State of Illinois
Pollution Control Board
James R. Thompson Center
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601
http://www.ipcb.state.il.us/

In The Matter Of:	)	
Anne McDonagh & David Fishbaum	)	
1464 Linden Avenue	)	
Highland Park, IL 60035	)	
	)	
Complainant(s),	)	
	)	
v.	)	PCB 20 08-76
Richard and Amy Michelon	)	*(For Board use only)*
1474 Linden Avenue	)	
Highland Park IL 60035	)	
	)	
Respondent(s)	)	

NOTICE OF FILING

TO:
Richard and Amy Michelon
1474 Linden Avenue
Highland Park IL 60035

PLEASE TAKE NOTICE THAT ON JUNE 7, 2008, THE UNDERSIGNED MAILED to the State of Illinois Pollution Control Board, James R. Thompson Center, 100 W. Randolph Street, Suite 11-500, Chicago, IL 60601, a copy of Complainants' Response to Motion to Dismiss pursuant to 415 ILCS 5/32 (d) of the Illinois Administrative Code and 103.212(b) of Title 35, Chapter 1, Pollution Control Board, a copy of which is attached hereto and served upon you.

Anne McDonagh

CERTIFICATE OF SERVICE

I, Anne McDonagh, do state that I have sent a copy of this Filing and Response to be served upon the persons named above by sending a copy of same via Registered Mail on June 7, 2008.

Anne McDonagh

COMPLAINANTS' RESPONSE TO MOTION TO DISMISS

NOW COME the complainants, ANNE MCDONAGH and DAVID FISHBAUM, WITH RESPONSE TO MOTION TO DISMISS FORMAL COMPLAINT FILED IN APRIL OF 2008.

WE DISAGREE WITH FOUR KEY DETAILS DISCUSSED BY MR. WICZER IN HIS BACKGROUND:

1. Mr. Wiczer avowed in his Motion and promised at Zoning Board of Appeals and in conversations with Complainant that Air Conditioners were "state of the art," and hence, the quietest available. Mr. Wiczer and the HVAC Technician Maher both cited a "71 decibel" level in their testimony to the Zoning Board of Appeals (Minutes, pp. 8, 19).

Our supports:

a. According to the manufacturer, American Standard, the units are **11 SEER, 79 Decibel units.** See Attachment A (Michelon's HVAC permit application, photos of units at property and email corroboration from manufacturer.) The units also emit a Prominent Discrete Tone, which makes the noise impossible to ignore. See Attachment B (Acoustic Associates report).

b. There were much quieter and more efficient American Standard units available at least two years prior to the ZBA Hearing and indeed, Wiczer and Maher cite these products' attributes in order to get the approval for a variance. On May 20, 2003, American Standard stated, *"With a SEER rating of up to 18.90 and a new fan system designed to allow sound levels as low as 72 decibels, this system is the most efficient and quietest outdoor unit we have ever manufactured. Customers and their neighbors no longer have to feel inconvenienced by noisy outdoor units."* (See Attachment C: Press Release from American Standard)

c. The installed 11-SEER units were actually illegal to manufacture by the time they first started operating in April of 2006 due to their lack of efficiency. That contradicts their status as "state of the art." According to the Department of Energy, Federal Register Part XII, dated January 22, 2001, Volume 66, No. 14, Rules and Regulations, p. 7170-71:

"When today's adopted standards go into effect, they will essentially raise the energy efficiency standards to 13 SEER for new air conditioners." "The standards will apply to products manufactured for sale in the United States as of January 23, 2006."
(See Attachment D.)

2. Anne McDonagh did not "*expressly request*" the units be placed at the side. We merely granted permission as we were told units were "*inaudible*" and were led to believe that our new neighbors were facing very real difficulty. Mr. Wiczer's testimony at the ZBA contains many *"statements of support"* that he says came from the Complainant but that is not true. We merely were given information about the quiet levels of the units and believed it to be true. Given the size and scope of the multi-million dollar property, we had no reason to expect that they would install extremely loud, discontinued units instead. We were wrong to believe the promises. Wiczer quotes himself in his Motion, using his hearsay as "evidence." It is Wiczer quoting Wiczer. There is no independent substantiation for his claims about what Anne allegedly said or for his claims about the product characteristics of the air conditioner either.

3. Anne McDonagh did meet the builder, Susan Schreiber, at a house on Sunnyside Avenue in Highland Park, where there were three air conditioners. However, they emitted no noise, absolutely no discernable sound. When Anne marveled at the fact that they made NO sound, she was assured this was in line with the "inaudible" she had been promised. Later, Dave Maher, the HVAC tech, admitted at Anne's house in November of 2006 that the units were probably "*not running.*" Anne was unaware how AC units cycle so when she was told they were on, she was led to believe that absolute silence would be the norm. Anne's son can concur that there was no sound at all: Anne only spent a few minutes there, as she didn't know she'd had to wait for all the units to come on at once in order to replicate the level of sounds she'd actually hear. Contrary to Mr. Wiczer's testimony that, *"we had to start*

compressors there," Anne never saw any of the Michelon's representatives enter or leave the home. And Mr. Wiczer was not on-site when the demonstration was given.

