ILLINOIS POLLUTION CONTROL BOARD
October 20, 1988

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS	)	
TO 35 ILL. ADM. CODE	)	R86-17(B)
304.120,DEOXYGENATING	)	
WASTES STANDARDS	)	
	)	

PROPOSED RULE. FIRST NOTICE.

PROPOSED OPINION AND ORDER OF THE BOARD (By J. Marlin):

By its Order of March 5, 1987, the Board opened Docket B of this proceeding to consider specific issues which arose as the Board evaluated a proposal of the Illinois Environmental Protection Agency (Agency). Specifically, on April 23, 1986 the Agency filed a proposal which effectively would have expanded the so-called lagoon exemption to all publicly owned treatment works (POTW) which had an untreated waste load of 5000 population equivalents (P.E.) or less. Under the Agency's proposal, any POTW treating 5000 P.E. or less which utilized third-stage treatment lagoons or utilized such lagoons after its current facility reached the end of its useful life would be subject to less stringent effluent standards. Those less stringent standards are 30 milligrams per liter (mg/l) for five-day biochemical oxygen demand (BOD_5) and 37 milligrams per liter for suspended solids (SS). The POTW's would then be exempt from the more stringent BOD_5 and SS standards of 10 mg/l and 12 mg/l. At the time of the Agency's proposal, this "exemption", or loosening of the standards, was only applicable to POTW's which had an untreated waste load of 2500 P.E.

In response to the Agency's proposal, the Board adopted a rule which expanded the lagoon exemption to POTW's with a load of 5000 P.E. or less if such facilities were already utilizing lagoons as of January 1, 1986 and continued to treat via third stage lagoons. In addition, the Board expanded the lagoon exemption to POTW's treating 5000 P.E. or less for any facility which had reached the end of its useful life by January 1, 1987 In short, the Board declined to expand the lagoon exemption to non-lagoon facilities reaching the end of their useful life after January 1, 1987. In its Opinion of August 6, 1987, the Board stated:

> According to the Agency's own figures, over 150 communities could eventually take advantage of this proposed expansion of the lagoon exemption. The Agency has given the Board effluent information on only seven

> POTW's. If data presented at hearing by Coal City is counted, the Board has before it effluent information from eight POTW's.
>
> Although the Agency proposal is written so that no exemption will be granted which would result in a violation of dissolved oxygen standard, the Agency proposal could still result in a decline in the quality of the receiving streams. Given the record, it is impossible for the Board to assess the environmental impact that will result if up to 150 communities switch to lagoon systems.
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> (R86-17(A), slip op. at 8, August 6, 1987).

The Board then went on to explain the purpose for opening Docket B of this proceeding:

> Due to the unresolved questions in this record, it is necessary for the Board to consider under a separate docket the proposal for expanding the lagoon exemption to those non-lagoon facilities which have not reached the end of their useful lives by January 1, 1987. This docket allows the Agency and the public, including DENR, to provide information on a number of topics including whether well designed and run lagoon systems can produce an effluent of better than 30/37 quality; the costs of various treatment alternatives; the practical feasibilty of using land treatment in Illinois alone or in combination with other methods; and the impact of various systems on streams.
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> (R86-17(A), slip op. at 9, August 6, 1987).

In response to a public comment received from Citizens Utilities Company of Illinois, the Board stated that Docket B would also address the issue of whether privately owned treatment facilities, not just POTW's, should also qualify for a lagoon exemption if they treat under 5000 P.E. (R86-17(A), slip op. at 1, August 6, 1987). The current regulations allow lagoon exemptions for private facilities treating under 2500 P.E.

Also, the Board provided that two Department of Energy and Natural Resource exhibits which were admitted in Docket A would be further examined in Docket B. DENR Exh. #1 is a position paper concerning dissolved oxygen modeling. DENR Exh. #2 is a report which discussed various alternatives for compliance with

wastewater treatment standards.

The record in Docket (A) has been incorporated into the record of Docket B. This docket is merely a continuation of the Board's consideration of the Agency's proposal. A hearing was held in Docket B on October 7, 1987.

In a Hearing Officer Order entered August 31, 1987, the Hearing Officer set forth several issues to be discussed at the October 7th hearing. Mr. Toby Frevert, Manager of the Planning Section for the Agency's Division of Water Pollution Control responded to each issue.

