



Dyron Hamlin MS, PE, CIH

Market Lead – Emergency Response and Industrial Hygiene



Location

North Little Rock, AR, USA

Experience

20 years

Qualifications/Accreditations

- Professional Engineer (AR 12728), Certified Industrial Hygienist (11223)
- Master of Science in Chemical Engineering, 2002
- Bachelor of Science in Chemical Engineering, 1998

Key technical skills

- Subject Matter Expert – Air Dispersion Modeling
- Chemical and Radiation Exposure Evaluations
- Process Safety Management
- Emergency Preparedness, Response, and Recovery

Memberships

- American Institute of Chemical Engineers
- American Industrial Hygiene Association
- Invited Instructor, University of Arkansas for Medical Sciences School of Public Health

Relevant experience summary

For 20 years, I have been helping people prevent, respond to, and recover from exposures to hazards. I frequently provide risk communication services in high-pressure scenarios – including preventive training, onsite response, and litigation support. I help manage our GHD FIRST (Fast Incident Response Services Team) program and Industrial Hygiene groups, and cover projects across North America, and to some extent, globally. I am a recognized expert in air dispersion modeling and air monitoring in risk assessment, industrial hygiene, and emergency response scenarios. I have assessed chemical and radiation exposures relating to occupational health and safety issues, aerosol/dust exposure, asbestos exposure, and indoor air quality. I have responded to over 150 major hazardous materials emergencies and have served as an expert in litigation for multiple cases. I am frequently consulted on emerging contaminants and their role in potential human exposure scenarios.

Project experience – Process Safety Management

PSM Audits – Gas and Liquid Storage Portfolio

Role: Project Manager / Lead Technical Specialist
Client: Multiple
Location: US, Canada
Project value: \$2-5 million
Date(s): 2012 - Present

Retained to provide expert services for process safety management compliance requirements. Worked across a large range of chemicals – toxic, flammable, corrosive – as well as potential radiation hazards; using lessons learned from past events to leverage focused audits for compliance and targeted improvements.

Elevated client understanding beyond compliance through Digital applications and dynamic modelling.

Facility Siting Analyses - Portfolio

Role: Project Manager / Lead Technical Specialist
Client: Multiple
Location: US, Middle East
Project value: \$1 million
Date(s): 2010 - Present

Provided expert services specifically related to consequence modelling for siting occupied structures within chemical storage and process facilities, including the Hanford Plutonium Finishing Plant in Hanford, WA. Work includes structural damage analyses for explosion modelling, as well as evaluation of shelter-in-place and emergency egress effectiveness for inhalation hazards. Practical outcomes for clients are achieved by applying engineering principles based on a combination of in-plant experience and well-accepted methodology.

GHD Industrial Hygiene Program Development

Role: Program Director
Client: Multiple
Location: US, Canada
Project value: \$30 million
Date(s): 2010 - Present

Developed North American Industrial Hygiene team through a combination of client development, technical initiatives, strategic hiring, and internal integration. Grew staff from 5 to approximately 40 over a 10-year period, with additional staff providing part-time support. Revenue growth from less than \$1 million to more than \$6 million annually.

Developed industry-leading protocols and standards to provide consistent, quality industrial hygiene services across a wide range of sectors including petrochemical, oil & gas, retail, industrial & manufacturing, pulp & paper, automotive, aerospace, and many others.

Expert Witness Support Services

Role: Subject Matter Expert
Client: Multiple
Location: Global
Date(s): 2003 - Present

Qualified expert witness in air dispersion modelling and human exposure analyses. Retained for litigation and non-litigation scenarios as an expert, frequently providing detailed risk communication services and accidental release reconstructions and investigations. Relied upon by government agencies and industry associations to evaluate preventive and protective strategies to reduce future exposures.

Specific field experience lends to the ability to ground-truth results using on-site observations; this adds weight to otherwise theoretical positions.

