ILLINOIS POLLUTION CONTROL BOARD
June 5, 1997

JOSEPH BOGACZ,	)	
	)	
Complainant,	)	
	)	PCB 96-47
v.	)	(Enforcement - Citizens)
	)	
COMMONWEALTH EDISON COMPANY,	)	
	)	
Respondent.	)	

MR. JOSEPH BOGACZ APPEARED *PRO SE*.

MR. CHRISTOPHER ZIBART and MR. GLENN RIPPIE OF HOPKINS & SUTTER APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by R.C. Flemal):

This matter is before the Board on a complaint filed by Mr. Joseph Bogacz concerning alleged production of ozone air pollution in violation of Sections 9 and 9.1 of the Environmental Protection Act (Act) (415 ILCS 5/9 and 9.1). Mr. Bogacz contends that high voltage (HV) electric transmission lines and other equipment, including transformers, operated by respondent Commonwealth Edison Company (ComEd), produce ozone through corona discharge.

The Bogacz complaint requests the following relief: order ComEd to stop polluting; initiate, consider and adopt appropriate regulations applicable to ComEd pursuant to Sections 10 and 26 of the Act (415 ILCS 5/10 and 26); and order ComEd to pay money penalties. [1] At hearing Mr. Bogacz averred that there may be other types of relief which the Board may consider appropriate in addition to the three stated above. (Tr.1 at 68.)

For the reasons discussed below, the Board finds no violation of Sections 9 or 9.1 of the Act and dismisses the complaint.

[1] On November 2, 1997 Mr. Bogacz amended the relief originally requested in his complaint; his original complaint requested, that among other things, ComEd stop polluting by burying the HV lines or by other means, and that the Board prohibit future construction of overhead HV lines.

PROCEDURAL HISTORY

Mr. Bogacz filed his initial complaint on August 23, 1995. On September 20, 1995 ComEd filed a motion to dismiss contending that the complaint was duplicitous and frivolous. On November 2, 1995 Mr. Bogacz filed a response to the motion to dismiss and a motion to amend the complaint. On November 16, 1995 the Board granted the motion to amend the complaint, but found that the complaint improperly asserted violations of Sections 8, 9.5, 9.6, and "other applicable Sections" of the Act, and accordingly struck those Sections from the complaint. The Board also denied ComEd's motion to dismiss on the grounds that the remaining portions of the complaint were not duplicitous or frivolous.

Hearing was held in Lake Zurich, Illinois, before Hearing Officer June Edvenson on November 21, 1996 and continued to November 22, 1996. Mr. Bogacz provided the only testimony in his case-in-chief. ComEd presented four witnesses: Linda Manning, Vice President of transmission systems for ComEd; Gary Johnson, engineer and scientist; Dr. Jaroslav Vostal, medical doctor and specialist in public health issues; and Mark Lorenz, siting and estimating engineer with ComEd.

Mr. Bogacz filed a post-hearing brief on January 21, 1997. ComEd filed a response brief on January 31, 1997. Mr. Bogacz filed a reply brief on February 18, 1997.

ARGUMENTS

Mr. Bogacz argues that ComEd produces ozone when it transmits electricity through its high voltage transmission lines, and that the ozone causes, sustains, and contributes to air pollution. (Tr.1 at 44.) Mr. Bogacz believes that there is a need for controlling this ozone because permits are not required by the Board, the United States Environmental Protection Agency (USEPA), or the Illinois Environmental Protection Agency (Agency).

