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CERTIFICATIONS

- **P. E. - Licensed Professional Engineer (Safety Engineering, CA)**
- **P.E. - Licensed Professional Engineer (State of Mississippi)**
- **DFE, Board Certified Diplomat in Forensic Engineering, The National Academy of Forensic Engineers, (Senior Member)**
- **National Society of Professional Engineers-Member**
- **New York State Society of Professional Engineers-Member**
- **Queens Chapter, Society of Professional Engineers-Member**
- **CPC, CChE - Certified Professional Chemist & Chem. Engineer (National Inst. of Chemists & Chemical Engineers)**
- **FRSC, CChem - Chartered Chemist and Fellow (Royal Institute of Chemistry, London, England)**
- **LFAIC-Life Fellow, The American Institute of Chemists**
- **DEE, Board Certified Environmental Engineer (American Academy of Environmental Engineers and Scientists)-Life Member**
- **IH, Board Certified Industrial Hygienist (American Academy of Environmental Engineers)**
- **FTI, Ctext-Fellow, The Textile Institute (Manchester, England)**
- **BCEE - Board Certified Environmental Engineer**
- **BCFE - Board Certified Forensic Examiner**
- **Certified - Arson Detection by the Federal Bureau of Alcohol, Tobacco and Firearms (U.S. Dept. of the Treasury)**
- **Certified - Chemical Engineer, Senior Member: #0118-003-3, The American Institute of Chemical Engineers**
- **Certified by The Steel Erectors Association of America in Connector Safety (OSHA Subpart R 1926.761(c)(2)) and Fall Hazards Safety (OSHA Subpart R 1926.761(b))**
- **Certified - Warnings & Instructions Specialist (University of Wisconsin-Madison, College of Engineering-1988)**
- **Certified in Motorcycle & Motor Scooter Safety and Operation**
- **Licensed Fire Safety Examiner - Arson Investigation and Prevention Unit, Virgin Islands Fire Service, Department of Licensing and Consumer Affairs**
- **Fellow - American College of Forensic Examiners**
- **Permanent Certification, University of the State of New York - Chem., Physics, Math, Gen. Science**
- **Board Certified Forensic Examiner in Chemistry and Chemical Engineering (American Board of Forensic Examiners)**
- **Board Certified Forensic Examiner in Safety Engineering and Design (American Board of Forensic Examiners)**
- **Board Certified Forensic Examiner in Fires and Explosions (American Board of Forensic Examiners)**
- **Board Certified Forensic Examiner in Industrial Hygiene (American Board of Forensic Examiners)**
- **Board Certified Forensic Examiner in Sports Safety (American Board of Forensic Examiners)**
- **Fellow of the Board—American Board of Forensic Examiners**
- **Diplomat in Forensic Engineering—American Board of Forensic Engineering and Technology (Lifetime)**

- **Professional Member - American Society of Safety Engineers**
- **Senior Grade - Systems Safety Society**
- **MS, PhD, DSc, JD**
- **Certified-Safety and Field Management Consultant, US Virgin Islands; License No: 1-31246-1L, Business No: 31246**
- **Technical Director-Risk Analysis & Safety, Amateur Athletic Union (AAU) Men and Women's Basketball (Former)**
- **Certification-Measurement in Residual Strains in Transparent and Translucent Materials, Strainoptic Technologies, Inc.: April 23, 1987**
- **Certification - University of Wisconsin-Madison, College of Engineering: Product Safety and Liability: The Role of Warnings: March 22-23, 1988 (Graduate Credit/Certification).**
- **Certification in Fires and Arson Accelerant Detection by the Bureau of Alcohol/Tobacco/Firearms, Sponsored by the Northeastern Association of Forensic Scientists and the Suffolk County Crime Laboratory, October 14-18,1991.**

AREAS OF EXPERTISE (Technical)

- **Experience in new product development, manufacturing, packaging, standards, warnings and instructions.**
- **Extensive experience in the identification, elimination and control of hazards to people and property. This includes the development, establishment, manufacturing, construction, assembly, testing, operation, training and procedures including manuals, environmental engineering and industrial hygiene, warnings & instructions for consumer and industrial products.**
- **Authority in the fields of products liability, OSHA, Labor Law (Industrial Code), architectural safety, safety engineering and construction accidents.**
- **Lectured and taught at various universities in the United States and Europe.**
- **Evaluated the cause of many brain injuries as a result of accidents nationally and internationally.**
- **Published and presented papers in the areas of fires, explosions (gas, bottle, battery), plastics, toxic torts, flammable fabrics, safety engineering and design, sports safety, household and industrial product safety, industrial equipment, warnings and instructions for both industrial and consumer products.**
- **Patentee of many products, including protective headgear (face mask used in football - licensed to Riddell), enhancement of energy absorption for protective headgear and equipment, safety shields for batteries, insulation materials used on missiles, household products, and non-toxic insect repellents worldwide. Copyright Registrations in the areas of battery warnings and instructions, toxic materials, household products and insect repellents.**
- **Experienced in animal and human health products, new product development, EPA, product data specifications, testing and analysis.**
- **Diplomate-American Board of Forensic Examiners in Safety & Safety Engineering.**
- **Member (former) of the Advisory Board -World Congress on Industrial, Technical, and High-Performance Textiles (Great Britain); former member of the Advisory Board - American Board of Engineering and Technology (USA).**
- **Member, Architectural Review Board, Village of Great Neck, Great Neck, NY.**
- **Member-ISO/TC 181/SC: Safety of Toys.**
- **Member of the ASTM, (1964-present).**
- **Over 100 publications and presentations.**
- **Patentee of products produced and used throughout the world (over 47).**
- **Consulted to ABC and CBS News, Eyewitness News (ABC), USA Today and the Discovery Channel.**
- **Consulted to the Department of Agriculture (Bureau of Mines).**
- **Consulted to the National Highway Traffic Safety Administration (NHTSA).**
- **Consulted to the Department of Labor (OSHA).**
- **Consulted to NIOSH (National Institute for Occupational Safety and Health).**
- **Consultant on Warnings & Instructions to the Unified Abrasives Manufacturer's Association.**

