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EVALUATING THE HEALTH IMPACTS OF THE GULF OF MEXICO OIL SPILL

HEARING

OF THE

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS

UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

ON

EXAMINING THE HEALTH IMPACTS OF THE GULF OF MEXICO OIL SPILL

JUNE 15, 2010

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EVALUATING THE HEALTH IMPACTS OF THE GULF OF MEXICO OIL SPILL

TUESDAY, JUNE 15, 2010

U.S. SENATE,
COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS,
Washington, DC.

The committee met, pursuant to notice, at 2:30 p.m. in room SD–430, Dirksen Senate Office Building, Hon. Tom Harkin, chairman of the committee, presiding.

Present: Senators Harkin, Murray, Casey, Hagan, Merkley, Bennet, and Enzi.

OPENING STATEMENT OF SENATOR HARKIN

The CHAIRMAN. The Senate Health, Education, Labor, and Pensions Committee will come to order. I thank you all for attending this important hearing.

The oil spill in the Gulf of Mexico, more accurately called an "oil well blowout," is an unprecedented environmental and human disaster. On April 20, the explosion on the Deepwater Horizon oil rig killed 11 workers, a terrible tragedy in itself. The explosion set about a chain of events that has led to the worst oil spill in U.S. history. The most recent estimates are that the deep sea well is spewing between 25,000 and 30,000 barrels of oil per day, amounting to more than 50 million gallons of oil spilled to date. And as of last week, more than 1 million gallons of dispersants have been used to break up the oil.

Of course, this is a very important issue for the Federal Government. In his first Oval Office address of this year, tonight, President Obama will discuss the oil spill. Just about an hour ago, Dr. Francis Collins, of the NIH, said that the National Institutes of Health will devote $10 million to support research on the potential human health effects of the oil spill. This is for respiratory, immunological, and neurobehavioral effects.

All of us see the pictures of oil-soaked pelicans, the tar balls on the beach, and we can't help but think, "How will this affect my drinking water, the air I breathe, the food I eat?" That's why today we're going to examine how the oil spill in the Gulf affects public health.

There are many different chemicals in crude oil and dispersants, with some more toxic than others. We know the environmental effects of these chemicals are devastating, but how they affect people is less clear. Previous oil spills, such as the Exxon Valdez spill in 1986 in Alaska, indicate there are some short-term health impacts.

Breathing in oil mist can cause headaches, nausea, and respiratory problems. Getting oil on the skin can lead to skin issues. Children and individuals with health problems, such as respiratory conditions like asthma, are particularly susceptible to oil effects. Many of these physical health impacts appear temporary, but little is known about the long-term impacts.

The oil spill may also affect mental health. One study in Alaska, conducted 1 year after Exxon Valdez, found that residents near the spill were more likely to suffer from anxiety, posttraumatic stress disorder, and depression.

Thankfully, from what we can tell at this point, there have been relatively few public health impacts among the public and workers at the scene of the oil spill. As of June 7, about 70 people in the five Gulf States have reported, to Poison Control Centers, health issues they think are from the exposure to oil, including throat irritation, headaches, nausea, and dizziness. More than 20,000 workers have been sent to the Gulf to help clean up the oil, but few have reported any illnesses. However, we need to continue to monitor the situation closely and respond to any potential risk.

We also need to make sure that the American people know what is, and what isn't, a problem so that they aren't scared away from eating food or visiting beaches that are perfectly safe. The Government is now responding to this need. The Centers for Disease Control and Prevention, who are here today, is leading surveillance efforts across the Gulf States for health effects. The CDC is also putting out fact sheets and information on its Web site, describing what is and isn't a health risk, and detailed ways to minimize any risks. The Department of Health and Human Services has dispatched mobile medical units to the Gulf Coast. The Occupational Safety and Health Administration is monitoring the safety of cleanup crews, working to ensure that the workers have the information and training they need to do their jobs safely. The Food and Drug Administration is working closely with the National Oceanographic and Atmospheric Administration, making sure contaminated waters are closed to fishing to ensure that the seafood eaten across the country is safe. Today, we'll learn more about the Government's response and how it will change as the situation in the Gulf evolves.

I convened this bipartisan hearing today, with Senator Enzi, to examine the impacts of the Gulf oil spill on the public's health and how the Government is responding to the crisis. Unfortunately, it doesn't look like the oil is going to go away anytime soon. We need to remain vigilant in protecting the public and the workers and volunteers in the cleanup effort.

As I've always said, preventing health problems before they happen is key. We need to get out in front of the oil spill to ensure that Americans in the Gulf and all over the country are safe.

I thank the witnesses for coming today, and look forward to hearing what you have to say.

Now I will recognize the Ranking Member, Senator Enzi.

STATEMENT OF SENATOR ENZI

Senator ENZI. Thank you, Mr. Chairman.

The Deepwater Horizon oil spill is tragedy of epic proportions, and I'm just as concerned about getting it cleaned up. And, in fact, I have a fellow in Buffalo, WY, that invented a way to clean up spills that's less expensive and more effective. He uses pine beetle killed trees, with some ingredients that he has 29 patents on, that do a marvelous job of cleaning it up. He's got some previous experience with cleaning them up. We've helped him submit and resubmit applications so that he could do it down in the Gulf; and so far, all that's happened is, they've been lost, I think. So, there are some other things that could be done there.

But, today what we're going to concentrate on, of course, is the health. And, of course, it's a tragedy for the 11 families who lost a loved one in the accident, but it's a disaster for many communities in the Gulf, and it's a colossal environmental mess. Today, I look forward to hearing from the Administration about the disaster's short- and long-term impact on public health.

As of last week, the Louisiana Department of Health and Hospitals had reported 71 cases of oil spill-related illness. Of those, 50 individuals were involved in cleaning up the spill, while 21 were individuals from the general public. The cause of illness is still unclear, and reports continue to be uncertain. The good news from the reports is the fast turnaround in treating these individuals, but uncertainty remains about the long-term impact on the general public.

Looking back to oil spills in the past, we see the dearth of information that's been collected, and the lack of research that's been conducted, on public health effects on the general public. With the spill in the Gulf of Mexico, we have a responsibility, in this crisis, to collect information and study the implications of the spill and the implications on the people, getting their baselines. Past spills have provided information on the environmental impact, but, with the wide-reaching effects of the spill in the Gulf and the uncertainty of where the oil will spread, it's critical that we monitor the health of individuals in contact with oil and living in areas affected by the spill.

I'm pleased with the response efforts to prevent contaminated food from entering the food supply, and I am looking forward to hearing more about how to reopen fisheries in a safe and efficient manner.

On May 18, the National Oceanic and Atmospheric Administration closed all fisheries in the Gulf, so we can safely say that our food supply has not been contaminated. However, the impact on small businesses in the Gulf will be devastating, and it is important to put those individuals back to work as soon as it's safely possible.

The Department of Health and Human Services has done a good job of posting information for the general public about what to do if they come in contact with oil or dispersants. I hope this hearing will give them an opportunity to reach out to those families and inform them of the risks of living near the spill, and the necessary precautions to take in the event that individuals come in contact with these toxic chemicals in the water.

I welcome the witnesses today, and hope they can shed some light on these health-related issues.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Enzi.

We have a distinguished panel here today. I'm delighted you're all here. I'll introduce you all. Your statements will be made a part of the record in their entirety, and we'll ask you to summarize them.

Our panel, going from my left over to my right—Dr. Lisa Kaplowitz, the Deputy Assistant Secretary for Preparedness and Response in the U.S. Department of Health and Human Services. In her position, she's responsible for directing and coordinating policy and strategic planning for all components in the Office of Preparedness and Response. Prior to her work with HHS, Dr. Kaplowitz was the director of the Health Department for the city of Alexandria, VA, and, before that, the deputy commissioner for emergency preparedness and response for the State of Virginia.

Next, Dr. John Howard, the Director of the National Institute of Occupational Safety and Health. In his capacity, Dr. Howard serves as the coordinator of the Department's World Trade Center Health Programs. Prior to his appointment as Director of NIOSH, Dr. Howard served as chief of the Division of Occupational Safety and Health in the California Department of Industrial Relations from 1991 through 2002.

Next, we have Dr. Aubrey Miller, a senior medical advisor and liaison to the U.S. Department of Health and Human Services for the National Institute of Environmental Health Sciences. A medical epidemiologist and captain in the U.S. Public Health Service, Captain Miller previously served as the chief medical officer in the Office of Counterterrorism and Emerging Threats at the FDA.

And last, we have Mike Taylor, the deputy commissioner for foods at the Food and Drug Administration. Mr. Taylor was named deputy commissioner for foods at the FDA in January 2010. He is the first individual to hold the position, which was created, along with the new Office of Foods, in August 2009. He is leading the FDA efforts to develop and carry out a prevention-based strategy for food safety, a plan for new food safety legislation here in the United States.

Again, I thank you all for coming here today. As I said, your statements will be made a part of the record. If you could summarize, basically, your statements in—oh, the clock says 5 minutes, but if you run over, I won't worry too much, unless it gets real over. OK?

Dr. Kaplowitz, welcome. Please proceed.

STATEMENT OF LISA KAPLOWITZ, M.D., M.S.H.A., DEPUTY ASSISTANT SECRETARY FOR POLICY, OFFICE OF THE ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE, DEPARTMENT OF HEALTH AND HUMAN SERVICES, WASHINGTON, DC

Dr. KAPLOWITZ. Chairman Harkin, Ranking Member Enzi, and distinguished members of the committee, thank you for the opportunity to testify today about our public health and medical efforts in response to the Deepwater oil spill disaster. I commend this committee for its leadership in holding today's hearing, and share your sense of urgency on this important issue.

On behalf of the Department, I would like to extend my sympathies to the families of those who lost their lives in this disaster, to those who were injured, and to those whose way of life has been changed for years to come. The impacts of this disaster must be considered in the timeframe of, not weeks and months, but years. Oil can remain toxic in the environment for years, and we do not know the impact it could have on human health over the long-term.

As the agency responsible for coordinating HHS preparedness and response efforts, ASPR chairs a twice-weekly policy call with other HHS agencies involved in the Gulf response, including the NIH, CDC, FDA, ACF, SAMHSA, other offices within HHS, and the Secretary's chief of staff. These calls assure that HHS response efforts are coordinated among all agencies and offices.

ASPR has also provided direct support to the oil spill through the National Disaster Medical System. From the time of the announcement of explosion and fire, ASPR's regional emergency coordinators in the Gulf Coast area were in close communication with each State's emergency coordinator, the State Departments of Health, and the Association of State and Territorial Health Officials.

HHS liaison officers deployed to the Unified Area Command Team, in Robert, LA, to the Incident Command Centers in Houma, LA, and Mobile, AL, and to the National Incident Command Center at the U.S. Coast Guard headquarters in Washington, DC.

On May 31, HHS, in coordination with the Louisiana Department of Health and Hospitals, set up a mobile medical unit in Venice, LA, to provide triage and basic care for responders and residents concerned about health effects of the oil spill. The medical unit screens workers and citizens for exposure, and refers those who require further care to local healthcare providers or hospitals. Our goal is to support the local community and fill any gaps that may be there, not to displace local providers.

Through June 14—yesterday—our NDMS medical unit had seen approximately 125 patients since opening. Some patient conditions, such as heatstroke, have been consistent with any response effort. In total, 48 individuals, or a little over 38 percent, have been treated for acute respiratory conditions; another 27 patient encounters have been for dermatologic, eye, or gastrointestinal problems; 17 individuals have been treated for injuries.

The Department is also directing attention and resources to address the behavioral health issues arising from the oil spill. Our experience and research from previous disasters, including the Exxon Valdez spill, allow us to anticipate and prepare for potential behavioral health needs, such as anxiety, depression, and other adverse emotional and psychological effects. To date, the Department's Substance Abuse and Mental Health Services Administration, or SAMHSA, has engaged in supporting State and local efforts to assess and meet the behavioral health needs of residents in the Gulf States and workers responding to this environmental disaster.

In addition, since the information available to inform decisionmaking related to the human health impacts is inconclusive, Secretary Sebelius has asked the Institute of Medicine to convene an independent panel of scientific experts at a public workshop exploring a broad range of health issues related to the oilspill—from heat exhaustion and other occupational hazards, to exposure to oil and

dispersants. This workshop will be held, actually, next week, June 22 and 23, in New Orleans, LA.

I want to assure the committee that our office, along with our sister agencies within the Department and the Administration as a whole, are taking the public health and medical consequences of the oil spill disaster very seriously and are implementing a comprehensive strategy to monitor and address any public health and medical issues that may arise.

Thank you for the opportunity to testify today. I'm happy to answer any questions you may have.

[The prepared statement of Dr. Kaplowitz follows:]

PREPARED STATEMENT OF LISA KAPLOWITZ, M.D., M.S.H.A.

Good afternoon Chairman Harkin, Ranking Member Enzi, and distinguished members of the committee. I am Dr. Lisa Kaplowitz, Deputy Assistant Secretary for Policy in the Office of the Assistant Secretary for Preparedness and Response (ASPR), U.S. Department of Health and Human Services (HHS). Thank you for the opportunity to speak with you about our public health and medical efforts in response to the Deepwater oil spill disaster. I commend this committee for its leadership in holding today's hearing and share your sense of urgency on this important issue.

Before I begin, on behalf of the Department I would like to extend my sympathies to the families of those who lost their lives in the explosion and sinking of the Deepwater Horizon, to those who were injured, and to those whose way of life has been changed for years to come. The impacts of a disaster such as this must be considered in the timeframe of not weeks and months, but years. Oil can remain toxic in the environment for years and we do not know the impact it could have on human health over the long term.