4. Regarding claim that Respondents spent "*thousands of dollars on upgrades*," their receipts actually reflect $90 spent on July 3rd on pads and mounts and $165 on July 12th on similar items for a total of $255. The majority of their incurred costs were to add more R-22, also know as Freon, and routine cleaning. The pads and mounts may reduce amplification but they do not lessen the created noise. (See their bills, submitted with their Motion.)

(As well as documentation to support these points, we have also included copies of two bills totaling $1903.46 for materials alone related to soundproofing our bedroom in an effort to regain our use of that one room. Photos and invoices will show that this work has been undertaken in the past month. (Attachment E) It has been unfit for sleeping for half of the past two years due to the level of noise. Such loud noise has been proven in several studies to raise sleepers' blood pressure, even if they do not awaken each and every time. (Attachment F)

RESPONSE TO ARUGUMENT

Re: Complaint is Frivolous:

We disagree that Complaint is frivolous. We acknowledge that we have expressly agreed to allow the placement of the units on the far outside wall of their garage (24 feet beyond their main structure), near our kitchen and bedrooms. However, we did not waive our rights that the units shall not exceed the Illinois EPA noise pollution limitations.

Far from being frivolous, the noise problem is egregious. Twenty-five feet beyond the Complainants' property line (inside our bedroom), the units create a noise level of 65 decibels at night with a Prominent Discrete Tone. As well as violating the Illinois EPA, the World Health Organization recognizes the 45-decibel limit for sleep areas as it the level at which many people are woken up. With the Illinois EPA limit of 47 decibels at night, and the

additional 10 decibel reduction for noises with a Prominent Discrete Tone, it is our understanding that our home is two (and almost three) *orders of magnitude louder* than allowed by the Illinois EPA. State of Illinois noise code (ref: 35 Ill. Adm. Code Subtitle H Section 901.102a and 901.106) (See Attachment B (Acoustic Associates Report).

Re: Complaint is Duplicative

We disagree that the Complaint is duplicative. Mr. Wiczer argues that the Complaint is duplicative because the Highland Park Zoning Board of Appeals allowed a variance as to the placement of the air conditioners. Whereas placement is within the authority of the Zoning Board of Appeals, they do not have the authority to allow (nor did they rule that) the air conditioners to exceed the Illinois laws regarding noise. In fact, Mr. Wiczer provided assurances that the units would not be heard. *"It is going to be invisible. You are not going to hear it: you are not going to smell it; you are not going to see it."* (ZBA pp.11-12) This has not been the case. As such, the complaint is not duplicative.

Re: Complaint lacked proper notice and service:

The package delivered via the United States Postal Service to the Michelons in April 2008 did contain a copy of the "Notice to Respondent" as well as a copy of the Formal Complaint. The following notice was contained therein.

> *Failure to file an answer to this complaint within 60 days may have severe consequences. Failure to answer will mean that all allegations in the complaint will be taken as if admitted for purposes of this proceeding. If you have any questions about this procedure, you should contact the hearing officer assigned to this proceeding, the Clerk's Office or an attorney. 35 Ill. Adm. Code 103.204(f).*

So we disagree that our complaint was missing proper service and notice on the Respondents.

In summary, the complaint is not about the issue of the placement of the air conditioners. It is about the fact that the air conditioners create noise pollution in excess of the laws of the State of Illinois that has made the Complainants' lives miserable. The Respondents should be held to obey the laws of the State of Illinois.

CERTIFICATION
(optional but encouraged)

I, David Fishburn Anne McDonagh, on oath or affirmation, state that I have read the foregoing and that it is accurate to the best of my knowledge.

(Complainant's signature)

Subscribed to and sworn before me

this 7 day

of JUNE, 2007

Notary Public

"OFFICIAL SEAL"
Barry Duke
Notary Public, State of Illinois
Commission Expires 2/23/2012

My commission expires: 02-23-2012

EXHIBIT A

CITY OF HIGHLAND PARK
Building Division
(847) 432-0808

HVAC Permit Application

Form HVAC-1999-11

JUN 17 2004

City of Highland Park
Building Dept.

Site Address: 1474 LINDEN	Lot Use: SINGLE FAMILY RESIDENCE	FOR OFFICE USE ONLY
Property Owner's Name: RICHARD & AMY MICHELON	Current Address: 57 WEST GOETHE #216 CHICAGO, IL 60610	Phone: [redacted]

HVAC PERMIT INFORMATION

Submission / Packet No.: 1474-08-03-792

Work is (check one): [X] NEW [ ] ALTER

NOTE: Fan induced furnace requires chimney liner for exterior masonry chimney.

Application Reviewed By: Date:

HVAC Contractor's Name: TARGET AIR INC. Phone/Pager:

HVAC Contractor's Address: 31632 N. ELLIS DR #105 VOLO IL 60073

$310.50

A/C Work is (check if one applies): [X] NEW [ ] REPLACE [ ] EXTEND	Location of Outside Cooling Unit: REAR OF HOUSE	Number of A/C Units: 3
Tons of Cooling Capacity: 11/2	A/C Manufacturer and Model: ALLIANCE AMER. STD. 11	C.F.M of Air Volume: 4800
Heating Work is (check if one applies): [X] NEW [ ] REPLACE [ ] EXTEND	Total calculated building heat loss: 121,372 BTU	Combustion Air Source: OUTSIDE AIR
Equipment Type (check one): [ ] BOILER [X] FURNACE	Chimney Capacity (B.T.U.): 3" PLASTIC FLUE PIPE	Total B.T.U. Input: 200,000 BTU
Total B.T.U. Output: 186,000	Number of Heating Units: 2	Heating Manufacturer Name and Model: AUC100K948C AMERICAN STANDARD