- **Consultant to Microsoft-Kinesiology Studies, Human Movements and Muscle Activity Impacts, Warnings and Instructions**
- **Consulted to Wave Loch, Inc. (manufacturer of the Flow Rider)**
- **Consulted to Hudson Bay stores, Canada in risk assessment and human factors.**
- **Consulted to Home Depot in risk assessment and human factors.**
- **Consulted to Big Lots Stores, Inc. on display safety.**
- **Consulted to the American Textile Company (warnings & instructions).**
- **Consulted to Estwing Manufacturing Co. (warnings and instructions).**
- **Consulted to the Long Island Railroad**
- **Consulted to the New York Transit**
- **Consulted to the Queensborough Bridge Authority**
- **Consultant for the Kaprun fire disaster case (Austria)**
- **Consultant to Intamin AG (Switzerland-roller coasters)**
- **Consulted to Family Dollar Stores (safety of products)**
- **Consulted to Northern Lights (mfg. of fitness equipment – safety engineering & design)**
- **Consulted to Sherwin Williams**
- **Consulted to Walter Kidde (fire extinguishers)**
- **Consulted to Kohl's Department Stores (retail displays and safety)**
- **Consulted to Bed Bath & Beyond, Inc. (retail displays and safety)**
- **Consulted to The Thompson's Company-Water Seal Product**
- **Consulted to The London Hotel, NYC, ADA (American Disability Act) evaluation**
- **Consulted to Reliable Bakery (Brooklyn) - Safety & OSHA**
- **Consulted to US Department of Justice, Eastern District of New York**
- **Consultant to Win Win Printing, Inc. – OSHA compliance and employee training**
- **Consulted to Hamaco Industries Corporation. A Japanese manufacturer of material handling equipment such as mechanical and electric lift tables. Preparation of warnings and instructions for lifts and creations of warnings and instructions for service and user manuals**
- **Consulted to CBS TV News, New York on 10-15-2013. Analysis of the safety protocol related to retail stores and stacking helves with merchandise. (televised 10-31-13, 11 p.m.)**
- **Consulted to Tylo Helo (Tylö AB), the largest sauna (dry and steam) company in the world**
- **Consulted to EBRU TV: Fresh Outlook, 05-17-14, Soma, Turkey (Mine Explosion in Turkey)**
- **Consulted to Transpo Industries, Inc.**
- **Consulted to Landscape Forms, Inc.**
- **Consulted to the Office of the United States Attorney**
- **Consulted to Tuff Stuff Fitness Equipment, Inc.**
- **Consulted to City of San Diego, CA (Playground safety)**
- **Consulted to Blue World Pools**
- **Consulted on the Vortex amusement ride accident at the North Carolina Fair (10-24-2013)**
- **Consulted to the City of Fort Lauderdale, Florida School District on Sports Injuries**
- **Consulted to the CalSpan (California Department of Transportation)**
- **Consulted on the cause of iPhones catching on fire, leaking, and exploding**
- **Consulted to the New York City School Construction Authority**
- **Consulted to the New York City Department of Education, City of New York, and the New York City Board of Education**
- **Consulted to a number of State Attorney General's offices-NY, LA, CA, & UT.**
- **Biomechanical analysis and reconstruction of accidents involving impacts in all sports, playgrounds, snowmobiles, bicycles, motorcycles, scooters, automobiles, bobsleds, skiing, snowboarding, sleigh riding, slips, trips & falls.**

PROFESSIONAL EXPERIENCE (Sports & Recreation)

- **Diplomat-American Board of Forensic Examiners in Sports and Recreational Safety**
- **Former Director of Sports, Recreation & the Athletics Division of Inter-City Testing & Consulting Corporation for twenty-eight years.**

