Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

October 10, 1989

James H. Scarbrough, Chief
U.S. Environmental Protection Agency
Region IV
345 Courtland Street NE
Atlanta, Georgia 30365

Re: Florida Mining and Materials - Burning of Hazardous Waste Fuel(liquid/solid) in Cement Kiln.

Dear Mr. Scarbrough:

Enclosed are copies of additional information received on the subject facility concerning burning of hazardous waste fuel(liquid/solid) in Cement Kiln.

If you have any question, please call me at 904/488-0300.

Sincerely,

William Neuman for

Satish Kastury
Administrator
Hazardous Waste Regulation

RP/do

cc: Barry Swihart, BWP&R
Air Permitting - Tallahassee (w/attachments)

Air Permitting

FLORIDA MINING & MATERIALS

CONSTRUCTION MATERIALS DIVISION

P. O. BOX 6, BROOKSVILLE, FLORIDA 34605-0006
TELEPHONE (904) 796-7241

C. M. COLEMAN, JR.
VICE PRESIDENT & GENERAL MANAGER

September 11, 1989

Mr. William C. Crawford
Permitting Engineer
Southwest District
Florida Department of Environmental
Regulation
4520 Oak Fair Boulevard
Tampa, Florida 33610

Re: Florida Mining & Materials Energy Recovery Program

Dear Mr. Crawford:

Last week in Tallahassee, we discussed with you and members of your staff, Florida Mining & Materials' (FM&M) plan to burn solid hazardous waste fuel for energy recovery in the plant's cement kilns. As we explained at the meeting, FM&M's parent company, Southdown, Inc., has entered into an agreement with Cadence Chemical Resources, Inc. to supply waste fuels to its cement plants all over the country. The solid fuels are blends of the same types of industrial wastes that yield liquid hazardous waste fuels and will generally have the same waste codes, but they have a different physical composition and are not "pumpable."

Cadence has developed and patented special technologies to process these solids into FuelPaks as Chem-Fuel S Blend, and then to introduce these packaged solid waste fuels directly into cement kilns. All processing and blending is done at fully regulated TSD facilities, and transportation is by licensed hazardous waste transporters only. For your review, enclosed is a copy of the information package that Mr. Mike Benoit of Cadence presented at the August 30 meeting and a letter from Mr. Richard Stoll, attorney for Cadence, that further explains the solid fuels technology and some aspects of EPA's position on burning waste fuels in cement kilns.

In addition to introducing you to FM&M's solid fuels program, we also discussed the issue of the temporary holding of fuels onsite on transportation vehicles for the brief interval between their arrival and introduction into the kiln. You informed us that it was DER's current view, that, for FM&M to hold hazardous waste fuels in vehicles onsite for more than eight hours, it must meet the requirements for transfer facilities in the Florida regulations. Consequently, we are currently reviewing Florida's rather stringent requirements for transfer facilities to evaluate measures necessary for FM&M to comply. Please be advised that FM&M does not intend to withdraw its RCRA permit application for tank storage, however. As I mentioned in my August 31 letter to Secretary Twachtman (copy enclosed), we intend to request that our storage application be modified to include solid fuels. We will contact you with more specific information as we develop a firm plan.

Thank you for your assistance in this matter. Please call me at (904) 796-7241 if you need any additional information or would like to discuss this.

Sincerely yours,

C. M. Coleman, Jr.
Vice President and
General Manager

CMC,Jr:gm

Enclosures

bcc: Mike Benoit (no encl.)
Dick Stoll (no encl.)
Melinda Taylor (no encl.)
Hank Andre (w/encl.)
Satish Kastury (w/encl.)

FLORIDA MINING & MATERIALS

CONSTRUCTION MATERIALS DIVISION

P. O. BOX 6, BROOKSVILLE, FLORIDA 34605-0006
TELEPHONE (904) 796-7241

C. M. COLEMAN, JR.
VICE PRESIDENT & GENERAL MANAGER

August 31, 1989

Mr. Dale Twachtman, Secretary
State of Florida
Department of Environmental Regulation
2600 Blair Stone Road
Room 626 Twin Towers Office Bldg.
Tallahassee, Florida 32399-2400

Dear Secretary Twachtman:

Our meeting yesterday with members of your staff was fruitful. We discussed the two issues mentioned in my August 28th letter to you and appear to be making good progress in both areas.

Regarding the storage versus "temporary holding" issue, your staff advised us of the transfer facility notification requirements for holding waste fuels on site for more than eight hours. This was new to some of us and we are evaluating the regulations to be sure we understand our obligations. On the surface, it seems to fit.

Regarding solid fuels, this was new to your staff and they need time to evaluate and discuss with EPA Region IV our unique plans for burning these materials. I believe they will become quite comfortable with this as they delve into it.

We are moving forward with our air permit work and hope to present the completed document by September 15, 1989. Assuming a quick turnaround on approval for the air permit, our decision to implement as a transfer facility, and DER staff's concurrence with burning solids, Florida Mining could be in position to burn hazardous waste fuels (liquids and solids) before the end of 1989. This should be helpful, in view of Alabama's recent decision on the Emelle landfill.

Thinking long term, I believe Florida Mining still needs a RCRA storage permit to receive and store both liquid and solid waste fuels. In this regard, my plans now are to pursue the RCRA Part B storage permit, modified to include reduced liquid storage (from 320,000 gallons to perhaps 100,000 gallons) and add provisions for storing solid fuels. We'll continue to pursue these ideas with our engineers and consultants, and present a firm plan to the Department.

I'll keep you advised as our thinking progresses. Please don't hesitate to phone me as the need arises.

Sincerely,

C. M. Coleman, Jr.

CMC,Jr:gm

Enclosure

bcc: Hank Andre
Mike Benoit
Frank Cross
Kay Rykowski
Dick Stoll
Melinda Taylor

LAW OFFICES
FREEDMAN, LEVY, KROLL & SIMONDS
WASHINGTON SQUARE - 1050 CONNECTICUT AVE., N. W.
WASHINGTON, D. C. 20036-5366
202 457-5100

RICHARD G. STOLL
(202) 457-5119

CABLE "ATTORNEYS"
TELECOPIER: 202-457-5151

September 11, 1989

Mr. William C. Crawford
Permitting Engineer
Southwest District
Florida Department of Environmental
Regulation
4520 Oak Fair Boulevard
Tampa, Florida 33610

Dear Mr. Crawford:

In our meeting of August 30 in Tallahassee, you requested that we submit information explaining our "solid" hazardous waste fuel (HWF) program. I think you will find that most of the pertinent points are contained in the "Information Package" we left with you at the meeting. I would like to review the highlights of this package (additional copy enclosed) and also respond to certain points or questions DER personnel raised during the meeting.

