

ILLINOIS POLLUTION CONTROL BOARD
August 9, 1973

CITY OF MOUNT OLIVE

v.

ENVIRONMENTAL PROTECTION AGENCY

PCB 73-124

CITY OF WAVERLY

v.

ENVIRONMENTAL PROTECTION AGENCY

PCB 73-127

ANNA STATE HOSPITAL

v.

ENVIRONMENTAL PROTECTION AGENCY

PCB 73-129

CITY OF CARRIER MILLS

v.

ENVIRONMENTAL PROTECTION AGENCY

PCB 73-131

VILLAGE OF NORRIS CITY

v.

ENVIRONMENTAL PROTECTION AGENCY

PCB 73-132

CITY OF HARRISBURG

v.

ENVIRONMENTAL PROTECTION AGENCY

PCB 73-133

CITY OF WHITE HALL

v.

ENVIRONMENTAL PROTECTION AGENCY

PCB 73-153

ELDORADO WATER COMPANY)	
v.)	PCB 73-207
ENVIRONMENTAL PROTECTION AGENCY)	
VIENNA CORRECTIONAL CENTER)	
v.)	PCB 73-232
ENVIRONMENTAL PROTECTION AGENCY)	
CITY OF NASHVILLE)	
v.)	PCB 73-227
ENVIRONMENTAL PROTECTION AGENCY)	
VILLAGE OF SHIPMAN)	
v.)	PCB 73-259
ENVIRONMENTAL PROTECTION AGENCY)	
VILLAGE OF AVON)	
v.)	PCB 73-256
ENVIRONMENTAL PROTECTION AGENCY)	
SUMMERFIELD, LEBANON, MASCOUTAH WATER COMMISSION)	
v.)	PCB 73-276
ENVIRONMENTAL PROTECTION AGENCY)	

OPINION OF THE BOARD (by Mr. Dumelle)

This opinion covers the grant of variances in the 20 cases listed for which orders were issued between May 31, 1973 and this date permitting copper sulfate dosing to control algae.

A year ago, on August 8, 1972 we granted three variances to cities to use copper sulfate in order to control algae in water supply reservoirs (City of LaHarpe, et al, PCB 72-168, 203, 225). We said then

We concur in the grant but do so reluctantly because of what appears to be an incomplete discussion by the Agency or by the various cities of alternative methods of treatment or of possible harm. However, the algae bloom "season" is now almost over and no discernible harm from using copper sulfate appears in these records. Ample time remains before next summer for both the Agency and all Illinois water supply users to prepare fuller discussions on both alternative methods and possible harm from the present practice.(5PCB 117)

Unfortunately the Agency and the Institute did not act promptly in authorizing a research study and only on May 30, 1973 did the Board receive an interim report on "Algae Control in Water Supply Reservoirs" by Dr. Charles B. Muchmore of Southern Illinois University. At this date the final report has not yet been received and the Board has had to act without full information available to it.

Dr. Muchmore's report involved a literature search; questionnaires to the 50 states (37 replies received); and contact with individuals knowledgeable in algal growth control.

Of the 37 states which replied, only three reported fish kills because of excessive copper sulfate usage and attributed this to the lowering of dissolved oxygen levels due to overkill of algae and rooted aquatic plants. The possibility of fish kills is a reason then to keep copper sulfate dosage as low as possible.

We point out that the Agency recommendations show copper levels resulting from CuSO_4 use varying from as low as 0.03 mg/l for the Vienna Correctional Center (PCB 73-232) to as high as 0.70 mg/l for the Summerfield, Lebanon, Mascoutah Water Commission (PCB 73-276) which was granted today. If 0.03 mg/l of copper will kill algae then why should 23 times as much be necessary (0.70 mg/l) in another case? It may be that the traditional amounts of copper sulfate always used in the past are being recommended by the Agency with no attempt to prescribe the least possible amount.

Dr. Muchmore cites a 1952 study done in Wisconsin that shows that copper concentrations in bottom muds of copper sulfate-treated water reservoirs were considerably less than the 9000 ppm (dry basis) necessary to affect benthic organisms. We would point out that this study is now 21 years old and it would be well to have more up-to-date information, especially from Illinois reservoirs. The mention of copper sulfate usage for 40 years in some water reservoirs

without harm is not conclusive since (a) we do not know if copper in those bottoms are approaching dangerous levels and (b) we do not know if such usage is warranted in Illinois waters because of possibly differing alkalinity and hardness characteristics.