Hurricane Katrina – Oil Spill Cleanup

Role: Project Manager
Client: Murphy Oil
Location: Chalmette, LA
Project value: \$30 million
Date(s): 2005-2007

Conducted a comprehensive assessment and remediation project in the aftermath of Hurricane Katrina. Managed more than 30 field staff:

- Louisiana RECAP-compliant remedial efforts
- Documentation and scientific support as expert for major class-action litigation
- Interaction with USEPA, LDEQ, and other regulatory personnel

Assisted client in achieving site closure in two years, demonstrating there was no need to establish the spill area as a Superfund site.

US Presidential Inauguration Security Support

Role: Project Manager
Client: Confidential
Location: Washington, D.C.
Project value: \$1 million+
Date(s): 2009

Was retained to design and conduct chemical evaluations including chemical weapon terrorism assessments before and during the first Inauguration of President Barack Hussein Obama in secure areas around the event. Engaged prototype air monitoring equipment to conduct field surveys and adapt to changing conditions during the event.

Was selected through a sole-source contract (~\$250k) to provide field-testing for prototype-stage air monitoring equipment for hazardous materials, radiation exposure, and chemical warfare agents. Deployed 3 prototype models at 4 locations to evaluate performance in detection, durability, and general utility for chemical assessment during emergency response situations.

Project experience – Emergency Response

GHD FIRST Emergency Response Program

Role: Program Manager
Clients: Transportation, Petrochemical, Oil & Gas, Retail, Industrial, Government, and more
Program value: \$40 million annually
Date(s): 2010-Present

Established the FIRST (Fast Incident Response Services Team) brand in 2010 and provided training to 50+ GHD offices globally. Streamlined and simplified emergency response in North America by distributing knowledge and widely sharing expertise.

Typical chemical response activities include

- Managing up to 30-50 site personnel
- Collecting exposure data for multiple hazards (in a single train derailment, for example, methyl ethyl ketone, butadiene, phthalic anhydride, chlorine, and cyclohexane were all released).
- Conducting air dispersion modeling and fate and transport assessments to assist in residential re-occupation of nearby homes and businesses.
- Providing risk communication and stakeholder engagement services
- Environmental assessments for resources at risk
- Incident Command System training and implementation
- Restoring incident sites to prior condition
- Providing on-going environmental monitoring

Example Emergency Response Projects

Project Manager / Expert Witness Support / Site Response and Chemical Assessment

- Refinery explosion and fire and subsequent hydrogen fluoride management and recovery, Superior, WI
- Train derailment and sulfuric acid spill in international tunnel, Port Huron, MI / Sarnia, ON
- Expert Witness support – Hanford, WA Plutonium Finishing Plant explosion.
- Crude oil unit train derailment and city evacuation, Watertown, WI
- Crude oil pipeline release, Port Neches, TX
- Plant fire and explosion involving acid gases, multiple organic liquids, Romulus, MI
- Train derailment release of oleum (fuming sulfuric acid), Farragut, TN
- Train derailment release of hydrochloric acid and styrene, Amite, LA
- Plant fire and explosion involving acid gases, multiple organic liquids, Fort Worth, TX
- 4 BLEVE derailment involving propane/LPG, ammonia, Belleville, ON
- In-situ reaction of acids to form TNT, tanker truck incident, Stanton, TN
- Train derailment release of ~280,000 gallons of liquefied anhydrous ammonia, Minot, ND
- Train derailment release of n-butyl acrylate, Longview, TX
- Responded to BLEVE of a railcar containing cyclohexanone oxime which put benzene, oleum tanks at risk. Freeport, TX
- Train derailment release of hydrochloric acid, benzene, LPG, Coahoma, TX
- Train derailment and ethanol fire, Tacoma, WA
- Train derailment release of vinyl chloride, methanol, and formaldehyde, Tamaroa, IL
- Train derailment release of styrene, propyl acetate, vinyl acetate, BNSF, Cameron, TX
- Train derailment and hydrochloric acid release, Columbus, OH
- Pool / chlorine chemical plant fire, Conyers, GA
- Train derailment and chlorine spill, Macdona, TX
- Train derailment and chlorine spill, Graniteville, SC
- Train derailment and sulfur dioxide, chlorine release, Matfield Green, KS
- Assessment of intentionally targeted railcar leaking toluene diamine, Slaton, TX
- Train derailment and kerosene fire, Mirando City, TX
- Reacting tank car of methylene bisphenyl diisocyanate, New Orleans, LA
- Train derailment and hydrofluoric acid spill, Creighton, PA
- In-situ reaction of acids to produce NO₂, Roper, UT

