

**Tom DeBold, P.E., CFEI**  
**Managing Engineer - Explosion and Fire Safety**

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## Professional Profile

Tom DeBold is a Managing Engineer within the Explosion and Fire Safety group at Gexcon US, Inc. He specializes in fire protection, mechanical, thermal and fluid engineering. Mr. DeBold performs post-incident investigative work related to fires and explosions and is experienced in evaluating cause and origin. Mr. DeBold has investigated numerous fire and explosion incidents, including natural gas and propane incidents, fire protection systems, carbon monoxide exposures, chemical and industrial facilities and equipment, dust explosions, general residential fires, and commercial fires. He performs incident reconstruction, on/off-site testing, and computational fluid dynamics (CFD) to assess the feasibility of accident scenarios. Additionally, Mr. DeBold uses CFD to perform safety studies including gas dispersion and explosion consequence analyses. His fire protection engineering expertise includes post-incident fire suppression/extinguishment system failure analyses, fire alarm and detection failures, and review of compliance with applicable codes.

Mr. DeBold has also spent time in Norway developing modeling skills for use with FLACS and PHAST, focusing on modeling large process facilities. These skills have been applied to a wide variety of projects including large loss investigations, floating production, storage and offloading vessels, production plants, and other on and offshore process facilities. These projects include dispersion of flammable and toxic gasses, hydrogen, low burning velocity refrigerants, ventilation studies, ignition of flammable gas build up, jet fire analysis and analysis of blast waves and explosion overpressures. Additionally, Mr. DeBold uses FDS to evaluate suppression or detection system activation, fire spread and growth, and smoke management systems.

Mr. DeBold is currently an adjunct lecturer at the University of Maryland in the Department of Fire Protection Engineering, where he teaches an undergraduate and graduate level course in Fire and Explosion Investigation and Reconstruction. Prior to joining Gexcon, Mr. DeBold worked in the nuclear safety field as well as in the experimental testing field.

## Academic Credentials

B.S., Fire Protection Engineering, University of Maryland, 2011

M.S., Fire Protection Engineering, University of Maryland, 2012

Adjunct Lecturer: University of Maryland, Department of Fire Protection Engineering

## Licenses and Certifications

Licensed Professional Engineer (P.E.), Maryland, #41455

Licensed Professional Engineer, Texas, #133581

Certified Fire and Explosion Investigator (CFEI) in accordance with the National Association of Fire Investigators National Certification Board per NFPA 921 Section 13.6.4.2

Certified FLACS Users per Gexcon AS.

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## Publications

DeBold, T.F., Pagliaro, J.L., Davis, S.G., Could this gas leak have caused the explosion? Case study showing why air infiltration needed to be considered to explain flammable gas accumulation. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2016). Itasca, Illinois, USA, 24-26 September 2018.

Davis, S.G., Pagliaro, J.L., Botwinick, D., DeBold, T., van Wingerden, K., Allason, D., Johnson, D.M., Davis, Scott, et al. "Do not believe the hype: Using case studies and experimental evidence to show why the HSE is wrong about excluding deflagration-to-detonation transitions. Journal of Process Safety Progress. Volume 38, Issue 2, June 2019: <https://doi.org/10.1002/prs.11998>

Davis, S.G., Pagliaro, J.L., DeBold, T.F., Propane safety: Investigation findings and lessons learned in the 2014 Philadelphia food truck explosion. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2016). Itasca, Illinois, USA, 24-26 September 2018.

Davis, S.G., DeBold, T.F., Pagliaro, J.L., Are liquid propane leaks really 270 times larger than vapor? Case study regarding the physics of liquid and vapor propane leaks. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2016). Itasca, Illinois, USA, 24-26 September 2018.

Davis, SG, Pagliaro, JL, DeBold, TF, Botwinick, D, van Wingerden, K, Allasan, D, and Johnson, DM (2018). Don't believe the hype: Using Case Studies and Experimental Evidence to Show why the HSE is wrong about Excluding DDTs. 14th Global Congress on Process Safety. Orlando, Florida, April 22, 2018.

