

EXHIBIT 1: SHER PAUL SINGH (www.packlawusa.com)

EDUCATION

- Ph.D. Michigan State University, East Lansing, MI.
Agricultural Engineering, Dissertation: *Accelerated Settling of Particles in a Herschel Bulkley Fluid Due to Vibration*, 1987.
- M.S. Michigan State University, East Lansing, MI
Packaging, Thesis: *Effect of Multiple Drops on Damage Boundary Curves*, 1983.
- B.S. Punjab University, Chandigarh, India
Mechanical Engineering, (*with Honors*) 1982.

- Academic Honors:**
- * Established University Record in Mathematics, 1978.
 - * Received University Merit Scholarship, 1978-1982.
 - * Dean's List, 1978-1982.
 - * Graduated with highest honors, Punjab University, 1982.

PROFESSIONAL POSITIONS AND HONORS

Scientific Advisory Board, World Food Logistics Organization
Board of Directors, International Association of Packaging Research Institutes
Board of Directors, National Institute of Packaging and Handling Engineers
Board of Directors, ISTA Global Board, International Safe Transit Association
Past Chair, ASTM D10-Packaging, Division 1, American Society of Testing and Materials International

- * ***Inductee, Military Packaging Hall of Fame, 2010***
- * ***IOPP Fellow, Institute of Packaging Professionals, 2009***
- * ***Lifetime Certified Packaging Professional, 2008***
- * ***Award of Merit and Fellow, ASTM International, 2007***
- * ***Logistics Achievement Award, National Institute of Packaging and Handling Engineers, 2006.***
- * ***Outstanding Mentor Award, Post-Baccalaureate Achievement Program, 1997.***
- * ***Leadership Fellow, Michigan State University, 1996-1997.***
- * ***Recipient of the Bronze Star in the 1990 Ameristar Packaging Competition.***

PROFESSIONAL EXPERIENCE

- 07/2000 - present **PROFESSOR**, School of Packaging, Michigan State University, East Lansing, MI.
06/1990 - present **DIRECTOR**, Consortium of Distribution Packaging Research, School of Packaging, Michigan State University, East Lansing, MI.
07/1993 - 07/2000 **ASSOCIATE PROFESSOR**, School of Packaging, Michigan State University, East Lansing, MI.
05/1987 - 06/1993 **ASSISTANT PROFESSOR**, School of Packaging, Michigan State University, East Lansing, MI.
05/1985 - 03/1987 **INSTRUCTOR**, School of Packaging, Michigan State University, East Lansing, MI.

Responsibilities:

TEACHING: Teaching and course development in undergraduate courses covering packaging dynamics, machinery, robotics, materials and systems. Graduate course teaching and developing in dynamics and packaging systems.

RESEARCH: Proposal and budget preparation for projects related to product protection, cushion design, environmental measurement of dynamic forces and simulation, packaging machinery and systems interaction, high speed motion analysis and robotics. Management of shock and vibration testing laboratory. Planning and management of various jointly industry funded research projects in Distribution Packaging.

INTERNATIONAL PROGRAMS: Teaching overseas packaging courses. Provide technical guidance and

consultancy in international packaging operations of various companies, universities and institutes.

NOT RETAINED

- 06/1984 - 03/1985 **ASSOCIATE ENGINEER**, International Business Machines, Rochester, MN. Responsibilities included feasibility analysis for automated equipment. Involved with AGVS systems leading to just-in-time delivery of parts. Modeling and simulation of packaging lines. Fragility analysis of direct access storage devices and computer packaging design.
- 01/1984 - 06/1984
06/1982 - 06/1983 **TEACHING ASSISTANT**, School of Packaging, East Lansing, MI. Duties included co-teaching courses and laboratory work to packaging students in materials and systems, shock, vibration and compression, and microcomputer applications.
- 09/1983 - 12/1983 **ASSOCIATE IN**, Department of Mechanical Engineering, University of California, Davis, CA. Assisted in teaching the use of Finite Element Methods.

COMPANIES CONSULTED INCLUDE:

Dr. Singh has served as a consultant to over a thousand domestic and international companies. Projects include developing packaging line systems, package design for product protection, evaluate package specifications, automation for packaging, expert witness, packaging forensics, and education.

Consulting services provided to automotive, consumer products, cosmetics, electronic, food, furniture and appliances, logistics and transportation , medical and pharmaceutical, packaging materials and systems, robotics and automation, and retail industries.

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|-----------------------------|----------------------------|
| Abbott Laboratories | Con Agra Foods |
| Abercrombie & Fitch | Consolidated Freightways |
| ABF Freightways | Coors Brewing Company |
| Abitibi Price | Corning |
| AC Delco | Costco |
| Allianz Global Risks | Crawford & Co. |
| American Honda | CSX Transportation |
| Amoco Corporation | Del Monte Corporation |
| Amway Corporation | Deneb Robotics |
| Amcor | Dey Pharmaceutical |
| Amgen | Dixie Container Co. |
| Anchor Glass | Dole |
| Anheuser Busch | Dow Chemical Company |
| Appleton Papers | Driscoll Strawberries |
| Arch Chemical | Dupont |
| Arco Chemical | Eastman Kodak Company |
| Avon Company | Ethan Allen |
| Ball Corporation | Faygo |
| Beatrice/Hunt-Wesson | Ford Motor Company |
| Becton Dickinson Company | Frito Lay, Inc. |
| Benckiser Consumer Products | GE Plastics |
| Buckhorn | General Electric Company |
| CHEP-USA | General Foods |
| Campbell Soup | General Mills |
| Certain Teed | General Motors |
| Chevron | Georgia Pacific |
| Chiquita Brands | Gerber Foods |
| Circuit City | Haworth |
| Clorox Company | Hawthorne Ammunition Depot |
| Coca Cola Company | Herman Miller |
| Colgate Palmolive | Home Depot |
| Colombo Frozen Yogurt | Honeywell Company |
| Columbia House | Iams Company |

