ILLINOIS POLLUTION CONTROL BOARD
May 6, 1999

IN THE MATTER OF:	)	
	)	
PETITION OF ABBOTT LABORATORIES	)	AS 99-5
FOR AN ADJUSTED STANDARD FROM	)	(Adjusted Standard - Water)
35 ILL. ADM. CODE 302.208 AND	)	
304.105	)	

OPINION AND ORDER OF THE BOARD (by N.J. Melas):

This matter comes before the Board on a "Petition for Adjusted Standard" filed on November 12, 1998, by Abbott Laboratories (Abbott) for its facility at Abbott Park, Lake County, Illinois. Abbott published notice of the petition in the *Daily Herald* of Arlington Heights, Illinois on November 26, 1998. On December 17, 1998, the Board issued an order requesting that Abbott file an amended petition in order to correct certain informational deficiencies in the original petition. On February 16, 1999, Abbott filed an "Amended Petition for Adjusted Standard" (Am. Pet.) which fully complied with the Board's December 17, 1998 order. In the amended petition, Abbott requests that the Board adopt an adjusted standard from Sections 302.208 and 304.105 of the Board's rules (35 Ill. Adm. Code 302.208, 304.105) as they relate to the discharge of chloride and total dissolved solids (TDS). The adjusted standard is requested for a 2,000 foot stretch of the Middle Fork of the North Branch of the Chicago River (Middle Fork).

On March 16, 1999, the Illinois Environmental Protection Agency (Agency) filed its response (Res.) to Abbott's Amended Petition. The Agency recommended that the Board grant Abbott an adjusted standard from Section 302.208, but deny the requested adjusted standard from Section 304.105. Res. at 2. The Board finds that Abbott has met the requirements for an adjusted standard from Section 304.105 and grants that part of the amended petition. The Board will not grant an adjusted standard from Section 302.208 and denies that part of the amended petition.

The Board's responsibility in this matter arises from the Environmental Protection Act (Act) (415 ILCS 5/1 et sq. (1996)). The Board is charged to "determine, define and implement the environmental control standards applicable in the State of Illinois" (415 ILCS 5/5(b) (1996)) and to "grant . . . an adjusted standard for persons who can justify such an adjustment" (415 ILCS 5/28.1(a) (1996)).

Abbott has waived hearing in this matter. Am. Pet. at 2. No other person has requested a hearing, and accordingly none has been held.

NATURE OF THE FACILITY AND DISCHARGE

Abbott Park is in an area of industrial facilities, commercial offices, and residences. Res. at 9. Abbott Park is 608 acres in size and serves as Abbott's headquarters. Am. Pet. at 2. The facility consists of 44 buildings, 8 miles of roads, 10 miles of sidewalks, parking lots, a series of 11 interconnected ponds, and a utilities plant that produces steam, process water, chilled water, distilled water, and compressed air. Am. Pet. at 2; Res. at 4.

The amended petition concerns the discharge of chloride and TDS from outfalls of the 11 interconnected ponds. The ponds retain storm water runoff to prevent flooding of the site and surrounding areas. Am. Pet. at 3; Res. at 4-5. The ponds are also a reservoir for re-circulating non-contact cooling water for the utilities and provide equalization and settling treatment for storm water runoff and utility wastewater. *Id*. The ponds are not waters of the State and are not subject to water quality standards. Res. at 5. The pond system has two discharge points to the Middle Fork that are covered by a National Pollution Discharge Elimination System (NPDES) permit (No. IL0066435). Am. Pet. at 3; Res. at 5. Outfall 001 is at a pond level control structure on Pond 1. Outfall 002, the primary discharge point for the entire pond system, is on the overflow weir of Pond 5, about one mile downstream and south of Outfall 001. Am. Pet. at 3. The outfalls discharge to the Middle Fork. Am. Pet. at 4. Abbott's NPDES permit limits chloride concentrations to 500 mg/L and TDS concentrations to 1,000 mg/L. Am. Pet. at 7.

The quantity of chloride and TDS from the utility operations is relatively constant except during the summer months when a greater quantity of chloride and TDS is discharged to the ponds. Am. Pet. at 4; Res. at 5. Abbott calculated that its utilities contribute about 2% of the chlorides loading and about 15% of the total TDS loading to the pond system. Am. Pet. at 6-7, Attachments 3, 6, 7.