Mr. Bogacz introduced several documents into evidence to support his argument, including a newspaper article (Comp. Exh. 1), a Lake County Lung Association brochure distributed by the Lake County Health Department (Comp. Exh. 2), a USEPA brochure on ozone action days (Comp. Exh. 3), Internet articles (Comp. Exh. 4, 6, 7), and various encyclopedia excerpts (Comp. Exh. 5, 10) regarding ozone. Mr. Bogacz's exhibits, excluding those which were filed by himself and ComEd before hearing, did not address HV transmission lines as a source of ozone. On cross-examination, Mr. Bogacz stated that the USEPA did not send him any documents that indicate that ozone produced by transmission lines has any significant effect on humans, plants, or animals. (Tr.1 at 59-60.) He acknowledged that the USEPA is "mute as to a specific ozone limit for high voltage lines." (Post Hrg. Br. at 1.)

ComEd's witnesses, Ms. Manning and Dr. Vostal, admitted that ComEd's transmission lines do indeed produce ozone (Tr.1 at 122 and Tr.2 at 61). However according to ComEd, "(t)he small amounts that are produced decay quickly, and no measurable amounts of ozone migrate down to ground level or off ComEd's transmission rights-of-way." (Res. Br. at 1.)

Ms. Manning testified that it would be generally impossible for ComEd to provide electric power to customers without the use of a transmission system. (Tr.1 at 98.) In addition, due to inadequate technology, inability to regulate power flow (ComEd's lines could absorb energy from other utilities), and expense, it may even be impossible to place ComEd's entire transmission system underground. (Tr.1 at 108-110.)

As regards the need for additional regulations, Ms. Manning explained that both the Illinois Commerce Commission (ICC) and the Federal Energy Regulatory Commission already regulate the current transmission system. When ComEd plans to build a new transmission line, it must file an application for a certificate of convenience with the ICC and hold public hearings; after which the ICC considers, among other things, the public's interest in building the lines, the routing and siting, and the physical construction (e.g., if it is overhead or underground) of the lines. (Tr.1 at 105-6.)

Dr. Johnson testified regarding the development of mathematical models for predicting the amounts of corona and ozone produced by HV transmission lines. (Tr.1 at 127.) Ozone can be created if there is a sufficiently strong electric field to dissociate an oxygen molecule or two atoms of oxygen, freeing the oxygen into individual atoms, which then can react with other oxygen molecules to form ozone. (Tr.1 at 128.) Dr. Johnson stated that usually the corona phenomena is not a problem in fair weather, but rather is more likely to occur in foul weather (Tr.1 at 132-3). He further explained:

> Transmission line corona is basically an electrical discharge that forms at the surface of the conductor for the very high voltage transmission lines. Essentially, the transmission lines are designed so that they are corona free; however, atmospheric conditions, basically bugs, debris, nicks in the conductor, scratches on the conductor, essentially small protrusions on the conductor when they are at this high voltage can produce points and form corona at the surface.

(Tr.1 at 132.)

ComEd's last witness, Mr. Lorenz, explained how ComEd attempts to minimize the corona discharge, not because of the potential production of ozone, but because corona discharge constitutes a loss of energy. (Tr.2 at 76-77.) Mr. Lorenz's testimony supported Ms. Manning's testimony. Mr. Lorenz stated that there is no technology that would allow 765,000 volt lines to be placed underground, and there are major complications in attempting to place 345,000 volt lines underground even where it is possible. Moreover, where it is possible to place the lines underground it is far more expensive than overhead construction, ranging from five to at least ten times the cost. (Tr.2 at 80.) Mr. Lorenz calculated the cost to ComEd to place the existing overhead circuits underground, where possible, at approximately $14.3 billion. (Tr.2 at 82.) These additional costs are due to "[t]he fabrication of cable with proper insulation qualities and levels to keep that conductor from going to ground and the electricity from going to ground is dramatically more expensive as compared to its equivalent overhead component." (Tr.2 at 80.) Additional factors involved in placing lines

underground are the cost of construction, including the labor cost; increased operation and maintenance fees; and lack of resources and engineers. Mr. Lorenz estimated that placing the transmission lines underground would not reduce the amount of ozone produced by ComEd's utility function. (Tr.2 at 86.)

