

ILLINOIS POLLUTION CONTROL BOARD
March 14, 1986

PFIZER PIGMENTS, INC.,)
)
 Petitioner,)
)
 v.) PCB 85-107
)
 ILLINOIS ENVIRONMENTAL)
 PROTECTION AGENCY,)
)
 Respondent.)

OPINION AND ORDER OF THE BOARD (by R. C. Flemal):

PROCEDURAL HISTORY

This matter comes before the Board upon the July 22, 1985 filing of a variance petition by Pfizer Pigments, Inc. ("PPI") requesting a thirty-two month variance from certain water quality parameters relating to its discharge of non-contact cooling waters from its East St. Louis plant to Schoenberger Creek. The Board on August 1, 1985 found PPI's petition deficient and ordered that more information be submitted. PPI filed an amended petition on October 30, 1985, accompanied by responses to additional information requested by the Illinois Environmental Protection Agency ("Agency") in a letter to PPI dated August 21, 1985. On December 30, 1985 the Agency filed a recommendation to grant variance relief to PPI subject to conditions, accompanied by a motion for leave to file its recommendation instantler. That motion was granted by Order of the Board on January 9, 1986.

Hearing in this matter was waived by the Petitioner. However, on August 29, 1985 an objection and request for hearing was filed by Mr. George T. Bush, Sr., Alderman and Public Works Committee Chairman of the City of East St. Louis. Hearing was held January 21, 1986 in the St. Clair County Building, Belleville, Illinois. The Agency asserted that Mr. Bush was notified of the hearing. However, Mr. Bush did not appear at the hearing. No other objections have been received, either as written comment or at hearing.

The specific relief that PPI requests consists of an increase in the limits on total iron (STORET 01045) and total suspended solids (STORET 00530) concentrations identified in 35 Ill. Adm. Code 304.204(c), and an increase in the load limits on total iron and total suspended solids (TSS) loads, as specified in PPI's currently applicable NPDES permit No. IL0038709. To wit, Section 304.204(c) and the NPDES permit currently limit discharges to:

<u>Constituent</u>	<u>Conc. (mg/l)</u>	<u>Load Limit (lbs/day)</u>
Total Iron	20	350
TSS	37	648

In place of these limits, PPI proposes the following limitations with the concurrence of the Agency:

<u>Constituent</u>	<u>Conc. (mg/l)</u>	<u>Load Limit (lbs/day)</u>
Total Iron	34	764
TSS	98	1823

Section 304.204 is itself a site-specific rule promulgated by the Board in PCB R81-29 on April 21, 1983 (7 Ill. Reg. 8111, effective June 23, 1983), and relating to PPI's cooling water discharge to Schoenberger Creek. In its entirety, Section 304.204 provides:

Section 304.204 Schoenberger Creek: Groundwater Discharge

- a) This rule shall apply to discharges from an existing facility owned by Pfizer Corporation to Schoenberger Creek immediately south of the Baltimore and Ohio main tracks in T2N, R9W of the 3rd P.M., St. Clair County.
- b) This rule shall apply only to discharges of groundwater used as non-contact cooling water in which naturally occurring background concentrations have not been increased by industrial or other human use.
- c) Instead of the general effluent standards set forth in Section 304.124 for the listed parameters, these discharges shall not exceed the following limitations:

<u>CONSTITUENT</u>	<u>STORET NUMBER</u>	<u>CONCEN- TRATION (mg/l)</u>
Iron (Total)	01045	20
Total Suspended Solids	00530	37

In the same proceeding in which Section 304.204 was promulgated, and simultaneously with that action, the Board also promulgated a special total iron water quality standard for Schoenberger Creek. This standard, namely 20 mg/l, is identified in 35 Ill. Adm. Code 303.353. Section 303.353 also specifies the location of applicability of the special total iron standard to be:

- 1) The final 1500 feet of Schoenberger Creek starting immediately south of the Baltimore and Ohio main tracks and running north to an unnamed tributary of the Cahokia Canal; and
- 2) The unnamed tributary from its confluence with Schoenberger Creek as it runs west and northwest for a distance of 8000 feet to its confluence with the Cahokia Canal.