Today, my colleagues and I will talk about actions the Federal Government is taking to (1) prevent injuries, illnesses and exposure to hazardous substances among response personnel and the general public, (2) ensure the safety of seafood from areas affected by the oil spill, (3) monitor the potential health impacts of the oil spill in the short and long terms, and (4) facilitate access to care to those impacted by the spill.

ASPR SUPPORT TO DEEPWATER HORIZON OIL SPILL RESPONSE

From the time of the announcement of the explosion and fire, ASPR's Regional Emergency Coordinators in Region VI (includes Louisiana and Texas) and Region IV (includes the rest of the Gulf States) were in close communication with the States' Emergency Coordinators, the State Departments of Health, and the Association of State and Territorial Health Officials. HHS Liaison Officers, who function as Medical Unit Leaders and provide coordination and oversight of Federal medical care, were deployed to the Unified Area Command team in Robert, LA, to the Incident Command Centers in Houma, LA and Mobile, AL, and to the National Incident Command Center in Washington, DC.

On May 31 HHS, in coordination with the Louisiana Department of Health and Hospitals, set up a mobile medical unit in Venice, LA to provide triage and basic care for responders and residents concerned about health effects of the oil spill. The goal of this medical unit is to screen workers and citizens for exposure and refer those who require further care to local health care providers or hospitals. Our goal is to support the local community and fill in any gaps that may be there, not to displace local providers. The Secretary activated the National Disaster Medical System (NDMS), and deployed a Medical Strike Team from Arkansas to staff the first rotation of the medical unit. Furthermore, we deployed an Incident Response Coordination Team to provide command and control and logistics support for the unit.

GULF REGION SURVEILLANCE

HHS is working closely with the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) to monitor for and prevent illness among both those working directly to clean up the oil as well as the general population living in the Gulf Region.

Because the oil spill in the Gulf region is unprecedented, we do not know the potential short- and long-term impacts of the spill on the health of workers or the region's general population. It is important, therefore, that surveillance and moni-

toring of the health status of the impacted population be initiated early, with continued surveillance activities for a number of years. To this end, HHS established a Health Surveillance Working Group, coordinated by the National Institutes of Health's National Institute of Environmental Health and Sciences (NIEHS), to coordinate the activities of various departmental agencies engaged in surveillance and monitoring related to potential health impacts in the Gulf region. The primary objectives of this Working Group are to:

1. identify all current health and medical surveillance activities, as well as points of contact for all agencies involved in these activities;
2. identify gaps in surveillance and develop relevant plans to address these gaps;
3. develop central coordination and fusion of health and medical surveillance activities; and
4. ensure that information is shared among all groups participating in health surveillance activities, as well as among workers directly involved in the oil clean-up and the general population.

HHS agencies directly involved in health monitoring and surveillance in the Gulf region include:

1. The Office of the Assistant Secretary for Preparedness and Response (ASPR), in the Office of the Secretary, responsible for coordination of surveillance efforts within HHS and for the National Disaster Medical System.
2. The National Institute for Environmental Health Sciences (NIEHS), a component of the National Institutes of Health, responsible for developing worker training programs for environmental hazards and conducting research.
3. The National Institute for Occupational Safety and Health (NIOSH), a component of the Centers for Disease Control and Prevention (CDC), responsible for providing information about protecting workers and volunteers from potential occupational safety and health hazards.
4. The National Center for Environmental Health, a CDC component that conducts public health surveillance and educates the public about possible health effects associated with exposure to oil and dispersants.
5. The Agency for Toxic Substances and Disease Registry (ATSDR), a sister agency to CDC that studies and provides scientific health information to prevent harmful exposures and diseases related to toxic substances.

The Health Surveillance Working Group currently has six subgroups to address: (1) stakeholder issues; (2) health and toxicologic information; (3) survey/roster/questionnaire development; (4) human health surveillance activities; (5) human health biomedical monitoring; and (6) research.

HHS agencies are working closely with State health departments in the Gulf Region, as States are responsible for population health surveillance and have systems to monitor changes in population health status seen by hospitals and other health care providers. As you will hear from my colleague at the CDC, we are also using poison control centers and the BioSense system to monitor health. To date, none of these systems has documented any evidence of an increase in conditions that could be linked to oil or dispersant exposure.

INSTITUTE OF MEDICINE PUBLIC WORKSHOP

As I have previously mentioned, there is potential for the oil spill to impact not only the health of workers coming into direct contact with crude oil and dispersants, but also volunteers, residents, and visitors, who are likely to be subjected to less direct forms of exposure. Current scientific literature is inconclusive with regard to potential health hazards resulting from the spill. Some scientists predict little to no toxic threat to humans from exposure to oil or dispersants, while others express serious concern about the potential short- and long-term impacts exposure to oil and dispersants could have on the health of responders and affected communities. Since information available to inform decisionmaking related to the human health impacts is inconclusive, Secretary Sebelius has contracted with the Institute of Medicine to convene an independent panel of scientific experts that will plan and commence a public workshop exploring a broad range of health issues related to the oil spill, ranging from heat exhaustion and other occupational hazards to exposure to oil and dispersants. The workshop will bring together the best scientific expertise available, drawing from both local and national subject matter expertise.

A review of current literature will be undertaken to facilitate the identification of gaps in knowledge concerning the human health effects of exposure to crude and weathered oil, exposure to dispersants, and an examination of the effects of environmental conditions, such as heat exposure, that have an impact on workers' health. A portion of the discussion will focus on delineating the populations most vulnerable

to the adverse health effects of the oil spill and will include a division of worker populations into subgroups based on vulnerability.

Because much is unknown about the potential short- and long-term health effects of the oil spill, a major objective of the workshop is to review and assess a framework for monitoring and surveillance of the affected populations. In conjunction with a discussion of surveillance, research methodologies and appropriate data collection will be explored for the purpose of obtaining a better understanding of the human health risks associated with the spill.

Finally, because communities across the Gulf Coast have incredibly rich cultures and a dynamic history that contribute to the multitude of linguistic and cultural diversity found in the region, the workshop will take a special look at effective communication strategies to convey information about health risks to at-risk populations, accounting for culture, health literacy, language, technology, and geographic barriers.

The IOM Workshop will take place on June 22 and 23, 2010 in New Orleans, LA and will be open to the public. A web cast and associated web portal for public comment will be available for those unable to attend in person.

BEHAVIORAL HEALTH RESPONSE EFFORTS

The Department is also directing attention and resources to address the behavioral health issues arising from the oil spill. The Deepwater Horizon oil spill may be unprecedented in terms of scope and damage, but experience and research from previous disasters—including the Exxon Valdez oil spill—allow us to anticipate and prepare for potential behavioral health needs. Disasters, whether natural or manmade, can have adverse emotional and psychological effects on people. However, evidence also shows that individual resilience and support systems help prevent most people from developing serious behavioral health conditions.[1]

The nature and location of the Deepwater Horizon oil spill raises specific behavioral health issues. Gulf Coast residents have survived numerous hurricanes, including the devastation of Katrina and Rita, and previous oil spills associated with hurricanes. Re-traumatization—experiencing the repetition of a traumatic event or exposure to multiple disasters—can heighten vulnerability to other traumatic events.[2] Following the Exxon Valdez oil spill, ecological damage was compounded by economic repercussions for the fishing and oil industries. Depression and anxiety levels increased for a period before dissipating. Among fishermen whose livelihood had been impacted, an increase in depression, anxiety, stress, substance abuse, and domestic violence was noted.[3]

The Department recognizes that in developing and implementing a behavioral health response to any disaster, Federal support must be carried out based on needs identified in close partnerships with the States. State partners know the needs of their communities and—particularly in the case of the Gulf Coast States—have extensive experience responding to the disaster behavioral health concerns of their citizens.

To date, the Department has been engaged primarily in supporting State and local efforts to assess and meet the behavioral health needs of residents of the Gulf Coast States and workers responding to this environmental disaster. CDC is conducting surveillance for behavioral risk factors. To aid their efforts, HHS has provided information and resources to State Disaster Mental Health Coordinators. Through its Substance Abuse and Mental Health Services Administration—or SAMHSA—the Department has also instituted regular calls for information sharing among the affected Gulf Coast States. These calls allow State Disaster Mental Health and Substance Abuse Coordinators to discuss what their local providers are reporting about the behavioral health needs of the affected communities and gaps where assistance is needed.

Overall, States are reporting spreading anxieties, frustrations about the ongoing nature of the spill and its economic impact, and fears that more severe psychological and social issues will emerge. The State behavioral health agencies have also re-

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[1] Bonanno, G.A. (2008). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *Psychological Trauma: Theory, Research, Practice, and Policy, 5(1)*, 101–113.

[2] Brewin, C.R., Andrews, B., and Valentine, J.D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal for Consulting and Clinical Psychology, 68(5)*, 748–766.

[3] Palinkas, L.A. (1993). Community patterns of psychiatric disorders after the Exxon Valdez oil spill. *American Journal of Psychiatry, 150*, 1517–1523. . . . and . . . Picou, S.J., and Arata, C.M. (1999). Chronic psychological impacts of the Exxon Valdez oil spill: Resource loss and commercial fishers. *Sociological Spectrum*, 23, 12–19.

ported to us that they are anticipating that the longer-term stressors and economic consequences of this disaster could lead to an increase in depression, substance use and abuse, family violence, high-risk behavior, suicide, and even a resurgence of trauma symptoms from previous events.

Currently, however, crisis hotlines are not showing significant increases in calls, and providers are not reporting marked increases in requests for assistance. States, at this point, are requesting guidance from the Department on substance use and prevention strategies. Efforts are underway at SAMHSA to bring substance abuse prevention and treatment expertise and resources to the group in the next call, which is scheduled for/was held on June 15. The Department will continue to maintain regular contact with the affected State Disaster Mental Health Coordinators and with behavioral health partners in the region and will provide assistance as gaps and needs are identified.

The Department has emphasized the need for stress management efforts to be included in worker health and safety precautions. Our colleagues at the National Institute for Occupational Safety and Health—NIOSH—have created a stress information pamphlet for distribution to responders that describes a range of potential stress reactions and recommendations for monitoring and addressing them. My colleague from CDC has described their efforts, and ASPR has been working with them to ensure coordination around behavioral health concerns.

The Department is focusing on long-term recovery issues as well. The Office of the Assistant Secretary for Health and the Regional Health Administrators' offices are actively communicating with Federal, State, and regional partners to plan for long-term recovery issues, including behavioral health. HHS is actively involved in coordination activities related to behavioral health and human services, such as the Deepwater Interagency Solutions Group led by the Department of Homeland Security.

CONCLUSION

I want to assure the committee that our office, along with our sister agencies within the Department, and the Administration as a whole, are taking the public health and medical consequences of the oil spill disaster very seriously and are implementing a comprehensive strategy to monitor and address any public health and medical issues that may arise. HHS continues to work in close partnership with virtually every part of the Federal Government under a national preparedness and response framework for action that builds on the efforts and lessons learned from prior response efforts.

Thank you for your time and interest. I am happy to answer any questions.

The CHAIRMAN. Thank you very much, Dr. Kaplowitz.

Dr. Howard, welcome, and please proceed.

STATEMENT OF JOHN HOWARD, M.D., DIRECTOR, NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, CENTERS FOR DISEASE CONTROL AND PREVENTION, DEPARTMENT OF HEALTH AND HUMAN SERVICES, ATLANTA, GA

Dr. HOWARD. Thank you very much, Mr. Chairman, Ranking Member Enzi, and other distinguished members of the committee. I'm pleased to provide you with an update on CDC's activities.

Following the fire and explosion on April 20, CDC immediately activated its Emergency Response Center to coordinate response activities across the agency. CDC's National Center for Environmental Health leads the Incident Command and works closely with the National Institute for Occupational Safety and Health and CDC to respond to potential health threats from the public, from workers, and volunteers.

As of today, CDC has 170 staff involved in the response, including 17 staff deployed to the Gulf States. Throughout this response, CDC has been coordinating our efforts with other parts of HHS.

The response issue brings up hazards to the public, primarily skin and respiratory irritation to various chemicals contained in crude oil and the oil dispersants. Skin contact should be avoided.

Any area that has come into contact with oil should be thoroughly washed. Eye, nose, and throat irritation can occur from close contact with crude oil. Those with asthma or chronic lung diseases may be more sensitive than—to others—to very low levels of hydrocarbons that sometimes cause odor sensitivity. Drinking water is not expected to be affected by the spill.

People who have questions about potential health effects are invited to look at our Web site, as you've referred to, Mr. Chairman, at *www.CDC.gov*, for more information, or contact their local health department.

CDC, in partnership with local and State health departments, is tracking symptoms and health complaints that could be associated with the oil spill. Health surveillance of populations near the Gulf is being done through three mechanisms. First, we're collecting data from 60 Poison Control Centers throughout the Gulf region. Second, CDC is collecting data from the BioSense surveillance system from 86 healthcare facilities throughout the area. And third, we're analyzing surveillance data that's being collected by the State health departments in the Gulf that are monitoring for potential health effects related to the oil spill. We've posted these initial results from these collaborative surveillance efforts on our Web site, and I invite you to go to that, to look at our updated numbers.

CDC is also evaluating data from air, sediment, and water samples in the Gulf, looking for any indication of contaminants at levels that would pose a threat to public health. After EPA's public release of the chemical components of the dispersants being used in the response, CDC has completed a preliminary review of the toxicity of these dispersant components, and has concluded that the substances of greatest concern to human health are being monitored by EPA.