DISCUSSION

The instant complaint contends that ozone discharges from ComEd's transmission equipment constitute violations of both Sections 9 and 9.1 of the Illinois Environmental Protection Act.

Violation of Section 9

Pursuant to Section 9 of the Act, the Board must determine whether ComEd's transmission lines produce a contaminant which causes air pollution or violates the Board's regulations or standards. The pertinent portion of Section 9 states:

> No person shall:
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> a. Cause or threaten or allow the discharge or emission of any contaminant into the environment in any State so as to cause or tend to cause air pollution in Illinois, either alone or in combination with contaminants from other sources, or so as to violate regulations or standards adopted by the Board under this Act;
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> * * * *

(415 ILCS 5/9 (1994).)

The first issue is whether ComEd's transmission lines cause, threaten, or allow the discharge or emission of a contaminant into the environment to cause or tend to cause air pollution. Several of ComEd's witnesses testified that transmission lines create an electric discharge in the air, or a corona phenomena, which may lead to the formation of ozone. (Tr.1 at 122, 127-8, Tr.2 at 61.) Also, ComEd's post-hearing brief acknowledges that "very small amounts of ozone can form high up or near the surface of the energized transmission line conductors." (Res. Br. at 1.) Based on the record, the Board finds that ComEd's transmission lines produce ozone. Ozone is a contaminant regulated by the Board at Section 243.125 of the Board's regulations. (35 Ill. Adm. Code 243.125.) Therefore the Board finds that ComEd's transmission lines cause a discharge of a contaminant, ozone, into the environment. However, in order to show a violation of Section 9, Mr. Bogacz must further prove that this discharge of ozone causes air pollution as defined in the Act.

Air pollution is defined in the Act at Section 3.02:

> "AIR POLLUTION" is the presence in the atmosphere of one or more contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property.

(415 ILCS 5/3.02 (1994).)

Under the first prong of Section 9, the issue is whether ComEd's transmission lines produce ozone in sufficient quantities and of such character and duration to be injurious or unreasonably interfere with the enjoyment of life or property as required by Section 3.02.

Mr. Bogacz presented no evidence showing the quantities, character, or duration of transmission line ozone produced by ComEd. Notwithstanding, ComEd produced equations calculating the quantities of ozone produced. Specifically at hearing, Dr. Johnson testified that although an exact number is not available, given the geometry of the voltage of the lines, one can calculate the corona loss that would be produced under various weather conditions and from those calculations further calculate the amount of ozone that would be produced. (Tr.1 at 134.) Dr. Johnson testified that in the entire ComEd system all over northern Illinois, there would be essentially no contribution of ozone in fair weather, and during foul weather (including very heavy rain) ComEd's transmission lines would be adding only 154-156 pounds of ozone into the atmosphere at any one time. (Tr.1 at 144.) Based on Dr. Johnson's studies, he concluded that a person living near a ComEd transmission line right-of-way would not experience significantly increased ozone exposure from the transmission lines, and ComEd's lines are not significantly increasing overall ozone in northern Illinois. (Tr.1 at 146.)

With regard to human health, ComEd stated that transmission line ozone is not a public health issue and "the short-lived trace amounts of ozone are immeasurably small and have no environmental effects." (Res. Br. at 1-2.) Dr. Vostal testified to this argument, stating that concentrations up to 500 ppb of ozone would not have any effect on the performance of a person's pulmonary function tests; and while exercising, 160 ppb of ozone must be present before any observed impact on the pulmonary tests is shown. (Tr.2 at 39-40.) Moreover ComEd admitted into evidence a letter from the USEPA to support its claims which stated:

> The USEPA does not monitor ozone levels created by high voltage transmission lines. Furthermore, based on the insignificant amounts of ozone generated by high voltage electric transmission lines, USEPA does not feel that these lines represent an imminent health threat. In a joint study entitled "Electrical and Biological Effects of Transmission Lines: A Review" (DOE/BP 945, 1993), the Department of Energy and The Bonneville Power Administration concluded that 'Ozone concentrations produced by transmission lines appear to be too low to have any significant effects on humans, animals or plants.'