- **Experienced in the identification, elimination, and control of hazards in recreation facilities, parks and school environments.**
- **Directly involved with sports & recreation safety standards, safety and design analysis of protective equipment, consumer products, warnings and instructions.**
- **Evaluated and tested every type of protective headgear in contact and collision sports.**
- **Consulted on a large number of brain injury cases in contact and collision sports and have made presentations at national and international conventions in the area of concussive and sub-concussive brain injuries.**
- **Member of the Executive Committee and consultant in the area of engineering and human factors to the Hockey Equipment Certification Council (HECC) (1980-1998)**
- **U.S. Delegate-International Standards Organization (ISO) (1988-1998)**
- **Member Safety & Protective Equipment Committee (SPEC) of USA Hockey (1996-2008)**
- **Member of the ASTM, (1964-present).**
- **Inventor of the Bio-Lite football facemask licensed to Riddell**
- **Inventor of the ForceField FF Headband (www.forcefieldheadbands.com)**
- **USPTA-certified tennis instructor (United States Professional Tennis Association)**
- **Creator of warnings and instructions for many sports products**
- **Consulted to municipalities on park & recreation facilities, and Set Makers, Inc., the manufacturer of recreation facilities for Burger King and McDonald's restaurants.**
- **Technical Director-Risk Analysis & Safety, Amateur Athletic Union (AAU) Men and Women's Basketball**
- **Consulted to Lobster, Inc. on safety and warnings (High speed tennis machine)**
- **Consulted to various municipalities on park, recreation safety and swimming pools relating to the designs of the activities including, but not limited to, general and hands-on supervision for challenged, handicapped and special needs children**
- **Tested and evaluated every type of protective sports head gear**
- **Consultant to Microsoft-Kinesiology Studies, Human Movements and Muscle Activity Impacts, Warnings and Instructions**
- **Consulted to Wave Loch, Inc. (manufacturer of the Flow Rider)**
- **Consultant to Intamin AG (Switzerland-roller coasters);**
- **Consulted to Northern Lights (mfg. of fitness equipment – safety engineering & design)**
- **Consulted to ABC and CBS on Amusement Park accidents**
- **Consulted on safety of activities on amusement parks including water parks (Splish Splash, Suffolk County, NY, Coney Island, Six Flags and Disney World)**
- **Consulted on cruise lines with safety of their recreational activities and exercise equipment**
- **Consulted to Chuck E Cheese on the safety of their amusement facility**
- **Consulted to ABC affiliates, KGTV News, in West Palm Beach, Florida and San Diego, California on the Safety of Playgrounds and Playground Activities http://www.10news.com/news/investigations/safety-consultant-finds-various-problems-at-san-diego-public-parks and http://www.10news.com/news/investigations/10news-report-spurs-changes-at-san-diego-public-parks**
- **Consulted on cases involving amusement parks, roller coasters, tennis pitching machines, exercise machines, recreational facilities for McDonalds and Burger King, lazar facilities, residential playgrounds, safety in indoor and outdoor basketball courts, bleacher safety, natural versus synthetic surfaces, headgear for sports, baseball base design, golf carts, ice hockey facilities, cruise line recreational activities (i.e. wave runners, track and exercise equipment), and many others.**
- **Consulted to City of San Diego, CA (Playground safety)**
- **Consulted on the Vortex amusement ride accident at the North Carolina Fair (10-24-2013)**
- **Consulted to the City of Fort Lauderdale, Florida School District on Sports Injuries**
- **Consulted to the Salvation Army (Wooden Surfaced Skating Rinks)**
- **Consulted on trampoline park accidents throughout the United States involving trampoline and foam Over 45 years of experience in creating, reviewing and critiquing waivers, disclosures,**

disclaimers, warnings and instructions for a variety of products including, but not limited to: sports, recreational activities; household, commercial and industrial products.

QUALIFICATIONS AS A SAFETY SPECIALIST

a. **Certified Safety Engineer**
b. **Licensed Professional Engineer with a specialty in Safety Engineering and Design (P.E.)**
c. **Diplomate in the American Board of Forensic Examiners**
d. **Fellow in the American College of Forensic Examiners**
e. **Board Certified Forensic Examiner in Safety Engineering and Design**
f. **Senior Grade and Diplomat in Forensic Engineering (DFE)**
g. **Professional Member of the American Society of Safety Engineers**
h. **Senior Grade Level in the Safety System Society**
i. **Member of the ASTM from 1964 to the present time involved directly in the creation of safety standards for all types of pedestrian walkways, stairs, etc.**
j. **Board Certified as an Environmental Engineer and a Board-Certified Industrial Hygienist**
k. **Specialist in ADA requirements**
l. **Certified in Warnings and Instructions**
m. **Over 45-years of experience in building codes and construction**
n. **US Delegate for thirteen years to the International Standards Organization creating international safety standards.**
o. **Board Certified Forensic Examiner in Safety Engineering and Design (American Board of Forensic Examiners)**
p. **Senior Classification-Systems Safety Society**
q. **Certified-Safety and Field Management Consultant, US Virgin Islands; License No: 1-31246-1L, Business No: 31246**
r. **Consulted to the Department of Labor (OSHA) in Safety.**
s. **Consulted to NIOSH (National Institute for Occupational Safety and Health).**
t. **Consultant to Microsoft-Kinesiology Studies, Human Movements and Muscle Activity Impacts, Warnings and Instructions**
u. **Consulted to Transpo Industries, Inc.**
v. **Consulted to Blue World Pools**
w. **Diplomat-American Board of Forensic Examiners in Sports and Recreational Safety**
x. **Over 45 years of experience in evaluating, testing and consulting on every type of walking surface with reference to safety and the coefficient of friction (slipperiness).**
y. **Presented seminars to the graduating class of mechanical engineers at Columbia University School of Mechanical Engineering covering subjects relating to safety and design (2005-2018).**
z. **Consulted to CBS News ABC News, and Eye Witness News, the Department of Agriculture, National Highway and Traffic Safety Administration and CalTrans (California Department of Transportation)**
aa. **Member of the Architectural Board in the Village of Great Neck, Great Neck, New York for 15 years and was directly involved in the examination and approval process of the architectural design of both residential and commercial buildings, relating to local, state and national codes.**

