9551.1990(09)

NO-MIGRATION FOR MARATHON PETROLEUM, IL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NOV 6 1990

Mr. David R. Saad
Environmental Coordinator
Marathon Petroleum Company
Marathon Avenue
Robinson, Illinois 62454

Re: No-Migration Petition submitted for Marathon Petroleum Company's Robinson, Illinois Land Treatment Facility and Storage Surface Impoundments (F-90-NMPP-FFFFF)

Dear Mr. Saad:

I am writing in regard to your December 5, 1989 "no-migration" petition, which requests a variance under 40 CFR §268.6 to allow Marathon Petroleum Company (Marathon) to continue the land treatment and storage of restricted wastes (EPA Hazardous Waste Nos. K048 - K052) at Marathon's Robinson, Illinois land treatment facility (LTF) and storage surface impoundments. After a careful review of your petition, we have concluded that your facility does not meet the standard for a no-migration finding. Therefore, 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 regarding the land treatment facility is based on several concerns:

- Ground water and unsaturated zone monitoring data indicate that hazardous constituents have already migrated beyond the unit boundaries.

- The ground-water monitoring system for the land treatment facility is inadequate for the purpose of a no-migration variance because it will not detect migration at the earliest practicable time due to the presence of hazardous constituents

beneath the land treatment units.

- The separation between the bottom of the land treatment unit and the top of the seasonally high water table exceeds the minumum requirements.

We also recommend denial of the petition for the storage surface impoundments because Marathon will not be able to differentiate between past releases from the previously unlined surface impoundments and possible future releases from the retrofitted units. The details of our concerns are described below.

Land Treatment Faciltiy

Presence of Constituents Below the Treatment Zone (BTZ)

Ground-water and soil-pore monitoring data provided in Marathon's petition indicate that migration of hazardous constituents below the treatment units has already occurred. Specifically, analyses of ground-water samples collected during May 1989 (Appendix C, V.3, Appendix E, Table E-14) have indicated the presence of bis(2-ethylhexyl)phthalate in three monitoring wells (P6B, P7C, and P12B) at concentrations ranging from 20 to 47 ug/l. These data indicate that bis(2-ethylhexyl)phthalate is present in the ground water at concentrations in excess of the health-based level of 3 ug/l used in no-migration petition decision-making. In addition, results from six other monitoring wells (P3D, P4C, P5C, P8B, P8C, and P12A) show the use of higher than normal detection limits (20 or 36 ug/l rather than 10 ug/l) for this same parameter, indicating this compound's possible presence at similar concentrations in the ground water at these other locations.

In addition, benzene was detected at a concentration of 33 ug/l in the soil-pore liquid collected from lysimeter L-3 on July 6, 1989 (Appendix C, V.3, Table E-14). (The health-based level for benzene is 5 ug/l.) Marathon infers that benzene is commonly found in the air at refineries, and therefore, spurious contamination of the sample may have occurred (Appendix C; V.1, page 2-16). However, Marathon did not provide the necessary data to support their speculation. Therefore, we can only conclude that these data provide evidence of migration from the unit.

Detecting Migration at the Earliest Practicable Time

We have also concluded that Marathon's groundwater monitoring system will not be able to detect migration at the earliest practicable time. Therefore, it failed to meet the requirements of 40 CFR §268.6(a)(4). Specifically, we are concerned that Marathon will be unable to differentiate between past releases from other sources and past, present, and future releases resulting from the operation of the LTF. We also are concerned that Marathon's unsaturated zone monitoring system will not be able to detect potential migration in the northern section of the West land treatment unit. We discuss our conclusions below.

Soil-core data provided by Marathon indicate that hazardous constituents are present below the West land treatment unit. Specifically, based on the presence of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, and pyrene in below treatment zone (BTZ) soil cores, Marathon has concluded that a "historical waste body" which predates operation of the West land treatment unit, exists beneath the unit (see Attachment I). Of these constituents, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and chyrsene were detected below the treatment zone at concentrations exceeding the health-based levels used in no-migration petition decision-making.

Marathon states that these data do not conclusively prove that constituents are migrating below the treatment zone. Rather, Marathon argues that the presence of the above constituents is due to past operations at this same site. Marathon, however, has not explained how and when this "historical waste body" was deposited. Therefore, we conclude that Marathon has not conclusively proven that the constituents detected below the treatment zone did not occur as a result of land treatment operations.

Regardless of whether the contaminants beneath the treatment unit resulted from a "historical waste body" or from current operations, we believe that Marathon will be unable to determine whether releases occurred because the waste constituents detected below the treatment zone have also been detected in the wastes managed at the land treatment unit. Due to Marathon's inability to differentiate between past releases from other sources and past, present, and future releases (if

any) resulting from the operation of the LTF, we conclude that Marathon has failed to meet the requirements of 40 CFR §268.6(a) (4).

Lastly, in 1988, Marathon expanded the 17-acre West land treatment unit to include an adjacent three acres (the northern expansion). Run-off from both the East and West land treatment units drain into this area and are routed to storage tanks and the refinery's wastewater treatment system. During storms, however, the run-off does not drain as fast as it accumulates, and the northern expansion area floods. As a result of the ponding, a temporary hydraulic head is formed, increasing the potential for migration of hazardous constituents. Although Marathon recently installed new lysimeters in the northern expansion, samples have yet to be collected. Marathon has collected soil core samples from this area, but results have not been submitted. Marathon, therefore, is unable to demonstrate that there has been, or will not be migration of hazardous constituents from this area of the West land treatment unit.

