United States Environmental Protection Agency

Office of Solid Waste and Emergency Response

EPA

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**TITLE:** Dilution of a Characteristic Waste as a Treatment Process to Qualify for the §264.340 Exemption

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Regulations: 40 CFR 264.340

Subject: Dilution of a Characteristic Waste as a Treatment Process to Qualify for the §264.340 Exemption

Addressee: James Scarbrough, Chief, Waste Management Branch, Region IV

Originator: John H. Skinner, Director, Office of Solid Waste

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Summary:

Dilution of a characteristic waste by mixing with other hazardous and non-hazardous waste is an acceptable treatment process under RCRA. Dilution is considered to be treatment, since the definition of treatment includes: ". . . any method . . . designed to change the physical, chemical, or biological character or composition of any hazardous waste . . . so as to render such waste non-hazardous, or less hazardous . . ."

Dilution is also an acceptable treatment technique for a D001, D002, or D003 waste stream with significant concentrations of Appendix VIII constituents. If after treatment, the wastes are rendered non-EP toxic or the concentrations of Appendix VIII constituents are insignificant, then the incineration of these wastes will either not be regulated under RCRA or may qualify for the exemption for a characteristic waste according to §264.340(c).

In order to establish compliance with the 264.340 exemption, applicant s must submit:

a) A list of all Appendix VIII constituents reasonably expected to be in the waste;

b) A justification for the exclusion of any Appendix VIII constituents cited in (a), indicating that the particular Appendix VIII constituents are not used as a raw material, are not a constituent or contaminant in the raw materials, and are not products, by-products, or intermediates in the production process; and

c) An analysis of the waste for each of the constituents identified in (a).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 10 1985

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Region IV's Application of the 40 CFR 264.340 Exemption to du Pont's Plant -- EPA I.D. Number NCD047369046

FROM: John H. Skinner, Director
Office of Solid Waste (WH-562)

TO: James Scarbrough, Chief
Waste Management Branch, Region IV

I am responding to your memorandum of December 11, 1984, raising two issues in North Carolina's processing of du Pont's Cape Fear permit application. The two issues are whether dilution is an acceptable means of converting hazardous wastes that do not qualify for the exemption at 40 CFR 264.340 into wastes that do qualify; and what information is necessary to demonstrate compliance with this exemption.

Herb Miller, of your staff, discussed the first issue with Alan Corson and Randy Chrismon. At that time, both Alan and Randy agreed that dilution can be used to treat a waste exhibiting any of the characteristics of ignitability, corrosivity, reactivity or EP toxicity. Dilution by mixing with other hazardous and non-hazardous waste is an acceptable method of treatment that is subject to permit conditions, as is proposed in the draft du Pont permit. Treatment is defined as "... any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste... so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of...."

Also discussed during the conversation among Alan, Randy, and Herb was whether dilution could also change a characteristic waste stream (either D001, D002, or D003) with significant concentrations of Appendix VIII hazardous constituents into a characteristic waste stream with insignificant concentrations of such constituents and thereby qualify for the exemption at 40 CFR 264.340. At the time of their discussion, both Alan and Randy thought that this may not be acceptable. However, after consideration of the information you sent in your memorandum and using the analysis outlined above, we have now concluded that dilution is also an acceptable treatment technique for a D001, D002, or D003 waste stream with significant concentrations of Appendix VIII constituents.

According to the du Pont permit application, 100 gallons of hazardous waste would be blended with 2700 gallons of solid waste to produce a waste that is 3.5% of the original concentration. According to the accompanying information, the waste streams #20 and #24 (which are hazardous only because of EP toxicity) would be sufficiently diluted by the blending to no longer be EP toxic. The burning of these wastes, after dilution, would not be subject to RCRA since the wastes are no longer hazardous even though they may contain relatively high concentrations of Appendix VIII constituents.

Samples #30 and #40 apparently do not meet any hazardous waste criteria. Ignitability is determined by use of the Setaflash or Pensky-Martens closed cup or equivalent methods. According to these methods, a flash outside the cup, such as experienced by du Pont, does not render a sample ignitable. If you have other data indicating that samples #30 and #40 are RCRA ignitable wastes, then blending or dilution would be appropriate to reduce the Appendix VIII constituents below concentrations of concern. In addition, sample #40 is apparently the analysis of a blended mixture, which has between 111 and 140 ppm of a chlorinated fluorocarbon. This concentration of Appendix VIII hazardous constituents may qualify for a 40 CFR 264.340(c) exemption.