Before turning to the Information Package, I should stress the similarties between the solid HWF program and the liquid HWF program with which you are already familiar. The solid HWF will be derived from essentially the same types of industrial wastes as the liquid HWF, will generally have the same waste codes, and will be tested and processed to our HWF specifications at the same RCRA T/S/D facilities. Major industrial wastes comprising the solid HWF are paint sludges, solvent still bottoms, printing ink wastes, resins, and absorbent materials containing solvents.

Like the liquid HWF, the solid HWF will be derived from industrial waste streams that exceed 5,000 Btu per pound to assure valid energy recovery. While the physical form of liquids and solids is different, the chemical composition is essentially the same. In fact, the physical state of the liquids and solids varies only in one major respect: the solid HWF is not "pumpable."

This difference in physical form produces two additional downstream differences in the delivery system. The first

distinction relates to transportation. Liquid HWF is transported from the processor to the kiln in bulk tank cars. Solid HWF is packaged and transported in sealed 6-gallon containers.

The second distinction relates to the method the HWF is fed to the kiln. Liquid HWF is pumped into the kiln from storage tanks or directly from tank trucks. Solid HWF is inserted into the kiln -- still in its sealed containers -- through Cadence-patented processes described in Part B of the Information Package.

I hope you find the enclosed Information Package useful. I would like to point out certain highlights from each of the five parts:

Part A -- Note that solids clearly qualify as valid energy recovery under all applicable EPA Headquarters guidance, and that we have confirmed this with key EPA personnel. (See pp. 2-3.)

Part B -- The liquid and solid HWF packaging and delivery processes are detailed on pp. 2-5.

Part C -- Note that we are now engaging in full scale solid HWF programs in cement kilns in three states.

Part D -- This table summarizes the highly successful emissions testing performed at kilns burning solid HWF. The table indicates the parameters contained in EPA's proposed regulations for industrial furnaces (52 Fed. Reg. 16982 et seq., May 6, 1987), and shows emission levels well below EPA's proposed standards.

Part E -- This discussion highlights the benefits of cement kiln burning for both liquid and solid HWF.

During the August 30 meeting, DER personnel inquired as to the "land ban" implications of our HWF program. First, our program is crucial to the success of the land ban, as there would be insufficient thermal capacity to handle land-banned wastes without cement kilns. EPA in fact recently relied in part on the availability of cement kiln capacity to justify its decision not to extend certain nationally applicable land ban deadlines. 53 Fed. Reg. 17607-11, May 17, 1988.

Moreover, EPA has specifically recognized that cement kilns provide the necessary degree of destruction to constitute "best demonstrated available technology" (BDAT) under the RCRA land

ban. On August 17, 1988, EPA amended 40 CFR 268.42(a)(2) to make clear that industrial furnace burning would be deemed equivalent to "incineration" for land ban purposes. 53 Fed. Reg. 31218, August 17, 1988. EPA did this recognizing that RCRA standards for industrial furnaces would not become final for some time. 53 Fed. Reg. at 31176, August 17, 1988; 53 Fed. Reg. 17604-05, May 17, 1988 (copies attached).

I trust this provides you with a fuller understanding of the solid HWF program. Please do not hesitate to contact me or Mike Benoit if you have any further questions.

Very truly yours,

Richard G. Stoll

RGS:md
Enclosure
cc: Satish Kastury ✓

CEMENT KILN BURNING OF HWF

INFORMATION PACKAGE FOR AUGUST 30, 1989 MEETING WITH FLORIDA AND REGION IV OFFICIALS

PART A - Legal/Regulatory Status

PART B - Process Descriptions

PART C - Survey of Current Kiln HWF Burning in U.S.

PART D - Summary of Emissions Data on Kiln Performance with Solid HWF

PART E - Benefits of Cement Kiln HWF Burning

PART A

LEGAL/REGULATORY STATUS OF CEMENT KILNS BURNING HWF UNDER RCRA

I. BURNING FOR ENERGY RECOVERY

A. Generally

1. Since 1980, EPA has exempted the burning of hazardous waste for energy recovery from RCRA controls. See 52 Fed. Reg. 16982-86 (May 6, 1987) for a historical overview. In the 1984 amendments to RCRA, however (often referred to as "HSWA"), Congress included new §3004(q). This subsection requires EPA to issue regulations which will eventually impose RCRA regulations and permitting requirements on burning for energy recovery.

2. The current status is as follows:

(a) EPA proposed comprehensive regulations on May 6, 1987. (Cited above.)

(b) Based on significant questions raised on the initial proposal, EPA will soon (probably September, 1989) issue a "supplement" to the May, 1987 proposal.

(c) After the public comment period on the "supplement," EPA will issue final regulations which will ultimately require cement kilns burning HWF to obtain a RCRA permit. EPA will probably issue these final regulations in mid-1990.

3. At this time, industrial furnaces burning hazardous waste fuel (HWF) for energy recovery are not subject to RCRA permitting requirements. EPA made this clear in promulgating preliminary HWF rules on November 29, 1985. See 50 Fed. Reg. 49164 et seq. In its preliminary HWF regulations, EPA imposed notification and recordkeeping requirements on burners, but deliberately avoided imposing permitting requirements. See 40 CFR §§266.30-.35, 50 Fed. Reg. 49204-05.

4. This exemption from the requirement to obtain a permit before burning HWF will continue even beyond EPA's issuance of final HWF burning regulations. EPA has made clear that even after its proposed regulations are finalized, existing burners will still have six months to file part A's and obtain interim status. 52 Fed. Reg. 17015. Thus, it will probably be

1991 before EPA will require that an industrial furnace obtain a RCRA permit as a condition to initiating burning for energy recovery.

B. Solids

1. Until recently, the most common form of HWF burning in the U.S. involved liquids. Solid HWF also fits well within all EPA guidance for valid energy recovery, and solids are now being burned for energy recovery in Arkansas, Kansas, and Nebraska.

2. EPA's discussions of the concept of "hazardous waste fuel" have never drawn a distinction between liquids and solids. See, e.g. section entitled "Definition of Hazardous Waste Fuel," 50 Fed. Reg. 49167, November 29, 1985.

3. Before initiating solids burning programs in several states, we sought confirmation from Robert Holloway and Steven Silverman of EPA Headquarters. Holloway is the technical person in the Office of Solid Waste most directly responsible for all of EPA's HWF regulations. See 50 Fed. Reg. 49164. Silverman is the attorney in the Office of General Counsel who has primary responsibility for all hazardous waste recycling and burning issues.