One issue to be discussed was "the quantitative and qualitative environmental impact of allowing all POTW's with an untreated waste load of 5000 P.E. or less to eventually utilize a lagoon exemption and be subject to less stringent effluent standards". (August 31, 1987 Hearing Officer Order). The Agency, through the testimony of Mr. Frevert, responded as follows:

> In reality I don't anticipate that all of those facilities ever would rely on lagoons. I don't anticipate that all of any category of discharger are going to uniformly rely on one single technology.
>
> Those that do, I'm confident with our experience in our monitoring program and our evaluation of systems over the years. In these small cases where good, bad or otherwise, we do have some problems with operator capabilities and mechanical problems and upsets of mechanical treatment plants that in practice we do see sludge deposits in the stream and we do see greater impacts upon the receiving stream in those smaller communities that rely on mechanical type of treatment versus a lagoon or land application process. That was addressed at a little more detail or significantly more detailed by myself and other witnesses in Docket A, but I wanted to comment on it again.
>
> (R.80-81)

Another issue for discussion set forth by the Hearing Officer Order was "[t]he practical feasibility of using land treatment in Illinois alone or in combination with other methods." (August 31, 1987 Hearing Officer Order). As to that issue, Mr. Frevert stated:

> I want to firmly state that I believe and the Agency believes that there is indeed a place

> for land application technology in the State of Illinois. We have for a long time reviewed and approved and overseen operation of land application systems and we do not have any prejudice against them or any reason to discourage their use in situations where it's warranted.

(R.82)

The Agency also addressed the issue of "whether privately owned treatment facilities should be included in the expansion of the lagoon exemption." (August 31, 1987 Hearing Officer Order). Mr. Frevert testified:

> When we originally formulated the proposal there was an extremely short time frame to address national municipal compliance policy requirements for a number of publicly owned wastewater treatment facilities subject to that national municipal strategy. That adds some financial concerns and also adds some relatively adequate treatment facilities at the time.
>
> Our Agency intentionally restricted our proposal to publicly owned treatment works with the intention of narrowing the scope or the focus of the proceeding in an effort to move it along more rapidly. With that particular element resoved, and that goal accomplished, I think it is perhaps a valid point to consider expansion to privately owned facilities.
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> I think there are some differences between public and private facilities in terms of mechanisms and the availability of financial resources to accomplish different treatment schemes and achieve compliance dates. In terms of potential operator problems with other types of technology, perhaps there aren't many major differences.
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> I cannot address the entirety of the issues related to the privately owned facilities, but I wanted to clearly state for the record our reliance on the POTW approach only was to expedite the process and minimize the scope of that first docket.

(R.79-80)

More detailed testimony concerning land treatment was also

received at the October 7th hearing. The authors of DENR Exhibit #2, Mr. Luther Skelton and Mr. Stephen John stated that land treatment is one treatment alternative to regulatory relief from current effluent standards. (R.14). A land treatment system involves the irrigation of crops or grass with treated effluent from a wastewater treatment system. Since the treated effluent is not discharged to waters of the State the effluent standards of Section 304.120 do not apply. Mr. John stressed the importance in reviewing alternative treatment technologies before granting sweeping regulatory relief.

> It's our expectations, for the reasons we discuss in those sections [of DENR Exh. #2] that the affent [sic] of the adoption of the lagoon exemption proposal, as it exists now, is likely to be that lagoons and rock filters become the norm for communities in the 2,500 to 5,000 PE range.
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> Our reason for saying that is that we think that it's common practice by many engineering firms to design what they see as the least expensive and most familiar, at least the innovative, if I may use that term, approach that complied with the regulations.
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> And we think that given the option of a lagoon exemption to the 30/37 standard, that many consulting engineers will design to just barely come into compliance with that standard. And as a practical matter, I think what that means is lagoons and rock filters will become the technology of choice if they have the option of meeting a 30/37 standard.
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> (R.45-46).

Mr. John also stated that with respect to the Great Lakes region, the "states with more stringent water quality standards generally have more land treatment systems because they [the land treatment systems] are capable of meeting higher standards." (R.48).

