

ILLINOIS POLLUTION CONTROL BOARD  
August 15, 1996

MOBIL OIL CORPORATION, )  
 )  
 Petitioner, )  
 )  
 v. ) PCB 96-218  
 ) (Variance - NPDES)  
 ILLINOIS ENVIRONMENTAL )  
 PROTECTION AGENCY, )  
 )  
 Respondent. )  
 )

OPINION AND ORDER OF THE BOARD (by E. Dunham):

On April 16, 1996 Mobil Oil Corporation (Mobil) filed a petition for an extension of variance. The Board previously granted Mobil a variance from the ammonia nitrogen effluent standards set forth in 35 Ill. Adm. Code 304.122(b) for its discharge into the Des Plaines River at its Joliet Refinery. (Mobil Oil Corporation v. IEPA (March 3, 1994), PCB 93-151.) Mobil filed an amended petition on April 24, 1996 to correct a clerical error. In its petition for extension of the variance, Mobil waived the hearing requirement in this matter.

The Board's responsibility in this matter arises from the Illinois Environmental Protection Act (Act) which gives the Board the ability to grant variances from Board regulations whenever it is found that immediate compliance with the regulations would impose an arbitrary or unreasonable hardship upon the petitioner. (415 ILCS 5/35(a) (1994).) The Illinois Environmental Protection Agency (Agency) is required to appear at hearings on variance petitions, and is charged with the responsibility of investigating each variance petition and making a recommendation to the Board as to the disposition of the petition. (415 ILCS 5/4(f) and 5/37(a).)

On May 24, 1996 the Agency filed its recommendation, advocating that the request for extension of variance be granted, subject to certain conditions. Mobil filed a response to the recommendation also on May 24, 1996.<sup>1</sup>

For the following reasons the Board finds that Mobil has presented adequate proof that immediate compliance with 35 Ill. Adm. Code 304.122(b) would result in the imposition of an

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<sup>1</sup> Mobil's amended Petition for Extension of Variance shall be referred to as (Pet. at \_\_\_); the Agency Recommendation shall be cited as (Rec. at \_\_\_); and Mobil's Response to the Recommendation will be cited as (Resp. at \_\_\_).

arbitrary or unreasonable hardship. Therefore, the extension of its prior variance is granted, subject to the conditions set forth in the order below.

### BACKGROUND

Mobil owns and operates a petroleum refinery which employs approximately 575 people and is located 10 miles southwest of Joliet on Arsenal Road near Interstate 55 in Channahon Township, Will County, Illinois. Known as the Joliet Refinery, the facility began operations in 1973 and is Mobil's newest domestic refinery. It has a rated capacity of 190,000 barrels of crude oil throughput per operating day, 70% of which is high sulfur and high nitrogen North American crudes. Designated a "conventional fuels" refinery, the facility's principal products are motor gasolines and distillate fuel oil; other products include kerosene jet fuel, propane, petroleum coke, sulfur, and heavy fuel oil. These products are transported by pipeline or barge throughout Illinois and other midwestern states. (Pet. at 3-4.)

The facility has access to the southern bank of the Des Plaines River and uses water for boiler feed, cooling tower make-up and non-contact cooling. Well water is used for drinking, sanitation and general services. Separate sewer systems are employed to segregate the various types of water discharges, including clean stormwater (Outfall 003), noncontact cooling water (Outfall 002) and process water which passes through the refinery's wastewater treatment plant (WWTP) before release into the Des Plaines River (Outfall 001). (Pet. at 4.)

An average of 1900 gallons per minute (GPM) of process wastewater and contaminated surface run-off is processed through the refinery's WWTP. By comparison, the calculated USEPA Best Available Technology (BAT) guidelines for a facility the size of Mobil's Joliet refinery is 5200 gpm. The treatment program uses cooling tower recycling and in-plant water reuse to lessen water discharge. In addition, advanced water conservation technology was incorporated into the refinery's design. The end result of these efforts is that the WWTP operates well within USEPA BAT guidelines and uses only 14 gallons of water per barrel of crude refined; however, these efforts also resulted in more concentrated effluent. (Pet. at 4-6.)

### REGULATORY FRAMEWORK

In determining whether a variance is to be granted, the Act requires the Board to decide if a petitioner has presented adequate proof that immediate compliance with the Board regulations at issue would impose an arbitrary or unreasonable hardship. (415 ILCS 5/35(a).) Furthermore, the petitioner bears the burden of proving that its claimed hardship outweighs the public interest in attaining compliance with regulations designed to protect the public. (*Willowbrook Motel v. Pollution Control Board*, 135 Ill.App.3d 343, 481 N.E.2d 1032 (1st Dist. 1977).) Only by such a showing can the claimed hardship rise to the level of arbitrary or unreasonable hardship.