(Resp. Exh. 1 and 2.)[2]

The Department of Energy report (Resp. Exh. 2, p.68) states that the extensive research projects conducted since 1975 on transmission line ozone show that the amount of ozone produced by even the largest lines in operation (765 kV) is insignificant. (*Id*.) In addition, ComEd submitted several technical papers into the record supporting its arguments regarding transmission line ozone. (Resp. Exh. 3-5, 15.)

Mr. Bogacz proffered no evidence to rebuff testimony or calculations presented by ComEd. Mr. Bogacz only provided documentation as to the hazards associated with ozone in general, but nothing specific to either ComEd or to transmission lines. The current USEPA national ambient air quality standard is 0.12 ppm. (40 C.F.R. §50.9.) Mr. Bogacz has not proven that ComEd's transmission lines produce ozone in sufficient quantities and of such characteristics and duration as to be injurious to human, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property. As a result, the Board finds that Mr. Bogacz has failed to show that the ozone produced by ComEd's transmission lines produces air pollution in violation of Section 9 of the Act.

Under the second prong of Section 9 of the Act, the Board must also determine whether the ozone produced by ComEd's transmission lines violates any regulations or standards adopted by the Board. The Board's regulations regarding the emission of ozone are found at Section 243.125:

> Ozone
>
> a) Standard. The ambient air quality standard for ozone is 0.12 ppm (235 micrograms per cubic meter) maximum 1-hours concentration not to be exceeded on more than one day per year.
>
> b) Measurement Method. For determining conformance with the ozone air quality standard, ozone shall be measured by the ozone-ethylene reaction method as described in 40 CFR 50. Appendix D (1982), as amended.

(35 Ill. Adm. Code 243.125.)

Mr. Bogacz presented no measurements or calculations that show ComEd's violation of Section 243.125. ComEd presented the only quantification into the record. Specifically

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[2] This September 15, 1995 USEPA letter was sent to Senator Paul Simon. On July 28, 1995 Mr. Bogacz wrote to Senator Simon to request that the USEPA investigate HV transmission line ozone. Senator Simon directed the request to the Office of Congressional Affairs, USEPA.

ComEd calculated the maximum ground-level ozone concentration increase due to a nearby line at[3]:

Along 765 kV lines:	0.00056 ppm[4]
Along 345 kV double circuit lines:	0.00034 ppm
Along 345 kV single circuit lines:	0.00013 ppm
Along 138 kV double circuit lines:	0.0000024 ppm
Along 138 kV single circuit lines:	0.0000009 ppm

According to Dr. Johnson, the ambient background levels of ozone with all of ComEd's transmission lines turned off, where there are no other transmission lines within the area to affect the measurements, measured between about 10 ppb (.01 ppm) at night to 40-90 ppb (.040-.090 ppm) during the sunny daytime hours. (Tr.1 at 129.) As noted above, the ambient air quality standard for ozone is 0.12 ppm (235 micrograms per cubic meter) maximum 1-hour concentration not to be exceeded on more than one day per year.[5] Using ComEd's calculations, the ground-level ozone concentration increase along each type of ComEd transmission line is consistently less than the maximum allowable 0.12 ppm standard. In fact, based upon these measurements, the increase in ozone due to ComEd's transmission lines at issue is *de minimus* and not in violation of Section 243.125.

Based upon the record and accompanying calculations, the ozone produced by ComEd's transmission lines does not violate Section 243.125 of the Board's regulations. As a result, the Board finds that Mr. Bogacz has failed to prove that ComEd's transmission lines violate Section 9 of the Act.