IBM Corporation
Idexx Pharmaceutical
Inland Container
International Honeycomb
International Paper Company
James River Corporation
Johnson Controls
K Mart Company
Kellogg's Company
Komatsu Corporation
Kraft, Inc.
Kroger
Lansmont Corp.
Laserfile Compact Disc
Libbey Glass
Libbey Owen Ford Glass
Lindt & Sprungli
Magna
Markel Southwest Underwriters
Mars Inc.
Masterfoods Inc.
Maytag/Jenn-Air
McDonalds
Mead Corporation
Meijer's Corporation
Menasha Corporation
Menasha Paper
Merck Pharmaceutical
Merillat Cabinets
Michigan Dept. of Lottery
Michigan Millers
Michigan National Bank
Miller Brewing Company
Mitsubishi
Mitsui Sumitomo Insurance
Neogen
Nestle
North American Van Lines
Orbis Menasha
Ortho Pharmaceutical
Owens Corning
Owens Illinois
Packaging Corporation of America
Pepsi Bottling Group
Phillips Electronics
Picatinny Arsenal
Pillsbury Co.
Pine Bluff Arsenal
Pioneer Hi-Bred
PPG Industries

Procter & Gamble
Purepak
Purepak-Elopak
QVC Inc
Revlon
Rite-Aid
Royal & Sunalliance
Sam's Club
Sasib Packaging
Sealed Air Corporation
Siemens
Simmons Mattress Company
Solo Cup Company
Sonoco
St. Gobain
Stanley II Co.
Starbucks Corporatrion
Smurfit-Stone Container Corporation
Strohs Brewing Company
Subway
Target
Tenneco
Textron
Tetra Pak
The Travelers
Trienda Corporation
Tuscarora Plastics
Uncle Ben's Inc.
Unisys
United Parcel Service
United States Dept. of Agriculture
United States Navy & Marine Corps
United States Postal Service
US Insurance Co.
US Steel
US Surgical
Uncle Bens
Wal-Mart Stores Inc.
Winco Foods
Weyerhaeuser Company
Wood Mode
World Bank (United Nations)
Wyeth-Ayerst Laboratories
Xerox
Yazaki Corporation
Yellow Freight System
Zenith Data Systems
Zenith Electronics

EXPERT WITNESS:

In addition served as a consultant to various law firms, corporations, and the U.S. Department of Justice, providing expert opinion and testimony in the areas of packaging machinery, damage and injury during transportation, design and evaluation of packages. Provided expert opinion in over one hundred cases.

Dr. Singh is President of Packaging Forensic Analysis, Inc. For more details see www.packlawusa.com

PEER REVIEWED PUBLICATIONS IN TECHNICAL JOURNALS:

Singh, J, Karsowski, A, Singh, S. Paul. 2010. "Life Cycle Inventory of HDPE Bottle Based Liquid Milk Packaging Systems". Journal of Packaging Technology and Science.

Singh, J, Ignatova, L, Olson, E, Singh, Sher Paul. 2010. "Evaluation of the Stress-Energy Methodology to Predict Transmitted Shock through Expanded Foam Cushions". Journal of Testing and Evaluation.

Singh, J, Singh, Sher Paul, Desautels, K, Saha, K, Olsen, E. 2010. "An Evaluation of the ability of RFID tags to withstand distribution of fresh produce in the RPC pooling system". Packaging Technology and Science Vol. 23, Issue 4, pp 217-226.

Stallings, J, Singh, J, Singh, Sher Paul. 2010. "Measurement and Analysis of Vehicle Vibration for Parcel Delivery Vehicles in Single Parcel Shipments". Journal of Applied Packaging Research, Vol. 4, No. 2.

Saha, K, Singh, J, Singh, Sher Paul. 2010. "Measurement, Analysis and Comparison of Drops Experienced by Packages in Inter-State and Intra-State Next Day Shipments in United States. Journal of Applied Packaging Research, Vol. 4, No. 2.

Topper, E, Singh, Sher Paul, Singh, J. 2010. "Packaging Requirements for Less-Than-Truckload Shipments to Reduce Damage - Paint, Televisions and Copiers". Journal of Applied Packaging Research, Vol. 4, No. 2.

Chonhenchob, Vanee, Singh, Sher Paul, Singh, Jay Jagjit, Sittipod, Sukasem, Swasdee, Dathpan, Pratheepthinthong, Supoj. 2010. "Measurement and Analysis of Truck and Rail Vibration levels in Thailand". Packaging Technology and Science Vol. 23, Issue 2, pp:91-100.

Singh, Sher Paul, Singh, J, Stallings, J, Burgess, Gary, Saha, K. 2010. "Measurement and analysis of temperature and pressure in high altitude air shipments". Packaging Technology and Science Volume 23, Issue 1, pp 35-46.

