

Morgan T. McVey

PROFESSIONAL HISTORY:

*Risk Management Professionals, Inc.;
Irvine, California; Project
Engineer, June 2015-Present*

EDUCATION:

*Bachelor of Science, Chemical
Engineering, University of
California, San Diego*

CERTIFICATION:

*California Engineer-in-Training (EIT)
Certification*

Ms. Morgan McVey graduated from University of California, San Diego with a Bachelor of Science degree



in Chemical Engineering with an emphasis on energy solutions and the environment. During the course of her education, Ms. Morgan McVey developed strong technical writing, analytical, and problem-solving skills and currently provides technical support in managing a variety of projects as an Engineering Manager with Risk Management Professionals.

Ms. McVey understands the significance of the various regulatory elements required for the timely completion of a successful project including the essential planning, monitoring of progress and milestones, the supervision of the project budget, and necessity of quality control throughout the project. Since joining Risk Management Professionals, Ms. McVey has been immersed in multiple aspects of United States Environmental Protection Agency (US EPA) Risk Management Plan (RMP), Occupational Safety and Health Administration (OSHA) Process Safety Management (PSM) Program, and California Accidental Release Prevention (CalARP) Program development. Ms. McVey's project experience has been vigorous throughout various product lines offered by Risk Management Professionals, including the following:

- Process Hazard Analyses (PHAs), including Hazard & Operability (HAZOP) facilitation support
- Layer of Protection Analysis (LOPA)
- Hazard Identification (HAZID) Studies
- Risk Management Plans (RMP) / Process Safety Management (PSM) Programs
- California Accidental Release Prevention (CalARP) Program
- RAGAGEP Gap Analyses
- Toxic and Flammable Gas and Liquid Dispersion Modeling
- Regulatory Compliance Audits and Support
- Hazard Mitigation Plans (HMP)
- Piping and Instrumentation Diagram (P&ID) Development and Field Verification
- Hazardous Materials Inventory Calculations
- Development of Operating Procedures



- Incident Investigations
- Hazardous Materials Business Plan (HMBP)

While Ms. McVey has experience in diverse product lines, all completed projects have used high-end qualitative and/or quantitative risk analysis techniques for decision-making. She has been involved in a variety of engineering projects across several industries, including the following fields:

- Refining
- Gas Processing and Transport
- Petroleum (Production, Refining, Storage)
- Chemical Manufacturing
- Water Treatment and Distribution Systems
- Agriculture & Fertilizer
- Ammonia Refrigeration Systems
- Selective Catalytic Reduction (SCR) Systems
- Cogeneration
- Pharmaceuticals & Medical Devices
- Aerospace Chemical Milling

PROJECT EXPERIENCE

Process Hazard Analysis (PHA)

Ms. McVey has facilitated and been the technical scribe for Process Hazard Analyses (PHAs) and Hazard Reviews (HR) using Hazard and Operability (HAZOP), Layer of Protection Analysis (LOPA), and What-If/Checklist methodologies and Hazard Identification (HAZID) studies for oil and gas upstream production and transport, downstream refining and process operations, chemical manufacturing, as well as for other industry sectors. These analyses include facilities both in the pre- and post-design phases.

The following list is representative of projects that Ms. McVey has provided facilitation support and/or scribe support for, in the conceptual design stages and operating cycle.

- *Refinery, St. Paul, MN* – Facilitated a 5-year redo PHA for the Desulfurization and ISOM units using the HAZOP/LOPA/What-if? Checklist methodologies.
- *Refinery, El Paso, TX* – Facilitated a 5-year redo PHA for the DHT unit using the HAZOP/LOPA/What-if? Checklist methodologies.

