

## Modeling and Analysis Capabilities

FRA staff has extensive experience analyzing, assessing and mitigating risks as it pertains to Petrochemical, Oil and Gas Facilities including:

- ◆ PHA/HAZOP/HAZID
- ◆ Emergency Response Plans and Training
- ◆ Facility Siting Studies
- ◆ Quantitative Risk Assessment
- ◆ Fire Risk Assessment
- ◆ Fire & Gas Detection Studies
- ◆ LNG Facility Dispersion and Explosion Modeling
- ◆ Bulk Storage Terminal Radiation Modeling

## Design Capabilities

FRA staff has comprehensive capabilities in analyzing and designing appropriate fire protection mitigation means including:

- ◆ Firewater Analysis and Design
- ◆ Dry, and Wet System Design
- ◆ Foam Water Suppression System Design
- ◆ Hybrid Suppression Design
- ◆ Fire & Gas Detection Design
- ◆ Emergency & Mass Notification System Design



# FIRE & RISK ALLIANCE

### *About Us*

Fire & Risk Alliance is a leader in fire and risk engineering. Our staff is composed of highly trained and educated engineers and scientists that focus on developing optimized solutions for our clients throughout the world. Our hands on practical experience, active engagement in the industry, and our applied research ensure that we provide state of the art solutions to our clients.



### *Risk Assessment, Studies and Fire Modeling*

Petrochemical, oil and gas refining, transportation and storage presents a multitude of fire protection hazards and mitigation issues. FRA is a leader in the field of assessing risks, modeling hazards and performing facility siting studies in the petrochemical, oil and gas industries.

Using the latest modeling technologies, FRA has provided clients with detailed analyses of new and existing sites. These analyses are used to better understand impact of hazards on site configuration, onsite personnel and responding emergency personnel. The models, analyses and assessments are tailored for each specific client to ensure comprehensive solutions to complex fire hazard scenarios unique to each facility. These assessments are also used to inform AHJs, as well as for national and international insurance and licensing purposes.



## Project Experience

- Petro Rabigh Refinery, Saudi Arabia
- Carribean Utilities Company, Cayman Islands
- Ras Tanura Sea Islands, Saudi Arabia
- Enbridge Flanagan Terminal, Pontiac, IL
- Ju' Aymah Offshore Oil Platform, Saudi Arabia
- Gulf Oil Tank Farm, Chelsea, MA
- Saudi Chevron, Saudi Arabia
- Bahamas Oil Refining Company Terminal, Bahamas
- Magnolia LNG, Lake Charles, LA
- Chattanooga LNG, Chattanooga, TN

## Contact

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## *Fire Protection Analysis and Design*

Identification of true site hazards and fire protection concerns is the first step in analyzing the impact of new equipment and processes to an existing facility or analyzing the configuration of a new facility. FRA has assisted clients word-wide in understanding these hazards and determining mitigations to reduce hazards to acceptable levels.

FRA provides innovative, practical and cost effective solutions for fire protection design. With FRA's background in applied research and development, FRA staff is able to present cutting edge fire protection equipment to clients to mitigate unique fire hazards or to provide alternative solutions that may present cost savings. Services include firewater, fire pump, suppression systems and fire and gas system design.

The task is not complete upon submission of a design package. To this end, FRA offers complete construction administration services that include contractor shop drawing reviews, construction cost estimates and installation oversight.

## *Emergency Response Plans and Training*

Fighting fires in petrochemical, oil and gas facilities can often be intense and challenging. Many such facilities rely on local fire department response as they do not have the resources in house to fight such fires.

FRA has developed tailored emergency response plans that clearly lay out hazard locations, capabilities of onsite fire protection equipment and response strategies based on the experience and training of the responding personnel.