NIOSH is doing three activities, and is working, together with the Occupational Safety and Health Administration, to protect workers and volunteers. First, we're rostering all workers involved in the response by means of a voluntary questionnaire. To date, nearly 13,000 workers have been rostered. Second, we're analyzing data from all sources for worker symptoms, health complaints, work-related injury and illness incidents, so that we can recommend interventions to prevent any additional injuries and illnesses. Third, NIOSH is conducting a health hazard evaluation of reported illnesses among workers involved in offshore cleanup operations, as requested by BP on May 28. Finally, as response activities proceed, CDC is working to protect the health and safety of workers, volunteers, and residents in the affected areas. And as we learn more than we do today, NIOSH will update our recommendations, NCEH will update their recommendations. CDC Web site will reflect all those recommendations.

So, thank you very much for your continued support, and I'd be pleased to answer any questions you may have.

[The prepared statement of Dr. Howard follows:]

PREPARED STATEMENT OF JOHN HOWARD, M.D.

Good afternoon, Mr. Chairman, Ranking Member Enzi, and distinguished members of the committee. Thank you for inviting me to testify today. I am Dr. John Howard, Director of the National Institute for Occupational Safety and Health (NIOSH), which is part of the Centers for Disease Control and Prevention (CDC)

within the U.S. Department of Health and Human Services (HHS). I am here today to provide an update on CDC's response to the recent Gulf of Mexico oil spill and our ongoing efforts to anticipate, monitor and respond to the potential health threats to workers and the public.

CDC'S ENVIRONMENTAL HEALTH RESPONSE

On April 20, 2010, after the explosion on the Deepwater Horizon leading to the oil spill, CDC's National Center for Environmental Health (NCEH) immediately began monitoring the situation. On April 22, NCEH staff participated in the National Response Team's activation meeting and then formed an oil spill task force to monitor and respond to any potential public health hazards associated with the oil spill. NCEH quickly posted information for Gulf coast residents on the CDC Web site describing the potential health risks associated with the oil spill and steps individuals can take to protect their health and safety. On May 10, CDC's Emergency Operations Center (EOC) officially activated, bringing in personnel from across CDC—including staff with expertise in environmental health, occupational safety and health, and emergency response—and coordinating CDC's efforts. NCEH is leading the EOC incident command and response activities and, together with NIOSH, is providing the vast majority of staff engaged in CDC's response effort. As of June 14, CDC had 170 staff responding to the oil spill.

Public Health Surveillance

Within the first few days of the response, CDC, in coordination with our Federal, State, and local partners, stepped up our public health surveillance activities, looking for possible health effects that could be related to the oil spill—whether experienced by workers involved in the response and cleanup efforts or by Gulf coast residents. NCEH contacted the American Association of Poison Control Centers to request that local poison control centers code any calls related to the oil spill so that CDC is able to track the number of related calls. NCEH started using CDC's BioSense surveillance system—which analyzes diagnostic and pre-diagnostic health data from clinical laboratories, hospital systems, ambulatory care sites, health plans, U.S. Department of Defense and Veterans Administration medical treatment facilities, and pharmacy chains—to enhance surveillance for respiratory health effects in States along the Gulf of Mexico coast. NCEH also reached out to the State epidemiologists in Alabama, Florida, Louisiana, Mississippi and Texas to ensure open lines of communication, coordinate public health surveillance activities, provide weekly summaries of surveillance findings, and work together to monitor for potential health effects related to the oil spill. CDC posted results from these collaborative surveillance activities on the CDC Web site on June 10.

Throughout the response to the oil spill, CDC has closely coordinated our efforts with other components of HHS—including the Assistant Secretary for Preparedness and Response, the Food and Drug Administration (FDA), the National Institutes of Health (NIH), and the Substance Abuse and Mental Health Services Administration; other Federal partners like the U.S. Coast Guard (USCG), the Department of Labor's Occupational Safety and Health Administration (OSHA), and the Environmental Protection Agency (EPA); and the Gulf coast States.

CDC, in partnership with State and local health departments, is closely tracking surveillance data across the Gulf coast States for health effects that may be related to the oil spill. These surveillance systems are being used to track symptoms related to the eyes, skin, and respiratory, cardiovascular, gastrointestinal, and neurological systems, including worsening of asthma, cough, chest pain, eye irritation, nausea, and headache. If the surveillance systems identify individuals with these symptoms, State and local public health officials will be able to follow up as needed to investigate whether there is an association between the symptoms and the oil spill. This follow-up is important because the same symptoms could be related to a different cause. The agency is also evaluating data from air, sediment, and water samples in the Gulf, looking for any indication of contaminants—such as volatile organic compounds, semi-volatile organic compounds, non-methane organic compounds, metals, particulate matter, carbon monoxide, and sulfides—at levels that would pose a threat to public health.

Potential Exposure Pathways

People can be exposed to hazardous substances related to the spill by breathing them (air), by swallowing them (food, water), or by touching them (skin). Individuals should avoid close contact with oil and fumes from any burning oil. Children tend to be more sensitive than adults to oil and other forms of pollution. What might be annoying to an adult could be a real problem for a child, particularly if the child is an infant or toddler, or has a pre-existing condition. If a person has concerns

about a possible exposure, he or she should seek medical attention and phone the poison control center.

• *Contact:* While for most people, brief contact with a small amount of oil will do no harm, contact with the oil should be avoided. If skin comes in contact with oil, the area should be washed with soap and water, baby oil, petroleum jelly, or a cleaning paste for hands such as those sold at auto parts stores. Solvents, gasoline, kerosene, diesel fuel, or similar products to clean oil off skin should not be used. Rashes or dark, sticky spots on the skin that are hard to wash off are symptoms that indicate a person should see a doctor or other health care provider. If a person gets oil in the eyes, eyes should be flushed with water for 15 minutes. If a person swallows oil, he/she should not try to vomit it, as this may get oil into the lungs. Swallowing small amounts (less than a coffee cup) of oil will cause upset stomach, vomiting, and diarrhea, but is unlikely to have long-lasting health effects.

• *Smell:* People may be able to smell the oil spill from the shore. The odor comes from chemicals in the oil that people can smell at levels well below those that would make most people sick. However, exposure to low levels of these chemicals may cause irritation of the eyes, nose, throat, and skin. Those with asthma or other lung diseases may be more sensitive to these effects.

• *Inhalation:* If a person inhales oil vapors, or smoke from burning oil, he or she should move to an area where the air is clearer. If a person has inhaled a lot of vapor or smoke and feels short of breath, has chest pain or tightness, or dizziness, he or she should seek medical attention.

• *Burning oil:* When responders burn some of the oil, some particulate matter (PM) may reach the shore. PM is a mix of very small particles and liquid droplets found in the air. PM may pose a greater risk for people who have a chronic condition such as asthma or heart disease. If a person can smell gas or see smoke or knows that fires are nearby, he/she should stay indoors, set the air conditioner to reuse indoor air, and avoid physical activities that put extra demands on the lungs and heart.

• *Water:* Drinking water and household water are not expected to be affected by the spill. However, water used for recreation may be affected. Swimming in water contaminated with chemicals from the oil spill could cause adverse health effects.

• *Food:* FDA and the Department of Commerce's National Oceanic and Atmospheric Administration are constantly monitoring the oil spill and its potential impact on the safety of seafood harvested from the area. The public should not be concerned about the safety of seafood in the stores at this time. Closure of the waters to fishing is the key step in preventing tainted fish from entering commerce. In addition, FDA is testing seafood at processing facilities in the Gulf region to further ensure that contaminated seafood does not reach consumers.

CDC'S OCCUPATIONAL SAFETY AND HEALTH RESPONSE

As part of CDC's overall response, NIOSH involvement in the oil spill response began very early. NIOSH was with OSHA and NIH's National Institute of Environmental Health Sciences (NIEHS) in the initial HHS response visit to the Gulf during the week of May 3. Since then, NIOSH has been providing information to BP, OSHA, the Coast Guard, and other Federal and State partners about protecting response workers and volunteers from potential occupational safety and health hazards.

Occupational Safety and Health Hazards

One key challenge in this public health response is that it appears that there are seven groups of workers potentially exposed to crude oil, weathered oil, chemical dispersants, combinations thereof, and other conditions that could pose hazards, and these groups are likely to have different exposure profiles. We are working to sort out these groups and their exposure differences and similarities. The groups include: (1) source control workers; (2) workers on vessels involved in burning; (3) workers on vessels not involved in burning; (4) equipment decontamination workers; (5) wildlife cleanup workers; (6) on-shore cleanup workers; and (7) waste stream workers.

To date, we believe the key exposures and hazards for these groups of workers include:

• Heat stress;

• Dermal exposure to oil, which is a skin irritant;

• Fatigue (we know that disaster response and recovery workers often work longer shifts and more consecutive shifts than the typical 40-hour work week, which may increase the risk of occupational injuries and accidents and can contribute to poor health);

• Potential exposure to chemicals, including benzene and other volatile organic compounds (VOCs), oil mist, polycyclic aromatic hydrocarbons (PAHs), and diesel fumes;
• Sprains, strains and lacerations; and
• Psychological stress.

To protect workers and volunteers against these occupational safety and health hazards and to better understand the threats posed by these hazards, NIOSH has undertaken a number of activities, including: supporting safety and health training of response workers; developing recommendations for the use of Personal Protective Equipment (PPE); rostering and monitoring responders; collecting and evaluating occupational exposure data; conducting a Health Hazard Evaluation of workers; and researching the toxicity of potential exposures.

Supporting Safety and Health Training of Response Workers

To emphasize prevention through training, NIOSH has worked with OSHA and NIEHS to devise recommendations for worker training materials. Before being employed and before receiving an ID badge, all cleanup workers must complete between one to four training modules of classroom training, depending on their job assignment. These modules have been approved for use in this event by OSHA in compliance with the OSHA hazardous waste operations and emergency response standard (29 CFR 1910.120, and OSHA Compliance Directive CPL 2–2.51).

NIOSH has been advising OSHA, BP, and other health and safety personnel about the capabilities of different types of Personal Protective Equipment (PPE), and has helped BP develop a matrix for selecting appropriate PPE. The type of protective equipment that is appropriate for each worker to use depends upon the circumstances of that worker's particular job and the mix of oil and dispersants to which the worker may be exposed. NIOSH also has developed fact sheets targeted to oil spill responders to describe the health risks posed by the use of dispersants and the risk of stress associated with responding to a traumatic event like this. These fact sheets are available on the CDC Web site at: *http://www.cdc.gov/niosh/topics/oilspillresponse/*.

Developing Recommendations for the Use of Personal Protective Equipment

To protect response workers from potential adverse health effects arising from their work, NIOSH recommends appropriate engineering controls (e.g., picking up tarballs with a scoop rather than by hand) and administrative controls (e.g., limiting the number of workers in areas with great exposure potential), as well as the use of task-specific PPE, including protective eyewear, clothing, gloves, and footwear. Selection of appropriate PPE requires: (1) identification of the hazards faced by workers (e.g., heat stress, fatigue, inhalational and skin exposure to crude oil and its constituents, chemical dispersants, and cleaning solvents, and musculoskeletal injuries); (2) analysis of the specific job tasks performed by workers (e.g., source control; surface control, such as laying boom, burning crude oil, and sheen busting; shoreline and marsh cleaning; and decontamination of personnel, equipment or wildlife); and (3) assessment of the risks that specific tasks present for workers.

VOCs, which may be more likely to be present at or near the oil leak source, pose a greater risk of inhalational exposure than the risk encountered in "aged" or "weathered" crude oil that may be encountered on or near the shoreline. Weathered crude contains mostly higher molecular weight, very low volatility hydrocarbon constituents of crude oil. When oil is deposited on shore, use of gloves and protective clothing to prevent dermal contact is recommended, but such deposits (referred to as "tarballs" or "tarpatties") are unlikely to pose inhalation risks. So, recommendations for respiratory protection and other PPE are not clear-cut and will vary depending on the characteristics of the oil, the type of work being done, and the magnitude of exposure. NIOSH and OSHA are currently working together on a respiratory protection policy.

It is important to note that in recent years several studies of previous oil spill response efforts have reported acute and chronic health effects in response workers. These studies may underestimate the health effects associated with oil response work since the magnitude and duration of the Deepwater Horizon response is unprecedented. At this time, there has been no comprehensive assessment of all response worksites in the Gulf, and as a result, we have an incomplete understanding of the human health toxicity associated with exposure to large amounts of dispersants and the toxicity associated with mixed exposure to large amounts of crude oil and dispersants together. This means that knowledge about potential exposures to the mixed exposure of crude oil and dispersant associated with the Deepwater Horizon response work is still evolving. Therefore, NIOSH believes it is pru-

dent to reduce the potential for such adverse health effects by the responsible use of administrative controls and PPE.

Rostering and Monitoring Responders

NIOSH is administering surveys to thousands of response workers who are participating in the recovery efforts in an effort to compile a roster of individuals involved in the response. The purpose of this roster is to obtain an accurate record of who is participating in the cleanup. The information collected in this roster would be vital for possible future studies to determine whether health conditions that may develop in the future are associated with occupational exposures during the cleanup. A roster is an important tool to capture site-specific information, such as a worker's job task, time on task, available exposure information, use of PPE, and other related factors. Participation in the survey is voluntary, and once the information is collected, NIOSH will protect individuals' personally identifiable information as confidential to the extent allowed by the law.

