



## Public Health Activities and the Deepwater Horizon Oil Spill

**Introduction:** In response to the ongoing Deepwater Horizon oil spill in the Gulf of Mexico, the Mississippi State Department of Health (MSDH) has been engaged in a number of activities aimed at monitoring and protecting public health. While ecological impacts are more likely, there may be human health effects. What follows is a description of the potential health effects related to exposure to the oil, a brief explanation of the roles of other state and federal agencies, and the continuing MSDH surveillance activities.

**Potential Health Effects:** The oil in the current spill is classified as sweet crude. As such, it has a fairly high content of light carbon compounds such as volatile organic compounds (VOC) and polycyclic aromatic hydrocarbons (PAH) and low sulfur content (hence the 'sweet' nomenclature). The VOC's are the primary concern for acute human health effects. However, when exposed to air, this class of oil can lose approximately 30% of its volume within a day due to weathering, primarily through evaporation. One additional and important factor is the stripping (or scrubbing) action the 5,000-foot water column provides as the crude makes its way to the surface. Therefore, the majority of the VOC's are removed before the oil surfaces. Winds and wave action add to further weathering of the oil, leading to the formation of oil emulsions, which are much thicker and stickier than the original oil. The longer the oil stays in the open water, the more it weathers and increases in density. By the time the oil reaches shore, it is in the form of emulsified brown, red and orange "mousse," light sheen, and globs of weathered oil (tarballs).

Individuals may be exposed to the oil through direct skin contact, ingestion through contaminated food or water, airborne particulate matter that could result from in situ burning of the oil, or exposure to oil odors. Symptoms vary depending on the pathway of exposure. Prolonged skin contact with the weathered oil may lead to slight to moderate skin irritation, and ingestion may lead to gastrointestinal complaints such as nausea and vomiting. Although crude oil odors may be detected along the coast, the substances that are evaporated from oil can be smelled at levels far below levels of concern for health. Some individuals may be more sensitive to the odors or particulate matter, which can lead to headaches, nausea, vomiting, or exacerbations of chronic respiratory illness.

**State and Federal Partners:** The Mississippi Department of Environmental Quality (DEQ) and the Mississippi Department of Marine Resources (DMR) are the lead state agencies in the response to the oil spill. MSDH serves in an advisory role to both of these agencies. DMR regulates commercial and recreational harvesting of oysters, shrimp and finfish in state waters to assure public safety. DMR and MSDH are working with other gulf states, the US Food and Drug Administration (FDA), and the National Oceanographic and Atmospheric Administration (NOAA) to coordinate the response and reopening protocols for fisheries. MSDH is assisting DEQ to provide appropriate public health messages and the triggers for beach advisories.

Several federal and state agencies, including DEQ and contractors for the Unified Command, are performing air monitoring for VOC's, particulate matter, and crude oil odors along the Gulf Coast from Louisiana to the Florida Panhandle. To date, most samples have detected no VOC's or solvents. Those few samples that have been detected VOC's on shore are well below any levels of health concerns. Both inshore and offshore water sampling is being done to detect gasoline, diesel and oil range organics in the same areas. Only a few samples have detected any of the organics, and these have also been below levels of health concerns.

