ILLINOIS POLLUTION CONTROL BOARD
November 6, 1997

BORDEN CHEMICALS AND PLASTICS OPERATING LIMITED PARTNERSHIP,	)	
Petitioner,	)	PCB 97-102
	)	(Variance - Water)
v.	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

JAMES F. WARCHALL OF SIDLEY & AUSTIN APPEARED ON BEHALF OF PETITIONER; and

MARGARET P. HOWARD OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by M. McFawn):

This matter comes before the Board on the "Verified Amended Petition for Variance" (Petition or Pet.) filed by Borden Chemicals and Plastics Operating Limited Partnership (Borden). Borden seeks a variance, for a term of five years, from the general use water quality standards for temperature set forth at 35 Ill. Adm. Code 302.211(b)-(e) and 35 Ill. Adm. Code 304.105, which prohibits violation of water quality standards by effluent from Borden's chemical plant in Illiopolis, Illinois.

The Board's jurisdiction and authority in this matter arise from the Environmental Protection Act (Act), 415 ILCS 5 (1996). The Board is charged therein with the responsibility to "grant individual variances beyond the limitations prescribed in this Act, whenever it is found upon presentation of adequate proof, that compliance with any rule or regulation, requirement or order of the Board would impose an arbitrary or unreasonable hardship." 415 ILCS 5/35(a) (1996). The Illinois Environmental Protection Agency (Agency) is charged, among other things, with the responsibility of investigating each variance petition and making a recommendation to the Board as to the disposition of the petition. 415 ILCS 5/37(a) (1996).

For the reasons set forth herein, the Board finds that Borden has presented adequate proof that immediate compliance with the regulations at issue would result in the imposition of an arbitrary or unreasonable hardship. Furthermore, there are no applicable federal laws or regulations which preclude the variance. Accordingly, the variance will be granted, subject to the conditions set forth in the Order below.

PROCEDURAL HISTORY

The original petition in this matter was filed with the Board on December 11, 1996. Over the next several months, Borden and the Agency met on several occasions regarding information sought by the Agency, and on July 11, 1997, Borden filed its "Verified Amended Petition for Variance." The Agency filed a recommendation in response to the Petition on August 11, 1997, wherein the Agency recommended that the variance be granted.

Borden waived a hearing in this matter. On January 21, 1997, however, the Board received a letter of objection to the granting of a variance to Borden. By an order adopted January 23, 1997, the Board directed that this matter go to hearing. A hearing was held in Springfield, Illinois, on September 11, 1997, before Hearing Officer Deborah Frank Feinen. At the hearing, only Borden introduced evidence. No evidence was presented contrary to the assertions in the Petition or the testimony of Borden's witnesses.

STATUTORY AND REGULATORY FRAMEWORK

In determining whether any variance is to be granted, the Act requires the Board to determine whether 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) (1996). Furthermore, the burden is upon the petitioner to show that its claimed hardship outweighs the public interest in attaining compliance with regulations designed to protect the public. Willowbrook Motel v. IPCB, 135 Ill. App. 3d 343, 481 N.E.2d 1032, (1st Dist. 1977). Only with such a showing can the claimed hardship rise to the level of arbitrary or unreasonable hardship.

A further feature of a variance is that it is, by its nature, a temporary reprieve from compliance with the Board's regulations and compliance is to be sought regardless of the hardship which the task of eventual compliance presents an individual polluter. Monsanto Co. v. IPCB, 67 Ill.2d 276, 367 N.E.2d 684 (1977). Accordingly, except in certain special circumstances, a variance petitioner is required, as a condition to the granting of a variance, to commit to a plan which is reasonably calculated to achieve compliance within the term of the variance.

In this case, Borden seeks a variance from 35 Ill. Adm. Code 302.211(b) through (e) and 304.105. Section 302.211 provides in relevant part:

> b) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.
>
> c) The normal daily and seasonal temperature fluctuations which existed before the addition of heat due to other than natural causes shall be maintained.

d) The maximum temperature rise above natural temperatures shall not exceed 2.8°C (5°F).

e) In addition, the water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 1.7°C (3°F).