BACKGROUND

Petitioner owns and operates a manufacturing facility in East St. Louis, Illinois. The plant employs over 300 people and is the major employer in East St. Louis. The PPI facility produces and processes both natural and synthetic iron oxides which are used in the paint and coating industry and in the audio, video, and computer tape industries.

PPI has two waste discharges from its facility. Process wastewater, which averages 2 million gallons per day (MGD), is discharged to the East St. Louis municipal sewer system. Once through cooling water is pumped from three on-site wells, used for cooling, and discharged sequentially to a storm sewer, Schoenberger Creek, an unnamed tributary to the Cahokia Canal, the Cahokia Canal, and the Mississippi River.

The three wells are designated as wells #12, #14, and #15. They have respective depths of 117, 115, and 117 feet and capacities of 500, 1000, and 1700 gallons per minute (GPM). PPI states that the only suitable configuration of well use is a combination of #12 and #15; wells #14 and #15 in combination produce more pressure than the piping system is capable of bearing, wells #12 and #14 do not provide adequate volume to satisfy peak demand, and none of the wells singly produce sufficient quantity to meet peak demand.

WELL WATER QUALITY

Petitioner attributes the difficulty it has in meeting present standards to elevated concentrations of iron and TSS in the raw well water, particularly the concentrations encountered in well #15. PPI provides the following typical analyses:

<u>Well No.</u>	<u>Total Iron</u> <u>(mg/l)</u>	<u>TSS</u> <u>(mg/l)</u>
12	12-14	22
14	16-18	23
15	22-29	39

PPI believes that the high iron concentrations are due to natural conditions in the aquifer, and not to any contamination. It cites two recent reports published by the

Illinois State Water Survey ("ISWS"). The first, ISWS Contract Report #341, dated March, 1984, is quoted as describing the groundwater in the East St. Louis area as "highly mineralized, very hard, and very alkaline, with unusually high soluble iron concentrations" (emphasis added by Petitioner). The same report is also cited to note that local well waters have a substantial degree of variability in mineral concentration, which PPI believes to be consistent with the variability encountered in its three wells. The second report, "Quality of Water in the Alluvial Aquifer, American Bottoms, East St. Louis, Illinois", ISWS Water Resources Investigations Report 84-4180, shows that dissolved iron concentrations within a three mile radius of the PPI plant wells are as high as 80-82 mg/l.

EFFLUENT CONDITIONS

The Agency has collated from Petitioner's Discharge Monitoring Reports the following summary of iron and TSS concentrations in PPI's cooling water discharge:

Month	Avg. Flow (MGD)	Total Iron		TSS	
		Avg. (mg/l)	Max. (mg/l)	Avg. (mg/l)	Max. (mg/l)
6/85	2.34	18.02	19.09	31	45
5/85	1.94	15.77	19.05	27	33
4/85	1.9	16.2	17.3	30	35
3/85	2.504	19.0	20.2	41	45
2/85	2.61	23.7	34.0	49	62
1/85	2.11	20.3	20.6	46	54
12/84	1.79	20.6	21.2	45	49
11/84	1.97	23.6	15.1	51	56
10/84	1.73	17.8	24.6	58	98
9/84	1.57	17.2	21.0	44	46
8/84	1.71	18.7	21.3	58	74
7/84	1.65	20.7	24.8	55	58
Avg.	1.99	19.3	22.4	45	55

As these data indicate, Petitioner has had difficulty meeting the presently applicable concentration limitations for both iron and TSS. However, the difficulty stems principally from the elevated iron concentrations. The TSS derives largely from oxidation of the dissolved iron of the well water, which produces colloidal ferric iron compounds measurable as suspended solids. Thus the two concentrations measurements are manifestations of the same problem.

