

U.S. Coast Guard National Strike Force



In-Situ Response Safety

Kenneth “KP” Pounds



Disclosure

- **The presentation to follow is not intended to endorse, represent, nor establish policy for any specific regulatory agency, associated representatives, nor products.**



SMART

SPECIAL MONITORING of APPLIED RESPONSE TECHNOLOGIES

Developed by:

U.S. Coast Guard
National Oceanic and Atmospheric Administration
U.S. Environmental Protection Agency
Centers for Disease Control and Prevention
Minerals Management Service



Smoke rising from the *New Carissa*, February 1999. Photo by USCG



§ 300.317 National response priorities

- (a) Safety of human life must be given the top priority during every response action.**
- (b) Stabilizing the situation to preclude the event from worsening is the next priority.**
- (c) The response must use all necessary containment and removal tactics in a coordinated manner to ensure a timely, effective response that minimizes adverse impact to the environment.**
- (d) All parts of this national response strategy should be addressed concurrently, but safety and stabilization are the highest priorities.**
- (e) The priorities set forth in this section are broad in nature, and should not be interpreted to preclude the consideration of other priorities that may arise on a site-specific basis.**

Safety Officer (SOFR)

- **Anticipate, Recognize, Evaluate, and Control hazards and measures for assuring personnel safety and to assess and/or anticipate hazardous and unsafe situations**



COMMAND STAFF POSITIONS

**Incident
Commander**

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graph TD; IC[Incident Commander] --- SO[Safety Officer]; IC --- IO[Info Officer]; IC --- LO[Liaison Officer];
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**Safety
Officer**

**Info
Officer**

**Liaison
Officer**

Hazard Recognition, Evaluation and Control

- Time sensitive operations
- Tidal dependent
- Chemical Exposure
- Explosion and Fire
- Oxygen Deficiency
- Biological Hazards
- Ecological Hazards
- Physical Safety Hazards
- Heat Stress
- Mechanical Hazards
- Accelerants used in ignition process
- Lack of Trained or Experienced Workforce



Operational Risk Management – Green Amber Red (GAR) Model

- Supervision
- Planning
- Team Selection
- Team Fitness
- Environment
- Event Complexity

GAR Evaluation Scale
Color Coding the Level Of Risk

0	23	44	60	
10	20	30	40	50
GREEN (Low Risk)	AMBER (Caution)	RED (High Risk)		

