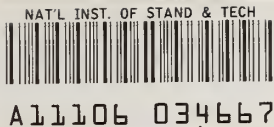


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U.S. DEPARTMENT OF COMMERCE
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NBSIR 85-3153

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U.S. DEPARTMENT OF COMMERCE, Malcolm Baldrige, *Secretary*
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1979	NBSIR 80-2114	PB80-103335
1980	NBSIR 81-2272	PB81-203317
1981	NBSIR 82-2499	PB82-220104
1982	NBSIR 83-2706	PB83-238915
1983	NBSIR 84-2871	PB84-217066

In a departure from our usual practice of citing only publications prepared by the Center for Fire Research (CFR) staff, by other National Bureau of Standards (NBS) personnel for CFR, or by external laboratories under contract or grant from the CFR, we are pleased to include the papers presented at the Howard Emmons' Conference, "Fire Science for Fire Safety". The Center for Fire Research devoted its 1983 Annual Conference to invited papers on subject areas that have been significantly influenced by Professor Emmons and his students. The Conference was held at the National Bureau of Standards in Gaithersburg, MD, August 23-25, 1983. Selected papers have been published in a special issue of Combustion Science and Technology, Vol. 39-40, 1984 and are cited herein.

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- Alvares, N. J., Foote, K. L. and Pagni, P. J. Forced Ventilated Enclosure Fires. *Combustion Science and Technology*; 1984; 39(1-6): 55-81.
- Atreya, A. Fire Growth on Horizontal Surfaces of Wood. *Combustion Science and Technology*; 1984; 39(1-6): 163-194.
- Babrauskas, V. Bench-Scale Methods for Prediction of Full-Scale Fire Behavior of Furnishings and Wall Linings. Society of Fire Protection Engineers. Boston, MA; SFPE TR 84-10.
- Babrauskas, V. Development of the Cone Calorimeter--A Bench-Scale Heat Release Rate Apparatus Based on Oxygen Consumption. *Fire and Materials*; 1984 June; 8(2): 81-95.
- Babrauskas, V. Upholstered Furniture Room Fires--Measurements, Comparison with Furniture Calorimeter Data and Flashover Predictions. *Journal of Fire Sciences*; 1984 January/February; 2(1): 5-19.
- Babrauskas, V. Upholstered Furniture Heat Release Rate Estimates from Bench-Scale Measurements, In: *International Conference on Fire Safety, 9th. Proceedings*; 1984 January 16-20; San Francisco International Airport, Millbrae, CA; 1984; 9.
- Baum, H. R. and Rockett, J. R. Analysis of the Forced Ventilation in Containership Holds. *Journal of Fluid Mechanics*; 1984; 142: 309-342.
- Baum, H. R. and Rehm, R. G. Calculations of Three Dimensional Buoyant Plumes in Enclosures. *Combustion Science and Technology*; 1984; 40(1-4): 55-77.
- Baum, H. R. and Rehm, R. G. Finite Difference Solutions for Internal Waves in Enclosures. *SIAM Journal of Scientific and Statistical Computing*; 1984 December; 5(4): 958-977.
- Beier, R. A., Pagni, P. J. and Okoh, C. I. Soot and Radiation in Combusting Boundary Layers. *Combustion Science and Technology*; 1984; 39(1-6): 235-262.
- Bell, J. R. 184 Evacuated in Dormitory Fire at College of William and Mary. *Fire Journal*; 1984 January; 78(1): 50-55, 58, 60.
- Best, R. Georgia Shopping Center Destroyed by Fire--\$11 Million Loss. *Fire Journal*; 1984 May; 78(3): 43-46, 124.
- Beyler, C. L. Ignition and Burning of a Layer of Incomplete Combustion Products. *Combustion Science and Technology*; 1984; 39(1-6): 287-303.
- Bright, D. S., Fletcher, R. A. and Baum, H. R. Air Flows Induced by Sparse Clouds of Droplets. *Aerosol Science and Technology*; 1984; 3: 187-193.