Alternative methods of algae control are dismissed by Dr. Muchmore as having more drastic effects upon the environment. These other methods are; activated carbon, lime or alum addition and air injection. Again, until the premise is fully proven (that copper sulfate causes little harm) then these alternatives might have to be considered in the future.

The possibility of using algae-eating fish does not appear promising according to a Federal biologist in Arkansas but no mention is made of two species of fish listed in our August 15, 1972 opinion.

Alternative chemicals mentioned by Dr. Muchmore for use as algicides are; Hydrothol-47, potassium permanganate (used in Arkansas) and 2-4,D. (used in Texas). His final report should elaborate on the possibilities for their use in Illinois. We would also point out that our earlier opinion (City of Paris, City of Oakland, 72-277, 72-289, August 15, 1972 5PCB 171) mentions 2,3-dichloronaphthoquinone and Algimycin-P11 and these should also be examined.


In summary, we grant the variances because the harm to the environment seems minimal and long range in nature. We point out that in one case before us, minnows were observed to turn blue and to remain that color for a day or two (Village of Sorrento, 73-170) but no kills occurred.

In a recent case, (Summerfield, et al 73-276) the Agency asks us to exempt side channel (not flow through) reservoirs from the 0.02 mg/l copper water quality standard. This is a good recommendation and if the side channel reservoir were only used for water supply purposes (not for fishing) then we would consider it as an appendage of the water treatment plant to be dosed with chemicals at the operator's will. However, we think it best to wait on this matter of interpretation until the final report by Dr. Muchmore is before us. Once the final report is issued we would expect that the Agency would propose a change in the Water Pollution Regulations to allow copper sulfate usage if no suitable alternative exists for algae control.

A year ago we granted similar variances to five Illinois cities. None have come back for new variances indicating that they have found alternate solutions to controlling algae or that no algae problem arose this year. The Board would be interested in the Agency or Dr. Muchmore's comments on the experience at these cities.

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

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion was adopted on the 9th day of August, 1973 by a vote of 3-0.


Christan L. Moffett, Clerk
Illinois Pollution Control Board

ILLINOIS POLLUTION CONTROL BOARD

August 9, 1973

ALTON BOX BOARD COMPANY,)
)
) Petitioner,)
)
 vs.) PCB 73-140
)
 ENVIRONMENTAL PROTECTION AGENCY,)
)
) Respondent.)

Karl Hoagland, Attorney for Alton Box Board Company
Frederick Hopper, Assistant Attorney General for the EPA

OPINION AND ORDER OF THE BOARD (by Mr. Henss)

Alton Box Board Company requests variance from Sections 402, 403, 404(a)(i), 404(b)(i), 405 and 408(a)(b) and (c) of Part IV, Chapter 3, Water Pollution Regulations of Illinois and Section 12(a) of the Environmental Protection Act. The Company states that variance from these water quality and effluent standards will be needed until construction is completed, about December 1977, on a proposed new waste water treatment facility.

The mill in question is located within the city limits of Alton in Madison County and borders the Mississippi River below Alton Lock and Dam #26. It is the largest of 4 paperboard mills owned by the Company. Approximately 800 tons of paperboard are produced daily by the mill's 720 employees. It consumes 735 tons of coal daily, 93 tons of processed chemicals, 600 tons of re-claimed wastepaper, 568 tons of wood chips and 8 to 10 million gallons of water. Petitioner owns a total of 43 plants located in 15 states in its fully integrated production of paperboard packaging products.

The record indicates that Alton Box has made some progress over the past 11 years in its attempt to conform to existing regulations. A May 18, 1964 letter from the Sanitary Water Board acknowledges a 2/3 reduction in fibre content of the Company effluent. After failure of an experimental control program Alton installed an 8.5 MGD wastewater clarifier and sludge removal system. In April 1967 the Sanitary Water Board said the new system could "provide adequate treatment to the tributary

industrial wastes for some years to come", if afforded proper maintenance and operational control. Under SWB-13, the Alton mill was required to have secondary treatment by December 1982.

On January 19, 1971 the Environmental Protection Agency advised Petitioner by letter (Petitioner Exhibit #23) that newly adopted regulations now required secondary treatment for the mill effluent by December 31, 1973.