Site Safety Plan

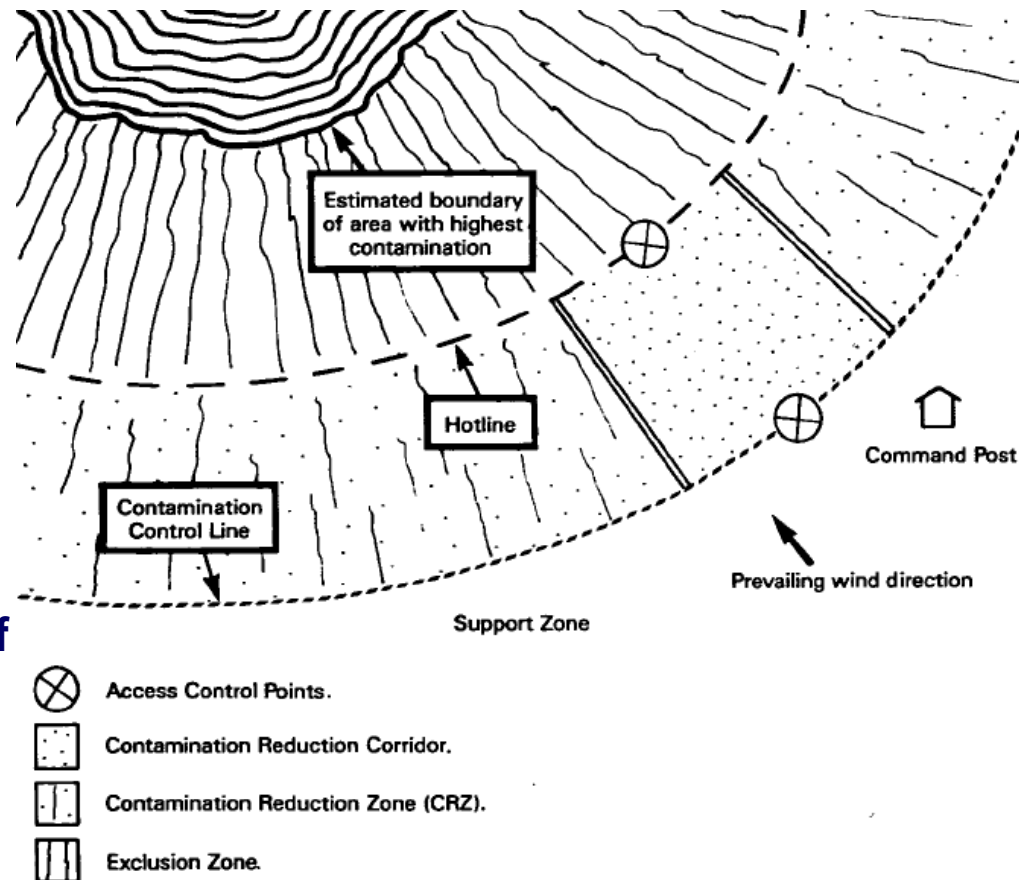
- Establishes policies and procedures to protect workers and the public from the potential hazards posed by the response site, must be developed before site activities proceed.
- Provide measures to minimize accidents and injuries that may occur during normal daily activities or during adverse conditions such as bad weather.
- 29 CFR 1910.120(b)(4)(i) *General*. The site safety and health plan, which must be kept on site, shall address the safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection.

Minimum Requirements

- **1910.120(q)(2)(i) Pre-emergency planning and coordination with outside parties..**
- **1910.120(q)(2)(ii) Personnel roles, lines of authority, training, and communication.**
- **1910.120(q)(2)(iii) Emergency recognition and prevention.**
- **1910.120(q)(2)(iv) Safe distances and places of refuge.**
- **1910.120(q)(2)(v) Site security and control.**
- **1910.120(q)(2)(vi) Evacuation routes and procedures.**
- **1910.120(q)(2)(vii) Decontamination.**
- **1910.120(q)(2)(viii) Emergency medical treatment and first aid.**
- **1910.120(q)(2)(ix) Emergency alerting and response procedures.**
- **1910.120(q)(2)(x) Critique of response and follow-up.**
- **1910.120(q)(2)(xi) PPE and emergency equipment.**
- **1910.120(q)(2)(xii) Emergency response organizations may use the local emergency response plan or the state emergency response plan or both, as part of their emergency response plan to avoid duplication. Those items of the emergency response plan that are being properly addressed by the SARA Title III plans may be substituted into their emergency plan or otherwise kept together for the employer and employee's use.**

Site Control

- **Exclusion Zone** – Area where contamination does or could occur
- **Activities**
 - Site characterization, sampling
 - Installation of monitoring equipment
 - Cleanup work
- **Hotline** – the outer boundary of the exclusion zone

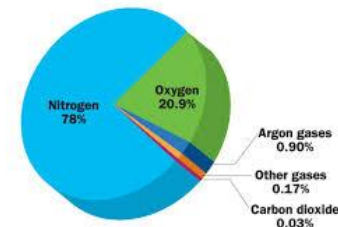


Air Monitoring

- Both responders and public concerns
- Selecting Personal Protective Equipment
- Delineating Areas Where Protection is Needed
- Assessing the Potential Health Effects of Exposure