Terdwongworakul, A, Jarimopas, B, Chaiyapong, S, Singh, Sher Paul, Singh, J. 2010. "Determination of Physical, Acoustical, Mechanical and Chemical Properties of Fresh Young Coconut Fruit for Maturity Separation". Journal of Testing and Evaluation, Vol 38, No.1.

Singh, Sher Paul, Singh, J, Chiang, K C., Saha, K. 2010. "Measurement and analysis of 'small' packages in next day air shipments". Packaging Technology and Science Volume 23, Issue 1, pp 1-9.

Jarimopas, B, Rachanukroa, D, Singh, Sher Paul. 2009. "Development of a new retail packaging for sweet tamarind". International Journal of Postharvest Technology and Innovation, 1(4), 416-429.

Jarimopas, B, Pushpariksha, P, Singh, Sher Paul. 2009. "Post-Harvest Damage and Performance Comparison of Sweet Tamarind Packaging". International Journal of Food Properties, 12(2), 414-426.

Jarimopas, Bundit, Puspariksha, Phanida, Singh, Sher Paul. 2009. "Postharvest Damage of Mangosteen and Quality Grading Using Mechanical and Optical Properties as Indicator". International Journal of Food Properties, 12: 414-426.

Singh, Sher Paul, Singh, J, Kittipinyovath, Pakapol. 2009. "Measurement and Analysis of shocks to products packaged in pails in single parcel ground shipments". *Packaging Technology and Science* Volume 22, Issue 7, pp 397-414.

Singh, J, Attema, A, Singh, Sher Paul, Vorst, K. 2009. "Comparison of Manufacturer's Joint Fastening Techniques for Corrugated Boxes and their Effect on Box Strength". *Journal of Applied Packaging Research*, Vol. 3, No. 4.

Madival, Santosh, Auras, Rafael, Singh, Sher Paul, Narayan, Ramani. 2009. Assessment of the Environmental Profile of PLA, PET and PS Clamshell Containers using LCA Methodology. *Journal of Cleaner Production* 17 1183. doi:10.1016/j.jclepro.2009.03.015.

Singh, Sher Paul, Singh, J, Paek, Y. 2009. "New Pressure Sensitive Device to Measure and Predict Drops". *Journal of Applied Packaging Research*, Vol. 3, No. 3.

Saha, K, Singh, Sher Paul. 2009. "Effect of Transport Vibration on Quality of Minimally Processed and packaged fresh cut cantaloupe". *Journal of Applied Packaging Research*, Vol. 3, Issue 1, pp. 15-26.

Singh, J, Singh, Sher Paul, Voss, T, Saha, K. 2009. "A study of the effect of pictorial markings and warning labels on handling of packages in the DHL single parcel environment". *Packaging technology and Science* Volume 22, Issue1, pp. 1-8.

Chonhenchob, V, Sittipod, S, Swasdee, D, Rachtanapun, P, Singh, Sher Paul, Singh, J. 2009. "Effect of Truck Vibration during Transport on Damage to Fresh Produce Shipments in Thailand". *Journal of Applied Packaging Research*, Vol. 3, No. 1.

Singh, Sher Paul, Joneson, E, Singh, J, Grewal, G. 2008. "Dynamic Analysis of Less-Than-Truckload Shipments and Test Methods to Simulate this Environment". *Packaging Technology and Science*, Vol. 21, Issue 8, 453-456.

Garcia-Romeu-Martinez, Manuel-Alfredo, Singh, Sher Paul, Cloquell-Ballester, Vicente-Agustin. 2008. "Measurement and Analysis of Vibration Levels for Truck Transportaion in Spain as a Function of Payload, Suspension and Speed". *Packaging Technology and Science*, Vol. 21, Issue 8, 439-451.

Jarimopas, B, Pushpaiksha, P, Singh, Sher Paul, Singh, J. 2008. "Mechanical and Light Properties of Mangosteen fruit as related to Post Harvest Quality". *Journal of Testing and Evaluation*, 36(2), 191-197.

Rissi, Giovani Otavio, Singh, Sher Paul, Burgess, Gary, Singh, J. 2008. "Measurement and Analysis of Truck Transport Environment in Brazil". *Packaging Technology and Science*, Vol. 21, Issue 4, 1-8.

Singh, J, Manley, J, Wallace, F, Olsen, E, Singh, Sher Paul. 2008. "The Effect of Ventilation and Hand Holes on Loss of Compression Strength Boxes". *Journal of Applied Packaging Research*, Vol. 2, No. 4.

Chonhenchob, Vanee, Kamhongwong, Damrongpol, Singh, Sher Paul. 2008. "Comparison of Reusable and Single-Use Plastic and Paper Shipping Containers for Distribution of Fresh Pineapples". *Packaging Technology and Science*, Vol. 21, Issue 2, 73-83.

Singh, J, Holtz, R, Singh, Sher Paul, Saha, K. 2008. "Effect of Unitization and Product Types on Readability of Tagged Packages of Consumer Goods". *Journal of Applied Packaging Research*, Vol. 2, No. 3.

Singh, Sher Paul, McCartney, M, Singh, J, Clarke, R. 2008. "RFID Research and Testing for Packages of Apparel, Consumer Goods and Fresh Produce in the Retail Distribution Environment". *Packaging Technology and Science*, Vol. 21, Issue 2, 91-102.

