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STATE OF ILLINOIS  
Pollution Control Board

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

PETITION OF RHODIA, INC. and THORN  
CREEK BASIN SANITARY DISTRICT  
FOR AN ADJUSTED STANDARD FROM  
35 ILL. ADM. CODE 302.208 and 304.105

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)  
) AS01-09  
) (Adjusted Standard - Water)  
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NOTICE OF FILING

Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board  
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100 West Randolph Street, Suite. 11-500  
Chicago, Illinois 60601

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Illinois Department of Natural Resources  
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Springfield, Illinois 62701-1787

**PLEASE TAKE NOTICE** that I have today filed with the Office of the Clerk of the Pollution Control Board the **RECOMMENDATION** of the Illinois Environmental Protection Agency, a copy of which is herewith served upon you.

ENVIRONMENTAL PROTECTION AGENCY  
OF THE STATE OF ILLINOIS

By: Deborah J. Williams  
Deborah J. Williams  
Assistant Counsel  
Division of Legal Counsel

DATED: November 29, 2001

Illinois Environmental Protection Agency  
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*Pollution Control Board*

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**RECOMMENDATION OF THE ILLINOIS ENVIRONMENTAL  
PROTECTION AGENCY**

NOW COMES the Illinois Environmental Protection Agency ("Illinois EPA") by one of its attorneys, Deborah J. Williams, in response to the Petition for Adjusted Standard ("Petition") of Rhodia, Inc. ("Rhodia") and Thorn Creek Basin Sanitary District ("TCBSD") (collectively referred to herein as "Petitioners") from 35 Ill. Adm. Code 302.208 and 304.105 and pursuant to 35 Ill. Adm. Code 104.416, hereby recommends that the Pollution Control Board ("Board") **GRANT** Rhodia and TCBSD's request for an Adjusted Standard from 35 Ill. Adm. Code 302.208 as specified in this Recommendation. The Illinois EPA concludes that an Adjusted Standard from the first provision makes an Adjusted Standard from 35 Ill. Adm. Code 304.105 unnecessary. In support of its recommendation, the Illinois EPA states as follows:

**I. INTRODUCTION**

1. On April 30, 2001, Rhodia and TCBSD filed a Petition with the Board for an Adjusted Standard from 35 Ill. Adm. Code 302.208 and 304.105. Petitioners caused publication of the required newspaper notice on May 3, 2001 and filed their Certificate of Publication with the Board on May 2, 2001.

2. On June 7, 2001, the Board determined that Petitioners' notice made an inaccurate reference to the administrative code citations from which relief was being sought and ordered

Petitioners to publish an amended notice and file a new certificate of publication by June 21, 2001. See, 415 ILCS 5/28.1(d)(2000), 35 Ill. Adm. Code 104.408 and 104.410. New notice was published on June 14, 2001 and another Certificate of Publication was filed with the Board on June 20, 2001.

3. The Illinois EPA is required to file its Recommendation with the Board within 45 days of the filing of a Petition for Adjusted Standard or within 30 days before a scheduled hearing date, whichever occurs earlier. 35 Ill. Adm. Code 104.416. On June 21, 2001, the Board granted the Illinois EPA's motion for extension of time to file its Recommendation until July 30, 2001.

4. On July 26, 2001, the Board found that Rhodia and TCBSD's Petition for Adjusted Standard did not sufficiently address certain informational requirements of 35 Ill. Adm. Code 104.406 and required the Petitioner to file an amended petition addressing these informational requirements by September 14, 2001. In this order, the Board also extended the deadline for the Agency's Recommendation until October 29, 2001.

5. Petitioners filed their Amended Petition for Adjusted Standard on August 27, 2001 along with a request for trade secret protection for certain financial information submitted in response to the Board's request for additional information.

6. On September 20, 2001, the Board joined two additional parties to this proceeding - Takasago Corporation (U.S.A.) and Consumers Illinois Water Company (CIWC) - and granted the Illinois EPA until November 30, 2001 to file a Recommendation in this matter. The Board also granted Petitioners' request for trade secret protection on September 20, 2001.