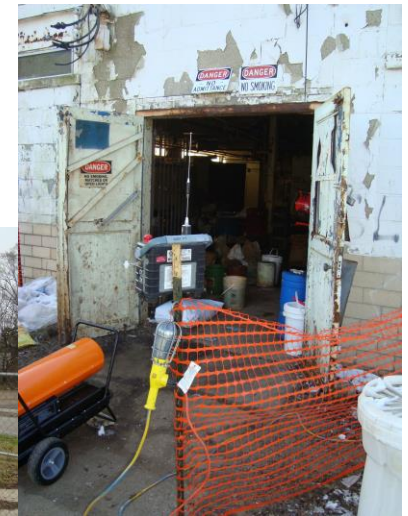
PERCENT (%)	PARTS PER MILLION (PPM)
1.0	10,000
5.0	50,000
10.0	100,000
50.0	500,000

- Normal air contains 20.9% oxygen; the remainder consists of nitrogen and trace gases.
- Oxygen, then, represents about one fifth (1/5) of the air envelope.
- A decreased oxygen reading of 1%, from 20.9% to 19.9%, actually represents a change in the total air envelope of approximately 5% or 50,000 ppm.
- This represents no hazard if the displacing gas is inert; if the displacing material is toxic, however, such a concentration could represent a very real hazard.



Air Monitoring in the Support Zone

- Fixed-location monitoring at the “fence line” or perimeter, where PPE is no longer required.
- Measures contaminant migration away from the site and enables the SOFR to evaluate the integrity of the site’s clean areas.
- Often serves to confirm that conditions have not changed and confirm reliability of modeling processes. (Rule our data.)



Personal Protective Equipment (PPE)

- **Should match the hazard**
- **Level A**
 - Highest level of respiratory, skin and eye protection
 - Used during unknown or vapor hazards
- **Level B**
 - Less skin protection than A
 - Used during splash hazards
- **Level C**
 - Lower level of respiratory
 - Particulate hazards
- **Level D**
 - Durable work clothes
 - Known physical hazards



Fatigue Standards

- **Motor Vehicle**

- CDL
- Non-CDL

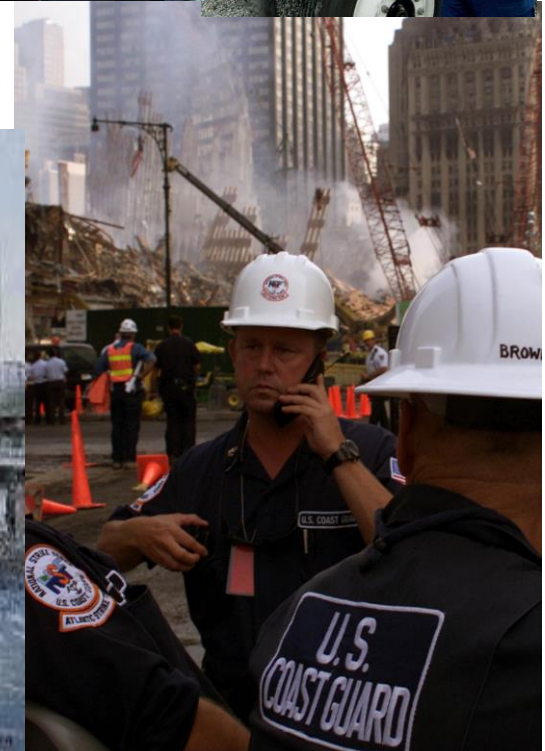


- **Boat Crew**

- BOAT Manual Vol 1, pg 2-24

- **Response Team**

- HAZMAT Team



Medical Monitoring

- **Wet Bulb Globe Temperature (WBGT)**
 - Environmental Contribution to Heat Stress
- **Physiological Monitoring**
 - Increased frequency for personnel in impermeable protective clothing
 - Limited stay times