4. In response to our inquiries, both gentlemen assured us that there was no reason to distinguish between solids and liquids in determining whether a waste was being burned for energy recovery. They said one would need to look to all published EPA guidance on the issue -- particularly the issue of Btu's -- to determine in a particular case whether valid energy recovery was involved.

5. The following are EPA's Federal Register statements on the issue of energy recovery vs. "sham" recycling:

(a) 48 Fed. Reg. 11158, March 16, 1983.

(b) 50 Fed. Reg. 630, 631, January 4, 1985.

(c) 50 Fed. Reg. 1690, January 11, 1985.

(d) 50 Fed. Reg. 49166, 49167, November 29, 1985.

(e) 52 Fed. Reg. 16985, 17013, May 6, 1987.

(f) 53 Fed. Reg. 522, January 8, 1988.

6. A review of all of these EPA statements leaves no doubt that our solids-burning program constitutes valid energy recovery. When considering whether burning is valid recycling in the energy recovery context (as opposed to the material recovery context), EPA's policy has focused primarily on the issue of the "energy value of the wastes." See reference f above. EPA has spoken several times in terms of a 5,000-8,000 Btu range, and made clear that it looked to 5,000 Btu as the cut-off for sufficient energy value:

> [O]rdinarily burning low energy (less than 5,000 Btu/lb.) hazardous waste is not considered to involve energy recovery, in spite of energy release.

50 Fed. Reg. 49167 (see reference d).

> Thus, these [proposed] rules would regulate burning in these devices for energy recovery as well as for the burning of low heating value wastes (i.e. less than 5,000 Btu/lb.) for the purpose of destruction.

52 Fed. Reg. 16985, n.2 (see reference e).

7. EPA has also made clear that in applying its policy, it would regard non-industrial boilers very differently than industrial furnaces (such as cement kilns) and boilers. EPA has recognized that industrial furnaces are much more reliable for burning hazardous wastes, and accordingly has said that it would apply its policy more liberally to such industrial furnaces. See references a, b, d.

II. STORAGE OF HWF

A. EPA has long recognized that one may recycle hazardous wastes without first "storing" them. EPA's regulations provide that storage before recycling is subject to the full panoply of T/S/D standards and permitting requirements. 40 CFR §261.6(c)(1). The regulations also provide, however, that a facility which recycles without prior storage is not subject to T/S/D and permitting requirements but only to notification and manifesting requirements. 40 CFR §261.6(c)(2).

B. EPA has consistently held that temporary holding of hazardous wastes in trucks is not "storage." In the context of recycling lead acid batteries, EPA recognized that batteries remain on a truck at a recycling facility "sometimes for up to

several weeks." EPA stated that it did not consider such "temporary holding" in trucks to be "storage." 48 Fed. Reg. 14498, April 4, 1983. Rather, EPA indicated a 14-day holding period in trucks as a benchmark for determining whether "storage" was taking place. Id.

C. EPA never included the 14-day period in its regulations, but it did include a 10-day period. Under 40 CFR §263.12, a vehicle which meets EPA and DOT packaging requirements can hold manifested wastes up to ten days at a transfer facility without triggering RCRA "storage" requirements. The regulation requires that such waste be in RCRA containers to qualify for the ten-day rule. 45 Fed. Reg. 86967.

D. We are aware of other cement kilns where transport vehicles containing HWF have been used in lieu of RCRA storage, and EPA has acquiesced in this practice. One such project is the proposal for St. Marys Peerless Cement Company to burn HWF in Detroit.

III. STATUS OF CEMENT KILN DUST

A. EPA has long held that its "derived from" rule does not apply to cement kiln dust when the kiln is burning HWF for energy recovery. EPA first articulated this policy in 1985. (50 Fed. Reg. 49190, n. 89, November 29, 1985.) EPA's most recent Federal Register explanation of this interpretation appeared in 1987:

> First, if the device is burning the hazardous waste solely for energy recovery, the Agency in all cases considers the residues to be from processing an ore or mineral (or to be cement kiln dust waste) and hence excluded.

52 Fed. Reg. 17012, col. 3, May 6, 1987 (emphasis added).

B. Thus, the dust from a cement kiln that is burning HWF will not be considered a RCRA hazardous waste. We are aware that EPA is considering proposing some refinements to its policy under which this exemption might be conditioned on the quality of the dust at a particular facility. We are following this issue closely at EPA Headquarters. Based on chemical analyses of our dust, we have remained confident that its status would not be adversely affected under any alternative policy which EPA has been considering.

PART B

PROCESS DESCRIPTION

I. CEMENT KILN OPERATION

A. Cement manufacturing is one of the largest mineral commodity industries in the United States. The central process unit in the manufacture of cement is the horizontal rotary kiln.

B. The rotary kiln is a very large steel cylinder lined with temperature-resistant refractory brick. Today's kilns range in sizes up to 780 feet in length and 21 feet in diameter. The kiln rotates at a slight angle (3 to 6 degrees) that causes the material to move down its length due to gravity.

C. Cement is made by heating raw material (limestone and soils bearing silica, alumina, and iron) in a kiln until a chemical reaction occurs. The raw material becomes a very hot semi-liquid, exceeding 2500 degrees Fahrenheit.

D. When cooled it forms into small nodules of approximately three-quarters of an inch in diameter, referred to as "clinker." After the clinker leaves the kiln, it is ground with a small amount of gypsum (typically 5 percent) to form cement.

E. Cement kilns can be divided into three major categories: wet process, dry process, and dry process with preheating and/or precalcining. In wet kiln processes the finely ground raw materials are mixed with water to form a slurry that is continuously added to the rotary kiln. The dry process mixes the raw materials together as a powder with no water added. In the third process, this dry powder is passed through a series of heat exchange devices to preheat the raw materials before introduction into the kiln.

F. The wet process is the oldest of the three, and a significant amount of energy is required to evaporate the water in the kiln. Later advances in technology led to the energy-saving dry process. The most recent cement technology allows even greater energy savings to be achieved with the modern preheater and/or precalciner kilns.

G. Raw materials pass through several distinct thermal zones within a rotary cement kiln. The first zone, beginning at

approximately 1480°F, is the drying and preheating zone where all the water is driven off. This is followed by the calcining zone, where carbon dioxide is driven off from the limestone, leaving free lime and silica and alumina minerals starting at approximately 2190°F. Finally, the burning zone is where the chemical reaction leading to the formation of clinker takes place. In the burning zone, temperatures must rise to in excess of 2550°F to form clinker.

H. Gas temperatures in the kiln's firing zone normally exceed 3000°F, and gas residence times can approach 5 seconds. Typically it takes from 2 to 4 hours for the raw material to make it through the kiln and emerge as clinker.

