 30-minute time limit may prove disruptive to offsite commercial landfills which process large numbers of containers. A long time period will have some impact on the sampling of containers (i.e., the number of containers inspected and processed will be reduced, as compared to a shorter test duration). The Agency does not want a time limit that may cause problems, such as backlogs of containers or inadequate sampling to eliminate these backlogs. Therefore, the Agency is willing to accept comments on the test duration of the LRT. If upon evaluating these comments, the Agency finds a significant impediment to using a 30-minute test duration, the Agency may instead choose a ten-minute duration in order to assure that the thoroughness of drum sampling is not compromised.

In summary, the value of 45 psi that was used in the evaluation of the LRT was selected because it is representative of pressures found in landfills. The test pressure parameter is discussed at length in Section 9 of today's preamble. As stated previously, the LRT was developed independent from the manner in which the appropriate standard test pressure was developed. The LRT would be appropriate for any reasonable pressure chosen for the test.

The sample size used in the evaluation was selected because it is a commonly used representative sample size among the regulated community.

The effect of sample storage (Parameter 2) was evaluated in this effort in order to determine the effects, if any, of long sample storage times. This was necessary since samples were stored for as long as 15 days before testing during the test's development phase, and because samples may likely be stored for periods of time during the conduction of the ongoing collaborative evaluation. As a result of this evaluation, the Agency found that sample storage time did not alter the results of the test; however, sample testing should be done within 48 hours.

As indicated previously, most of the LRT testing was done on sorbent/liquid samples that were loaded such that they would be right around the critical range where liquid release might be expected to be observed on the filter paper. This was necessary as, for economic reasons, the majority of testing would be designed to provide the maximum liquid loading for liquid/sorbent combinations. The third parameter, liquid loading, was designed to provide results within the range for which one to two positive tests would be expected for every three tests run. This was necessary to make the data analyzable and the results interpretable, in terms of being able to describe quantitatively the ruggedness and precision of the test.

Note that the range of liquid loading investigated (i.e., 95.5 to 96.5 weight/weight %) for the Floor Dry/5% Acetone, is different for the range of liquid release determined initially for the same material, as shown in Table 1. This was due to the fact that a different lot of the sorbent material was used in preparing the samples for the ruggedness testing than was used in the earlier development work. It is apparent that different lots of the same material can have different sorptive properties.

The fifth parameter, rate of pressure application, was examined because work on the ZHE with the TCLP had indicated that instantaneous application of high pressures could cause the filter to rupture. Hence, the LRT was examined under conditions of fast and slow pressure build-up.

HeinOnline -- 51 Fed. Reg. 46832 1986

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

The sixth parameter examined, device orientation, was examined in an attempt to determine if it made a difference as to which direction the piston travelled (i.e., upwards or downwards). Although the ruggedness test showed no significant effects with device orientation, both devices tested are oriented so that the piston travels up for the LRT. This orientation was selected to avoid the necessity of flipping the device over after loading, which was shown to disturb the sample.

The ruggedness test was designed based on the need to have a high probability (i.e., 0.9) of finding a difference as great as 0.33 (i.e., at least one positive in three tests) in a one tail statistical evaluation test at the 5 percent significance level. In order to give statistically significant answers, the ruggedness test was conducted at a liquid loading for which the expected proportion of releases was approximately 0.5. Accordingly, if one of the parameters (Table 4) were to change the test results by 0.33 or greater, this would indicate that controlling the parameter may be critical to obtaining reproducible results.

As far as precision is concerned, the observed standard deviation of a single test series (i.e., 3 test runs) indicated the test to be of adequate precision (Ref. 2). Based on the average for the entire set of data generated during the ruggedness tests, the standard deviation for a set of three tests is approximately 0.29.

The Agency is proposing use of the LRT in response to the HSWA requirement to prohibit the disposal in landfills of liquids that have been absorbed in materials that release liquids when compressed, as might occur during routine landfill operations.

9. Selection of Appropriate Pressure for the Liquids Release Test

In regard to the appropriate pressure for today's proposed test, the Agency is proposing that the owner/operator use a value of 50 psi or a value equivalent to the pressure at the landfill in question. The LRT evaluation was conducted at 45 psi; however, it is important to remember that the LRT was developed independent from the manner in which the standard test pressure (50 psi) was selected. The value of 50 psi was selected assuming a bulk density of 70 lbs/ft ^{3} and a depth of 100 ft.