In addition, a variance, by its very nature, is a temporary reprieve from compliance with the Board's regulations, and compliance is to be sought regardless of the hardship which

eventual compliance presents an individual polluter. (Monsanto Co. v. Pollution Control Board, 67 Ill.2d 276, 287, 367 N.E.2d 684, 688 (1977).) Accordingly, a variance petitioner is required, as a condition to grant of variance, to commit to a plan which is reasonably calculated to achieve compliance within the term of the variance, unless certain special circumstances exist.

The instant variance request concerns 35 Ill. Adm. Code 304.122(b) which limits effluent discharges of ammonia nitrogen to 3.0 milligrams per liter (mg/L) and reads in pertinent part:

Section 304.122      Nitrogen (STORET number 00610)

- b) Sources discharging to any of the above waters<sup>2</sup> and whose untreated waste load cannot be computed on a population equivalent basis comparable to that used for municipal waste treatment plants and whose ammonia nitrogen discharge exceeds 45.4 kg/day (100 pounds per day) shall not discharge an effluent of more than 3.0 mg/l of ammonia nitrogen.

#### VARIANCE REQUESTED

From 1988 to 1993, Mobil operated its Joliet facility under a site-specific ammonia nitrogen rule that established limitations of 20.0 mg/l on a monthly average, and 35.0 mg/l as a daily composite. In 1993 Mobil sought a five-year variance from the ammonia nitrogen effluent standard set forth in 35 Ill. Adm. Code 304.122(b). The Board granted a four-year variance from Section 304.122(b) and set the ammonia nitrogen limits at 13.0 mg/l monthly average, and 26.0 mg/l daily maximum. The four year variance allowed Mobil two years to study its effluent problem, and two years to make the necessary modifications or seek site specific relief. Mobil was given until May 3, 1996 to file a petition for site specific relief. The expiration date of the variance was set at March 3, 1998. (Mobil Oil Corporation v. IEPA, (March 3, 1994) PCB 93-151.)

Mobil now seeks to extend the date by which it is to file a petition for site specific relief by one year, May 3, 1997. Mobil also requests that the final date of its current variance be extended by one year, until March 3, 1999.

#### COMPLIANCE PLAN

##### Past Compliance Efforts

In 1990 Mobil constructed a benzene stripping unit at its Joliet Refinery which removes benzene and other volatile hydrocarbons as well as a large amount of sulfide from the process water. In 1991 Mobil converted the facility's equalization basin to an equalization biological

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<sup>2</sup> "Waters" refers to the Illinois River and the Des Plaines River downstream of its confluence with the Chicago River System or the Calumet River System. (35 Ill. Adm. Code 304.122(a).)

treatment unit which resulted in additional pretreatment of the process water. However the combined result of these equipment improvements was enhanced nitrification inhibition. (Pet. at 7.)

Despite this result, Mobil reports progressive improvement in reducing ammonia in the process water. From March 1994 to January 1996 its WWTP ammonia reduction averaged 79% and achieved 6.0 mg/l average effluent concentration. (Pet. at Attachment III.) The daily limitation of 26 mg/l was never exceeded. The monthly average of 13 mg/l was exceeded only once, in January 1995, due to a sand filtration malfunction which has been replaced with a caustic-free Merox gasoline treating unit. (Pet. at 8.)

In order to achieve compliance with the Act and Board regulations, Mobil reports that its research and development department evaluated several available alternate technologies and associated costs. (Pet. at 12, Attachment VII.) However, these options proved to be inappropriate due to cost and effectiveness and Mobil embarked on an ammonia optimization study which it had pledged to perform. (Pet. at 8, 13.)

#### Ammonia Reduction Program

Mobil first studied the aeration basins of its WWTP and found each to be oxygen deficient at peak loading. Mobil obtained a construction permit from the Agency and replaced the mechanical aerators with a fine bubble diffuser network. In addition, Mobil upgraded its activated sludge system by installing clarifier internals with bottom suction headers, a configuration more efficient than the suction riser pipe previously used. (Pet. at 8-9.)