Example Air Dispersion Modeling Evaluations

- Plant fire and explosion acid gases, multiple organic liquids, Valley Center, KS
- Derailment involving phenol, Castleberry, AL
- Derailment involving ethanol and subsequent fire, Painesville, OH
- Odor investigation following reported release, Texas City, TX
- Tank release of Fluorosilicic acid, New Orleans, LA
- Fire started by lightning strike of gasoline tank, Kansas City, MO
- Train derailment and methanol spill, Memphis, TN
- Train derailment and phenol spill, The Dalles, OR
- Train derailment and styrene spill, Atlanta, GA
- Crotonaldehyde leak on ocean-going vessel, Elizabethport, NJ
- Ammonia tank car release, Windsor, ON
- Hydrochloric acid release, Calipatria, CA
- Plant fire and explosion, El Dorado, AR
- 1,3-butadiene release, Texas City, TX
- Styrene tank car polymerization reaction, Cincinnati, OH

Publications

- Hamlin, D. "Modeling Ozone Formation in a Central Texas Power Plant Plume," Master's Thesis, The University of Texas at Austin, May, 2002
- Stout, S., Millner, G., Hamlin, D., Liu, B. "The Role of Chemical Fingerprinting in Assessing the Impact of a Crude Oil Spill Following Hurricane Katrina," Environmental Claims Journal, Vol 18, pp 169-184, Spring 2006
- Stout, S., Liu, B., Millner, G., Hamlin, D., Healey, E. "Use of Chemical Fingerprinting to Establish the Presence of Spilled Crude Oil in a Residential Area Following Hurricane Katrina, St. Bernard Parish, Louisiana," Environ. Sci. Technol., Vol 41, 7242-7251, 2007
- Cawthon, D.; Hamlin, D.; Steward, A.; Davis, C.; Cavender, F., and Goad, P. Field studies on the ammonia odor threshold based on ambient air-sampling following accidental releases. Toxicological & Environmental Chemistry. 2009 Jun; 91(4):597-604
- Hamlin, D.; Khajeh Najafi, S. "Where's the Leak?" Occupational Health & Safety Magazine. September, 2009.

Presentations

- "SAFER STAR™: Its Use in Emergency Response and Risk Assessment" Presented at the 14th Annual Bureau of Explosives Hazardous Materials Seminar, Dallas, TX, May 2002.
- "Responses to Emergencies Involving Propane and Liquefied Petroleum Gas (LPG)" Presented at the Annual Propane Gas Defense Association Meeting, Chicago, IL, September 2002.