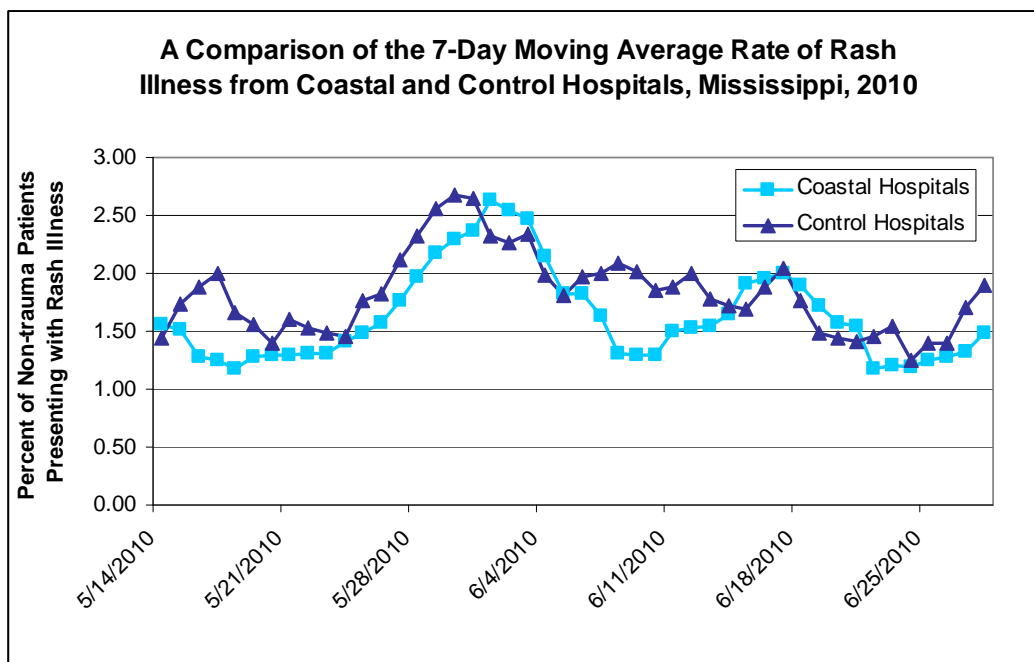
The health of workers and volunteers working on the spill is being monitored by the US Occupational Safety and Health Administration (OSHA) and the National Institute of Occupational Safety and Health (NIOSH),

a part of the US Centers for Disease Control and Prevention (CDC). NIOSH is developing a roster of workers involved in the cleanup in an effort to identify any health acute conditions, and to monitor for health problems that may occur in the future. NIOSH has published a new report on its website titled “NIOSH Report of BP Injury and Illness data, April 23 –June 6, 2010” which may be accessed at: <http://www.cdc.gov/niosh/topics/oilspillresponse/data.html>.

In previous oil spills and natural disasters, there have been spikes in domestic violence, substance abuse, depression and anxiety and the potential for suicides. The Mississippi Department of Mental Health (DMH) is making preparations to increase capacity for mental health services and create crisis teams to provide counseling. MSDH is working with DMH to develop a surveillance plan to monitor for increases in calls received to the DMH counseling hotline and increases in visits to coastal mental health facilities.

**MSDH Surveillance Activities:** MSDH is working with the CDC and other state health departments to coordinate surveillance across the gulf states. On May 10, MSDH began enhanced syndromic surveillance looking for potential acute health effects related to the oil spill. Five coastal hospitals and four inland hospitals (to serve as comparisons) are providing data. MSDH is receiving daily reports of emergency department visits that fall into three syndrome categories: afebrile respiratory illness, rash, and other (nausea, vomiting, and headache). Any increase in reported symptoms is investigated for association with oil exposure. A small increase in rash related visits was noted on June 1, and the investigation of this revealed no association with oil exposures. Otherwise, the percent of individuals with the identified syndrome categories presenting for evaluation at the coastal emergency departments has been comparable (Figure, rash illness) or below the percent seen in the control hospitals. On June 11, the coastal hospitals were requested to begin collecting oil exposure data as well. So far, only one report of oil exposure has been received through this system. In addition, chief complaint data reported electronically (through the Early Aberration Reporting System or EARS) from three coastal emergency departments is monitored for increases in the three syndromes. No oil associated illness increases have been detected.