Singh, Sher Paul, Burgess, Gary, Singh, J. 2008. "Performance Comparison of Thermal Insulated Packaging Boxes, Bags and Refrigerants for Single Parcel Shipments". *Packaging Technology and Science*, Vol. 21, Issue 1, 25-35.

Jarimopas, Bundit, Rachanukroa, Dolhathai, Singh, Sher Paul, Sothornvit, Rungsinee. 2008. "Post-harvest damage and performance comparison of sweet tamarind packaging". *Journal of Food Engineering* 88 (2008) 193–201.

Garcia-Romeu-Martinez, Manuel-Alfredo, Singh, Sher Paul, Cloquell-Ballester, Vicente-Agustin, Saha, Koushik. 2007. "Measurement and Analysis of International Air Parcel Shipping Environment for DHL and FedEx Between Europe and United States". *Packaging Technology and Science*, Vol. 20, Issue 6, 421-429.

Singh, Sher Paul, Sandhu, A. P. S, Singh, J, Joneson, E. 2007. "Measurement and Analysis of Truck and Rail Shipping Environment in India". *Packaging Technology and Science*, Vol. 20, Issue 6, 381-392.

Kale, Gaurav, Auras, Rafael, Singh, Sher Paul, Narayan, Ramani. 2007. Biodegradability of Polylactide Bottles in Real and Simulated Conditions. *Polymer Testing* 26 (8): 1049-1061. doi:10.1016/j.polymertesting.2007.07.006.

Jarimopas, B, Singh, Sher Paul, Sayasoonthorn, S, Singh, J. 2007. "Comparison of Package Cushioning Materials to Protect Post-Harvest Impact Damage to Apples". *Packaging Technology and Science*, 20(5), 315-324.

Jarimopas, B, Sayasoonthorn, S, Singh, Sher Paul, Singh, J. 2007. "Test Method to Evaluate Bruising During Impacts to Apples and Compare Cushioning Materials". *Journal of Testing and Evaluation*, 35(3), 321-326.

Singh, Sher Paul, Burgess, Gary, Kremer, Matt, Lockhart, Hugh. 2007. "Effect of Reduced Pressure, Vibration and Orientation to Simulate High Altitude Testing of Liquid Pharmaceutical Glass and Plastic Bottles". *Packaging Technology and Science*, Vol. 20, Issue 5, 359-368.

Kale, Gaurav, Auras, Rafael, Singh, Sher Paul. 2007. "Ambient Exposure Conditions". *Packaging Technology and Science*, Vol. 20, Issue 1, 49-70.

Chonhenchob, Vanee, Chantarasomboon, Yada, Singh, Sher Paul. 2007. "Quality Changes of Treated Fresh-Cut Tropical Fruits in Rigid Modified Atmosphere Packaging Containers". *Packaging Technology and Science*, Vol. 20, No. 1, 27-37.

Singh, Sher Paul, Jarimopas, B, Saengnil, W. 2006. "Measurement and Analysis of Vibration Levels in Commercial Truck Shipments in Thailand and its Impact on Packaged Produce". *Journal of Testing and Evaluation*, 34(2), 104-110.

Kale, Gaurav, Auras, Rafael, Singh, Sher Paul. 2006. Comparison of the Degradability of Poly(lactide) Packages in Composting and Ambient Exposure Conditions. *Packaging Technology and Science* 40 49-70.

Kale, Gaurav, Auras, Rafael, Singh, Sher Paul. 2006. Degradation of Commercial Biodegradable Packages under Real Composting and Ambient Exposure Conditions. *Journal of Polymers and the Environment* 14 (3): 317-334. 10.1007/s10924-006-0015-6.

Auras, Rafael, Singh, Sher Paul, Singh, Jay. 2006. Performance Evaluation of PLA against Existing PET and PS Containers. *Journal of Testing and Evaluation* 34 (6): 530-536. DOI:10.1520/JTE100041.

Singh, S. P., G. Burgess, J. Singh and M. Kremer, "Measurement and Analysis of Next Day Air Shipping Environment for Mid Sized and Light Weight Packages for DHL, FedEx and USPS", *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 19, 2006.

Singh, S. P., G. Burgess, H. Lockhart and O. Boata, "Effect of Reduced Pressure and Vibration on Haz-Mat Packages for Liquids", *Packaging Technology and Science*, John Wiley and Sons, Vol. 19, 2006.

Singh, S. P., V. Chonhenchob, and J. Singh, "Life Cycle Inventory and Analysis of Re-Usable Plastic Containers and Display Ready Corrugated Containers Used for Packaging Fresh Fruits and Vegetables", *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 19, 2006.

Chonhenchob, V., Y. Chantarasomboon, and S. P. Singh, "Quality Changes of Treated Fresh Cut Tropical Fruits in Rigid Modified Atmosphere Packaging Containers", *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 19, 2006.

Singh, J., S. P. Singh, and G. Burgess, "Measurement and Analysis of US Truck Vibration for Leaf Spring and Air Ride Suspensions and development of Tests to Simulate these Conditions", Vol. 19, 2006.

Auras, R., S. P. Singh and J. Singh, "Performance Evaluation of PLA against Existing PET and PS Containers", *Journal of Testing and Evaluation*, Vol. 34, No. 6, American Society for Testing and Materials, 2006.