I. Combustion gases and gases from the calcining and clinkering reactions travel up the kiln in a countercurrent flow to the raw material. An induced draft fan pulls the gases through the system, controlling gaseous residence time and maintaining a slight vacuum in the system.

J. After leaving the kiln, these gases pass through emission control devices such as electrostatic precipitators and/or fabric filters to remove the kiln dust entrained in the stream.

K. Cement kilns have enormous size, high output rates, and very high fuel consumptions. Since the energy crisis of the seventies great burdens have been placed on the manufacturers of cement to find low cost environmentally safe fuel sources.

II. HAZARDOUS WASTE FUEL (HWF) AND THE CADENCE SYSTEM

A. It is now quite common in the U.S. for cement kilns to burn fuels derived from hazardous waste (HWF). For many years, this burning was limited to liquid HWF. As described in part III below, however, major programs are now underway to utilize solid HWF.

B. Cadence Chemical Resources, Inc. was established in 1975. Its sole business is the derivation of value from energy-bearing wastes by recycling them in environmentally sound ways as fuel in industrial processes. During the mid-1970's, Cadence pioneered the practice of burning liquid HWF in cement kilns. Cadence is currently among the largest HWF suppliers to the cement industry. Since 1975, Cadence has supplied over 500 million gallons of its waste-derived "Chem-Fuel®" to industrial customers.

C. Cadence has established a national network of independently-owned solvent recycling and HWF blending facilities. Currently there are 15 of such "Cadence processors." These processors receive waste materials from thousands of industrial generators throughout the U.S. They blend Chem-Fuel under license with Cadence, and ship it to various cement kilns to be burned for energy recovery.

D. Cadence's processors accept waste materials in a wide variety of forms and containers. Desirable hazardous wastes include: flammable solvents, paint and coating wastes, printing inks, chlorinated solvents, solvent stillbottoms, resinous materials, and a broad range of other hydrocarbon-based hazardous wastes.

E. Each of Cadence's processing facilities is dedicated to the complete recycling of organic hazardous wastes and operates in compliance with state and federal RCRA regulations. Every precaution is taken to assure the safe handling and processing of all hazardous waste that comes under Cadence's management.

F. Before a Cadence processor accepts any waste for blending into Chem-Fuel, the processor performs a precise chemical and physical analysis to ensure complete compatibility with Cadence's requirements.

G. Cadence's processors perform thorough analyses of not only all waste received from generators but also all Chem-Fuel destined for burning in cement kilns.

H. Chem-Fuel may be in liquid form (Chem-Fuel® K Blend) or solid form (Chem-Fuel® S Blend).

III. THE SOLIDS PROGRAM

A. Chem-Fuel "S" Blend is solid waste that is packaged in 6-gallon DOT containers called "FUELPAKS"®. The weight of these containers generally averages 45-60 lbs They are capped with lids that are mechanically sealed to insure package integrity.

B. Chem-Fuel S Blend consists principally of high molecular weight resins and polymers along with other non-pumpable industrial waste components. It has a heating value in excess of 5,000 Btu/lb.

C. As Cadence's processors fill FUELPAKS with S blend, they take samples from individual containers at a statistically-determined frequency (using EPA method #SW-846). For each batch, the processor will analyze composite samples to verify that Cadence's specifications are being met.

D. Once full, the FUELPAKS are sealed and loaded onto pallets (approximately 36 FUELPAKS per pallet) and wrapped with polyethylene. The wrapped pallets are then loaded into box trailers or rail cars. Each load is accompanied by a Load Record (which is Cadence's bill of lading) and a RCRA hazardous waste manifest.

E. To ensure the integrity of shipments of Chem-Fuel, security seals are utilized on vehicles while in transit between the Cadence processor and the cement kiln. The processor's quality control lab issues seals after the load is approved for shipment. Personnel responsible for loading the boxcar attach the seals and verify them prior to departure.

F. The seals remain intact during transit until arrival at a cement kiln where the identity of the security seal(s) and the integrity of the shipment is confirmed by the individual who signs the hazardous waste manifest and the Load Record prior to unloading.

G. Cadence issues security seals to its processors in controlled numerical sequences. Cadence maintains a record of seal numbers and the processor to whom they are sent.

IV. CHARGING SOLIDS TO THE KILN

A. The solids are charged into the kiln at a point along the length of the kiln cylinder where the kiln gas temperatures range from about 1750°F to about 2150°F. In a conventional long dry and wet process rotary kiln, that range of gas temperatures is typically found in the middle one-third zone of the kiln cylinder. In a preheater or precalciner type rotary kiln, that temperature range exists in about the upper one-third zone.

B. The solids are charged to the kiln along with their sealed (FUELPAK) containers via a special "drop tube" apparatus. The container itself contributes both energy and material to the process. This is because iron is oxidized at the higher temperatures in the calcining zone of the kiln -- adding energy. The iron oxides also become material for the clinker process chemistry.

C. Air temperature in the kiln cylinder in the vicinity of the drop tube ranges from about 1750°F to about 2150°F. The drop tube must be constructed of a material which can withstand those thermally harsh conditions over long periods of time.

D. A sensor is positioned to detect transfer of the fuel module through the port and into the kiln cylinder. An audible or visible signal is generated to indicate that the transfer is complete.

E. Hazardous constituent destruction efficiency (DRE) can be monitored as a function of carbon monoxide and/or total hydrocarbons in the effluent gas stream. Each kiln can be calibrated during a test burn so that carbon monoxide levels can be utilized as a direct indication of the DRE. Thus, for example, carbon monoxide concentration ranging from about 100-2000 parts per million can be determined to correspond to a defined range of hydrocarbon emissions. Continuous monitoring assures compliance with any applicable environmental regulations and consistent product quality.

PART C

SURVEY (NATIONAL)

Over the last few years, the practice of industrial furnace HWF burning for energy recovery has become quite widespread. Cement kilns comprise the great majority of industrial furnaces now burning HWF. The attached sheet shows the companies and locations that are now burning HWF throughout the U.S.

