Celebrating 35+ years in business, JENSEN HUGHES is a global leader offering engineering and consulting services for fire protection and life safety, code compliance, hazard analysis and risk management, research and testing, and physical security. We are committed to providing the most cost-effective, sustainable and appropriate solutions that meet our clients’ needs.

RISK AND RELIABILITY ASSESSMENTS

JENSEN HUGHES
Advancing the Science of Safety

JENSEN HUGHES RISK AND RELIABILITY CLIENTS

- U.S. ARMY Soldier Biological and Chemical Command
- U.S. ARMY Chemical Materials Agency
- Bechtel SAIC, LLC
- U.S. Department of Energy (DOE)
- National Aeronautics and Space Administration (NASA)
- Chemical Processing - EniChem (Italy)
- Offshore Oil Platforms
- Application of ASHRAE Class 2L, Mildly Flammable Refrigerants

QRA
A Quantitative Risk Assessment (QRA) analyzes risk and reliability of processing facilities, as well as the health effects to the public and workers, from postulated events and toxic releases. Risk is quantified by estimating the probability of an event and release and the number of people who could be affected. A QRA provides an understanding of the various ways in which an event can occur, and ranks by importance the plant and operational features that govern risk. Our personnel have supported various programs, from the destruction of the U.S. chemical weapons’ stockpile to chemical process industrial accident analysis to aerospace mission evaluation. The methodology we employ has been endorsed by Expert Review Panels and very favorably received by the National Resource Council.

RELIABILITY • AVAILABILITY • MAINTAINABILITY (RAM)
JENSEN HUGHES has experience with the review and evaluation of equipment performance data for key process system components to estimate equipment and subsystem availability and reliability. Parameters that we commonly develop are Mean Time Between Failure (MTBF), failure rate, Mean Time To Repair (MTTR) and percent availability out of operating time. Our professionals determine the modeling approach based on the system and component characteristics and the nature of the equipment performance data. On that basis, Failure Mode and Effect Analysis (FMEA) or fault tree analysis could be used to assess the various failure modes, as well as the effects of such failures on the availability of the components and subsystems. Evaluating the failure modes and repair times provides valuable insight into maintenance practices and how they can potentially be improved.

HAZARD AND OPERABILITY (HAZOP) STUDIES
Scoping out the hazards is an important step in evaluating the process risks and vulnerabilities, particularly for new facilities, systems that are being upgraded or modified, or post-event analysis. We have participated with project teams in HAZOPs using standard guidewords to evaluate system issues that require further risk and reliability analysis.
Modeling and Software Implementation

JENSEN HUGHES has significant expertise in the development of QRA and RAM models. We quickly gather site-specific information and use it to identify key risk contributors.

Modeling and software we offer, or with which we have project experience includes:

- Probabilistic Risk Assessment Models: Includes event tree analysis, fault tree analysis, human reliability analysis, fire risk modeling, risk quantification and results presentation (e.g., CAFTA, SAPHIRE, FRANX EPRI HRA Calculator)
- Reliability/Availability/Maintainability (RAM) Models: Includes FMEA, Failure Reporting and Corrective Analysis (FRACAS) Evaluations, and Reliability Block Diagrams
- Process Hazard Analysis: For documenting process hazard analysis studies, JENSEN HUGHES uses PHAWorks®
- Risk Management: Online models, installation, program development and implementation support
- Emergency Planning: Evaluation and prioritization of credible scenarios
- Process Optimization: Ranking of vulnerabilities, support to risk reduction and evaluation of alternative technologies

Where commercially available tools are unavailable, our scientists and engineers develop in-house tools for the problem at hand.

Training

Our personnel have developed and conducted numerous training courses covering a wide range of reliability and risk assessment topics:

Training Formats: Traditional training, Web-based training, Blended solutions.

Training Course Topics:

- Initiating Event/Accident Sequence Analysis
- Event Tree/Fault Tree Analysis
- Fire Risk Modeling
- Human Reliability Analysis — emphasis on process safety, fire/flood and other hazards
- Reliability Data Analysis
- QRA Model Quantification and Results Analysis
- Process Safety Management (PSM)

We can also custom-develop a training class to meet your specific needs and corporate goals. Please call us for more information or visit our website at www.jensenhughes.com.