Rhim, J. W., A. K. Mohanty, S. P. Singh, and P. K. W. Ng, "Preparation and Properties of Biodegradable Multilayer Films Based on Soy Protein Isolate and Poly-lactide", *Industrial & Engineering Chemistry Research*, 45, 3059-3066 (2006).

Rhim, J.W., A.K. Mohanty, S. P. Singh, and P. K. W. Ng "Effect of Processing Methods on Performance of Polylactide (PLA) Films: Thermo-compression vs. Solvent Casting Methods", *Journal of Applied Polymer Science*, 2006.

Auras, R., S. P. Singh and J. Singh, "Evaluation of Oriented PLA Polymer v/s Existing PET and OPS for Frozen Food Service Containers", *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 18, 207-216, 2005.

Singh, S. P. and J. Singh, "Pictorial Markings and Labels for Safe Transport and Handling of Packaged Goods", *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 18, 133-140, 2005.

Singh, S. P., G. Burgess, and J. Singh, "A New Test Method and Pictorial Markings for Packages Containing Liquid Dangerous Goods in High Altitude Shipments" *Journal of Testing and Evaluation*, Vol. 32, No. 5, American Society for Testing and Materials, 2004.

Chonhenchob, V. and S. P. Singh, *Packaging Performance Comparison for Distribution and Export of Papaya Fruit*, *Packaging Technology & Science*, Vol. 18, 2004.

Chonhenchob V. and S. P. Singh, "Testing and Comparison of Various Packages for Mango Distribution" *Journal of Testing and Evaluation*, Vol. 32, No. 1, American Society for Testing and Materials, 2004.

Chonhenchob, V. and S. P. Singh, "A Comparison of Corrugated Boxes and Reusable Plastic Containers for Mango Distribution", *Packaging Technology and Science*, 16: 231-237, 2003.

Singh, S. P., G. Burgess, and J. Singh, "Package Performance Testing of Dangerous Goods in High Altitude Shipments" *Packaging Technology and Science*, 16: 119-130, 2003.

Singh, S. P., G. Burgess, and J. Singh, "Package Performance Testing of Dangerous Goods in High Altitude Shipments" HAZMAT Package and Shipper, Packaging Research International, 25-31, March/April 2003.

Singh, S. P., G. Burgess, S. Pratheepthinthong and J. Singh, "Packaging Specifications for Corrugated Boxes with Heavy Flowable Products in Single Parcel Shipments" JTEVA, Vol. 29, ASTM, 2001.

Singh, S. P., G. Burgess, Z. Hays, "Measurement and Analysis of the UPS Ground Shipping Environment for Large and Heavy Packages", JTEVA, Vol. 29, ASTM, 2001.

Singh, S. P., and S. Sittipod, "Effects of Recording Parameters on Power Density Spectra in Transport Vibration Measurement", JTEVA, Vol. 29, No. 2, 173-191, ASTM, 2001.

Burgess, G., P. Singh and E. Knudsen, "Evaluation of the Gavarti Associates - Comprehensive Abrasion Tester", JTEVA, Vol. 28, No. 5, 420-423, ASTM, 2000.

Singh, S. P., and S. Pratheepthinthong, "Loss of Compression Strength in Corrugated Shipping Containers Shipped in the Single Parcel Environment", JTEVA, Vol. 28, No. 4, 242-248, ASTM, 2000.

Newsham, M.D., J. R. Giacini, and S. P. Singh, "Product/Package Interaction: Effect of Physical, Chemical, and Climatic Environments", Journal of Testing and Evaluation, Vol. 28, No. 2, 103-108, ASTM, 2000.

Singh, S. P., Instability of Stacked Pallet Loads Due to Misalignment, Journal of Testing and Evaluation, Vol. 27, No. 5, 349-354, ASTM, 1999.

Singh, S. P., R. Walker, and D. Close, "Comparison of Returnable Paper and Plastic Corrugated Packaging Trays for the USPS", Journal of Testing and Evaluation, Vol. 27, No. 4, ASTM, 1999.

Singh, S. P., M. D. Newsham, and S. Pierce, "Distribution, Parcel Labels Pose Challenges for Drop Orientation", Packaging Technology and Engineering, Vol. 8, No. 4, 1999.

Singh, S. P., R. Walker, and P. Seehaver, "Comparison of International Mail Trays", Packaging Technology and Science, Vol. 11, 1-15, 1998.

Singh, S. P., and M. Gorzynski, "Effect of Vibration as a Cause of Leakage in Aluminum Beer Cans in Palletized Loads" Journal of Testing and Evaluation, Vol. 26, No. 4, 389-392, July, 1998.

Church, E. and S. P. Singh, "Focused Simulation Tests Provide Inroads for Reusable Containers" Packaging Technology and Engineering, Vol. 7, No. 2, 1998.

Sheehan, R., and S. P. Singh, "Data Analysis Techniques for Package Distribution Environment Data". Test Engineering and Management, 18-20, August, 1997.

Singh, S. P., and V. Syal, "Leakers as a Function of Closure Type in Gallon Size Plastic Bottles in Simulated Small Parcel Test Environment" JTEVA, ASTM, Vol. 24, No. 4, 241-245, July, 1996.

Singh, S. P., Cheema, "Measurement and Analysis of the Overnight Small Package Shipping Environment for Federal Express and United Parcel Service", JTEVA, ASTM, Vol. 24, No. 4, 205-211, 1996.