U.S. Kilns Burning Hazardous Waste Fuel

Company	Location (s)	Type of Kilns
Ash Grove Cement	*Foreman, AR *Chanute, KS *Louisville, NE	cement
Continental Cement Co.	Hannibal, MO	cement
Coplay Cement Co.	Logansport, IN	cement
Dundee Cement Co.	Clarksville, MO Santee, SC	cement
Environmental Conservation Systems Inc. (Solite Corp.)	Brooks, KY	lightweight aggregate
Giant Cement Co.	Harleyville, S.C.	cement
Gifford-Hill Cement Co.	Midlothian, TX	cement
Keystone Cement Co.	Bath, PA	cement
Lafarge Corp.	Demopolis, AL Fredonia, KS Alpena, MI Paulding, OH	cement
Lone Star Industries Inc.	Greencastle, IN	cement
Medusa Cement Co.	Wampum, PA	cement
National Cement Co.	Lebec, CA	cement
Norlite Corp.	Cohoes, NY	lightweight aggregate
Oldover Corp. (Solite Corp.)	Green Cove Springs, FL Norwood, NC Arvonia, VA	lightweight aggregate
River Cement Co.	Festus, MO	cement
Southdown, Inc.	Fairborn, OH	cement
St. Marys Peerless	Detroit, MI	cement
Texas Industries	Midlothian, TX	cement

Kilns marked with an (*) are burning solid HWF as well as liquids. all other are burning liquids only.

PART D

SUMMARY OF EMISSIONS DATA ON CEMENT KILN PERFORMANCE WITH SOLID HAZARDOUS WASTE FUEL

Testing Performed by Mullins Environmental Testing Co., Inc. (METCO), Addison, Texas

I. ASH GROVE CEMENT COMPANY

Louisville, Nebraska
April, 1988
Preheater/Precalciner Kiln

	Run 1	2	3	4	5	6
Particulate Matter (lbs/hr)	93.8	16.0	6.4	8.0	11.3	8.2
Hydrogen Chloride (lbs/hr)	14.1	19.3	19.9	13.5	14.3	19.5
Lead (lbs/hr)	0.286	0.007	0.004	0.006	0.003	0.005
Chromium (lbs/hr)	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane DRE - %	>99.9999	>99.9999	>99.9999	99.997	>99.9999	>99.9999

II. ASH GROVE CEMENT COMPANY

Foreman, Arkansas
October, 1988
(Wet Process Kiln)

	Run 1	2	3	4	5	6	7	8
Particulate Matter (lbs/hr)	6.88	7.12	4.67	19.40	12.14	26.76	5.39	23.63
Hydrogen Chloride (lbs/hr)	19.8	28.4	16.4	17.2	21.5	19.7	20.2	22.2
Lead (lbs/hr)	0.023	0.021	0.012	0.187	0.077	0.209	0.035	0.069
Chromium (lbs/hr)	0.050	0.061	0.019	0.019	0.034	0.026	0.021	0.031
Trichlorobenzene DRE - %	>99.9999	>99.9999	>99.9999	>99.9999	>99.9999	>99.9999	>99.9999	>99.9999

PART E

BENEFITS OF CEMENT KILN BURNING

1. Even if U.S. industry uses its best efforts to minimize hazardous waste generation, there will still be vast quantities of hazardous waste that must be treated or disposed in the decades to come.

2. Land disposal of untreated hazardous waste is now recognized as a poor environmental alternative and various legal requirements are working rapidly to phase this practice out.

3. Thermal treatment can be a particularly effective way to handle hazardous waste. With the right kind of treatment system, virtually all of the organic components can be destroyed and the inorganic components can be bound up in a non-hazardous matrix.

4. As EPA has recognized in its formal proposals, cement kilns are "ideally suited" devices to treat hazardous wastes. 52 Fed. Reg. 16986, May 6, 1987.

5. Emissions testing data from cement kilns burning hazardous waste consistently shows destruction of hazardous constituents at greater efficiency than required by any existing or proposed federal regulations and in fact at greater efficiency than commercial incinerators.

6. These test results should not be surprising, as cement kilns have several attributes which make them obviously "ideal" devices to handle hazardous waste.

First, in order to produce usable cement clinker, they must maintain very high temperatures with a great deal of stability and with a relatively long residence time for materials passing through the process.

Second, a cement kiln is a natural "scrubber" for many types of hazardous constituents because it must use a great deal of limestone (which converts to lime in the heat of the kiln) in the manufacturing process. The lime neutralizes, absorbs, and/or stabilizes all of the inorganic constituents in the hazardous waste.

Third, while the heat of the kiln effectively destroys the organic hazardous constituents, the inorganics become chemically combined with the cement clinker or dust (residue). These inorganics occur at exceedingly low concentrations and in a non-leachable matrix. EPA has ruled that when kilns burn hazardous waste, both the product and dust are exempt from RCRA. Testing shows that these substances are not hazardous in any event.

7. By contrast, a commercial incinerator will compare unfavorably to kilns in terms of temperature, stability, and residence time. In addition, a commercial incinerator does not benefit from the natural "scrubbing" of lime within its combustion unit.

8. And the residue from a commercial incinerator is far inferior to cement kiln dust. All of the "feedstock" to a commercial incinerator is hazardous waste and the residue (scrubber sludge, ash) will have concentrations of inorganics which are not bound up in a non-leachable medium. In a cement kiln burning hazardous waste for fuel, virtually all the "feedstock" is non-hazardous limestone and clay minerals and the residue will have very low concentrations of inorganics which are bound up in a non-leachable medium.

9. When a cement kiln is burning hazardous waste for energy recovery, it must constantly maintain the integrity of the thermal environment (temperature, residence, stability) or else it will not produce clinker to specification. There is thus additional strong incentive for the kiln operator (which does not exist for the commercial incinerator operator) to insure the integrity of the burning process.

10. There is clearly a capacity shortage for the proper treatment of hazardous wastes in the U.S. Cement kilns have several great benefits in this regard:

(i) Individual kiln capacity. A typical cement kiln is at least 5 times larger than the typical commercial incinerator. Moreover, a typical kiln would operate on a 24-hour per day, 7-day per week basis for all but a 3 or 4 week period each year.

(ii) National capacity. There are over 200 cement kilns in the U.S. today.

(iii) Kilns are already here. One of the most difficult aspects of finding new thermal treatment outlets for hazardous waste is the need to get new burning sites approved. The "NIMBY" syndrome and the site-review and permitting

processes work to assure that a proposed totally-new "greenfield" burning facility may take years to obtain all necessary approvals (if ever).

The 200 cement kilns in the U.S are already sited, and they are already burning. While there may be local concerns about bringing in a new type of fuel, these concerns can usually be addressed much more easily and quickly than concerns over a totally new burning facility.

11. In a broader sense, cement kiln burning for energy recovery dovetails beautifully with national goals of energy conservation and resource recovery. Every Btu provided by HWF replaces an equivalent amount of Btu's from virgin fuels. And under the HWF burning system, society actually uses industrial hazardous wastes in a productive manner. Under the commercial incinerator option, these valuable resources are not being used, they're just being destroyed.

12. From a national air emissions perspective, it makes little sense to encourage the proliferation of new point sources when existing point sources can handle the same capacity without increasing emissions.

