9433.1990(04)

CONOCO'S NO-MIGRATION PETITION DENIAL

Mr. Dennis R. Parker
Conoco Inc.
Post Office Box 1267
Ponca City, Oklahoma 74603

Re: No-Migration Petition submitted for Conoco Inc.'s Ponca City, Oklahoma Land Treatment Facility (F-90-NPCP-FFFFF)

Dear Mr. Parker:

I am writing in regard to your October 12, 1989 "no-migration" petition, which requests a variance under 40 CFR 268.6 to allow Conoco Inc. to continue the land treatment of restricted wastes (EPA Hazardous Wastes Nos. K049, K051, K052, and D001) at Conoco's Ponca City, Oklahoma land treatment facility (LTF). Based on our evaluation of your petition, we believe that Conoco's soil-pore liquids and ground-water monitoring systems are inadequate for the purposes of a no-migration variance and that Conoco has failed to demonstrate, to a reasonable degree of certainty, that constituents will not migrate beyond the land treatment unit boundaries at hazardous concentrations. As a result of our evaluation, we will recommend to the Assistant Administrator for Solid Waste and Emergency Response that the petition be denied.

Our decision to recommend denial of the petition is based on the lack of a monitoring plan that detects migration at the earliest practicable time. In addition, the information presented in the petition indicates that migration of hazardous constituents beneath the treatment unit has already occurred. Lastly, we believe that conoco has failed to provide a comprehensive characterization of the disposal unit site. We discuss the results of our evaluation below.

Soil-Pore Liquid Monitoring System

Conoco has failed to meet the requirements of 40 CFR §§268.6(a)(4). Specifically, the facility is required to have a monitoring system capable of detecting migration of hazardous constituents from ??? LTF at the earliest extent practicable.

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program. Conoco's petition indicates that only four lysimeters were installed in the 38 acre LTF (of which approximately 24 acres are actively used) (Figure 5-19, "Location of Monitoring Wells, Lysimeters, and Land Treatment Demonstration (LTD) Pilots, page 84). This means one lysimeter monitors approximately six acres of active area. In addition, Figure 5-19 indicates that the four lysimeters were installed in the upgradient corner of Plot 1, the upgradient edge of Plot 7, and the two upgradient corners of Plot 9. Based on the locations of these lysimeters (assuming that wastes are actively applied in the LTD plots), we are concerned that these four lysimeters are subject to edge effects (e.g., reduced loadings) and, therefore, do not believe these lysimeters are capable of collecting representative samples of the active areas within the LTF. Furthermore, as a result of Conoco's anticipated closure of Plot 9, in the future there will only be two lysimeters installed at the LTF.

Given the amount of time generally required for a constituent to be detected at a downgradient ground-water monitoring well (especially an inorganic constituent), lysimeters are important in detecting constituent migration at the earliest practicable time. Neither current reliance on four lysimeters nor Conoco's reduction to two Lysimeters in the future fulfill the requirements of 40 CFR 268.6(a)(4).

Ground-Water Monitoring System

Conoco has further failed to meet the requirements of 40 CFR §268.6(a)(4) as the result of the anticipated closure of Plot 9, which will result in the downgradient ground-water monitoring well (8A) being located more than 610 feet from the "new" outer edge of the LTF (Plot 7). The magnitude of the distance between the unit and the downgradient monitoring well means, once again, that Conoco's ground-water monitoring system for the Ponca City LTF will be incapable of detecting hazardous constituent migration at the earliest practicable time.

In addition, Conoco stated in its February 6, 1990 letter to Ms. Karen Dihrberg (Oklahoma State Department of Health (OSDH)) that "a remediation plan is being developed for a part of Plot 9 where hydrocarbons and phenolics have been detected below the treatment zone." specifically, cresols, phenol, benzene,

toluene, ethyl benzene, and xylenes were detected below the treatment zone (BTZ) at the concentrations summarized below in Table 1.

