ILLINOIS POLLUTION CONTROL BOARD
December 20, 1984

REILLY TAR & CHEMICAL CORPORATION and THE CITY OF GRANITE CITY,	)	
Petitioners,	)	
v.	)	PCB 84-82
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

OPINION AND ORDER OF THE BOARD (by J. D. Dumelle):

This matter comes before the Board upon a June 27, 1984 petition and an August 31, 1984 amended petition filed on behalf of the Reilly Tar & Chemical Corporation (Reilly) and the City of Granite City requesting variance from 35 Ill. Adm. Code 307.103 as it relates to Reilly's mercury discharge to Granite City's sewer system until August 31, 1988. The Illinois Environmental Protection Agency (Agency) filed a recommendation on October 26, 1984, that variance be granted subject to certain conditions. Hearing was waived and none was held.

Reilly owns and operates a coal tar refinery in Granite City which produces coal tar pitch, creosote oil and pipeline enamel. It processes 12-15 million gallons of coal tar per year through distillation and discharges about 25,000 gallons per day (gpd) of wastewater with a potential discharge of 40,000 gpd. This water consists of storm water, water of decantation, and process water which was historically treated in an aerated lagoon on Reilly's property to reduce the phenol content and then disposed of by spray irrigation on its property. The past practice indicates that whatever mercury was in the treated wastewater is now on Reilly's property or in its on-site lagoon. Groundwater monitoring of the site has revealed significant concentrations of contaminants other than mercury and a formal groundwater assessment is in progress.

For several years, Reilly has been working on a system to treat its wastewater in above ground tanks to produce an effluent capable of meeting Granite City's pretreatment requirements for discharge to its sewage system. Reilly's system consists of two collecting and primary/oil water separating tanks, two secondary A.P.I. type oil waste separators with surface skimmers, one equalizing tank, three 250,000 gallon digesters, and two clarifiers with associated aerators, pumps, piping and monitoring equipment.

Wastewater is collected and pumped to tanks, where the creosote oil is allowed to settle, and then is transferred through the A.P.I. type separators where residual traces of oil are removed. The water is then pumped to the equalizing tank and to the 250,000 gallon digesters for final treatment consisting of bio-oxidation of the phenol. Discharge from the digesters flows through a clarifier tank which, if variance is granted, will be discharged to the sanitary sewer system. On January 7, 1983, Reilly was granted a temporary permit to construct and operate the wastewater pretreatment plant. In April 1983 final drawings were completed and bids requested for construction. The first construction bids were let in April and construction commenced May 6, 1983. On August 16, 1983, wastewater was introduced into the system. On August 26, 1983, the first effluent exited the system and testing commenced.

Data obtained to date indicate the system is satisfactorily meeting all required pretreatment standards with the exception of mercury, and in fact is performing more efficiently than pilot work indicated.

Tests for total mercury levels in Reilly's wastewater have been inconclusive as to the exact concentrations of mercury; however, data indicate influent levels of approximately 100 ppb with effluent levels of approximately 40 ppb. The source of the mercury has been traced to the coal tar, which is a by-product from the carbonization of coal. Mercury has been found in all sources of Reilly's coal tar, and is known to occur naturally in coal. Reilly argues that this prevents the possibility of eliminating it by using selective sources or by changing Reilly's manufacturing process.

Granite City discharges from 6.5 to 15 million gpd with an estimated average of 7.5 million gpd of treated waste with a mercury content ranging from 0.1 ppb to 49.6 ppb. The following values have been reported for the Granite City discharge:

Date	Mercury (ppb)
June 14-15, 1984	2.0
January 17-18, 1984	0.7
July 13, 1983	0.4
December 9, 1982	0.5
June 29, 1982	1.2
June 8, 1982	49.6
January 5, 1982	0.7
October 7, 1981	0.1

The Board effluent standard for mercury is 0.0005 mg/l (0.5 ppb) pursuant to 35 Ill. Adm. Code 304.126. Under the averaging provisions of 35 Ill. Adm. Code 304.104(a)(2) a daily composite may not exceed 1.0 ppb. The Board notes that the discharge data from the Granite City plant indicates probable violations of the

mercury effluent standard*. However, neither Granite City nor Reilly requests variance from that standard and the record does not include sufficient information for the Board to make any decision on that question. Reilly and Granite City requests a variance from 35 Ill. Adm. Code 307.103 in order to be allowed to discharge mercury at a concentration of 0.035 mg/l (35 ppb) to the Granite City sewer system, and that is the sole request that the Board will address in this matter.

