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United States Environmental Protection Agency
Washington, D.C. 20460
Office of Solid Waste and Emergency Response

August 11, 1992

MEMORANDUM

SUBJECT: Combined Operation of the Resource Recovery Kilns and Cement Kilns at Giant Cement Company, Harleyville, South Carolina

FROM: Jeffery D. Denit, Deputy Director
Office of Solid Waste

TO: Donald J. Guinyard, Director
Waste Management Division
Region IV

This is in response to your January 8, 1992, memorandum requesting review of the tentative Regional decisions on the issues presented in Giant Cement Company's October 1, 1991, position paper. Following are the OSW interpretations on each of the four issues raised.

Issue 1: Regulatory Status of the Cement Kilns

We agree with your interpretation that the "resource recovery kiln"/cement kiln systems should be regulated under the BIF (boiler and industrial furnace) standards, if operated in the manner described in your memorandum and Giant's position paper. (That is, each resource recovery kiln burns contaminated soils, and possibly other solid wastes, and both the treated solids and the off-gas are fed into a cement kiln.) For systems of two or more hazardous waste treatment units in series, our general guideline is that a case-by-case determination of how the overall system is classified and what standards and permit conditions are applied should be based on the dominant design, operating, feed, and emissions characteristics of the system, and the most specific standards applicable to that type of system.

In the Giant situation, it appears that the resource recovery kiln and the cement kiln operate as part of one overall system. The BIF standards would be applicable because they are the most

specific standards applicable to this system. Portions of the BIF standards are specifically tailored to the operating characteristics of cement kilns. For example, the BIF rule contains provisions related to reading of hazardous waste at points other than the hot end of the kiln and includes hydrocarbon standards which take into account organics being volatilized from raw materials. These provisions may relate to the Giant system, but are not addressed in the incinerator regulations. Of course, additional operating conditions would likely need to be added to address feed rates, temperatures, etc., in the desorber.

You also state that Giant argues that off-gases from the resource recovery kilns fed to the cement kiln cannot be classified as a hazardous waste. We agree with the Regions' interpretation that this distinction is irrelevant when determining our regulatory authority over the gases. Off-gases from the resource recovery kilns are regulated under RCRA since they originate from treatment of hazardous waste.

Issue 2: Carbon Monoxide Testing

As previously stated, we agree with your position that the cement kilns and resource recovery kilns operating in series should be regulated under the BIF regulations. Therefore, any approach provided under the BIF regulations to establish a carbon monoxide limit may be considered, including the alternate hydrocarbon approach.

Issue 3: Land Disposal Testing

You raised the issue of how treatment in the cement kiln of the solids and the gases discharged from the resource recovery kilns affect whether the product from the cement kiln is considered to be a waste-derived product.

Solids

We agree with most of your interpretation regarding the effect of treating solids on the classification of the product, with one clarification noted below. Environmental media (e.g., soils, groundwater) contaminated with listed hazardous waste must be managed as if they were hazardous wastes until they no longer contain the listed waste, or are delisted. The Regions or authorized States may determine, on a case-specific basis, at what levels contaminated environmental media no longer contain the hazardous waste. As discussed in the attached June 19, 1989, letter from Jonathan Cannon to Thomas Jorling, these levels may be

health-based levels derived by assuming direct human exposure. We would like to clarify, however, that this determination must consider all Appendix VIII constituents present in the listed waste, rather than just those constituents for which the waste was listed, as stated in your memo.

Although Giant's situation is complicated by the fact that there are two units combined into one system, we believe it may be possible to determine whether the soils leaving the resource recovery kiln contain hazardous waste prior to entering the cement kiln. In order for this determination to be meaningful and enforceable, it will be necessary to develop a sampling and analysis regime that must be adhered to by the facility in order to ensure that the media no longer contain hazardous waste after treatment in the resource recovery kiln. This determination will be more difficult and complicated if the facility accepts media with a wide variety of waste codes, in varying proportions and concentrations. It is not clear whether Giant plans to treat only contaminated media originating from a limited set of waste codes, or whether they plan to burn a wide variety of waste codes including actual wastes (see footnote 1), in the resource recovery kiln. We are concerned that under the Part A already submitted, there is no limitation on the variety of wastes and waste codes which Giant could accept and treat.

The Region or State can use existing policy memoranda regarding the "contained-in" policy as guidance in setting the appropriate health-based levels to indicate when the soils no longer contain hazardous waste. However, there must be an enforceable mechanism which specifies the conditions necessary for the facility to demonstrate that the soil meets these levels on a regular basis, similar to the delisting program. In the future, we expect that the Hazardous Waste Identification Rule (HWIR) may provide quantitative criteria and specific sampling and analysis requirements that could be applied to this situation. In setting quantitative criteria, you may in the interim use generally available Agency numbers, such as the soil levels in the proposed Subpart S corrective action rule (55 FR 30798, July 27, 1990) or numbers derived from IRIS through the use of standard exposure assumptions.

If it is determined that treated environmental media from the resource recovery kilns no longer contain hazardous wastes, then the "decontaminated" solids need not be managed as a hazardous waste, and feeding these materials to the cement kiln would not cause the cement product to be a "waste-derived product" subject to the provisions of §266.20(b).

