

Scott E. Dillon, P.E., CFEI
Managing Engineer

Professional Profile

Mr. Scott E. Dillon is a Managing Engineer in Exponent's Thermal Sciences practice. Mr. Dillon applies his knowledge of fire protection engineering and fire science principles to the analysis and investigation of building fire and life safety systems, the causation of fires and explosions, the evaluation of product liability issues, and the prevention of accidents, with particular emphasis on fires and explosions. He routinely performs origin and cause investigations of fires and explosions, as well as analyses of life safety, fire protection and alarm systems to determine code compliance and mechanisms of failure. He specializes in performing investigations of fires and explosions involving residential, commercial, industrial, chemical, and agricultural facilities as well as vehicles. He has experience in the investigation of fires involving solid fuel and fuel-gas burning appliances and fireplaces. He has experience performing investigations of fires and explosions involving combustible dusts, combustible metals, and combustible metal dusts and performs hazard evaluations of facilities to assist in the prevention of accidents. He also has experience in the investigation and evaluation of the design, installation, inspection, and testing of fire and life safety systems, including automatic fire sprinkler systems, commercial kitchen fire protection equipment, automatic fire alarm and detection systems, and occupant egress systems. Mr. Dillon also specializes in: the evaluation of the fire performance of materials; investigating the fire safety performance of household appliances; full-scale fire reconstruction, flammability, and heat transfer testing; thermal test instrumentation; standard fire test methods; the development of custom fire test procedures, fire dynamics; fire and smoke modeling; and the ignition of liquid and solid fuels.

Mr. Dillon's research has focused on the prediction of material performance using bench-scale test results; ignition and flame spread of solid fuels; heat release rate measurements from a variety of fuels and compartment configurations; full-scale heat flux mapping of intermediate sized fire exposures; the development of material properties from small-scale test methods; and the modeling fire growth and material reaction to fire.

Mr. Dillon is knowledgeable in numerous NFPA, ASTM, ANSI, ISO, UL and other fire test methods. He is also a member of several ASTM and NFPA committees involved in the development and revision of several fire test methods and standards, including NFPA 211 for chimneys and fireplaces and NFPA 484 for combustible metal dusts. He has extensive experience in conducting standard fire test methods and interpreting the results of fire tests. He designs and conducts custom fire tests and experiments in support of fire investigations and product liability issues including the design of data acquisition methodologies and data analysis.

Prior to joining Exponent, Mr. Dillon was employed as a fire research engineer with the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) Fire Research Laboratory (FRL). He has performed numerous small- and large-scale fire tests and simulations to assess the ignition and

growth of fires. He also provided engineering analyses, technical assistance, and scene support to ATF Certified Fire Investigators and the ATF National Response Team in the areas of ignition and flame spread, fire modeling, fire performance of materials, fire growth, and fire dynamics. He specialized in the design and execution of standard and nonstandard fire tests in support of fire investigations and research projects, fire testing methods and large-scale heat release rate calorimetry. He has also implemented engineering calculation methods and computer fire models to interpret fire development and conducted engineering analysis of building fire protection and alarm systems.

Academic Credentials and Professional Honors

M.S., Fire Protection Engineering, University of Maryland, 1998
B.S., Fire Protection Engineering, University of Maryland, 1996

Licenses and Certifications

Licensed Professional Engineer, State of Illinois, #062060342
Certified Fire and Explosion Investigator (CFEI), #11710-6246
Hazardous Waste Operations and Emergency Response (HAZWOPER) training in accordance with OSHA 29 CFR 1910.120
Confined Space Entry

Presentations and Publications

Ogle RA, Dillon SE, Carpenter, AR. Fatal explosion caused by an intermittently used fuel gas piping system. American Institute of Chemical Engineers (AIChE) 7th Global Congress on Process Safety, Chicago, IL, March 13–16, 2011.

Ogle RA, Dillon SE, Carpenter, AR. Facility siting and hidden pathways for hazardous gas migration. Mary Kay O'Connor Process Safety Center, 2011 International Symposium, College Station, TX, October 25–27, 2011.

Morrison DR, Dillon SE, Hetrick TH. A review of the hypotheses of low-temperature self-ignition of wood. Proceedings, 2011 Fire and Materials Conference, San Francisco, CA, Interscience Communications Limited, London, January 2011.

Morrison DR, Dillon SE, Fecke MT. Lessons learned from a thermal runaway incident involving an organic peroxide intermediate during a power outage. Proceedings, 2010 Global Process Safety Congress, San Antonio, TX, March 21–24, 2010.

Morrison DR, Ogle RA, Dillon SE, Lucas RJ. Analysis of a two decade old arson investigation using scientific fire investigation methods: The People vs. Madison Hobley. Proceedings, 2009 Fire and Materials Conference, San Francisco, CA, Interscience Communications Limited, London, January 2009.

Dillon SE, Carpenter AR, Ogle RA. Comparative fire risk of motor vehicle fires: Gasoline vs. ethanol. AIChE, 42nd Annual Loss Prevention Symposium, New Orleans, LA, April 7–9, 2008.