Experience in Head & Brain Injuries

1. **Extensive experience in the impact and dissipation of forces to the head and brain.**
2. **Experience extends over 49 years in sub-concussive and concussive brain injuries to children and adults in contact and collision sports.**
3. **Over 49 years of training and experience in sub-concussive and concussive brain injuries to children and adults involved in slip, trips and falls and other types of personal injuries.**
4. **Former experience as one of three delegates to the ISO (International Standards Organization) with 15 other countries that created safety standards for protective helmets in the sport of hockey worldwide.**
5. **Former guest speaker to a large number of national conventions involving head and brain injuries in sports.**
6. **Has presented scientific papers at international and national technical meetings involving concussions and sub-concussive brain injuries.**

7. **Sole author of several peer reviewed articles on concussive brain injuries.**
8. **Inventor and provider of the leading protective headgear used in soccer, basketball, cheerleading, curling, Veteran's hospitals for the traumatically brain injured veterans, for seniors prone to falling in nursing homes, for seniors prone to falling, dwarfs and young children learning to walk, children in playgrounds, challenged and handicapped children, and many more applications.**
9. **Consults on one or more brain injury accidents per week over the last 10+ years.**
10. **Member of the ASTM (American Society for Testing and Materials) from 1964 to the present time creating safety standards for every type of contact and collision sport.**
11. **Observed a number of autopsies in which head and brain injuries were involved with the demise of the individual.**
12. **Directly involved with the creation of every safety standard relating to protective headgear used in both contact and collision sports and every type of recreational activity involving the use of headgear.**

INDUSTRIAL EXPERIENCE

- **Director, Scientific Advisory Services, Ltd., Great Neck, NY & Boca Raton, Florida 1998-present www.scientificadvisory.com**

- **Technical Director and President of ForceField FF (NA) Ltd. 2004-present (www.forcefieldheadbands.com)**

- **President and Technical Director of Repello Products Ltd., Mineola, New York, 1998-2002. Inventor of patented non-toxic insect repellent products including, but not limited to the wristband, tablecloths, candles, outdoor sprays, garbage bags, hand and body lotion. Company sold in 2002. (wristband developed into a billion-dollar industry after sale)**

- **V.P. & Tech. Dir - Surface Restorations, Inc., Greenwich, Ct.; Welford on Avon, England; Oslo, Norway, 1998-2001 Proprietary formulations in restoring all building surfaces including, for example, the indoor surfaces throughout the 42nd Street underground train stations. Also, the removal of graffiti.**

- **Founder ,CEO and Technical Director of Inter-City Testing & Consulting Corporation, Mineola, NY; Boca Raton, Fl; Sacramento, CA; San Francisco, CA 1970-1998 (sold September 1998) 100+ PhD's with full laboratory facilities covering every engineering discipline.in addition to all contact and collision sports, playgrounds, parks, and amusement parks.**

- **President, Athletic Safety Products, Inc. Mineola, NY, 1983-1999 (Sold 9-1999) Invented the protective face mask that changed the sport of football. Eliminated quadriplegic and paraplegic injuries in children.**

- **Vice President & Technical Director of Polyphase Chemical Service, W Hempstead, NY 1968-1970 Responsible for the development of products used for reacting with coal and oil in reducing the pollution, acid rain and maintaining a more efficient burning of fuels used in power plants especiall in the super heater areas.**

- **Director of Research and Development & Manufacturing. of Mansol Ceramics Co., Belleville, NJ, 1967-1968**
  In charge of all research and development relating to ceramics used in the glass-to-metal-seal industry. Developed the testing protocol for evaluating new products. In charge of formulating glass formulations and processing the glass to manufacture preforms.
  In charge of the processing, molding and sintering preforms for the glass to metal seal industry.

- **Materials Specialist - J.P. Stevens & Co., Corporate Research Lab., Garfield, NJ, 1966-1967 (United States Government Secret Clearance)**
  In charge of setting up a complete research testing and analytical laboratory. This involved ordering all the expensive instrumentation used for the analysis of all types of textile materials including, but not limited to determining the impurities in high silica and carbonaceous materials. This included the screening out and determining what instrumentation to purchase and the setting up of the laboratories that encompassed every aspect of the analytical process in addition to the high temperature testing facility which incorporated plasma arc testing at approximately 10,000 degrees Fahrenheit.

