

The image features the OSHA logo prominently in the center. The logo consists of a stylized 'O' with a blue outer ring and a grey inner circle, followed by the letters 'S', 'H', and 'A' in a white, serif font with a slight shadow effect. The background is a close-up, slightly blurred view of the American flag, showing the stars and stripes in shades of red, white, and blue.

OSHA

adds value to business,
work and life.

Worker Safety and Health Management During the BP Oil Spill: Exposure Assessment and Monitoring

Todd Jordan, MSPH, CIH
Director, USDOL/OSHA Health Response Team

2010 Worker Safety and Health Technical Conference
October 2010

OSHA Activities

- Ensure that workers have safety and health training and protections necessary to avoid injuries and illnesses
 - Technical Assistance to UC and Agencies
 - Conduct Interventions
 - Develop and implement exposure assessment and sampling strategy



OSHA Worker Exposure Assessment and Sampling Activities

- Information collected on employers, workers, and work tasks (standard form)
 - Hazards
 - PPE
 - Controls
- Sampling Strategy
 - Three (3) work zones
 - Sixteen (16) specific work tasks



Potential Sampling Tasks

1. Manual scraping
2. Sump and pump/vacuum
3. Manual removal of oil materials
4. Low pressure flushing
5. Manual sorbent application
6. Manual cutting
7. In-situ burning
8. Vacuum truck, vacuum pumps, portable skimmers
9. Oil mop
10. Recovery of oil from groundwater
11. Marsh-non shore cleanup operations (SCAT)
12. Skimming
13. High pressure cleaning
14. Manual removal of solid tar balls
15. On shore support
16. Float support
17. Other

Shore Cleanup

- Tar ball removal
- Oiled sediments, vegetation, and debris removal
- Manual sorbent application and removal
- Pollution investigation
- Sump & pump/ vacuum trucks



Vessel Booming & Skimming

- On-water operations
- Various skimming techniques
- Oil patrols
- Environmental sampling
- Boom application, removal, tending



Vessel Booming & Skimming

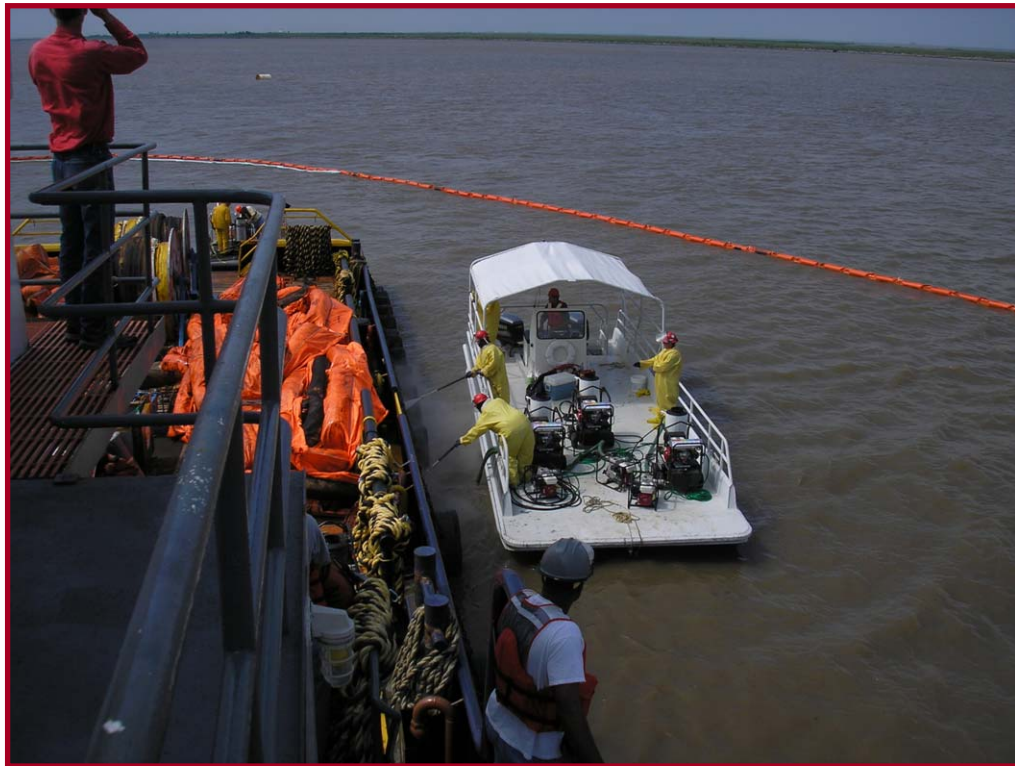


In-Situ Burning

- On-water destruction of “fresh” oil
- Upwind end of contaminated area ignited and allowed to burn to down-wind end