DESCRIPTION OF WORK

NEW CONSTRUCTION

FORCED AIR HEATING AND AIR CONDITIONING

Finalized

TOTAL PERMIT FEE: $310.50

Permit Approved By: Date: 6-21-04

Permit Issued By: Date: 8/18/04

Permit Finaled By: Date:

Work Location on Property:

NOTE: AFFIXING SIGNATURE ACKNOWLEDGES THE INFORMATION OF APPLICANT'S RESPONSIBILITIES AS STATED ON THE BACKSIDE OF THIS DOCUMENT.

HVAC Contractor's Signature: David G Mahar sec Date: 6-16-04

Signer's Printed Name: DAVID G MAHAR Phone: [redacted]

white - file

yellow - applicant

From: "Tyler, Customer-Information" <customer-information.tyler@trane.com>
Subject: **RE: Contact Form AmStdHVAC Type: Product**
Date: May 22, 2008 9:39:34 AM CDT
To: "annemcdonagh" <annemcdonagh@comcast.net>
2 Attachments, 165 KB

Thank you again for the additional information. I do not have pictures but the pictures you sent are sufficient. This unit is nominally rated at 11 SEER, has a decibel rating of 79, and is an Allegiance 11. We do not manufacture an Alliance model.

Thank you again!

Thank you for visiting our website!
American Standard Heating and Cooling
Customer Relations Department

From: annemcdonagh [mailto:annemcdonagh@comcast.net]
Sent: Wednesday, May 21, 2008 3:35 PM
To: Tyler, Customer-Information
Subject: Re: Contact Form AmStdHVAC Type: Product

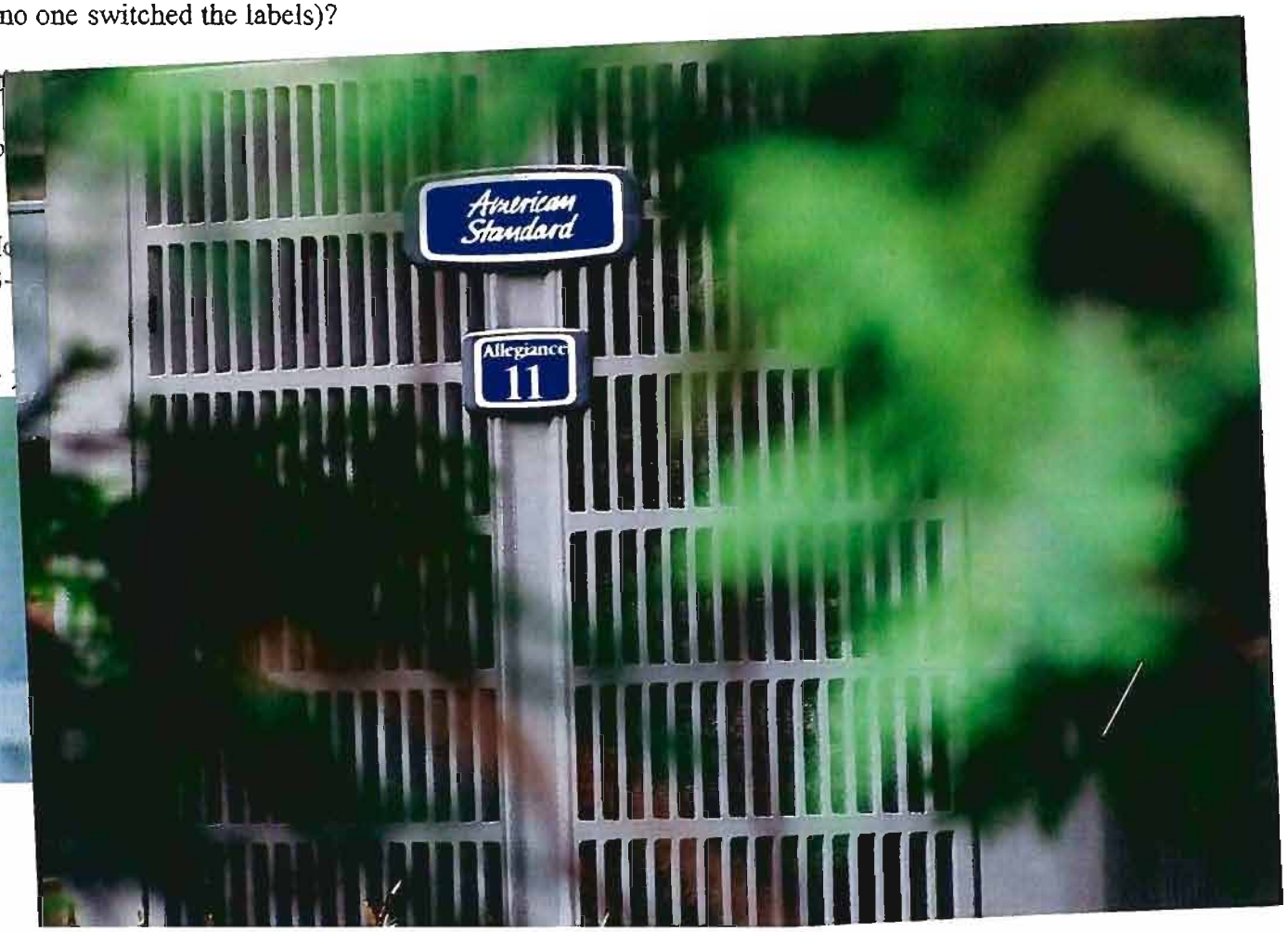
Thank you so much for your help. I was also looking for a photo that would show that American Standard labels its units SEER rating by the label on the front. That is, if there is a "Allegiance 11" in large letters on the front of the unit, that means it is an 11-SEER unit. Do you have any photos that you could email me that would show this? Thank you.