	°C	°F
Jan	16	60
Feb	16	60
Mar	16	60
Apr	32	90
May	32	90
Jun	32	90
Jul	32	90
Aug	32	90
Sep	32	90
Oct	32	90
Nov	32	90
Dec	16	60

Section 304.105 provides in relevant part:

> In addition to the other requirements of this Part, no effluent shall, alone or in combination with any other sources, cause a violation of any applicable water quality standard.

FINDINGS OF FACT

Based upon Borden's amended petition and the testimony and exhibits offered at the hearing on September 11, 1997, the Board finds the facts here set forth.

Borden's Illiopolis plant is located in a rural area one mile west of Illiopolis, Illinois. The plant produces polyvinyl chloride (PVC) suspension and dispersion resins for the vinyl film, fabric, flooring, plastic pipe, and insulation industries. The plant has been in operation since 1949. The plant's production processes have remained essentially unchanged over the years of operation. The plant presently employs approximately 240 people. Pet. at 3.

The plant discharges treated wastewater pursuant to a National Pollution Dishcharge Emission System (NPDES) permit. The discharge enters an unnamed ditch which drains into

Long Point Slough. The Slough flows into the Sangamon River. The primary uses of both the ditch and the Slough are as conduits for agricultural runoff and wastewater treatment discharges. Although a variety of aquatic species inhabit the ditch and the Slough, the waters are of little use for recreational or other purposes on account of their low and variable flows. Exhibit (Ex.) 1 at 3; Pet. at 5. At times, the flow of water upstream from Borden's outfall in the unnamed ditch, and upstream of the convergence with the ditch in Long Point Slough, is reduced to zero. No water is withdrawn from either the ditch or Long Point Slough for drinking, agricultural, or industrial purposes. Ex. 1 at 3; Pet. at 6.

Over short periods, there is substantial natural variation in water temperature in portions of the ditch unaffected by Borden's discharges. Ex. 1 at 6; Ex. 3 at 8. This variation is likely due to the small size and flow of the ditch and the resulting large impact on the temperature of the ditch caused by short term variations in ambient air temperature, cloud cover, rainfall, and/or groundwater discharge. Ex. 3 at 8. In fact, in some portions of the ditch and Slough, natural heating has caused exceedences of the temperature rise standards over short distances. Ex. 1 at 6. While the upstream flow in the ditch is a small fraction of the effluent flow, Borden's discharges into the ditch would violate the temperature rise standard unless effluent temperature is controlled to within approximately 2.8°C of the upstream temperature. Due to the large fluctuations in the temperature and flow of the stream upstream from Borden's outfall, such control may be a practical impossibility. Ex. 3 at 7-8.

Wastewater flows from Borden's plant into a serpentine stream where solids settle out, and then discharges into the ditch. Ex. 1 at 2; Pet. at 31. Although some cooling of wastewater occurs before the water enters the ditch, the cooling is not always sufficient to assure that the water in the ditch does not exceed the winter maximum temperature standard as set forth in Section 302.211(e). Exceedences of the summer temperature standard, although rare, have also been recorded. Ex. 1 at 3-4.

Borden's plant's wastewater results from three main waste streams generated at the plant. The first waste stream includes wastewaters from the PVC plants and paste plant, vinyl chloride air pollution control wastewater stripper effluent, and cooling tower and boiler blowdown. Pet. at 7. Among the treatment processes applied to this waste stream is activated sludge treatment involving use of autotrophic bacteria for nitrification. For optimum nitrification, the plant maintains an average temperature between 28°C and 32°C in the activated sludge system. Pet. at 8. The need to maintain the biologically-treated wastewater at a temperature of approximately 30°C is the primary cause of the plant's effluent exceeding winter temperature standards. Pet. at 12.