- Budnick, E. K. Estimating Effectiveness of State-of-the-Art Detectors and Automatic Sprinklers on Life Safety in Residential Occupancies. *Fire Technology*; 1984 August; 20(3): 5-22.
- Carrier, G., Fendell, F. and Feldman, P. Big Fires. *Combustion Science and Technology*; 1984; 39(1-6): 135-162.
- Cetegen, B. M., Zukoski, E. E. and Kubota, T. Entrainment in the Near and Far Field of Fire Plumes. *Combustion Science and Technology*; 1984; 39(1-6): 305-331.
- Chapman, R. E. FSESCM Model: A Planning Tool for Health Care Facilities. In: Society of Fire Protection Engineers. *Computer Applications in Fire Protection: Analysis, Modeling and Design*; 1984 March 19-21; Leesburg, VA.
- Cooper, L. Y. and Stroup, D. W. ASET - A Computer Program for Calculating Available Safe Egress Time. In: Society for Fire Protection Engineers. *Computer Applications in Fire Protection: Analysis, Modeling and Design*; 1984 March 19-21; Leesburg, VA.
- Cooper, L. Y. On the Significance of a Wall Effect in Enclosures with Growing Fires. *Combustion Science and Technology*; 1984; 40(1-4): 19-39.
- Cooper, L. Y. Smoke Movement in Rooms of Fire Involvement and Adjacent Spaces. *Fire Safety Journal*; 1984; 7(1): 33-46.
- Cooper, L. Y. Thermal Response of Unconfined Ceilings Above Growing Fires and the Importance of Convective Heat Transfer. *American Society of Mechanical Engineers*; 1984; 84-HT-105.
- Delichatsios, M. A. Flame Heights in Turbulent Wall Fires with Significant Flame Radiation. *Combustion Science and Technology*; 1984; 39(1-6): 195-214.
- Dobbins, R. A. and Mulholland, G. W. Interpretation of Optical Measurements of Flame Generated Particles. *Combustion Science and Technology*; 1984; 40(5-6): 175-191.
- Emmons, H. W. Future History of Fire Science. *Combustion Science and Technology*; 1984; 40(1-4): 167-174.
- Evans, D. D. Calculating Sprinkler Actuation Time in Compartments. In: Society of Fire Protection Engineers. *Symposium on Computer Applications in Fire Protection: Analysis, Modeling and Design*; 1984 March 19-21; Leesburg, VA.
- Evans, D. D. Calculating Fire Plume Characteristics in a Two-Layer Environment. *Fire Technology*; 1984 August; 20(3): 39-63.
- Evans, D. D. Control of Blowout Fires with Water Sprays. In: *Technology Assessment and Research Program for Offshore Minerals Operation*; 1984 March 28-29; Reston, VA.