If not, here is a photo of a unit that I am concerned with. Would you confirm that this is an 11-SEER (as long as no one switched the labels)?

Also, I t
but you
79 decib

Anne Mc
847-433-

On May




Allegiance
11

We apologize for the delay in replying to your original email. The sound rating for your unit is 79db.

Thank you for visiting our website!
American Standard Heating and Cooling
Customer Relations Department

From: annemcdonagh@comcast.net [mailto:annemcdonagh@comcast.net]
Sent: Tuesday, May 20, 2008 12:54 PM
To: as-mailbox@amstd-comfort.com
Subject: Contact Form AmStdHVAC Type: Product

Type:	Product
Name:	anne mcDonagh
Email:	annemcdonagh@comcast.net
Address:	1464 Linden Avenue Highland Park, IL 60035
Phone:	(847) 433-6971
Comment:	This is my second request I would like to get the decibel ratings for the Alliance 11, 5 ton Air conditioner model that would have been sold in 2005. That will be in the product information files. Please send me that information as soon as possible. Thank you. Or direct me to a local site.

EXHIBIT B

Acoustic Associates, Ltd.

Specialists in Hearing and Acoustics

1278 W. Northwest Hwy - Suite 904, Palatine, Illinois 60067
Office: 847-359-1068 • Fax: 847-359-1207
Website: www.AcousticAssociates.com
E-mail: info@AcousticAssociates.com

Tom Thunder, AuD, FAAA, INCE - *Principal*
Roger Harmon, BSEE, PE - *Acoustical Engineer*
Steve Hallenbeck, AuD, FAAA - *Audiologist*
Steve Thunder, BSE Cand. - *Engineering Intern*

June 8th, 2007

Anne McDonagh
1464 Linden Ave.
Highland Park, IL 60035

Re: Noise Emissions

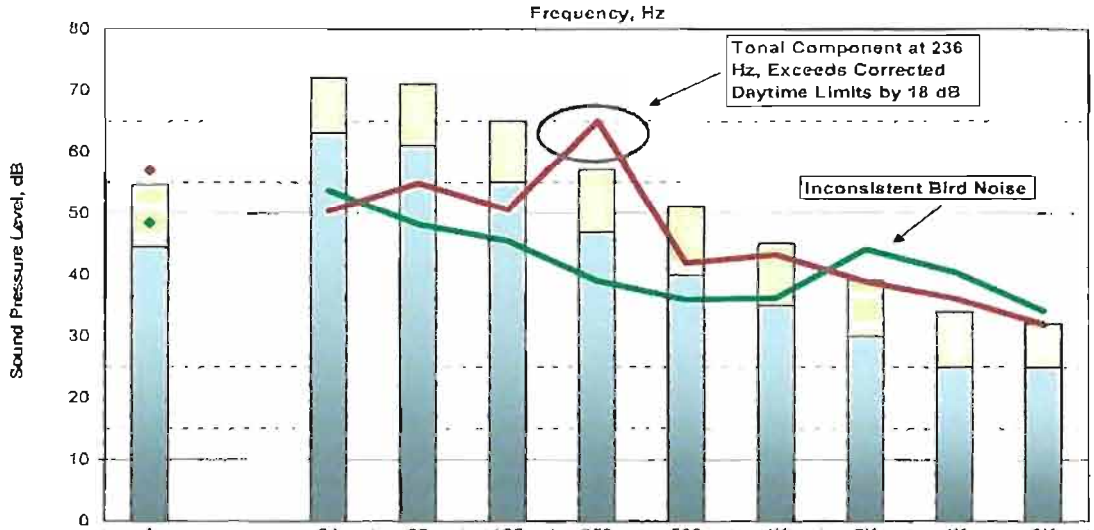
Dear Mrs. McDonagh:

This letter reports the findings of our recent noise assessment of the A/C units next to your property. As you asked we have assessed this noise relative to the State of Illinois noise code (ref: 35 Ill. Adm. Code Subtitle H). Under this code, your residence is classified as Class A (residential) land and the neighboring home from which the noise is emitting is also classified as Class A (residential) land. Since the measurements were taken at approximately 11:30 AM, the applicable code here is Section 901.102a which pertains to residential noise radiated to another residential property during daytime hours (7am – 10pm). Although the limits are specified in each of nine octave frequencies, the overall (total) limit often used for simple monitoring purposes is 55 dBA. Also, it was found that there was a Prominent Discrete Tone. Accordingly, Section 901.106 of the code also applies. This applies a -10 dB correction to the frequency at which the tone occurs.