13. Cement kiln burning has great potential national economic benefits as generators can pay much less per gallon (conmpared to commercial incineration) to meet their RCRA obligations.

wastes may be generated at a CERCLA site or during a corrective action at a RCRA facility and may require a variance from the treatment standard.

BDAT TREATMENT STANDARDS FOR K021, K025, AND K060

[Nonwastewaters and Wastewaters]

No Land Disposal

m. K044—Wastewater treatment sludges from the manufacturing and processing of explosives.

K045—Spent carbon from the treatment of wastewater containing explosives.

K047—Pink/red water from TNT operations.

EPA has determined that a proposed standard of "No Land Disposal" is appropriate for K044, K045, and K047 wastes. This determination is based on the fact that open burning and open detonation of reactive wastes is not considered land disposal. So long as no reactive constituents remain after detonation, there would be no land disposal of a hazardous waste (40 CFR 261.3(a)(2)(iii)).

EPA's listing of K044, K045, and K047 was based solely on the potential of these wastes to explode. The Agency does not have any data to suggest that any hazardous residuals are present following open burning or open detonation. However, EPA solicits comments providing data that show the presence of BDAT List constituents in treatable concentrations in residuals from managing these wastes in this manner.

In the absence of such data, EPA concludes that the current practices of open burning and open detonation provide complete destruction of the hazardous components of K044, K045, and K047 and subsequent land disposal of residuals is unnecessary. Therefore, EPA is proposing "No Land Disposal" as the requirement for these wastes. This standard is consistent with EPA's general approach in that the standard provides a significant reduction in the hazard presented by these wastes and is based on demonstrated and available technology.

EPA recognizes alternative technologies, such as incineration in specially designed units, is being investigated for wastes similar to K044, K045, and K047. By establishing a treatment standard of "No Land Disposal" rather than allowing the statutory bans to take effect, a petition for a variance from the standard can be submitted to the Agency for evaluation.

BDAT TREATMENT STANDARDS FOR K044, K045, AND K047

[Nonwastewaters and Wastewaters]

[No Land Disposal]

n. Wastes for Which EPA is Proposing No Treatment Standards (Including all Chemical Specific P and U Wastes).

F007—Spent cyanide plating bath solutions from electroplating operations.

F008—Plating bath sludges from the bottom of plating baths from the electroplating operations where cyanides are used in the process.

F009—Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.

F019—Wastewater treatment sludges from the chemical conversion coating of aluminum.

K011—Bottom stream from the wastewater stripper in the production of acrylonitrile.

K013—Bottom stream from the acetonitrile column in the production of acrylonitrile.

K014—Bottoms from the acetonitrile purification column in the production of acrylonitrile.

K017—Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.

K031—By-product salts generated in the production of MSMA (monosodium methanearsenate) and cacodylic acid.

K035—Wastewater treatment sludges generated in the production of creosote.

K084—Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.

K085—Distillation or fractionation column bottoms from the production of chlorobenzenes.

All remaining "First Third" wastes originally listed under § 261.33 (e) and (f) (i.e., those beginning with a "P" or "U").

The Agency has not completed its evaluation of BDAT for these wastes and is not proposing treatment standards at this time. Therefore, the Agency will not promulgate standards for these wastes by their statutory deadline of August 8, 1988. RCRA section 3004(g)(6) (42 U.S.C. 6924(g)(6)) provides that if EPA fails to set treatment standards for any hazardous waste included in the schedule promulgated on May 28, 1986 (51 FR 19300) by the statutory deadline, such waste may be land disposed in a landfill or surface impoundment only if the facility meets certain statutory requirements and only until May 8, 1990. These requirements have been termed the "soft hammer" provisions.

Wastes identified as K011, K013, and/or K014 are wastes generated from the production of acrylonitrile. Information supplied by industry trade associations indicate that many of the facilities are combining K011 and K013 and removing filterable solid materials prior to disposal of the filtrate in underground injection wells. The filtered K011 and K013 residues are often combined with K014 and incinerated in a hazardous waste incinerator. The Agency anticipates that many facilities will submit petitions for evaluation of "no migration" from these underground injection units into which filtrates of K011 and K013 are being injected. At this time, EPA has not completed its investigation of the incineration of the filtered residuals nor has it evaluated a "no migration" petition specific to these waste codes. EPA anticipates that it will establish treatment standards based on analysis of the performance of incineration or based on an extrapolation of data for wastes with similar physical and chemical characteristics. This investigation of K011, K013, and K014 will not be completed in time for proposal and promulgation by the statutory deadline of August 8, 1988. Therefore, until EPA promulgates treatment standards (and until May 8, 1990), the "soft hammer" provisions would apply to these wastes if they are placed in land disposal units.

Finally, EPA notes that many of these wastes, when existing as untreated wastes, are already prohibited from land disposal because they are California List wastes. The liquid cyanide wastes, for example, could exceed the statutory prohibition levels for cyanide. Several of the organic hazardous wastes undoubtably exceed the statutory levels for wastes containing halogenated organics (HOC wastes). To the extent that these wastes are prohibited under the California List rule (52 FR 25773, July 8, 1987) or statutory provisions (RCRA section 3004(d)(2)) and also fall under the soft hammer, the California List prohibitions and treatment standards (if any) apply. Thus, for example, any prohibited HOC wastes that also are First Third "soft hammer" wastes would have to be incinerated before land disposal.

o. Burning in Industrial Boilers and Industrial Furnaces as BDAT for HOC's.

EPA has also decided to repropose for additional comment a notice that appeared in the May 6, 1987, proposed rule on boilers and industrial furnaces burning hazardous wastes. 52 FR 17021.

APPROPRIATE TREATMENT TECHNOLOGIES FOR FIRST THIRD NONWASTEWATERS—Continued

RCRA waste code	Potential California list applicability	Primary applicable treatment technologies
K035	Organics and/or metals	Biodegradation. Ash stabilization. Incineration.
K083		Wet air oxidation.
K086 solv. sludges caust. water		Biodegradation. Ash stabilization.
K106	Mercury	Metals recovery. Metals stabilization.

