

# Health Hazard Evaluation of Deepwater Horizon Response Workers

On May 28, 2010, BP requested a health hazard evaluation of Deepwater Horizon Response workers. The ninth in a series of interim reports from this health hazard evaluation was issued December 7, 2010. In this report, NIOSH presents the findings of three separate activities.

## Bulk Sampling

At an in-situ burn, NIOSH collected seven samples, including three of fresh surface oil, two of burnt oil residue floating on the water, and two of “weathered” surface oil. All samples revealed a variety of hydrocarbons, including volatile organic compounds and polynuclear aromatic hydrocarbons, and other compounds.

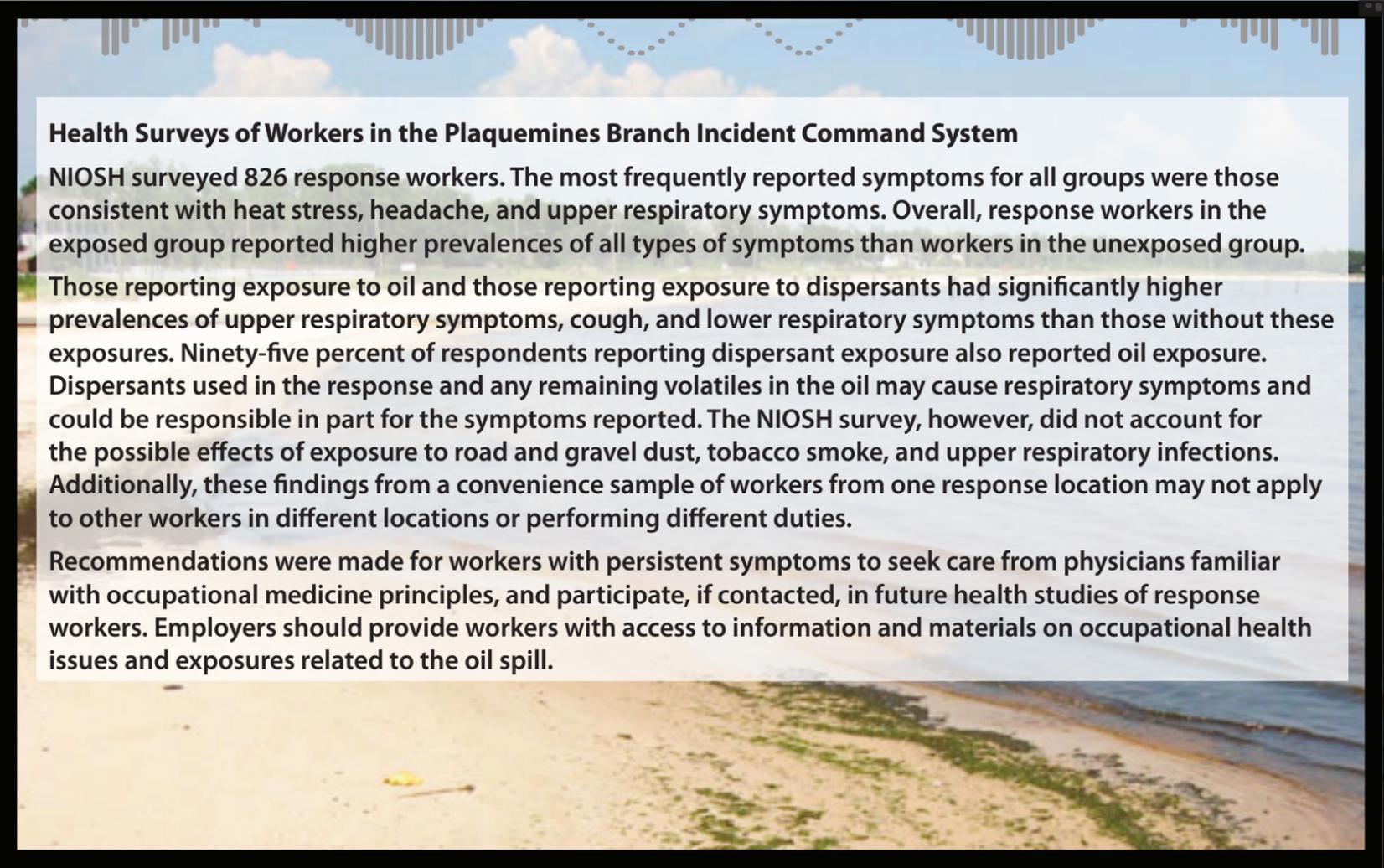
NIOSH collected six bulk samples during a dispersant application operation. Two samples were oil from the water surface prior to dispersant application, two samples were of water collected from 1 meter depth in an area with no visible surface oil, and two samples were of water/oil/dispersant mixtures collected from the water surface after dispersant application. The oil sample results similarly revealed a variety of VOCs, PAHs, and other compounds; few, if any VOCs were detected in either the water samples or water/oil/dispersant mixture samples.