To conduct our study, we set up our equipment next to the house that was being disturbed, 25 ft from the source. Our equipment consisted of a high precision sound level meter connected to a digital recorder. A calibration tone was placed on the recording so that the recording could be accurately analyzed in our laboratory. The recording began around 11:30 AM on Tuesday, May 29, 2007. Our intern was on site documenting his recordings and observing acoustic surroundings. It was indicated that the noise being recorded at the time was representative, although it was even louder on other occasions.

In our lab analysis, we generated 1/3-octave and octave frequency spectra. The 1/3-octaves were used to determine the presence on a Prominent Discrete Tone, as required by IL code. And the octave bands were used to present the data in a simplified form. The resultant octave band frequency spectrum is shown in FIGURE 1. The overall level of this spectrum is 57 dBA. As seen in the figure, the octave level at 250 Hz (65 dB) far exceeds the Illinois daytime limit of 57 dB, as well as the nighttime limit of 47 dB. Furthermore, when the daytime limit is corrected for the presence of the prominent discrete tone (-10 dB), it exceeds the allowable limit by 18 dB. It is also necessary to correct the levels due to background noise. In this case the correction was 0 dB. As shown in FIGURE 1, the background noise is far below the measurement level (greater than 10 dB) at 250 Hz.

Figure 1- A/C Noise



	A	31	63	125	250	500	1K	2K	4K	8K
Allowable Daytime Limits	55	72	71	65	57	51	45	39	34	32
Nighttime Limits	44	63	61	55	47	40	35	30	25	25
Background Noise	48	54	48	45	39	36	36	44	40	34
25ft From Source	57	50	55	51	65	42	43	39	38	32

There are a total of 3 A/C units. But at the time of the measurement, there was only one unit running. The second unit was the same as the first, so a 3 dB increase in the noise level can be expected when the second unit is running at the same time as the first unit. The 3rd unit, however, was not the same as the other two. Therefore, an increase in the noise when all three units run is likely, but we can not predict by how much. At the time of the test, it was 80 degrees outside and the units were determined to have about a 50% duty (on-off) cycle after an hour of measurement /observation. On hotter days it can be assumed that the duty cycle will increase therefore increasing the noise. During the measurements one unit ran part of the time and two units ran part of the time. Therefore, data from only one unit running was taken and then extrapolated to an equivalent of a 1-hour measurement.

The character of this noise can also contribute to the nuisance. In addition to the annoyance of the tonal quality of the noise, there is also an acoustic beating characteristic where the level of the hum oscillates. This characteristic exacerbates the nuisance. The beating is likely caused by the 2 A/C units running at nearly the same speed creating the beating effect. Note, that there is no beating when just one unit is running.

I hope this report meets your expectations in addressing this noise issue. We appreciate the opportunity of working with you and ask that you call us if you have any questions.

Sincerely,

Steve Thunder
Purdue University Acoustical Engineering Intern

Reviewed by,

Tom Thunder, AuD, INCE
Acoustical Engineer and Audiologist

EXHIBIT C

American Standard Heating & Air Conditioning Takes Home Comfort To a New Level

May 20, 2003

New American Standard Heating & Air Conditioning Allegiance® 18 Air Conditioning System is the Ultimate in Comfort, Efficiency and Quiet Operation

Tyler, TX (May 20, 2003) – American Standard Heating & Air Conditioning, a business of American Standard Companies, Inc. (NYSE:ASD), today unveiled the newest addition to its family of residential systems, designed to meet both dealers' and customers' needs. With a SEER rating of 18.90, the Allegiance® 18 well exceeds the minimum efficiency level of 13.00 SEER, designated by the U.S. Environmental Protection Agency for Energy Star® recognition.

"The introduction of the Allegiance® 18 air conditioning system marks a pivotal moment in American Standard Heating & Air Conditioning history," said Paul Trotter, national sales manager for American Standard Heating & Air Conditioning. "With a SEER rating of up to 18.90 and a new fan system designed to allow sound levels as low as 72 decibels, this system is the most efficient and the quietest outdoor unit we have ever manufactured. Customers and their neighbors no longer have to feel inconvenienced by noisy outdoor units."

"The American Standard Heating & Air Conditioning Allegiance® 18 system exceeds both dealers' and customers' expectations for energy efficiency, high performance and reliable ways to cool the home without sacrificing comfort or noise control," says Michelle Rodriguez, Vice President for ACES A/C Supply North.

Key product features and benefits of the Allegiance® 18 include dual Duration™ compressors for two-stage cooling and greater humidity control in cooling made possible by the Comfort -R mode of operation with either an American Standard variable-speed Freedom 80 or 90 Furnace or variable speed air handler. The two-compressor design allows the Allegiance® 18 to provide the maximum benefit to the consumer in comfort and efficiency for a two-stage design. The variable speed condenser fan motor operates at 440 RPM on low speed providing very low noise levels. Additionally, the two-row Spine Fin™ coil provides maximum surface area for more efficient heat transfer capabilities. American Standard Heating & Air Conditioning continues to prove its standards of excellence in quality and reliability with a 10-year limited warranty on compressors and coil, and a five-year limited warranty on all other parts.

