AGENDA DAY 1 – June 13, 2018

7:00-8:00am  Registration and Buffet Breakfast
8:00-8:20   Welcome and Opening Remarks
8:00-8:20   KEYNOTE ADDRESS
             Review and Meta Analysis of Hand-Arm Vibration Disorders
             Tohr Nilsson, MD, PhD
             Associate Professor, Occupational and Environmental Medicine, Department of Public
             Health and Clinical Medicine, Umeå University, Sweden

SESSION 1 - HAND-ARM VIBRATION EXPOSURES IN OCCUPATIONAL ENVIRONMENTS

9:00-9:20   Electric Rotary Vs. Pneumatic Rock Drill: Differences in Handle Vibration and Productivity
             Drilling Into Concrete
             *David Rempel, Andrea Antonucci, Alan Barr, Michael R. Cooper, Bernard Martin -
             Department of Bioengineering, University of California, Berkeley CA, USA
9:20-9:40   Zero Vibration Injuries – Achieved by Machine Redesign
             *Eva Troell, Hans Lindell and Snævar Leó Grétarsson - Swerea IVF, Mölndal Sweden
9:40-10:00  Hand-Arm Vibration Among Manufacturing Industry Workers in Washington State
             *Stephen Bao and Ninica Howard - Washington State Department of Labor and Industries,
             Olympia WA, USA
10:00-10:20 Coffee and Networking Break

SESSION 2 - HIGH FREQUENCY HAND-ARM VIBRATION EXPOSURES

10:20-10:40 Rivet Bucking Bar Acceleration: Feed Force Effects
             *T.W. McDowell, X.S. Xu, C. Warren, D.E. Welcome, R.G. Dong - Health Effects
             Laboratory Division, National Institute for Occupational Safety and Health,
             Morgantown WV, USA

*Indicates presenting author

- Continued on next page
Comparing Vibration Exposures Across Tungsten and Steel Bucking Bars for Aluminum Riveting
Ryan Mott, Wadih Zaklit, Bryan Ford, Luke Wavrin, Joe Garbini and Per Reinhall, Department of Mechanical Engineering and the Boeing Advanced Research Center, University of Washington, Seattle WA, USA
*Riley Hanson Smith - The Boeing Company and the Boeing Advanced Research Center and University of Washington, Seattle, WA, USA

Vibration Produced by Percussive Hand Tools is an Underestimated Contributor to the Development of Vibration Injury
*Ronnie Lundström - Department of Public Health and Clinical Medicine, Occupational Medicine, Umeå University, Sweden

High Frequency Vibration: Measurement, Effects on Biologic Tissue and Risk Assessment
Hans Lindell and *Eva Troell - Swerea IVF, Mölndal, Sweden

Five Week Riveting Hammer Vibration: Rat Tail Sensory Nerves
Jordan Zimmerman, James Bain and *Danny Riley - Medical College of Wisconsin, Department of Cell Biology, Neurobiology & Anatomy, Milwaukee WI, USA Chaowen Wu - Medical College of Wisconsin, Department of Plastic Surgery, Milwaukee WI, USA Hans Lindell and Snævar Leó Grétarsson - Swerea IVF, Mölndal, Sweden

Changes in Biomarkers of Cardiovascular Dysfunction in an Animal Model of Hand Arm Vibration Syndrome
*Kristine Krajnak, Stacey Waugh and Thomas McDowell - Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown WV, USA

Finger Vibration on a Handheld Workpiece
*Daniel E. Welcome, Xueyan S. Xu, Chris Warren, Thomas W. McDowell, Ren G. Dong - Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown WV, USA

Nonlinear Tuned Vibration Absorber on Reciprocating Tools
*Snævar Leó Grétarsson and Hans Lindell - Swerea IVF, Mölndal, Sweden

Development of a Convenient and Reliable Method for Measuring Vibration Transmissibility of Gloves at Fingers
*Xueyan Sherry Xu, Daniel E. Welcome, Chris Warren, Thomas W. McDowell, Ren G. Dong - Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown WV, USA

Physical Constraints Associated with Current Anti-Vibration Gloves and New Glove Design Alternatives
*Markus Berger, Y. Berger & CO AB / Eureka Safety