It has been challenging to enroll workers due to the different locations of the training sites. To date we have visited all the staging areas in Louisiana to roster workers, and we are currently enrolling workers in Mississippi, Alabama, and Florida. Through our rostering efforts, we have already captured information from more than 11,000 workers responding to this event. In an attempt to reach all cleanup workers, the survey is being administered in English, Spanish, and Vietnamese. A copy of the survey is included as Exhibit 1.

Collecting and Evaluating Occupational Exposure Data

NIOSH is also gathering and evaluating occupational safety and health data for Gulf response workers, including:

- Demographic and role specific survey data collected from the rostering of workers involved in the response, as discussed earlier;
- Epidemiologic survey data collected from rostered workers who may have health symptoms resulting from their response participation (signs and symptoms of injury, illness or job stress); and
- Scientific/epidemiologic industrial hygiene data collected from workers in the workplace (i.e., measures of physical, biological or medical conditions in the workplace which may possibly be harmful) through a Health Hazard Evaluation that NIOSH is conducting.

NIOSH is also evaluating data collected by the EPA, OSHA, other Federal agencies, State agencies, and BP, including:

- Personal monitoring data from work environments on-shore, aboard vessels, and upon off-shore work platforms;
- Response worker injury and illness incidence reports: NIOSH is currently collecting and characterizing all of the acute injury and illness incidents recorded by BP to identify trends and recommend interventions to prevent additional injuries and illness; and
- Injury and illness data on BP's employees, contract employees, Federal, State, and local responders, and volunteers who seek care at a BP medical facility. NIOSH is recoding BP's data into a standardized reporting format.

Conducting a Health Hazard Evaluation of Workers

NIOSH has a unique opportunity to assess these occupational safety and health hazards and others that may arise as we conduct a Health Hazard Evaluation (HHE) of reported illnesses among workers involved in offshore cleanup operations, as requested by BP on May 28. Several NIOSH staff members have been deployed to the Gulf coast to work on this HHE, including industrial hygienists, who are assessing exposures through observation, industrial hygiene assessments, and evaluation of work practices and use of PPE, and medical officers, who are evaluating illnesses and injuries among groups of offshore workers. The Louisiana Department of Health and Hospitals has agreed to provide medical reports of seven previously hospitalized fishermen for NIOSH physicians to review. Once the HHE is completed, NIOSH will compile the findings and recommendations in a report that will be provided to employer and employee representatives, and it will be publicly available on the NIOSH Web site.

Researching the Toxicity of Potential Exposures

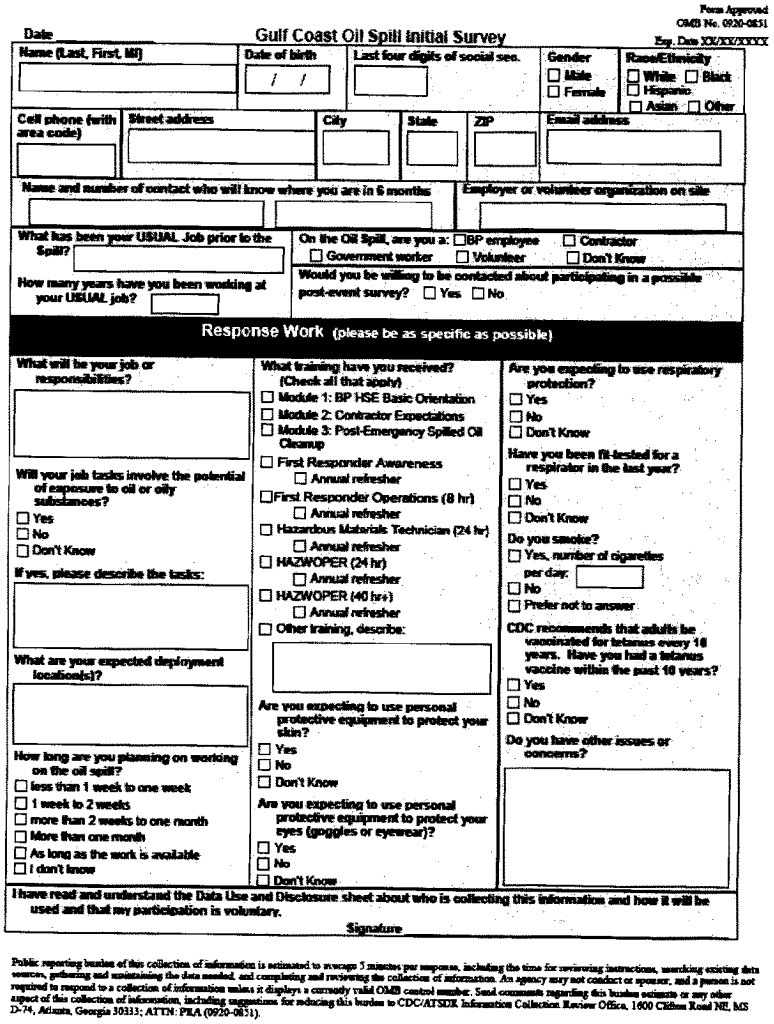
NIOSH is also conducting laboratory research to address reports of workers with respiratory symptoms and headaches by initiating toxicity studies of both crude oil and chemical dispersants. This research will seek to determine the acute pulmonary, central nervous system, and cardiovascular responses to inhalation of dispersants, oil constituents, and the combination of the two, and the results will

help inform the development of prevention strategies. We anticipate that preliminary data may be available by the end of the summer. NIOSH also has proposed a study to address concerns regarding skin exposure and the handling of oil during beach cleanup.

CONCLUSION

Regardless of the final size and extent of the spill, it is already evident that response and cleanup activities will be underway in the Gulf for an extended period of time, and thus we must remain vigilant to protect response and recovery workers, volunteers and the public from potential exposures to oil, its constituents, and dispersants. CDC continues to work diligently to protect the health and safety of workers and residents along the Gulf coast. This oil spill underscores the importance of CDC's work and the continued need for further health and safety research. It is important to protect against potential health hazards now so that we do not have to study chronic health effects associated with this spill in the future. Therefore, the occupational and environmental hazards associated with the oil spill must be identified, monitored, evaluated and addressed. As this situation evolves and we learn more about the potential health hazards, CDC will update our recommendations for how to protect the health of those living and working along the Gulf coast. I appreciate the opportunity to describe CDC's response activities in the Gulf of Mexico. Thank you for your continued support. I am pleased to answer any questions you may have.

Exhibit 1 – Gulf Coast Oil Spill Survey



Form Approved
OMB No. 0920-0851
Exp. Date XX/XX/XXXX

Date

Gulf Coast Oil Spill Initial Survey

Name (Last, First, MI) | Date of birth / / | Last four digits of social sec. | Gender ☐ Male ☐ Female | Race/Ethnicity ☐ White ☐ Black ☐ Hispanic ☐ Asian ☐ Other

Cell phone (with area code) | Street address | City | State | ZIP | Email address

Name and number of contact who will know where you are in 6 months | Employer or volunteer organization on site

What has been your USUAL Job prior to the Spill?

How many years have you been working at your USUAL job?

On the Oil Spill, are you a: ☐ BP employee ☐ Contractor ☐ Government worker ☐ Volunteer ☐ Don't Know

Would you be willing to be contacted about participating in a possible post-event survey? ☐ Yes ☐ No

Response Work (please be as specific as possible)

What will be your job or responsibilities?

Will your job tasks involve the potential of exposure to oil or oily substances?
☐ Yes
☐ No
☐ Don't Know

If yes, please describe the tasks:

What are your expected deployment location(s)?

How long are you planning on working on the oil spill?
☐ less than 1 week to one week
☐ 1 week to 2 weeks
☐ more than 2 weeks to one month
☐ More than one month
☐ As long as the work is available
☐ I don't know

What training have you received? (Check all that apply)
☐ Module 1: BP HSE Basic Orientation
☐ Module 2: Contractor Expectations
☐ Module 3: Post-Emergency Spilled Oil Cleanup
☐ First Responder Awareness
☐ Annual refresher
☐ First Responder Operations (8 hr)
☐ Annual refresher
☐ Hazardous Materials Technician (24 hr)
☐ Annual refresher
☐ HAZWOPER (24 hr)
☐ Annual refresher
☐ HAZWOPER (40 hr+)
☐ Annual refresher
☐ Other training, describe:

Are you expecting to use personal protective equipment to protect your skin?
☐ Yes
☐ No
☐ Don't Know

Are you expecting to use personal protective equipment to protect your eyes (goggles or eyewear)?
☐ Yes
☐ No
☐ Don't Know

Are you expecting to use respiratory protection?
☐ Yes
☐ No
☐ Don't Know

Have you been fit-tested for a respirator in the last year?
☐ Yes
☐ No
☐ Don't Know

Do you smoke?
☐ Yes, number of cigarettes per day:
☐ No
☐ Prefer not to answer

CDC recommends that adults be vaccinated for tetanus every 10 years. Have you had a tetanus vaccine within the past 10 years?
☐ Yes
☐ No
☐ Don't Know

Do you have other issues or concerns?

I have read and understand the Data Use and Disclosure sheet about who is collecting this information and how it will be used and that my participation is voluntary.

Signature

Public reporting burden of this collection of information is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Information Collection Review Office, 1600 Clifton Road NE, MS D-74, Atlanta, Georgia 30333; ATTN: PRA (0920-0851).

The CHAIRMAN. Thank you very much, Dr. Howard.
And now we turn to Dr. Miller.
Welcome, Dr. Miller. Please proceed.

STATEMENT OF AUBREY KEITH MILLER, M.D., MPH, SUPERVISOR FOR PUBLIC HEALTH SCIENCE, NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES, NATIONAL INSTITUTES OF HEALTH, DEPARTMENT OF HEALTH AND HUMAN SERVICES, WASHINGTON, DC

Dr. MILLER. Thank you, Chairman Harkin, Ranking Member Enzi, and distinguished members of the committee. Thank you for

the opportunity to provide information about the activities undertaken by the National Institute of Environmental Health Sciences in response to the oil spill disaster in the Gulf of Mexico.

My name is Aubrey Miller. I am senior medical advisor to the Director of NIEHS and the National Toxicology Program.

While extensive data exists on the effects of oil spills on wildlife and ecosystems, the effects on human health from these exposures have not been well-studied. Experts agree that the potential for a human health hazard exists, since crude oil and chemicals being used to fight the spill contain harmful substances, yet understanding and quantifying these effects requires further study.

A recent review article which looked at 34 publications concerning health effects related to past oil tanker spills made clear that there is very little data concerning exposed individuals, and only for a handful of these incidents. Historically, the workers involved in such cleanups have reported the highest level of exposure and most acute symptoms. Reporting of higher levels of respiratory symptoms was observed in fishermen who participated in the cleanup following the Prestige tanker accident off the coast of Spain.

A few studies have looked at psychological effects of spills, both among workers and in affected communities. Follow up studies of affected populations from the Exxon Valdez spill, for example, reported higher levels of anxiety disorder, posttraumatic stress disorder, and depression. Such research findings remind us of the importance of keeping longer-term, less obvious sequelae in mind, and not just the immediate toxicity effects, when considering the overall health impact of this type of disaster.

Now, turning our attention to the Gulf oil spill response, the NIEHS team was on site within days of the platform explosion, and had a continuous presence in Louisiana. They have been working with the National Incident Command officials, as well as local and State officials, academic institutions, and other Federal agencies, to provide technical assistance for worker training and safety related to the oil spill through NIEHS's Superfund Worker Training Program. This program has provided safety training to emergency responders and hazard materials workforce for the last 23 years. For other emergency responses, such as the World Trade Center attack, and now the oil spill, NIEHS was able to provide nearly immediate assistance to help protect workers.

Three different levels of training for oil spill workers have been developed and supported by NIEHS: a 40-hour training course on hazardous waste operations and emergency response, short 2- and 4-hour training courses on safety and health awareness, developed together with OSHA. And as of June 10, BP reports that it has trained approximately 30,500 workers using NIEHS worker safety and training materials or modules.

Additionally, more than 5,000 pocket-sized booklets, titled "Safety and Health Awareness for Oil Spill Cleanup Workers," have been distributed to instructors, safety officials, beach workers and those working for BP in the Vessels of Opportunity Program. These booklets have been printed in English, Spanish, and Vietnamese. Here are some copies of them to look at.

NIEHS has helped support and facilitate interagency coordination to protect workers and the public affected by this disaster, including facilitation of a Federal multiagency public health assessment of the oil spill responders in the Louisiana area to determine the need for any additional medical support or additional medical mobile units. NIEHS is co-leading an interagency workgroup, and, within this workgroup we are directly focused on identifying all the relevant health and toxicological information to help inform our current actions and drive research efforts, and, two, developing new tools and research to gather essential information about adverse health effects stemming from the oil spill, both in the short-term and long-term.

And last, NIEHS is exploring a variety of different funding mechanisms and programs to carry out important research related to this particular disaster and the people whose health may be affected. We expect a number of researchers to apply immediately for our time-sensitive awards, where proposals are accepted each month, and reviewed and funded within 3 months.

One of the most important takeaway messages from our current and ongoing review of the science regarding human health effects of oil spill disasters is that there is a clear need for additional health monitoring and research to underpin our public health decisions as a committed partner in ongoing efforts to keep our cleanup workers safe and in essential research concerning the health effects of those who are exposed.

Thank you, and I'm happy to answer your questions.