Davis, SG, Pagliaro, JL, DeBold, TF, van Wingerden, M, van Wingerden, K (2018). Large Scale Flammability and Explosivity Testing of Ammonia: Impact on Ammonia Safety in Refrigeration Applications. 2018 IAR Natural Refrigeration Conference & Expo. Colorado Springs, Colorado, March 18, 2018.

Davis, SG, DeBold, TF, & Marsegan, C (2017). Investigation Findings and Lessons Learned in the West Fertilizer Explosion. Journal of Fire Science. Volume 35, Issue 5, September 5, 2017: pp. 379-395. <https://doi.org/10.1177/0734904117715649>

Davis, SG, Pagliaro, JL, DeBold, TF, van Wingerden, M, van Wingerden, K (2017). Flammability and explosion characteristics of mildly flammable refrigerants, Journal of Loss Prevention in the Process Industries. Volume 49, Part B, September, 2017: pp: 662-674. <http://dx.doi.org/10.1016/j.jlp.2017.05.019>

Davis, SG, DeBold, T, Marsegan, C, & Hendrickson, B (2017). Overfill to Overpressure – Investigation Findings and Contributing Events to the CAPECO Explosion. 13th Global Congress on Process Safety. San Antonio, Texas, March 29, 2017.

Davis, S.G., Pagliaro, J.L., DeBold, T.F., van Wingerden, M., van Wingerden, K. Large scale flammability and explosivity testing of low burning velocity gases: Validity of prediction tools and impact on siting studies and risk assessments. 13th Global Congress on Process Safety (AIChE 2017). San Antonio, Texas, March 27, 2017.

Davis, S.G., DeBold, T.F., Marsegan, C., & Hendrickson, B. (2016). Investigation Findings and Lessons Learned in the West Fertilizer Explosion. Eighth International Symposium on Fire Investigation Science and Technology (ISFI 2016). Scottsdale, Arizona, USA, 22-24 September 2016.

Davis, S.G., Pagliaro, J.L., DeBold, T.F., van Wingerden, M., van Wingerden, K. Flammability and explosion characteristics of marginally flammable refrigerants. 11<sup>th</sup> International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions. Dalian, China, July 2016.

Davis, S.G., Hendrickson, B., Marsegan, C., & DeBold, T. (2016). Investigation Findings and Lessons Learned in the West Fertilizer Explosion. 12th Global Congress on Process Safety. Houston, Texas, April 11-23, 2016.

Davis, S.G., DeBold, T.F., Engel, D., Hendrickson, B., & Hinze, P.C. (2014). A Case Study of an Alleged CO Poisoning in a Moving Truck. Seventh International Symposium on Fire Investigation Science and Technology (ISFI 2014). University of Maryland, USA, 22-24 September 2014: 149-160.

Davis, S.G., Engel, D., DeBold, T.F., Hinze, P.C., & Hendrickson, B. (2014). Misuse of Simple Explosion Tools in Complex Explosion Investigations. Seventh International Symposium on Fire Investigation Science and Technology (ISFI 2014). University of Maryland, USA, 22-24 September 2014: 173-184.

DeBold, Thomas. Laminar Smoke Points of Coflowing Diffusion Flames in Microgravity. Thesis, University of Maryland, College Park. Ann Arbor: ProQuest/UMI, 2012. (Publication No. AAT 1533862).

### **Presentations**

DeBold, T.F., Pagliaro, J.L., & Davis, S.G. Could This Gas Leak Have Caused the Explosion? Case Study Showing Why Air Infiltration Needed to be Considered to Explain Flammable Gas Accumulation. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2018). Itasca, IL, USA, 24 September 2018.

DeBold, T.F. CFD Case Study: House Explosion Involving Long-Term Gas Leak. University of Maryland Fire Protection Engineering Faculty Summer Lecture Series. College Park, MD. July 26, 2021.

### **Prior Experience**

Graduate Research Assistant in FireTec, 2011-2012

Student Engineer in Nuclear Regulatory Commission, Uranium Enrichment Branch 2010

Student Engineer in Nuclear Regulatory Commission, Fire Research Branch 2009

### **Professional Affiliations**

National Fire Protection Association– NFPA (member)

Society of Fire Protection Engineering – SFPE (member)

National Association of Fire Investigators – NAFI (member)

International Association of Arson Investigators – IAAI (member)