Winter salting operations have a significant impact on the concentrations of chloride and TDS in the pond system. During the winter, Abbott applies salt to the 114 acres of roadways, parking lots, and sidewalks at the Abbott Park facility in order to reduce slip-and-fall injuries and prevent automobile accidents. Am. Pet. at 14; Res. at 5. In addition to the salt from the Abbott Park outfalls, runoff carrying salt drains into the ponds from a 7 acre stretch of Highway 43 (Waukegan Road) located directly east of Abbott Park. Am. Pet. at 5; Res. at 5. The wintertime salting of the roads and sidewalks at Abbott Park and Highway 43 increases the level of chloride and TDS in the ponds and subsequently in the outfall effluent. Am. Pet. at 5. Sodium chloride and calcium chloride salts are commonly used to melt ice; these salts cause an increase in chloride and TDS in the ponds and discharges. Am. Pet. at 5, Attachment 5.

Abbott claims that its salting operations and the road salt from Highway 43 are the reasons behind its periodic noncompliance with its NPDES permit. Am. Pet. at 7, Attachments 8-11; Res. at 5. The noncompliance generally occurs during mid to late winter

and sometimes in the spring when the salt has traveled through the pond system to the outfalls. *Id*.

STANDARD AND PROPOSED LANGUAGE OF ADJUSTED STANDARD

The water quality limits for chloride and TDS are at Section 302.208 and the limits have been incorporated into Abbott's NPDES permit as effluent limits for both of the outfalls. Am. Pet. at 7. (Since the Middle Fork has a 7Q10[1] of zero, Abbott was not afforded the benefit of mixing. *Id*.) Abbott requests an adjusted standard from the water quality standards at Section 302.208 of the Board's regulations (35 Ill. Adm. Code 302.208). This Section provides:

> g) Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102.
>
> | Constituent | Unit | STORET Number | Standard |
> |---|---|---|---|
> | | | *** | |
> | Chloride (total) | mg/L | 00940 | 500 |
> | | | *** | |
> | TDS | mg/L | 70300 | 1,000 |
>
> where mg/L = milligram per liter

Abbott also seeks an adjusted standard from Section 304.105 of the Board's regulations (35 Ill. Adm. Code 304.105) which provides:

> In addition to the other requirements of this Part, no effluent shall, alone or in combination with other sources, cause a violation of any applicable water quality standard. When the Agency finds that a discharge which would comply with effluent standards contained in this Part would cause or is causing a violation of water quality standards, the Agency shall take appropriate action under Section 31 or Section 39 of the Act to require the discharge to meet whatever effluent limits are necessary to ensure compliance with the water quality standards. When such a violation is caused by the cumulative effect of more

[1] The United States Environmental Protection Agency (USEPA) defines 7Q10 as "the lowest stream flow for seven consecutive days that would be expected to occur once in 10 years". Terms of Environment: Glossary, Abbreviations And Acronyms, EPA 175-B-92-001, September 1992. Both USEPA and the Board use the 7Q10 concept to describe low stream flows. See also 35 Ill. Adm. Code 302.103.

> than one source, several sources may be joined in an enforcement or variance proceeding, and measures for necessary effluent reductions will be determined on the basis of technical feasibility, economic reasonableness and fairness to all dischargers.

Abbott proposes the following adjusted standard (Am. Pet. at 10):

> The General Use Water Quality standards for chlorides and total dissolved solids contained in Section 302.208(g) shall not apply to the Middle Fork of the North Branch of the Chicago River which receives discharges from the Abbott Park, Illinois facility of Abbott Laboratories, from the point of discharge from that facility to the intersection of the Middle Fork of the North Branch of the Chicago River with Route 176. Instead this water shall comply with a chlorides standard of 750 mg/L and total dissolved solids standard of 1,500 mg/L. In addition, the effluent standards for chlorides and total dissolved solids from the Abbott Park facility shall not exceed the following limits:

Constituent	STORET Number	Concentration
Chlorides	00940	750 mg/L
Total Dissolved Solids	70300	1,500 mg/L

ADJUSTED STANDARD PROCEDURE

In both a general rulemaking and a site-specific rulemaking, the Board is required to take the following factors into consideration: the existing physical conditions, the character of the area involved, including the character of the surrounding land uses, zoning classifications, the nature of the receiving body of water, and the technical reasonability and economic reasonableness of measuring or reducing a particular type of pollution. 415 ILCS 5/27(a) (1996). The general procedures that govern an adjusted standard proceeding are found at Section 28.1 of the Act and the Board's procedural rules at 35 Ill. Adm. Code 106. Section 28.1 also requires that the adjusted standard procedure be consistent with Section 27(a).