- Evans, D. D. Thermal Actuation of Extinguishing Systems. *Combustion Science and Technology*; 1984; 40(1-4): 79-92.
- Fernandez-Pello, A. C. Flame Spread Modeling. *Combustion Science and Technology*; 1984; 39(1-6): 119-134.
- Handa, T., Morita, M., Rockett, J. A., Sugawa, O. and Hayashi, K. Some Examples of Application of Harvard V Fire Computer Code to Fire Investigation. *Fire Science and Technology*; 1983; 3(1): 63-72.
- Hasemi, Y. and Tokunaga, T. Some Experimental Aspects of Turbulent Diffusion Flames and Buoyant Plumes from Fire Sources Against a Wall and in a Corner of Walls. *Combustion Science and Technology*; 1984; 40(1-4): 1-17.
- Hirate, T., Kashiwagi, T. and Brown, J. E. Thermal Oxidation of Poly(Methyl Methacrylate). In: American Chemical Society. National Meeting; April 8-13, 1984; St. Louis, MO.
- Hottel, H. C. Stimulation of Fire Research in the United States after 1940 (A Historical Account). *Combustion Science and Technology*; 1984; 39(1-6): 1-10.
- Huggett, C. Combustion Conditions and Exposure Conditions for Combustion Product Toxicity Testing. *Journal of Fire Sciences*; 1984 September/October; 2(5): 328-347.
- Huggett, C. Flash Fire Hazards in Fire Experiments. *Journal of Fire Sciences*; 1983 September/October; 1(5): 396-398.
- Huggett, C. Heating Rates in Fire Experiments. *Journal of Fire Sciences*; 1984 July/August; 2: 257-259.
- Jeng, S-M. and Faeth, G. M. Predictions of Mean Scalar Properties in Turbulent Propane Diffusion Flames. *Journal of Heat Transfer*; 1984 November; 106: 891-893.
- Jeng, S-M. and Faeth, G. M. Radiative Heat Fluxes Near Turbulent Buoyant Methane Diffusion Flames. *Journal of Heat Transfer/Transactions of the ASME*; 1984 November; 106: 886-888.
- Jeng, S-M. and Faeth, G. M. Species Concentrations and Turbulence Properties in Buoyant Methane Diffusion Flames. *Journal of Heat Transfer*; 1984 November; 106: 721-727.
- Jeng, S-M., Lai, M. C. and Faeth, G. M. Nonluminous Radiation in Turbulent Buoyant Axisymmetric Flames. *Combustion Science and Technology*; 1984; 40(1-4): 41-53.
- Jones, W. W. Model for the Transport of Fire, Smoke and Toxic Gases (FAST). In: Society of Fire Protection Engineers. Computer Applications in Fire Protection: Analysis, Modeling and Design; 1984 March 19-21; Leesburg, VA.

- Jones, W. W. and Quintiere, J. G. Predication of Corridor Smoke Filling by Zone Models. Combustion Science and Technology; 1984; 35(5-7): 239-253.
- Kahn, M. J. Human Awakening and Subsequent Identification of Fire-Related Cues. Fire Technology; 1984 February; 20(1): 20-26.
- Kashwagi, T. and Brown, J. Thermal Oxidation of Poly(methyl methacrylate). American Chemical Society, Polymer Preprint; 1984; 25(1).
- Klem, T. J. New York Dwelling Fire Kills Family of Seven. Fire Journal; 1984 November; 78(6): 42-45, 51.
- Klem, T. J. Six Die in Wisconsin Group Home Fire. Fire Journal; 1984 January; 78(1): 26-30, 60.
- Klote, J. H. Overview: Smoke Control Manual. ASHRAE Journal; 1983 April; 25(4): 31-34.
- Klote, J. H. Smoke Control for Elevators. ASHRAE Journal; 1984 April; 26(4): 23-33.
- Klote, J. H. ASHRAE Design Manual for Smoke Control. Fire Safety Journal; 1984; 7(1): 93-98.
- Klote, J. H. Computer Modeling for Smoke Control Design. In: Society of Fire Protection Engineers. Computer Applications in Fire Protection: Analysis, Modeling and Design; 1984 March 19-21; Leesburg, VA.
- Klote, J. H. and Bodart, X. Smoke Control by Pressurised Stairwell. Journal of CIB; 1984 July/August: 216-222.
- Krasny J. F. and Babrauskas, V. Burning Behavior of Upholstered Furniture Mockups. Journal of Fire Sciences; 1984 May/June; 2: 205-235.
- Levin, B. C. National Bureau of Standards Toxicity Test Method. In: Fire Retardant Chemicals Association. Fire Safety Aspects of Products of Combustion/Hazard Assessment and Fire Testing; 1983 March 20-23; Baltimore, MD; 1984 October.
- Levin, B. M. Human Behavior in Fire: What We Know Now. In: Society of Fire Protection Engineers. SFPE Fire Protection Engineering Seminars, 1984; 1984 May 21-24; New Orleans, LA: SFPE TR 84-3.
- Levine, R. S. Proceedings: Ad Hoc Mathematical Fire Modeling Working Group. Fire Technology; 1984 May; 20(2): 47-63.
- Mao, C.-P., Fernandez-Pello, A. C. and Humphrey, J. A. C. Investigation of Steady Wall-Ceiling and Partial Enclosure Fires. Journal of Heat Transfer; 1984 February; 106: 221-228.