[The prepared statement of Dr. Miller follows:]

PREPARED STATEMENT OF AUBREY KEITH MILLER, M.D., MPH

Chairman Harkin, Ranking Member Enzi, and members of the committee, thank you for the opportunity to provide information about the activities undertaken by the National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health (NIH), an agency of the Department of Health and Human Service (HHS), in response to the oil spill disaster in the Gulf of Mexico. My name is Aubrey Miller, and I am Senior Medical Advisor to the Director of the NIEHS. I will give you a brief overview of our understanding of possible human health effects of exposures related to the Gulf oil spill, a preview of some of our planned research, a description of how NIEHS is working with our agency partners to facilitate and support needed health monitoring and research activities to further our understanding and hopefully prevent adverse health effects among workers and exposed communities, and a report on NIEHS' s early and ongoing role in helping to protect oil spill workers.

EFFECTS ON HUMAN HEALTH FROM OIL SPILLS

I would like to first provide a brief overview of our understanding of the human health effects associated with oil spills. While experts agree that potential for human health hazard exists, since both crude oil and the chemicals being used to fight the spill contain harmful substances, understanding and quantifying these effects requires further study.

Determination of actual exposure and risk is not a trivial task. To begin with, the composition of the spilled oil changes over time. The oil nearest the source of a spill contains higher levels of some of the more volatile and more toxic components, such as benzene, toluene, and xylene. These and other volatile organic compounds (VOCs) are well-known chemical hazards that can cause acute toxicity as well as longer term health effects such as cancer, birth defects, and neurological effects. Oil that has been exposed to air and water for a period of time, so-called "weathered oil," has lost most of these VOCs. Nonetheless, weathered oil still contains other hazardous chemicals such as polycyclic aromatic hydrocarbons and heavy metals, such as nickel and lead, and therefore should be handled with skin protection. If aero-

solized by wind and weather, it also could be taken into the body through respiration.

Other potential sources of toxicity exist due to the use of dispersants, but there is little information on the precise level of risk to public health that dispersants present when utilized on such a large scale. Different routes of exposure must also be considered, such as respiratory exposure, skin exposure, and ingestion. Different levels of exposure and risk are associated with different exposure routes for individuals who may come in contact with the oil in a variety of ways, such as working on a boat, or doing cleanup on a beach, or through living in a nearby community.

In a recent article in the *Journal of Applied Toxicology*, the authors reviewed the results of studies of human health effects related to oil tanker spills as reported in 34 publications.[1] The clearest conclusion from the examination of these studies is that we have very little data; follow up of exposed people has occurred only for a handful of the tanker spill incidents from the past several decades. Historically, the workers involved in cleanup have reported the highest levels of exposure and the most acute symptoms, when compared to subjects exposed in different ways, as seen in the reporting of higher levels of lower respiratory tract symptoms in fishermen who participated in cleanup following the *Prestige* tanker accident off the coast of Spain.[2] Other studies have looked at psychological effects of spills, both among workers and in affected communities; follow-up studies of affected populations from the *Exxon Valdez* spill, for example, reported higher levels of generalized anxiety disorder, post-traumatic stress disorder, and depressive symptoms.[3] Such research findings remind us of the importance of keeping longer term, less obvious sequelae in mind, not just the immediate toxicity effects, when considering the overall human health impact of this type of disaster.

NIH-FUNDED RESEARCH

NIH is exploring a variety of different funding mechanisms and programs to carry out what will be important research related to this particular disaster and the people whose health may be affected by it. We hope that such research findings provide useful information for some of the unanswered questions discussed above.

NIEHS has a grant program for time-sensitive research and community education. We shall use this program to quickly fund research on the public health impact of the oil spill on affected populations in the region. Topics to be considered for funding are environmental monitoring and characterization related to the Gulf oil spill; toxicity testing of complex mixtures using high-throughput techniques and innovative statistical approaches; exposure assessment for individuals and populations; research on short-term health effects, including respiratory effects, irritants, and changes in immune function; long-term health effects, such as risk of cancer, adverse pregnancy outcomes, and neurodevelopmental effects in children; and risk assessment research, including understanding the unique risks of vulnerable populations, such as children, pregnant women, the elderly, and people with chronic health problems. NIEHS is coordinating with other Federal agencies, including the Environmental Protection Agency (EPA), to appropriately disseminate the results of this research and to avoid duplication of effort.

NIEHS also co-funds Centers for Oceans and Human Health with the National Science Foundation (*http://www.niehs.nih.gov/research/supported/centers/oceans/index.cfm*). The Centers have responded to the oil spill in various ways, such as providing expertise to local and State health departments, monitoring beach conditions in real-time, and dispatching researchers to the coast for water and wildlife sampling and analyses. Additional "rapid response" funds have also been provided by NSF to help carry out these efforts.

Also, NIH's National Center on Minority Health and Health Disparities (NCMHD) is supporting a consortium of seven medical and public health institutions that will expand and connect research projects to help Gulf Coast communities prepare for and recover from weather-related disasters, epidemics and environmental health threats. Projects by members of the SECURE (Science, Education, Community United to Respond to Emergencies) consortium include development of technology to enhance surveillance systems for early health and environmental warnings and to guide the efforts of first-responders during and after a disaster, arrangement of

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[1] Aguilera F, Mendez J, Pasaro E, Laffon B. (2010) Review on the effects of exposure to spilled oils on human health. J Appl Toxicol 30:291–301.

[2] Zock JP, Rodriguez-Trigo G, pozo-Rodriguez F, Barbera JA, Bouso L, Torralba Y, Anto JM, Gomez FP, Fuster C, Verea HS, SEPAR-*Prestige* Study Group. (2007) Prolonged respiratory symptoms in clean-up workers of the *Prestige* oil spill. Am J Resp Crit Care 176:610–616.

[3] Palinlcas LA, Petterson JS, Russell J, Downs MA. (1993) Community patterns of psychiatric-disorders after the *Exxon-Valdez* oil spill. Am J Psychiat 150:1517–1523.

post-disaster health care, training programs to improve preparedness through community groups and schools, and post-traumatic stress counseling.

NIEHS, along with other HHS agencies, will keep a close accounting of costs and will identify funds from existing resources for research.

NIEHS LEADERSHIP ACTIVITIES ON INTERAGENCY OIL SPILL HEALTH MONITORING WORKGROUPS

NIEHS has leveraged our existing relationships, rapid worker training response, toxicology expertise, and research programs to help support and facilitate interagency coordination and the overarching mission to protect the workers and the public affected by this disaster.

To help assess the response to the oil spill crisis, on June 1, 2010, NIEHS, in cooperation with the U.S. Coast Guard (USCG) and BP, facilitated a Federal multiagency public health assessment of the oil spill responders in the Louisiana area to determine the need for any additional medical support or additional mobile medical units. The team, which included the Assistant Secretary for Preparedness and Response (ASPR) and the Director of the National Institute for Occupational Health (NIOSH) within HHS, as well as the Deputy Assistant Secretary for the Occupational Safety and Health Administration (OSHA), met with Unified Command leaders and toured beach cleanup operations in Port Fourchon, LA.

Furthermore, NIEHS helped form and is co-leading an interagency workgroup, the "Interagency Oil Spill Health Monitoring and Research Workgroup," which includes HHS representatives from: the Assistant Secretary for Preparedness and Response (ASPR); NIOSH, the National Center for Environmental Health, and the Agency for Toxic Substances and Disease Registry (all within the Centers for Disease Control and Prevention); and the Substance Abuse and Mental Health Services Administration. Within this workgroup NIEHS is directly focused on: (1) identifying all the relevant human health and toxicological information to help inform our current actions and drive needed intramural and extramural research efforts; (2) developing new tools, such as health surveys and medical tests, to gather essential information about adverse health effects stemming from the oil spill, both in the short term and long term; and (3) engaging additional stakeholders, through our network of existing governmental, academic, and nongovernmental organizations to work with us in this effort to produce the best process, products, and outcomes.

SAFETY TRAINING FOR OIL SPILL WORKERS

For 24 years, NIEHS has administered a Worker Training Program under its Superfund authority. The program has provided safety training to emergency responders and the hazardous materials workforce, and we were able to provide nearly immediate assistance in the oil spill response through this program.

Our program director, Chip Hughes, was on site within days of the platform explosion. Hughes and his team have had a continuous presence in Louisiana and have been working with USCG, OSHA, and BP officials, as well as local and State officials, academic institutions, and other Federal agencies to provide worker safety training.

Three different levels of training for oil spill workers have been developed and supported by NIEHS. As of June 10, 2010, BP reports that it has trained approximately 30,500 workers using the NIEHS worker safety training materials:

- **A 40-hour Training Course on Hazardous Waste Operations and Emergency Response. This is commonly known as HAZWOPER training.** This is part of our regular, ongoing worker training offered through NIEHS and OSHA. This extensive training is now being delivered to supervisors and individuals who will likely have direct contact with oil spill products. More than 1,040 people in the Gulf Coast region have completed the HAZWOPER training.
- **Short 2- and 4-hour training courses on Safety and Health Awareness.** NIEHS, together with OSHA, helped develop several short educational courses, including some online training, which focus on the necessary hazard awareness and safety training for all oil spill workers hired by BP. This training is provided to individuals who will have minimal contact with oil spill products. These courses provide training on safe work practices, personal protective equipment, decontamination, heat stress and other common hazards for cleanup work. As of June 10, approximately 29,500 workers throughout the Gulf Coast have completed these training courses, according to BP reports. The training is being paid for and administered by BP. The courses are being provided in English, Spanish and Vietnamese. OSHA is also working with BP to develop a new 8-hour curriculum for worker safety and health training.

Additionally, more than 5,000 pocket-sized booklets titled "Safety and Health Awareness for Oil Spill Cleanup Workers" have been distributed to instructors, safety officials, front-line responders participating in the BP Vessels of Opportunity Program, and beach workers in the Shoreline Cleanup assessment Team. The booklets also have been printed in English, Spanish and Vietnamese.

All of the NIEHS worker training resources and materials are available on our Web site at *www.niehs.nih.gov/oilspill*. In addition to our worker education and safety efforts, NIEHS has proactively pursued several avenues including rapid promotion of individual NIH-funded research programs and collaborative interagency engagement to help close our knowledge gaps and foster the research needed to support science-based public health decisions and actions.

CONCLUSION

One of the most important take-away messages from our current and ongoing review of the science regarding human health effects of oil spill disasters is that there is a clear need for additional health monitoring and research to underpin our collective understanding and public health decisions. As the situation in the Gulf of Mexico continues to unfold, NIEHS will stay engaged, both as a committed partner in research on the health effects of these exposures on workers and affected communities and in its efforts to help keep our cleanup workers safe.

Thank you, and I am happy to answer your questions.

The CHAIRMAN. Thank you very much, Dr. Miller.

Now we'll turn, last, to Mr. Taylor, from the Food and Drug Administration.

Mr. Taylor, welcome back.

STATEMENT OF MICHAEL R. TAYLOR, J.D., DEPUTY COMMISSIONER FOR FOODS, FOOD AND DRUG ADMINISTRATION, WASHINGTON, DC

Mr. TAYLOR. Thank you, Mr. Chairman, Ranking Member Enzi and members of the committee. I am pleased to have the chance to discuss with you today FDA's safety activities in response to this really tragic event in the Gulf.

As you indicated, FDA is an integral part of the Federal Government's comprehensive multiagency approach to protect the safety of seafood from the Gulf of Mexico, following the oil spill. This program is important for consumers who need to know their food is untainted, and for the fishing industry, which needs to be able to sell its products with confidence. FDA is working closely with NOAA, with the Environmental Protection Agency, with our sister agencies in HHS, and with State authorities, on a multi-pronged approach to ensure the safety of seafood from the Gulf of Mexico.

These measures we are taking include the precautionary closure of fisheries, backed up by surveillance and testing of seafood products and continued enforcement of FDA's Hazard Analysis and Critical Control Point, or HACCP, regulations. FDA and NOAA are also working together to develop protocols for reopening closed Gulf fisheries in a manner that ensures the safety of product from those areas. We are confident that Gulf of Mexico's seafood in the market today is safe to eat.

The primary preventive measure for protecting the public from potentially contaminated seafood is, of course, the closure by NOAA of fishing areas in the Gulf that have been, or are likely to be, affected by the oil spill. NOAA acted swiftly, after the spill, to close affected waters, and NOAA has been able to stay ahead of the spill by anticipating its movement and by including a 5-mile buffer zone around the affected areas. FDA is working with both NOAA and the States to ensure that appropriate closures are in place.

To verify the effectiveness of the closures in protecting the safety of seafood, NOAA and FDA are collecting and testing a variety of types of seafood samples, including finfish, shrimp, crabs, and shellfish. FDA sampling is taking place at Gulf Coast seafood processors and is targeting, specifically, oysters, crabs, and shrimp, which could retain contaminants longer than finfish. This sampling will provide verification that the closures are working and that seafood on the market is safe to eat.

As an extra measure of protection, as I indicated, to complement the closures and testing, FDA is stepping up inspections of seafood processors under our seafood HACCP regulation. HACCP is, as you know, a system of preventive controls under which seafood processors are required to identify and control potential food safety hazards in their operations.

We have just re-issued existing guidance to Gulf Coast seafood processors, explaining how they can meet their obligation, under the HACCP regulations, to ensure that they are not receiving fish from waters that are closed by Federal or State authorities. FDA will be inspecting those facilities to verify compliance.

Finally, NOAA and FDA are working closely with the States on a protocol for determining when closed waters can be reopened. Under the protocol, waters impacted by oil will not reopen until oil from the spill is no longer visible, observably present, and seafood samples from the area have successfully passed both sensory analysis by trained screeners and chemical analysis to verify the oil products are not present at harmful levels. NOAA and FDA will work to reopen previously closed areas as quickly as possible in order to minimize the impact of closures on fishermen and coastal communities while protecting public health.