In addition, the undersigned was responsible for the safety and welfare of all employees and invitees who performed testing using the equipment that the undersigned was responsible for setting up. Prior to invitees using the equipment, they were required to go through a whole protocol to determine that all of the equipment installed was installed safely and securely and that all of the invitees would be provided with all of the necessary and required personal safety equipment.

In charge of creating high temperature silica and carbonaceous textiles that were used in missiles protecting inert parts during the exposure to ablative temperatures of over 10,000 degrees Fahrenheit.

Trouble shooting problems in production facilities in the South for the weaving and warping machines.

- Research Engineer and Research Chemist - Aerojet General Corp., Sacramento, CA, 6/61-9/61, 1963-1965 (United States Government Confidential Clearance)

In that capacity, I was responsible for setting up a complete testing and analytical laboratory in performing plasma arc testing of every type of polymer manufactured in the United States as applicants for the protection of inert parts of the Polaris A-3 and Minuteman missiles. That involved the installation of all types of equipment both light and extremely heavy that were used to perform research on the ablation characteristics of the polymeric materials. In addition, the undersigned was also in charge of static testing of the actual parts on missiles on the grounds of the facility.

In addition to the responsibilities stated above, the undersigned was also responsible in the creation of new and unique polymeric systems for the same objectives as those polymers that were in existence in the United States. All of the responsibilities included, but were not limited to, the safety and welfare of all employees and invitees. Many of the invitees were scientists who had Confidential and Secret Clearance like the undersigned. The invited scientists used our equipment to also perform studies on ablation. They had their own protocol in verifying that all equipment they were going to be exposed to and use were installed and setup in a safe manner prior to getting involved with their own testing.

Lastly, the undersigned supervised and was directly involved in the creation of mathematical solutions to predicting the ablative performance and characteristics of every type of polymer when exposed to hypothermal conditions.

TEACHING EXPERIENCE

0. **Columbia University, Department of Mechanical Engineering, Senior Design Course- The Integration of Law and the Mechanical Engineer, Guest Lecturer, 2- 2 hour lectures each Fall for 2004-2018-present.**

1. **Manhattan College, Department of Mechanical Engineering, Engineering Designs & The Mechanical Engineer: Responsibilities of the Engineer in the Design of Products for Consumer and Industrial Applications, Guest Lecturer October 17, 2017**

2. **City College of New York (CUNY), Department of Mechanical Engineering, "The Mechanical Engineer & Consumer Product Design Safety Requirements & The Law," Guest Lecturer, two-hour seminar for all of the graduating seniors in mechanical engineering, New York, NY, November 12, 2015.**

3. **Permanent Certification, University of the State of New York, State Education Department, in Chemistry, Physics, Mathematics, and General Science.**

- **Hofstra University, Hempstead, NY: Department of Engineering - Review Course for Professional Engineering Exam, 1974-1981 (Adjunct).**

- **C.W. Post College, Greenvale, NY: Lecturer - Practical Safety Engineering, "Hospital Systems Safety Implementation," Spring, 1977**

- **Nassau Community College, Garden City, NY: 9/73-1/74; 9/74-1/75: Adjunct Faculty, Chemistry: 9/75- 1/76: Full-Time Faculty, Chemistry**

- **Empire State College, Old Westbury, NY: 1975-1977, Adjunct Faculty, Physics.**

- **University of North Carolina, Chapel Hill, NC: 9/61-2/63, Instructor/teaching fellow, General Chemistry.**

- **University of the Pacific, Stockton, CA: 9/60-6/61, Instructor/teaching fellow, General Chemistry, Qualitative and Quantitative Analysis.**

- **University of Oregon, Eugene, Oregon: 9/59-9/60, Instructor and teaching fellow in General Chemistry.**

- **Hofstra University, Hempstead, NY: 9/56-9/57, Assistant/Mathematics: 6/55-6/59, Assistant/Chemistry.**

PROFESSIONAL ASSOCIATIONS

- **Member of the Human Factors and Ergonomics Society**
- **National Society of Professional Engineers**
- **New York State Society of Professional Engineers**
- **Queens Chapter, Society of Professional Engineers**
- **The National Academy of Forensic Engineers**
- **American Academy of Environmental Engineers, Diplomate**
- **American Industrial Hygiene Association (Full Membership)**
- **Royal Society of Chemistry (London), Fellow**
- **The Textile Institute, Fellow (Manchester, England)**
- **National Fire Protection Association**
- **American Society of Civil Engineers**
- **Human Factors and Ergonomics Society**
- **American Society of Safety Engineers (Professional Member)**
- **Systems Safety Society - Senior Grade**
- **American Society of Safety Professionals (ASSP), Long Island Section**
- **Standards Engineering Society**
- **American National Standards Institute (ANSI)**
- **Society of Automotive Engineers**
- **American Chemical Society (over 50 years)**
- **The American Institute of Chemical Engineers (Senior Member)**
- **Society of Plastics Engineers**
- **American Association of Textile Chemists and Colorists (AATCC)**
- **Human Factors and Ergonomics Society**
- **American Society of Mechanical Engineers (9073529)**
- **International Code Council**
- **American Society for Testing and Materials: ASTM (1964- to present)**