- Mao, C.P., Kodama, H. and Fernandez-Pello, A. C. Convective Structure of a Diffusion Flame over a Flat Combustible Surface. *Combustion and Flame*; 1984 August; 57(2): 209-236.
- Markstein, G. H. Measurements on Gaseous-Fuel Pool Fires with a Fiber-Optic Absorption Probe. *Combustion Science and Technology*; 1984; 39(1-6): 215-233.
- McCaffrey, B. J. Fire Plume Dynamics--A Review. In: Conference on Large-Scale Fire Phenomenology; 1984 September 10-13; National Bureau of Standards, Gaithersburg, MD.
- McCaffrey, B. J. Jet Diffusion Flame Suppression Using Water Sprays - An Interim Report. *Combustion Science and Technology*; 1984; 40(1-4): 107-136.
- Miller, J. H., Mallard, W. G. and Smyth, K. C. Intermolecular Potential Calculations for Polycyclic Aromatic Hydrocarbons. *Journal of Physical Chemistry*; 1984 October 11; 88(21): 4963-4970.
- Mitler, H. E. Harvard Fire Model. In: Society for Fire Protection Engineers. Computer Applications in Fire Protection: Analysis, Modeling and Design; 1984 March 19-21; Leesburg, VA.
- Mitler, H. E. Zone Modeling of Forced Ventilation Fires. *Combustion Science and Technology*; 1984; 39(1-6): 83-106.
- Mountain, R. D. and Mulholland, G. W. Stochastic Dynamics Simulation of Particle Aggregation. In: International Topical Conference on Kinetics of Aggregation and Galation. Proceedings; 1984 April 2-4; Athens, GA: Edited by F. Family and D. P. Laudau; 1984: 83-86.
- Parker, W. J. Calculations of the Heat Release Rate by Oxygen Consumption for Various Applications. *Journal of Fire Sciences*; 1984 September/October; 2(5): 380-395.
- Paulsen, R. L. Human Behavior and Fires: An Introduction. *Fire Technology*; 1984 May; 20(2): 15-27.
- Pfenning, D. and Evans, D. D. Suppression of Gas Well Blowout Fires Using Water Sprays; Large and Small Scale Studies. American Petroleum Institute, Committee on Fire Safety Protection, Production Session; 1984 September 11-13; San Antonio, TX.
- Pitts, W. and Kashiwagi, T. Application of Laser-Induced Rayleigh Light Scattering to the Study of Turbulent Mixing. *Journal of Fluid Mechanics*; 1984; 141: 391-429.
- Quintiere, J. Perspective on Compartment Fire Growth. *Combustion Science and Technology*; 1984; 39(1-6): 11-54.
- Quintiere, J. G., Steckler, K. and Corley, D. Assessment of Fire Induced Flows in Compartments. *Fire Science and Technology*; 1984; 4 (1): 1-14.

