ILLINOIS POLLUTION CONTROL BOARD
October 14, 1982

IN THE MATTER OF:	)	
	)	
CITY OF ROCHELLE:	)	R78-15
SITE SPECIFIC LIMITATION FOR	)	
TOTAL SUSPENDED PARTICULATE MATTER	)	

Proposed Rule. First Notice.

PROPOSED OPINION AND ORDER OF THE BOARD (by I. Goodman):

On November 13, 1978 the City of Rochelle (Rochelle) filed a petition to amend Rule 203(g)(1) of Chapter 2: Air Pollution to include a particulate emission limitation for the emissions exhausted from the stack at its Municipal Steam Power Plant, located on South Main Street. Specifically, Rochelle requested a limitation of 0.6 pounds per million British thermal units (lbs/mBtu) of actual heat input.

When Rochelle proposed amending Rule 203(g)(1), adoption of the same had been vacated along with Rule 204(c)(1) (Common wealth Edison v. PCB, 62 Ill.2d 494, 343 N.E.2d 549 and Ashland Chemical v. PCB, 64 Ill. App.3d 169, 381 N.E.2d 56). Therefore, once docketed this proposal was consolidated for hearing with R78-16, a Board inquiry reviewing the rules on total suspended particulates (TSP). On August 21, 1980 R78-16 was dismissed. Other than this proposal by Rochelle, no steps were taken to adopt particulate limitations for fuel combustion sources until R82-1 was instituted by the Board. Since further action in R82-1 awaits receipt of an economic impact study, Rochelle's source is not currently subject to a specific TSP emission limitation.

Consolidated with R77-15, R78-14, R78-16 and R78-17 for hearing, R78-15 was discussed on January 24, 1979 in Springfield, January 30, 1979 in Chicago, February 7, 1979 in Peoria and April 17, 1979 in Chicago. After receiving the economic impact study from the Department of Energy and Natural Resources entitled "Economic Impact of Sulfur Dioxide and Particulate Matter Regulations in Illinois, R77-15", Doc. No. 79/22, hearings were held on January 29, 1980 in Chicago, January 30, 1980 in Peoria and February 13, 1980 in Chicago. The record closed on March 17, 1980.

Rochelle proposed this site-specific regulation primarily due to the Illinois Environmental Protection Agency (Agency) permitting policy in light of the Illinois Supreme Court decision

vacating Rule 203(g)(1). This policy, as set out in "Guidelines for the Performance of Air Quality Impact Analyses to be Used in Support of Permit Applications," was to grant permits if sources demonstrated either compliance with the terms of vacated Rule 203(g)(1) or compliance with ambient air quality standards (Petition, p. 2). This policy led Rochelle to conduct stack tests to determine compliance with vacated Rule 203(g)(1)(B) and modeling studies to determine its contribution to ambient air concentration levels of particulate matter. The stack test report, dated October, 1977, showed Rochelle's contribution to be an average emission rate of 0.418 lbs/mBtu or less. Since the maximum rate allowable based on Rule 203(g)(1)(B) is 0.18 lbs/mBtu, Rochelle is petitioning for a site-specific rate of 0.60 lbs/mBtu.

The city's plant produces electric power for its 12,000 consumers and produces process steam for a Swift and Company facility. Its two steam boilers vent to a common stack and have maximum rated capacities of 100,000 lbs/hour at 100 million Btu of heat input (R. 376). Particulate matter emissions are presently controlled through the use of mechanical collectors (multiclones) having 90% efficiency, taken together, when the boilers are operating at full loads (R. 377, 393, 398, 405).

Initially, Rochelle conducted six stack tests to determine compliance with the 0.18 lbs/mBtu limitation. All resulted in violations of that limit (Exhibit 5). The stack tests were then averaged to provide a basis for modeling. Unfortunately, the stack tests had not been conducted with the boilers operating at full capacity, contrary to standard testing procedures. Therefore the actual results were ratioed "up" in an effort to characterize full load results. This was apparently done on the assumption that a given increase in heat input produces another given increase in steam and a corresponding increase in emission rates. The record reflects contrary opinions as to the validity of such extrapolation (R. 400-405, 415-416).