Standing Centre of Pressure Alters the Vibration Transmissibility Response of the Foot
Katie Goggins and Brent Lievers - Bharti School of Engineering and Centre for Research in Occupational Safety and Health, Laurentian University, Sudbury, ON, Canada Marco Tarabini - Department of Mechanics, Politecnico di Milano, Lecco, Italy Tammy Eger* - Centre for Research in Occupational Safety and Health and School of Human Kinetics, Laurentian University, Sudbury, ON, Canada

*Indicates presenting author
SESSION 4 - HAND-ARM VIBRATION STANDARDS AND EXPOSURE ASSESSMENT

3:40-4:00  Can New Technology Address the Practical Limitations Identified Within ISO 5349-1 Annex D?  
*Setsuo Maeda - Department of Applied Sociology, Kindai University, Japan  
Jacqueline McLaughlin and Leif Anderson - Reactec Ltd., Edinburgh, UK

4:00-4:20  A Macro Data Evaluation of Variance in Perceived Workforce HAV Exposure Risk Across Over 400 Organisations Employing Continuous Monitoring Technology  
*Leif Anderson and Jacqueline McLaughlin - Reactec Ltd., Edinburgh, UK

*Jakob B. Riddar, Karin Fisk and Catarina Nordander - Occupational and Environmental Medicine, Faculty of Medicine, Lund University, Sweden  
Ingrid Liljelind - Occupational and Environmental Medicine, Faculty of Medicine, Umeå University, Sweden

4:40-4:50  Break

SESSION 5 - FUTURE NEEDS OF HAV ASSESSMENT, REPORTING AND STANDARDS

4:50-5:40  Facilitated Discussion

5:40  Adjourn - Registered Boeing tour participants depart via shuttle at 5:45pm

AGENDA DAY 2 - JUNE 14, 2018

7:00-800am  Buffet Breakfast

8:00-8:40  KEYNOTE ADDRESS  
Review and Meta Analysis of Whole Body Vibration Disorders with Focus on the Low Back  
*Jens Wahlström - Occupational and Environmental Medicine, Department of Public Health and Clinical Medicine, Umeå University, Sweden

SESSION 1 - WHOLE BODY VIBRATION EXPOSURES IN OCCUPATIONAL ENVIRONMENTS

8:40-9:00  Evaluation of the Impact of Whole Body Vibration Data Collection Strategies on Exposure Estimation  
*Luz S. Marín - Department of Safety Sciences, Indiana University of Pennsylvania, Indiana PA, USA  
Jack T. Dennerlein - Department of Physical Therapy, Movement, and Rehabilitation Sciences, Northeastern University, Boston MA, USA  
Lope H. Barrero - Department of Industrial Engineering, Pontificia Universidad Javeriana, Bogota, Colombia  
Peter W. Johnson - Department of Environmental and Occupational Health Sciences, Department of Industrial and Systems Engineering, University of Washington, Seattle WA, USA

9:00-9:20  Whole Body Vibration Associated with Dozer Operation at Two Australian Surface Coal Mines  
*Danellie Lynas and Robin Burgess Limerick, Holly Whitelaw and Roseanne Baxter - Minerals Industry Safety and Health Centre, Sustainable Minerals Institute, University of Queensland, Brisbane, Australia

9:20-9:40  Assessment of Whole Body Vibration Exposures Among Garbage Truck Drivers  
*Hyoung Frank Ryou and Peter W. Johnson - Department of Environmental and Occupational Health Sciences, University of Washington, Seattle WA

9:40-10:00  Resonant Frequency Identification At 24 Locations on the Foot when standing In a Natural Upright Position  
Katie Goggins and Brent Lievers - Bharti School of Engineering, Laurentian University and Centre for Research in Occupational Safety and Health, Laurentian, Sudbury, ON, CND  
Marco Tarabini - Department of Mechanics, Politecnico di Milano, Lecco, Italy  
*Tammy Eger - Centre for Research in Occupational Safety and Health, Laurentian University and School of Human Kinetics, Laurentian University, Sudbury, ON, CND

9:40-10:00  Coffee and Networking Break  

*Indicates presenting author
SESSION 2- FIELD METHODS TO EVALUATE WHOLE BODY VIBRATION EXPOSURES

10:20-10:40 The Effects of Whole Body Vibration on Biomechanical Loading and Non Driving Task Performance in a Self Driving Car Environment
*Kiana Kia - School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University, Corvallis OR, USA
Peter W. Johnson - Department of Environmental and Occupational Health Sciences, University of Washington, Seattle, USA
Jeong Ho Kim - School of Biological and Population Health Sciences, Oregon State University, Corvallis OR, USA