Figure

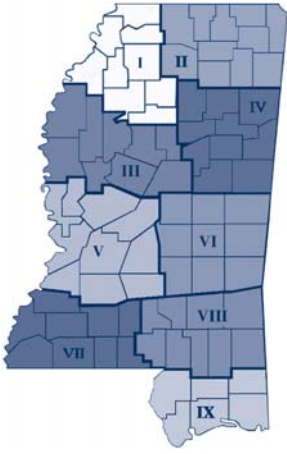


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# Mississippi

## Provisional Reportable Disease Statistics

### May 2010



		Public Health District									State Totals*			
		I	II	III	IV	V	VI	VII	VIII	IX	May 2010	May 2009	YTD 2010	YTD 2009
Sexually Transmitted Diseases	Primary & Secondary Syphilis	0	0	0	1	5	3	0	2	9	20	13	83	85
	Total Early Syphilis	2	0	3	1	13	9	0	3	25	56	38	227	217
	Gonorrhea	68	35	63	30	127	43	23	39	44	472	540	2511	3029
	Chlamydia	198	145	219	137	396	168	114	162	176	1715	1756	9170	9976
	HIV Disease	13	6	6	5	34	4	10	8	11	97	44	270	256
Mycobacterial Diseases	Pulmonary Tuberculosis (TB)	1	1	2	0	2	0	0	1	0	7	7	29	32
	Extrapulmonary TB	0	0	0	0	0	0	0	0	0	0	0	4	5
	Mycobacteria Other Than TB	1	5	1	0	10	1	1	3	5	27	24	181	141
Vaccine Preventable Diseases	Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	2	0	1	0	3	9	21	34
	Tetanus	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0	0
	Measles	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mumps	0	0	0	0	0	0	0	0	0	0	1	0	1
	Hepatitis B (acute)	0	2	0	0	1	0	0	0	0	3	3	13	10
	Invasive <i>H. influenzae</i> b disease	0	0	0	0	0	0	0	0	0	0	0	0	0
	Invasive Meningococcal disease	0	0	0	0	0	0	0	0	0	0	0	2	2
Enteric Diseases	Hepatitis A (acute)	0	0	0	0	0	0	0	0	0	0	0	0	5
	Salmonellosis	2	6	5	3	8	3	7	6	2	42	66	127	191
	Shigellosis	2	0	0	0	0	0	0	0	0	2	4	11	13
	Campylobacteriosis	1	0	0	1	4	0	1	0	0	7	6	37	42
	<i>E. coli</i> O157:H7/HUS	0	1	0	0	3	0	0	0	0	4	1	9	6
Zoonotic Diseases	Animal Rabies (bats)	0	0	0	0	0	0	0	0	0	0	0	0	1
	Lyme disease	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rocky Mountain spotted fever	0	0	0	0	0	0	0	0	0	0	3	0	4
	West Nile virus	0	0	0	0	0	0	0	0	0	0	0	1	1

\*Totals include reports from Department of Corrections and those not reported from a specific District.



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The Centers for Disease Control and Prevention (CDC) has been providing MSDH with data on similar syndromes through BioSense, a surveillance network that monitors visits to Department of Defense and Veterans Administration facilities on the coast. On May 11, an increase in visits for respiratory illness was detected and on June 10 an increase in visits for rash related problems was detected. Neither of these increases were related to oil exposure.

Health care providers who encounter patients that have symptoms that may be due to exposure to petroleum products may call the Mississippi Poison Control Center for consultation or reporting, at (800) 222-1222.

Below are important internet links to information regarding the oil spill response and potential health effects:

- Mississippi State Department of Health: <http://www.msdh.state.ms.us/>
- Centers for Disease Control and Prevention: <http://emergency.cdc.gov/gulfoilspill2010/>
- US Food and Drug Administration: <http://www.fda.gov/Food/ucm210970.htm>
- National Library of Medicine (oil spill related pages): <http://disasterinfo.nlm.nih.gov/dimrc/oilspills.html>
- Mississippi Department of Environmental Quality: [www.deq.state.ms.us](http://www.deq.state.ms.us)
- Mississippi Department of Marine Resources: [www.dmr.ms.gov](http://www.dmr.ms.gov)
- Deep Water Horizon Response: <http://www.deepwaterhorizonresponse.com/go/site/2931/>

References available on request.