- Rockett, J. A. Data for Room Fire Models. Combustion Science and Technology; 1984; 40(1-4): 137-151.
- Rockett, J. A. Two Approaches to the Analysis of Actual Fires. In: Society of Fire Protection Engineers. Computer Applications in Fire Protection: Analysis, Modeling and Design; 1984 March 19-21; Leesburg, VA.
- Rockett, J. A., Morita, M. and Handa, T. Using the Harvard Fire Simulation. Fire Science and Technology; 1983; 3(1): 57-62.
- Sekiguchi, Y. and Shafizadeh, F. Effect of Inorganic Additives on the Formation, Composition and Combustion of Cellulosic Char. Journal of Polymer Science; 1984; 29: 1267-1286.
- Sibulkin, M. and Gale, T. Effects of External Radiation on Solid-Fuel Diffusion Flames. Journal of Fire Sciences; 1983 January/February; 2(1): 70-81.
- Sibulkin, M. and Malary, S. F. Investigation of Completeness of Combustion in a Wall Fire. Combustion Science and Technology; 1984; 40(1-4): 93-106.
- Smyth, K. C., Mallard, W. G. and Miller, J. H. Multiphoton Ionization of Molecules in Flames. SPIE, Applications of Laser Chemistry and Diagnostics; 1984; 482.
- Snell, J. E. NBS Center for Fire Research Programs and Their Implications to NFPA. Fire Journal; 1984 July; 78(4): 64-66, 68-70, 72.
- Snell, J. E. Preliminary Report of the NFPA Advisory Committee on the Toxicity of the Products of Combustion. Fire Journal; 1984 September; 78(5): 69-71, 73-76.
- Takeda, H. Experimental Approach of the Early Stages in Compartment Fires. In: American Society of Mechanical Engineers, Heat Transfer Division. Fire Dynamics and Heat Transfer; 1983 July 24-28; Seattle, WA. Edited by J. G. Quintiere, A. L. Alpert and R. A. Altenkirch.
- Thomas, P. H. Recent Developments and Trends in Fire Testing for Fire Growth in Buildings. Combustion Science and Technology; 1984; 40(1-4): 153-165.
- Timoney, T. Explosion at New York Fireworks Plant Kills Two. Fire Journal; 1984 July; 78(4): 13-16, 18.
- Timoney, T. Howard Johnson's Hotel Fire Orlando, Florida. Fire Journal; 1984; 78(5): 37-39, 42-45, 88.
- Tsao, R. and Voorhees, K. J. Analysis of Smoke Aerosols from Nonflaming Combustion by Pyrolysis/Mass Spectrometry with Pattern Recognition. Analytical Chemistry; 1984; 56(3): 368-373.

- Tsao, R. and Voorhees, K. J. Fingerprinting of Gasoline in Combustion Aerosols by Pyrolysis-Mass Spectrometry with Factor Analysis. *Analytical Chemistry*; 1984; 56: 1339-1343.
- U. S. Department of Justice (National Institute of Justice, Technology Assessment Program). *NIJ Portable Organic Vapor Detectors*; 1984 June; NIJ Standard-0606.00.
- Vandsburger, U., Kennedy, I. and Glassman, I. Sooting Counterflow Diffusion Flames with Varying Oxygen Index. *Combustion Science and Technology*; 1984; 39(1-6): 263-285.
- Walton, W. D. User's View of Computer Hardware and Software. In: *Society of Fire Protection Engineers. Computer Applications in Fire Protection: Analysis, Modeling and Design*; 1984 March 19-21; Leesburg, VA.
- Wichman, I. S. Model Describing the Influences of Finite-Rate Gas-Phase Chemistry on Rates of Flame Spread Over Solid Combustibles. *Combustion Science and Technology*; 1984; 40(5-6): 233-255.
- Williamson, R. B. Observations of Large Scale Turbulence in Corner-Wall Experiments. *Combustion Science and Technology*; 1984; 41(1-2): 83-99.
- Wong, K. L., Stock, M. F., Malek, D. E. and Alarie, Y. Evaluation of the Plumonary Effects of Wood Smoke in Guinea Pigs by Repeated CO₂ Challenges. *Toxicology and Applied Pharmacology*; 1984; 75: 69-80.
- Yang, K. T., Lloyd, J. R., Kanury, A. M. and Satoh, K. Modeling of Turbulent Buoyant Flows in Aircraft Cabins. *Combustion Science and Technology*; 1984; 39(1-6): 107-118.