The second waste stream consists of wastewater from PVC Plant No. 2. The temperature of this waste stream typically exceeds the ambient temperature due to heat from the chemical process by which PVC is produced. Based upon limited measurements of temperature in Plant No. 2's wastewater coupled with knowledge about its flow, this waste stream appears to be only a secondary contributor to the temperature of the plant's final effluent. Pet. at 10.

The final waste stream sources include the vinyl chloride afterburner control scrubber/neutralizer, discharges from the boiler plant water treatment process, including filter backwash water, Zeolite regeneration and demineralizer regeneration rinse waters, and boiler plant lime softening sludges. These waters are collected in a pond for treatment prior before entering the ditch. As with the second waste stream, based upon limited measurement of its temperature coupled with knowledge of its flow, this third waste stream does not appear to be a significant contributor to the temperature of the plant's final effluent. Pet. at 11.

Borden submitted data complied from its Discharge Monitoring Reports (DMR) between 1985-1996, about the winter and summer maximum and minimum temperature standards at their sampling points. Pet. at Ex. H and I. The three sampling points are (1) Sampling Point A which is upstream in the ditch from Borden's outfall; (2) Sampling Point B which is the plant's outfall; and (3) Sampling Point C which is downstream from the plant's outfall.

The following chart summarized the number of times between 1985 and 1996 that temperatures exceeded the maximum temperatures listed at Section 302.211(e) compared to the number of samples taken. Pet. at 13.

Exceedences Recorded between 1985 - 1996

	Winter	Summer
Sampling Point B	123/253	6/360
Sampling Point C	57/238	1/334

Borden's DMR's also showed that the temperature at Sampling Point C often exceeded that at Sampling Point A by more than 2.8§C. This information is relevant to Section 302.211(d) which limits any rise in temperature to 2.8§C above the natural temperature. Pet. at Ex. K and L. Borden also collected temperature data between May and September 1996. The information showed the same temperature changes, and also indicated that the effluent temperature correlates with the ambient air temperature. Pet. at Ex. O. This same data indicated that the temperature at Sampling Point A had large natural variations in temperature over short periods. Pet. at Ex. J. Based on these indications, Borden concluded that its effluent increased the temperature of the unnamed tributary. However, Borden also concluded that much of the temperature changes were seasonal with sizable daily variations in the unnamed ditch's temperature.

Finally, Borden presented and examined a 1984 Stream Study (Pet. at Exhibit C and Q, Appendix A-3) to support its argument that natural heating of the unnamed tributary caused exceedence of the temperature rise standard at Section 302. 211(d), unaffected by Borden's effluent. Pet. 17-19.

The temperature of Borden's effluent in the winter is due primarily to the need to maintain conditions in Borden's wastewater treatment system which maximize biodegradation

of organics and ammonia nitrogen to ensure compliance with Borden's NPDES permit. Pet. at 2; Ex. 3 at 5. The temperature of Borden's effluent in the summer results from heat sources that are integral to the plants' manufacturing and pollution control activities (vinyl choride incinerator scrubber water, PVC Plant No. 2 wastewater, and aeration in the activated sludge unit). Pet. at 12. Cooling of the plant's final effluent in the serpentine stream prior to discharge to the ditch is minimal. In fact, the data indicated that depending on ambient temperature and cloud cover, the temperature of the wastewater may increase prior to discharge. Pet. at 12. According to Borden, neither treatment technology nor process changes are available in the short term that would result in compliance with the temperature standards. Pet. at 2.

Borden's effluent is not likely to have an adverse impact on fish populations in the receiving waters. In fact, there would potentially be a lower abundance and diversity of fish and possibly other aquatic life in the receiving waters without Borden's discharge. Borden's discharge minimizes the temperature changes that would otherwise occur in the ditch, preventing freezing in the winter and a lack of flow in the summer. Ex. 2 at 1-3.

Borden has identified six potential mechanisms for compliance: (a) aeration of the serpentine stream, (b) installation of cooling towers, (c) installation of a water chiller with a heat exchanger system, (d) installation of a cooling pond, (e) replacing the wastewater treatment plant with a larger system that could achieve organic and ammonia nitrogen removal at a lower temperature, and (f) cooling wastewaters that are not provided biological treatment prior to combining with biologically treated wastewaters. Ex. 3 at 5. All of these options would require a significant period of time for feasibility analysis, design and construction. Ex. 3 at 6. Projected costs for these compliance methods range from $1,670,000 to $8,360,000. Ex. 5.

