

BEFORE THE POLLUTION CONTROL BOARD  
OF THE STATE OF ILLINOIS

IN THE MATTER OF:	)	
	)	
	)	R07-09
TRIENNIAL REVIEW OF SULFATE AND	)	(Rulemaking - Water)
TOTAL DISSOLVED SOLIDS WATER	)	
QUALITY STANDARDS: PROPOSED	)	
AMENDMENTS TO: 35 Ill. Adm. Code 302.102(b)(6),	)	
302.102(b)(8), 302.102(b)(10), 302.208(g),	)	
309.103(c)(3), 405 .109(b)(2)(A), 405.109(b)(2)(B),	)	
406.100(d); REPEALED 35 Ill. Adm. Code 406.203,	)	
PART 407; and PROPOSED NEW 35 Ill. Adm. Code	)	
302 .208(h).	)	

**NOTICE OF FILING**

To:

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Mathew Dunn Illinois Attorney General's Office Environmental Control Division James R. Thompson Center 100 West Randolph Street Chicago, Illinois 60601	Jonathan Furr Illinois Department of Natural Resources One Natural Resources Way Springfield, Illinois 62702-1271

**SEE ATTACHED SERVICE LIST**

Please take notice that on April 9, 2007, we filed with the Office of the Clerk of the Illinois Pollution Control Board via electronic mail the **TESTIMONY OF JAMES E. HUFF** and the **TESTIMONY OF BRIGITTE POSTEL**, a copy of which is served upon you.

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: )  
 )  
PROPOSED AMENDMENTS TO: )  
35 Ill. Adm Code 302.102(b)(6), 302.102(b)(8) )  
405.109(b)(2)(A), 405.109(b)(2)(B), 406.100(d); )  
REPEALED 35 Ill. Adm. Code 406.203, PART 407; and )  
PROPOSED NEW 35 Ill. Adm. Code 302.208(h)

TESTIMONY OF JAMES E. HUFF, P.E.

My name is James E. Huff, and I am Vice President and part owner of the environmental consulting firm Huff & Huff, Inc. I am here today on behalf of CITGO's Lemont Refinery, which discharges into the Chicago Sanitary & Ship Canal, a Secondary Contact Waterway.

I am a registered Professional Engineer in Illinois and have been involved in Illinois water quality issues since 1971, including the original Pollution Control Board Water Quality Standards. I have been following closely the Agency's efforts to amend the Total Dissolved Solids (TDS) and sulfate water quality standards since 2004. Attachment 1 to my testimony is a copy of my education and experience.

The Agency's efforts to amend the water quality standards for TDS and sulfate, which included expanding our knowledge on sulfate toxicity as it relates to hardness and chlorides, are to be commended. Illinois has an opportunity to develop water quality standards based on better science than what has historically been available that will be protective of the designated stream uses.

Bob Mosher and Brian Koch of the Illinois Environmental Protection Agency addressed in detail the aquatic toxicity as well as livestock watering impacts associated with higher sulfates, along with describing the US EPA procedure utilized to derive the General Use sulfate water quality standard. I have reviewed the Agency's testimony and exhibits, and fully support the Agency's proposed changes as they apply to General Use Streams.

Secondary Contact and Indigenous Aquatic Life (Secondary Contact) Standards are not currently included in the Agency's proposed changes to the sulfate and TDS water quality standards. I would recommend that changes to the Secondary Contact waterways for these same constituents be included in this proceedings. Secondary Contact waterways are not suited for general use activities such as swimming. Barge transportation is a major stream use on the Chicago Sanitary & Ship Canal and Des Plaines River above the I-55 Bridge. Given the Agency's testimony in this Rulemaking, there is no technical reason not to eliminate the TDS water quality standards proposed for General use Streams to the Secondary Contact Waterways. The evidence already presented by the Agency to support the General Use proposal certainly applies to Secondary Contact Waterways as well.

At the March 7, 2007 hearing Toby Frevert indicated that the hardness and chloride levels in the Ship Canal and similar to the levels found in the lower Des Plaines River. Mr. Frevert indicated that the Agency was planning to modify all of the Secondary Contact water quality standards at one time, and that was why the Agency was not proposing sulfate and TDS changes at this time.