II. National Bureau of Standards Interagency Reports

- Braun, E. and Allen, P. J. NBSIR 84-2887. Flame Spread on Combustible Solar Collector Glazing Materials; 1984 July; 62 pages. Available: NTIS.
Note: PB84-229814.
- Budnick, E. K. NBSIR 84-2819. Estimating Effectiveness of State-of-the-Art Detectors and Automatic Sprinklers on Life Safety in Residential Occupancies; 1984 January; 81 pages. Available from: NTIS.
Note: PB84-153980.
- Cooper, L. Y. NBSIR 84-2876. Need and Availability of Test Methods for Measuring the Smoke Leakage Characteristics of Door Assemblies; 1984 May; 34 pages. Available from: NTIS.
Note: PB84-216480.
- Cooper, L. Y. NBSIR 84-2912. Thermal Response of Aircraft Cabin Ceiling Materials During a Post-Crash, External Fuel-Spill, Fire Scenario; 1984 October; 52 pages. Available from: NTIS.
Note: PB85-145647.
- Cooper, L. Y. NBSIR 84-2856. Thermal Response of Unconfined Ceiling Above Growing Fires and the Importance of Convective Heat Transfer; 1984 April; 36 pages. Available from: NTIS.
Note: PB84-216548.
- Hall, Jr., J. R. and Stiefel, S. W. NBSIR 84-2817. Decision Analysis Model for Passenger-Aircraft Fire Safety with Application to Fire-Blocking of Seats; 1984 March; 103 pages. Available from: NTIS.
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- Jaluria, Y. NBSIR 84-2841. Buoyancy-Induced Wall Flow due to Fire in a Room; 1984 May; 96 pages. Available from: NTIS.
Note: PB84-216472.
- Jason, N. H. NBSIR 84-2871. Fire Research Publications, 1983; 1984 April; 19 pages. Available from: NTIS.
Note: PB84-217066.
- Jones, W. W. NBSIR 84-2934. Model for the Transport of Fire, Smoke and Toxic Gases (FAST); 1984 May; (FAST computer tape, including a sample data file, may be ordered from NTIS at a separate cost of \$400.00.) 65 pages. Available from: NTIS.
Note: PB85-109130.
- Klote, J. H. NBSIR 84-2948. Field Tests of the Smoke Control System at the San Diego VA Hospital; 1984 November; 18 pages. Available from: NTIS.
Note: PB85-137727.

- Klote, J. H. NBSIR 84-2868. Field Tests of the Smoke Control System at the Bay Pines VA Hospital; 1984 May; 50 pages. Available from: NTIS.
Note: PB84-217041.
- Lawson, J. R. NBSIR 84-2917. Environmental Cycling of Cellulosic Thermal Insulation and Its Influence on Fire Performance; 1984 August; 46 pages. Available from: NTIS.
Note: PB85-108470.
- Loftus, J. J. and Peacock, R. D. NBSIR 84-2969. Evaluation of Thimble-Chimney Connector (Wall Pass-Through) Systems for Solid Fuel Burning Appliances; 1984 November; 66 pages. Available from: NTIS.
Note: PB85-158160.
- McCaffrey, B. J. NBSIR 84-2812. Jet Diffusion Flame Suppression Using Water Sprays. An Interim Report; 1984 January; 55 pages. Available from: NTIS.
Note: PB84-159052.
- Nelson, H. E. and Shibe, A. J. NBSIR 84-2976. Development of a Fire Evaluation System for Detention and Correctional Occupancies; 1984 December; 121 pages. Available from: NTIS.
Note: PB85-177913.
- Nelson, H. E., Shibe, A. J., Levin, B. M., Thorne, S. D. and Cooper, L. Y. NBSIR 84-2896. Fire Safety Evaluation System for National Park Service Overnight Accommodations; 1984 September; 101 pages. Available from: NTIS.
Note: PB85-105518.
- Nelson, H. E. NBSIR 84-2897. Jefferson National Memorial Historical Site Analysis of Impact of Fire Safety Features; 1985 March; 40 pages. Available from: NTIS.
Note: PB85-179727.
- Ohlemiller, T. J. NBSIR 84-2895. Modeling of Smoldering Combustion; 1984 June; 110 pages. Available from: NTIS.
Note: PB84-236389.
- Quintiere, J. G. and Harkleroad, M. NBSIR 84-2943. New Concepts for Measuring Flame Spread Properties; 1984 November; 154 pages. Available from: NTIS.
Note: PB85-133973.
- Rehm, R. G., Baum, H., Barnett, P. D. and Corley, D. M. NBSIR 84-2932. Difference Calculations of Buoyant Convection in an Enclosure. Part II: Verification of the Nonlinear Algorithm; 1984 September; 35 pages. Available from: NTIS.
Note: PB85-104065.