Maintaining Minimum Separation

Federal regulations require that the depth to ground water at land treatment facilities should be no less than three feet from the bottom of the treatment zone to the seasonal high water table (see 40 CFR §264.271(c)(2)). Data provided in the petition indicate there may be a seasonal high water table or perched water table within the till layer beneath the LTF, or at least near the northern part of the LTF, that encroaches into the three foot thick buffer zone required below the treatment zone. Specifically, some of the monitoring wells screened in the till and at the till/sandstone interface were found to have depth-to-water level measurements of less than eight feet. The water level measurements were taken during relatively dry months (August and November) in which ground water is at a low level. Marathon's inability to demonstrate that it is maintaining the minimum separation between the bottom of the treatment zone and the top of the seasonally high ground-water table is a basis for denial of the no-migration petition.

Surface Impoundments

We have concluded that Marathon has failed to demonstrate, to a reasonable degree of certainty, that constituent migration

from the three storage surface impoundments will not occur. We note that it is difficult to evaluate the long-term performance of the liner system installed in the three surface impoundments for the storage of both liquid wastes and bulk dry wastes. Discussed below are the reasons why we have concluded that Marathon has failed to demonstrate that there will be no-migration of constituents at hazardous concentrations from the three impoundments.

First, we are concerned that Marathon will not be able to differentiate between past releases from the previously unlined impoundments and future releases (if any) from the new lined impoundments. Specifically, between 1980 and 1988, Marathon operated the three surface impoundments without liners and leak detection systems. After eight years of operating without liners, we believe that it is likely that some contamination of the subsoils has occurred beneath these impoundments. According to the Geological Engineering Report for the three surface impoundments (Appendix D, V.1, Attachment V, page 3-2), soil borings taken from areas near the pits showed a layer of soil with strong odor and appearance of hydrocarbons. The presence of contaminated soils beneath the impoundments will hinder Marathon's ability to determine whether constituents are migrating from the impoundments and affect Marathon's ability to detect constituent migration at the earliest extent practicable.

Second, on June 19, 1990, the Illinois Environmental Protection Agency (IEPA) conducted a site visit at the Robinson Refinery. During the site visit, it was apparent that waste overtopping had occurred as evidenced by the dead vegetation and stained soil on the south side of the impoundment. In the petition, Marathon has claimed that, to prevent overtopping, they designed the impoundments with adequate freeboard (two-feet). As overtopping, induced by local meteorological conditions, recently occurred, Marathon's design of the impoundments is insufficient to prevent future occurrences of overtopping. As a result, Marathon has failed to prove, to a reasonable degree of certainty, that there will be no migration.

Third, Marathon stated that the Oily Sludge Pit had leaked due to a one-inch tear in the upper flexible membrane liner in the center of the pit, which "appeared to have been caused by some external mechanism and was not the result of material failure." Marathon does not know how the liner was damaged.

Without this knowledge, Marathon can not guarantee that such an event would not occur in the future. In addition, the petition indicated that the bulk waste pit will be manually cleaned out every one-to-five years, depending on the waste accumulation rate. Without knowledge of how or why the impoundment liner was damaged, Marathon will not be able to guarantee that the bulk pit liner will not be damaged when personnel remove solids.

Completeness of Petetion

Finally, our review indicates that the petition is incomplete and that information and clarification, in areas beyond those highlighted above, would be needed to complete the petition. However, because of the problems noted above, we believe we have enough information at this time to move toward a denial of your petition.

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 Land Disposal prohibitions scheduled to be effective November 8, 1990. This letter should be forwarded to the following address within two weeks of the date of receipt of today's correspondence:

Patricia Cohn, Acting 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 choose 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,

Original document signed

Jeffery D. Denit, Deputy Director
Office of Solid Waste

Attachment

cc: Karl Bremer, EPA Region V
George Hamper, EPA Region V
Gale Hruska, EPA Region V
Larry Eastep, Illinois EPA
Patricia Cohn, PSPD, OSW
James Michael, PSPD, OSW
Terry Keidan, PSPD, OSW

ATTACHMENT I

Summary of Constituents Detected in the BTZ (mg/kg)

| Constituents | Sample Date | Sample Number | Concentration | Health-Based Level |
|---|---|---|---|---|
| Benzo(a)anthracene | 07/11/89 | LTD-5-2 | 20 | 0.055 |
| | 07/11/89 | LTD-5E-2 | 120 | |
| | 04/18/89 | LTD-12D | 0.63 | |
| Benzo(a)pyrene | 07/11/89 | LTD-5E-2 | 63 | 0.055 |
| Benzo(b)fluoranthene | 07/11/89 | LTD-5E-2 | 52 | 0.055 |
| Bis(2EH)phthalate | 08/10/88 | RI-17D | 0.68 | 50 |
| Chrysene | 08/10/88 | RI-5D | 0.41 | 15 1/ |
| | 07/11/89 | LTD-5D-2 | 110 | |
| | 04/19/89 | LTD-5E | 0.095 | |
| | 07/11/89 | LTD-5E-2 | 650 | |
| | 08/09/88 | RI-10D | 1.3 | |
| | 08/10/88 | RI-12D | 0.35 | |
| | 04/18/89 | LTD-12D | 3.4 | |
| | 04/18/89 | LTD-12E | 0.99 | |
| Pyrene | 07/11/89 | LTD-5-2 | 27 | 32,000 |
| | 07/11/89 | LTD-5E-2 | 160 | |
| | 04/18/89 | LTD-12D | 0.63 | |

1/ Calculated by Marathon using the RFI Guidance Manual.