Bio Materials for: Richard R. James
Ver: Nov. 8, 2017

Mr. James is the Owner and Principal Consultant for E-Coustic Solutions, LLC, of Okemos, Michigan. He has been a practicing acoustical engineer for over 40 years. He started his career as an acoustical engineer working for the Chevrolet Division of General Motors Corporation in the early 1970s. His clients include many large manufacturing firms, such as, General Motors, Ford, Goodyear Tire & Rubber, and others who have manufacturing facilities where community noise and worker noise exposure occur. In addition, he has worked for many small companies and private individuals. He was actively involved with the Institute of Noise Control Engineers (INCE) since its formation in the early 1970's. He was a full Member from early in the 1990's through 2017.

His academic credentials include a degree in Mechanical Engineering (BME) from General Motors Institute, Flint Michigan (now Kettering Institute). He has been an adjunct Instructor to the Speech and Communication Science Department at Michigan State University from 1985 to 2013 and an adjunct Professor for the Department of Communication Disorders at Central Michigan University from 2012 through 2017. In addition, Mr. James served on the Applied Physics Advisory Board of Kettering Institute from 1997 to 2007.

Specific to wind turbine noise, he has worked for clients in over 60 different communities.

He has provided written and oral testimony in approximately 30 of those cases. He has also authored or co-authored four papers covering wind turbine noise topics including:

- Criteria for wind turbine projects necessary to protect public health (2008),
- Demonstrating that wind turbine sound immissions are predominantly comprised of infra and low frequency sound (2011), and
- A peer reviewed historical review of other types of low frequency noise sources with similar sound emission characteristics, such as large HVAC systems (fans) which caused noise induced Sick Building Syndrome and other noise sources that have known adverse health effects on people exposed to their sound. (2012).
- A peer reviewed literature review of research spanning 40 years showing wind turbines cause risks of adverse health effects from both audible and inaudible sound emissions (2016).

He has been qualified as an expert in acoustics for hearings and court proceedings in several countries. Examples of recent qualifications are:

Jurisdiction	Before	Qualified as:
Ontario, CA (January 2014)	Ministry of Environment (MOE) and Environmental Review Tribunal (ERT)	Qualified to provide evidence on matters related to acoustics and noise control engineering and wind turbines
Alberta, CA (Dec. 2013)	Alberta Utilities Commission (AUC)	An acoustical engineer and acoustician with expertise in the field of sound including noise, low frequency noise, sounds emitted from industrial wind turbines and human response to noise.
Michigan, US	Michigan Circuit Court	1. acoustician with expertise in measurement of wind turbine noise and its effects on people. (Dec. 2013) 2. acoustician qualified to opine that the plaintiff's symptoms were caused by the defendant's wind turbines. After special Daubert Hearing (Dec. 2013)

EXHIBIT Int. I-1(a)

Computers to quiet the factory

Ever since the Occupational Safety & Health Administration (OSHA) adopted industrial noise standards in 1971, plant engineers have been struggling to reduce the ear-piercing din in factories. But it is a tough job. The hundreds of machines inside a factory produce different sounds, each of which interacts differently with nearby equipment and partitions. Even skilled acoustical engineers often misjudge the effort needed to get down to the noise level the government permits. And because noise control is often expensive, mistakes can be costly.

Now, however, many corporations are turning to computer models to make sure their noise-control efforts will be cost-effective. Spurred by the falling cost of computer time and the high price of noise control, companies are using models to ensure that newly built plants will comply with OSHA noise rules. Managers are also using computers to test whether modifications of an existing plant will actually reduce noise. And executives are finding that models enable them to contest ineffective noise-control measures proposed by the government.

The computer's advantage. A noise model is based on equations that state in mathematical form the same laws of physics that consultants have traditionally used to forecast sound levels. These equations predict, for example, the effects of bouncing sound off a wall or absorbing it in acoustical tile. To apply a model to a particular plant, a consultant first measures the several different noises emitted by each machine, then records the size, nature, and placement of noise barriers such as walls and ceilings. When these data are fed into the noise model, engineers can get information about the noise level anywhere in the plant.