10:40-11:00 Performance of Boseride and Air Suspension Seats in Laboratory Test of Trucking Vibrations
Ben Dietze, *James P. Dickey - School of Kinesiology, University of Western Ontario, London, Ontario Canada
Tammy Eger - Centre for Research in Occupational Safety and Health and School of Human Kinetics, Laurentian University, Sudbury, ON, Canada
Bronson Du and Philip Bigelow - School of Public Health and Health and Healthy Systems, University of Waterloo, Ontario, Canada

11:00-11:20 Simplified Single or Multi Directional Shaker Inputs from Field Data for Suspension Seat Transmissibility Testing
*James Haylett - Commercial Vehicle Group, Inc., New Albany, OH

11:20-11:40 Beyond Back Pain: Acute Cognitive and Motor Effects of Simulated Whole Body Vibration in Lab Based Experiments
*Catherine Trask - Canadian Centre for Health and Safety in Agriculture, University of Saskatchewan, Saskatoon, Canada
Marcus Yung - Division of General Medical Sciences, Washington University, St Louis MO, USA
Stephan Milosavljevic - School of Physical Therapy, University of Saskatchewan, Saskatoon, Canada

11:40-12:00 Exploring the Association Between Truck Driver Fatigue and Exposure to Whole Body Vibration
*Fangfang Wang - Department of Industrial and Systems Engineering, University of Washington, Seattle WA, USA
Hugh Davies - School of Population & Public Health, University of British Columbia, Vancouver, BC
Bronson Du - School of Public Health and Health Systems, University of Waterloo, Ontario, Canada
Peter W. Johnson - Department of Environmental and Occupational Health Sciences, Department of Industrial and Systems Engineering, University of Washington, Seattle WA, USA

SESSION 3- METHODS TO EVALUATE AND IMPROVE HUMAN VIBRATION EXPOSURE ASSESSMENT

11:00-1:40 Lunch Break

1:40-2:00 Mobile App Offers Low Cost Way to Evaluate Whole Body Vibration
*Alan G. Mayton and Brian Y. Kim - National Institute for Occupational Safety and Health, Pittsburgh Mining Research Division, Pittsburgh, PA

2:00-2:20 Comparison of Vibration Measurement Accuracy Between a Low Cost, Portable IMU System and a Gold Standard Accelerometer System
*Benjamin Pierson - Public Health Residency Program, Madigan Army Medical Center and Department of Environmental and Occupational Health Sciences, University of Washington, Seattle WA, USA
Dawn Ryan and Peter W. Johnson - Dept. of Environmental & Occupational Health Sciences, University of Washington, Seattle WA, USA

2:20-2:40 The Impact of Contact Force on the Accuracy of Hand Arm Vibration Measurement
*Jacek Kuczyński, Marketing Manager, Svantek Sp. z o.o., Warsaw, Poland
Piotr Kowalski - Central Institute for Labour Protection - National Research Institute; Department of Vibroacoustic Hazards, Warsaw, Poland

*Indicates presenting author
Comparisons of Two Calibration Methods of a Hand Force Mapping System
*Yumeng Yao and Subhash Rakheja - CONCAVE Research Center, Concordia University, Montreal, Canada
Pierre Marcotte - Institut de recherche Robert Sauvé en santé et en sécurité du travail (IRSST), Montréal, Canada

Coffee and Networking Break

SESSION 4 - WHOLE BODY VIBRATION ASSESSMENT IN SPECIAL ENVIRONMENTS

The Effect of Road Type on Neonate Whole Body Vibration Exposures During Ambulance Transport
*Dawn M. Ryan, June Spector and Peter W. Johnson - Department of Environmental and Occupational Health Sciences, University of Washington, Seattle, WA
Adam Lokeh and David Hirschman, Children’s Minnesota Hospital, Minneapolis MN, USA
Rob Parker - Bose Corporation, Framingham MA, USA

Aircrew Multi-Axis Vibration Exposures During Operation of the Blackhawk Uh-60l Helicopter
*Suzanne D. Smith - Air Force Research Laboratory, 711 HPW/RHCPT, Wright-Patterson AFB OH, USA
Steven G. Chervak and Jay E. Clasing - Army Public Health Center, Aberdeen Proving Ground, Bethesda MD, USA

Drop Tower Test Results for Measuring the Shock Attenuation of Marine Craft Seats
*Douglas Reynolds - Department of Mechanical Engineering, University of Nevada, Las Vegas NV, USA

SESSION 5 - FUTURE NEEDS FOR WBV ASSESSMENT, REPORTING AND STANDARDS

Facilitated Discussion
Adjourn

USSC Group Active Suspension Bus Seat Demo at King County Metro South Base
Tour and demo will take place from 6:30-7:30, followed by a social hour hosted by United States Seating at Optimism Brewery from 7:30-8:30pm.