The material included with your memorandum indicated that du Pont also plans to incinerate EP toxic spill residues. This material is not blended prior to incineration but du Pont claims that "the mixture is likely no longer EP toxic." The du Pont company must ensure that the EP toxic spill residues will never be EP toxic or must obtain a permit to incinerate these hazardous wastes. As with the other waste streams, du Pont may dilute this waste stream to ensure that it is no longer EP toxic.

Your memorandum also asks what minimum information is necessary to establish compliance with the 40 CFR 264.340 exemption. As your memorandum correctly identifies, an applicant must submit:

a. A list of all Appendix VIII constituents which would reasonably be expected to be in the waste.

b. A justification for the exclusion of any Appendix VIII constituents from the list in (a).

c. An analysis of the waste for each of the constituents identified in (a).

The justification for excluding wastes from the list identified in (a) must indicate that the particular Appendix VIII constituents are not used as a raw material, are not a constituent or contaminant

in the raw materials, and are not products, by-products or intermediates in the production process. The applicant may demonstrate this by describing the process which generates the waste and listing the chemical constituents of the raw material, catalysts, expected intermediates, products, and by-products.

It appears you also asked the applicant to submit calculations of the expected concentration of Appendix VIII constituents in the stack gases based on the constituent's concentration in the waste feed. Although there is no specific requirement for this information in the regulations, the Region is within its discretion to request this material. The information should assist the Region in determining whether the concentration of Appendix VIII hazardous constituents is significant.

To summarize the conclusions in this memo, dilution of a characteristic waste is a treatment process under RCRA. Generally, this treatment will occur in tanks or containers which will be permitted under Subpart I or J of Part 264, and subject to the general facility standards of RCRA. If, after treatment, the wastes are rendered non-EP toxic or are D001, D002, or D003 waste with insignificant concentrations of Appendix VIII constituents, then the incineration of these wastes will either not be regulated under RCRA or may qualify for the exemption for characteristic wastes at 40 CFR 264.340(c). This exemption will be granted, at the Director's discretion, if the waste does not pose a threat to human health and the environment when burned in an incinerator. If the treatment process reduces the concentration of Appendix VIII constituents so that they are undetectable using the appropriate procedures in SW-846 (or equivalent procedures), then the facility must be granted the exemption at 40 CFR 264.340(b).

Thank you for your memorandum raising these important issues. If you have any questions please contact Irene Horner (FTS 382-4304) regarding waste characterization issues or Randy Chrismon (FTS 382-4691) regarding incineration issues.

Attachments

cc: Waste Management Branch Chiefs
Regions I-III, V-X
Bruce Weddle
Alan Corson
Peter Guerrero

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE DEC 11 1984

SUBJECT Region IV's Application of the 40 CFR §264.340 Exemption from a Trial Burn to E.I. DuPont de Nemours and Company, Cape Fear, North Carolina Plant - EPA I.D. Number NCD 047 369 046

FROM

Chief, Residuals Management Branch
Waste Management Branch

TO

John H. Skinner, Director
Office of Solid Waste

We are requesting your written concurrence by January 2, 1985 with our approach on two important permitting issues that arose from our overview of North Carolina's processing of Dupont's application and which are discussed below:

1. We need written confirmation of the verbal agreement given in the November 7, 1984 telephone conversation when Alan Corsan and Randy Chrismon agreed with Herb Miller of my staff that:

   Dilution by mixing with other hazardous and non-hazardous wastes is not an acceptable means of converting hazardous wastes that do not qualify for the exemption (40 CFR §264.340) into wastes that do qualify.

2. We also request your agreement that at a minimum, any applicant requesting the exemption must supply the following information for each waste stream subject to the exemption. (See Comment two of attachment 4.)

   a. A list of Appendix VIII constituents which would reasonably be expected to be in the waste.

   b. Justification for the exclusion of any Appendix VIII constituents from the list in a.

   c. An analysis of the waste for each of the constituents identified in a.

   d. A summary of the steps taken to develop the list in a. and/or the justification in b. The summary must include a description of the process which generates the waste, and a list of the chemical constituents of raw materials, catalysts, expected intermediates, products, and by-products involved.

   e. A calculation of the concentration in the stack gases of each Appendix VIII constituent identified in c., above, based on their concentrations found by that analysis. (The calculations should assume the following destruction efficiencies: 0%, 50%, 99.0%, and 99.99%.)