Mr. Chairman, we are all indebted to the scientists and front-line food safety specialists in our agencies and in State Governments along the Gulf for their diligent and ongoing response to this catastrophic oil spill. I appreciate the opportunity, on their behalf, to discuss these activities, and look forward to your questions.

Thank you.

[The prepared statement of Mr. Taylor follows:]

PREPARED STATEMENT OF MICHAEL R. TAYLOR, J.D.

INTRODUCTION

Mr. Chairman and members of the committee, I am Michael Taylor, Deputy Commissioner for Foods at the Food and Drug Administration (FDA or the Agency), an agency of the Department of Health and Human Services. Thank you for the opportunity to discuss FDA's role in helping to protect the American public from negative health impacts of the Deepwater Horizon oil spill.

FDA is an active and integral part of the Federal Government's comprehensive, coordinated, multi-agency program to ensure that seafood from the Gulf of Mexico is free from contamination as a result of the spill. This program is important not only for consumers who need to know their food is untainted, but also for the fisheries industry, which needs to be able to sell its products with confidence.

On May 17, FDA established an Incident Management Group (IMG) to oversee and effectively coordinate issues related to the oil spill. The IMG is coordinating activities and monitoring issues that include fish and shellfish safety, protocols for the testing of seafood samples, and requests from Federal and State agencies for FDA assistance.

FDA is working closely with the National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), other Federal agencies, and State authorities in the regions affected by the oil spill. We are taking a multi-

pronged approach to ensure that marketed seafood from the Gulf of Mexico is not contaminated. These measures include the precautionary closure of fisheries, surveillance and testing of seafood products, and FDA's Hazard Analysis and Critical Control Point (HACCP) regulations. Beyond our immediate concern with ensuring that currently marketed seafood is free of contamination, FDA and NOAA are developing strict protocols for re-opening closed Gulf fisheries, in a manner that ensures the safety of product from those areas.

CLOSURES

The primary preventative control for protecting the public from potentially contaminated seafood is the closure of fishing areas in the Gulf that have been or are likely to be affected by the oil spill. NOAA has the authority to close Federal waters to commercial and recreational fishing, and States have the authority to close waters within their State jurisdictional limits. FDA is working with both NOAA and the States to ensure that appropriate closures are in place.

On May 2, 2010, NOAA closed to fishing a portion of Gulf waters (3 percent of the Gulf of Mexico Exclusive Economic Zone (EEZ)) that were known to be affected by oil, either on the surface or below the surface, as well as areas projected to be affected by oil within 72 hours and a 5-nautical mile safety zone around those areas. Due to the evolving nature of the spill, NOAA has continued to revise the closed area, which, as of June 14, encompasses 32.3 percent of the Gulf EEZ. The States of Alabama, Louisiana and Mississippi have closed portions of their coastal waters to recreational and commercial fishing and the States of Florida and Texas are closely monitoring their waters in conjunction with FDA and other agencies.

SURVEILLANCE

NOAA is collecting a variety of types of seafood samples including finfish, shrimp, crabs, and shellfish from the Gulf for analysis. NOAA is actively monitoring seafood caught just outside of closed Federal areas, and testing it for both petroleum compounds and dispersants, to help ensure that NOAA's closed areas are sufficiently protective to prevent the harvest of tainted fish. FDA will be testing seafood collected from State waters by the respective State agencies.

Samples are compared to the baseline samples from unaffected areas, as well as samples taken after Hurricanes Katrina and Rita. These baseline and post hurricane samples demonstrate that Gulf seafood had low levels of polycyclic aromatic hydrocarbons (PAH), a primary contaminant of concern in oil, prior to the spill. They provide a comparative standard for safety in the region following the spill.

FDA is implementing a surveillance sampling program targeting seafood products at Gulf Coast seafood processors. The Agency will be targeting oysters, crabs and shrimp, which could retain contaminants longer than finfish. This sampling will provide verification that seafood on the market is not contaminated from the spill.

TESTING

FDA and NOAA bring considerable technical expertise to this situation in terms of collecting and analyzing seafood. The testing already underway and being planned covers several areas. These include baseline testing of seafood in oil-free areas for future comparisons; surveillance testing to ensure that seafood from areas near to closed fisheries are not contaminated; testing as part of the re-opening protocol to determine whether an area is producing seafood safe for consumption; and market testing to ensure that the closures are keeping contaminated food off the market. Results of the testing and sampling times and locations will be made available to the public.

Testing involves two steps—including both a sensory and a chemical analysis of fish and shellfish. The sensory standard for comparison is based on samples of surface water mixed with a combination of oil and dispersants. Sensory experts check the scent and look of raw seafood, and the taste and scent of cooked seafood. Chemical analysis of oil allows scientists to conclusively determine whether contaminants are present in fish or shellfish tissue that would be consumed, and if so at what level, and whether the contaminants are due to the spill or related clean-up activities. The current science does not suggest that dispersants bioaccumulate in seafood. NOAA, however, is conducting studies to look at that issue. FDA will be closely reviewing the results of those studies. If the studies provide new information, that will be taken into consideration in management of the effects of the spill with regard to seafood safety.

FDA has deployed its Mobile Chemistry Laboratory to the Florida Department of Agriculture in Tallahassee, which will be used to run chemical analyses of samples collected by States for select volatile organic compounds. The technique will screen

seafood samples for volatile head-space chemical compounds that may be indicative of petroleum taint. Positive results from these tests will trigger further chemical analysis for PAH. FDA has seven employees currently deployed to the Mobile Lab.

FDA's Arkansas Regional Laboratory has begun to test Gulf seafood samples collected by States, while three additional FDA field laboratories and State labs in California, Florida, Arizona and Wisconsin that are members of FDA's Food Emergency Response Network (FERN) continue to work on the implementation of testing protocols and methodology for PAH. These laboratories are expected to be ready to begin running samples by the end of June, and additional State and Federal labs are also preparing to assist in the sample analysis.

Samples collected by NOAA from Federal waters for surveillance or associated with re-opening Federal waters will be analyzed by NOAA laboratories or inspection personnel using the same methodology and protocols.

HACCP

The existing framework of FDA's Seafood HACCP program is proving its value in the context of this extraordinary public health effort. These science-based regulations, issued in 1997, initiated a landmark program to increase the margin of safety that U.S. consumers already enjoyed and to reduce seafood-related illnesses to the lowest possible levels.

The FDA's seafood HACCP regulation requires processors to identify and control hazards which are reasonably likely to occur. FDA will re-issue existing guidance to seafood processors that explains how they can meet their obligation under the regulation to ensure that they are not receiving fish from waters that are closed by Federal or State authorities. The Agency is also increasing inspections of facilities that may be processing seafood from affected areas.

REOPENING

FDA and NOAA are working to refine a protocol that sets the health standard for what seafood in the Gulf is considered safe to consume, as well as a process for determining when closed Federal waters can be re-opened. Under the protocol, waters impacted by oil will not re-open until oil from the spill is no longer observable and seafood samples from the area successfully pass both sensory analysis by trained screeners and chemical analysis to ensure there are no harmful oil products found in them. With respect to PAH and other possible chemical contaminants, the re-opening criteria include quantitative limits that will help ensure that seafood harvested from re-opened waters will be as safe as seafood taken prior to the oil spill.

FDA will work with NOAA to facilitate the re-opening of previously closed areas as quickly as possible in order to minimize the impact of closures on the fishing industry and coastal communities. The two agencies have held multiple discussions with State officials from Texas, Louisiana, Mississippi, Alabama, and Florida to discuss the protocol for re-opening waters closed in response to the oil spill. We are confident that the protocol used to re-open Federal waters can also be used to assess the safety of State harvest waters before they are re-opened by State agencies.

NOAA and FDA have provided a working draft of the re-opening protocol to the affected Gulf Coast States. Along with the protocol, Federal agencies are working to provide the States with all of the baseline data from areas where oil from the Deepwater Horizon spill had not yet reached. Each sample location was selected to represent the spectrum of seafood species and conditions in the Gulf of Mexico.

CONCLUSION

FDA, in close coordination with other Federal and State agencies, has been proactive in monitoring this disaster, planning for its impacts, and preparing our personnel and facilities to continue to help ensure a safe food supply. The protocols and approaches we have developed will protect the American people while minimizing the negative impact on Gulf seafood producers and exporters.

Thank you for the opportunity to discuss FDA's activities with regard to seafood safety. I look forward to answering any questions you may have.

The CHAIRMAN. Thank you, Mr. Taylor.

Thank you all for your testimony. We'll start a round of 5-minute questions.

Dr. Kaplowitz, I understand you have mobile units in Louisiana to respond to the spill. How many are there? And what are they

seeing and doing on a daily basis? And are you planning on sending any additional units?

Dr. KAPLOWITZ. There's only one mobile unit in the Gulf area that we've sent there, and that's the one in Venice, LA. We've been in very close contact with all the States to determine whether they need further assistance, in terms of healthcare. We are assured that, at this point, the other States do not require any further assistance from the National Disaster Medical System. We are tracking, on an ongoing basis, the people seen in this clinic. It hasn't been a large number of people. And very few of the complaints, we feel, are directly related to the oil spill, but we want to assure that people have access to healthcare. We're very careful to work with healthcare providers in the area. We don't want them to feel as though they're being supplanted. So, it's a true partnership.

The CHAIRMAN. So, you don't know if you're sending any more down there, or not?

Dr. KAPLOWITZ. At the moment, nothing else is planned, but we certainly have teams that can assist further, working with the healthcare community.

The CHAIRMAN. Dr. Howard, there was an interview on television last night, where a marine biologist said that the President should demand respirators on all responders immediately, that are working in this area. I don't know if she's right, or not. But, tell me what's happening, in terms of people using respirators. And how important is it that these workers use respirators—the workers that are cleaning up, either out at the site or that are cleaning up along the beaches?

Dr. HOWARD. Yes, Senator, I saw Dr. Ott's interview last night, myself. And certainly, you know, there are areas where exposure is uncertain or the exposure has been, in the past, judged as excessive. When you do the oil burning out offshore, that's an area that we have concern about, and we've recommended that respiratory protection be appropriate for that. Obviously, if you're in a ship, doing the burning, and you're upwind all the time, but sometimes wind can change, so that's an area of concern.

For folks that are doing booming and skimming, they may not be exposed to a lot of the volatiles, but they may be exposed to fresher crude, less-weathered crude. That may be an area where respiratory protection is recommended.

For shoreline workers who are doing cleanup, that are picking up highly weathered crude, respiratory protection itself may not be indicated, but their dermal protection is extremely important, because they're handling oil on the beach, etc.

So, respiratory protection has to be delineated based on the exposure scenario. So, we, at NIOSH, are developing recommendations, along with OSHA, for respiratory protection for workers and volunteers in all exposure scenarios.

The CHAIRMAN. Mr. Taylor, about 2 weeks ago I saw an article in the paper—I don't have it with me right now, but, again, it was another marine biologist, or toxicologist—and she had been diving in the ocean around this area in the Gulf and finding that very small fish, tiny little fish had been ingesting some of this dispersant, which I guess is very toxic, but—it wasn't completely toxic to the small fish. The point she was making is that a lot of the small

fish are being eaten by bigger fish, and then those fish are being eaten, up the food chain, by sharks and dolphins and other things. And she was pointing out that, as it did that it became even more toxic as it went up the food chain.

Do you have any knowledge of this? And what steps is the FDA taking to look into the possibility that these small—almost down to the phytoplankton size, where teeny little fish are eating this dispersant, and that's being moved on up the food chain to the kind of fish that we eat—what's the FDA doing to keep tabs on that?

Mr. TAYLOR. We've looked very closely at the question of whether the dispersants could affect the safety of the seafood, of what people eat, and we're confident, based on what we know now, that we don't have a concern there. The issue here is whether the dispersants are actually absorbed into the flesh of the animal, or bioconcentrated, as the scientists say. There are some basic mechanisms of the way in which these water-soluble compounds—which is what the dispersants are—are able, or not able, to pass the membranes, whether it's in the gills or in the intestine of the fish, which are lipid membranes. And so, because these are water-soluble compounds, there's a physiological barrier essence that the animal has created that protects the flesh of the food—what people eat—from being contaminated. This does not mean that these compounds are not potentially harmful to the fish themselves, and we understand there are issues there. But, as we focus on the safety of the food itself, we feel confident that these dispersants are not getting into the food in a way that would affect the safety of the food.

The CHAIRMAN. You're very confident of that?

Mr. TAYLOR. Yes, just on the science that we've got and some really good experience with this, we're confident of that. We know that NOAA, for example, is doing some further studies to verify this understanding about the inability of these compounds to bioconcentrate. We'll certainly work with NOAA in following that. But, there's a large body of experience with the properties of these compounds and in past oil spill situations that give us confidence on this point.

The CHAIRMAN. How about people eating shrimp? I'm over my time. One last question. How about people eating shrimp? How confident should we be that the shrimp we have on our salads, in our soups, in our meals that we buy—how safe is that?

Mr. TAYLOR. Because of the aggressive action by NOAA to close waters, we're confident that if it's on the market today, that shrimp and other seafood taken from the Gulf are safe. Those are very aggressive preventive measures. The best thing we can do, is to get control of a situation where there's a potential hazard, and really prohibit the taking of fish from those areas. Those waters are being patrolled by the Coast Guard and by NOAA, and now there's testing going on to verify, in fact, that the seafood is safe. But, that basic preventive measure is something we have, going forward, on the food safety aspect of this, that perhaps we don't have, certainly, in the occupational context of exposure to the oil or the dispersants.