A quick survey of landfill depths conducted prior to the development of the release test indicated that most landfill depths were below 60 feet. The maximum depth was 100 feet. Pressure is a function of depth and bulk density. Soil bulk densities of 110 to 120 lbs/ft ^{3} are not unusual for soil; however, liquid loaded sorbents are not expected to be in this range. The Agency assumes that liquid loaded sorbents will have a bulk density of approximately 60–70 lbs/ft ^{3}; therefore at the maximum depth of 100 feet, this would correspond to a pressure of approximately 50 psi. This option would result in a safety factor being incorporated into the test for shallower landfills (i.e., less than 100 ft).

Another option would be to provide flexibility in the selection of the appropriate pressure value. In this option, the Agency could allow the landfill owner/operator and the permit writer to determine on a case-by-case basis the appropriate pressure value based on the conditions at the landfill in question. The Agency believes that, in either option, the pressure should be calculated at the deepest point in the landfill. The Agency solicits comments on the two alternative approaches. The Agency specifically requests comments on whether a maximum value should be used in all cases (i.e., 50 psi) or whether flexibility should be allowed in determining the correct value of pressure for which the test should be conducted. Is 50 psi the correct value for a maximum pressure? Is the Agency's assumption concerning the bulk density range (60–70 lbs/ft^3) of liquid loaded sorbents correct?

10. Relationship Of The Paint Filter Liquids Test To Todays Proposed Lquids Release Test

There is an interrelationship between the Paint Filter Liquids Test and the LRT. In some situations, a facility may be required to conduct both tests. For example, containerized wastes *without* any absorbents must be tested for the presence or absence of free liquids using the Paint Filter Liquids Test. See §§ 264.314(c) and 265.314(d). If a containerized waste material fails the Paint Filter Liquids Test (i.e., contains free liquids), and is treated (solidified) by the addition of a non-biodegradable absorbent, then today's proposed liquid release test must also be used to determine whether the waste/absorbent mixture will release further liquids under pressure. If liquids are detected in the form of wetness on the filter paper, then additional non-biodegradable absorbent material must be added in order to pass the liquid release test. Once the waste/absorbent mixture passes the liquids release test, it does not need to be retested to pass the Paint Filter Liquids Test.

If, on the other hand, the containerized waste without any absorbents passes the Paint Filter Liquids Test (i.e., is a solid), then this containerized waste is allowed to be disposed in a landfill without further testing. If the waste passes the Paint Filter Liquids Test, it is considered a solid and is therefore not prohibited from being placed in a landfill under section 3004(c)(2).

Under proposed §§ 264.13(c)(3) and 265.13(c)(3), the owner or operator will be required to determine if the generator has added an absorbent to a containerized liquid hazardous waste (see Section 11 of today's preamble). As noted above, today's proposal requires the use of the proposed liquids release test when a non-biodegradable absorbent has been added to solidify the containerized liquids. Owners or operators who know that a non-biodegradable absorbent has been added to solidity the containerized liquids and who employ the Paint Filter Liquids Test rather than the liquids release test will not be in compliance with today's proposal. If the owner or operator adds a non-biodegradable absorbent to the waste or if they determine that the generator added a non-biodegradable absorbent, then the liquids release test is required initially. Re-testing to pass the Paint Filter Liquids Test is unnecessary because the Agency believes that the liquid release test is more stringent than the Paint Filter Liquids Test. The Agency believes that a liquid/absorbent mixture tested under pressure for 30 minutes, during which time no wetness on the filter paper appears, would indeed pass the 5 minutes, no pressure, Paint Filter Liquids Test.

A facility's waste analysis plan requires that either all containers or some percentage of containers be tested, depending on site-specific circumstances, so that a detailed chemical and physical analysis of the waste is obtained. The Agency does not expect that waste analysis plans will change a great deal based on today's proposal; therefore, the frequency of testing using the LRT for conttainerized wastes will be determined based on the facility's current waste analysis plan.

The previous discussion centered on when to use the Paint Filter Liquids Test or the Liquids Release Test. The Agency will accept comments on whether or not the LRT should be used for only continerized wastes, or whether it should also be used for all wastes that are to be disposed in landfills, which would include bulk wastes. Very limited data developed during the refinery listing program indicate that some wastes may pass the Paint Filter Liquids Test but not the filter step in the TCLP which is similar to the LRT. Subjecting all wastes (whether liquids, solids,

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

containerized, or bulk) that are to be disposed in a landfill to a pressure test would remove additional liquids from the landfill. Using one test for containerized wastes would eliminate room for error (i.e., the question of whether an absorbent had been added to a container). All containers must bear up to the same stresses; therefore, all wastes should meet the same standards prior to disposal regardless of whether absorbents have been added or not. In light of HSWA and the concerns on the placement of liquids in landfills, the Agency is specifically requesting comments on whether the LRT should replace the Paint Filter Liquids Test as the test for determining if a waste contains free liquids.