DISCUSSION

Applicability of Section 302.211(e)

Before discussing the merits of Borden's petition, we will address Borden's request that we determine whether Section 302.211(e) applies in this case. Borden argues that Section 302.211(e) does not apply to it, since the point at which temperature exceedences have been identified, in the unnamed ditch and Long Point Slough, are not in the "main river." It is proper for a petitioner to seek a determination as to whether the rule from which it seeks variance is applicable to it. The question of applicability of the rule becomes a threshold issue. If the rule is inapplicable, no variance is necessary and no inquiry into arbitrary or unreasonable hardship need be made. Precision Coatings, Inc. v. Illinois Environmental Protection Agency (Feb. 20 1985), PCB 84-117.

Borden, noting that "main river" as the term is used in Section 302.211(e) has never been defined, suggests that neither the unnamed ditch nor Long Point Slough is a "main river," and consequently Section 302.211(e) does not apply. Pet. at 3-4; 35-37. The Agency suggests, in its "Recommendation" (Rec.) that the unnamed ditch and Long Point Slough should be considered "rivers" inasmuch as it is the Agency's position that "main river" is the

portion of the receiving stream where mixing is allowed, and in a low flow stream such as the unnamed ditch or Long Point Slough, the entire width of the receiving stream should be the "main river." Rec. at 5.

We find no support for the Agency position that "main river" means the portion of the river in which mixing is allowed. Rather, it appears from the context of Section 302.211(e) that the "main river" would be the river beyond the mixing zone, because it is the impact on the "main river" which is regulated by this section, and such impact will only be determined after mixing has occurred.

Nevertheless, the Board concludes that the unnamed ditch into which Borden discharges from its Illiopolis plant is a "main river" as that phrase is used in Section 302.211(e). "Main river" in 35 Ill. Adm. Code 302 differentiates between a primary channel (main flow) and those portions of the stream which do not follow the same thermal regime as the main flow. See 35 Ill. Adm. Code 302.104. In this case, we believe that the entire unnamed ditch should be considered the "main river" for the purposes of Section 302.211(e), since we have no evidence, nor has any argument been made, that the portion of the stream into which Borden discharges follows any different thermal regime than the main flow in the ditch.

The Board accordingly finds that Section 302.211(e) is applicable to Borden's discharge into the unnamed ditch.

Merits of Variance Application

The evidence establishes that minimal harm to the environment is likely to result from granting of the requested variance, and that Borden will be faced with arbitrary and unreasonable hardship if required to comply immediately. The Board has previously found that arbitrary or unreasonable hardship would result where technically and economically feasible means of compliance have not been identified despite diligent efforts by the petitioner. Mobil Oil Company v. Illinois Environmental Protection Agency (Aug. 14, 1986), PCB 86-45, slip op. at 6. It appears from the evidence that due to temperature fluctuations in the unnamed ditch upstream from Borden's discharge point, there may be no technically and economically feasible means by which Borden can comply consistently with Section 302.211(b), (c), (d) and (e), and consequently Section 304.105. From these facts, and the apparent unlikelihood of any adverse environmental impact, the Board concludes that it is appropriate to grant Borden the requested variance from Section 302.211(b), (c), (d), and (e), and Section 304.105.

While the granting of this variance will result in no end-of-pipe effluent limitations for temperature and no water quality standards for temperature applicable to the ditch or Long Point Slough, Borden has agreed to certain conditions to be applied to the grant of this variance, including a limitation on the temperature to be maintained in the plant's final polishing clarifier (the unit following biological treatment in Borden's effluent treatment

stream)[1] of 35°C, as well as a specific timetable to be followed in evaluation of compliance alternatives, which includes conducting a fish survey to determine specific effects of Borden's effluent on aquatic life. The Board believes that these conditions will further decrease the likelihood of environmental harm during the period of this variance.