Without the computer, a noise consultant must calculate intuitively. The advantage of having a model is in being able to track interactions among a larger number of variables to predict the noise level at each station. A model developed by Total Environmental Systems Inc. in East Lansing, Mich., can cope with 3,500 noise sources and 250 partitions. "There are no more than 10 people in the country who can intuitively evaluate 100 variables," says Richard R. James, TES vice-president.

Many company officials are enthusiastic about the success of these models. Using a computer model developed by TES, General Motors Corp. found that it could slash by 25% its expected use of noise-reducing material in the body-fabricating area of its new Oklahoma City assembly plant. Tests made after the plant was built showed that the model had predicted the actual noise level in the plant to within 2 decibels, a high degree of accuracy. "We can't afford trial and error," notes Woodford L. Van Tifflin, the engineer who oversees GM's noise control system.

Peter Yates

Engineers James and Van Tifflin: Using models to plan noise control.

Costs. The average machine shop could not afford the $50,000 it cost GM to have TES model a 750,000-sq.-ft. portion of its Oklahoma City plant. The TES prices for less complex jobs start at $18,000. But even clients paying the highest fees say that the savings from modeling more than cover the costs. "Modeling prices are not out of line," argues Robert F. Birdsall, a Ford Motor Co. environmental engineer. Ford recently completed noise modeling for its new Batavia (Ohio) transaxle plant, slated to be in production by the 1981 model year.

Most of the modeling of existing plants is aimed at preventing OSHA citations for excessive noise. But modeling also helps a company fight alleged violations of noise standards. Stanadyne Inc. in Windsor, Conn., recently used a model to show that the government overstated—by a factor of 20—the effectiveness and thus the feasibility of noise control measures that it claimed Stanadyne should have used at its Bellwood (Ill.) plant to keep workers from being exposed to more than 90 decibels. The model's results played a key role in a judge's Dec. 28 decision in favor of the company, claims Stanadyne's attorney, Columbus R. Gangemi Jr. Testimony based on a model "is easier for the court to understand and easier to defend" than traditional expert testimony based on engineering analysis alone, he says.

Saving time. In addition to eliminating the cost of unnecessary or ineffective noise-control measures, modeling husbands executive time. The model can generate a noise map of a new plant using colors and contour lines to indicate the sound level at each worker station. Additional maps then can display the impact of various noise-reduction strategies. So, rather than having to wade through statistical tables or try to follow complex oral explanations, managers can see at a glance what areas in the plant have noise problems and the effect of potential solutions. "It puts complex information into a meaningful summary," says Ford's Birdsall.

Although users of noise modeling are enthusiastic, there is still some skepticism in the acoustical consulting community. These doubts persist despite the widespread use of modeling to cope with other forms of industrial pollution (BW—Oct. 29). "It could be a gimmick," says Paul Jensen, manager of the industrial noise division at Bolt Beranek & Newman, an acoustical consulting firm in Cambridge, Mass. Jensen contends that it is more important to consider the worker. "The problem with the model is that it doesn't say a darn thing about the worker—where he is, how he moves in and out of noisy areas."

Many other consultants, though, contend that Jensen overstates the case against modeling. "We use it successfully for companies having 5 to 1,000 employees," counters Thomas D. Miller, vice-president of Donley, Miller & Nowikas Inc. in East Hanover, N. J. But he cautions that modeling, like any mathematical simulation, is only as valid as the data base and operating assumptions on which it is built. ■

BIOGRAPHICAL SKETCH

NAME	POSITION TITLE	BIRTHDATE
Richard R. James	Principal Consultant, E-Coustic Solutions, LLC (2006-)	3/3/48

ACADEMIC CREDENTIALS

INSTITUTION	DEGREE/POSITION	YEAR	FIELD
General Motors Institute, Flint, MI	B. Mech. Eng.	1966-1971	Noise Control Engineering
Michigan State University, East Lansing, MI	Adjunct Instructor	1985-2013	Acoustics and Effects of Noise on People
Central Michigan University, Mount Pleasant, MI	Adjunct Professor	2012-2017	Wind Turbine Noise and its Impact on People

RESEARCH AND PROFESSIONAL EXPERIENCE:

Richard R. James has been actively involved in the field of noise control since 1969, participating in and supervising research and engineering projects related to control of occupational and community noise in industry. In addition to his technical responsibilities as principal consultant, he has developed noise control engineering and management programs for the automotive, tire manufacturing, and appliance industries. Has performed extensive acoustical testing and development work in a variety of complex environmental noise problems utilizing both classical and computer simulation techniques. In 1975 he co-directed (with Robert R. Anderson) the development of SOUND™, an interactive acoustical modeling computer software package based on the methods that would be later codified in ISO 9613-2 for pre and post-build noise control design and engineering studies of in-plant and community noise. The software was used on projects with General Motors, Ford Motor Company, The Goodyear Tire & Rubber Co., and a number of other companies for noise control engineering decision making during pre-build design of new facilities and complaint resolution at existing facilities. The SOUND™ computer model was used by Mr. James in numerous community noise projects involving new and existing manufacturing facilities to address questions of land-use compatibility and the effect of noise controls on industrial facility noise emissions. He is also the developer of ONE*dB(tm) software. He was also a co-developer (along with James H. Pyne, Staff Engineer GM AES) of the Organization Structured Sampling method and the Job Function Sound Exposure Profiling Procedure which in combination form the basis for a comprehensive employee risk assessment and sound exposure monitoring process suitable for use by employers regulated by OSHA and other governmental standards for occupational sound exposure. Principal in charge of JAA's partnership with UAW, NIOSH, Ford, and Hawkwa on the HearSaf 2000tm software development CRADA partnership for world-class hearing loss prevention tools.

1966-1970	Co-operative student: General Motors Institute and Chevrolet Flint Metal Fabricating Plant.
1970-1971	GMI thesis titled: "Sound Power Level Analysis, Procedure and Applications". This thesis presented a method for modeling the effects of noise controls in a stamping plant. This method was the basis for SOUNDTM.
1970-1972	Noise Control Engineer-Chevrolet Flint Metal Fabricating Plant. Responsible for developing and implementing a Noise Control and Hearing Conservation Program for the Flint Metal Fabricating Plant. Member of the GM Flint Noise Control Committee which drafted the first standards for community noise, GM's Uniform Sound Survey Procedure, "Buy Quiet" purchasing specification, and guidelines for implementing a Hearing Conservation Program.
1972-1983	Principal Consultant, Total Environmental Systems, Inc.; Lansing, MI. Together with Robert R. Anderson formed a consulting firm specializing in community and industrial noise control.
1973-1974	Consultant to the American Metal Stamping Association and member firms for in-plant and community noise.
1973	Published: "Computer Analysis and Graphic Display of Sound Pressure Level Data For Large Scale Industrial Noise Studies", Proceedings of Noise-Con '73, Washington, D.C.. This was the first paper on use of sound level contour 'maps' to represent sound levels from computer predictions and noise studies.