11. Conforming Changes

As a result of adding the requirement for the liquid release to §§ 264.314 and 265.314, several minor conforming changes are being proposed. These conforming changes will add references to existing reference list in Subparts B and E of Part 264 and in Subparts B, E, and N of Part 265. Specifically, technical conforming changes are being made to §§ 264.13 (General Waste Analysis), 264.73 (Operating Record), 265.13 (General Waste Analysis), 265.73 (Operating Record), 265.302 (General Operating Requirements).

In order to comply with the requirements of today's proposal relating to containerized hazardous wastes, the owner/operator of an off-site landfill receiving containerized wastes must determine whether an absorbent material has been added to the containerized waste. Thus, in addition to amending §§ 264.13(b)(6) and 265.13(b)(6) to require the owner/operator to specify in the waste analysis plan the method to be used to (1) determine if the absorbent/waste mixture will release further liquids under pressure, and (2) determine the total organic carbon content, today's proposal would also require the owner/operator of a off-site landfill to specify the procedures to be used to determine whether the generator has added absorbents to the containerized waste.

The generator may supply the information in writing to the owner/operator that identifies any absorbent added to the waste. The information must be sufficiently detailed to allow the owner/operator to determine whether the absorbent is less than or equal to one percent (1%) total organic carbon. If the owner/operator does not receive this information in writing from the generator, the owner/operator must perform an analysis to find out whether absorbents were added and whether they are less than or equal to one percent total organic carbon. The owner/operator must put the results of any analysis or the information received from the generator in the operating records under §§ 264.73(b)(3) or 265.73(b)(3) along with the results of the LRT. If the owner/operator determines that absorbents were added, the containerized waste may be landfilled only if it meets the requirements proposed in §§ 264.314(d)(2) or 265.314(d)(2).

The Agency considered other options in developing the above approach. One option was to change the instructions of the uniform manifest (Subpart B of Part 262) to require the generator to identify any absorbent material added to the containerized waste. EPA rejected this option because allowing the owner/operator to determine the procedures to be used to obtain the information gives the owner/operator the flexibility to make appropriate arrangements with the generator while avoiding unnecessary paperwork.

Another approach was to create a presumption that absorbent materials were added to the containerized waste. This approach would require an owner/operator who was subject to an enforcement action for violations of §§ 264.314(d)(2) or 265.314(d)(2) to bear the burden of proof in demonstrating that absorbents were not added. EPA decided that a presumption was not warranted since it would be burdensome to require the owner/operator to perform the tests or refute the presumption for all shipments of containerized wastes. The presumption would be reasonable in cases where a substantial part of the containerized wastes would be expected to have absorbents added to them; however, the Agency did not have information indicating that this was the case.

By adopting the approach proposed in the rule, EPA believes that it is codifying existing industry practice. EPA believes that the off-site landfills already require extensive waste analysis information from the generator before they accept the generator's waste for disposal. By requiring that this information be placed in the operating record, EPA is enabling the owner/operator to demonstrate compliance with §§ 264.314(d)(2) or 265.314(d)(2).

II. State Authority

I. Applicability of Rules in Authorized States

Under Section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR Part 271 for the standards and requirements for authorization.) Following authorization, EPA retains enforcement authority under sections 3008, 7003, and 3013 of RCRA, although authorized States have primary enforcement responsibility.

Prior to the Hazardous and Solid Waste Amendments of 1984 (HSWA), a State with final authorization administered its hazardous waste program entirely in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities in the State that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under newly enacted section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to carry out those requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authoirzed States in the interim.

Today's rule will be promulgated pursuant to section 3004(c)(2) of RCRA, a provision added by HSWA. Therefore, it would be added to Table 1 in § 271.1(j) which identifies the Federal program requirements that are promulgated pursuant to HSWA and take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions identified in Table 1 as discussed in the following section of this preamble.

2. Effect on State Authorizations

As noted above, EPA will implement the standards in today's rule (when finalized) in authorized States until they modify their programs to adopt these rules and the modification is approved by EPA. Because the rule will be promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantively

HeinOnline -- 51 Fed. Reg. 46834 1986

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

equivalent or equivalent to EPA's. The procedures and schedule for State program modifications under section 3006(b) are described in 40 CFR 271.21. The same procedures should be followed for section 3006(g)(2).