## **II. BACKGROUND**

7. Rhodia (formerly Rhône-Poulenc Basic Chemicals Co.) and TCBSD have requested adjusted standard relief from the sulfate and total dissolved solids (TDS) water quality standards in Thorn Creek and the Little Calumet River.

8. Rhodia operates a manufacturing plant located at 1101 Arnold Street, in Chicago Heights, Cook County, Illinois that produces inorganic phosphate chemicals and precipitated silica. Amended Petition at p. 2.

9. TCBSD is located in Chicago Heights, Cook County, Illinois and its discharge is permitted pursuant to National Pollutant Discharge Elimination System ("NDPES") permit No. IL 0027723, issued on September 29, 1995, and modified on September 4, 1996. That permit expired on September 30, 2000 and is in the process of being renewed. TCBSD is an approved pretreatment community and controls industrial contributors as required in its NPDES permit.

10. In 1991, the Board granted an adjusted standard applicable to a portion of Thorn Creek. See, In the Matter of: Petition of Nutrasweet Company and Consumers Illinois Water Company for an Adjusted Standard from 35 Ill. Adm. Code 304.105 and 302.208, AS 89-3 (February 28, 1991).<sup>1</sup> On June 23, 1994, the Board granted an adjusted standard from 35 Ill. Adm. Code 304.105 to TCSBD and Rhone-Poulenc in AS 94-7. The Board's Order was amended pursuant to a joint motion for reconsideration on August 11, 1994.

11. Petitioners claim that based upon the need for Rhodia to expand silica production, the relief granted in AS 94-7 is no longer sufficient. Rhodia retained Huff & Huff to prepare an Environmental Assessment (dated November 2000) to support request for a revised adjusted standard.

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<sup>1</sup> Nutrasweet Company is now owned by Takasago Corporation (USA).

### **III. RELIEF REQUESTED**

12. Petitioners have requested a revision to the adjusted standard relief granted by the Board in AS 94-7 in which the Board granted adjusted water quality standards for TDS and sulfates. Petitioners divided the requested reach of receiving stream to obtain adjusted water quality standard relief into four distinct segments, each with different values for TDS and sulfates. If an adjusted standard is granted by the Board, the Illinois EPA would submit the adjusted standard to the United States Environmental Protection Agency ("U.S. EPA") for approval and incorporate the limits established by the approved adjusted standard into TCBSD's NPDES permit.

13. Reach #1 of the Adjusted Standard relief requested by Rhodia and TCBSD is Thorn Creek from TCBSD's outfall to the confluence with Deer Creek. The existing adjusted water quality standard for TDS is currently 2,100 milligrams per liter ("mg/L") at this stretch of the water body and Petitioners have requested the adjusted standard be set at 2,650 mg/L of TDS. The current adjusted standard for sulfate is 1,000 mg/L. Rhodia and TCBSD have requested the adjusted standard of this stretch be set at 1,350 mg/L of sulfate.

14. Reach #2 is defined by Petitioners as Thorn Creek from the confluence of Deer Creek to the United States Geological Survey gauge 05536275 in Thornton. The requested adjusted standard for TDS is 2,620 mg/L (the current adjusted water quality standard for this segment of the receiving stream is 2,100 mg/L) and sulfate is 1,340 mg/L (currently set at 1,000 mg/L). These values represent the influence of the new allowance in the District's effluent and the influence of the dilution with Deer Creek, which has an adjusted standard of 2,100 mg/L TDS (no changes have been proposed to this limit).

15. Reach #3 is Thorn Creek from the USGS gauge and the confluence with the Little Calumet River. Petitioners have requested that TDS be adjusted to a standard of 2,360 mg/L

(currently set at 1,900 mg/L in this segment) and sulfate to 1,160 mg/L (currently 850 mg/L). Slight reductions in the standards occur here due to small amounts of dilution from tributaries of Thorn Creek; Butterfield Creek and North Creek.