TABLE 1

Concentrations of Organic Constituents
Detected in the BTZ (ug/kg)

Constituents	Bore Hole	Concentrations
Cresol	BH-10-4	9,000
	BH-17-4	35,000
Cresol, o	Plot 9	43,000
Cresol, p	Plot 9	96,000
Phenol	BH-10-4	5,000
	BH-17-4	19,000
	Plot 9	210,000
Benzene	BH-11-4 [1]	300
Ethyl benzene	BH-11-4 [1]	14,900
Xylene, m & p	BH-11-4 [1]	119,200
Xylene, o	BH-11-4 [1]	39,500

KEY: Bore Hole data identified as "BH" were obtained from the December 11, 1989 letter from D.R. Parker (Conoco) to Mr. F. Rood (OSDH).

Bore Hole data identified as "Plot 9" were obtained from the September 13, 1989 letter from D.R. Parker (Conoco) to Mr. F. Rood (OSDH).

The presence of these organic constituents below the treatment zone and other organic and inorganic constituents in the zone of incorporation and treatment zone presents several problems. First, if these or other constituents continue to migrate and are detected at the downgradient monitoring well (8A), it will be impossible for the Ponca City ground-water monitoring system to determine whether these hazardous constituents migrated from the active or inactive plots. Second, if Conoco were to install a new downgradient monitoring well,

[1] Text presented by Conoco in their December 11, 1989 letter indicated that detectable levels of volatile organic constituents were presented in two bore holes (BH-11 and BH-18). Tabulated data were not received for BH-18.

this well would have to be installed inside Plot 9. As a result, the new well would drilled through contaminated media and could possibly act as a conduit for additional ground-water contamination. Again, we believe Conoco would be unable to distinguish whether the contamination resulted from hazardous constituents migrating from the active or inactive plots. Lastly, the detection of the constituents listed above in Table 1 in the soils beneath the treatment unit raises the possibility that these constituents may be contained in the soil-pore liquids and the ground water beneath the other plots at the LTF. As discussed above, Conoco's deficient soil-pore liquid monitoring system does not allow for the early detection of these constituents. EPA, therefore, is unable to clearly conclude whether these constituents are absent from the soil-pore liquids and ground water beneath the LTF. For the Agency to determine, with a reasonable degree of certainty, that no migration of hazardous constituents has occurred, we must be able to clearly conclude that these constituents are not present in the soil-pore liquids and ground water.

Our concerns that the present ground-water monitoring system is inadequate are also supported by the following information regarding the presence of hydrocarbon plumes and monitoring well construction. According to a memorandum sent by Mr Bill Honker (EPA Region VI) to Mr. Jim Michael (EPA HQ) dated November 27, 1989, there are numerous hydrocarbon plumes in the ground water beneath the facility. Previous correspondence between the OSDH and Region VI (dated November 2, 1988) stated that one of the upgradient monitoring wells at the LTF was filled with an oily fluid, which we note Conoco contends was not released from the LTF, but rather that a hydrocarbon mound was encroaching upon the LTF. Nonetheless, we are concerned that the hydrocarbon plum(s) eventually will influence all of the upgradient monitoring wells and that Conoco will no longer be able to clearly compare the ground-water quality at monitoring wells 8A, 11, 13, and 14 to the background levels as specified in Provision VI(5)(b) of the facility's permit. Furthermore, with time, as the hydrocarbon plume continues to move beneath the LTF, it will become increasingly difficult for Conoco to differentiate whether hydrocarbons detected in the monitoring program are coming from the hydrocarbon plume or the wastes applied at the LTF. Again, for the Agency to determine with a reasonable degree of certainty, that migration of hazardous constituents has not occurred, we must be able to clearly conclude that any

hydrocarbons (if detected) originated from a hydrocarbon plume and not the wastes applied at the LTF.

Lastly, in the petition, Conoco has assumed that the vast majority of contaminants found in a refinery are lighter than water and will be found at the unsaturated zone/water table interface (Attachment 9, Page 10-3). The petition, however, indicates that the monitoring wells are screened in the basal coarse sand and gravel layer of the alluvial terrace sediments overlying the shale bedrock. The depth at which the monitoring well screens were installed, therefore, does not allow for the detection of the "light" contaminants which Conoco assumed would be found at the unsaturated zone/water table interface. These inadequacies further impede the ability of the present ground-water monitoring system to fulfill the requirements of 40 CFR §268.6(a)(4).