APPROPRIATE TREATMENT TECHNOLOGIES FOR FIRST THIRD WASTEWATERS

RCRA waste code	Potential California list applicability	Primary applicable treatment technologies
F006	Cyanides	Cyanide destruction.
F007		
F008	Metals	Aqueous metals recovery.
F009		Chromium reduction.
F019		Metals precipitation.
K004	Chromium	Chromium reduction.
K008		Metals precipitation.
K061/all		
K011	Cyanides	Cyanide destruction.
K013		Carbon adsorption.
K014		
K017	Halogenated organics	Steam stripping.
K021		Carbon adsorption.
K073		Chemical oxidation. Biodegradation.
K022	Unlikely to be applicable	Steam stripping.
K035		Carbon adsorption.
K036		Chemical oxidation.
K083		Biodegradation.
K060		Metals precipitation.
K031	Arsenic, Lead or Mercury	Oxidation/reduction.
K046/nonexplosive		Metals precipitation.
K069/all		
K084		
K106		
K046/explosive	Lead	Oxidation of explosive. Metals precipitation.
K085	Halogenated Organics and PCB's	PCB incineration. Biodegradation. Carbon adsorption.
K086 solv. sludges caust. water	Halogenated Organics and/or	Biodegradation. Carbon adsorption.
	Metals	Chromium reduction. Metals precipitation.

9. Burning in Industrial Boilers and Industrial Furnaces as BDAT for Certain California List HOCs

In the May 17 proposal, EPA proposed to amend the § 268.42(a)(2) treatment standard (i.e., incineration) applicable to certain California list HOCs to include burning in industrial boilers and furnaces (53 FR 17604). This approach was based on an earlier May 6, 1987 proposed rule on boilers and industrial furnaces burning hazardous waste (52 FR 17021) and was reproposed in the May 17 proposal because the change in the HOC treatment standard will precede the boiler and industrial furnace rule (which is scheduled for promulgation in 1989) which will establish final permitting and interim status standards for emissions from these devices. The Agency is prepared to accept this discrepancy in timing of the boilers and furnaces rule because these devices are likely to be operated efficiently so as to achieve substantial destruction of the HOCs in the waste. This is because industrial boilers and furnaces have a commercial purpose which requires relatively efficient burning (see § 260.10 definitions of "boiler" and "industrial furnace"). In addition, non-industrial boilers, some of which might be expected to destroy HOCs less efficiently, are essentially prohibited from burning hazardous waste at all (see § 266.31(b)).

While many commenters agreed with the Agency's proposal, EPA received several comments opposed to this approach, stating that the amendment to the HOC treatment standard should be delayed until the industrial boilers and furnaces emissions standards are effective. However, the Agency maintains that the reasoning presented in the May 17 proposal is valid and is promulgating the proposed amendment to § 268.42(a)(2). Today's rule will allow industrial boilers and furnaces burning in accordance with applicable regulatory standards to burn California list HOCs. When Part 266 standards become effective for these devices, the devices thus must meet these standards. Until then, these devices must meet other applicable Federal, State and local standards.

K062 nonwastewaters	Concentration (in mg/l)
Chromium (Total)	0.094
Lead	.37

K071 nonwastewaters	Concentration (in mg/l)
Mercury	0.025

K086 nonwastewaters (Solvent Washes Subcategory) see also Table CCW in § 268.43)	Concentration (in mg/l)
Chromium (Total)	0.094
Lead	.37

K087 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)
Lead	0.51

K101 and K102 nonwastewaters (Low Arsenic Subcategory—less than 1% Total Arsenic) (see also Table CCW in § 268.43)	Concentration (in mg/l)
Cadmium	0.066
Chromium (Total)	5.2
Lead	.51
Nickel	.32

15. In § 268.42 paragraph (a)(2) is revised to read as follows:

§ 268.42 Treatment standards expressed as specified technologies.

(a) * * *

(2) Nonliquid hazardous wastes containing halogenated organic compounds (HOCs) in total concentration greater than or equal to 1,000 mg/kg and liquid HOC-containing wastes that are prohibited under § 268.32(e)(1) of this part must be incinerated in accordance with the requirements of Part 264, Subpart O or Part 265, Subpart O, or in boilers or industrial furnaces burning in accordance with applicable regulatory standards. These treatment standards do not apply where the waste is subject to a Part 268, Subpart C treatment standard for a specific HOC (such as a hazardous waste chlorinated solvent) for which a treatment standard is established under § 268.41(a)).

* * * * *

16. Section 268.43 is amended by adding paragraphs (a) and (b) and Table CCW to read as follows:

§ 268.43 Treatment standards expressed as waste concentrations.

(a) Table CCW identifies the restricted wastes and the concentrations of their associated hazardous constituents which may not be exceeded by the waste or treatment residual (not an extract of such waste or residual) for the allowable land disposal of such waste or residual.

TABLE CCW—CONSTITUENT CONCENTRATIONS IN WASTES

F001, F002, F003, F004 and F005 wastewaters (Pharmaceutical industry)	Concentration (in mg/l)
Methylene chloride	0.44

F006 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Cyanides (Total)	Reserved

K001 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Naphthalene	8.0
Pentachlorophenol	37
Phenanthrene	8.0
Pyrene	7.3
Toluene	.14
Xylenes	.16

K001 wastewaters	Concentration (in mg/l)
Naphthalene	0.15
Pentachlorophenol	.88
Phenanthrene	.15
Pyrene	.14
Toluene	.14
Xylenes	.16
Lead	.037

K015 wastewaters	Concentration (in mg/l)
Anthracene	1.0
Benzal chloride	.28
Benzo (b and/or k) fluoranthene	.29
Phenanthrene	.27
Toluene	.15
Chromium (Total)	.32
Nickel	.44

K016 nonwastewaters	Concentration (in mg/kg)
Hexachlorobenzene	28
Hexachlorobutadiene	5.6
Hexachlorocyclopentadiene	5.6
Hexachloroethane	28
Tetrachloroethene	6.0

K016 wastewaters	Concentration (in mg/l)
Hexachlorobenzene	0.033
Hexachlorobutadiene	.007
Hexachlorocyclopentadiene	.007
Hexachloroethane	.033
Tetrachloroethene	.007

K018 nonwastewaters	Concentration (in mg/kg)
Chloroethane	6.0
1,1-Dichloroethane	6.0
1,2-Dichloroethane	6.0
Hexachlorobenzene	28
Hexachlorobutadiene	5.6
Hexachloroethane	28
Pentachloroethane	5.6
1,1,1-Trichloroethane	6.0

K018 wastewaters	Concentration (in mg/l)
Chloroethane	0.007
Chloromethane	.007
1,1-Dichloroethane	.007
1,2-Dichloroethane	.007
Hexachlorobenzene	.033
Hexachlorobutadiene	.007
Pentachloroethane	.007
1,1,1-Trichloroethane	.007

K019 nonwastewaters	Concentration (in mg/kg)
Bis(2-chloroethyl)ether	5.6
Chlorobenzene	6.0
Chloroform	6.0
1,2-Dichloroethane	6.0
Hexachloroethane	28
Naphthalene	5.6
Phenanthrene	5.6
Tetrachloroethene	6.0
1,2,4-Trichlorobenzene	19
1,1,1-Trichloroethane	6.0