16. Reach #4 is the Little Calumet River from the confluence with Thorn Creek to the confluence with the Calumet River. An adjusted standard for TDS has been requested at 2,020 mg/L (currently 1,700 mg/L in this segment) and sulfate at 1,000 mg/L (currently set at 750 mg/L). Further dilution received from the Little Calumet allows the concentrations to be lowered again. The adjusted standard ends with the confluence of the Little Calumet with the Calumet River, which provides additional dilution and is a secondary contact water with a different standard for TDS (1,500 mg/L) and no standard for sulfate.

#### **IV. LEVEL OF JUSTIFICATION REQUIRED**

17. The Illinois EPA agrees with the Petitioner that the regulations of general applicability at 35 Ill. Adm. Code 302.208 and 304.105 do not specify a level of justification or other requirements necessary for this type of adjusted standard. Since there is no specific level of justification for adjusted standards from the regulations at issue in this Petition, the general level of justification provided in Section 28.1 of the Environmental Protection Act ("Act"), 415 ILCS 5/28.1, is the standard of review by which the Board is to judge the instant adjusted standard petition. Section 28.1(c) of the Act, 415 ILCS 5/28.1(c), provides the general level of justification the Board must find a petitioner to have met when granting an adjusted standard petition. That subsection provides:

[T]he Board may grant individual adjusted standards whenever the Board determines, upon adequate proof by petitioner, that: 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.

## V. FACTS PRESENTED IN THE PETITION

18. Thorn Creek is a tributary of the Little Calumet River in Northern Will and Southern Cook Counties. Deer Creek is a tributary of Thorn Creek. Both creeks receive municipal sewage treatment plant effluents.

19. The principal discharger to Thorn Creek is TCBSD. Consumers Illinois Water Company is the primary discharger to Deer Creek. Both wastewater treatment plants have industrial users that contribute high TDS to the plants that passes through the treatment process unaltered, creating high TDS conditions in the effluents. Takasago (formerly Nutrasweet) is the primary industrial user of the CIWC Plant, while Rhodia (formerly Rhône-Poulenc) is the primary industrial user of TCBSD's plant. Takasago petitioned for regulatory relief with CIWC as Rhodia has done with TCBSD.

20. Thorn Creek and Deer Creek are both low flow streams. Thorn Creek has a seven day, ten year low flow value ("7Q10") of 0.3 cubic feet per second ("cfs") upstream of the TCBSD discharge. Deer Creek had a zero 7Q10 flow value upstream of CIWC's discharge. The high effluent concentrations result in stream concentrations that violate water quality standards.

21. By granting the relief of both sets of Petitioners, a complex series of adjusted water quality standards has been created for TDS and sulfate in Deer and Thorn Creeks and the Little Calumet River.

22. Rhodia wants to increase production of silica which creates sodium sulfate in the industrial waste stream. This would increase already high levels of TDS and sodium sulfate in the District's effluent.

23. The Illinois EPA believes that based on proposed production levels by Rhodia, the rise in effluent concentrations and receiving water body concentrations is well established and documented.

**VI. EFFORTS NECESSARY TO ACHIEVE COMPLIANCE AND ALTERNATIVES**

24. The Petitioners examined several alternatives to achieve compliance with the TDS and sulfate limitations in TCBSD's permit following an expansion of silica production. Sodium sulfate, the material causing the compliance problem, is a basic salt. It is difficult to remove this material from a facility's effluent because the water must be removed from the substance, rather than precipitating the substance out of the water. Since sodium sulfate is not amenable to the biological treatment provided by the District, only options for pretreatment at Rhodia were investigated. These options included: falling film evaporation, reverse osmosis and calcium chloride treatment with falling film evaporation. After evaluating the annualized and capital costs of each alternative and considering the adverse cross-media environmental impacts resulting from the various alternative methods of compliance, the Illinois EPA agrees that none of these are viable options. (See table summarizing costs of compliance alternatives at Amended Petition pages 12-13.)