Singh, S. P., G. Burgess, and J. Lee, "Effect of Recycled Content on Corrugated Board Properties and Box Compression Strength", Transpack 96, IOPP, 10:1-17, February, 1996.

Rosenau, W. V., D. Twede, M. Mazzeo, S. P. Singh, "Returnable/Reusable logistical Packaging: A Capital Budgeting Investment Decision Framework", Journal of Business Logistics, Vol. 17, No. 2, 139-165, 1996.

Singh, S. P., and R. Walker, "Life Cycle Analysis of Nestable Wood and Plastic Pallets", *Journal of Plastic Film and Sheeting*, Technomic Publishing Co., Vol. 11, 312-325, October, 1995.

Singh, S. P., G. Burgess and Rojuckarin, "Test Protocol for Simulating Truck and Rail Vibration and Rail Impacts in Shipments of Automotive Engine Racks", *Packaging Technology and Science*, Vol. 8, 33-41, 1995.

Singh, S. P. and H. ElKhateeb, 'Evaluation of a Proposed Test Method to Measure Surface and Volume Resistance of Static Dissipative Packaging Materials', *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 7, No. 6, 283-289, 1994.

Singh, S. P., V. Chonhenchob, and G. Burgess, 'Comparison of Various Loose Fill Cushioning Materials Based on Performance and Environmental Performance', *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 7, No. 5, 229-241, 1994.

Singh, S. P., R. Stapleton, and G. Burgess, 'Reliability and Error Estimations of Mechanical Shock Recorders and Impact Indicators', *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 7, No. 4, 187-194, 1994.

Rodriguez, H., S. P. Singh, and G. Burgess, 'Study of Lateral Shocks Observed During Fork Truck and Pallet Jack Operations for the Handling of Palletized Loads', *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 7, No. 4, 205-211, 1994.

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Singh, S. P., G. Burgess, J. Marcondes and J. Antle, 'Measuring the Package Shipping Environment in Refrigerated Ocean Vessels', *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 6, No. 4, 175-181, 1993.

Singh, S. P. and G. Burgess, 'Effect of Internal Gas Pressure on the Compression Strength of Beverage Cans and Bottles', *Journal of Testing and Evaluation, ASTM*, Vol 21, No. 2, 129-131, 1993.

C. W. Hall, S. P. Singh and G. Burgess, 'Use of a Proposed Test Procedure for Quantifying the Triboelectric Charging Propensity of Packaging Films'. *Journal of Testing and Evaluation, ASTM*, Vol. 21, No.1, 57-61, 1993.

Singh, S.P., 'Media for Shock and Vibration - Environmental Concerns', *Journal of Packaging India, IIP*, Vol 25, No. 4, 25-31, 1992.

Singh, S. P. and J. Marcondes, 'Vibration Levels in Commercial Truck Shipments as a Function of Suspension and Payload', *Journal of Testing and Evaluation, ASTM*, Vol 20, No. 6, 466-469, 1992.

Marcondes, J. and S. P. Singh, 'Use of Road Roughness on to Predict Vertical Vibration and Package Design', *Advances in Electronic Packaging*, Vol. 2, 999-1004, American Society of Mechanical Engineers, 1992.

Singh, S. P. and T. Voss, 'Drop Heights Encountered in the United Parcel Service Small Parcel Environment in the United States', *JTEVA, ASTM*, Vol 20, No. 5, 382-387, 1992.

Singh, S. P., 'Its Time to Examine Your Plants Unit Load Practices', *International Industrial Engineering*

Conference Proceedings, 287-292, Institute of Industrial Engineers, 1992.

Singh, S. P., G. Burgess and M. Xu, 'Bruising of Apples in Four Different Packages Using Simulated Truck Vibration', *Journal of Packaging Tech. and Science*, John Wiley and Sons, Vol. 5, 145-150, 1992.

Graesser, L., S. P. Singh and G. Burgess, 'A Performance Study for Two Portable Data Recorders Used to Measure Package Drop Heights', *Journal of Packaging Technology and Science*, John Wiley and Sons, Vol. 5, 57-61, 1992.

Singh, S. P., N. Charnnarong and G. Burgess, 'A Comparison Between Various Package Cushioning Materials Based on Shock Transmission Versus Material Used', *Institute of Packaging Professionals Technical Journal*, 28-36, Winter 1991.

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BOOK CHAPTERS:

Contributing author in the following text books:

"Damage Reduction to Food Products During Transportation and Handling", Handbook of Food Products, 2006.

"Packaging Forensics" L & J Publishing Company, 2000.

"Transport Packaging" Tool and Manufacturing Engineers Handbook, Society of Manufacturing Engineers, 1997.

"Distribution Packaging Technology Handbook", Institute of Packaging Professionals, 1995.

"Progress in Material Handling Research", Material Handling Institute of America, 1993.

TECHNICAL REPORTS FOR FEDERAL AND INTERNATIONAL AGENCIES:

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CONFERENCE PAPERS IN PROCEEDINGS:

Presented over thousand hundred talks at various regional, national, and international meetings including the following:

S. P. Singh, Keynote: "Packaging Innovation, Sustainability and Marketing Challenges for the Emerging Decade", 17th IAPRI Conference, Beijing, China, 2010.