In April 1971 Petitioner hired Mid-America Engineers Incorporated to do a feasibility study relating to the liquid wastes (Exhibit 24). Although the study was to have been completed within 8 weeks, it was not received until September 16, 1971. The recommendations of the study were not followed, allegedly because Petitioner did not choose to accept undesirable pollutional trade-offs inherent in the plan. Evidence also shows that in April 1971 Alton Box hired a St. Louis firm of consulting engineers to assist in obtaining permits and for consultation on other phases of their pollution abatement problems (Petitioner Exhibit #26). During May 1971 two Alton Box officials toured six other mill sites to determine how other paper mills were treating their liquid effluent before discharge. Mid-America Engineers was requested to perform additional studies and subsequently provided Petitioner with revisions that were found acceptable.

Alton Box adopted a program which called for the complete elimination of wood chips from the process in order to abate the troublesome black liquor effluent. This would leave reclamation and recycling of wastepaper (increased to 950 tons per day) as the primary source of raw material. Under this plan, Alton Box would be able to reduce its use of land for aeration, lagoons and ponds. The time schedule for the 4 stage program is as follows:

Stage 1:

Install processing equipment for converting the entire operation to reclamation of wastepaper.
Time required - 18 months
Estimated completion date - September 19, 1974
Effects: BOD-25 lbs./ton or 20,000 lbs. per day - 80% reduction
Suspended Solids - 5 lbs./ton or 2,000 lbs. per day - 37.5% reduction

Stage 2: (simultaneous with Stage 1)

Phase out woodchips and phase in new sources of reclaimed waste paper (i.e., expansion of the paper reclamation division).

Time required - 18 months
Estimated completion date - September 1974
Effects: (incorporated in effects shown for Stage 1)

Stage 3:

Close the mill process water system by reducing number of discharge water points.
Time required - 24 months
Estimated completion date - September 1976
Effects: BOD-20 lbs./ton or 16,000 lbs. per day - 85% reduction
Suspended solids - 0.125 lbs./ton or 100 lbs. per day - 98.4% reduction

Stage 4:

Secondary treatment of residual flow
Time required - 15 months
Estimated completion date - December 1977
Effects: Compliance with Regulations

Under Stage 1, Petitioner plans to install 2 new hydropulpers, enlarge and revise the asphalt dispersion system, and construct stock tower and conveyor system for feeding the wastepaper to the hydropulper and cleaners. Alton Box claims that the 18 month time frame was supplied by the hydropulper manufacturing firm and includes time required to design, fabricate, deliver and install the equipment so as to intermesh with the existing reclaimed fibre system. As noted above, Stage 2 would occur simultaneously with Stage 1.

Petitioner advises that the extremely complex nature of Stage 3 (eliminating a great number of discharge water points) delays its commencement until Stage 1 has been completed. This seems reasonable to us.

Installation of a new clarifier originally called for in Stage 4 has now been programmed for installation during Stage 1. Alton Box claims that as much of Stage 4 as possible has been accelerated and advanced into the earlier stages.

Alton Box submitted this program to the Agency along with a Project Completion Schedule on August 25, 1972, and followed with permit application on September 29, 1972. On December 18, 1972, the Environmental Protection Agency rejected the Project Completion Schedule because of the obvious failure of the proposed system to be in full operation by December 31, 1973 as required by Regulation, and several administrative inadequacies. The permit was then denied because there was no approved Project Completion Schedule

and because of failure to provide a complete list of contaminants discharged and their concentrations.

After a series of meetings with the Agency and their consulting engineers, Alton Box submitted a revised Project Completion Schedule and permit application giving the following information:

Current average daily flow -- 9,600,000 GPD
Designed average daily flow -- 14,400,000 GPD
Current influent BOD -- 1,500 mg/l
Current influent suspended solids -- 1,800 mg/l

On page 5 of the Mid-America Engineer's Report (Exhibit #31) we note a column titled "Mill Effluent" under which BOD and suspended solids were shown to be 1450 mg/l and 300 mg/l respectively. It could not be determined whether the "Mill Effluent" was the influent to the waste treatment works or the effluent to the Mississippi River.

Page 10 of this same report contained the following table:

	<u>Present</u>	<u>Future</u>	<u>Reduction</u>
Total Process effluent	10,600 gal/ton	1,250 gal/ton	88%
Total BOD ₅ Discharge	133 lb/ton	4 lb/ton	97%
Total Suspended Solid discharge	7.45 lb/ton	1/8 lb/ton	98.3%

Calculations from this Table reveal that the present discharges for BOD and suspended solids are about 1,500 mg/l and 90 mg/l respectively. The BOD figure obtained by this calculation for Processed Discharge is exactly the same figure given for "Current Influent BOD". Compounding the confusion, as the Agency points out, a discharge of 4 lbs. BOD per ton of production in an effluent of 1,250 gallon per ton yields about 384 mg/l, far in excess of the 20 mg/l which Petitioner claims will be the BOD concentration upon completion of all stages of the proposed abatement program.