Gases

Although, as stated earlier, the off-gas from the resource recovery kiln is regulated, our interpretation is that feeding the off-gas into the Giant cement kiln would not cause the cement produced in the kiln to be subject to the §266.20(b) product criteria.

Generally, when listed hazardous waste is burned in a cement kiln for any purpose other than solely for energy recovery (i.e., as an ingredient or for destruction) and the product is then placed on the land, under §261.2(c)(1)(i)(B) and the derived-from rule (§261.3(c)(2)(i)), the cement product is a solid and hazardous waste and is subject to §266.20 (see footnote 2). However, as indicated in the preamble to the first third land disposal restrictions rule, when listed hazardous waste is burned in an industrial furnace for energy recovery, the product produced is not subject to §266.20 because the Agency concluded that due to the process chemistry involved the constituents in the fuel do not partition to the product and therefore the product does not "contain" the hazardous waste (see 53 FR 31197, August 17, 1988).

In the Giant case, because the material fed to the cement kiln is a gas, and because it is fed similarly to fuels (i.e., to the hot end of the kiln), we believe that what is occurring in the Giant system is more analogous to burning of waste fuels than it is to what normally occurs when materials are burned for destruction in a cement kiln. Specifically, it is expected that the feed rate of hazardous constituents contributed by the gas stream would be lower than that contributed by the hazardous waste fuel, and that the hazardous constituents in the gas stream are no more likely to be contained in the cement product than those in the hazardous waste fuel. Thus, unless the facts indicate otherwise, as with hazardous waste fuels we believe that burning of the off-gas stream in the cement kiln should not cause the cement product to be a waste-derived product subject to the §266.20(b) criteria because the product is not expected to contain the hazardous waste.

Issue 4: Regulatory Status of Clinker

If, based on the factors discussed under "Solids" in Issue 3, it is determined that the cement kiln product is a waste derived product, §266.20(b) would apply. Under §266.20(b), hazardous waste-derived products used in a manner that constitutes disposal are not presently subject to regulation if these wastes have undergone a chemical reaction so as to become inseparable by

physical means, and if such products meet applicable land disposal restrictions treatment standards in Subpart D of Part 268 (or applicable prohibition levels in §268.32 or RCRA Section 3004(d) where no treatment standards exist). You proposed that any analysis required under §266.20(b) be conducted on the commercially sold cement, rather than the clinker. Section 266.20 states that the product must meet the above criteria. In most cases the cement is the final product which is sold to the consumer and placed on the land, and this material should meet the applicable land disposal restriction requirements.

However, in some situations it may be preferable and acceptable to test the clinker to determine whether the cement would meet the §266.20(b) criteria. We understand there may be cases where a cement kiln facility sells its clinker to another facility which grinds and mixes it with gypsum to produce cement. In such a case, it may be preferable to test the clinker before it goes off-site. Further, waste-derived products which do not meet the criteria in §266.20(b) must be managed as hazardous waste. Thus, if the clinker is not determined to meet these criteria prior to grinding, clinker storage could be subject to RCRA permitting. Finally, in cases where demonstration of compliance with the 266.20(b) criteria (applicable land disposal restrictions) would include testing using the Toxicity Characteristic Leaching Procedure, we believe that the particle size reduction step of the procedure would ensure that results for the clinker would be representative of the cement's conformance with these criteria, provided the cement contains no hazardous waste-derived materials other than the ground clinker. For these reasons, we believe it would be reasonable to consider the clinker to be the facility's product, and to allow the §266.20(b) criteria to be demonstrated on the clinker.

In addition, as you stated, 40 CFR 268.7(b)(7) requires that for each shipment of waste-derived product to a receiving facility, the waste-derived product producer must submit to the Regional Administrator a certification as described in §268.7(b)(5) and a notice which includes the information listed in §268.7(b)(4) (except the manifest number). The producer must also keep records of the name and location of each entity receiving the hazardous waste-derived product. It is not necessary for the producer to send the certification notice to the receiving facility.

Finally, please note that the derived-from and mixture rules were reinstated on an interim basis (effective until April 28, 1993) pending notice and comment on those provisions (57 FR 7628 7633, March 3, 1992). In addition, as illustrated by the Giant

case, the management of hazardous waste in cement kilns involves many complex and difficult issues. We are currently beginning a study of these issues as part of our RCRA Reform Initiative for which we will be gathering a wide range of data including information on industry practices. I anticipate that discussion of these issues will continue as we progress with the study and I welcome your thoughts and ideas.

We commend Region IV for its thorough analysis of these complex issues. If you have further questions, feel free to contact Sonya Sasseville at (202) 260-3132.

cc: Incinerator Permit Writers' Workgroup; Dev Barnes; Matt Hale; Matt Straus; Elizabeth Cotsworth; Dave Bussard; James Michael; Charlotte Mooney; Steve Silverman

1 It should be noted that if listed hazardous wastes (rather than media contaminated with listed wastes) are treated in the resource recovery kilns, the recovery kiln residues would be hazardous waste pursuant to the derived-from rule.

2 Such hazardous waste-derived products used in a manner that constitutes disposal are not presently subject to regulation if they meet the criteria under §266.20(b).

Attachment