American Standard Heating & Air Conditioning is a global manufacturer with market leading positions in three businesses: air conditioning systems and service, sold under the American Standard® brand for commercial, institutional and residential buildings; bath and kitchen products, sold under such brands as American Standard® and Ideal Standard®, and vehicle control systems, including electronic braking and air suspension systems, sold under the WABCO® name to the world's leading manufacturers of heavy-duty trucks, buses, SUVs and luxury cars. The company employs approximately 60,000 people and has manufacturing operations in 29 countries. American Standard is included in the S&P 500.

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EXHIBIT D

ENERGY-EFFICIENT AIR CONDITIONERS: NEW STANDARDS COMING IN 2006

SAVING MONEY AND SAVING ENERGY

New air conditioner standards go into effect January 23, 2006.

What does this mean for consumers?

New air conditioners manufactured after that date will be more energy-efficient and save money.

Existing air conditioners are not affected and homeowners do not have to replace them.

Background:

To increase the energy efficiency of residential air conditioners, the Department of Energy has issued new standards that go into effect January 23, 2006. Products manufactured as of January 23 will have to meet the new standards. The standards, however, will not require homeowners to change their existing central air conditioning units, nor will it mean that replacement parts and services will no longer be available for their home's systems.

It's true that air conditioners manufactured after January 23 must meet a higher minimum standard, achieving a Seasonal Energy Efficiency Ratio (SEER) of 13 or higher; the current standard is 10. (A SEER rating of 13 is 30 percent more efficient than 10.) The standard applies only to appliances *manufactured* after January 23, 2006. Equipment with a rating less than 13 SEER manufactured before this date may still be sold and installed. The average homeowner will remain unaffected by this standard change for some time to come.

The "lifespan" of a central air conditioner is about 15 to 20 years. Manufacturers typically continue to support existing equipment by making replacement parts available and honoring maintenance contracts after the new standard goes into effect. A change in the standard does not require replacement of equipment. Nor does a change in the standard mean that an existing system will be obsolete or impossible to maintain.

Here are some Qs and As to help understand the issue:

Q1. What's happening with air conditioner efficiency standards next January?

A1. To improve the energy efficiency of air conditioners, the Department of Energy has issued new residential central air conditioner standards that will take effect January 23, 2006. New air conditioners *manufactured* on or after January 23 will have to meet the new efficiency

standards. The last time the government increased minimum efficiency standards for air conditioners was almost 10 years ago.

The new standards do not require homeowners to change their existing central air conditioning units. Replacement parts and services will still be available to maintain current home air conditioners.

Air conditioners manufactured after January 23 must achieve a Seasonal Energy Efficiency Ratio (SEER) of 13 or higher -- 30 percent more efficient than the current SEER standard of 10. The standard applies only to appliances *manufactured* after January 23, 2006. Equipment with a rating less than SEER 13 manufactured before this date may still be sold and installed. The average homeowner will remain unaffected by this standard change for some time to come.

Q2. Why is DOE issuing new air conditioner standards?

A2. The Department of Energy is directed by the Energy Policy and Conservation Act to consider establishing minimum efficiency standards for various consumer products, including central air conditioners and central air conditioning heat pumps. The department has determined that the new standards are the highest efficiency levels that are technically feasible and economically justified as required by law. Therefore, the department is amending the energy conservation standards for residential central air conditioners and central air conditioning heat pumps.

In 2004, DOE amended the minimum efficiency standards for new central air conditioners and heat pumps that had been in effect for almost ten years. These amended standards take into account a decade of technological advancements and will save consumers and the nation money and significant amounts of energy, and have substantial environmental and economic benefits as well. These standards go into effect January 23, 2006.

Q3. What are homeowners required to do once the new rules go into effect?

A3. Nothing at all. As of January, 2006, all central air conditioners manufactured will meet this standard. Central air conditioners already in the marketplace that meet the old standard can still be sold and purchased at that time. Homeowners do not have to upgrade or replace existing central air conditioners.
The "lifespan" of a central air conditioner is about 15 to 20 years. Manufacturers typically continue to support existing equipment by making replacement parts available and honoring maintenance contracts after the new standard goes into effect. A change in the standard will not require replacement of equipment, nor will it make an existing system obsolete or impossible to maintain.

Q4. How much energy will the new central air conditioner standards save?

A4. The 13 SEER standard is forecasted to save the nation 4.2 quads (quadrillion British Thermal Units) of energy over 25 years (2006 through 2030). This is equivalent to the energy consumed by nearly 26 million American households in one year. The standards are also expected to save consumers $1 billion over the same period.

EXHIBIT E

Back to Article Click to Print

TIME
IN PARTNERSHIP WITH CNN

Wednesday, Feb. 13, 2008

Nighttime Noise and Blood Pressure

By Sora Song

The din of airplanes landing, motorcycles roaring or a bedmate snoring can make for patchy sleep and strained nerves. But even when you manage to slumber through a rackety night, your body still registers the noise by raising blood pressure, according to a small new study.