Also at issue in this proceeding was the question whether the receiving stream was the Mississippi River or a tributary to the Mississippi River known as Shields Branch. In granting the 1965 permit, the SWB classified Petitioner's discharge as being directly to the Mississippi River. However, the Agency contends that the discharge actually entered Shields Branch about 1/4 mile before reaching the Mississippi River. If we upheld the Agency's position, the effluent criteria imposed on Alton Box would not be 20 mg/l BOD and 25 mg/l suspended solids as Petitioner thought but a more stringent 4 mg/l BOD and 5 mg/l suspended solids.

We hold that the higher standard for emissions to the Mississippi River is applicable here. Evidence indicated that Shields Branch as it was once known, no longer exists. A former Alton Box Board employee and long-time resident of the area testified that the spring feeding the Branch had been capped or plugged sometime in the past causing the Branch to become essentially a stagnant no-flow ditch. The Agency offered no evidence on this point. Except for periods of wet weather, all flow upstream of Petitioner's outfall is the result of industrial wastewater discharges from other industry in the area. The original Shields Branch discharged to the Mississippi at a point above the Alton Box property. However, the erection of a levee diverted whatever flow the Branch may have carried onto Alton Box lands. An aerial photograph (Exhibit #9), marked to delineate the original course of Shields Branch before diversion, appears to show that the industrial drainage ditch and Shields Branch are two different courses below a point near the LaClede Steel plant. Petitioner's effluent is not at any point in the original course of Shields Creek. The photograph vividly displays Petitioner's discharge point to the industrial drainage ditch in that the ditch becomes very dark. The dark liquid is also very evident at the ditch outfall to the Mississippi River and for some distance downstream. We find that Petitioner's effluent reaches the Mississippi in an industrial ditch.

While we are convinced that Alton Box has made a good beginning, we do not believe there is sufficient information for immediate acceptance of its entire abatement program. Petitioner's conversion to 100% reclaimed paper for feedstock will reduce some pollution problems. By removing the wood chips, the black liquor portion of the present influent to the treatment plant will be eliminated. Upon completion of the entire project, Petitioner states that an estimated \$4.7 million from the corporate's \$23 million pollution control budget will have been spent. This must be viewed as a significant outlay for a plant as old as the Alton mill. An air pollution control program for the Alton mill has already been completed.

However, Petitioner leaves us up in the air by failing to reveal methods to be used in Stage 4 to achieve compliance; and computations of anticipated BOD levels in the influent (or effluent) leave something to be desired.

Alton Box Board Company stated that a variance denial would cause the termination of operations or subject the Company to possible fines for continued operations beyond December 31, 1973. If forced to close, Alton Box claims that an immediate economic loss of over \$12,500,000 would occur which would place the Company

in default under its long-term loan agreements. Other adverse effects would be the possible loss of employment of 721 persons, loss of payroll, loss of State and Federal tax payments and the loss of production capabilities during a period of severe shortage of paperboard for paperboard packaging. Alton Box claims that the resulting paperboard shortage could have a direct and serious effect on customer plants employing more than 30,000 persons in Illinois alone.

The Environmental Protection Agency recommends that we grant Petitioner a variance from Rule 921(a) and (d) of Chapter 3 and deny all other variances. Although Alton Box did not specifically ask for exemption from those Rules, the Agency expressed in their Recommendation a belief that Alton's Petition should be so construed. On June 28, 1973 we deleted Rule 921(d) from Chapter 3 therefore that portion of the Agency's Recommendation is now moot. The Agency also expressed a belief that Petitioner should have requested relief from Rule 1002(a) of Chapter 3.

The Agency recommends denial on the ground that the hardships alleged above are self-imposed and not sufficient to justify the grant of a variance. The Agency has an enforcement case pending and may fear the effect of a variance on that prosecution case. However, the variance is not a shield against prosecution of violations which occurred before or after the term of the variance.

Using Petitioner's estimate of BOD discharge of 106,000 lbs. per day, the Agency calculated that Alton Box was dumping the equivalent of the untreated sewage of some 623,529 persons into Illinois waters. Petitioner calls this a factually incorrect statement representing a blatant and total falsehood, the sole purpose of which was to mislead and prejudice the Board against Petitioner.