- *Refinery, Dickinson, ND* – Facilitated a 5-year redo PHA for the Tank Farm unit using the HAZOP/LOPA/What-if? Checklist methodologies.
- *Refinery, Los Angeles, CA* – Facilitated a 5-year redo PHA using the HAZOP/LOPA/What-if? Checklist methodologies for a Cogeneration & Merox Unit (~3 months) with anhydrous ammonia. Included butane/refinery fuel gas (with Merox gas treating unit)/natural gas feed trains to Gas Turbine Generators with exhaust gas to a Heat Recovery Steam Generator. Includes boiler feed water (hot lime/demineralization/deaerator) to the HRSG and to steam turbine generators. Conducted a Damage Mechanism Review (DMR) and Hierarchy of Controls Analysis (HCA) as required by California regulations.
- *Refinery (North & South Plant), El Paso, TX* – Provided long-term MOC PHA facilitation support for MOC PHA's associated with the LER (Light Ends Recovery) Unit, NHT (Naphtha Hydrotreater) Unit, DHT (Diesel Hydrotreater) Unit, Crude Unit, FCC Unit, ALKY Unit, Reformer Unit, Vacuum Unit, and Boilers.
- *Crude Storage & Transfer Terminal, Corpus Christi, TX* – Provided design phase MOC PHA facilitation support for the addition of crude loading arms and associated equipment using the HAZOP methodology with integrated LOPA (CME Methodology).
- *Refinery, St. Paul, MN* – Provided support for a diesel hydrotreater unit 5-year revalidation HAZOP. Included utilities, human factors, external events, and facility siting checklists.
- *Propane Storage & Transfer Terminal, Suisun City* – Ms. McVey facilitated the Propane Terminal PHA using the HAZOP & What-If/Checklist methodologies for a propane storage and transfer facility, which included transfer between Propane Railcars, Propane Trucks, Propane Cylinders, and 11 Propane Storage Tanks. The entire rail unloading and truck loading/unloading process was analyzed for potential hazards, along with associated facility siting, external events, and human factors.
- *Nitric Acid Process for Fertilizer Production, Gardena* – Ms. McVey facilitated the nitric acid HR using the HAZOP & What-If?/Checklist methodologies for a manufacturing process combining nitric acid and metal oxides (zinc oxide, magnesium oxide, manganese oxide) to produce metal nitrates (zinc nitrate, magnesium nitrate, manganese nitrate). The process included nitric acid unloading, bulk tank and associated scrubber system, pumps, and fertilizer reactor chemistry. Hazards identified included cross contamination of various chemicals onsite resulting in extremely exothermic side reactions. Facility siting, external events, and human factors associated with the process were also reviewed.

- *Anhydrous Ammonia Refrigeration, Irwindale* – Ms. McVey facilitated the MOC PHA for a CalARP/RMP/PSM Program Level 3 facility and specifically looked at hazards associated with the addition of a heat exchanger, replacement of high pressure recirculators, installation of new water chillers, and moved evaporators. Facility siting, external events, and human factors associated with the MOC changes were also reviewed.
- *Water Treatment Facility, Downey* – Ms. McVey facilitated the Revalidation HR for the 5-year update of the ammonia process in association to the water treatment facility. Facility siting, external events, and human factors associated with the process were also reviewed.
- *Piperidine Process for Polypeptide Synthesis, Torrance* – Ms. McVey facilitated the initial Hazard Review associated with the piperidine process for polypeptide synthesis with regards to HIV drug development.
- *Hydrofluoric Acid Process for Chemical Milling, El Cajon* – Ms. McVey facilitated the initial Hazard Review for the hydrofluoric acid process associated with chemical milling of various metallic aerospace parts. The process included a bulk storage tank containing hydrofluoric acid with an associated scrubber system, 10+ chemical etching tanks with different combinations and concentrations of various acidic chemicals, a tank farm, and water treatment system. Facility siting, external events, and human factors associated with the process were also reviewed.
- *Selective Catalytic Reduction (SCR) Biomass Cogeneration, Bakersfield* – Ms. McVey facilitated the SCR PHA using the HAZOP & What-If?/Checklist methodologies for equipment associated with the SCR (Bulk Ammonia Storage Tank loading/unloading, Ammonia Vaporizer, and associated Cyclones). Hazards associated with facility siting, human factors, and external events were also analyzed.
- *Fractionization and Isomerization Facility (Gas Plant), Bakersfield* – Ms. McVey provided long-term PHA support for six months (week on/week off) for the Butane Isomerization PHA using the HAZOP Methodology for the entire gas plant, including the Hydrotreater Unit, Reactor Trains, Regeneration Process, Hydrogen Plant, multiple plant utilities, etc. As part of the PHA, the Team also reviewed the previous PHA recommendations, relevant Management of Change (MOCs), previous incidents, human factors, and facility siting.
- *Hydrocracker Unit, Long Beach* – Ms. McVey provided PHA support for updates and modifications made to a Hydrocracker Unit. The scope of the PHA included several product rundown lines, coolers, and a steam generator.