Ability to Prevent Future Migration

Conoco's December 11, 1989 letter to the OSDH provided a rationale and procedure for how Conoco will prevent future overloading and subsequent migration of phenolic compounds. We do not believe that the rationale provided by Conoco, or future testing, as proposed by Conoco, will prevent future migration of phenolic compounds or hydrocarbons (benzene, ethyl benzene, toluene, and xylenes) below the treatment zone.

First, analytical data provided in the petition (Table 3-6, page 20) indicated that phenol was not present in any of the wastes sampled using the following detection limits: 10, 20, 100, 200, and 990 ug/kg. If these data are representative of the wastes managed at the LTF, how can Conoco demonstrate which waste had or will exhibit elevated levels of phenol. Second, we note that many of the wastes sampled and analyzed contained significant concentrations of benzene, ethyl benzene, toluene, and xylene (Table 3-6, page 19); therefore, limiting phenolic content may not be sufficient to prevent future migration of these hydrocarbons (see Table 1). Lastly, assuming that Conoco screens the wastes and is able to determine which wastes have "excessive" concentrations of phenol, we do not believe that the "water leaching" test, as proposed by Conoco, is adequate to determine the leachable concentrations of phenol. The Toxicity Characteristic Leaching Procedure (TCLP) should be used to determine the leachable concentration of phenol (and the

hydrocarbon constituents). At a minimum, Conoco should conduct the TCLP using distilled water. We note that Conoco should use and adhere to the analytical methods and protocols established in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Publication SW-846 (third edition), November 1986.

Incomplete Petition

Although the Agency limited its technical review to the soil-pore liquids and ground-water monitoring portions of Conoco's no-migration petition, we found that Conoco also failed to meet the requirements of 40 CFR §268.6(a)(3). Specifically, during our review, we noted that Conoco acknowledges that the underlying geologic unit had not been completely characterized, i.e., Conoco recognizes that the thickness of the basal sand and gravel unit and the top of the shale bedrock are still incompletely defined (Attachment 9, Page 10-4). Conoco stated that this data is scheduled to be collected in the near future, however, a specific date was not given. Without this information, we are unable to fully evaluate the design and effectiveness of the ground-water monitoring program at the facility. In addition, possible interconnections between the upper and next lower aquifer have not been thoroughly explored.

However, because the technical basis for denial already exists, we are not requesting you to provide this, or additional information on waste characterization, revised VIP modeling results, or air monitoring and modeling for particulates, that would be necessary for EPA to judge your petition to be technically complete.

Summary

As discussed above, we believe that Conoco has failed to meet the requirements of 40 CFR §268.6(a)(4) and that the results of the unsaturated zone monitoring (soil-pores) show that Conoco has failed to demonstrate, to a reasonable degree of certainty, that hazardous constituents will not migrate beyond the land treatment unit boundaries at hazardous concentrations. Conoco has also failed to meet the requirements of 40 CFR §268.6(a)(3). We will therefore recommend to the Assistant Administrator for Solid Waste and Emergency Response that the no-migration petition for your Ponca City facility be denied.

It is our practice to give petitioners the option of withdrawing their petitions to avoid a negative publication in the Federal Register. If you prefer this option, you must send us a letter withdrawing your petition and acknowledging that the petitioned wastes are still considered to be restricted wastes subject to the Third Third Land Disposal prohibitions scheduled to be effective November 8, 1990. This letter should be forwarded to the following addresses within two weeks of the date of receipt of today's correspondence:

Elizabeth A. Cotsworth, Chief
Assistance Branch (OS-343)
Office of Solid Waste
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

If you chose not to withdraw your petition, we will recommend that a proposed denial decision be published in the Federal Register.

Any questions regarding our findings may be submitted in writing to Mr. James Michael of my staff.

Sincerely,

Jeffery D. Denit, Deputy Director
Office of Solid Waste

Attachment

cc: Docket
Bill Honker, Region VI
Bill Gallagher, Region VI
Randy Brown, Region VI
Damon Wingfield, OSDH
C. Michael Swindoll, Conoco
Elizabeth Cotsworth, EPA HQ
James Michael, EPA HQ