As the Board is aware, the CITGO Lemont Refinery was granted a five-year variance from the TDS water quality standard in April 2005, to allow for the discharge of additional TDS associated with a Wet Gas Scrubber for sulfur dioxide removal. CITGO elected to go the variance route because of time constraints imposed by US EPA in its Consent Order with CITGO and the understanding the Agency's pending rule to eliminate the TDS water quality change would eliminate the need for the variance for the entire five year period requested. I would note in R06-24, ExxonMobil's Site Specific request, the Agency noted in its Post-hearing Comments that Conditions 3, 5, 6, 7, and 10 in CITGO's variance would no longer be pertinent. As part of CITGO's variance conditions, TDS data at the I-55 Bridge on the Des Plaines River is being collected during the winter months. Attachment 2 presents the data collected to date. TDS levels exceeded the 1,000 mg/L from February 21 to March 7, 2007.

The Agency's sulfate and TDS proposal was delayed in getting to the Board, and excludes Secondary Contact Waterways. This has put CITGO in a difficult position, either file for a Site Specific Rule Change or hope that the Secondary Contact Water Quality changes will be submitted to the Board and adopted within the next three years.

Attachment 3 presents historic sulfate water quality at the I-55 Bridge on the Des Plaines River. As Mr. Frevert noted, similar levels would be expected in the Chicago Sanitary & Ship Canal. With the exception of one apparent outlier of 490 mg/L sulfate (when the TDS was only 720 mg/L) the levels have been below 120 mg/L. In R06-24, Scott Twait of the Agency testified that the hardness in the Des Plaines River is 205 mg/L and the chlorides are 450 mg/L. Using the proposed Agency equation as found in Section 302.208(h)(2)(A), the sulfate water quality standard would be 1,138 mg/L. The monitoring data at the I-55 Bridge demonstrate the sulfate levels are not only well below this proposed water quality value, but also well below the existing 500 mg/L sulfate water quality standard. The combined impact from CITGO's and ExxonMobil's wet gas scrubbers will result in the sulfate level at the I-55 bridge increasing 29 mg/L at the 7-day, 10-year low stream flow of 970 million gallons per day. Such an increase will not cause the sulfate to increase above the existing 500 mg/L water quality standard or the proposed 1,138 mg/L water quality standard.

As Brigitte Postel from CITGO has testified, the stakeholders meeting on the proposed water quality changes last month was contentious, and achieving consensus on other issues is going to be a difficult task. Sulfate and TDS were not part of the disagreements, but use attainability and changes in other pollutants, notably temperature, ammonia, and bacteria are very controversial. Clearly, relying on the Secondary Contact Water Quality changes for TDS is fraught with uncertainty from a timing perspective, leaving CITGO with the one option, filing a Site-Specific Rule Change request before the Board. This is not only an unnecessary cost to the Board, Agency, and CITGO, but also places an additional time burden on the same three groups. I am sure there are more critical issues that can be focused upon. That the Agency desires to amend

the Secondary Contact Water Quality Standards only once seems like inadequate justification for not adopting the TDS changes now.

As the Board is aware, there are currently no sulfate or chloride water quality standards on the Secondary Contact Waterways. The General Use sulfate standards are limited to waterways having chloride levels less than 500 mg/L, which is the General Use water quality standard for chlorides. Attachment 4 to my testimony is recent chloride data from CITGO's water intake from the Chicago Sanitary & Ship Canal. This location is upstream from the CITGO outfall, and reflects the stream quality coming from the Chicago Metropolitan Area. While there has been an overall decline in peak chlorides over the last decade, this past winter was particularly challenging from a de-icing perspective. The chloride levels stayed elevated for a longer period of time than in recent years. From February 19, 2007 to at least March 5, 2007 the chlorides stayed above 500 mg/L. (This is essentially the same time frame that the TDS at the I-55 Bridge exceeded 1,000 mg/L, as presented in Attachment 2.) It is not clear from the proposed regulations what sulfate water quality would apply during such a period of elevated chlorides on General Use waterways, if the proposed General Use sulfate standard were to be adopted. However, the Agency's draft regulations for Secondary Contact waterways has the same equation as for General Use Waterways, but without the 500 mg/L chloride cap on the use of the equation, as presented below:

$$\text{Sulfate, mg/L} = (1276.7 + 5.508(\text{Hardness, mg/L}) - 1.457(\text{Chlorides, mg/L})) \times 0.65$$

In summary, the Agency's proposal is appropriate for Primary Contact waterways, with some clarification on the standard when the chlorides exceed 500 mg/L. Adopting the above equation for Secondary Contact waterways as part of the R07-009 proceedings would also be appropriate, and consistent with the Agency's intentions. Given the delays that will undoubtedly occur in adopting revised Secondary Contact Water Quality regulations, I would urge the Board to eliminate the TDS water quality standard for Secondary Contact waterways as part of these proceedings and adopt the above sulfate standard. If the Board is unwilling to do this for all Secondary Contact waterways, we would ask the Board to consider the deletion of the TDS water quality standard as it applies to CITGO.