ORDER

A. Borden is hereby granted a variance from 35 Ill. Adm. Code 302.211(b), (c), (d), and (e), and 35 Ill. Adm. Code 304.105, for effluent from its Illiopolis, Illinois plant discharged into an unnamed tributary of Long Point Slough.

B. This variance shall be in effect for five years from the date of this order, or until the Board rules on any permanent relief Borden may request, whichever occurs first.

C. During the variance period the temperature in the plant's final polishing clarifier shall not exceed 35°C.

D. Borden shall take action consistent with the schedule set forth in the following table:

Item	Description	Completion Date
1	Completion of report summarizing additional fish survey work (as described in Exhibit AA to "Verified Amended Petition for Variance")	11/30/1997
2	Completion of in-plant wastestream temperature monitoring (as described in Exhibit AA to "Verified Amended Petition for Variance")	6/15/1998
3	Identification of compliance options	8/15/1998
4	Assessment of technical feasibility of compliance options at the Borden plant	10/15/1998
5	Identification of adverse environmental impacts of technically feasible compliance options	10/15/1998
6	Identification of possible solutions to identified adverse environmental impacts	12/15/1998
7	Assessment of net environmental benefit of technically feasible compliance options	1/30/1999

[1] Borden's Petition and the Agency's "Recommendation" originally proposed the temperature restriction for the plant's biological treatment system. By agreement, as represented at the hearing, the limit will now apply to the final polishing clarifier. See Transcript of September 11, 1997, hearing at p. 14.

8	Quantification of capital and operating costs of technically feasible and environmentally acceptable options	7/31/1999
9	Choice of compliance option and/or decision to pursue adjusted standard	1/30/1999
10	Install equipment to implement compliance option and/or file adjusted standard petition	1/30/2000
11	Install equipment to implement compliance option (if compliance option technically and economically feasible)	10/31/2000
12	Compliance with temperature standards or final decision on adjusted standard petition	11/5/2002

E. This variance shall not be effective unless and until a Certificate of Acceptance is executed and transmitted to the Agency as described below.

CERTIFICATION OF ACCEPTANCE

If Borden chooses to accept this variance subject to the above order, within 45 days of the date of this order, Borden shall execute and forward to:

Margaret P. Howard
Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Ave., East
Springfield, IL 62702

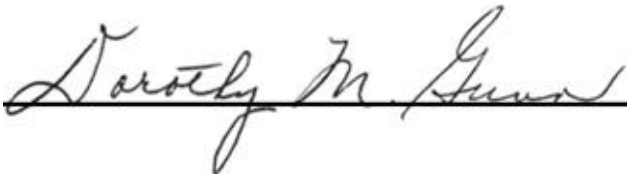
a Certificate of Acceptance and agreement to be bound to all terms and conditions of the granted variance. The 45-day period shall be held in abeyance during any period that this matter is appealed. The form of the Certificate of Acceptance shall be substantially similar to that attached to this order.

IT IS SO ORDERED.

Board Member K.M. Hennessey abstained.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1996)) provides for the appeal of final Board orders to the Illinois Appellate Court within 35 days of service of this order. Illinois Supreme Court Rule 335 establishes such filing requirements. See 145 Ill. 2d R. 335; 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 6th day of November 1997, by a vote of 6-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

BORDEN CHEMICALS AND PLASTICS OPERATING LIMITED PARTNERSHIP,	)	
Petitioner,	)	PCB 97-102 (Variance - Water)
v.	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

CERTIFICATE OF ACCEPTANCE

Borden Chemicals And Plastics Operating Limited Partnership hereby accepts and agrees to be bound by all the terms and conditions of the order of the Pollution Control Board adopted on November 6, 1997, in PCB 97-102.

BORDEN CHEMICALS AND PLASTICS
OPERATING LIMITED PARTNERSHIP

By: _____
Authorized Agent

_____
Title

_____
Date