Mobil conducted biological studies which confirmed that the benzene stripping unit increased the toxicity of the WWTP influent. Although the newly installed caustic-free Merox gasoline treater offsets the increased toxicity, Mobil still failed to achieve compliance. The studies further found that WWTP streams diluted with waste water contained an additional organic material, which is generated during the activated sludge biodegradation process, that greatly inhibits nitrification. (Pet. at 10, Attachment VI.) Mobil then investigated the feasibility of an upstream process that would remove known inhibitors from the WWTP influent. However, the studies showed that an upstream reduction of organic inhibitors was not commercially available and may not significantly offset the inhibition caused by biodegradation byproducts. (Pet. at 10.)

Mobil incurred \$250,000 in investigation costs and \$7.32 million in upgrades to its WWTP. As a result of these improvement efforts and study results, Mobil believes that despite performing more consistently, the Joliet refinery WWTP fails to achieve compliance due to the autoinhibition effects in the system. Therefore, Mobil intends to seek site-specific relief. Mobil now requests an extension of its variance to complete upgrades to its WWTP and submit a petition for site-specific relief. This extension would also allow Mobil to offer five years' worth of effluent performance to be used to calculate the site-specific ammonia effluent limits. (Pet. at 11.)

### Future Compliance Plans

As stated by both parties, the purpose of this request for extension of the prior variance is to allow Mobil time to evaluate the Joliet facility's performance once the upgrades mentioned above are completed. (Pet. at 11, Rec. at 4.) The upgrades were scheduled for completion by June 1, 1996. (Pet. at 9.) This time frame would allow Mobil 11 months to evaluate the performance of its facility. (Rec. at 4.)

If Mobil decides to seek site specific relief for its Joliet facility, the Agency recommends that the extended variance expire on the date such relief is granted. Therefore, the Agency requests that Mobil submit progress reports to the Agency every six months in the same fashion as in the prior variance. (Rec. at 5.) If the Board denies Mobil's request for site specific relief, then Mobil will be responsible for complying with 35 Ill. Adm. Code 304.122(b). As such the Agency requests that Mobil submit a compliance plan and any necessary permit applications within three months of the Board's denial of site specific relief. (Rec. at 4.)

In response, Mobil contends that there are no known compliance strategies; therefore requiring Mobil to submit a compliance plan is unwarranted. (Resp. at 1.) Mobil requests the Board to either remain silent on the issue of what actions should be taken if a site specific request is denied, or include language in the Board order that Mobil's acceptance of the order is not a waiver of its right to file a petition for variance in the future. (Resp. at 2.)

### HARDSHIP

Mobil asserts that denial of its request for extension of the prior variance would create an arbitrary and unreasonable hardship for several reasons. First, Mobil contends that proven, cost effective technology which would guarantee effluent compliance with the 3.0 mg/l ammonia limit has not been identified, despite two years of investigation and significant capital investments. Second, Mobil argues that its ammonia discharge is a minuscule contribution to the Des Plaines River's existing loading; therefore, requiring immediate compliance would not result in any measurable progress toward lowering concentrations of ammonia in the receiving waters. (Pet. at 14.)

Third, Mobil's good faith efforts to achieve compliance have resulted in the lowest annualized average ammonia concentrations ever achieved by its Joliet refinery. Mobil contends that further improvements, like the addition of a break point chlorination system, would result in the formation of chlorinated hydrocarbons without an ability to consistently achieve the 3.0 mg/l effluent standard. This result, Mobil states, does not justify spending \$1.9 million in capital and \$700,000 in annual operating costs. (Pet. at 15.) Finally, Mobil argues that since the Board previously found variance relief appropriate for its Joliet refinery, an extension of that variance for one year is not unreasonable. (Pet. at 15.)

## ENVIRONMENTAL IMPACT

Mobil contends, and the Agency agrees, that the environmental impact of the requested variance will be insignificant because its continued discharge of ammonia nitrogen into the Des Plaines River will not considerably change the levels of ammonia nitrogen or dissolved oxygen, and will not threaten water quality standards in the Des Plaines or Illinois Rivers. (Pet. at 11-12, Rec. at 4.)

## CONSISTENCY WITH FEDERAL LAW

In its recommendation the Agency indicated that there are no applicable federal laws or regulations which preclude the granting of this variance. (Rec. at 4.)