This concludes my pre-filed testimony. I will be happy to address any follow-up questions.

ATTACHMENT 1



**JAMES E. HUFF, P.E.**  
**Vice President**

Expertise: Wastewater Treatment Planning and Design  
Stream Surveys/Antidegradation Analysis  
Soil & Groundwater Remedial Design

Experience:

Since 1980, Mr. Huff has been vice president of Huff & Huff, Inc. responsible for projects pertaining to wastewater treatment, design and operation, water quality studies, hazardous waste management, groundwater and soil remediation, and compliance assessments.

Mr. Huff has directed 15 municipal wastewater treatment design projects. Examples of municipal design projects are listed below:

- Belt filter press system for aerobic digested sludge, with sludge mixer and control system.
- Sludge storage pad with enclosure
- Bar screen
- Grit, washer replacement
- Tertiary filter rehabilitation
- Secondary/Tertiary high flow bypass with chlorine contact tank and flow measurement and blending
- Anaerobic digester supernatant treatment for ammonia removal using SBRs (1999 ACEC-IL Engineering Excellence Merit Award project.)
- Conversion from chlorine to sodium hypochlorite disinfection
- Conversion of wet weather storage facilities to store-treat basins, with effluent disinfection
- In-stream high purity oxygen injection into effluent and receiving stream for increasing stream D.O
- Excess Flow Treatment for new CSO.

Mr. Huff is currently the Project Manager for preparation of a Facilities Plan for the Village of Barrington, that is evaluating the change in sludge quantity for future nutrient removal options and the need to upgrade to Class A sludge. Mr. Huff has also conducted several CSO studies including Nine Minimum Controls, O&M Plans, and Water Quality Impact Studies. Two novel in-stream aeration systems, using high-purity oxygen on a shallow Illinois stream, were designed by the firm, and have operated successfully for over twenty years. Mr. Huff has also completed two value engineering projects, one on an expanded wastewater treatment plant and the other for a excess flow holding tank in the sewer system.

He has also designed cluster wastewater treatment systems with subsurface discharge for seven residential developers/country clubs, an outdoor event facility, and a temple. These systems are typically 10,000 to 20,000 gpd, utilizing two SBRs, computer controlled, followed by a large leach field. These unique systems are permitted under the IDPH under a unique experimental use permit provision.

Mr. Huff has designed industrial wastewater treatment plants ranging in size from less than one thousand gallons per day to eight million gallons per day. He has assisted two petroleum refineries with nitrification issues and evaluated the impact an industrial user's sodium sulfate discharge would have on the POTW, including the anaerobic sludge process. Currently Mr. Huff is the Project Manager on a Treatability Study evaluating another industrial discharger's proposed sodium sulfate discharge will have on an Indiana POTW. Mr. Huff has worked in a variety of industries on wastewater projects, including: petroleum refineries, cosmetics, foundries, plating, printed circuit boards, organic chemical, pharmaceutical

- Sequential batch reactors (SBRs) for BOD<sub>5</sub>/COD reduction at pharmaceutical plant
- Replacement of a rotary drum pre-coat filter with a belt filter press for cosmetic wastewater
- Side stream SBR for nitrification on meat packing three-stage lagoon
- Breakpoint chlorination for ammonia removal at chemical plant and also a meat packer
- Land application, with winter lagoon at chemical plant
- Copper removal from printed circuit board facility using sodium borohydride
- Integrated settling basin sludge drying beds at foundry

On the Fox River, Mr. Huff was project manager for a group of municipal dischargers on a project to collect and analyze weekly water quality samples along the river, its tributaries, and outfalls at over 30 locations to establish a better database on un-ionized ammonia levels. Mr. Huff has directed fish, mussel, benthic, and water quality surveys for municipal, storm water, and industrial discharges located on the following waterways: Beaver Creek, Cedar Creek, Deep Run, Flint Creek, Mississippi River, Thorn Creek, North Kent Creek, Tyler Creek, Kiswaukee River, Chicago Sanitary & Ship Canal, and Casey Fork Creek, and has completed antidegradation studies as part of many of these studies. Thermal studies, mixing zone studies, and multi-part diffuser designs have been completed for a variety of clients. A thermal study on the Illinois River is on-going.

Since 2004, Mr. Huff has been the lead consultant for NIPC (now CMAP) to review FPA requests for consistency with the Commission's Water Quality Management Plan. To date, Mr. Huff has completed over 50 FPA requests, including the Facilities Plan associated with these. Antidegradation and nutrients have been two major issues on many of these applications. Mr. Huff serves on the Illinois Nutrient Technical Advisory Committee, representing the American Council of Engineering Companies – Illinois (ACEC-IL). Mr. Huff has been involved in eleven site specific rule changes and adjusted standards in Illinois. These studies have included ammonia, D.O., BOD<sub>5</sub>, TSS, TDS, and sulfates.