Using the Point Source Diffusion Model (PSDM) Rochelle further determined the magnitude and maximum concentrations of TSP contributed to the ambient air solely by its source. Worst case emission rates were utilized to predict conservative ground level TSP concentrations. Sequential calculations were made for 256 receptors located at various points ranging from 0.5 to 25.0 kilometers from the stack (R. 387-388). This modeling indicated that maximum TSP for the 24-hour standard contributed by the Rochelle facility is 15.6 ug/m^3, less than 11% of the secondary standard of 150.0 ug/m^3. This impact was predicted to occur within 1.5 kilometers southwest of the plant. The maximum calculated annual contribution of the Rochelle plant is 2.3 ug/m^3, which is about 4% of the secondary annual standard of 60 ug/m^3. This impact was predicted to occur within 1.5 kilometers north of the plant (R. 388-389).

To further qualify the modeling results, Rochelle conducted a monitoring program, intended primarily to determine background values in the plant impact area. Monitoring at the modeled northern impact point resulted in no violations of the annual ambient air quality standards for TSP, and only one violation of the 24 hour standard. The latter was attributed to nearby road construction.

Rochelle conceded that control technology, either electrostatic precipitors (ESP) or baghouses, were available and that installation would facilitate compliance with the 0.18 lbs/mBtu limitation. Installation of baghouses was not considered by Rochelle as a means to comply with the limit (R. 394-5); installation of ESPs was considered, not as a substitute control mechanism, but instead as a means of further controlling Petitioner's existing cyclones (R. 421). The capital cost to install ESPs was estimated at $1.4 million in 1977 dollars, or at a minimum average cost of $100 per customer. These figures do not appear to be offset by monetary contribution by Swift and Company as the primary industrial user in the area.

Ogle County is designated attainment for TSP at 40 CFR 81.314. The surrounding counties, Lee and Boone are likewise listed. However, the counties of DeKalb, Winnebago, specifically Rockford Township, are listed as non-attainment for the secondary standard. Rockford Township and all the townships in DeKalb, except DeKalb and Mayfield Townships, have been proposed for redesignation by the Agency in January 1982. Since DeKalb township is twenty miles directly east of the Rochelle plant, its non-attainment designation was questioned during this proceeding. Petitioner stated that it is "obvious that if no violations are predicted at 10 kilometers...there would be no excursion for a receptor 20 kilometers away (Exhibit 35, Part 1, pg. 2). Additionally, the Illinois Environmental Protection Agency (Agency) stated that it did not consider Rochelle's source to significantly contribute to ambient air concentrations, and that the rural area of Ogle County is not bothered by an air quality problem (R. 424). In post hearing public comments the Agency stated that the relaxed limitation "would not cause an air quality problem."

Over the course of the years two monitoring stations have been operated in DeKalb Township. The monitoring results (Annual Air Quality Reports 1977-1981) are set out in the chart below.

	No. of Samples			Highest Samples				Annual Geometric Mean	Annual Statistics Violations	
	Total	>150 ug/m^3 (Primary)	>260 ug/m^3 (Secondary)	1	2	3	4		>75 ug/m^3 (Primary)	>60 ug/m^3 (Secondary)
*1977	43	2	1	435	179	103	91	56	0	0
*1978	34	1	0	168	111	111	110	+	+	
*1979	26	0	0	133	98	96	92	+	+	
**1979	14	0	0	95	93	78	66	+	+	
**1980	29	0	0	92	88	84	81	+	+	
**1981	54	0	0	129	125	109	98	53	0	0

* 200 S. 4th St.
** 650 N. 1st St.
\+ Insufficient data to determine annual geometric mean

Unfortunately, the statistical data for three of the five years is insufficient to establish a geometric mean for eight consecutive quarters, which is necessary for DeKalb Township to be proposed for redesignation. Nevertheless, the monitoring results indicate that this area has probably not experienced a TSP air quality problem since 1977. Since the Rochelle facility has been operating at or near the proposed emission limit and no violations of the standards have been recorded, Petitioner statement that its source does not impact DeKalb appears valid.