Violation of Section 9.1

Mr. Bogacz's complaint additionally alleges that ComEd violated Section 9.1 of the Act. Pursuant to 35 Ill. Adm. Code 103.122(c)(1)(1994), a formal enforcement complaint must contain a "reference to the provision of the Act and regulations which the respondents are alleged to be violating." Although Mr. Bogacz's complaint included Section 9.1 as the section

[3] See ComEd's Supplemental Answers to Complainant's Interrogatory No.2 filed on August 12, 1996 for calculations and assumptions.

[4] The calculated concentrations were present by ComEd in units of parts per billion (ppb). The numbers are here presented in units of parts per million (ppm) to facilitate direct comparison to the ambient air quality standard of 0.12 ppm.

[5] See also the federal ambient air quality standard for ozone and accompanying reference method, 40 C.F.R. §50.9, which is the same as the Illinois standard of 0.12 ppm.

violated, the Board finds nothing specific in the record to indicate which subsection he is alleging was violated. Therefore in an attempt to review Section 9.1 in light of the instant matter, the Board believes only Section 9.1(d) has the potential to be violated. Section 9.1(d) states:

> d. No person shall:
>
> 1. Violate any provisions of Sections 111, 112, 165 or 173 of the Clean Air Act, as now or hereafter amended, or federal regulations adopted pursuant thereto; or
>
> 2. Construct, install, modify or operate any equipment, building, facility, source or installation which is subject to regulations under Sections 111, 112, 165 or 173 of the Clean Air Act, as now or hereafter amended, except in compliance with the requirements of such Sections and federal regulations adopted pursuant thereto, and no such action shall be undertaken without a permit granted by the Agency or in violation of any condition imposed by such permit. Any denial of such a permit or any conditions imposed in such a permit shall be reviewable by the Board in accordance with Section 40 of this Act.

(415 ILCS 5/9.1(d) (1994).)

The cited sections of the Clean Air Act are Section 111 (42 U.S.C. §7411), Standards of Performance for New Stationary Sources; Section 112 (42 U.S.C. §7412), Hazardous Air Pollutants; Section 165 (42 U.S.C. §7475), Preconstruction Requirements; and Section 173 (42 U.S.C. §7503), Permit Requirements. After reviewing the record the Board finds that Mr. Bogacz has not proven that any of these Sections of the Clean Air Act, or that Section 9.1, were violated.

CONCLUSION

The Board finds that based upon the record, the ozone created by the transmission lines operated by Commonwealth Edison Company does not violate Sections 9 or 9.1 of the Act. Furthermore, the record before the Board indicates that ozone produced by ComEd's transmission lines is *de minimus*, and as such does not present a threat to human health or the environment in violation of the Act. Because Mr. Bogacz has failed to prove a violation of Section 9 or 9.1 of the Act, the Board need not address the relief requested.[6]

[6] The Board notes that in Citizens for a Better Environment v. Commonwealth Edison (April 18, 1974), PCB 74-87, the Board found complainant's petition frivolous which alleged violations of Sections 9(a) and 9(b) of the Act, arguing that ComEd was required to obtain permits for its transmission lines.

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

ORDER

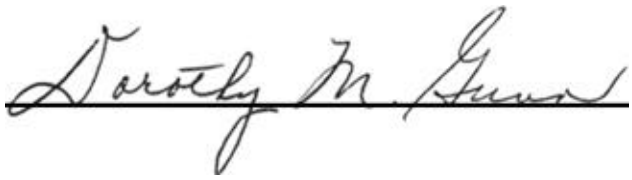
This matter is hereby dismissed and this docket is hereby closed.

IT IS SO ORDERED.

Board Member K.M. Hennessey abstained.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1994)) provides for the appeal of final Board orders to the Illinois Appellate Court within 35 days of the date of service of this order. The Rules of the Supreme Court of Illinois establish filing requirements. (See also 35 Ill.Adm.Code 101.246 "Motions for Reconsideration.")

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 5th day of June, 1997 by a vote of 6-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board