C-8 Refractories
C-14 Glass & Glass Products
C-01 Cement
D-1 Paint, Varnish, Lacquer & Related Products
D-9 Electrical Insulating Materials
D-12 Soaps & Other Detergents
D-13 Textiles
D-13.52 Flammability
D-14 Adhesives
D-19 Water
D-20 Plastics
D-21 Polishes
D-26 Halogenated Organic Solvents
D-30 High Modulus Fibers and their Composites
E-5 Fire Tests of Materials and Construction
E-7 Non-destructive Testing
E-15 Analysis & Testing of Industrial Chemicals
E-17 Skid Resistance
E-20 Temperature Measurement, Chemicals
E-27 Hazard Potential of Chemicals
E-30 Forensic Sciences
E-34 Occupational Health & Safety Aspects of Materials, Physical & Biological Agents
E-28 Mechanical Testing
F-8 Sports Equipment & Facilities
F-9 Tires
F-13 Safety & Traction of Footwear
F-15 Consumer Product Safety
F-23 Protective Clothing
F-27 Snow Skiing
F-08 on Sports Equipment and Facilities
F08-Main Committee
F08-10 Bicycles

F08-11 In-Line Skating
F08-12 Wrestling and Gymnastics
F08-13 Fencing Equipment
F08-15 Ice Hockey
F08-16 Archery Products
F08-17 Trampolines and Related Equipment
F08-18 Golf Clubs and Shafts
F08-19 Bicycle Accessories
F08-21 Climbing and Mountaineering
F08-22 Camping Equipment
F08-23 Tennis Courts and Running Tracks
F08-24 Paintball and Equipment
F08-25 Residential Basketball Equipment
F08-26 Baseball and Softball
F08-30 Fitness Products
F08-51 Medical Aspects and Biomechanics
F08-52 Playing Surfaces and Facilities
F08-52.1 Task Group Playground Surfacing
F08-53 Headgear and Helmets
F08-54 Athletic Footwear
F08-55 Body Padding
F08-56 Facilities-Baseball and Softball
F08-57 Eye Safety for Sports
F08-61 Ice Hockey Rinks
F08-63 Playground Surfacing Systems
F08-64 Natural Playing Surfaces
F08-65 Artificial Turf Systems
F2374- Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices
F24 on Amusement Rides and Devices
F24-10 Test Methods
F24-20 Specifications and Terminology
F24-24 Design and Manufacture
F24-30 Maintenance and Inspection
F24-40 Operations
F24-60 Special Rides & Attractions
F15- Consumer Products
F15- Aquatic Play Equipment
F15-29 Public Playground Equipment
F15-36 Soft Contained Play Equipment
F15-44 Play Equipment for Children Under Two

EXPERIENCE IN THE AREAS OF FIRES AND EXPLOSIONS

1. **Kaprun fire disaster case in Austria**
2. **Coal barbeque starter**
3. **Cigarette lighters**
4. **Paint thinners**
5. **Flammable sprays**
6. **Hair sprays**
7. **Hair treatment**
8. **Flammable fabrics**
9. **Automobile battery explosions**
10. **Gasoline fires and explosions**
11. **Dust explosions**
12. **Spontaneous combustion cases**
13. **Gas tank explosions**
14. **Propane tank- truck supply fires**
15. **Vapor explosions from varnishes, paints, floor finishers**
16. **Total release sprays**
17. **55-gallon drums/cutting them in ½ explosions filled with explosive vapor**
18. **Exploding automobile tires with temporary isopropane/butane**
19. **Aerosols - flash back**
20. **Paints**
21. **Dept. of Agriculture Bureau of Mines**
22. **Spontaneous combustion**
23. **Exploding automobile batteries**
24. **iPhones, cell phones leaking, catching on fire and explosions**
25. **Fireworks**
26. **Fireworks manufacturing facility**
27. **Gasoline tanks explosions**
28. **Gasoline containers**
29. **Propane tank explosions (pool heater and household use)**
30. **Chemical tanker explosions**
31. **Power plant explosions**
32. **Ship explosions**
33. **House explosion due to natural gas leaking from supply pipes from street to basement**
34. **Static electricity discharge- fires and explosions**
35. **High voltage discharge**
36. **Household product fires**
37. **Natural gas leaks- fires and explosions**
38. **Trailer home fires and explosions**
39. **Deflagration of plastic containers containing flammable liquids**
40. **Mobile phone and iPad lithium battery explosions**