Nov. 1973	Published: "Isograms Show Sound Level Distribution in Industrial Noise Studies", Sound & Vibration Magazine
1975	Published: "Computer Assisted Acoustical Engineering Techniques", Noise-Expo 1975, Atlanta, GA which advanced the use of computer models and other computer-based tools for acoustical engineers.
1976	Expert Witness for GMC at OSHA Hearings in Washington D.C. regarding changes to the "feasible control" and cost-benefit elements of the OSHA Noise Standard. Feasibility of controls and cost-benefit were studied for the GMC, Fisher Body Stamping Plant, Kalamazoo MI.
1977-1980	Principal Consultant to GMC for the use of SOUND(tm) computer simulation techniques for analysis of design,layout, and acoustical treatment options for interior and exterior noise from a new generation of assembly plants. This study started with the GMAD Oklahoma City Assembly Plant. Results of the study were used to refine noise control design options for the Shreveport, Lake Orion, Bowling Green plants and many others.
1979-1983	Conducted an audit and follow-up for all Goodyear Tire & Rubber Company's European and U.K. facilities for community and in-plant noise.
1981-1985	Section Coordinator/Speaker, Michigan Department Of Public Health, "Health in the Work Place" Conference.
1981	Published: "A Practical Method for Cost-Benefit Analysis of Power Press Noise Control Options", Noise-Expo 1981, Chicago, Illinois
1981	Principal Investigator: Phase III of Organization Resources Counselors (ORC), Washington D.C., Power Press Task Force Study of Mechanical Press Working Operations. Resulted in publishing: "User's Guide for Noise Emission Event Analysis and Control", August 1981
1981-1991	Consultant to General Motors Corporation and Central Foundry Division, Danville Illinois in community noise citation initiated by Illinois EPA for cupola noise emissions. Resulted in a petition to the IEPA to change state-wide community noise standards to account for community response to noise by determining compliance using a one hour L_{eq} instead of a single not-to-exceed limit.
1983	Published: "Noise Emission Event Analysis-An Overview", Noise-Con 1983, Cambridge, MA
1983-2006	Principal Consultant, James, Anderson & Associates, Inc.; Lansing, MI. (JAA), Together with Robert R. Anderson formed a consulting firm specializing in Hearing Conservation, Noise Control Engineering, and Program Management.
1983-2006	Retained by GM Advanced Engineering Staff to assist in the design and management of GM's on-going community noise and in-plant noise programs.
1984-1985	Co-developed the 1985 GM Uniform Plant Sound Survey Procedure and Guidelines with James H. Pyne, Staff Engineer, GM AES.
1985-2013	Adjunct instructor in Michigan State University's Department of Communicative Sciences and Disorders from 1985-2013
1986-1987	Principal Consultant to Chrysler Motors Corporation, Plant Engineering and Environmental Planning Staff. Conducted Noise Control Engineering Audits of all manufacturing and research facilities to identify feasible engineering controls and development of a formal Noise Control Program.
1988-2006	Co-Instructor, General Motors Corporation Sound Survey Procedure (Course 0369)
1990	Developed One*dB(tm), JAA's Occupational Noise Exposure Database manager to support Organizational structured sampling strategy and Job Function Profile (work-task) approach for sound exposure assessment.
1990-1991	Co-developed the 1991 GM Uniform Plant Sound Survey Procedure and Guidelines with James H. Pyne, Staff Engineer, GM AES. Customized One*dB(tm) software to support GM's program.
1990-2006	Principal Consultant to Ford Motor Company to investigate and design documentation and computer data management systems for Hearing Conservation and Noise Control Engineering Programs. This included bi-annual audits of all facilities.
1993-2006	GM and Ford retain James and JAA as First-Tier Partners for all non-product related noise control services.
1993	Invited paper: "An Organization Structured Sound Exposure Risk Assessment Sampling Strategy" at the 1993 AIHCE

1993	Invited paper: “An Organization Structured Sound Exposure Risk Assessment Database” at the Conference on Occupational Exposure Databases, McLean, VA sponsored by ACGIH
1994-2001	Instructor for AIHA Professional Development Course, “Occupational Noise Exposure Assessment”
1996	Task Based Survey Procedure (used in One*dB(tm)) codified as part of ANSI S12.19 Occ. Noise Measurement
1995-2001	Coordinate JAA’s role in HearSaf 2000tm CRADA with NIOSH, UAW, Ford, and HAWKWA
1997-2007	Board Member, Applied Physics Advisory Board, Kettering Institute, Flint, Michigan
2000	Use of structured, interactive interviews in retrospective noise exposure assessment in an occupational epidemiologic study, Prince, Waters, Anderson, and James, JASA,, April 2000
2002-2006	Member American National Standards Institute (ANSI) Accredited Standards Committee S12, Noise
2006	Closed James, Anderson and Associates, Inc. (JAA) and founded E-Coustic Solutions (E-CS)
2006-Present	Consultant to local communities and citizen’s groups on proper siting of Industrial Wind Turbines. This includes presentations to local governmental bodies, assistance in writing noise standards, and formal testimony at zoning board hearings and litigation.
2008	Paper on “Simple guidelines for siting wind turbines to prevent health risks” for INCE Noise-Con 2008, co-authored with George Kamperman, INCE Bd. Cert. Emeritus, Kamperman Associates.
2008	Expanded manuscript supporting Noise-Con 2008 paper titled: “The “How To” Guide To Siting Wind Turbines To Prevent Health Risks From Sound”
2009	"Guidelines for Selecting Wind Turbine Sites," Kamperman and James, Published in the September 2009 issue of Sound and Vibration.
2010	Punch, J., James, R., Pabst, D., "Wind Turbine Noise, What Audiologists should know," Audiology Today, July-August 2010
2011	Jerry L. Punch, Jill L. Elfenbein, and Richard R. James, "Targeting Hearing Health Messages for Users of Personal Listening Devices," Am J Audiol 0: 1059-0889_2011_10-0039v1
2011	Bray, W., HEAD Acoustics, James, R., "Dynamic measurements of wind turbine acoustic signals, employing sound quality engineering methods considering the time and frequency sensitivities of human perception," invited paper for Noise-Con 2011, Portland OR
2012	James, R., "Wind Turbine Infra and Low Frequency Sound: Warning Signs that were not Heard," April 2012, Bulletin of Science, Technology and Society
2012	Appointed to position as Adjunct Professor in the Department of Communication Disorders at Central Michigan University.
2014	Negative Health Effects of Noise from Industrial Wind Turbines-Parts 1-3, Punch, J, James, R., Hearing Health Technology Matters, http://hearinghealthmatters.org/hearingviews/2014/wind-turbine-noise-evidence-health-problems/
2016	Punch, J. L., James, R.R., “Wind turbine noise and human health: a four-decade history of evidence that wind turbines pose risks,” Journal of Hearing Health and Technology Matters, October 4, 2016, http://hearinghealthmatters.org/journalresearchposters/files/2016/09/Final-Final-16-09-30-Wind-Turbine-Noise-Final-Manuscript-HHTM-Punch-James.pdf.

