

PPC 9551.1991(06)

NO-MIGRATION PETITION FOR ATLANTIC REFINING & MARKETING, PA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

APR 22 1991

Mr. J. R. McIntire
Refinery Manager
Atlantic Refining & Marketing Company Corporation
3144 Passyunk Avenue
Philadelphia, Pennsylvania 19145

Re: No-Migration Petition submitted for Atlantic Refining & Marketing Company Corporation's Philadelphia, Pennsylvania Land Treatment Facility (F-91-NARP-FFFFF)

Dear Mr. McIntire:

I am writing in regard to your May 16, 1990 "no-migration" petition, which requests a variance under 40 CFR §268.6 to allow, Atlantic to continue the land treatment of restricted wastes at the Philadelphia, Pennsylvania land treatment facility (LTF). After a careful review of your petition, we have identified three major technical problems. These are:

- Evidence of releases from the LTF in excess of health based levels;
- Inadequate ground-water and soil-pore monitoring systems for no-migration purposes; and,
- Apparent non-compliance with other regulatory requirements.

Therefore, we have concluded that the Atlantic facility does not meet the standard set by the statute for a no-migration variance. We will, therefore, recommend to the Assistant Administrator for Solid Waste and Emergency Response that a no-migration variance for Atlantic be denied.

Each of the major technical deficiencies identified from our evaluation of your petition is discussed in detail below. Any questions concerning any of our technical analyses and findings may be submitted in writing to Mr. James Michael of my staff.

Presence of Hazardous Constituents in the Ground-Water

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Atlantic states that "ground-water will not be used for the purposes of no-migration" (Vol.1, section 5.3.1.2.2, page 138), and no quantitative analysis of ground-water was provided in the petition. Therefore, in order to conduct a complete evaluation of Atlantic's no-migration petition, we sought ground-water data from the Pennsylvania Department of Environmental Resources (PADER).

Hazardous constituents above health-based levels were detected in the 1987 and 1990 sampling events.¹ Specifically, in 1987, PADER detected benzene, chlorobenzene, 1,4-dichlorobenzene, and ethyl benzene above their respective health-based levels in the downgradient monitoring wells. In 1990, PADER again detected benzene and 1,4-dichlorobenzene above their respective health-based levels in the downgradient monitoring wells (see Table 1).

Although Atlantic argues that the underlying ground-water has been contaminated from other preexisting sources, Atlantic's petition has failed to demonstrate that the existing ground-water contamination did not result, even in part, from LTF operations. A comparison of PADER data for the LTF's upgradient and downgradient wells shows in all cases that concentrations of hazardous constituents in the downgradient monitoring wells exceed the concentrations of the same constituents, if detected at all, in the upgradient monitoring well. This indicates to us that migration has already occurred that may be attributable to the wastes in the LTF unit and not the hydrocarbon plume underlying the general area where the LTF is located. Furthermore, we do not believe that Atlantic's ground-water monitoring system is capable of differentiating the source of the constituents already detected (see discussion below). As a result, we cannot definitively conclude that the contamination which is already evident is not due to migration of constituents from the LTF unit. This finding is

¹ PADER performed only a qualitative analysis of organic constituents in 1988, and did not perform any analyses for organic constituents in 1989, necessary to satisfy the no-migration standard for land disposal of restricted hazardous wastes.

Presence of Hazardous Constituents in the Soil-Pore Liquids

We understand that the LTF is divided into eight plots, A-H, with one lysimeter located on each plot, and that Atlantic has not applied wastes to plots G and H since 1985. The RCRA Permit specifies that Atlantic should conduct soil-pore monitoring for each plot on a semi-annual basis for the principal hazardous constituents (PHC's) identified, which include volatile and semivolatile organics and inorganics. In contrast to this requirement,

Atlantic's petition included soil-pore monitoring data from only a few plots.

Specifically, soil-pore liquid samples were collected from only three plots in April 1989, four plots in July 1989, and three plots in October 1989. Moreover, even though plot H has been inactive since 1985, only the soil-pore liquids collected from plot H were analyzed for the inorganic indicator constituents. These limited data showed that benzene was detected above the health based level of 0.005 mg/l (see Table 2). The instances of benzene in the soil pore liquids above the health-based level indicates that this contaminant has migrated below the LTF at concentrations considered hazardous by EPA.

Furthermore, because the soil-pore monitoring data provided by Atlantic are so limited, we consider them insufficient to demonstrate, to a reasonable degree of certainty, that inorganic and other organic constituents have not migrated from the LTF.

Detecting releases at the Earliest Practicable Time

In its petition, Atlantic has not demonstrated that the ground-water and soil-pore monitoring systems at the land treatment facility (LTF) are capable of detecting releases from the LTF at the earliest practicable time, as is required by 40 CFR §268.6(a)(4). Of particular concern is the inability to clearly differentiate between past and present releases.

Ground-Water Monitoring System

Atlantic stated that it developed its ground-water detection monitoring program "in light of well-documented, preexisting ground-water contamination associated with the general area where the LTF is located" (Vol. 1, section 6, page 55). We note that during the 1989 and 1990 compliance monitoring evaluation (CME) inspections, approximately three feet of standing oil was observed in the downgradient monitoring well (W6), preventing collection of ground-water samples with a three foot bailer. In addition, older CME monitoring results indicated the presence of significant levels of contamination, particularly total organic carbon (TOC) in the underlying ground-water, up to 98,000 mg/l.