From 1987 through 1990, Mr. Huff was a part-time faculty member, teaching the senior level environmental courses in the Civil Engineering Department at IIT-West in Wheaton, Illinois.

From 1976 to 1980, Mr. Huff was Manager of Environmental Affairs for Akzo Nobel Chemicals, a diversified industrial chemical manufacturer. At Akzo, Mr. Huff was responsible for all environmental activities at eight plants located throughout the United States and Canada. Technical work included extensive biological and chemical treatability studies as well as designing new facilities, including two wastewater pretreatment facilities, a land application system, and an incinerator system.

Previously, Mr. Huff was an Associate Environmental Engineer in the Chemical Engineering Section at IIT Research Institute (IITRI). Much of this work involved advanced wastewater treatment development, including applying a combination of ozone/UV treatment of cyanide, PCB's, RDX, HMX, and TNT and the use of catalytic oxidation of cyanide using powdered activated (carbon impregnated with copper in refinery activated sludge units. At Mobil Oil's Joliet Refinery Mr. Huff was employed as an Advanced Environmental Engineer during the construction and start-up of the largest grassroots refinery ever constructed. Mr. Huff was responsible for wastewater training, permitting start-up, and technical support as well as for water supply, solid waste, and noise abatement issues at the refinery from 1971 to 1973.

#### Membership

Illinois Association of Wastewater Agencies  
American Council of Engineering Companies - IL  
Environmental Committee 1999 – 2005  
Chairman-June 2000-2004  
Board of Directors – 2005-2007

Water Environment Federation Member  
Illinois Water Environment Federation  
National Water Well Association

Licenses: Registered Professional Engineer, Illinois and New Jersey  
Class 2 Wastewater Operator-Illinois  
Class K Industrial Wastewater Operator-Illinois

Education:

1966-1970 Purdue University, West Lafayette, Indiana  
B.S. in Chemical Engineering

1970-1971 Purdue University, West Lafayette, Indiana  
M.S.E. in Environmental Engineering

1974-1976 University of Chicago  
Graduate School of Business. Part time

Honors: Omega Chi Epsilon (Chem. Engr. Honorary)  
President's Academic Award  
Graduated with Distinction  
Fellowship from the Federal Water Quality Admin.

Thesis: "Destabilizing Soluble Oil Emulsions Using Polymers with Activated Carbon," Major Professor, Dr. James E. Etzel

Selected Papers:

"Ozone-U.V. Treatment of TNT Wastewater," E.G. Fochtman and J.E. Huff, International Ozone Institute Conference, Montreal, May 1975.

"Characterization of Sensory Properties: Qualitative, Threshold, and Supra-Threshold," J.E. Huff and A. Dravnieks, American Water Works Assoc. Seminar, Minneapolis, MN, June 1975.

"Control of Rendering Plant Odors by Wet Scrubbers: Results of Plant Tests," R.H. Snow, J.E. Huff, and W. Boehme, APCA Conference Boston, MA, June 1975.

"Alternative Cyanide Standards in Illinois, a Cost-Benefit Analysis," L.L. Huff and J.E. Huff, 31st Annual Purdue Industrial Waste Conference, Lafayette, IN, May 1976.

"Cyanide Removal from Refinery Wastewaters Using Powdered Activated Carbon," J.E. Huff, J.M. Bigger, and E.G. Fochtman, American Chemical Society Annual Conference, New Orleans, LA, March 1977. Published in Carbon Adsorption Handbook, P.N. Cheremisinoff and F. Ellerbusch, Eds., Ann Arbor Science Publishers, Inc., 1978.

"Industrial Discharge and/or Pretreatment of Fats, Oils and Grease," J.E. Huff and E.F. Harp, Eighth Engineering Foundation Conference on Environmental Engineering, Pacific Grove, CA, February 1978.

"A Review of Cyanide of Refinery Wastewaters," R.G. Kunz, J.E. Huff, and J.P. Casey, Third Annual Conference of Treatment and Disposal of Industrial Wastewater and Residues, Houston, TX, April 1978. Published as: "Refinery Cyanides: A Regulatory Dilemma," Hydrocarbon Processing, pp 98-102, January 1978.

"Treatment of High Strength Fatty Amines Wastewater - A Case History," J.E. Huff and C.M. Muchmore, 52nd Conference - Water Pollution Control Federation, Houston, TX, October 1979. Published JWPCF, Vol. 54, No. 1, pp 94-102, January 1982.