K019 wastewaters	Concentration (in mg/l)
Bis(2-chloroethyl)ether	0.007
Chlorobenzene	.006
Chloroform	.007
p-Dichlorobenzene	.008
1,2-Dichloroethane	.007
Fluorene	.007
Hexachloroethane	.033
Naphthalene	.007
Phenanthrene	.007
1,2,4,5-Tetrachlorobenzene	.017
Tetrachloroethene	.007
1,2,4-Trichlorobenzene	.023
1,1,1-Trichloroethane	.007

K020 nonwastewaters	Concentration (in mg/kg)
1,2-Dichloroethane	6.0
1,1,2,2-Tetrachloroethane	5.6

This proposal would have allowed burning in industrial boilers and furnaces to be considered BDAT for California List HOCs. Although most of the comments supported this approach, EPA is soliciting further comment. We note that this rule might become effective a short time before final permitting and interim status standards for emissions from these devices become effective (current schedules call for the boiler and industrial furnace rules to be promulgated early in 1989). EPA is tentatively prepared to accept this possibility because these devices are likely to be operated efficiently so as to achieve substantial destruction of the HOCs in the waste. This is because industrial boilers and industrial furnaces have a commercial purpose which requires relatively efficient burning (see § 260.10 definitions of "boiler" and "industrial furnace" which require, for boilers, energy recovery efficiency of 60 percent and 75 percent export and utilization of recovered energy, and, for industrial furnaces, that the device be an integral part of a manufacturing process). In addition, non-industrial boilers, some of which might be expected to destroy HOCs less efficiently, are essentially prohibited from burning hazardous waste at all. Section 266.31(b).

The rule as proposed would amend § 268.42(a)(2) to say that boilers and industrial furnaces burning in accordance with applicable regulatory standards could burn HOCs. When Part 266 standards exist for these devices, the devices thus must meet these standards. Until then, they would have to meet other applicable Federal, state, and local standards.

11. Requirement that Hazardous Waste Derived Products Used in a Manner Constituting Disposal Meet BDAT in Order to Remain Exempt from Regulation

Under the Agency's rules, hazardous secondary materials being used in a manner constituting disposal are defined as solid and hazardous wastes. 40 CFR 261.2(c)(1). Examples are use of hazardous waste as dust suppressants, road base material, or fertilizers. Products produced from hazardous secondary materials, which are placed on or applied to the land, are likewise defined as solid and hazardous wastes (assuming the waste-derived product remains hazardous, per the definitions in § 261.3). 40 CFR 261.2(c)(1)(B). If the hazardous waste component has "undergone a chemical reaction in the course of producing the product so as to become inseparable by physical means", then such waste-derived products used in a manner constituting disposal are not presently subject to federal regulation. 40 CFR 266.20(b). Commercial waste-derived fertilizers are likewise presently exempt from Federal Subtitle C regulation. The question we are addressing here—and also addressed in a more specific content for waste-derived fertilizers produced from waste K061 in the April 8, 1988 proposed rule—is whether waste-derived products whose placement on the land is presently exempt from Federal regulation should be allowed to be placed on the land if they don't meet the BDAT treatment standards for each prohibited hazardous waste that they contain.

The Agency is proposing to qualify the exemption from regulation for hazardous waste-derived products that are used in a manner constituting disposal (§ 266.20(b)) to provide that such waste-derived products must meet any (and all) applicable treatment standard(s) in Subpart D of Part 268 for the waste. The Agency believes that this approach is warranted for the following reasons.

First, this type of use constituting disposal consists of placing wastes directly on the land, a form of land disposal under section 3004(k). Under the land disposal prohibition program, untreated hazardous wastes are not to be placed directly on the land (i.e., land disposed) except in "no migration" units.

Second, the Agency (with few exceptions) has not evaluated whether the placement of hazardous waste-derived products on the land is safe. The Agency has merely deferred regulation while it studies the problem to determine an appropriate regulatory regime. See 50 FR 646–647 (January 4, 1985). Thus, continuation of the current exemption from regulation in § 266.20(b) appears to directly thwart the policy, and indeed the express command, of the land disposal prohibition statutory provisions. There is not even a countervailing environmental objective at stake since the Agency has no data demonstrating the safety of most of these practices. Indeed, the existing exemption in § 266.20(b) may create an incentive to avoid treatment (or to avoid BDAT-level treatment) and to utilize this form of disposal instead. It consequently appears to the Agency that all hazardous waste-derived products, in order to be exempt from regulation when they are placed on the land, should have to meet any applicable treatment standard for the waste established in Subpart D of Part 268. At that point, even though hazardous wastes were being placed on the land, they at least would be meeting the treatment standard required for all other wastes of the same type.

The Agency consequently solicits comment on whether the existing exemption in § 266.20(b) should be conditioned by requiring that any such waste-derived product meet applicable treatment standards. EPA notes further that if the Agency adopts this proposal, it would not necessarily be finding that further regulation of this type of use constituting disposal is unnecessary, or finding that use constituting disposal of waste-derived products that meet the treatment standard is necessarily safe. Disposal of hazardous waste would still be occurring in unregulated units. Rather, this type of placement on the land would at least be meeting the minimum statutory requirements in section 3004 (d), (e), (g) and (m).

In order to implement this type of requirement, the Agency would need to have some type of tracking scheme in place, and some means for persons producing waste-derived products to demonstrate that they are meeting the applicable treatment standard. Of course, hazardous wastes utilized to produce waste-derived products that are used in a manner constituting disposal are already subject to regulation until the waste-derived product is produced, and so are subject to § 268.7 tracking controls (as well as the other applicable Subtitle C requirements) until that point. The issues on which we are soliciting comment are how should the producer document that the waste-derived product meets BDAT—for instance, is there any reason not to follow the testing procedures in § 268.7(b)—and whether any further tracking to the ultimate user (as occurs normally under § 268.7(b) (1) and (2)) is needed.

Finally, the Agency reiterates that there does not appear to be any question that waste-derived products that are placed on the land are "solid wastes" under RCRA. Nothing in *American Mining Congress* v. *EPA*, 824 F. 1177 (D.C. Cir. 1987) is to the contrary. The hazardous wastes in the waste-derived product are being gotten rid of by disposing of them, and so are being discarded. See generally, 53 FR 521–522 (January 8, 1988), and underlying record materials.

The following examples show how the Agency envisions the proposal would operate.

1. A generator generates a listed wastewater treatment sludge which is prohibited from land disposal and for which the Agency has established treatment standards. The sludge is