Although Atlantic attributes this contamination to preexisting site conditions and argues the LTF has not affected ground-water quality, we are not aware of any assessment monitoring program conducted by Atlantic during interim status, nor did the petition describe any facility attempt to locate the sources of the ground-water contamination. In addition, the constituents of a weathered petroleum product plume would be very similar to those

detected in a release from your LTF managing wastes from petroleum refining activities. Clear differentiation between the sources of releases is necessary to support a finding of no-migration. However, your petition does not provide this level of certainty.

In order to determine whether migration of hazardous constituents has occurred, Atlantic plans to perform a trend analysis on each of the constituents detected in the ground water. We believe, however, that the elevated levels of constituents contributed by the "free-product plume" will mask all but massive releases from the LTF. We are concerned that, Atlantic intends to rely on a significant increase in the concentrations of the volatile aromatic organic indicator compounds to provide early detection of migrating hazardous constituents. For the purposes of no-migration, we require petitioners to clearly demonstrate that their facility is not contributing contaminants at concentrations in excess of the applicable health-based levels. We do not believe that a trend analysis will enable Atlantic to identify releases at low concentrations which are frequently used as health-based levels (e.g., 0.005 mg/l of benzene). We, therefore, conclude that Atlantic's ground-water monitoring system is inadequate for the purposes of detecting constituent releases from the LTF at the earliest practicable time.

Soil-Pore Liquids Monitoring System

Similarly, Atlantic has not demonstrated that its soil-pore monitoring program will allow for the detection of constituent migration at the earliest practicable time.

Atlantic's soil-pore monitoring program does not appear to adequately monitor the effect of accumulated waste on localized migration of hazardous constituents (i.e., hot-spots). Atlantic's petition indicated that it dumps wastes at the access ramps of each plot and does not distribute these on the plots until several loads have accumulated. The wastes spread over the plot may not be evenly distributed, as evidenced by the "long-term accumulation of treated waste residues in the proximity of waste off-loading ramps" (App.1, page LTP-18). The placement of the lysimeters was chosen using a random number approach and are not placed near the access ramps where the wastes are placed. It is, therefore, likely for hot-spots to exist within the LTF, for which Atlantic's soil-pore monitoring program does not adequately account.

Second, in the petition, Atlantic described the physical and chemical consistency of the soils as being highly variable over short distances. We believe that the physical heterogeneity of soil texture in the lower treatment zone (LTZ), as described, may establish pathways of reduced

resistance to migration of hazardous constituents. We expect these pathways of reduced resistance to "short-circuit" the land treatment processes and facilitate the migration of hazardous constituents below the treatment zone. In addition, if slag, ash, bricks, large chunks of concrete, wood timbers, wires, and construction debris are present within the LTF, as the petition states, we are concerned that these materials also will form pathways of reduced resistance to soil water flow, or themselves be a source contributing hazardous constituents. Neither Atlantic's placement of lysimeters, nor its predictive computer modeling, accounted for the potential effects of such soil variability or foreign material on the physical and chemical processes within the treatment zone. We conclude, therefore, that Atlantic's soil-pore monitoring system is not capable of detecting constituent migration at the earliest practicable time.

Maintaining Minimum Separation

Federal regulations require that the depth-to-ground water at land treatment facilities should be at least three feet from the bottom of the treatment zone to the seasonal high water table (see 40 CFR 264.271 (c) (2)). Specific depth-to-ground-water measurements beneath the LTF have not been provided in this petition. However, based upon topographic maps provided by Atlantic, it appears that most of the Atlantic's LTF is at an elevation of about 20 feet above sea level. In addition, seven to thirteen feet above sea level was cited as the water table elevation range (Vol.1, section 4.5.1, page 4-21), therefore, we estimated the depth of the water table as also being between seven and thirteen feet below ground surface. This estimate indicates that portions of the LTF may not be three feet above the seasonal high water table as is required by 40 CFR §264.271(c) (2).

In addition, Pennsylvania State regulations define the seasonal high water table as "the presence of mottling" (see 25 Pa.Code §75.264 (u) (5)). As is shown by Attachment I, mottles were reported at various depths within the LTF. The presence of mottles in the LTF indicates that there may be an insufficient separation between the LTZ and upper saturated zone (i.e., the presence of saturated soil conditions). We believe, therefore, that the presence of mottles within the LTF soils further supports our determination that Atlantic has failed to demonstrate compliance with 40 CFR §264.271(c)(2).

Incomplete Petition

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

discussed above, we believe we have sufficient 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 Third Land Disposal prohibitions. This letter should be forwarded to the following address within two weeks of the date of receipt of today's correspondence:

Elizabeth Cotsworth, Chief
Assistance Branch (OS-343)
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.

Sincerely,

Jeffery D. Denit, Deputy Director
Office of Solid Waste

cc: Elizabeth Cotsworth, PSPD, OSW
James Michael, PSPD, OSW
Paul Gotthold, Region III
Hon Lee, Region III
Larry Lusk, PA DER

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bcc: Terry Keidan, AB, PSPD, OSW
Allyson Ugarte, AB, PSPD, OSW
Dave Reeves, AB, PSPD, OSW
Kathy Stein, OE
Bill Kline, WMD, OSW
Douglas Donor, Region III
Howard Finkel, ICF Incorporated

ATTACHMENT I

Depth to Uppermost Occurrence of Mottles (inches)

Plot	Horizon	Depth	BTZ	Separation
A	2F1	37-48	37	None
B	2F	39-51	39	None
C	ZOI2	11-40	40	None
D	2F2	35-44	28	7
E	ZOI2	10-35	35	None
F	ZOI2	10-38	38	None
G	2F1	28-32	28	None
H	4F3	48-53	28	20
Background	F1	0-28		

Note: BTZ is the depth to the control area (clean fill zone)

Source: App.3, Attachment 5-2