25. Petitioners presented the following capital costs for each alternative: \$6 million for falling film evaporation, \$4 million for reverse osmosis, and \$4.2 million for calcium chloride treatment with falling film evaporation. Annualized costs of \$915,000 for falling film evaporation; \$600,000 for reverse osmosis; and \$670,000 for calcium chloride treatment with falling film evaporation were also presented in the Petition. See Amended Petition at p. 12. The Illinois EPA agrees that these costs appear representative of the actual costs of each of these technologies. All are expensive and have the negative drawback of a concentrated salt waste that



must still be disposed of off-site. In addition, the cost of compliance presented by the Petitioners exceeds the typical cost of secondary treatment for these pollutants, which is taken into account in establishing the best achievable technology that is economically available for industrial sources. As determined by the initial adjusted standard review for the AS 94-7, the Illinois EPA believes that all conceivable options were investigated and none are technically feasible or economically reasonable. This conclusion is also consistent with past findings by the Board for other dischargers dealing with basic salts.<sup>2</sup> Since no technically feasible and economically reasonable treatment is available to remove TDS and sodium sulfate from the Rhodia's industrial or TCBSD's municipal effluent; therefore, the Illinois EPA supports the adjusted standard petition.

## VII. ENVIRONMENTAL IMPACT

26. The environmental harm addressed by Petitioners and investigated by the Illinois EPA involves the toxicity of TDS and sulfates to aquatic life. The Petitioners conducted chronic toxicity tests with fathead minnow and *Ceriodaphnia* using the projected stream concentrations of TDS and sulfate. Thorn Creek water collected below the discharge spiked with extra sodium sulfate was used in these tests. No acute or chronic toxicity was observed at projected stream concentrations that would result from the increase in production. This includes the growth and reproductive evaluations inherent in these bioassays. The Illinois EPA agrees that this was an appropriate experiment to prove that no adverse impacts to aquatic life in the receiving streams would be expected at the highest predicted stream concentrations of TDS and sodium sulfate.

27. The Petitioners also commissioned Huff & Huff, Inc. to perform biological monitoring of Thorn Creek both upstream and downstream of the TCBSD's outfall. The overall

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<sup>2</sup> See Adjusted Standards granted to the following dischargers: Consumers Illinois Water Company and Nutrasweet (Takasago)(AS 89-3), Borden Chemical (AS 93-2), Akso Nobel (AS 93-8), and Abbot Laboratories (AS 99-5).

conclusion of these surveys was that no differences exist in the fish and macroinvertebrate populations of the receiving stream above and below the existing TCBSD discharge. Therefore, this demonstrates that the increase in TDS and sulfate concentration from the first adjusted standard has had no impact on the aquatic life community. The results of the predictive bioassays mentioned above indicate that this condition of no impact should remain after concentrations are increased. In addition, there is no cumulative impact from the increased concentration of the discharge since the sodium sulfate is dissolved.

28. The Illinois EPA also agrees with the Huff & Huff study that predicts in-stream concentrations of TDS and sodium sulfate. Studying base stream flows, background TDS and sodium sulfate concentrations and the contributions of other effluents resulted in these conclusions that form the basis for the magnitude of relief requested. These predictions are believed to be accurate.

### **VIII. PETITIONER'S JUSTIFICATION OF PROPOSED ADJUSTED STANDARD**

29. The Board must review the justification for a proposed adjusted standard pursuant to 35 Ill. Adm. Code 104.426. This rule provides that the Petitioner must justify its adjusted standard consistent with Section 27(a) of the Act, 415 ILCS 5/27(a)(2000). Section 27(a) of the Act requires the Board to take into account five specified factors when promulgating regulations, including adjusted standards: the existing physical conditions; the character of the area involved including surrounding land use; zoning classifications; nature of the receiving water body; and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution. The preceding sections of the Illinois EPA's Recommendation have addressed each of these factors, and it is the Illinois EPA's conclusion that these factors point in favor of the grant of an Adjusted Standard to the Petitioners.