"A Proposal to Repeal the Illinois Pollution Control Board's Construction Permit Water Regulations," J.H. Russell and J.E. Huff, Chicago Bar Record, Vol. 62, No. 3, pp 122-136, Nov.-Dec., 1980.

"Measurement of Water Pollution Benefits - Do We Have the Option?" L.L. Huff, J.E. Huff, and N.B. Herlevson, IL Water Pollution Control Assn 3rd Annual Conference, Naperville, IL, May 1983.

"Evaluation of Alternative Methods of Supplementing Oxygen in a Shallow Illinois Stream," J.E. Huff and J.P. Browning, IL Water Pollution Control Assn 6th Annual Meeting, Naperville, IL, May 7, 1985.

"Technical and Economic Feasibility of a Central Recovery Facility for Electroplating Wastes in Cook County, IL," J.E. Huff and L.L. Huff, 1986 Governor's Conference on Science and Technology in Illinois, Rosemont, IL, Sept. 3, 1986.

"Biomonitoring/Bioassay," J.E. Huff, Federation of Environmental Technologists Seminar, Harvey, IL, December 11, 1989.

"Storm Water Discharges," J.E. Huff, Federation of Environmental Technologists Environment '90 Seminar, Milwaukee, WI, March 7, 1990.

"Engineering Aspects of Individual Wastewater System Design," J.E. Huff, 22nd Annual Northern Illinois Onsite Wastewater Contractors Workshop, St. Charles, IL, February 27, 1995.

"Cleaning Up Contaminated Property in Illinois," J.W. Watson and J.E. Huff, Midwest Environmental Corporate Counsel Association, September 18, 1997.

"Total Maximum Daily Loadings (TMDL) and Ammonia Conditions in the Fox River Waterway," J. E. Huff and S. D. LaDieu, Illinois Water '98 Conference, Urbana, IL, Nov. 16, 1998.

"The Illinois Ammonia Water Quality Standards: Effluent Implications & Strategies for Compliance," L.R. Cunningham & J. E. Huff, Illinois Water '98 Conference, Urbana, IL, Nov. 16, 1998.

"Impact of a High Sulfate and TDS Industrial Discharge on Municipal Wastewater Treatment," J.L. Daugherty, J.E. Huff, S.D. LaDieu, and D. March, WEFTEC 2000, Anaheim, CA, October 17, 2000.

"Phase II Storm Water Regulations – Compliance Strategies For The Gas Transmission/Distribution Industry," J.E. Huff, American Gas Association 2003 Operations Conference, Orlando, Florida, April 28, 2003.

"Endocrine Disruptors or Better Living Through Chemistry" Illinois Association of Wastewater Agencies Fall Meeting, Bloomington, IL, November 14, 2003.

"Emulsified Zero-Valent Iron: An Emerging Remediation Technology" J. E. Huff, Association of Environmental & Engineering Geologists-North Central Section, February 20, 2007.

"Permitting Wastewater Treatment Plant Expansions in Northeast Illinois in the 21<sup>st</sup> Century", J.E. Huff, 28<sup>th</sup> Annual Illinois Water Environment Association Conference, Bloomington, IL, March 6, 2007.

ATTACHMENT 2  
 DES PLAINES RIVER TDS SAMPLING  
 I-55 Bridge

Date	Total Dissolved Solids, mg/L
11/21/06	590
11/28/06	600
12/04/06	620
12/06/06	670
12/08/06	650
12/11/06	700
12/13/06	660
12/15/06	660
12/18/06	700
12/20/06	700
12/21/06	680
12/26/06	520
12/27/06	540
12/29/06	570
01/02/07	600
01/03/07	580
01/05/07	440
01/08/07	420
01/10/07	520
01/12/07	500
01/15/07	690
01/17/07	620
01/19/07	740
01/22/07	750
01/24/07	720
01/26/07	710
01/29/07	940
01/31/07	960
02/02/07	860
02/05/07	740
02/07/07	800
02/09/07	770
02/12/07	770
02/14/07	710
02/16/07	730
02/20/07	700

ATTACHMENT 2  
DES PLAINES RIVER TDS SAMPLING  
I-55 Bridge

Date	Total Dissolved Solids, mg/L
02/21/07	1000
02/23/07	1100
02/26/07	1200
02/28/07	1300
03/02/07	1200
03/05/07	1100
03/07/07	1100
03/09/07	980
03/12/07	1000
03/14/07	1000
03/16/07	870
03/19/07	790
03/22/07	790
03/26/07	700
03/28/07	720
03/29/07	690
03/30/07	740
<b>Average</b>	<b>762</b>
<b>Maximum</b>	<b>1300</b>