- *Hydrotreater System, Argentina* – Ms. McVey provided PHA support for modifications to a Hydrotreater Unit using the HAZOP & What-If?/Checklist methodologies. The purpose of the modifications was to improve operability of the unit.
- *Gas Processing Plant, California* – Ms. McVey provided PHA support for the crude petroleum and natural gas Processing Plant Revalidation PHA. The Plant includes Compression, Cold Recovery section, a Fractionation Train, Emergency Flares (HP/LP), and multiple Plant Utilities. The PHA also included a discussion of facility siting, human, factors, external events, and a review of the Plant's previous incidents.
- *Floating Production, Storage, and Offloading (FPSO), Texas* – Ms. McVey participated in the PHA / Safety Objective Analysis (SOA) for the FEED phase for the project. Ms. McVey provided PHA support for the PHA/SOA for many of the utility systems for the FPSO facility, including the HP and LP Flares, Heating and Cooling Mediums, Seawater Lift, Instrument/Utility Air and Nitrogen, Power Generation, and various Drain Systems.

Compliance Audits

Ms. McVey has completed many CalARP/RMP/PSM Compliance Audits, which include facility walkdowns and familiarization with the regulated covered process, reviewing Prevention Program documentation in order to identify deficiencies that would result in citations from the applicable regulatory agencies, developing a line item report that lists the specific deficiencies, and meeting with facility personnel in order to identify any other needs or services they may require. Below is a partial list of clients for whom Ms. McVey has performed Compliance Audits:

- *El Paso Refinery – El Paso, TX* – Ms. McVey, along with two colleagues, conducted a Triennial Compliance Audit for the RMP/PSM regulated refinery for ~28 units. Ms. McVey's contribution focused on the mechanical integrity section, along with other sections including PHA, HA, Submittals, PSI, etc. This included personnel interviews to determine implementation of policies and procedures, and associated record review.
- *Signal Hill Petroleum - Gas Processing Plant, Signal Hills* – Ms. McVey conducted a regulatory CalARP/RMP/PSM Program Level 3 Compliance Audit of the petroleum gas processing plant. The scope of the Compliance Audit included a review of facility policies and procedures, a review of all Prevention Program elements, a site walkdown to verify compliance, and personnel interviews to determine implementation of the CalARP/RMP/PSM Program.
- *PepsiCo. – Anhydrous Ammonia, Hayward, CA*
- *Belridge Gas Plant, Bakersfield, CA*

- *DTE Stockton Biomass Cogeneration, Stockton, CA (Gap Analysis)*
- *Sheldon United - Propane Storage & Holding Facility, Suisun City, CA*
- *Glacier Cold Storage - Anhydrous Ammonia Refrigeration, Wilson, CA*
- *City of Downey Water Treatment Facility, Downey, CA*

RAGAGEP Gap Analysis – The purpose of this gap analysis is to analyze the as-built process conditions and suggests potential additional mitigation measures based on current applicable industry best practices, codes and standards for the covered process to improve facility safety.

- *Mt. Poso Cogeneration, Mt. Poso, CA*
- *Woodland Biomass Power, Woodland, CA*
- *DTE Stockton Biomass Cogeneration, Stockton, CA*

Incident Investigation

- *Gas Terminal, San Pedro, CA – Conducted an incident investigation using root cause analysis, and held interviews to develop a timeline of associated events to reach a conclusion.*

CalARP/RMP/PSM Program Development

Ms. McVey has developed many California Accidental Release Prevention (CalARP) Programs, RMPs, and PSM Programs for a wide spectrum of industries and processes. As part of these efforts, she has conducted Offsite Consequence Analyses (OCA), external events analyses, dispersion modeling, recommendations review, program development, United States Environmental Protection Agency (US EPA) and Administering Agency (AA) submittals, and review. Ms. McVey has been working closely with regulators to help her clients stay ahead of regulatory requirement amendments.