40 CFR 271.21(e)(2) requires that States that have final authorization must modify their programs to reflect Federal program changes, and must subsequently submit the modifications to EPA for approval. The deadlines for the State to modify its program for this proposed regulation will be determined by the date of promulgation of the final rule in accordance with § 271.21(e). These deadline can be extended in exceptional cases (40 CFR 271.21(e)(3)). Once EPA approves the modification, the State requirements become Subtitle C RCRA requirements.

States with authorized RCRA programs may already have requirements similar to those in today's proposed rule. These State regulations have not been assessed against Federal regulations being proposed today to determine whether they meet the tests for authorization. Thus, a State is not authorized to carry out these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under cooperative agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs, rather than take separate actions under Federal authority.

States that submit official applications for final authorization less than 12 months after promulgation of EPA's regulations may be approved without inlcuding standards equivalent to those promulgated. However, once authorized, a State must modify its program to include standards substantially equivalent or equivalent to EPA's within the time periods discussed above.

III. Compliance with Executive Order 12291

Executive Order 12291 (Section 3(b)) requires that all regulatory agencies prepare a Regulatory Impact Analysis for all "major" rules. Section 1(b) defines "major" rules as those that are likely to result in:

1. An annual effect on the economy of $100 million or more,
2. A major increase in costs or prices for consumers or individual industries, or
3. Significant adverse effects on competition, employment, investment, productivity, innovation, or international trade.

EPA's analysis indicates that the rule prohibiting disposal of containers holding liquids and free liquids does not constitute a "major" rule.

IV. Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 et seq) requires a Federal Agency to prepare a Regulatory Flexibility Analysis (RFA) for all regulations that have "a significant economic impact on a substantial number of small entities," where:

- "Substantial number" means more than 20 percent of the affected small entities;
- "Small" is determined by the SBA loan eligibility criteria, unless an alternative definition is proposed and justified; and
- "Significant economic impact" occurs if:
- Annual compliance costs (annualized capital, operating, reporting, etc.) increase total production costs for relevant products or processes by more than 5 percent, or
- Compliance costs as a percent of sales for small entities is 10 percent or more as a percent of sales than for large entities, or
- Capital costs for compliance are a significant portion of capital available (considering internal cash flow and external financing opportunities), or
- Closures of small entities are likely to result.

EPA certifies that this proposed regulation will not have a significant economic impact on a substantial number of small entities; therefore, no Regulatory Flexibility Analysis is needed.

V. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted to the Office of Management and Budget (OMB) for approval under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501–3502. The public should submit comments on these requirements to the Office of Information and Regulatory Affairs, OMB, 730 Jackson Place, NW., Washington, DC, marked: "Attention: Desk Officer for EPA." The final rule will respond to any OMB, or public comments on the information collection requirements.

VI. References

1. "Sorbent Pressure Test Development," Report prepared by Research Triangle Institute.
2. "Liquid Release Test for Liquid Loaded Sobents—Single Laboratory Evaluation of Test Equipment," Report prepared by Research Triangle Institute, April 1986.
3. "Structurally Stable Absorbents," Report prepared by Mason and Hanger-Silas Mason, Co., August 1985.
4. "Development of Criteria to Distinguish Acceptable Sorbents for Containerized Hazardous Liquids," Report prepared by K.W. Brown, March 1986.

List of Subjects

40 CFR Part 260

Administrative practice and procedure, Hazardous materials, Waste treatment and disposal.

40 CFR Part 264

Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal.

40 CFR Part 265

Hazardous materials, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds, Waste Treatment and disposal, Water supply.

40 CFR Part 271

Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Indian lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

Dated: December 8, 1986.

Lee M. Thomas,

Administrator.

For the reasons set forth in the preamble, 40 CFR Parts 260, 264, 265 and 271 are proposed to be amended as set forth below.

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for Part 260 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3001 through 3007, 3010, and 7004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 as amended, [42 U.S.C. 6905, 6912(a), 6921 through 6927, 6930 and 6974].

2. Section 260.11 is amended by revising the fourth reference in paragraph (a) to read as follows:

§ 260.11 References

(a) * * *

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846 [Second Edition, 1982 as amended by Update I (April, 1984), Update II (April, 1985), and

HeinOnline -- 51 Fed. Reg. 46835 1986

This information is reproduced with permission from HeinOnline, under contract to EPA. By including this material, EPA does not endorse HeinOnline.

Update III [Insert month and year of final publication in FR]]. The second edition of SW-846 and updates I, II, are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20401, (202) 783-3228, on a subscription basis.