**ATTACHMENT 3**  
**Des Plaines River at the I-55 Bridge**  
**Sulfate and TDS Data**

<b>DOWNSTREAM RIVER WATER</b>		
<b>Date Sampled</b>	<b>Sulfate (mg/L)</b>	<b>Total Dissolved Solids(mg/L)</b>
02/28/05	95	800
03/09/05	99	840
03/11/05	95	900
03/15/05	92	900
03/22/05	98	860
03/25/05	100	890
04/01/05	95	770
04/05/05	69	750
04/12/05	100	760
04/28/05	76	730
05/03/05	490	720
05/10/05	96	760
05/19/05	120	610
05/24/05	65	610
05/31/05	67	630
06/07/05	96	700
06/14/05	67	510
06/21/05	77	540
06/28/05	91	520
07/05/05	100	520
07/12/05	62	510
07/19/05	69	480
08/02/05	62	410
08/10/05	56	440
08/17/05	47	430
08/23/05	53	400
08/31/05	94	400
09/13/05	48	340
09/20/05	54	300
09/28/05	51	360
10/04/05	48	290
10/11/05	57	380
10/19/05	40	470
10/28/05	62	500
11/01/05	88	460
11/09/05	98	480
11/17/05	89	530
11/21/05	81	570
11/30/05	110	480
12/06/05	89	590
12/13/05	90	620
12/20/05	100	870
12/28/05	100	790
01/04/06	100	880
01/10/06	100	900
01/19/06	110	740
01/24/06	92	720
01/31/06	100	840
02/07/06	100	780
02/14/06	110	800
02/21/06	120	840
02/28/06	95	760
03/09/06	95	720
03/13/06	89	700
03/22/06	84	700
04/13/06	110	650
04/18/06	93	520
04/25/06	100	550
<b>Average</b>	<b>92</b>	<b>630</b>
<b>Maximum</b>	<b>490</b>	<b>900</b>

Source: PCB R06-24, Exhibit 6A

**ATTACHMENT 4  
CITGO WATER INTAKE  
2007 CHLORIDE AND TDS RESULTS**

<b>Date</b>	<b>Chloride, mg/L</b>	<b>Total Dissolved Solids, mg/L</b>
01/01/07	174	689
01/05/07	156	657
01/08/07	113	454
01/12/07	133	576
01/19/07	239	662
01/22/07	203	666
01/26/07	384	876
01/29/07	286	1656
02/02/07	225	800
02/05/07	227	459
02/09/07	181	666
02/12/07	224	619
02/16/07	181	532
<b>02/19/07</b>	<b>695</b>	1181
<b>02/23/07</b>	<b>549</b>	1245
<b>02/26/07</b>	<b>600</b>	1520
<b>03/02/07</b>	<b>734</b>	1487
<b>03/05/07</b>	<b>616</b>	1332
03/09/07	395	1076
03/16/07	350	1131
03/19/07	340	1075
03/23/07	281	950
03/23/07	281	761
03/26/07	415	
<b>Average</b>	<b>333</b>	<b>916</b>
<b>Maximum</b>	<b>734</b>	<b>1656</b>

BEFORE THE POLLUTION CONTROL BOARD  
OF THE STATE OF ILLINOIS

IN THE MATTER OF: )  
)  
) R07-09  
TRIENNIAL REVIEW OF SULFATE AND ) (Rulemaking - Water)  
TOTAL DISSOLVED SOLIDS WATER )  
QUALITY STANDARDS: PROPOSED )  
AMENDMENTS TO: 35 Ill. Adm. Code 302.102(b)(6), )  
302.102(b)(8), 302.102(b)(10), 302.208(g), )  
309.103(c)(3), 405 .109(b)(2)(A), 405.109(b)(2)(B), )  
406.100(d); REPEALED 35 Ill. Adm. Code 406.203, )  
PART 407; and PROPOSED NEW 35 Ill. Adm. Code )  
302 .208(h). )

**TESTIMONY OF BRIGITTE POSTEL**

**I. BACKGROUND**

My name is Brigitte Postel. I have been employed by CITGO Petroleum Corporation ("CITGO") for the past 3 years. I have worked at the Lemont Refinery since October 2003. At Lemont Refinery, I have held the position of Environmental Engineer, Water Coordinator. I received a Bachelor of Science in Chemistry from the University of Illinois, Champaign-Urbana and a Masters of Science in Environmental Engineering from Lamar University, Beaumont Texas.

Prior to my time at Lemont Refinery, I held various environmental positions in the pharmaceutical, chemical and power industries.