According to the Agency, Reilly has the following alternatives: maintenance of the status quo with continual accumulation of mercury and other contaminants in its on-site lagoon; deep well injection; replacement of the wet scrubbers, or plant closure with attendant loss of employment. However, no estimate of costs for these alternatives except closure has been given by Reilly. Neither continued on-site lagoon disposal nor plant closure is recommended by the Agency, and it states that the feasibility of deep well injection is slight, given an approximate cost of $1,000,000 for a new well. It does, however, recommend that wet scrubber replacement and storm water diversion should be considered as part of the compliance plan.

Reilly has reviewed treatment systems for mercury removal including biological systems, precipitation and complexation, ion exchange, activated carbon adsorption, solvent extraction, chemical displacement, electrolytic, reverse osmosis, synthetic polymeric absorbents, agriculture products and ground up rubber. It determined, and the Agency does not disagree, that these methods are very expensive and are unproved and unreliable at the mercury concentrations with which Reilly is working. It has, however, set forth a proposed, sequential compliance plan which may cost as much as $60,000, but which it believes will result in compliance by the summer of 1988.

If Reilly is granted the variance to discharge 25,000 gpd at 35 ppd (0.035 mg/l), it could add 3311.96 mg/day (0.0073 lbs/day) of mercury to the Granite City plant. At 69% removal by the activated sludge process at the plant it would increase the mercury content in the effluent by 1026.71 mg/day (0.0026 lbs/day) and increase the mercury content in the sludge by 2285.25 mg/day (0.005 lbs/day). This 1026.71 mg/day, when diluted by the 28.482 million l/day (7.5 million gpd) estimated average discharge at the Granite City plant, would result in an increase of the effluent mercury of 0.00004 mg/l (0.04 ppb).**

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*The 49.6 ppb figure is particularly disturbing, especially since it is unexplained. However, this sample was taken at a time when Reilly was not discharging to the sewer system.

**The Board notes that several of the Agency's conversions in its recommendation were recalculated and corrected by the Board.

Based upon these discharge levels, the existing mercury concentration in Granite City's plant and its fluctuations, the Agency concludes that the addition of Reilly's effluent to Granite City's sewer system would not significantly impact the environment.

The Board agrees with the Agency that immediate compliance by Reilly would constitute an unreasonable hardship, given the lack of probable environmental impact and the necessity of preventing further groundwater pollution from the existing lagoon.

In order to afford Reilly complete relief in this proceeding, Granite City must also be granted variance from Section 307.103 since Granite City would be in violation of that rule if it allowed Reilly to discharge mercury at a concentration of greater than 5 ppb to its sewer system.

The Agency contends that it may be possible for Reilly to reduce or eliminate mercury in the wastewater by changing its manufacturing processes. It alleges that creosote oil particulates, as with most oily vapors, can be controlled without water scrubbing by means of filters which condense the vapor and still recover the product. Likewise, storm water can be diverted if it is not contaminated.

The Board will, therefore, include as a condition of variance that Reily consider these possibilities. The Board will also require Reilly to apply for renewal of its operating permit, to proceed with its proposed program to reduce mercury concentrations in its discharge, and to submit quarterly progress reports, all as recommended by the Agency.

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

ORDER

Reilly Tar and Chemical Corporation and Granite City is hereby granted variance from 35 Ill. Adm. Code 307.103, as it applies to Reilly's discharge, until August 31, 1988, subject to the following conditions:

1. Reilly Tar and Chemical shall not discharge mercury at a concentration greater than 0.035 mg/l, subject to the averaging rule of 35 Ill. Adm. Code 304.104(a), to the Granite City sewer system, nor shall Granite City allow Reilly Tar and Chemical to discharge mercury at a concentration greater than that level.

2. Reilly Tar and Chemical shall make prompt application for renewal of its Operating Permit No. 1984-EO-0557;

3. Reilly Tar and Chemical shall conduct a program to reduce the mercury concentration in its effluent as outlined in paragraph 10 (pp. 14-19) of its amended petition;

4. Reilly Tar and Chemical shall submit quarterly progress reports (on the last day of December, March, June and September) during each year of the variance period to the:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   2200 Churchill Road
   Springfield, Illinois 62706;

5. Reilly Tar and Chemical shall include in the March 1985 progress report an analysis of the quantity of wastewater produced by its wet scrubber(s), stormwater, and decantation; the mercury concentration in each wastewater source and the approximate cost to replace scrubber equipment or divert storm water to reduce wastewater production; and

6. Reilly Tar and Chemical and Granite City shall execute a Certificate of Acceptance in the following form and submit it to the Agency at the address in condition (4), above:

CERTIFICATION

We, Reilly Tar and Chemical and City of Granite City, hereby accept and agree to be bound by all terms and conditions of the Order of the Pollution Control Board in PCB 84-82, dated December 20, 1984.

Reilly Tar and Chemical	City of Granite City
Authorized Agent	Authorized Agent
Title	Title
Date	Date

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Order was adopted on the 20th day of December, 1984 by a vote of 5-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board