Volunteers living near four major European airports with night flights — in Athens, Milan, Stockholm and London — took part in the study published this week in the *European Heart Journal*. Study participants were outfitted with ambulatory blood pressure monitors, which were programmed to take readings at 15-min. intervals throughout the night. The volunteers' bedrooms were also equipped with an MP3 recorder and a noise-meter, which recorded all ambient noise, its timing and its volume. Researchers considered a "noise event" to have occurred if any sound, from road traffic, aircraft or a partner's snoring, exceeded 35 decibels (dB) — not a very high threshold, considering that a quiet whisper from 3 ft. away measures about 30 dB and the hum of a refrigerator logs about 40 dB. Noise levels recorded in volunteers' bedrooms fluctuated between about 30 dB or 40 dB to about 80 dB or 90 dB, roughly the volume of a food blender.

Researchers found that people's blood pressure rose reliably in response to a noise event, even when it wasn't loud enough to wake them. The response was consistent across all sources of sound, whether from the runway or the other side of the bed. Airplane noise, for example, caused an average 6.2 mmHg increase in systolic blood pressure (the pressure of blood in the artery when the heart contracts — i.e., the larger, top number) and a 7.4 mmHg increase in diastolic pressure (when the heart relaxes between beats). A snoring partner and road traffic had similar impact. And the effect was dose dependent: The louder the noise, the higher the jump in blood pressure. For every additional 5 dB in volume of aircraft noise, systolic and diastolic blood pressure rose another 0.65 mmHg each. "It's a small increase in the blood pressure, obviously, but it is significant," says co-author Dr. Lars Jarup, who specializes in environmental and occupational medicine at Imperial College London.

The new report was a corollary of a much larger study conducted by the same research group, examining the relationship between hypertension and nighttime exposure to noise near airports or daily exposure to road traffic noise. That study, which appeared online in the journal Environmental Health Perspectives last December, involved 4,861 participants, aged 45 to 70, who had lived at least five years near a major European airport. Researchers found that nighttime airport noise was linked to a significant increase in risk for hypertension; every 10 dB increase in exposure led to a corresponding 14% rise in high blood pressure risk. In addition, the study found, daily exposure to road traffic noise (at average levels above 65 dB) led to a more than 50% increased risk of hypertension — but, curiously, only among men, not women.

The new study, which included 140 middle-aged volunteers with normal blood pressure, was designed to take a closer look at the link between noise and hypertension risk — a relationship that researchers still don't fully understand. "It seems plausible that if you have a lot of these transient [blood pressure] changes during the night — if you live around the airport for many years, for example — that in the end you might get some long-term effects on your blood pressure," says Jarup, "but we don't really know." Why the body responds to nighttime noise is also somewhat mysterious. While the research in humans is new, previous lab experiments in animals have shown that they register blood pressure blips in response to noise, even during sleep or sedation. "That was the same here," says Jarup of the current study, suggesting that the human body's response may be similarly automatic. "It's not that you're annoyed and that's why your blood pressure goes up. It's something that's in the brain, and we really don't know what the mechanism is.... It could well be some kind of stress reaction, which is recorded subconsciously."

Hypertension — defined as having systolic blood pressure of 140 mmHg or diastolic pressure 90 mmHg, or higher — is known to increase risk of stroke and heart attack. Risk factors like nighttime noise are perhaps less decisive than other changeable variables like weight, exercise and alcohol intake. But, in general, says Jarup, "I would say that the main point is to reduce your risk factors — the fewer the better."

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Find this article at:
http://www.time.com/time/health/article/0,8599,1713178,00.html

[Outline] [RSS]

In a stark warning German researchers say that loud noise can increase the risk of heart attacks in elderly men and women. This risk is squarely attributed// to the noise related to the workplace as well as the usual din associated with traffic.

It was found that this noise had a physiological effect on the heart. Dr. Stefan Willich, director of the Institute for Social Medicine, Epidemiology and Health Economics at Charite University Medical Centre in Berlin and lead author of the study said that their study was a pointer to the fact that constant exposure to loud grating noise had a mild to moderate effect on the risk of heart attacks. "The increase appears more closely associated with actual sound levels rather than with subjective annoyance. However, there were differences between men and women and these need further investigation,' he commented.

The current study observed the effect of noise on 2,000 heart attack patients admitted in the hospital and used 2,000 patients admitted in the trauma and general surgery departments, but not for heart attack as a control group. It was found that the noise level increased the risk of heart attack by 50 percent in men and by three times in women. On the reverse side, workplace noise tripled the risk for men and had minimal or no risk for women. "We seem to be looking at a threshold at which risk occurs and remains constant above this, and this [threshold] appears to be around 60 decibels,' Willich commented. The researchers theorize in the November 24 issue of the European Heart Journal that noise could arouse anger and stress in subjects and thus activate the stress-hormone Adrenaline, which could be directly responsible for elevating the risk of a heart attack.

Experts believe that the paper has made a direct correlation between high decibels of noise and heart attacks. Says Dr. Peter Rabinowitz, an associate professor of internal and occupational medicine at Yale University School of Medi

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Noise and health.

Print

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Noise affects everybody in everyday life--at home, at leisure, during sleep, when traveling, and at work. However, human organisms are not prepared to shut off the noise. Hearing is a permanent process using cortical and subcortical structures to filter and interpret acoustical information; the analysis of acoustical signals is essential for human survival and communication. Noise is detrimental to health in several respects, for example, hearing impairment, sleep disturbance, cardiovascular effects, psychophysiologic effects, psychiatric symptoms, and fetal development (Stansfeld et al. 2000). Furthermore, noise has widespread psychosocial effects including noise annoyance, reduced performance, and increased aggressive behavior [American Academy of Pediatrics 1997; World Health Organization (WHO) 2001].