S. P. Singh, "Measurement and Analysis of Physical and Climatic Changes in International Sea Container Shipments", Annual NIPHLE Conference, San Diego, CA, 2010.

S. P. Singh, Keynote: "Trends of Wal-Mart to Achieve Packaging Sustainability Initiative", Green Packaging Conference, Toronto, Canada, 2009.

S. P. Singh, Keynote: "Measurement of Vibration, Impacts and Temperature in Inter-Modal Sea Container Shipments from Asia to United States", ISTA China Conference, Shinzen, 2009

S. P. Singh, "Role of Testing in Making Products More Marketable and Reducing Unsaleables", ISTA Europe Conference, Valencia, Spain, 2009.

S. P. Singh, Keynote: "Wal-Mart Packaging Sustainability Initiative", ISTA China Conference, Beijing, China, 2009.

S. P. Singh, "Freight Loss and Reducing Damage through Packaging and Testing", Loss Prevention Conference, Atlanta, GA, 2008.

S. P. Singh, Keynote: "Sustainable Packaging", 16th IAPRI International Packaging Conference, Bangkok,

Thailand, 2008.

S. P. Singh, Keynote: "How Green is your Packaging: Reusable Plastic v. Paper Corrugated", International Packaging Conference, AIP, Sydney, Australia, 2008.

S. P. Singh and E. Church, "Cold Chain Packaging for Pharmaceutical and Medical Products", 6th Cold Chain management and Temperature Control Summit, Toronto, Canada, 2008.

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J. Singh and S. P. Singh, "Measurement and Analysis of Temperature and Pressure in High Altitude Shipments", 2008 International Transport Packaging Forum, Orlando, FL, 2008.

S. P. Singh, "Dynamics of Smalls", 2008 International Transport Packaging Forum, Orlando, FL, 2008.

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A System Analysis of Various IBC Types, IBC-USA 99, New Orleans, April, 1999.

Stability of Stacked Pallet Loads, TRANSPAK 99, Institute of Packaging Professionals, Orlando, Feb, 1999.

How to Protect Material for Shipment, PROMAT 99, Material Handling Institute, Chicago, Feb, 1999.

Returnable Containers for Fresh Produce, UNITED 99, United Fresh Fruit and Vegetable Growers, San Diego, Feb, 1999

Best Practice Packaging for Physical Protection, Creating and Developing Innovative Packaging, MSU Seminar, Phoenix, January, 1999.

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Future of Plastic Pallets in the Grocery Industry, Proceedings of the 1995 Annual National Wood Pallet and Container Association Pallet Conference, St. Louis, MO, 1995.

Current Trends of Palletization and Packaging in the United States, Proceedings of the Canadian Pallet Conference, Vancouver, Canada, 1995.

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Designing Packages for the Overnight Shipping Environment. Paper presented at the 8th International IAPRI Packaging Conference, Sao Paulo, Brazil, June, 1993.

Environmental Impact of Packaging Cushioning Materials. Presented at the Pack Expo Conference, Chicago, November, 1992.

Protective Media for Shock and Vibration. Paper presented at the Industrial Packaging Conference, New Delhi, India, October, 1992.

Bruising of Apples as a Function of Truck Vibration and Packaging. Paper presented at 1991 Summer Meeting of ASAE (92-6036), Charlotte, June, 1992.

Measuring the Dynamic Environment of Automated Package Sortation Equipment Used in the United Parcel System. Paper presented at the 1992 International Material Handling Research Colloquium, Milwaukee, June, 1992.

Optimizing Pack Design for Distribution. Paper presented at World Packaging Congress, Seville, Spain, January, 1992.

Transportation and Military Packaging. Paper presented at the Colloquium on Current Concerns in Packaging for Management, San Diego, 1992.

New Package System for Fresh Strawberries and Raspberries. Paper presented at 1991 Summer Meeting of ASAE (91-6017), Albuquerque, 1991.

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Correlating Real Life Shipments with Lab Testing. Presented at the Pack Expo Conference, Chicago, 1990.

Recycling and Disposal Issues of Pallets. Paper presented at the NWPCA Annual Meeting, Toronto, 1990.

Vibration Levels in Refrigerated Truck Shipments. Presented at the Refrigerated Transportation Foundation Annual Meeting, Baltimore, August, 1990.

Measuring the Truck Transportation Environment in United States. Paper presented at the Sixth Annual Conference on Distribution Packaging and Handling. San Francisco, 1989.

Environmental Measurement and Simulation, Singh, P. Paper presented at SPHE Conference, Traverse City, April, 1988.

Vibration Induced Settling of Particles in Herschel-Bulkley Fluids. Singh, P. and G. Burgess. Paper presented at 1987 Winter Meeting of ASAE (87-6527), Chicago, 1987.

Vibration Simulation of Insecticide Tanks. Singh, P. and C. Ritchie. Paper presented at 1987 Winter Meeting of ASAE (87-6528), Chicago, 1987.

Computer Hardware: Availability and Applications in Packaging. Presented at SPHE Conference, East Lansing, September, 1986.

Future Trends of Wood Containers and Pallets. Presented at Annual Meeting of Canadian Pallet and Container Association, Cambridge, September, 1986.

Role of Plastic Containers/Pallets in the Automotive Industry. Presented at Annual Meeting of National Wood Pallet Container Association, Toronto, June, 1986.