Abbott seeks an adjusted standard from rules of general applicability. In determining whether an adjusted standard should be granted from a rule of general applicability, the Board must consider, and Abbott has the burden to prove, the factors at Section 28.1(c) of the Act (415 ILCS 5/28.1(c) (1996)):

> 1. factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;

2. the existence of those factors justifies an adjusted standard;

3. the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and

4. the adjusted standard is consistent with any applicable federal law.

In granting an adjusted standard, the Board may impose conditions that may be necessary to accomplish the purposes of the Act. 415 ILCS 5/28.1(a) (1996).

DISCUSSION

The Agency recommended that the Board grant Abbott an adjusted standard from Section 302.208, but deny an adjusted standard from Section 304.105. Res. at 2. For the reasons outlined below, the Board declines to follow the Agency's recommendation.

Adjusted Standard from Section 304.105 as Opposed to Section 302.208

Section 304.105 provides that "no effluent shall, alone or in combination with other sources, cause a violation of any applicable water quality standard." In other words, Section 304.105 applies the requirements from Section 302.208 to a discharger such as Abbott. The Board, pursuant to Section 28.1 of the Act, has the authority to grant an adjusted standard from Section 304.105 if Abbott has met the requirements for an adjusted standard. The Board notes that, provided that Abbott meets the requirements, the adjusted standard will be granted from Section 304.105 and only up to the concentration limits proposed by Abbott. The Board has granted relief from Section 304.105 in other cases. See *In re* Rhône-Poulenc Basic Chemicals Company, Thorn Creek Basin Sanitary District (June 23, 1994), AS 94-7, slip op. at 18-19; *In re* City of Springfield, Office of Public Utilities (December 1, 1994), AS 94-9, slip op. at 10-11.

The Board declines, in this case, to consider granting Abbott an adjusted standard from Section 302.208. There are no practical consequences for Abbott in providing an adjusted standard pursuant to Section 304.105 as opposed to Section 302.208. Provided that Abbott can prove an adjusted standard from Section 304.105, Abbott will be exempt from causing or contributing to water quality violations up to the proposed concentration limits. See Rhône-Poulenc, slip op. at 19.

Furthermore, the Board will not grant an adjusted standard from the requirements in 302.208 as they apply to Abbott's effluent limits in its NPDES permit. The Agency used the water quality standards in Section 302.208 as a basis to determine the effluent limits for chlorides and TDS in Abbott's permit. The requirements in Section 302.208 do not set or mandate the effluent limits in Abbott's NPDES permit. Second, the adjusted standard

procedure cannot be used to change effluent limits in a permit. Abbott should contact the Agency if it wishes to change the effluent limits in its NPDES permit.

Technical Feasibility and Economic Reasonableness

During the winter of 1996-1997, Abbott used approximately 1,000 tons of salt in order to clear ice from its roads, parking lots, and sidewalks; during the winter of 1997-1998, Abbott used 840 tons. Am. Pet. at 14-15. At $35 per ton of salt, Abbott spent about $35,000 during the winter of 1996-1997 and $29,000 during the winter of 1997-1998. Am. Pet. at 15.

Abbott investigated other deicing strategies. It experimented with a mixture of salt and sand, but this approach led to an increase in debris tracked into Abbott Park facilities. Am. Pet. at 15; Res. at 6. Abbott must keep its manufacturing areas clean pursuant to federal regulations. Am. Pet. at 15.

Calcium magnesium acetate (CMA) is commercially available, but it would have cost Abbott $455,000 more to use CMA instead of salt during the winter of 1996-1997. Am. Pet. at 15; Res. at 6. In addition to its high cost, CMA does not melt snow and ice but rather changes them to slush - a less safe alternative. Am. Pet. at 15.

Even if Abbott were to completely stop using salt, the chloride and TDS concentrations in the Middle Fork could still exceed the limits in Section 302.208 because the Illinois Department of Transportation has confirmed that it will continue to use salt on Highway 43. Am. Pet. at 15-16, Attachment 5.