Noise causes acute mechanical damage to hair cells of the cochlea in the inner ear when the short-term sound intensity or peak impulse noise levels are very high {[L.sub.AF] (A-weighted sound pressure level) > 120 dB; [L.sub.Cpk] (C-weighted peak sound pressure level) > 135 A-weighted decibels [dB(A)]}. In the long run, average sound pressure levels ([L.sub.Aeq]) of > 85 dB(A) are likely to cause significant hearing loss due to metabolic exhaustion [International Organization for Standardization (ISO) 1990]. This is not only relevant in occupational settings but also with respect to leisure activities, including firecrackers, toy pistols, and other noisy toys; loud music in discotheques, concerts, and when listening via headphones; and noisy machines and tools (Maassen et al. 2001). Particularly, children and adolescents are affected (Bistrup et al. 2001). The WHO and the U.S. Environmental Protection Agency consider a daily average sound exposure equivalent to [L.sub.Aeq] = 70 dB(A) to be safe for the ear (WHO 2000). The large numbers of young people with hearing impairments should serve as a warning. "Noise hygiene" can be improved, particularly through education at school.

Even ear-safe sound levels can cause nonauditory health effects if they chronically interfere with recreational activities such as sleep and relaxation, if they disturb communication and speech intelligibility, or if they interfere with mental tasks that require a high degree of attention and concentration (Evans and Lepore 1993). The signal--noise ratio (in terms of signal processing) should be at least 10 dB(A) to ensure undisturbed communication. High levels of classroom noise have been shown to affect cognitive performance (Bistrup et al. 2001). Reading and memory have been reported to be impaired in schoolchildren who were exposed to high levels of aircraft noise (Hygge et al. 2002). Some studies have shown higher stress hormone levels and higher mean blood pressure readings in children exposed to high levels of community noise (Babisch 2000; Passchier-Vermeer 2000).

During sleep, electrophysiologic awakening reactions can be detected in an electroencephalogram for event-related maximum noise levels above [L.sub.AF] = 40-45 dB(A) in the bedroom (e.g., aircraft overflights). Recent studies suggest even lower thresholds. The long-term somatic consequences of such arousals are still a matter of discussion and research (WHO Regional Office for Europe 2004). Sleep deprivation, however, is associated with an increased risk of accidents and injuries. Cardiovascular responses found during sleep were independent of sleep disturbance. A subject may sleep during relatively high noise levels but still show autonomic responses.

Among other nonauditory health end points, short-term changes in circulation (including blood pressure, heart rate, cardiac output, and vasoconstriction) as well as in levels of stress hormones (including epinephrine, norepinephrine, and corticosteroids) have been studied in experimental settings for many years (Babisch 2003; Berglund and Lindvall 1995). From this, the hypothesis emerged that persistent noise stress increases the risk of cardiovascular disorders including high blood pressure and ischemic heart disease. Classical biologic risk factors have been shown to be elevated in subjects who were exposed to high levels of traffic noise. Nowadays the biological plausibility of the association is established (Babisch 2002). Its rationale is the general stress concept:

* Sound/noise is a psychosocial stressor that activates the sympathetic and endocrine systems.

* Acute noise effects do not occur only at high sound levels in occupational settings, but also at relatively low environmental sound levels when, more importantly, certain activities such as concentration, relaxation, or sleep are disturbed.

The following questions need to be answered:

* Do these changes observed in the laboratory habituate, or do they persist under chronic noise exposure?

* If they habituate, what are the physiologic costs; if they persist, what are the long-term health effects?

There is no longer any need to prove the noise hypothesis as such. Decision making and risk management rely on quantitative risk assessment, but not all biologically notifiable effects are of clinical relevance. The results of epidemiologic noise studies suggest an increase in cardiovascular risk with increasing noise exposure (e.g., Babisch 2000). Unfortunately, most of the individual studies that have been carried out lack statistical power. Over the years the quality of studies has improved, and many potential confounding factors have been considered. Some expert groups have rated the evidence of an association as sufficient (overview by Babisch 2002; Passchier-Vermeer 2003). Transportation noise from road and air traffic is the predominant sound source in our communities; outdoor sound levels for day-evening-night ([L.sub.den]) > 65-70 dB(A) were found to be associated with odds ratios of 1.2-1.8 in exposed subjects compared with unexposed subjects [< 55-60 dB(A)] (Babisch 2000). Because large parts of the population are exposed to such noise levels [European Environmental Agency (EEA) 2004], noise policy can have a significant impact on public health (Kempen et al 2002; Neus and Boikat 2000). For noise

levels below an [L.sub.den] of 55 dB(A), no major annoyance reactions or adverse health effects are to be expected.

Studies use magnitude of effect, dose-response relationship, biological plausibility, and consistency of findings among studies as issues in epidemiologic reasoning. Environmental and health policy must determine acceptable noise standards that consider the whole spectrum from subjective well-being to somatic health. This means that limit values may vary depending on the severity of outcomes. Future noise research should focus on source-specific differences in risk characterization, combined effects, differences between objective (sound level) and subjective (annoyance) exposure on health, sensitive/vulnerable groups, sensitive periods of the day, coping styles, and other effect-modifying factors.

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