NIOSH obtained several bulk samples of Corexit® EC9500A dispersant. These included dispersant collected on the vessel during an application operation, dispersant collected from a storage site, and dispersant provided directly by the manufacturer. Sample analysis revealed trace amounts of 2-butoxyethanol in product collected in the field. This likely was the result of cross contamination from containers that previously held products containing 2-butoxyethanol.

Off the side of a shrimping trawler, NIOSH collected two bulk samples of foamy water, described by response workers as “dispersant foam.” No VOCs were detected.

Aboard two vessels at the oil spill source, NIOSH collected two bulk samples of drilling mud and four bulk samples of oil. The drilling mud samples contained 2-butoxyethanol and various fatty acids and related compounds. The oil sample results were similar to the other oil samples NIOSH analyzed.

Results of the bulk samples do not change the findings and conclusions made by NIOSH in earlier Interim Reports based on results of personal breathing zone and area air sampling.

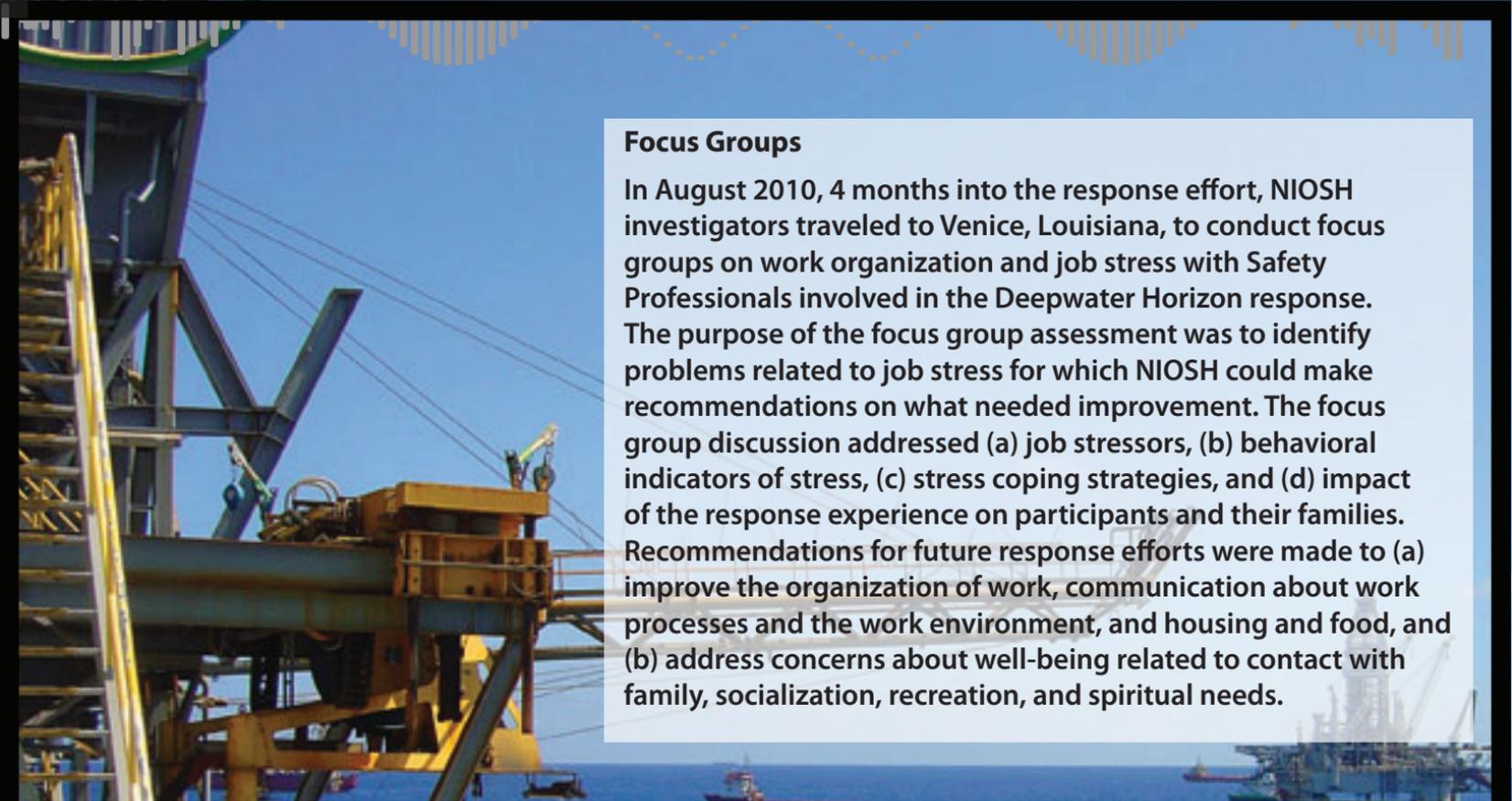
The background of the slide is a photograph of a sandy beach with green seaweed and blue water. A white rectangular text box is centered on the image. At the top of the slide, there is a decorative border consisting of vertical lines of varying heights and some dotted patterns.