## DISCUSSION

Pursuant to Section 36(b) of the Illinois Environmental Protection Act, a variance may be extended from year to year, but only if satisfactory progress has been shown. (415 ILCS 5/36(b)). The Board has examined the record in this petition in light of the current variance granted to Mobil in March 1994 and set to expire in March 1998. Based upon Mobil's investigation and results to date, the Board finds that Mobil has demonstrated adequately that it has produced satisfactory progress in lowering the ammonia nitrogen level in its discharges. However, Mobil continues to experience the hardship described in its original petition for variance. Mobil states that improvements to its Joliet WWTP were to be completed June 1, 1996, and believes that the additional time requested to study the effects of its improvements will enable it to better determine and justify site specific effluent limitations for ammonia nitrogen in its discharge. In light of this and the record which indicates that Mobil's current discharges have a minimal impact upon the receiving waters, the Board believes that the relief requested should be granted.

The Board will grant a one year extension of time in which Mobil may choose to file a petition for site specific relief, i.e., no later than May 3, 1997. The Board will also grant an extension of the current variance for one year, i.e., until March 3, 1999. Together, these extensions allow Mobil additional time to complete analysis of its WWTP upgrades, and their impact upon the degree of permanent relief needed to achieve compliance with the Board's regulations or site specific limitations.

In its recommendation, the Agency indicated that if the Board denies Mobil's request for site specific relief, then Mobil, responsible for achieving compliance with 35 Ill. Adm. Code 304.122(b) once this variance expires, shall have to submit to the Agency a compliance plan and any necessary permit applications within three (3) months of the Board's denial of site specific relief. The Agency suggested that the compliance plan detail construction steps to be taken; the dates by which each step will be completed; the completion date for any necessary construction; and the date on which compliance with 35 Ill. Adm. Code 304.122(b) will be achieved. Finally, the Agency recommended that interim limits for ammonia nitrogen which will be complied with during the term of the compliance plan also be submitted to the Agency.

In consideration of the number of variables dependent upon future events in this scenario, the Board declines to address these matters at this time.

This opinion constitutes the Board's findings of fact and conclusions of law.

### ORDER

The Mobil Oil Corporation (Mobil) is hereby granted an extension of the variance from 35 Ill. Adm. Code 304.122(b) issued in PCB 93-151, as that section applies to Mobil's wastewater treatment facility at its Joliet refinery located on Arsenal Road in Channahon Township, Will County, Illinois, subjected to the following conditions:

1. This variance shall expire on March 3, 1999.
2. Mobil shall not exceed the ammonia nitrogen limits of 13.0 mg/l on a monthly average basis, and 26.0 mg/l on a daily maximum basis.
3. Mobil shall continue to submit progress reports every six (6) months to the Illinois Environmental Protection Agency (Agency), c/o Mark Books, Compliance Assurance Section, Bureau of Water, IEPA, 2200 Churchill Road, P.O. Box 19276, Springfield, IL 62794-9276. The progress reports shall describe completed and anticipated events in the optimization study, and any process changes made to reduce ammonia nitrogen discharges.
4. In the event that Mobil chooses to seek an alternative standard, it shall file its petition with the Board by May 3, 1997.
5. Mobil shall continue to operate its wastewater treatment plant so as to produce the best effluent practicable and to achieve compliance with 35 Ill Adm. Code 304.122(b) as soon as possible.

IT IS SO ORDERED.

If Mobil chooses to accept this variance subject to the above order, within forty-five days of the grant of the variance, Mobil must execute and forward the attached certificate of acceptance and agreement to:

Margaret P. Howard  
Division of Legal Counsel  
Illinois Environmental Protection Agency  
P.O. Box 19276  
2200 Churchill Road  
Springfield, Illinois 62794-9276

Once executed and received, that certificate of acceptance and agreement shall bind Mobil to all terms and conditions of the granted variance. The 45-day period shall be held in abeyance during any period that this matter is appealed. Failure to execute and forward the certificate within 45-days renders this variance void. The form of the certificate is as follows:

CERTIFICATION

I (We), \_\_\_\_\_, hereby accept and agree to be bound by all the terms of the Order of the Pollution Control Board in PCB 96-218, August 15, 1996.

\_\_\_\_\_  
Petitioner

\_\_\_\_\_  
Authorized Agent

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1994)) provides for the appeal of final Board orders within 35 days of the date of service of this order. The Rules of the Supreme Court of Illinois establish filing requirements. (See also 35 Ill. Adm. Code 101.246 "Motions for Reconsideration.")

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the \_\_\_\_ day of \_\_\_\_\_, 1996, by a vote of \_\_\_\_\_.

\_\_\_\_\_  
Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board