* * * * *

Part 264—Standards For Owners and Operators of Hazardous Waste Treatment, Storage, And Disposal Facilities

3. The authority citation for Part 264 continues to read as follows:

Authority: Sections 1006, 2002(a), 3004, 3005 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 as amended (42 U.S.C. 6905, 6912(a), 6924, and 6925).

4. Section 264.13 is amended by revising paragraph (b)(6) and by adding paragraph (c)(3) to read as follows:

§ 264.13 General Waste Analysis

* * * * *

(b) * * *

(6) Where applicable, the methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in §§ 264.17, 264.314 (c) and (d), and 264.341.

* * * * *

(c) * * *

(3) The procedures that the owner or operator of an off-site landfill receiving containerized hazardous waste will use to determine whether a hazardous waste generator has added a biodegradable absorbent material to the waste in the container.

5. Section 264.73 is amended by revising paragraph (b)(3) to read as follows:

§ 264.73 Operating Record.

* * * * *

(b) * * *

(3) Records and results of waste analysis peformed as specified in §§ 264.13, 264.17, 264.314 (c) and (d), and 264.341.

* * * * *

6. Section 264.314 is amended by revising paragraph (d) to read as follows:

§ 264.314 Special Requirements for bulk and containerized liquids.

* * * * *

(d)(1) Containers holding free liquids must not be placed in a landfill unless:

(i) The container is very small, such as an ampule; or

(ii) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or

(iii) The container is a lab pack as defined in § 264.316 and is disposed of in accordance with § 264.316; or

(2) The containerized liquids or free liquids have been solidified by the use of an absorbent material and, if solidified, (i) the total organic carbon content of the absorbent material is less than or equal to 1.0 percent, and (ii) the waste/absorbent mixture does not release liquids as determined by Method 9096 (Liquids Release Test) as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods." [EPA Publication No. SW-846].

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

7. The authority citation for Part 265 continues to read as follows:

Authority: Sections 1006, 2002(a), 3004, 3005, and 3015, Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended (42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935).

8. Section 265.13 is amended by revising paragraph (b)(6) and by adding paragraph (c)(3) to read as follows:

§ 265.13 General waste analysis.

* * * * *

(b) * * *

(6) Where applicable, the methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in §§ 265.193, 265.225, 265.252, 265.273, 265.314 (c) and (d), 265.345, 265.375, and 265.402.

* * * * *

(c) * * *

(3) The procedures that the owner or operator of an off-shore landfill receiving containerized hazardous waste will use to determine whether a hazardous waste generator has added a biodegradable absorbent material to the waste in the container.

9. Section 265.73 is amended by revising paragraph (b)(3) to read as follows:

§ 265.73 Operating record.

* * * * *

(b) * * *

(3) Records and results of waste analyses and trial tests performed as specified in §§ 265.13, 265.193, 265.225, 265.252, 265.273, 265.314 (c) and (d), 265.341, 265.375, and 265.402.

* * * * *

10. Section 265.302 is amended by revising the comment at the end of the section to read as follows:

§ 265.302 General operating requirements.

* * * * *

[*Comment:* As required by § 265.13, the waste analysis plan must include analyses needed to comply with §§ 265.312, 265.313, and 265.314 (c) and (d). As required by § 265.73, the owner or operator must place the results of these analyses in the operating record of the facility.]

11. Section 265.314 is amended by revising paragraph (c) to read as follows:

§ 265.314 Special requirements for bulk and containerized liquids.

* * * * *

(c)(1) Containers holding free liquids must not be placed in a landfill unless:

(i) The container is very small, such as an ampule; or

(ii) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or

(iii) The container is a lab pack as defined in § 265.316 and is disposed of in accordance with § 265.316; or

(2) The containerized liquids or free liquids have been solidified by the use of an absorbent material and, if solidified, (i) the total organic carbon content of the absorbent material is less than or equal to 1.0 percent, and (ii) the waste/absorbent mixture does not release liquids as determined by Method 9096 (Liquids Release Test) as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods." [EPA Publication No. SW-846].

* * * * *

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

12. The authority citation for Part 271 continues to read as follows:

Authority: Sections 1006, 2002(a), and 3006 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a) and 6926).

13. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication:

§ 271.1 Purpose and scope.

* * * * *

Table 1.—Regulations Implementing the Hazardous and Solid Waste Amendments of 1984

Date	Title of regulation
* * * * *	
[Insert date of publication in *FR*].	Containerized Hazardous Liquids
* * * * *	

[FR Doc. 86-28381 Filed 12-23-86; 8:45 am]
BILLING CODE 6560-50-M