PPI attributes its effluent difficulties principally to water drawn from well #15. This conclusion is consistent with the observations of the high iron concentration in well #15 and PPI's ability to meet the existing limitations prior to the development of well #15. Well #15 was installed after the adoption of site-specific rule 304.204 and after application for, but before receipt of, PPI's current NPDES permit. Petitioner therefore suggests that the difficulties it is presently encountering with well #15 could not be foreseen in either action.

ENVIRONMENTAL IMPACT

Schoenberger Creek, as discussed by both Petitioner and the Agency, is severely degraded. The Board notes, however, that the presence of environmentally degraded conditions do not as a matter of course dictate continuation, nor worsening of such conditions. A September 28, 1985 study of Schoenberger Creek commissioned by PPI described the stream as channelized and having a heavy sediment load. It further noted that anaerobic sediment conditions exist upstream of Pfizer's discharge, and that the creek has been extremely degraded by channel manipulation, drainage diversion, and point source and non-point source pollution.

The following sampling data has been collected by PPI:

Schoenberger Creek Sampling Results
September 28, 1985 Survey

Site No.	Location	Fe Total (mg/l)	Fe Dissolved (mg/l)	TSS (mg/l)	Field Readings	
					Temperature (°C)	DO (ppm)
1	Schoenberger Creek Upstream	1.2	0.05	46	14	6.8
2	Schoenberger Creek at Culvert (Discharge Point)	14.9	0.21	36	13	7.3
3	Schoenberger Creek at Route 40	11.2	0.30	38	13.5	6.8
4	Cahokia Canal below confluence	6.34	0.23	30	13	6.9
5	IDOT discharge	11.9	0.23	34	13.5	7.0
6	Cahokia Canal above confluence	6.1	1.0	34	14	7.3
7	On plant discharge	17.0	3.8	42	13.5	7.0
8	Wellhead	18.2	9.4	42	13.5	-

These data suggest that Petitioner's discharge adversely affects both the total and dissolved iron loadings of Schoenberger Creek, but has a positive influence on the level of total suspended solids in the stream. A potentially more troublesome result of the discharge is the oxidation of ferrous iron to the ferric state, at which point it precipitates. As the Board noted in R81-29, this process exerts a chemical oxygen demand on the stream, and coats the bottom of the stream with a deposit of ferric iron, destroying habitat. However, the depletion of dissolved oxygen in the stream expected to occur as a result of the discharge was not borne out by the September 28, 1985 sampling conducted by Petitioner (above). That sampling shows that levels of dissolved oxygen remain essentially constant throughout the stream's reach; moreover, samples taken at all stations were in compliance with the dissolved oxygen water quality standard of 35 Ill. Adm. Code 302.206.

REMEDIAL AND COMPLIANCE PROGRAMS

Petitioner has undertaken several programs to attempt to come into compliance. Among these has been a comprehensive analysis of the existing cooling water distribution system, including piping, valving, controls, etc. Its objective was, and continues to be, to determine the feasibility of proportioning the three well water sources in a manner which would both satisfy discharge limitations and provide adequate cooling water supply. As of the date of the petition, PPI asserts that it has been unable to find any workable alternatives due to limitations of the existing network design and controls coupled with the periodic need for both scheduled and unscheduled maintenance downtime of the individual wells. However, PPI asserts that it intends to continue investigations in this direction.

Among other specific compliance alternatives considered by Petitioner have been temporary use of the East St. Louis Treatment Plant, discharge to the new American Bottoms Regional Wastewater Treatment Plant, use of city water, pre-treatment of the cooling water, shut-down of well #15, and replacement of well #15. PPI considers the first alternative to lack viability because the East St. Louis Treatment Plant is scheduled to be replaced during the first quarter of 1986, and hence does not offer a permanent solution. Discharge to the new American Bottoms Plant remains a possible resolution. However, Petitioner considers that it may be cost-prohibitive, indicating that treatment of 2 MGD of cooling water would increase PPI's sewer bill by more than \$1.5 million annually. City water, in addition to costing an extra \$500,000 per year, is about 30°F warmer than the well water during the summer months, and hence cannot provide sufficient heat transfer to replace the well water. Alternate well configurations and possible pre-treatment of the well water are options which remain under consideration. The Board suggests that Petitioner consider blending of city water with well water as an additional compliance alternative.