The Rochelle stack is the only major fuel combustion emission source in Ogle County emitting particulates (R. 396). Keeping in mind that the modeling performed was conservative and premised on a limit of 0.6 lbs/mBtu, the combined data from the stack tests, the PSDM and site-specific monitoring indicates that should the limitation requested be granted, violations of the ambient air quality standard will not result.

However, in receiving an emission limit more relaxed than that presumably required by other such sources, the Petitioner would consume a portion of the Prevention of Significant Determinations (PSD) increments. Therefore, Rochelle was directed by the hearing officer to submit its estimation of the amount of PSD increments to be used up by this regulation (R. 411). The estimation was to be based upon the emission rate used as input in the PSDM rather than the facilities actual emission rate. Since the Rochelle source can only impact Class II areas and possibly the non-attainment area of DeKalb Township, only those PSD limitations are applicable. The modeling predicted a maximum 24 average of 15.6 ug/m^3 and an annual average of 2.3 ug/m^3, which are well within the corresponding Class II standards of 37 ug/m^3 and 19 ug/m^3. The standards for non-attainment areas are 5 ug/m^3 for the 24-hour average, and 1 ug/m^3 for the annual average. TSP concentrations predicted 10 kilometers east of the source are between 1.3-2.2 ug/m^3 for the 24-hour average and 0.1 ug/m^3 for the annual average--again concentrations below the allowable standards (Ex. 35). Furthermore, since no baseline has been established for any areas affected by the Rochelle source, PSD increment consumption is not sufficient reason to deny Rochelle a relaxed site-specific limitation.

The Board finds the evidence provided by Rochelle's modeling and monitoring sufficient, despite the questionable practice of extrapolating the stack tests results to full load capacity, to demonstrate that this proposed regulation will not degrade the attainment status of Ogle County, or other nearby attainment areas. The economic evidence indicates that although the technology is available, it is costly. The Board is swayed by evidence that the air quality, and therefore the health or welfare of persons in the immediate vicinity, is not jeopardized by the emission amount Rochelle seeks, and so the limitation of 0.60 lbs/mBtu is granted.

ORDER

The following language is hereby proposed for adoption into Chapter 2: Air Pollution, Part II: Emission Standards and Limitations for Stationary Sources:

RULE 203: Particulate Emission Standards and Limitations

(a)-(f) Unchanged.

(g) Fuel Combustion Emission Sources

(1) Using Solid Fuel Exclusively

(A) Existing Sources Located in the Chicago Major Metropolitan Area--Reserved

(B) Existing Sources Located Outside the Chicago Major Metropolitan Area--Reserved

(C) Exemptions for Existing Controlled Sources Notwithstanding sub-paragraphs (A) and (B) of this Rule 203(g)(1), any existing fuel combustion emission source using solid fuel exclusively, and meeting the following conditions, may emit up to, but not exceed, the limits set out.

(i) As of April 14, 1972 the emission source has an emission rate based on original design or equipment performance test conditions, whichever is stricter, which is less than 0.2 lbs/mBtu of actual heat input, and the emission control of such source is not allowed to degrade more than 0.05 lbs/mBtu from such original design or acceptance performance test conditions, the rate of emissions shall not exceed 0.2 lbs/mBtu of actual heat input; or

(ii) As of April 14, 1972 the source is in full compliance with the terms and conditions of a variance granted by the Board sufficient to achieve an emission rate less than 0.2 lbs/mBtu, and construction has commenced on equipment and modification prescribed under that program; and emission control of such sources is not allowed to degrade more than 0.05 lbs/mBtu from original design or equipment performance test conditions whichever is stricter, the rate of emission shall not exceed 0.2 lbs/mBtu of actual heat input; or

(iii) As of (the effective date of this Rule) the rate of emissions from Boilers #1 and #2 located at the Rochelle Municipal Stream Power Plant, South Main Street, City of Rochelle in Ogle County, Illinois shall not exceed 0.6 lbs/mBtu of actual heat input.

IT IS SO ORDERED.

Board Chairman Dumelle and Board Member Werner concurred.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Order was adopted on the 14th day of October, 1982 by a vote of 5-0.

Christan L. Moffett, Clerk
Illinois Pollution Control Board