Decon



- Vessel decon
- Boom decon
- Equipment decon
- High and low-pressure washing

Decon



Decon



IH Sampling

- Chemical Exposure Assessments
 - Oil
 - Dispersants
 - Cleaning agents
 - Combustion products
- Physical Hazard Assessments
 - Noise
 - Heat



IH Sampling – Direct Reading and Integrated

- Personal Samples
 - Breathing zone
 - Sample results cards provided to workers
- Area Samples
 - Areas frequently occupied by workers
- Special Samples (characterization)
 - Bulks (air, solid, liquid)
 - Worst case



Sampling Methods

Sample	Method	Media	Comments
VOC-Diffusive (BTEX, etc.)	OSHA 1005	SKC 575-002 Diffusive Sampler	Crude oil
VOC-Active (BTEX, etc.)	OSHA 1005	SKC 226-01 Charcoal Tube	Crude oil
Petroleum Distillates	OSHA 48	SKC 226-01 Charcoal Tube	Crude oil
Heavy Aliphatics & Aromatics	Qualitative GC/MS	SKC 590-100 Ultra I Sampler	Crude oil
Propylene Glycol	OSHA PV2051	SKC 226-57 XAD-7 OVS Tube	Dispersant
2-Butoxyethanol	OSHA 83	SKC 575-002 Diffusive Sampler	Dispersant (prior to 5/2010)

Sampling Methods

(continued)

Sample	Method	Media	Comments
Formaldehyde	OSHA 1007	Assay Tech ChemDisk	In-situ burning
Oil Mist	PC2121	PVC Filter	Decon/pressure washing (initial sampling)
Glycol Ethers (2-butoxyethanol)	OSHA 83	SKC 226-01 Charcoal Tube	Decon cleaning agent
Benzene Soluble Fraction	OSHA 58	Glass Fiber Filter	Decon/pressure washing

Direct Reading Methods

- VOC: Photo-ionization detector (PID)
- 4-gas: CO, H₂S, %LEL, %O₂
- Benzene, Toluene, Xylene, TPH, NH₃: CMS/Detector Tubes
- Noise: SLM, Dosimeter
- Heat Stress: WBGT Meter

Heat Stress

- Prevalent among all operations
- Extremely hot, humid conditions
 - Avg. maximum Heat Index values ranged between 99-117 °F, May-September
- Comprehensive heat stress program implemented
- Stringent work/rest cycles utilized
 - Example: 20 minutes on, 40 minutes off for extreme conditions
- Shaded and/or air-conditioned rest areas
- Medical monitoring
- Water and sports drinks readily available for hydration
- First aid/removal from work if symptoms occur

Personal Protective Equipment

- PPE programs were reviewed and guidance provided
- Respirators not required, with the exception of:
 - Operations at the source (respirators used according to direct reading measurements)
 - In-situ burning (escape respirators available if necessary, rec. by NIOSH)
- PPE used mainly for skin protection
- Necessary to balance PPE requirements with heat stress issues

Sample Results

- Sampling Information Posted on OSHA Website
 - Sample Strategy
 - Sample Results

The screenshot displays the OSHA website's homepage with a focus on the Gulf of Mexico oil spill response. The header includes the OSHA logo and navigation links. A prominent banner reads "Keeping Workers Safe During Oil Spill Response and Cleanup Operations". Below this, a navigation menu lists various topics: Oil Spill, Worker Rights, Chemical Exposure, Hazards, Training, News Releases, Worker Protection, and OSHA Activity. The main content area features a section titled "OSHA's Efforts to Protect Workers" with a sub-section "OSHA Response By the Numbers" containing a table of statistics.