- “Evacuate or Shelter-in-Place?” Presented at the 15th Annual Bureau of Explosives Hazardous Materials Seminar, Dallas, TX, May 2003.
- “Managing an Environmental Crisis” Presented at the Air Regulations Update Seminar of the Arkansas Environmental Federation, April 7, 2004.
- “Managing Emergencies using 21st Century Technology” Presented at the 16th Annual Bureau of Explosives Hazardous Materials Seminar, Dallas, TX, May 2004.
- “Reconstruction of a Hazardous Material Release using Real-time Air Monitoring Data and Air Dispersion Modeling” Presented at the 57th American Academy of Forensic Sciences Annual Scientific Meeting, New Orleans, LA, February, 2005.
- “Reality Checks on the Use of Hazardous Materials as Weapons of Mass Destruction” Presented at the 9th Force Health Protection Conference, Albuquerque, NM, August, 2006.
- “Chlorine Releases – an On-site Perspective” Presented as a Subject Matter Expert at the Toxic Inhalation Hazard Technical Interchange Meeting, Arlington, VA, November, 2006.
- “TIH Releases – an On-site Perspective” Presented as a Subject Matter Expert at the Transportation Security Administration Toxic Inhalation Hazard Preparedness, Response & Recovery Seminar, Los Angeles, CA, June 12, 2007.
- “Using Accidental Observations to Assess Model Performance” Presented at the 12th Annual George Mason University Conference on Atmospheric Transport and Dispersion Modeling, Fairfax, VA, July 8-10, 2008.
- “Point Location Air Monitoring During Full-Scale Chlorine and Ammonia Release Tests” Presented at the 14th Annual George Mason University Conference on Atmospheric Transport and Dispersion Modeling, Fairfax, VA, July 13-15, 2010.
- “The Feedback Loop: the use of Field Observations to Improve Scientific Understanding” Presented at the 24th Annual Bureau of Explosives Hazardous Materials Seminar, St. Louis, MO, May 2011 and the Sites & Spills Expo, Toronto, ON, Canada, November 2011.
- “Comprehensive Air Monitoring Strategies During Environmental Spill and Cleanup Projects” Presented at the Sites & Spills Expo, Toronto, ON, Canada, November 2012.
- “Useful Calculations for Hazardous Materials Responders” Presented at the Sites & Spills Expo, Toronto, ON, Canada, November 2012.
- “Integrated Risk Assessment and Management for a Chemical Spill Emergency Response Associated with a Train Derailment” Presented at the 52nd Annual Society of Toxicology Annual Meeting and ToxExpo, San Antonio, TX, March 2013.
- “Air Modeling Crude Oil Spill Exposures” Presented at the 23rd Annual Clean Gulf Conference, Tampa, FL, November 2013.
- “Crude Oil Exposure Assessments” Presented at the 75th Annual AIHcE Industrial Hygiene Conference, San Antonio, TX, May 2014.
- “Dangerous Goods Response Toolbox.” Presented at the Annual Canadian Emergency Response Contractors Association meeting, Waterloo, ON, Canada. October 2014.
- “Air Monitoring and Public Protective Actions.” Chlorine Emergency Response Providers team training, Mississippi State Fire Academy, Jackson, MS. 2014-Present.
- “Air Quality Monitoring during Railroad Tunnel Construction Activities in an Urban Environment.” Railroad Environmental Conference, University of Illinois, Champaign, IL. October 2015
- “Assessing Inhalation Exposures during an Emergency Response.” 8-hour Professional Development Course. AIHcE Spring and Fall 2016.
- “Ice Road Emergency - Responding to Diesel and Crude Oil Spills in Frozen Climates.” Clean Pacific Conference, Seattle, WA. June 2016
- “Air Monitoring using Unmanned Aerial Vehicles.” Midwest Energy Association Conference, Cincinnati, OH. September 2016.
- “Silica Monitoring during Multi-industry Projects for Compliance.” American Hazardous Materials Professionals Conference, Fort Worth, TX, August 2017.
- “The Increasing Influence of Background Air Quality on Compliance.” 19th Railroad Environmental Conference, University of Illinois, Champaign, IL, October 2017.
- “Silica Monitoring during Coal Train Derailments.” 19th Railroad Environmental Conference, University of Illinois, Champaign, IL, October 2017.
- “Industrial Hygiene in the Digital Age.” 2019 Texas Chemistry Council Environmental, Health, and Safety (EHS) Seminar.
- “Assessing Community Health Risks Related to Ethylene Oxide Emissions and New EPA Risk Criteria.” 2021 Emerging Contaminants in the Environment Conference. University of Illinois, Champaign, IL, May 2021.

Career history

January 2011 – present	Principal Chemical Engineer, Certified Industrial Hygienist, Project Manager, GHD (formerly Conestoga-Rovers & Associates), Little Rock, AR
2010	Owner, Hamlin Chemical Consulting
2002-2010	Director, Chemical Fate and Transport, Center for Toxicology and Environmental Health, LLC
1998-2000	Process Engineer, Bioengineering Resources, Inc.