- Rockett, J. A. NBSIR 83-2805. Park Service Room Fire Test Simulations Using the Harvard Level 5.2 Computer Fire Model; 1984 June; 45 pages. Available from: NTIS. Note: PB84-217496.
- Shaub, W. M. NBSIR 84-2872. Containment of Dioxin Emissions from Refuse Fired Thermal Processing Units--Prospects and Technical Issues; 1984 May; 150 pages. Available from: NTIS. Note: PB84-217090.
- Walton, W. D. and Twilley, W. H. NBSIR 84-2960. Heat Release and Mass Loss Rate Measurements for Selected Materials; 1984 December; 61 pages. Available from: NTIS. Note: PB85-159945.

III. National Bureau of Standards Technical Notes

- Loftus, J. J. and Peacock, R. D. NBS TN 1205.
Clearances and Methods of Protection for Wall and Ceiling
Surfaces Exposed to Radiant Heating Appliances; 1984 December;
112 pages. Available from: GPO.
- Peacock, R. D. and Braun, E. NBS TN 1193. Fire
Tests of Amtrak Passenger Rail Vehicle Interiors; 1984 May; 115
pages. Available from: GPO.
- Ruegg, R. T. and Fuller, S.K. NBS TN 1203.
Benefit-Cost Model of Residential Fire Sprinkler System; 1984
November; 149 pages. Available from: GPO.

IV. Contract and Grant Reports

- Alvord, D. M. NBS-GCR-84-483. Fire
Emergency Evacuation Simulation for Multifamily Buildings; 1984
December; 130 pages. Available from: NTIS.
Note: PB85-178077.
- Atreya, A. NBS-GCR-83-449.
Pyrolysis, Ignition and Fire Spread on Horizontal Surfaces of
Wood; 1984 March; 439 pages. Available from: NTIS.
Note: PB84-219500.
- Delichatsios, M. A. NBS-GCR-84-473.
Modeling of Aircraft Cabin Fires; 1984 September; 114 pages.
Available from: NTIS.
Note: PB85-137685.
- DeSouza, B. P., Yang, K. T. and Lloyd, J. R. NBS-GCR-84-479.
Numerical Simulations of the Effect of Floor and Ceiling Venting
on Fire and Smoke Spread in Aircraft Cabins; 1984 December; 71
pages. Available from: NTIS.
Note: PB85-178333.
- Dieterberger, M. A. NBS-GCR-84-480.
Furniture Fire Model; 1984 November; 47 pages. Available from:
NTIS.
Note: PB85-137677.
- Fernandez-Pello, A. C. NBS-GCR-84-471. Fire
Propagation in Concurrent Flows. Final Progress Report--June 1,
1983 to May 31, 1984; 1984 August; 48 pages. Available from:
NTIS.
Note: PB85-101129.
- Francis, R. L. NBS-GCR-84-482.
Negative Exponential Solution to an Evacuation Problem; 1984
December; 19 pages. Available from: NTIS.
Note: PB85-166759.
- Jeng, S-M., Lai, M-C. and Faeth, G. M. NBS-GCR-84-458.
Investigation of Axisymmetric Buoyant Turbulent Diffusion Flames:
Flow Structure and Radiation Properties; 1984 January; 95 pages.
Available from: NTIS.
Note: PB84-155829.
- Keating, J. P. and Loftus, E. F. NBS-GCR-84-477. Post
Fire Interviews: Development and Field Validation of the
Behavioral Sequence Interview Technique; 1984 October; 91 pages.
Available from: NTIS.
Note: PB85-127512.
- Kisko, T. M. and Francis, R. L. NBS-GCR-84-457.
Network Models of Building Evacuation: Development of Software
System; 1984 May; 24 pages. Available from: NTIS.
Note: PB84-217520.