Hammins A, Bundy M, Dillon SE. Characterization of candle flames. *Journal of Fire Protection Engineering* 2005; 15(4):265–286. Society of Fire Protection Engineers, Bethesda, MD, 2005.

Dillon SE, Hammins A. Ignition propensity and heat flux profiles of candle flames for fire investigation. *Proceedings, 2003 Fire and Materials Conference*, San Francisco, CA, Interscience Communications Limited, London, January 2003.

Janssens ML, Dillon SE, Allwein S. Characterizing the thermal environment of the cone calorimeter for analyzing ignition data of materials. *Proceedings, 9th Interflam Conference*, Edinburgh, Scotland, Interscience Communications Limited, London, pp. 125–135, September 17–19, 2001.

Dillon SE, Janssens ML, Garabedian AS. A comparison of building code classifications and results of intermediate-scale fire testing of stored plastic commodities. *Conference Proceedings of the Ninth Interflam Conference*, Edinburgh, Scotland, Interscience Communications Limited, London, pp. 593–604, September 17–19, 2001.

Janssens ML, Dillon SE, Allwein S. Burning characteristics of heptane and methanol pool fires. *Proceedings, Fire and Materials Conference*, San Francisco, CA, 2001, Interscience Communications Limited, London, January 2001.

Grenier AT, Janssens ML, Dillon SE. Predicting fire performance of interior finish materials in the ISO 9705 Room/Corner Test. *Proceedings, Fire and Materials Conference*, San Francisco, CA, Interscience Communications Limited, London, January 2001.

Dillon SE, Janssens ML, Hirschler MM. Using the cone calorimeter as a screening tool for the NFPA 265 and 286 room test procedures. *Proceedings, Fire and Materials Conference*, San Francisco, CA, Interscience Communications Limited, London, January 2001.

Janssens ML, Dillon SE. Balanced approach to the fire performance evaluation of interior finish materials. NISTIR 6588, S.L. Bryner (ed), November 2000, U.S./Japan Government Cooperative Program on Natural Resources (UJNR), Fire Research and Safety, 14th Joint Panel Meeting, Vol. 1, *Proceedings*, San Antonio, TX, March 1–7, 2000.

Beyler CL, Hunt SP, Lattimer BY, Iqbal N, Lautenberger C, Dembsey N, Barnett J, Janssens MJ, Dillon SE, Grenier A. Prediction of ISO 9705 room/corner test results. Volumes I and II, CG-D-22-99, United States Coast Guard, Washington, DC, November 1999.

Spearpoint MJ, Dillon SE. Flame spread model progress: Enhancements and user interface. NIST GCR 99-782, National Institute of Standards and Technology, Gaithersburg, MD, November 1999.

Dillon SE, Quintiere JG, Kim WH. Discussion of a model and correlation for the ISO 9705 room-corner test. Proceedings, 6th International Symposium, Fire Safety Science, University of Poitiers, France, M. Curtat (ed), International Association for Fire Safety Science, pp. 1015–1026, July 5–9, 1999.

Dillon SE, Quintiere JG, Messa S, Rosa D. Wall and ceiling heat flux measurements in a room-corner test. NISTIR 6242, October 1998, National Institute of Standards and Technology Annual Conference on Fire Research, Book of Abstracts, Gaithersburg, MD, November 2–5, 1998.

Dillon SE. Analysis of the ISO 9705 room-corner test: simulations, correlations, and heat flux measurements. Master's Thesis, University of Maryland, NIST GCR 98-756, National Institute of Standards and Technology, Gaithersburg, MD, August 1998.

Dillon SE, Kim WH, Quintiere JG. Determination of properties and the prediction of the energy release rate of materials in the ISO 9705 room-corner test. NIST GCR 98-753 and NIST GCR 98-756 (Appendices), National Institute of Standards and Technology, Gaithersburg, MD, July 1998.

Dillon SE, Milke J. Thermal and structural response of light steel frame wall assemblies exposed to fire using the SAFIR finite element model. National Institute of Standards and Technology, 2nd International Conference on Fire Research and Engineering, Gaithersburg, MD, August 10–15, 1997.

Professional Affiliations

National Fire Protection Association (NFPA) – Member

Technical Committee on Chimneys, Fireplaces, and Venting Systems for Heat Producing Appliances (NFPA 211) – Principle member

Technical Committee on Combustible Metals and Dusts (NFPA 484) – Alternate member
Research Section – Member

Building Fire Safety Systems Section – Member

ASTM International – Member

Committee E05 on Fire Testing

Subcommittee E05.13 on Large Scale Fire Tests

Subcommittee E05.15 on Furnishings and Contents

Subcommittee E05.21 on Smoke and Combustion Products

Subcommittee E05.32 on Research

Committee F15 on Consumer Products

International Association of Arson Investigators (IAAI) – Member

International Association of Arson Investigators, Illinois Chapter – Member

National Association of Fire Investigators (NAFI) – Member

International Association for Fire Safety Science (IAFSS) – Member

Society of Fire Protection Engineers (SFPE) – Professional Member

Society of Fire Protection Engineers, Illinois Chapter – Member