

ILLINOIS POLLUTION CONTROL BOARD  
September 30, 1976

THE METROPOLITAN SANITARY DISTRICT	)	
OF GREATER CHICAGO,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 76-54
	)	
ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

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

Petition for Variance from Rule 405 of Chapter 3 of the Water Pollution Control Regulations was filed by the Metropolitan Sanitary district of Greater Chicago ("District") on February 27, 1976. The Illinois Environmental Protection Agency ("Agency") filed its Recommendation on April 9, 1976. A public hearing was held on July 30, 1976. Waivers of the 90-day decision period have been received running until October 8, 1976.

The District asks to be relieved of the requirement to chlorinate its effluent from the West-Southwest Sewage Treatment Plant ("W-SW") in Stickney for a period of five years or until:

1. The effect of disinfection of sewage treatment effluent and the economic feasibility in connection therewith has been fully resolved.
2. This Board reconsiders the requirement set forth under Section 405 of Chapter III of the Illinois Pollution Control Board Rules and Regulations, or any other applicable section.

The District's main arguments are threefold:

1. Chlorination poses a significant health threat to the environment and to humans.

2. Chlorination provides no significant beneficial environmental impact.
3. Chlorination imposes an arbitrary and unreasonable hardship upon the District taxpayers in that costs in excess of \$1,000,000 annually are incurred with no benefits to the environment.

The Agency's Recommendation is for a one-year variance grant for Battery D at W-SW but a denial as to variance for Batteries A,B, and C.

#### THE HEALTH THREAT

The District discusses the National Organics Reconnaissance Survey, initiated November 1974, which concluded that four volatile organics are formed by the chlorination of drinking water. These chemicals are chloroform, bromodichloromethane, dibromochloromethane, and bromoform. Some of these are said to be carcinogenic.

Viruses are said by the District not to be greatly reduced by chlorination because of the turbidity of the effluent and the low viricidal properties of the chloramines (which are formed with the ammonia in the effluent).

Lastly, the District asserts that fish can be harmed by low concentrations of free and combined chlorine and by chloramines. Fishing may be precluded in the District waterways by chlorination, according to the District.

#### NO SIGNIFICANT BENEFIT

The District presents data to show that fecal coliform levels downstream return to their prechlorination levels due to regrowth. Total coliform levels at Peoria are shown to be higher in 1974 than in 1966 when chlorination was not practiced.

#### ARBITRARY AND UNREASONABLE HARDSHIP

Because of the foregoing assertions, the District feels that its present expenditure at W-SW in excess of \$1,000,000 per year constitutes an arbitrary and unreasonable hardship.

#### DISCUSSION

The Agency feels that the entire matter of sewage treatment plant effluent disinfection is more appropriately the function of a regulatory proceeding. The cost of chlorination alone is

not a hardship since W-SW is the world's largest sewage treatment plant. On a flow basis, it treats the population equivalent of 8,500,000 persons (using 100 gpcd on its 1975 treated flow of 850 MGD). Thus any of its expenditures can be expected to be large in absolute amounts.

The District's contention that at least four volatile organic chemicals are formed by chlorination at W-SW is not borne out by this record. The District, which is well equipped with laboratories and qualified personnel, has presented no data showing that these organics are in fact formed at W-SW. We are thus left with data applicable to drinking water which may react differently than sewage plant effluent. The Alleged carcinogenic properties of these chemicals awaits a U.S. Environmental Protection Agency study and report which has not yet been made. Furthermore, the origin of the bromine found in three of the volatile organics listed is not given. Thus the essential elemental ingredients for these chemicals may not even be present.

The virus question is quite similar. The W-SW plant has been experiencing excellent effluents low in both suspended solids and BOD<sub>5</sub> as stated many times before this Board. Thus its effluent turbidity may in fact be far lower than those of other sewage treatment plants and its virus kill thus correspondingly greater. Again, actual data seems to be called for to substantiate the District's assertion.

The possibility that chlorine levels may preclude fish life in District waterways is a moot point since dissolved oxygen levels are presently too low to support fish. Until the Tunnel and Reservoir Plan and/or instream aeration projects are on line fish would not generally be able to survive. No timetable is given for the activation of these improvements.

Fecal coliform is used as an indicator organism. Its decrease implies a decrease in pathogenic organisms like shigella, salmonella, (typhoid and cholera) and dysentery. Its subsequent increase may not prove a parallel increase in the pathogens. Again, actual data could answer this point. The various combined sewer overflow points to the waterways may be the contributors to the high fecal coliform levels or they may not. The record is not clear on this point. The sampling frequency appears to be different. What is important is the relationship of sampling to rainfall events and this is not given.

The data presented in Exhibit "A" (Table 5) showing total coliform levels at Peoria higher in 1974 than in 1966 is not conclusive for two reasons. First, the data are for total and not for

fecal coliforms. Total coliforms may be of vegetable origin which in turn may come from land runoff and not from W-SW. Second, the sampling frequency for the years compared is significantly different.

The District makes an argument that no recreational use would be made of waterways with their 2,000,000 tons per month of commercial commerce. We must distinguish several points here. First, the instant variance applies to W-SW which is on the Sanitary and Ship Canal. Most of the 24,000,000 tons (annual basis) alluded to is probably registered up the Canal to the junction with the Cal-Sag Channel and thence to Lake Calumet. In other words the traffic densities referred to probably does not occur in the vicinity of W-SW. Secondly, pleasure craft do in fact use the waterways. Personnel on these craft handle lines and may otherwise come into contact with the waters. Thus there is recreational use of these waterways.

The District makes no mention of the capital cost of the chlorination facility for Battery D that has gone unfunded. It does not explore alternatives which might lower the cost of disinfection by as much as 50% such as using bulk chlorine as is done at City of Chicago water plants.

The District is presently overdosing the effluents from Batteries A, B, and C to try to meet standards in the combined W-SW effluent. In February 1976 they met the standard. In January they did not. It is not clear if the standard is impossible to attain on a regular basis. Perhaps the provision of baffles in the effluent conduit to provide better mixing would be of value.

The Board agrees with the Agency that the issues raised here are better presented in a regulatory proceeding. Specific W-SW plant data is lacking in this record and the variance is denied without prejudice. The Petitioner has not carried its burden.

This opinion constitutes the Board's findings of fact and conclusions of law.

#### ORDER

Variance from Rule 405 of Chapter 3 is denied without prejudice.

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 30<sup>th</sup> day of September, 1976 by a vote of 5-0.



Christan L. Moffett, Clerk  
Illinois Pollution Control Board