30. Additionally, 35 Ill. Adm. Code 104.426(a) restates the four additional factors specified in Section 28.1 of the Act, 415 ILCS 5/28.1(2000), to be proven by the Petitioners: the Petitioners' relevant factors are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to the Petitioners; that these factors justify an adjusted standard; the requested adjusted standard will not result in environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and the requested adjusted standard is consistent with any applicable federal law.

31. The Board has previously found that these factors were met in AS 94-7 and nothing has taken place since the grant of this adjusted standard to change that conclusion. In making its Recommendation to the Board, the most important of these for the Illinois EPA to revisit was whether any chance of additional environmental harm would result from the requested adjusted standard and whether these effects were "substantially or significantly" more adverse than the effects considered by the Illinois EPA in adopting the rule of general applicability. The Illinois EPA has concluded (see above section on environmental impact) that no additional environmental harm will result from the grant of the requested relief.

#### **IX. CONSISTENCY WITH FEDERAL LAW**

32. The existing general use Illinois water quality standards have been approved by U.S. EPA. The Illinois EPA has been unable to determine whether AS 94-7 was formerly approved by U.S. EPA following its submittal by Illinois EPA. The proposed adjusted standards for water quality, if adopted by the Board, will be submitted for approval to U.S. EPA.

## **X. HEARING**

33. Petitioners, Rhodia and TCBSD, have waived their right to a hearing in this matter. The Illinois EPA agrees that no hearing is necessary for the Board to make a determination on this request for a revision to an existing Adjusted Standard.

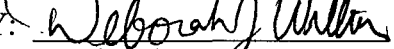
## **XI. RECOMMENDATION AND CONCLUSION**

34. The Illinois EPA recommends that Petitioners, Rhodia, Inc. and Thorn Creek Basin Sanitary District, be granted the requested adjusted standard, pursuant to 415 ILCS 5/28.1 and consistent with 415 ILCS 5/27(a), from the Total Dissolved Solids and Sulfate requirements contained in 35 Ill. Adm. Code 302.208, at the Petitioners' Chicago Heights, Cook County, Illinois facilities. The Illinois EPA does not believe the requested adjusted standard from 35 Ill. Adm. Code 304.105 is necessary in this case, as an adjusted TDS and sulfate water quality standard would allow Rhodia and TCBSD to expand silica production and still maintain full compliance with its NPDES permit as the Illinois EPA will amend TCBSD's NPDES permit to conform with any adjusted standard granted by the Board in this case.

WHEREFORE, for the reasons stated herein, the Illinois EPA recommends that the Pollution Control Board **GRANT** the Adjusted Standard Petition of Rhodia, Inc. and Thorn Creek Basin Sanitary District.

Respectfully Submitted,

ILLINOIS ENVIRONMENTAL  
PROTECTION AGENCY

BY:   
Deborah J. Williams  
Assistant Counsel  
Division of Legal Counsel

DATED: November 29, 2001  
1021 N. Grand Ave. East  
P.O. Box 19276  
Springfield, Illinois 62794-9276  
(217) 782-5544

STATE OF ILLINOIS

COUNTY OF SANGAMON

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) SS  
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**PROOF OF SERVICE**

I, the undersigned, on oath state that I have served the attached **RECOMMENDATION** upon the person to whom it is directed, by placing a copy in an envelope addressed to:

Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board  
James R. Thompson Center  
100 West Randolph Street, Suite. 11-500  
Chicago, Illinois 60601  
**(Overnight Mail)**

Roy Harsch  
Shiela Deely  
Gardner, Carton and Douglas  
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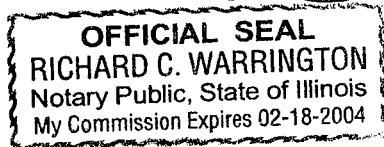
and mailing it from Springfield, Illinois on November 29, 2001 with sufficient postage affixed as indicated above.

*Nancy J.D. Lampert*

**SUBSCRIBED AND SWORN TO BEFORE ME**

this 29 day of November 2001

*[Signature]*  
Notary Public



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