Dr. John Sheaffer, a consulting engineer, testified that land treatment of treated wastewater effluent is well suited to Illinois due to the State's soil composition, climate and terrain. (R.41). Dr. Sheaffer also stated that the lagoon treatment of the wastewater is better suited to land treatment than conventional mechanical facilities such as an activated sludge plant. (R.33). The lagoon/land treatment system often recommended by Dr. Sheaffer has few moving parts and requires fewer people to operate when compared with a mechanical treatment system. (R.60-61).

According to Dr. Sheaffer, the treated effluent which is applied to the crops or grass is generally of such quality that it would meet the 10/12 standards for BOD_5 and SS. (R.65). Dr. Sheaffer testified that one million gallons of wastewater contain $150 worth of nutrients. (R.27). A report submitted by Dr. Sheaffer states that an agricultural community with an average flow of 600,000 gpd, if utilizing land treatment, will apply an equivalent of $32,850 of fertilizer each year. (R86-17(B) Exh #2, p.6). With regard to the potential for the spread of pathogens or viruses from the applied effluent, the witnesses stated that a land treatment system was relatively low (R.71-72). According to Mr. John properly designed systems do not pose any significant hazard to crops or animals which consume the crops. (R.72)

Dr. Sheaffer testified that the cost of a small land treatment system would likely exceed the cost of a system which included lagoon treatment and a rock filter. However, he stated that larger land treatment systems would actually cost less. (R.59). Dr. Sheaffer reports that construction costs range from $2.00 per gallon installed capacity for large systems to $4.00 per gallon installed capacity for small systems. Dr. Sheaffer's October, 1987 report states that there are 20 land treatment projects in Illinois that are completed or in some stage of development. (R86-17(B), Exh #2, p.6).

Discussion

The Board held in its August 6, 1987 Opinion that it would not grant relief to POTW's to the fullest extent as requested by the Agency due to the lack of environmental data in the record. That is, the record was deficient with respect to the environmental impact which could result if all POTW's that treat less than 5000 P.e. Eventually qualified for a lagoon exemption and were subject to less stringent effluent standards. The evidence entered at the October 7, 1987 hearing did not correct that deficiency.

However, the record of the October 7th hearing does indicate that land treatment is a viable alternative for communities which are not currently meeting the 10/12 BOD_5 and SS standards. Land treatment systems are technically feasible and economically reasonable methods of wastewater treatment. See In the Matter Of: Petition of the City of Tuscola to Amend Regulations Pertaining to Water Pollution, R83-23 (April 21, 1988). More importantly, instead of discharging effluent to the waters of the State, land treatment systems enable the reuse of valuable nutrients. Such systems seem particularly well suited to rural communities which have readily available cropland that could benefit from a land treatment irrigation system.

Given the continuing uncertainty as to the environmental impact of the full Agency proposal as well as the availability of alternative treatment technologies such as land treatment, the

Board will not expand the lagoon exemption to the extent requested by the Agency. However, the Board will amend Section 304.120 to allow any facility, with an untreated waste load of 5000 population equivalents or less and whose current treatment system has reached the end of its useful life, to qualify for a lagoon exemption if such a facility can prove, in an adjusted standard proceeding, that the facility is so situated that a land treatment system is not a suitable treatment alternative. When applicable, the petitioner in an adjusted standard proceeding shall address, at a minimum , the following factors: cost; influent character; climate; geographic characteristics; hydrologic conditions; soil conditions; and the availability of irrigable land. If any of the above factors are inapplicable, the petitioner must explain such inapplicability.

The remaining issue is whether privately owned wastewater treatment works should benefit from lagoon exemptions to the same extent as publicly owned facilities. The Board finds no reason to distinguish between wastewater treated by publicly owned lagoons as opposed to privately owned lagoons. It is apparent from the Agency's testimony that privately owned wastewater treatment facilities were not excluded from the Agency's proposal because of environmental considerations. The Board will propose for First Notice amendments to Section 304.120 which would allow privately owned facilities to benefit from lagoon exemptions to the same extent as POTW's.

In addition, the Board is proposing to change the language of Section 304.120(c)(1)(B) to more clearly reflect the intent of the Board. It has always been the intent of the Board to expand the lagoon exemption to 5000 P.E. or less for facilities which were already utilizing lagoons or other types of facilities which reached the end of their useful lives by January 1, 1987. By inserting the phrase "and employing third-stage treatment lagoons" the Board is not substantively changing the rule; rather, it is making the meaning of the rule more evident.