AGENDA DAY 3 - JUNE 15, 2018

SESSION 1 - ADVERSE HEALTH OUTCOMES ASSOCIATED WITH VIBRATION AND SHOCKS

Rotator Cuff Disease in Workers Exposed to Hand Arm Vibration: A Challenge for Prevention
*Alice Turcot - Institut national de santé publique du Québec, Québec, Canada
Louis Mori - Faculty of Medicine, Université Laval, Québec, Canada
Nathalie Cardinal - Direction de Santé Publique, Thetford Mines, Canada

Shock and Vibration Issues in Professional Sports
*Thomas Jetzer - Occupational Medicine Consultants, Minnesota Twins, Minneapolis MN, USA
Douglas Reynolds - Department of Mechanical Engineering, University of Nevada, Las Vegas, USA

SESSION 2 - SENSORY AND MOTOR ISSUES ASSOCIATED WITH HAND-ARM VIBRATION

The Vibration Responses of a Handheld Workpiece and the Hand Arm System
*Xueyan Sherry Xu, Daniel E. Welcome, Chris Warren, Thomas W. McDowell and Ren G. Dong - National Institute for Occupational Safety and Health, Morgantown, West Virginia, USA
Hanshen Lin, Bin Xiao and Qingsong Chen- Guangdong Province Hospital for Occupational Disease Prevention and Treatment, Guangzhou, Guangdong, China

*Indicates presenting author
Longitudinal Study of Thermotactile Perception Thresholds When Exposed to Hand-Arm Vibration
*Ronnie Lundström* and Tohr Nilsson - Department of Public Health and Clinical Medicine, Occupational Medicine, Umeå University, Sweden
Adnan Noor Baloch, Mats Hagberg and Lars Gerhardtsson - Department of Occupational and Environmental Medicine, University of Gothenburg and Sahlgrenska University Hospital, Sweden

White Fingers and Cold Intolerance in Relation to Hand Arm Vibration and Ambient Cold Exposure in Northern Sweden
*Albin Stjernbrandt*, Hans Pettersson, Ingrid Liljelind, Tohr Nilsson and Jens Wahlström - Occupational and Environmental Medicine, Department of Public Health and Clinical Medicine, Umeå University, Sweden

A Multi Scale Approach for Predicting Acute and Chronic Effects of Mechanical Vibration on the Digital Vascular Network
*Christophe Noël* - Electromagnetism, Vibration, Optic laboratory, Institut national de recherche et de sécurité (INRS), Vandœuvre, Nancy, France

A Two Scale Finite Element Model for Vibration Induced Raynaud Syndrome
Yue Hua - Nanjing University of Science and Technology, China
*Pierre Lemerle* - Institut National de Recherche et de Sécurité, France Jean François Ganghoffer - Université deorraine, France

Modeling the Vibration Response of a Workpiece Hand Arm System
*Ren G. Dong*, Daniel E. Welcome, Xueyan Sherry Xu, Thomas W. McDowell and John Z. Wu - Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown WV, USA
Qingsong Chen, Hanshen Lin - Guangdong Province Hospital for Occupational Disease Prevention and Treatment, Guangzhou, Guangdong, China

Do We Need to Consider Skin Thickness When Conducting Vibrotactile and Thermal Perception Threshold Measurements?
*Ronnie Lundström* and Tohr Nilsson - Department of Public Health and Clinical Medicine, Occupational Medicine, Umeå University, Sweden
Håkan Dahlqvist - EIMeKon HB, Vindön, Sweden
Mats Hagberg - Department of Occupational Medicine, Göteborg University, Sweden

Closing Comments - Registered PACCAR tour participants depart via shuttle at 12:15pm

Meeting of the ACHV Scientific Committee

Boeing Advanced Research Center (BARC) Lab, University of Washington - Open House

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Thank you to the 7th ACHV Planning Committee:

Peter Johnson, PhD; Conference Chair | Jeong-ho (Jay) Kim, PhD | Florin Marcu, PhD | Nancy Simcox, MS

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