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U.S. DEPT. OF COMM. BIBLIOGRAPHIC DATA SHEET <i>(See instructions)</i>	1. PUBLICATION OR REPORT NO. NBSIR 85-3153	2. Performing Organ. Report No.	3. Publication Date May 1985															
4. TITLE AND SUBTITLE <p style="text-align: center;">Fire Research Publications, 1984</p>																		
5. AUTHOR(S) Nora H. Jason																		
6. PERFORMING ORGANIZATION <i>(If joint or other than NBS, see instructions)</i> NATIONAL BUREAU OF STANDARDS DEPARTMENT OF COMMERCE WASHINGTON, D.C. 20334 Gaithersburg, MD 20899		7. Contract/Grant No. 8. Type of Report & Period Covered <p style="text-align: center;">final</p>																
9. SPONSORING ORGANIZATION NAME AND COMPLETE ADDRESS <i>(Street, City, State, ZIP)</i>																		
10. SUPPLEMENTARY NOTES <input type="checkbox"/> Document describes a computer program; SF-185, FIPS Software Summary, is attached.																		
11. ABSTRACT <i>(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)</i> Fire Research Publications, 1984 is a supplement to previous editions; the last five editions are referenced below. Information about earlier editions is available upon request. <table style="width:100%; margin-top: 10px;"> <tr> <td style="width:20%;">1979</td> <td style="width:30%;">NBSIR 80-2114</td> <td style="width:30%;">PB80-103335</td> </tr> <tr> <td>1980</td> <td>NBSIR 81-2272</td> <td>PB81-203317</td> </tr> <tr> <td>1981</td> <td>NBSIR 82-2499</td> <td>PB82-220104</td> </tr> <tr> <td>1982</td> <td>NBSIR 83-2706</td> <td>PB83-238915</td> </tr> <tr> <td>1983</td> <td>NBSIR 84-2871</td> <td>PB84-217066</td> </tr> </table> <p style="margin-top: 10px;">In a departure from our usual practice of citing only publications prepared by the Center for Fire Research (CFR) staff, by other National Bureau of Standards (NBS) personnel for CFR, or by external laboratories under contract or grant from the CFR, we are pleased to include the papers presented at the Howard Emmons' Conference, Fire Science for Safety. The CFR devoted its 1983 Annual Conference to invited papers on subject areas that have been significantly influenced by Professor Emmons and his students. The Conference was held at NBS in Gaithersburg, MD, August 23-24, 1983. Selected papers have been published in a special issue of Combustion Science and Technology, Vol. 39-40, 1984 and are cited herein.</p>				1979	NBSIR 80-2114	PB80-103335	1980	NBSIR 81-2272	PB81-203317	1981	NBSIR 82-2499	PB82-220104	1982	NBSIR 83-2706	PB83-238915	1983	NBSIR 84-2871	PB84-217066
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1982	NBSIR 83-2706	PB83-238915																
1983	NBSIR 84-2871	PB84-217066																
12. KEY WORDS <i>(Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)</i> Bibliographies; combustion products; compartment fires; egress; fire models; fire research; fire suppression; fire tests; smoke; toxicity; upholstered furniture																		
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