PATENTS

1. **High temperature carbonaceous and siliceous materials in aerospace fields assigned to corporations; dental and medical fields-assigned to corporations, industrial formulations for air and water pollution fields-assigned to corporations; polymers and novel adhesives-assigned to corporations; formulations for cleaning - industrial and consumer applications-assigned to corporations; glass and coating formulations-assigned to corporations.**
2. **Head Gear in Sports – C. J. Abraham, U.S. Patent No. 4,342,122, August 3, 1982. (Licensed to Riddell - BIOLITE face masks, a new generation of protective equipment).**
3. **Flexible Face Mask Improvement – C. J. Abraham, U.S. Patent No. 4,631,758, dated December 30, 1986.**
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- **Peer reviewer of manuscripts for the American Society for Testing & Materials (ASTM) 1991-Present**
- **Peer reviewer of manuscripts for the Journal of Forensic Examiners, 1994-Present**
- **Peer reviewer of manuscripts for Inter Science Publishers: Int. J. of Entrepreneurial Venturing (IJEV)**
- **Numerous papers written and/or presented during 1961-1965 under confidential and/or secret clearance in areas of ablation, insulation, material evaluation, fiber analysis in hyper-thermal environments.**

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122. Engineering Designs & The Mechanical Engineer: Responsibilities of the Engineer in the Design of Products for Consumer and Industrial Applications, C.J. Abraham, Manhattan College Department of Mechanical Engineering, October 17, 2017

123. Industrial Accidents, Types and Causes Integrating Mechanical Engineering and The Law, C.J. Abraham, Columbia University, Department of Mechanical Engineering, October 19, 2017

124. **Engineering Designs & The Mechanical Engineer: Responsibilities of the Engineer in the Design of Products for Consumer and Industrial Applications, Columbia University, Department of Mechanical Engineering, September 28, 2017**
125. **The Most Common Indoor Volleyball Injuries and the Non-delegable Responsibilities of Coaches, Schools and Leagues with Reference to the Safety and Welfare of Players, C. J. Abraham, 2017 American Volleyball Coaches Association, Kansas City, Kansas, December 16, 2017**
126. **Engineering Designs & The Mechanical Engineer (Part I): Responsibilities of the Engineer Involved in the Design of Products for Consumer and Industrial Applications, C. J. Abraham, Columbia University, Department of Mechanical October 11,2018**
127. **Engineering Responsibilities & The Mechanical Engineer (Part II): Responsibilities of the Engineer Involved in the Design of Products for Consumer and Industrial Applications, C. J. Abraham, Columbia University, Department of Mechanical Engineering, October 23, 2018**
128. **The Kaprun Ski Train-A Disaster Waiting to Happen, C.J. Abraham, National Academy of Forensic Engineers (NAFE), Orlando Florida, January 5, 2019**
129. **Sub-concussive and Concussive Brain Injuries in Soccer, C.J. Abraham, Dublin Soccer League Coaches, Dublin California, July 22, 2019**
130. **Product Designs, The Mechanical Engineer & The Law, by C. J. Abraham, Columbia University, Department of Mechanical Engineering – October 15, 2019**
131. **Risk Analysis of Products, the Law and the Mechanical Engineer, by C. J. Abraham, Columbia University, Department of Mechanical Engineering – October 29, 2019**
132. **WDHD Channel 7News Boston- Collapse of Government Parking Garage in which a crane operator and the crane fell 6 stories. Interview-March 27, 2022.**
133. **NBC Channel 10 Providence- Collapse of Government Parking Garage in which a crane operator and the crane fell 6 stories. Interview-March 28, 2022.**
134. **NBC Channel 10 Boston- Collapse of Government Parking Garage in which a crane operator and the crane fell 6 stories. Interview-March 28, 2022.**
135. **A Forensic Engineering Approach In The Reconstruction Of A Head-On Collision Between Two Snowmobiles, National Meeting of the National Association of Forensic Engineers: Toronto, Canada, July 22, 2022**

Dr. C.J. Abraham
PhD, JD, PE, DPE, CPC, FRSC, DEE, IH
FTI, BCFE, DCEE, CChE, CChem

Dr. Abraham is a licensed Professional Engineer (P.E.), and a Senior Member and Diplomat of the National Academy of Forensic Engineers (DFE). He has more than five decades of national and international experience in forensic engineering, safety engineering, human-factors analysis, and accident reconstruction, including the evaluation of injury mechanisms arising from motor-vehicle collisions, falls, recreational incidents, occupational accidents, and other high-energy events. His professional practice focuses on identifying hazardous conditions, evaluating human performance limitations, reconstructing accident sequences, and determining whether injuries were foreseeable and preventable under accepted engineering, safety, and emergency-response principles.

A central and long-standing focus of his professional work is the brain—specifically, the mechanisms of head and brain injury, the neurocognitive consequences of trauma, and the scientific evaluation of how forces, motion, acceleration/deceleration, and physiological stressors affect brain function. Over the course of his career, he has evaluated hundreds of cases involving concussive and sub-concussive brain injuries, hypoxic brain injury, and secondary neurological injury arising not only from the initial traumatic event, but also from delayed medical care, improper post-impact evaluation, and failure to recognize evolving neurological compromise. My analyses routinely address how post-incident conduct and timing of medical intervention can materially exacerbate brain injury beyond what would have occurred from the primary impact alone. He is the Technical Director of Scientific Advisory Services, Ltd., where my work includes accident reconstruction, human-factors analysis, evaluation of safety policies and procedures, supervision and operational assessments, and causation analysis in complex personal-injury and wrongful-death matters. His accident-reconstruction work involves analysis of collision dynamics, perception-reaction issues, human performance limitations (including fatigue and circadian effects), environmental and roadway conditions, and the interaction between human behavior and system-level safeguards.