## **Health Surveys of Workers in the Plaquemines Branch Incident Command System**

**NIOSH surveyed 826 response workers. The most frequently reported symptoms for all groups were those consistent with heat stress, headache, and upper respiratory symptoms. Overall, response workers in the exposed group reported higher prevalences of all types of symptoms than workers in the unexposed group.**

**Those reporting exposure to oil and those reporting exposure to dispersants had significantly higher prevalences of upper respiratory symptoms, cough, and lower respiratory symptoms than those without these exposures. Ninety-five percent of respondents reporting dispersant exposure also reported oil exposure. Dispersants used in the response and any remaining volatiles in the oil may cause respiratory symptoms and could be responsible in part for the symptoms reported. The NIOSH survey, however, did not account for the possible effects of exposure to road and gravel dust, tobacco smoke, and upper respiratory infections. Additionally, these findings from a convenience sample of workers from one response location may not apply to other workers in different locations or performing different duties.**

**Recommendations were made for workers with persistent symptoms to seek care from physicians familiar with occupational medicine principles, and participate, if contacted, in future health studies of response workers. Employers should provide workers with access to information and materials on occupational health issues and exposures related to the oil spill.**



## Focus Groups

In August 2010, 4 months into the response effort, NIOSH investigators traveled to Venice, Louisiana, to conduct focus groups on work organization and job stress with Safety Professionals involved in the Deepwater Horizon response. The purpose of the focus group assessment was to identify problems related to job stress for which NIOSH could make recommendations on what needed improvement. The focus group discussion addressed (a) job stressors, (b) behavioral indicators of stress, (c) stress coping strategies, and (d) impact of the response experience on participants and their families. Recommendations for future response efforts were made to (a) improve the organization of work, communication about work processes and the work environment, and housing and food, and (b) address concerns about well-being related to contact with family, socialization, recreation, and spiritual needs.

To read Interim Report #9 and view updates on this health hazard evaluation visit <http://www.cdc.gov/niosh/topics/oilspillresponse/gulfspillhhe.html>.

