BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
NOISE RULE UPDATE:	)	R03-8
AMENDMENTS TO 35 ILL. ADM. CODE	)	(Rulemaking - Noise)
900 AND 903	)	

P.C. #6

NOTICE

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the Comments on the Illinois Pollution Control Board's Notice of Proposed Amendments by George Kamperman, a copy of which is hereby served upon you.

Respectfully submitted,

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Subject: Noise Rule Update: Amendments to 35Ill. Adm. Code 900 and 903; R2003-008

Gentlemen:

The Illinois Noise Rule was constructed by the Illinois Noise Task Force consisting of about a dozen faculty members at the University of Illinois. During the formulation of the Illinois noise standard I was retained as their consultant on noise measurement and noise control. I participated in numerous meetings in 1972 at Champaign and then fifteen all day hearings on the proposed Noise Rule conducted by the Pollution Control Board at different locations throughout Illinois. The Illinois Noise Rule has become the noise standard reference in the USA.

The present "Noise Rule Update" presents an opportunity to make the noise measurement procedures more meaningful and efficient for determining compliance with 35 Ill. Adm. Code 901. The one-hour LEQ measurement requirement (Section 900.103 Measurement Procedures) was never envisioned by the drafters of the original Illinois noise standard. I did testify, at the public hearings thirty years ago, that the sound level averaging time of a standard sound level meter is undesirably short (one-eight second on fast meter response and one second on slow meter response) thus, making it difficult to determine the average noise level. And although longer time-weighted-average (LEQ) sound measurements were possible with laboratory instruments, there were no portable LEQ meters available thirty years ago. Today there are numerous manufacturers of very portable LEQ meters containing octave and one-third octave band frequency analyzers. These portable integrating averaging sound level meters (LEQ) can average the sound level over a period of time from a fraction of a second to more than a month. There is no unique duration of sound measurement recommended for all sound sources. A LEQ measurement duration of one minute is usually more than adequate for documenting the average sound emission from a steady source such as a transformer or constant speed roof exhaust fan. More complex sound sources may require a longer LEQ measurement period to obtain the average sound level.

It is my professional opinion the existing one-hour LEQ measurement requirement does not protect residents as intended by the drafters of the Illinois noise standard. The one-hour LEQ measurement requirement is also excessively burdensome on determining compliance due to problems with intrusive noises and the limited number of different sound measurement locations that can be performed in a finite period of time. Although a measurement duration related to the sound source variability is best for obtaining the average sound level, it may not be the best for a noise limit standard. For the Illinois Noise Rule I recommend the PCB select a single LEQ measurement period of not less than one minute and not more than ten minutes. The measured results will be the same with either time period for a constant sound source. A one-minute versus a ten-minute LEQ measurement may benefit the receiver at the expense of the emitter if the sound

source is not constant. Thus, the sound emitter will always argue for the longest possible time duration for a LEQ measurement.

The following American National Standards Institute standards are recommended for the measurement procedures in 35 Ill. Adm. Code 901. ANSI S12.9 Part 1&3 address the sound measurement procedures. ANSI S1.4 for standard sound level meters is already part of Code 901. ANSI S1.43 should also be referenced to cover the special additional requirements for LEQ meters. S1.40 is included to ensure the sound measuring system is calibrated in the field with an appropriate acoustic calibrator.

ANSI S12.9-1988/Part 1 (R1998) "American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound. Part 1"
This standard provides basic quantities for description of sound in community environments and general procedures for measurement of these quantities. Based on these quantities and procedures, compliance limits of sound may be specified by cognizant authorities and conformance with the limits controlled for purposes of environmental assessment, regulation, and land use planning.

ANSI S12.9-1993/Part 3 (R1998) "American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-term measurements with an observer present"
This standard is the third in a series of parts concerning description and measurement of outdoor environmental sound. The standard describes recommended procedures for measurement of short-term, time-average environmental sound outdoors at one or more locations in a community for environmental assessment or planning for compatible land uses and for other purposes such as demonstrating compliance with a regulation. These measurements are distinguished by the requirement to have an observer present. Sound may be produced by one or more separate, distributed sources of sound such as a highway, factory, or airport. Methods are given to correct the measured levels for the influence of background sound.

ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters"
This standard is a revision of the American National Standard Specification for Sound Level Meters, S1.4-1971. It conforms as closely as possible to the IEC Standard for Sound Level Meters, Publication 651, First Edition issued in 1979. This revision represents a significant improvement over ANSI S1.4-1971, particularly in its specifications relating to measurement of transient sound signals. It also permits the use of digital techniques and displays. The principal changes from ANSI S1.4-1971 are: inclusion of an optional impulse exponential-time averaging characteristic, inclusion of an optional peak characteristics, more rigorous definition of the dynamic characteristics for the Fast and Slow exponential-time-averaging, increase in the crest factor requirement to ten for type 1 instruments, specification of a type 0 laboratory instrument with generally smaller tolerance limits than those previously specified for type 1, and deletion of the type 3 survey instrument

ANSI S1.43-1997 (R2002) "American National Standard Specifications for Integrating Averaging Sound Level Meters"
This Standard describes instruments for the measurement of frequency-weighted and time-average sound pressure levels. Optionally, sound exposure levels may be measured. This standard is consistent with the relevant requirements of ANSI S1.4-1983(R 1997) American National Standard Specification for Sound Level Meters, but specifies additional characteristics that are necessary to measure the time-average sound pressure level of steady, intermittent, fluctuating, and impulsive sounds.

ANSI S1.40-1984 (R2001) "American National Standard Specification for Acoustical Calibrators"
This standard specified performance requirements for coupler-type acoustical calibrators. For each microphone type that may be used with the calibrator, requirements include the sound pressure level in the coupler, the frequency of the sound, and the determination of the influence of atmospheric pressure, temperature, humidity, and magnetic fields on the pressure level and frequency of the sound produced by the calibrator. Specifications are to be met within stated tolerances at each frequency and sound pressure level of operation.

Sincerely,

George W. Kamperman, P.E., Bd. Cert. INCE

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CERTIFICATE OF SERVICE

I, JOEL J. STERNSTEIN, an Assistant Attorney General, certify that on the 28th day of February, 2002, I caused to be served by First Class Mail the foregoing to the parties named on the attached service list, with the exception of Matthew J. Dunn, by depositing same in postage prepaid envelopes with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601. Matthew J. Dunn was served personally.

Joel J. Sternstein

JOEL J. STERNSTEIN