OSHA Response By the Numbers	
4/26 thru 10/1/10	
Site visits by OSHA personnel*	4,266
Exposure Assessments	7,439
OSHA personnel:	
Permanently assigned to Gulf	146

*Site visits cover vessels of opportunity, Staging areas, decontamination, distribution and deployment sites

OSHA Presence and Chemical Sampling in the Gulf

OSHA's Efforts to Protect Workers

Every day OSHA has over 146 professionals protecting workers throughout the Gulf. From April 26th through October 1st, between 20-40 were assigned solely to the Oil Spill Response. OSHA personnel have been deployed to all staging areas in Louisiana, Mississippi, Alabama, and Florida. OSHA staff were on the ground and on boats to make sure BP was protecting cleanup workers from health and safety hazards.

OSHA worked as part of the coordinated federal response which included the U.S. Coast Guard and other government agencies that deal with health and the environment to evaluate BP's efforts and make sure BP put in place all of the precautions needed to protect workers from the hazards associated with cleanup work. When OSHA found problems or learned about them from workers, we immediately brought them to the attention of BP and monitored the situation until they were corrected. OSHA also raised its concerns throughout the Unified Command so they could be addressed across the entire response area. See [OSHA's Activity Fact Sheet](#) for more information.

Exposure to Toxic Chemicals. To determine whether or not workers are exposed to dangerous levels of toxic chemicals, OSHA conducted its own independent air monitoring, both on shore and on the cleanup vessels, and is reviewed data from BP, the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA). To date, no air sampling by OSHA has detected any hazardous chemical at levels of concern. See [more information on OSHA's sampling strategy, detailed findings, and evaluations.](#) Read our [frequently asked questions on health hazards and protections](#), including information on respirators and other personal protective equipment.

Training is important. To work in the cleanup, you must be trained on the hazards of your job in a language that you understand. You must be trained before you begin oil spill response and cleanup work. [Read OSHA's fact sheet on training requirements for the Deepwater Horizon oil spill response.](#)

Worker Protection. To help workers understand their risks and what their employers should be doing to protect them, OSHA has developed a series of job-specific sheets. Each sheet

Restore The Gulf
Official Federal Portal for the Deepwater BP Oil Spill Response and Recovery

careeronestop
PROVIDING CAREER SERVICES
[CareerOneStop's Deepwater Horizon Resource](#) site provides quick access to a range of employment and related resources for individuals impacted by the emergency in the Gulf of Mexico. 1-866-443-6363 (1-866-407-2265) TTY: 1-877-5627

Recent News:

- [OSHA Statement on 2-Butoxyethanol & Worker Exposure](#)
- [Statement from US Department of Labor warns employers along Gulf Coast against withholding of HAZWOPER certificates](#)

C-Span Video, Dr. Michaels Interviewed on OSHA Efforts to protect clean-up workers [\[Transcript\]](#)

Lessons Learned

- UC response allows S&H professionals to provide “higher” levels of protection
 - Use of “best” OEL vs. outdated PEL
 - HASP
- Good coordination of IH sampling activities on an on-going basis w/ BP, contractors, USCG, NIOSH, EPA, etc.
- Use diffusive samplers whenever possible
 - Less manpower needed to collect samples
 - Less disruptive to workers
- Improved coordination between laboratory and field personnel
 - Ensure sampling times (volumes) adequate to ensure reporting limits are below appropriate OEL
- Improve coordination between field personnel and data management personnel
 - Quicker feedback of sampling reports to field planners

Todd Jordan, MSPH, CIH
Director, OSHA Health Response Team

Salt Lake Technical Center
8660 S. Sandy Parkway
Sandy, UT 84070

Jordan.Todd@dol.gov

801-233-4916

The image features the OSHA logo prominently in the center. The logo consists of a stylized 'O' with a blue outer ring and a grey inner ring, followed by the letters 'S', 'H', and 'A' in a white, serif font with a slight shadow effect. The background is a close-up, slightly blurred view of the American flag, showing the stars and stripes in shades of red, white, and blue.

OSHA

adds value to business,
work and life.