Effect of Multiple Drops in Damage Boundary Curves. Singh, P. and G. Burgess. Presented at the 4th International Conference on Packaging, East Lansing, MI, 1985.

Design Criteria and Dynamic Behavior of Premolded PE Cushions. Singh, P. and R. Bonlender. Presented at the 4th International Conference on Packaging, East Lansing, MI, 1985.

Modeling and Simulation of Packaging Lines Using Computer Aided Techniques. IBM, Rochester, MN, 1984.

VIDEO TAPES FOR EDUCATION:

Designing Safe Loads for LTL Shipments. Prepared for Overnite Transport, 2006.

Environmental Impact of Popcorn as a Cushioning Material. Prepared for National Television News Release through MSU Outreach, 1991.

Move Your Freight the ABF Way. Prepared for ABF Freight Inc. Principle Coordinator of the roject, 1989.

Freight Movement Inside Trailer. Prepared for Yellow Freight Inc. Supervised with other faculty for Packaging Dynamics Sections, 1988.

Magicians of Packaging. Participated for the Environmental Measurement Section. Prepared at School of Packaging by Pi Kappa Gamma, 1988.

Future of Wood Pallet. Singh, P. Prepared for the National Wood Pallet Container Association, Washington, DC, 1986.

NOT RETAINED

SEMINAR MANUALS:

1. Fundamentals of Shocks and Vibration. G. Burgess and P. Singh. Annual MSU School of Packaging Seminar.
2. Chapter on Distribution Packaging. G. Burgess and P. Singh.
* Principles of Packaging for Supervisors Course and PACTECH Seminar
3. Packaging/Unitization Seminar. P. Singh.
4. Automotive Packaging Seminar. Transportation Environment, Pallets.
5. Electronic Packaging and Advance Dynamics.
6. Fresh Produce (Vegetables and Fruit) Distribution and Packaging.

PROFESSIONAL ASSOCIATIONS AND POSITIONS HELD:

ASAE (American Society of Agricultural Engineers)
Chairman, Packaging Committee FPE 711, 1987-1990.

ASME (American Society of Mechanical Engineers)
Chairman, Protective Packaging Committee, 1991-1995.

European Committee for Standardization, CEN TC 331/WG4, Technical Expert, 1997-2000.

ASTM (American Society for Testing and Materials)
Chair Division 1, D-10 Packaging Committee
Member (D-10). Vice Chairman (D10.15) Fragility Assessment Committee. Chairman, Task Group on Reusable Pallets and Packaging.

IAPRI Board – International Association of Packaging Research Institutes

IOPP (Institute of Packaging Professionals), Member.

ISTA Board – International Safe Transit Association

NIPHLE Member – National Institute of Packaging Handling and Logistics Engineers

National Forensic Center, Member.

Pi Kappa Gamma (Honorary Packaging Fraternity), Advisor.

Packaging Alumni Association, Member, Board of Directors.

Produce Marketing Association – Chair - Packaging Standardization Task Group

National Society of Safety Engineers - Member

PACKAGING TEST PROJECTS:

In addition Dr. Singh has written over a hundred reports on various studies done to test and evaluate packaging systems for various companies including the following:

Abbott Laboratories	Kellogg's Company
Abitibi Price	Kraft, Inc.
Amway Corporation	Laserfile Compact Disc
Anheuser Busch	Libbey Glass
Appleton Papers	Menasha Paper
Arco Chemical	Merillat
Association of American Railroads	Miller Brewery
Avon Company	Mitsubishi
AC Delco	Morton Grove Pharmaceutical
Beatrice/Hunt-Wesson	ODL (Glass Doors) Inc.
Becton Dickinson Company	Orbis Menasha
Buckhorn	Owens Illinois
Chevron	Ortho Pharmaceutical
Chiquita	Overnite Transport
Clorox Company	Pepsi Bottling Group
Coca Cola Company	PPG Industries
Colgate Palmolive	Proflowers
Con Agra Foods	Purepak
Coors Brewery	QVC Inc
Dow Chemical	SCA Packaging
Dupont	Sealed Air Corporation
Eastman Kodak Company	Simmons Mattress Company
Ethan Allen	Sonoco Products Company
Faygo	Stone Container Corporation
Ford Motor Company	Stroh Brewery
Frito Lay, Inc.	Trienda Corporation
General Motors	Tuscarora Plastics
General Electric Co.	Uncle Ben's Inc.
General Foods	United States Dept. of Agriculture
Gerber Foods	United States Postal Service
Haworth	Wood Mode
Herman Miller	Wyeth-Ayerst Laboratories
Hewlett Packard	Xerox
International Honeycomb	Yellow Freight System
Johnson Controls	Zenith Data Systems

INTERNATIONAL AGENCIES AND INSTITUTES:

In addition served as a consultant and advisor to the following universities and institutes in training and developing packaging curriculum at graduate and postgraduate level and served as examiner at the following:

- California Polytechnic University, San Luis Obsipo, CA
- Copenhagen Business School, Copenhagen, Denmark
- Danish Technological Institute, Copenhagen, Denmark
- Indian Institute of Packaging, India
- Japan Packaging Institute. Tokyo, Japan
- Kasetsart University, Bangkok, Thailand
- Nanyang University, Singapaore
- Massey University, Palmerston North, New Zealand
- Sheffield University, Sheffield, United Kingdom

- Victoria Institute of Technology, Melbourne, Australia

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