Abbott then considered treating the effluent, discharging the treated effluent to the Middle Fork, and sending the wastewater to the North Shore Sanitary District (District). Am. Pet. at 16. The least costly option involves ultrafiltration and reverse osmosis treatment. Am. Pet. at 16; Res. at 6. The installation cost for this system would be approximately $750,000, and the annual treatment costs would be approximately $500,000. *Id*. Abbott would then have to pay the District a one-time permit fee of over $500,000 and annual user fees in the tens of thousands of dollars. Am. Pet. at 16-17. The wastewater sent to the District must still be disposed; the chloride and TDS would pass through the District's biological treatment process and into a receiving water. Am. Pet. at 17.

The Board recognizes that salt is necessary for safety reasons and that salt is widely accepted as a method for deicing. Res. at 6. The Board agrees with the Agency that the alternatives to salt, including CMA and sending wastewater to the District, are economically unreasonable. Res. at 6, 10.

Justification for Adjusted Standard

The Board agrees with the Agency that the cost of treating chloride and TDS, and the lack of an effective alternative deicing option justifies granting an adjusted standard. Res. at 11-12.

Existing Physical Conditions / Impact on the Environment

An adjusted standard would have to protect the Middle Fork by ensuring that native and resident organisms are protected. Res. at 7.

In July 1998, Abbott hired an aquatic biologist to conduct a biological and habitat survey near the Abbott Park outfalls. Am. Pet. at 11; Res. at 7. He rated the Middle Fork near the outfalls as generally poor in quality, and said that the fish and macroinvertebrate communities which he observed there were typical of an urban stream with similar characteristics in Northern Illinois. Am. Pet. at 11, Exh. 2 at 2; Res. at 7-8. He concluded that the fish and macroinvertebrate species present in the Middle Fork were limited by habitat rather than water quality because they were tolerant to chlorides. *Id*.

The aquatic biologist cited studies which conclude that maximum concentrations of 800 mg/L of chloride and 1,300 to 1,750 mg/L of TDS will not harm fish in Illinois streams. Am. Pet. at 12, Exh. 2 at 3; Res. at 8. He concluded that the requested adjusted standard will not harm aquatic life in the stretch of the Middle Fork near the Abbott Park outfalls. *Id*. The Board and the Agency agree that granting the adjusted standard for chloride and TDS will have no measurable adverse effect on aquatic life in the Middle Fork. Res. at 6, 12.

Substantially Different Factors

The Board adopted the water quality criteria for chloride and TDS in order to sufficiently protect aquatic life and public water supplies. Res. at 11. However, the Middle Fork is not used as a source of drinking water. *Id*. In addition, the proposed adjusted standards for chloride and TDS will protect aquatic life in the 2,000 foot stretch of the Middle Fork. These are substantially different factors than those that the Board considered when it adopted the water quality criteria for chloride and TDS. See *In re* Effluent Criteria (March 7, 1972), R70-8, *In re* Water Quality Standards (March 7, 1972), R71-14, *In re* Water Quality Standards Revisions for Interstate Waters (SWB 14) (March 7, 1972), R71-20, slip op. at 6, 8.

Consistency With Federal Law

States must adopt water quality standards which protect the designated use of interstate and intrastate waters. 33 U.S.C. § 1313(c) (1996); 40 C.F.R. § 122.44 (1997). The Board has adopted the water quality standards at 35 Ill. Adm. Code 302.208. States may also revise water quality standards. 40 C.F.R. § 131.4 (1997). Standards adopted in compliance with the Board's adjusted standard procedure that do not adversely affect the designated use are consistent with federal law. Am. Pet. at 17; Res. at 4. As discussed above, the proposed adjusted standard will not adversely affect aquatic life of the Middle Fork. The proposed adjusted standard is therefore consistent with federal law.

Conditions on the Adjusted Standard

In the December 17, 1998 order in this case, the Board asked that Abbott provide more information on the quantitative impact of its discharges on the water quality of the Middle Fork. Pursuant to the order, Abbott conducted sampling upstream and downstream of Outfall 002 on three occasions from December 1998 to February 1999. Am. Pet. at 12, Attachment 5. The data show an increase in chloride and TDS concentrations at both upstream and downstream sampling points, but the data show little impact on chloride and TDS concentrations from the Abbott Park outfalls. *Id*. However, in order to fully determine the effect of the Abbott Park outfalls, it is necessary to wait until late winter or early spring once the salt has been able to travel through the pond system. Am. Pet. at 12-13. Thus, as a condition to the issuance of an adjusted standard, Abbott proposes to continue monthly monitoring of chloride and TDS concentrations in the Middle Fork for one year. Am. Pet. at 13.