The CHAIRMAN. Thank you very much, Mr. Taylor.

Senator Enzi.

Senator ENZI. Thank you, Mr. Chairman.

I want to thank everybody on the panel. I've got more questions than can possibly be asked in even two or three rounds. And so, I hope you'll be willing to answer some in writing, particularly some of the more specific ones.

But, I'll start with Dr. Howard. How many people are currently on the CDC registry because of the oil spill?

Dr. HOWARD. Senator, we've rostered about—nearly 13,000, as of today. Now, you may ask, What's the denominator? We're somewhat unclear about what the denominator is. We think it's somewhere between 15,000 and 20,000. But, not all workers that have been trained are necessarily badged and working. So, we feel that, based on where we started, the 13,000 that we've rostered is a very good start, as of now.

We're preparing a Web-based rostering, and we're also rostering people at the training centers, before they even complete their training and go out into the field.

So, we're confident that we can capture everyone who is working.

Senator ENZI. In these efforts that you're doing, what are you doing to ensure that you're able to compare the health of the general public before and after the spill, since you weren't really stationed there before the spill? What kind of baselines are you gathering?

Dr. HOWARD. That's a really excellent question, and it goes to the issue of CDC's health surveillance of the populations in the Gulf States.

One of the things that we're doing is drawing a number of different sources of data. One source of data are Poison Control Centers. They're all over the United States. But, we're looking at 60 Poison Control Centers that are located in Gulf States, trying to figure out, What kind of calls are they getting? Are people alleging they've been exposed? Are they just asking for information, for instance? To date, looking at those calls, as of now, today, we have about 400 of those calls. The majority of those calls are coming from workers, not actually from residents.

So, that's one good source of information. We've started this fairly early in the process, and hopefully now we can build on it every week and we can use some of the earlier data as a baseline as we go through, especially as the oil migrates around the Gulf.

The second big area is the BioSense Program, which is essentially looking at surveillance of a whole bunch of healthcare facilities throughout the United States. We used it in H1N1, for instance. Now we're using 86 of those healthcare centers which are located in the Gulf area. People coming in the door, what are they complaining about? Are they complaining about a rash that they may have gotten from contact with oil, etc?

And then, the third thing, we're looking at the State health department data, because each of the States in that area—Louisiana, Mississippi, Alabama, Florida—they all collect their own data, they all have their own surveillance system. We're putting it in one portal on our oil spill site, on the CDC site, and we're looking at what their data shows. It's very similar. When we look at Louisiana's data, for instance, we see the predominant number of folks that they're surveilling are primarily workers, not residents. The general symptoms that are being reported by people when they come

into these systems is the kind of experience that we've had throughout this from the very beginning: headache, dizziness, a little nausea, things smell bad. Those are the common kinds of complaints that we're seeing, and also both on the telephone and Poison Control Centers and in the healthcare facilities.

Senator ENZI. Thank you. Sounds very efficient, and I appreciate all the effort that that requires.

Dr. Kaplowitz, as the Assistant Secretary for Preparedness and Response, have you seen a significant increase in the number of individuals presenting at the hospitals and the community health centers in the area, besides the special clinic?

Dr. KAPLOWITZ. Again, that would build on what Dr. Howard's talking about. We work together to monitor the surveillance, and much of the surveillance is happening at the State level, also the BioSense and the Poison Control Centers. So, we don't actually have a separate surveillance system. We monitor what's happening in the clinic in Venice, and we have people who are in the area who are trying to stay in touch with providers in the area. So, we're all working together to make sure that we have a similar picture, in terms of surveillance in the area.

Senator ENZI. Could you cover, again, how severe the health conditions are of the individuals that have come to the Venice clinic?

Dr. KAPLOWITZ. OK. In general, they've been mild. Most of the reports have been respiratory illness. So, 38.4 percent, to be exact, have been treated for acute respiratory conditions. I can't tell you specifically whether they're triggered by oil, but that's what's reported. We have 27 patient encounters for dermatologic, eye, or gastrointestinal problems, which, again, may or may not be directly related to the oil.

I think the best data, in terms of people working most closely with the oil, is going to be from the workers. But, we certainly are very concerned about the general population, which is why we want to continue this long-term surveillance and set up systems that we can monitor people over a prolonged period of time.

Senator ENZI. I know that my time is expired, but I've got just a little, short—I hope, short—followup on that. Are you gathering baselines from those that you're treating, beyond what's just happening to them there, so that it can be aggregated later to see what other implications there are?

Dr. KAPLOWITZ. We're not set up to do that right now, but that's certainly something that we're working to set up, in terms of a long-term surveillance system. And that could complement what Dr. Collins has been talking about, in terms of funding research. It's going to be really important to set up the studies correctly, and that's one advantage of the Institute of Medicine meeting, as well. We're going to pull together top scientists to really advise us on where we should be going, what we should be looking for.

Also, I was reminded, we're seeing a lot of heat-related illness. Not too surprising. And that's a concern, too, when you talk about respirators, because that could actually exacerbate heat illness. So, a lot of what we're seeing is heat-related.

Senator ENZI. Thank you very much.

The CHAIRMAN. I thank you, Senator Enzi.

Senator Murray.

STATEMENT OF SENATOR MURRAY

Senator MURRAY. Well, Mr. Chairman, thank you so much for having this hearing. This obviously is a very important hearing.

My experience on this goes back to the Exxon Valdez spill that obviously the Northwest saw acutely, more than a couple of decades ago. Many people from my State have fishery boats, and many volunteered to go up there. I remember it all very well. I recall numerous reports on the negative health effects of the responders there, and that there were widespread concerns, at the time, that reports and claims were largely ignored. And I want to make absolutely sure we do not repeat that, and we take all of the claims and concerns seriously, both now and in the future.

So, I wanted to ask all of you, What assurances can all of you make that our government and BP will respond swiftly and thoroughly to any of these reports? And are there systems set up to monitor and report on the short- and long-term health effects of the workers who are responding to this disaster?

Dr. HOWARD. Well, I'm not going to respond for BP, but certainly, on the part of Department of Health and Human Services, I think——

Senator MURRAY. OK.

Dr. HOWARD [continuing]. Your concerns are exactly our concerns.

I was at the Exxon Valdez in Alaska, also, myself. And I think one of the deficiencies there is that we were able to ascertain some acute irritant effects, but we really didn't follow through with monitoring that population for chronic effects. And that is something I think that we all have spoken to the need for that.

But, to start that, to actually be able to identify chronic effects, you have to start very early. You have to get a hold of all the people who are involved—hence, our rostering activity—and then you have to make sure you know what they're doing in their particular tasks.

Senator MURRAY. So, do you have a system to implement, right now, that is keeping track of all those workers——

Dr. HOWARD. Yes.

Senator MURRAY [continuing]. What they're doing? Any complaints?

Dr. HOWARD. The rostering system we have, we ask, "What are you assigned to do?" So, that's—as you come out of the Training Center, you're either assigned for shoreline cleanup or you're assigned for other activity. So, we're going to, then, monitor that as we go forward. We have to have a baseline. We have to find everybody.

Senator MURRAY. Right.

Dr. HOWARD. We have to have all that demographic information.

And then, in terms of the surveillances, as I've indicated, in the Unified Command, there are health and safety modules, so we're looking at the injuries that are being reported—punctures, lacerations, motor vehicle accidents. All sorts of things like that are happening, because there are a lot of people, in a big area, doing a lot of activity.

And then, we're also looking at, as Dr. Kaplowitz pointed out, this most significant problem we're having, with heat stress. You know, the heat index, on many days in the area of cleanup, is quite high, and that is probably our most serious issue, where we can say most workers that we have seen problems with are reporting heat stress issues. Then we have some workers who report hydrocarbon odors. And then we had an episode, a couple of weeks ago, where we had nine workers reporting significant hydrocarbon issues. Seven of them went to the hospital.

Senator MURRAY. Right, and are you taking absolutely everything seriously and recording everything?

Dr. HOWARD. Absolutely every report—we are following up. Exactly. And we are looking at all the data that is being recorded by BP and its contractors, as well as governmental agencies, about any incident that's reported in any of their workers—we're analyzing all that data, trying to figure out, Are there patterns? Are there things that we could recommend to prevent those things from happening?

Senator MURRAY. OK. So, doing better than when you remember the Exxon Valdez?

Dr. HOWARD. Oh, much better. Much better in that regard. I think we are at the point of being remarkably better organized in health and safety than we were in the Exxon Valdez. And I think the meeting of the IOM, next week in Louisiana, we will be able to get what we never got in the Exxon Valdez—concurrent scientific input. We got it later on. There were commissions that were established, as you know, but we did not ever get concurrent——

Senator MURRAY. Right. OK, good.

Anybody want to add anything to that or does that cover it?

You've mentioned, Dr. Kaplowitz, several times, this heat problem, heat stroke, and the number of people who are being impacted—I understand the temperature is, like, 110 degrees now, so not surprising. So, it's necessary to stop people from working when that happens. But, I also realize that's going to slow the cleanup. And I wondered, from your perspective, or anybody's perspective, Do we have enough workers down there? Is BP hiring enough to meet all the needs of this, knowing that we are going to have some people with health effects?

Dr. KAPLOWITZ. I'm going to have to defer on that one. I can assure you that the heat's being taken very seriously. There's a lot of attention being paid to hydration and allowing people significant rest time. So, some may be working for 20 to 40 minutes with 20 to 40 minutes off. And that's a decision made by NIOSH, working with OSHA.

Senator MURRAY. But, is that being taken into account, that we'll need additional workers because people do have to take time off, and those kind of things?

Dr. HOWARD. Yes. I think that point is extremely well taken. The exact manpower demands for this activity, I've not seen, but I certainly think they're greater than what we have now.

Senator MURRAY. Yes. I just want to make sure we're not pressuring people to stay on the job when they should be taking——

Dr. HOWARD. Exactly.

Senator MURRAY [continuing]. Time out, that we have enough people to cover everybody so it's not——

Dr. HOWARD. No. We're actually getting some complaints from folks along the coast, that the workers are working 15 minutes and resting 45 minutes. But, unfortunately, given the heat indices, we have to do that.

The other thing I wanted to add is, some consideration is being talked about now, at the Unified Command, for nighttime cleanup activities, which would help ameliorate some of the radiant heat load that we have during the daytime on workers.

Senator MURRAY. OK.

Dr. Miller, I wanted to ask you, Is NIEHS currently studying the risk of oil dispersants on public health?

Dr. MILLER. Currently we've been evaluating what the literature tells us about the oil dispersants. And the information would suggest our greatest worry is really related to the acute exposure, and especially in high concentration of this, for the workers utilizing it. Certainly, there appears to be some concern, also, with respect to how it may affect the oil and, in fact, does it increase its absorbance into humans that may be exposed to it, and affect it in that way? We don't have as great a concern for the long-term health effects with it, fortunately. And the one dispersant that they were using, which contained 2-butoxy ethanol, has—they have stopped using that particular one. So, that helps ameliorate some of our concerns with respect to it.

Now, as we move forward, we'd like to do additional research and toxicology testing and get better exposure data with respect to the dispersants and the oil, too.

Senator MURRAY. And you have the resources you need to do that?

Dr. HOWARD. That's what—some of the research moneys that just came through—Dr. Collins will be headed to help us with those types of questions, to looking at the human health effect.

So, that's very important to us, as well as the efforts right now to try to get researchers involved, through our time-sensitive programs, in performing some research on some of these important questions, absolutely.

Senator MURRAY. OK. Thank you very much.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Murray.

Senator Merkley.

STATEMENT OF SENATOR MERKLEY

Senator MERKLEY. Thank you very much, Mr. Chair.

Thank you all for your testimony and your efforts to respond to this disaster.

I wanted to start, Dr. Kaplowitz, with a question for you. I went down to the Gulf on Friday, and I was struck by the amount of oil that's touched the shoreline, even though it's just a tiny bit of the oil slick. And it was pointed out to us that if there is a significant storm in the upcoming weeks—and we are in the hurricane season now—that instead of a small fraction of the oil, large amounts of that oil, perhaps the entire slick, will be driven up into the shores, and we'd have, in terms of the shoreline impact, a disaster a couple

of orders of magnitude larger than the one we already have. And that's going to be a lot more cleanup, a lot more workers. Is that a fair picture of the situation? And are we preparing for the possibility of a storm driving the slick north and creating a much larger contamination?

Dr. KAPLOWITZ. Well, I can assure you this is an integral part of planning for hurricane season this year. Each year, we get geared up for hurricane season. And there's been a lot of discussion about what the impact of a storm in the Gulf could have, including the fact that a storm surge could push the oil inland. The fact is, we really don't know what's going to happen, but we are very concerned that the oil can be pushed further inland through the storm surge.

Again, this is unprecedented, but clearly we have to be concerned that the oil will be pushed further inland.

Senator MERKLEY. In addition to the oil being pushed inland, there has been some discussion of the fact that a major storm could pick up some of the oil and re-dump it inland. Is that a real possibility? And does that have health issues that—concerns that we need to be prepared for?

Dr. KAPLOWITZ. I can't answer that question. Again, most of the discussions I've been part of talk about the storm surge, so I don't know the answer to that.

Senator MERKLEY. OK. Let me go ahead and ask a question about the underwater plumes. And essentially my understanding is—Mr. Taylor, this may be in your area, with FDA—my understanding is, you are preventing all fishing in areas where the underwater plume exists, so that people can be assured that—and I just want to clarify this, for the record—are you assuring folks that the food that they're getting from the Gulf is from outside the plume, or are you assuring them that the food is safe, even though it might be from inside the plume?