Dr. James W. Irvin, appearing on behalf of Petitioner, testified that he "would not expect the BOD, as anticipated to be discharged from the Alton Box Board during this intervening period, from present until their facilities are complete, to have a significant effect on the oxygen resource of the Mississippi River". When asked to describe his statement in language other than "significant" Dr. Irvin replied: "It would have to be an opinion but I would not expect that the present discharge would cause a depression in the dissolved oxygen of anything more than half a milligram a liter". (R. 273) Dr. Irvin later testified pertaining to the suspended solids and Petitioner's effluent that "...my opinion is that the suspended solids discharge is rather insignificant". (R. 276)

We do not agree with Dr. Irvin that an estimated depression of up to 1/2 milligram per liter dissolved oxygen caused by the effluent from a single source is insignificant. USGS figures for the twelve month period, October 1970 to September 1971, show that the Mississippi River at Chouteau Island had an average dissolved oxygen concentration of about 7.3 mg/l (Exhibit #56). Data prepared by the Illinois Environmental Protection Agency for the year 1971 reveals that the Mississippi River at the Illinois Terminal Road Bridge at East Alton had an average dissolved oxygen concentration of 8.5 mg/l (Water Quality Network, 1971 Summary of Data, Volume 1, page 1-229). If we adopt Dr. Irvin's reasoning, we should view as insignificant the fact that similar discharges from an additional 5 industrial sites in the same area could reduce the oxygen content of the Mississippi River below standards. We believe the Illinois General Assembly expressed a different viewpoint in Section 11 of the Environmental Protection Act:

"It is the purpose of this Title to restore, maintain and enhance the purity of the waters of this State...."

The Mississippi is not a pure stream and it has a large capacity but this fact is not an excuse for the dumping of large amounts of waste.

The record in this proceeding demonstrates the need for an early start on construction of the waste treatment facilities at Alton Box Board Company. Alton Box has expressed a belief that construction of the proposed system could begin within two or three weeks of our decision. Delaying a decision until the conclusion of the enforcement action would not speed the proposed system along. We do not believe our decision today places the Agency's enforcement case in jeopardy since the dates involved precede the dates for which we intend to grant the variance.

The Agency warns that we "are being given the opportunity to buy a pig in a poke". If so, we do not accept the offer. The first three stages of the construction program should reduce BOD by 85% and suspended solids by 98.4%. These reductions will not be sufficient for compliance with our regulations, but they are none the less significant reductions. We have been left in the dark as to the proposed fourth stage system. Obviously we can not approve a proposed system that has not been fully explained to us. We can, however, start the first three stages on their way by granting a variance with certain conditions. Petitioner must be fully aware that the granting of future variances will depend upon adherence to the conditions and that such future variances should not be considered assured. We will expect a discussion of possible

alternatives for Stage 4 upon the first request for variance extension.

ORDER

It is the Order of the Board that:

1. Alton Box Board Company is granted a variance from Rules 402, 403, 404(a)(i) and (b)(i), 405 408(a), (b), and (c), and 921(a) of the Water Pollution Regulations of Illinois and a limited variance from Section 12(a) of the Environmental Protection Act from April 6, 1973 until April 6, 1974 for the purpose of constructing the proposed new process and waste water treatment facilities as described by documents submitted during this proceeding. The variance from Section 12(a) EPA shall be applicable only as to BOD and suspended solids levels. We are not at this time granting a variance for the discharge of any contaminants which were not considered in this Opinion.
2. Petitioner shall by September 13, 1973 post a bond in the amount of \$500,000 in a form acceptable to the Environmental Protection Agency, such bond to be forfeited in the event Petitioner fails to install and operate the abatement equipment described in this proceeding and equipment to be described at a later date. The bond shall be mailed to Fiscal Services Division, Illinois EPA, 2200 Churchill Road, Springfield, Illinois 62706.
3. This variance is conditioned upon the submission of monthly progress reports commencing September 15, 1973 to the Agency describing the status of construction and installation of the proposed new process and waste treatment plant and upon a showing of satisfactory progress in the installation.
4. As further condition, Petitioner shall by September 30, 1973 submit to the Board and the Agency data that precisely and clearly shows current and anticipated concentrations of all contaminants cited in Part 4 of the Water Pollution Regulations of Illinois for the mill influent liquid to and effluent liquid from the waste water treatment works.

5. Petitioner shall diligently attempt to expedite the construction of the new waste treatment plant at all stages. Quarterly reports commencing December 1, 1973 shall be submitted to the Agency showing progress or lack of progress being made toward the selection of methods to be installed during Stage 4.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order was adopted this 9th day of August, 1973 by a vote of 3 to 0.

Christan L. Moffett