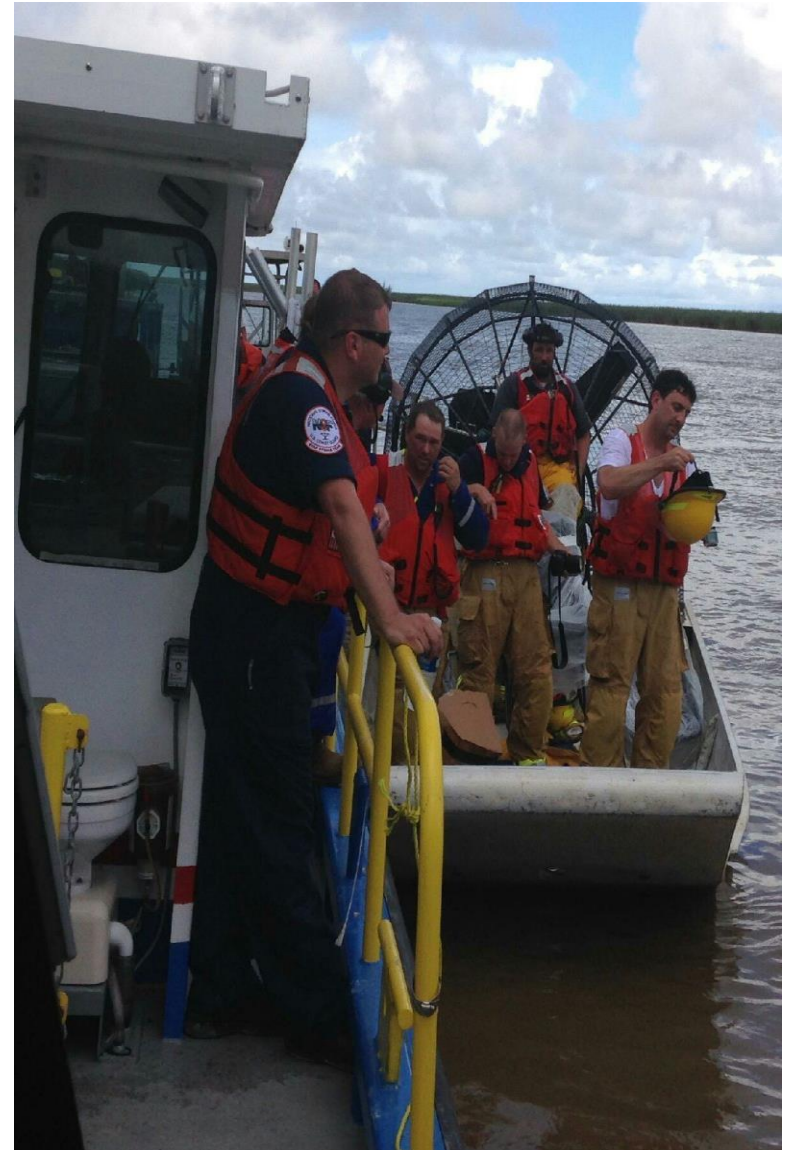
High Risk – Low Frequency

- **Response activities that are extremely hazardous and not always conducted**
 - Diving Operations
 - Helo Operations
 - Climbing Operations
 - Airboat Operations
 - Logistical issues
- **Will Need Additional Safety Personnel Resources**



Safety Challenges

- 🔹 **Resources Support**
- 🔹 **Resource Competition**
- 🔹 **Communications**
- 🔹 **Logistics**
- 🔹 **Area Familiarization**



Off Shore Operations



Division Group Specific Resources



Risk vs Reward



FIREPROOF BARRIERS & FIRE BOOM

DESMI-AFTI'S Superior Fire Boom: Pyro-Boom



Just another day



- <http://coastguardnews.com/east-wax-lake-spill-unified-command-to-conduct-in-situ-burn/2015/07/24/>



<http://response.restoration.noaa.gov/about/media/louisiana-marsh-uncommon-opportunity-learn-about-burning-oil.html>





Questions?



We thank you for what you do