From 1970 through 1998, I served as the Founder and Technical Director of Inter-City Testing & Consulting Corporation, where I supervised more than one hundred Ph.D.-level scientists across multiple engineering and scientific disciplines. Through that organization, I evaluated a wide range of serious injury incidents, including motor-vehicle collisions and impact-related trauma, and developed forensic methodologies for linking physical evidence, human response, and injury outcomes.

In addition, he is the Founder and Technical Director of ForceField, a company devoted to the design, testing, and development of protective systems intended to reduce and dissipate forces transmitted to the head and brain. He is the inventor of multiple U.S. and international patents relating to impact-energy absorption and dissipation, including patented technologies used in protective headgear, facemasks, headbands, and related devices. These inventions were specifically developed to mitigate concussive and sub-concussive brain injury, and their development required extensive biomechanical testing, materials analysis, and evaluation of how impact forces interact with the head and brain. My patent work is directly relevant to understanding injury thresholds, force transmission, and mechanisms of brain injury.

He has been an active member of ASTM International since 1964 and has participated extensively in the development of safety standards and consensus engineering principles applicable to injury prevention, human performance, and protective systems. He has also served in advisory and leadership roles with national and international standards organizations, including the International Standards Organization (ISO), addressing safety and injury-prevention issues involving human exposure to hazardous conditions. A significant component of his professional teaching experience includes approximately fifteen years of invited seminars at Columbia University's School of Engineering, Department of Mechanical Engineering, where I lectured on the integration of engineering principles with legal responsibilities in accident prevention and forensic analysis. These seminars addressed hazard recognition, accident-reconstruction methodology, human-factors limitations (including attention, perception-reaction time, fatigue, and foreseeable misuse), and the engineering analysis of injury causation, with particular emphasis on head and brain injury mechanisms and how engineering failures and response delays can exacerbate neurological harm.

He has authored and presented more than one hundred scientific publications and technical presentations and has lectured nationally and internationally on forensic engineering, safety, human factors, accident

reconstruction, and brain-injury prevention and mitigation. I have also consulted for governmental and regulatory agencies, including NIOSH, OSHA, and NHTSA, as well as municipalities and public agencies, on matters involving human performance, safety systems, and injury causation.

Over the last 50 years, C. J. Abraham has created warnings and instructions for many products and protocols applied and used worldwide. He has consulted to major news channels, NHTSA, OSHA, NIOSH, State of California (CaITrans), Microsoft, New York Transit, Queensborough Bridge Authority, Department of Agriculture, the Federal Government, office of the United States Attorney, State Attorney General's Offices, and municipalities throughout the United States, Canada, and Europe in a variety of technical areas.

Dr. Abraham is also the author of over 120 publications and presentations. His current interests are in the areas of head and brain protection in sports and recreation and personal injury accidents and litigations. In addition, he is also involved in the reconstruction of all types of sports injuries in a large variety of recreational and sports activities, amusement parks, sports facilities, as well as accidents involving a variety of products and vehicles. His background may be found at www.scientificadvisory.com. He has also invented and commercialized many products.

In the past, Dr. Abraham was a United States representative to the International Standards Organization (ISO), a member of the Executive Board of the Hockey Equipment Certification Council (HECC), a member of the Safety and Protective Equipment of USA Hockey. He has also been an active member of the American Society of Testing and Materials (ASTM) from 1964 to the present time participating in the creation of safety standards for all types of recreational activities, sports, and a variety of products.

He is also a Diplomat in Sports and Recreation. As a result of Dr. Abraham's involvement in personal injury and litigation cases, many products, including recreational and sports activities, have been made safer.

In 2020 Dr. Abraham was awarded the Distinguished Scientist Award by the Engineering, Science and Medicine Organization in India. He is also listed in Who's Who in America in the 2023rd edition. Dr. Abraham was awarded first prize by the Textile Institute in Manchester, England for the best designed textile product in 2011. Dr. Abraham has been a Fellow in the textile institute for over 40 years. In 2021, Dr. Abraham was nominated by the Royal Institute of Chemistry in London, England, as one of the top 3 products that were created all though chemical applications. Dr. Abraham has been a Fellow in the Royal Institute of Chemistry for over 40 years.

Most recently, Dr. Abraham created the patented Universal GameFace which has created a new standard of care and technology for facemasks in softball and baseball. The announcement was made in conjunction with his partnership with Markwort Sporting Goods. Hobbies: Tennis, golf, bridge, pickleball

Hobbies: Pickleball, bowling, bridge, tennis, cooking, and horticulture

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