We have attached the following items:

(1) Cover sheet and pages 14 and 15 of the state prepared preliminary draft permit which would have specified treatment of hazardous wastes by dilution.

(2) Sections D-2c, D5b(1) and D5b(2) of Dupont's application that were referenced in the draft permit regarding dilution of hazardous wastes.

(3) Dupont's Justification for Incinerator Exemption--Section D-3c, Exhibit IV and Exhibit V of the application.

(4) Region IV's November 23, 1984 letter and comments to North Carolina on the subject application.

Thank you for your assistance in these important permitting issues. If you have any questions, please call Mr. Herb Miller at FTS 257-3067.

James H. Scarbrough

James H. Scarbrough

cc: Allan Corson
Randy Chrismon

MAR 20 1985

Mr. Allan S. Abramson, Director
Division of Environment
Kansas Department of Health and Environment
Forbes Field
Topeka, Kansas 66620

Dear Mr. Abramson:

Your February 27, 1985, letter points out a topic which has already been subject to review. Let me augment the points that the January 10, 1985, memorandum covered concerning the du Pont permit application submitted to Region IV; this led to the conclusion that dilution was an acceptable treatment technique for waste streams prior to incineration. Nothing in the RCRA regulations prohibits dilution as a treatment method; indeed, there are times when dilution is a necessary step in a treatment train that renders hazardous waste nonhazardous.

The May 19, 1980, Federal Register discussed provisions of the definition of hazardous waste outlined in 40 CFR 261.3.

> The waste mixtures provision is a clarification which has been added in response to inquiries about whether mixtures of hazardous and nonhazardous wastes would be subject to Subtitle C requirements. This is a very real issue in real-world waste management, since many hazardous wastes are mixed with nonhazardous wastes or other hazardous wastes during storage, treatment, or disposal...
>
> Waste mixtures containing only wastes which meet the characteristics are treated just like any other solid waste, i.e., they will be considered hazardous only if they exhibit the characteristics. EPA recognizes that this may not be an altogether satisfactory regulatory approach. While it would no doubt encourage some desirable mixing of wastes, it would also allow some wastes (principally wastes caught by EPA's extraction procedure) to escape regulation merely by being mixed with other wastes or other materials. We know of no solution to this problem which does not create major inconsistencies in the way wastes are determined to be hazardous under Subpart C of this regulation. (45 FR 33095.)

Sections 261.3(c)(1) and (d)(1) say that an unlisted hazardous waste remains a hazardous waste until it no longer exhibits any of the characteristics identified in Subpart C. After sufficient dilution, a characteristic waste is no longer hazardous unlike listed waste mixtures which must still obtain exclusions according to §260.20 and 260.22 in order to be nonhazardous.

Dilution is considered to be treatment, since the definition of treatment includes "...any method...designed to change the physical, chemical, or biological character or composition of any hazardous waste...so as to render such waste nonhazardous, or less hazardous..." In the case of ignitable, corrosive, reactive and EP toxic waste, dilution performed according to the permit conditions can effectively render waste nonhazardous.

In the du Pont request, after dilution, ignitable waste will have concentrations of Appendix VIII constituents that fall below the suggested 100 ppm range acceptable for the §264.340(b) exclusion discussed in the June 24, 1984, preamble (47 FR 27525). In their February 11, 1985, followup letter, Region IV requested du Pont to provide further classification of the Appendix VIII constituents remaining in the ignitable waste in order to determine whether or not the incinerator can qualify for the type of reduced Subpart O permit covered by the §264.340(b) exclusion.

As you know, a State with interim status may be more stringent than RCRA. Since Kansas has interim status, you may choose to have stricter regulations than EPA, as the §271.1(i) and §271.121(i) standards allow. Indeed, if you can distinguish between desirable, necessary dilutions, and dilutions intended to avoid regulation, we would like to benefit from your insight. Dilution is a treatment process that can be permitted under Federal regulations unless our standards are changed to identify unacceptable forms of treatment.

If you have any further concerns regarding this topic, please feel free to contact Alan Corson or Irene Horner of my staff at (202)382-4770.

Sincerely yours,

John H. Skinner
Director
Office of Solid Waste

bcc Hazardous Waste Branch Chiefs, Regions I-X
Gene Lucero. OWPE
Peter Guerrero, Permits