**II. GENERAL REFINERY INFORMATION**

CITGO operates its Lemont Refinery at 135<sup>th</sup> and New Avenue in Will County, Illinois. The Refinery was constructed during the period 1967 through 1970. It became operational in late fall of 1969. Currently, the average daily production is 168,626 barrels per day. The Refinery employs approximately 530 people.

Approximately twenty-five different products are produced at the Refinery, including gasolines, turbine fuels, diesel fuels, furnace oils, petroleum coke and various specialty naphthas which can be manufactured into many intermediate products, including antifreeze, dacron, detergent, industrial alcohols, plastics and synthetic rubber. Ninety percent of the Refinery's output goes into making gasolines, diesel fuels, home heating oils and turbine fuels for use in Illinois and throughout the Midwest.

The Refinery draws from and discharges to the Chicago Sanitary & Ship Canal ("Canal"). The Refinery takes approximately 4.0 million gallons of water daily from the Canal, and discharges approximately 3.8 million gallons to the Canal, the difference being cooling tower evaporation and steam losses. The wastewater effluent contains dissolved solids derived from compounds present in crude oil that are removed from the crude by various Refinery operations, as well as concentrating the TDS present in the intake water from the Canal from the evaporation cooling.

The Refinery operates under a National Pollutant Discharge Elimination System ("NPDES") permit (No. IL 0001589), issued by the Illinois Environmental Protection Agency ("IEPA"). The NPDES permit became effective September 1, 1994. CITGO filed a timely NPDES renewal application in 1997, and a renewed NPDES permit was issued on July 28, 2006. The NPDES permit includes outfall 001 at the Refinery at river mile 296.5 on the Canal (Latitude 41°38'58", Longitude 88°03'31").

### **III. CITGO'S POSITION ON AGENCY'S PROPOSED RULEMAKING**

The purpose of my testimony today is two-fold: to support the requested rule change by the Agency and to request that the Board also extend the changes pertaining to TDS, and sulfates to Lemont Refinery.

The refinery has been in operation since 1969. Until recently, however, we did not have occasion to be concerned with the total dissolved solids component of our effluent. Until the most recent NPDES permit was issued last year, CITGO's NPDES permits had not limited the discharge for TDS.

TDS has become an issue for the refinery due to the agreement that CITGO reached with U.S. EPA and the states of Illinois, Louisiana, New Jersey, and Georgia to substantially reduce the sulfur dioxide and nitrous oxide emissions from several facilities, including Lemont refinery. Due to the discharge from the Wet Gas Scrubber, that is a key component of an emission control project, we found that increased levels of TDS would be discharged. As we were developing the project, we also learned that due to TDS levels in the lower Des Plaines river near the I-55 Bridge, that IEPA would not issue a construction permit for that project.

Treatment for TDS in the wastewater stream was neither technically feasible nor economically reasonable. Deep well injection was not an option, according to information we obtained from the Agency. Technologies for removing sodium sulfate from a dilute aqueous stream are limited. Electrodialysis has never been applied in the chemical or refinery industries on the scale required at the Refinery. Biological sulfate reduction is theoretically possible, but this will not reduce the overall TDS concentration merely by replacing the sulfate ions with carbonate ions. The concentration of sodium sulfate is too high for reverse osmosis, as scaling problems would develop. The sole technology potentially available is evaporation, an energy intensive approach, which will result in increased carbon dioxide emissions to the atmosphere. This technology would result in a capital cost on the order of \$7,000,000 and operating costs, including depreciation, of \$1,000,000 per year, assuming that the Refinery has sufficient steam capacity, and that a new boiler is not required.

This situation led to us researching the TDS water quality issues. We learned of efforts by IEPA to eliminate the existing TDS water quality standard - for both general use and secondary contact waters. Thus, CITGO began following the TDS rulemaking since its inception. CITGO was in attendance at the first shareholders meeting which took place in Springfield in the Spring of 2004. In July 2004, CITGO contacted Linda Holst of U.S. EPA Region 5 to advise U.S. EPA that the TDS water quality standard change affected more than just the Illinois coal industry. In August 2004, Dave Soucec, of INHS, was contacted by CITGO to discuss the timeframe for the additional toxicity testing Region 5 required before they would approve the proposed TDS rule change. It was determined that the requested data would take six months to a year to generate and be approved by Region 5. Also, throughout the summer of 2004, Bob Mosher was contacted by CITGO to discuss the proposed TDS rule change and the potential impacts to projects required in a pending consent decree. We learned that the rule change to remove the TDS standard was proceeding, but it became clear, even two years ago that it would not happen in a timely manner for the Lemont Refinery.

Given the obligations imposed on CITGO by, *inter alia*, U.S. EPA and Illinois, the only viable option to allow the construction schedule to proceed was to file a variance.