- *Hydrofluoric Acid Aerospace Chemical Milling Facility, El Cajon, CA – Lead the development of a CalARP Program Level 2 Plan, including development of the following elements: Safety Information, Hazard Review, Operating Procedures, Training guidelines, Maintenance Program & Procedures, Hazard Assessment/ Offsite Consequence Analysis, CalARP Submittal, etc.*
- *Flammable Mixture Trans-Loading Facility, Martinez, CA – Managed and supported the development of a CalARP Program Level 2 Plan, including development of the elements specified above.*

- *Piperidine Process for Polypeptide Synthesis, Torrance, CA* – Managed and supported the development of a CalARP Program Level 2 Plan, including development of the elements specified above.
- *Flammable Mixture Storage & Transfer Facility, Richmond, CA* - Developed a CalARP Program Level 2 Plan, including development of the elements specified above.
- *Anhydrous Ammonia Refrigeration, Irwindale, CA* – Development of CalARP/RMP/PSM Program Level 3 operating procedures for the entire system, including evaporators, compressors, condensers, high stage recirculators, etc. Operating procedures included Normal Start-Up, Normal Shutdown, Emergency Shutdown, Temporary Operations, Consequences of Deviation, Start-Up Following an Emergency Shutdown, Emergency Operations, etc.

Hazard Mitigation Development

Ms. McVey has assisted in the development of Hazard Mitigation Plans (HMPs) for several municipalities in the state of California. These plans include a risk assessment of probable hazards, including the estimated frequency of occurrence and extent of impact. In addition, the Plans identified possible mitigation projects and examined the economic feasibility of the projects through a qualitative cost-benefit analysis. Development of each Plan also included public participation and neighboring agency coordination.

US EPA RMP Submittals

Ms. McVey has managed US EPA RMP submittals for multiple facilities. The submittals included calculations and validations of flammable material inventories, performing the proper dispersion modeling for worst-case and alternative release scenarios, and compiling and submitting the information. Specific facility locations include: Texas, California, & Wyoming.

Site-Map Development

Ms. McVey has developed multiple site-maps including all CalARP/RMP/PSM regulated elements and specified documentation, obtained from facility walkdowns and associated facility personnel interview.

CLIENT LIST

The following is a list of clients and projects that Ms. McVey has managed and/or provided engineering support.

Municipalities and Water Treatment

- City of Paramount Water Treatment Plant
- City of Pittsburg Water Treatment Plant
- City of El Segundo

Hazard Mitigation Plan (HMP)

- City of Downey
- City of Tustin

Manufacturing Facilities

- Carpenter
- Purolite
- Polypeptide Laboratories Group
- Joslyn Sunbank Company, LLC
- GKN Aerospace
- REC Silicon
- Royalty Carpets

Agricultural

- Grow More, Inc
- Sun-Maid Ripperdan

Ammonia Refrigeration/Chilling Facilities

- Glacier Cold Storage
- Griffith Energy LLC
- Ready Pac Foods
- Boskovich Farms
- Milk Specialties Global

Oil and Gas

- Andeavor St. Paul Park Refinery, Carson/Wilmington Refinery, El Paso Refinery
- Axion Energy
- Chevron
- Fluor
- Occidental Petroleum
- Plains All American Pipeline/ Midstream
- Berry Petroleum Company
- Lunday Thagard
- Williams Midstream
- WorleyParsons
- Valero Corporation
- Sempra Utilities - SoCal Gas
- Signal Hill Petroleum
- Sheldon United Terminal



Energy

- Griffith Energy LLC
- DTE Stockton Cogeneration, LLC
- Woodland Biomass Cogeneration, Ltd.
- Mt. Poso Cogeneration
- Wellhead Power