ORDER

The Board hereby proposes for First Notice the following amendments to be published in the Illinois Register.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 304
EFFLUENT STANDARDS

Section 304.120 Deoxygenating Wastes

Except as provided in Section 306.103, all effluents containing deoxygenating wastes shall meet the following standards:

a) No effluent shall exceed 30 mg/l of five day biochemical oxygen demand (BOD_5) (STORET number 00310) or 30 mg/l of suspended solids (STORET number 00530), except that treatment works employing three stage lagoon treatment systems which are properly designed, maintained and operated, and whose effluent has a dilution ratio no less than five to one or who qualify for exceptions under paragraph (c) shall not exceed 37 mg/l of suspended solids.

b) No effluent from any source whose untreated waste load is 10,000 population equivalents or more, or from any source discharging into the Chicago River System or into the Calumet River System, shall exceed 20 mg/l of BOD_5 or 25 mg/l of suspended solids.

c) No effluent whose dilution ratio is less than five to one shall exceed 10 mg/l of BOD_5 or 12 mg/l of suspended solids, except that sources employing third-stage treatment lagoons shall be exempt from this paragraph (c) provided all of the following conditions are met:

1) The waste source qualifies under one of the following categories:

A) Any wastewater treatment works with an untreated waste load less than 2500 population equivalents, which is sufficiently isolated that combining with other sources to aggregate 2500 population equivalents or more is not practicable.

B) Any wastewater ~~publicly owned~~ treatment works in existence and employing third-stage treatment lagoons on January 1, 1986 whose untreated waste load is 5000 population equivalents or less and sufficiently isolated that combining to aggregate 5000 population equivalents or more is not practicable.

C) Any wastewater ~~publicly owned~~ treatment works with an untreated waste load of 5000

population equivalents or less, which has reached the end of its useful life by January 1, 1987, and is sufficiently isolated that combining to aggregate 5000 population equivalents or more is not practicable.

D) Any wastewater treatment works with an untreated waste load of 5000 population equivalents or less which has reached the end of its useful life and which has received an adjusted standard determination from the Board that it qualifies for a lagoon exemption. Such a Board determination will only be made in an adjusted standard proceeding, held in accordance with Section 28.1 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111½ par. 1001, et seq.) and 35 Ill. Adm. Code 106.

i) In an adjusted standard proceeding the Board may determine that the petitioning wastewater treatment source qualifies for a lagoon exemption if the wastewater treatment works proves that it is so situated that a land treatment system is not a suitable treatment alternative. A petitioner for an adjusted standard under this subdivision (D) shall address, at a minimum, the following factors: cost; influent character; geographic characteristics; climate; soil conditions; hydrologic conditions; and the availability of irrigable land. Where special circumstances may render these factors inapplicable for reasons of irrelevancy or expense of data collection in relation to the relevancy of the data, the petition shall include a justification for such inapplicability.

ii) For the purposes of this subdivision (D), a land treatment system is a wastewater treatment system which does not directly discharge treated effluent to waters of the State but instead uses the treated effluent to irrigate terrestrial vegetation.

2) The lagoons are properly constructed, maintained and operated; and

3) The deoxygenating constituents of the effluent do not, alone or in combination with other sources, cause a violation of the applicable dissolved

oxygen water quality standard.

d) No effluent discharged to the Lake Michigan basin shall exceed 4 mg/l of BOD_5 or 5 mg/l of suspended solids.

e) Compliance with the numerical standards in this Section shall be determined on the basis of the type and frequency of sampling prescribed by the NPDES permit for the discharge at the time of monitoring.

f) For the purposes of this Section, useful life is the period of time during which it is cost effective to operate and maintain a particular wastewater treatment works under consideration. At a minimum, the following factors relating to a wastewater treatment works shall be considered in a determination of its useful life:

1) Structural and operational condition of components;

2) Past operations and maintenance record;

3) Cost for continued use; and

4) Description and costs for treatment alternatives.

(Source: Amended at Ill. Reg. , effective)

IT IS SO ORDERED.

J.D. Dumelle concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 20th day of October, 1988, by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board