In an effort to better quantify the biological impact of the effluent from its outfalls, Abbott will conduct fish and benthos sampling in order to supplement the July 1998 study. Am. Pet. at 13; Res. at 8. Sampling will occur in the early and late spring, when chloride and TDS concentrations in the effluent from the Abbott Park outfalls should be at the highest annual levels. *Id*. The sampling will also provide data when there is likely to be water flowing upstream from Outfall 001. There was no sampling during the Summer of 1998 because there was no flow upstream of Outfall 001. Am. Pet. at 13.

Duration

In the December 17, 1998 order, the Board requested that Abbott clarify whether the adjusted standard should be in effect during the winter months or throughout the year. As explained above, there is a time lag between the onset of salting operations and increases in the concentrations of chloride and TDS in Abbott's effluent. Am. Pet. at 12-13. The maximum retention period in the Abbott Park ponds may be as high as 185 days. Am. Pet. at 18, Attachment 6. The effects of salting operations after a late winter storm in March may not be evident until September. The only time of year in which chloride and TDS concentrations would not be affected by winter salting operations would be late autumn. Therefore, Abbott requests that the proposed adjusted standard remain in effect throughout the year. Am. Pet. at 17. The Board agrees with Abbott on this point.

CONCLUSION

The Board finds that Abbott has demonstrated that the factors surrounding the request for the adjusted standard from Section 304.105 of the Illinois Administrative Code are substantially and significantly different than the factors considered by the Board in adopting that rule. Further, due to the substantial costs associated with the compliance alternatives presented by Abbott, the Board is persuaded that the alternatives for compliance would be economically unreasonable and would result in no increased environmental protection. Therefore the Board will grant Abbott an adjusted standard from 35 Ill. Adm. Code 304.105. The Board will not grant Abbott an adjusted standard from the general use water quality standards at Section 302.208 of the Illinois Administrative Code.

This opinion constitutes the Board findings of fact and conclusions of law in this matter.

ORDER

The Board hereby adopts the following adjusted standard, pursuant to the authority of Section 28.1 of the Environmental Protection Act:

1. Abbott Laboratories (Abbott) is granted a partial adjusted standard from 35 Ill. Adm. Code 304.105. Pursuant to this grant, 35 Ill. Adm. Code 304.105 does not apply to chloride or total dissolved solids (TDS) in the effluent from Outfall 001 or Outfall 002 of Abbott's 11 interconnected ponds at its Abbott Park, Lake County, Illinois facility to the Middle Fork of the North Branch of the Chicago River (Middle Fork), provided that this effluent does not cause or contribute to water quality concentrations in the Middle Fork that are greater than:

    a. 750 milligrams per liter (mg/L) for chloride extending 2,000 feet downstream from Abbott's Outfall 002 to the intersection of the Middle Fork and Route 176, and

    b. 1,500 mg/L for TDS extending 2,000 feet downstream from Abbott's Outfall 002 to the intersection of the Middle Fork and Route 176.

2. The Board grants the adjusted standard pursuant to the following conditions:

    a. Abbott shall monitor the concentrations of chloride and TDS in the Middle Fork on a monthly basis for a period of one year after the date of this order consistent with the specifications in its amended petition. Sampling shall continue through April 2000. Abbott shall retain records of the monitoring results and make them available for public inspection.

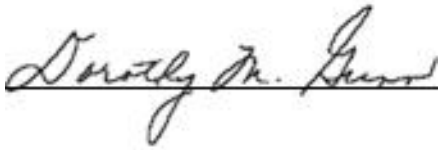
    b. Abbott shall sample fish and benthos in the Middle Fork upstream of Outfall 001, below Outfall 002, and at the Route 176 Intersection. Sampling at the three sites shall occur once in the early spring of 1999 and once in the late spring of 1999 consistent with the amended petition. Abbott shall retain records of the sampling results and make them available for public inspection.

3. Upon notification by the Agency that Abbott is not complying with the conditions listed in section 2 of this order, the Board will revoke Abbott's partial adjusted standard from 35 Ill. Adm. Code 304.105.

IT IS SO ORDERED.

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 172 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 May 1999 by a vote of 7-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board