On October 6, 2004, CITGO's consent decree was lodged. One requirement, installation of air pollution control equipment by December 2007, would result in a scrubber wastewater stream with elevated TDS. With the proposed TDS rule change, a variance would not be required; however, in discussions with Bob Mosher, it was evident that the rule change would not be promulgated before a construction permit for the scrubber facilities was needed to meet the timeline outlined in the consent decree. Subsequently, on November 8, 2004, CITGO filed a petition for a variance from TDS water quality standards. On December 21, 2004 a construction permit for a purge treatment unit was submitted to the agency.

On April 2005, the Board granted a five-year TDS variance to CITGO. *CITGO Petroleum Corporation and PDV Midwest Refining, LLC v. IEPA*, PCB 05-85. On May 1, 2006, IEPA granted a construction permit for the purge treatment unit. CITGO has been proceeding to install the equipment required under the consent decree and the construction permit. That project is on schedule. We have also been collecting the water quality data as required by the variance. Jim Huff will include that data as part of his testimony.

On May 2, 2006, CITGO attended a stakeholder meeting convened by IEPA to discuss changes to the sulfate, TDS and mixing zone regulations. It was at this time that CITGO learned of a significant change to the previously proposed TDS rule change. Secondary contact TDS water quality standards would remain intact, and the general use TDS water quality standard would be eliminated. Secondary contact TDS water quality standards would be a component of a DRAFT Use Attainability Analysis (“UAA”) proposal. In the UAA proposal, TDS for secondary contact waters would also be eliminated.

CITGO has made multiple written requests to IEPA to amend the secondary contact TDS standard concurrently with the general use TDS standard. The agency has responded that the secondary contact TDS standard will be addressed during the UAA process. It is apparent that the UAA process is experiencing delays. At a March 20, 2007 Stakeholder Advisory meeting, there was much controversy surrounding the definition of “attainability” and water quality criteria such as ammonia, dissolved oxygen, temperature and bacteria. Elimination of the TDS water quality standard was not commented on by industry, environmental groups or U.S. EPA. To CITGO’s knowledge, TDS has never been raised as an issue during UAA discussions.

Moreover, we understand that the only point source permitted dischargers into secondary contact waters who are adversely affected by the TDS water quality standard [either in general

use waters or in the secondary contact waters] are the CITGO Lemont refinery, and the Exxon-Mobil Joliet refinery. We base this conclusion on several conversations with Agency staff, and a review of the Board's dockets. The Board recently granted site-specific relief to Exxon-Mobil [whom we would note had a much longer construction schedule for its wet gas scrubber and hence had the time to pursue rulemaking]. *In the Matter of: Revisions to Water Quality Standards for Total Dissolved Solids in the Lower Des Plaines River for ExxonMobil Oil Corporation: Proposed 35 Ill. Adm. Code 303.445, PCB R06-024* (Feb. 15, 2007). CITGO did not have that amount of time under our consent decree.

CITGO does not agree that the UAA process is the only correct avenue to amend the secondary contact TDS water quality standard. We see no reason why the Board cannot amend the secondary contact TDS standard at the same time as general use waterways, at least as it pertains to CITGO, and any other discharger adversely affected by the present standards.

If the secondary contact TDS standard is not amended during this proceeding, CITGO may be compelled to begin the process of a site-specific rulemaking, similar to the recent rulemaking granted ExxonMobil. Such a proceeding would repeat the same testimony and evidence as presented in this proceeding; we fail to see why such duplication is necessary.

**V. CONCLUSIONS**

- The information which justified the deletion of the TDS standard in general use waters applies equally to secondary contact waters such as the Lemont Refinery's receiving waters.
- The UAA proceeding is not the only appropriate avenue for removing the TDS standard for secondary contact waters. Due to the delays that have occurred in the UAA proceeding, CITGO's obligations under its consent decree may come due before the UAA proceeding materializes into a final rule.

- We urge the Board to recognize that removal of the TDS standard for secondary contact waters is consistent with the Agency's proposal to remove the TDS standard for General Use waters by eliminating the TDS standard for secondary contact waters in this proceeding, to the extent applicable to the CITGO refinery.

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CERTIFICATE OF SERVICE

The undersigned, an attorney, certify that I have served upon the individuals named on the attached Notice of Filing and Service List true and correct copies of the **TESTIMONY OF JAMES E. HUFF** and the **TESTIMONY OF BRIGITTE POSTEL**, via First Class Mail, postage prepaid on April 9, 2007.

A handwritten signature in cursive script, appearing to read "Elizabeth Seigel", written over a horizontal line.