In an attempt to find a permanent resolution to the problem, Petitioner has initiated and proposes to continue an eight step compliance program beginning with sampling and ending with an operational compliance system (Petition, Ex. A). During this period PPI proposes to identify the most effective compliance alternative among those noted above, as well as other alternatives which may exist, and to implement this alternative. The Agency notes that this program consists of a "schedule for decision rather than a commitment to resolve the problem" (Recom, p. 7). However, the Agency apparently believes that no obvious best solution is apparent at this time, and cites the Board's previous holding in Modine Manufacturing Company v. IEPA as controlling:

Compliance plans are to be developed prior to and included in the variance petition, not during its pendency. This is not to say that if no solution is apparent, the variance requested cannot include a time schedule and compliance plan designed to study and resolve the problem. PCB 79-112, August 18, 1982, p. 2.

PPI proposes that its compliance schedule take 32 months, the requested period of variance. Assuming that this period began with the filing month of July, 1985, the 32 months would extend into March, 1988. The Agency contends that this time frame is longer than necessary, that much of the information necessary to evaluate a compliance method was developed in R81-29, and that Petitioner has had knowledge of excessive amounts of pollutants since July, 1984. For these reasons, the Agency recommends that the variance be granted only until July 31, 1987, producing a period approximately eight months shorter than that requested by PPI. For the reasons cited by the Agency, the Board finds the variance period suggested by the Agency to be the more appropriate.

HARDSHIP

Both PPI and the Agency contend that Petitioner would suffer an arbitrary or unreasonable hardship if denied variance relief. Given the alternatives discussed above, the Board finds that arbitrary or unreasonable hardship would result if PPI is denied variance relief, and that such hardship would not be justified by the environmental impact of Petitioner's discharge. The Board will therefore grant variance relief from the effluent limitations of 304.124(c), subject to conditions.

This Opinion constitutes the Board's findings of fact of conclusions of law in this matter.

ORDER

Pfizer Pigments, Inc. is hereby granted variance from 35 Ill. Adm. Code 304.204(c) for its East St. Louis plant, subject to the following conditions:

1. The variance shall begin on July 22, 1985 and shall terminate on July 31, 1987.
2. During the term of the variance, Petitioner shall operate its existing facility so as to minimize its discharges of iron and total suspended solids.
3. During the variance period Petitioner shall limit its discharges to:

Daily Maximum
Concentration (mg/l)

Total Iron	34.0
Total Suspended Solids	98.0

4. The Agency shall modify Petitioner's NPDES permit to reflect the altered daily maximum concentrations of total iron and total suspended solids imposed on the Petitioner by the Board.
5. The compliance program chosen by Petitioner shall be operational by May 31, 1987, and Petitioner shall attain compliance by July 31, 1987.
6. Petitioner shall report to the Agency in July 1986, December 1986, and June 1987 of the progress toward compliance.
7. Within forty-five (45) days after the date of the Board Order the Petitioner shall execute and send to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
Springfield, IL 62706
Attention: James C. Frost

a certification of acceptance of this variance by which it agrees to be bound by its terms and conditions. This forty-five (45) day period shall be held in abeyance for any period during which this matter is being appealed. The form of the certification shall be as follows:

CERTIFICATION

Pfizer Pigments, Inc. has received and understands the Order of the Illinois Pollution Control Board in PCB85-107 and hereby accepts said Order and agrees to be bound to all of the terms and conditions thereof.

Pfizer Pigments, Inc.

By: Authorized Agent

Title

Date

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 14th day of MARCH, 1936, by a vote of 7-0.

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