Professional Affiliations/Memberships/Appointments

Research Fellow - Metrosonics, Inc.	American Industrial Hygiene Association (through 2006)
National Hearing Conservation Association (through 2006)	Institute of Noise Control Engineers (Member through 2017)
American National Standards Institute (ANSI) S12 Working Group (through 2006)	Founder and Board Member of the Society for Wind Vigilance, Inc.
Adjunct Professor, CMU 2012-2017	Adjunct Instructor, MSU 1985-2013

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List of Recent Publications

Sept. 5, 2017

2000 JASA, April 2000, Prince, Waters, Anderson, and James, Use of structured, interactive interviews in retrospective noise exposure assessment in an occupational epidemiologic study

2008 Paper on guidelines for siting wind turbines to prevent health risks for INCE Noise-Con 2008, co-authored with George Kamperman, Kamperman Associates.

2008 Expanded manuscript supporting Noise-Con 2008 paper titled: "The 'How To' Guide To Siting Wind Turbines To Prevent Health Risks From Sound"

2009 "Guidelines for Selecting Wind Turbine Sites," Kamperman and James, Published in the September 2009 issue of Sound and Vibration.

2010 Punch, J., James, R., Pabst, D., "Wind Turbine Noise, What Audiologists should know," Audiology Today, July-August 2010

2011 Jerry L. Punch, Jill L. Elfenbein, and Richard R. James , "Targeting Hearing Health Messages for Users of Personal Listening Devices," Am J Audiol 0: 1059-0889_2011_10-0039v1

2011 Bray, W., HEAD Acoustics, James, R., "Dynamic measurements of wind turbine acoustic signals, employing sound quality engineering methods considering the time and frequency sensitivities of human perception," invited paper for Noise-Con 2011, Portland OR

2012 James, R., "Wind Turbine Infra and Low Frequency Sound: Warning Signs that were not Heard," April 2012, Bulletin of Science, Technology and Society, http://bsts.sagepub.com, DOI:10.1177/0270467611421845

2014 Negative Health Effects of Noise from Industrial Wind Turbines-Parta 1-3, Punch, J, James, R., Hearing Health Technology Matters, http://hearinghealthmatters.org/hearingviews/2014/wind-turbine-noise-evidence-health-problems/

2016 Punch, J. L., James, R.R., "Wind turbine noise and human health: a four-decade history of evidence that wind turbines pose risks," Journal of Hearing Health and Technology Matters, October 4, 2016, http://hearinghealthmatters.org/journalresearchposters/files/2016/09/16-10-21-Wind-Turbine-Noise-Post-Publication-Manuscript-HHTM-Punch-James.pdf.