Mr. TAYLOR. The purpose of the NOAA closures—and it is NOAA that actually has the authority to close the waters—is to prohibit taking of fish from areas that are contaminated with oil, whether on the surface or in the water column. So, yes, the reason we're confident about the safety of seafood is that those closures have been aggressive, they've been anticipating the movement of the spill. They have a 5-mile buffer zone around the oil itself which is included in the closure. So, again, that's the fundamental preventive measure that we've been able to take, and we think it is very effective.

Senator MERKLEY. So, tracking underwater plumes are a little harder than surface plumes. Do we feel like we have enough testing, enough resources to really know where those underwater plumes are, at different levels in the water column?

Mr. TAYLOR. Yes, I'll have to defer to NOAA on the technology, but this is their business, and they have the means to do this.

Senator MERKLEY. OK. I want to turn to FDA's seafood—and I think you refer to it as the HACCP program. One of the things that I've heard is that folks are going into restaurants and ordering things, like shrimp, and saying, "Is any of this shrimp coming from the Gulf?" How do you recommend that restauranteurs—if, in fact, they're ordering from the Gulf—respond to customers so there's a

consistent message to the American consumer, "Yes, we do have shrimp from the Gulf, but it is all shrimp that is approved and tracked as safe by such-and-such?"

Mr. TAYLOR. Right. Well, again, the power of the HACCP, this preventive control system that seafood processors are required to have, is that they have to have a system that verifies that they are sourcing their product, whether it's shrimp or other seafood from the Gulf, from waters that are not subject to the closure. And they will have to document that. And so, a restauranteur should be certainly seeking that sort of verification from—if they're concerned about this—from the processor.

Senator MERKLEY. I think it's their customers that are very concerned. Is there a standard way of presenting that—I mean, this is partly a public education——

Mr. TAYLOR. Right.

Senator MERKLEY [continuing]. Issue, and I'm just wondering if there's—helping giving people a way to approach this.

Mr. TAYLOR. Again, the first thing we're doing is communicating—the basis for our confidence that these foods are safe. There isn't in place, if you're asking, a mechanism for that sort of verification documentation to track all the way through to the restaurant. But, certainly the restaurant could do whatever they feel the customer demands.

Senator MERKLEY. OK. No standard guidance, that's what I was——

Mr. TAYLOR. Yes, sir, right.

Senator MERKLEY [continuing]. Looking for.

Well, I think that my time's expired now, so I'll stop there.

Thank you.

The CHAIRMAN. Thank you, Senator Merkley.

Senator Casey.

STATEMENT OF SENATOR CASEY

Senator CASEY. Thank you, Mr. Chairman.

I want to thank the panel for being here, and for your work.

Dr. Howard, I wanted to start with you about a question that you made reference to in your testimony under the heading of "Potential Exposure Pathways." I'm just reading from the third sentence. You said, "Children tend to be more sensitive than adults to oil and other forms of pollution. What might be annoying to an adult could be a real problem for a child, particularly if the child is an infant or toddler or has preexisting conditions."

I have three basic questions; all of them overlap. First, what has our government seen, or anyone else on the scene, seen as it relates to the scope of the problem as it might relate to children, their exposure and the problems they're having with that? Second, what are we doing about it? And third, is there a plan in place to track adverse health effects as it relates to children?

Dr. HOWARD. Yes, Senator. You know, the general rule is, children have higher respiratory rates and higher metabolic rates than adults, and they tend to, then, take in more of a toxin if it's in the atmosphere. So, that's the general rule that that statement's based on.

They also have—especially very young children, infants—relatively undeveloped immune systems so that they are less able to fight off infections that an adult would. So, that's the general susceptibility that children have.

Fortunately, we haven't seen, in our health surveillance system that I've described—thus far, we haven't seen any complaints—issues of exposure coming from parents of young children, for instance. We haven't seen that in our system that we have.

Senator CASEY. You mean parents reporting.

Dr. HOWARD. Parents reporting, calling in to a Poison Control Center, saying, "My child was exposed," etc. We haven't seen that in our system yet. We're highly cognizant of looking for that, though, but we haven't seen it yet. So, that is some relatively good news.

Senator CASEY. In the absence of a lot of complaints, I can understand why you may not be at this point yet, assuming there will be health effects as it relates to children. Let me ask it this way, Is there an existing strategy that you could apply to this to treat children, or would you have to come up with an additional strategy as it relates both to the treatment of a child, but also that relates to monitoring what happens to workers? Let me just see if I can get the right title—"Collecting and Evaluating Occupational Exposure Data." I mean, as you're tracking problems that workers have, in particular—and I know the urgency of that—is there something you can or should do that would be focused just on children?

Dr. HOWARD. Well, certainly pediatricians know very well how to treat childhood exposures. Children often get into all sorts of trouble. In fact, most Poison Control Centers, a lot of their calls are related to children who have gotten into household products, etc, when they shouldn't have. A lot of Poison Control Centers are very well situated to be able to offer advice, both to parents, as well as physicians who see a child in an emergency room that might have——

What we are anticipating, of course, is children on the beach may be coming into contact with some weathered crude on the beach, as has been seen on the TV.

So, that kind of a monitoring system that we've set up would include that kind of information. As I say, as yet, we haven't seen it, but we're certainly looking for it.

Senator CASEY. Thank you very much.

The CHAIRMAN. Thank you, Senator Casey.

Senator Bennet.

STATEMENT OF SENATOR BENNET

Senator BENNET. Thank you, Mr. Chairman. Thank you for holding this hearing.

And thanks, to all the witnesses, for your testimony.

I actually would like to start, Dr. Howard, where Senator Casey left off, because, among other things in your testimony, you talked about the health risks from this spill, including the vulnerability, of children and people with asthma, to air pollution from burning oil. You also said—and I heard you say that we haven't seen it yet. But, you said, in the testimony, that, "Much of the data we have regarding health risks of oil spills likely understates the risks for

a large spill." I wonder—assuming that we begin to see this sort of exposure—whether you could tell us a little bit about what the full chronic health impacts of this might look like over time.

Dr. HOWARD. Well, Senator, I wish I could, but I think, as Dr. Miller pointed out, when you look at the world's literature, you have, maybe, less than 40 articles that you could possibly turn to, not all of them very high quality; and, in fact, some of them involve a tanker running aground and a small spill, maybe 10,000, 15,000 barrels, let's say, of oil. We don't have a world's literature here that's able to tell us what happens when there's this much oil around populated sites.

Now, we know from those studies, though, that there are acute irritant effects on the skin from crude oil, as well as any other chemicals that are mixed with it, because, essentially, the dispersant is yet another type of hydrocarbon, so it's all hydrocarbon sensitivity, irritation, dermatitis.

And then, you're going to get some neurological complaints from the volatiles that may be off-gassing from the hydrocarbon, or some people are just very sensitive—even though there's no measurable volatiles, some people are just very sensitive to hydrocarbon odors. Some people go to the gas station and they get very sensitive to—when the gas fumes are there. So, those people can develop a headache, they can get dizzy, they can be a little nauseous. They can get so nauseous that they could vomit. So that there are those sort of constellation of symptoms that are very common. And you look in those studies, and those studies that have looked at acute effects—and most of the studies, that's all they've looked at—you'll see those common symptoms. Some of them will say people also experience respiratory irritation, down in their throat and their lungs; they cough. And just in a very few studies have they actually measured the lung function. In a couple of those studies, they've found the lung function has come back within a very short period of time.

So, mostly they're irritant effects, they're self-resolving, and they primarily involve the respiratory tract and the gastrointestinal tract.

Senator BENNET. Dr. Kaplowitz, did you have something?

Dr. KAPLOWITZ. I——

Senator BENNET. Thank you.

Dr. KAPLOWITZ. [continuing]. Just wanted to add that this is really what makes the Institute of Medicine workshop so important. The Institute of Medicine is pulling together many experts in all those areas—respiratory health, neurologic problems, as well as psychologic issues—to get the best information, as well as to help us determine how to do the monitoring, and how to do it right, from this point forward, including the issues with children. We're very concerned, but we don't know what the long-term impacts could be.

Senator BENNET. Dr. Miller, just on the point of the dispersants we were talking about—and the Chairman talked about it, too—did we learn anything from the Valdez episode, about the use of the dispersant that was used here, the COREXIT 9527? Or was that something different? Or did we not study it?

Dr. MILLER. Yes, I don't think, to my knowledge, that we utilized the dispersants in the Valdez, but I'm not as familiar with—if that was the case. But, I don't believe it was.

For this situation, the dispersants, at least at this level of usage, is unique. And we can anticipate that we need to evaluate this very closely to just make sure that we are not seeing health effects related to the dispersants, in addition, as Dr. Howard said, to the oil and the chemical compounds that are there and present in the oil.

Again, as Dr. Howard mentioned, too, the acute effects—and what makes us wary in some of the studies that, again, are very limited, suggest that there may be some longer-term sequelae, in terms of respiratory problems or genotoxic effects and others. So, the clear need for this research, in the IOM meeting, to really start moving forward on critical research elements.

Senator BENNET. Let me just—may I ask one more question, Mr. Chairman? Thank you.

Mr. Taylor, you testified that roughly 32 percent of the Gulf's Exclusive Economic Zone is, today, closed to fishing. How much worse do you think things are going to get, in terms of this moratoria?

Dr. MILLER. Well, the closures will follow the growth of the spill. And I think we're all focused on when we can stop the spill from growing. I'm certainly not in a position to predict that, but NOAA is following the spill and its movement and, you know, it's expanding the closure, as needed, to encompass it, as it grows.

Senator BENNET. We know it's unlikely to be stopped in the coming weeks—can you predict, at all, whether that 32 percent is going to become 40 percent or 45 percent?

Dr. MILLER. Yes, NOAA may well—they actually do a lot of projecting, based on the data they collect, which they collect on a daily basis, and we can get back to you with any projections that NOAA has for the growth in the future. But, they follow that extremely closely.

Senator BENNET. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator Bennet.

Senator Hagan.

STATEMENT OF SENATOR HAGAN

Senator HAGAN. Thank you, Mr. Chairman. And thank you for holding this hearing.

I appreciate the testimony of the witnesses today. And, in particular, we all know that this is an environmental disaster of just huge proportions, and the areas that it's affecting now, and the areas that we're all concerned about it affecting, is something that's, I think, on the entire country's minds. I think everybody's praying for all of our workers, and especially that we can come to an as-soon-as-possible resolution to this disaster.

I know we're talking about the health impacts right now, but I was just wondering, What long-term resources do we think are going to be available for people who suffer health problems related to this disaster? What are your cost estimates to deal with relevant health issues? And who's going to actually pay for it?

Anybody want to take a stab at that initial question?

Dr. HOWARD. Well, since no one will step up to the plate.

I think there's—uncertainty is probably the word that we have for a lot of issues that you brought up, Senator. We're quite pleased that NIH has stepped up with some funding that's independent—it's government funding—to look at acute and chronic health effects. As we've said all this afternoon, we just really do not know a lot of things, here. And the only way to find out is to be able to study. Certainly, that's something I think we all support at HHS. And as Dr. Kaplowitz had pointed out, Secretary Sebelius has, very early on, said, "We need to call in the experts, and we need to do this right, from the beginning."

So, I think, in that sense, we're at that stage of, certainly, supporting the sentiments that you just said, and we need to do it quickly, and we need to do it with confidence so people will have confidence that we're looking at this situation and we're generating the science that we need to answer everybody's question.

Senator HAGAN. Appreciate that.

Dr. Kaplowitz, in your testimony you mentioned the Institute of Medicine workshop that's going to take place, I believe next week, to better inform the public. Can you tell us, What are some of the things that the officials are going to convey to the public during this workshop?

Dr. KAPLOWITZ. Actually, it is going to be open to the public, but, as much as anything, the workshop is also to inform us, in the Government as well as the scientific community, about where we go next. This is, first and foremost, a scientific workshop, and not a workshop where mainly we're going to be presenting information. We want to hear from the experts, in terms of the best science. What do we know? What don't we know? And how should we plan to move forward with the kind of research studies that we've talked about? What's the best way to set up surveillance?

Also, the behavioral health issues have to be looked at, because we know we're going to see some sort of impact; we don't know exactly how much.

And then, one thing that I didn't mention is the communications issue, because there are many issues with risk communication to the public. This is a culturally diverse community, in the Gulf, not only speaking different languages, but different cultures, and we want to be able to effectively communicate what we do know and what we would like to do.

Senator HAGAN. Who is doing that public education in the communities that are currently affected? Who's actually handling that?

Dr. KAPLOWITZ. Much of the time, it's handled by localities, by States. We're providing a great deal of information, and that's especially, the CDC. I'll defer to Dr. Howard. But, we're trying to pull together the best information. However, we realize that just having scientific information isn't what's going to reassure people.

Senator HAGAN. Are you monitoring what education's coming out? And I bring that up because, you watch TV, and the TV reporters are handling it with their hands unprotected, they're swimming in it. Maybe there needs to be some more education going on.

Dr. KAPLOWITZ. Yes. And we recognize that. So, again, we're communicating with the press, but also, with the public being impacted, we're very concerned that we get the appropriate messages across.

So, it's mainly a scientific meeting. We know there'll be a lot of attention paid.

Senator HAGAN. Thank you.

Last week, I joined with a number of my Senate colleagues in calling on Secretary Napolitano and Secretary Locke to coordinate with State emergency preparedness agencies and develop a plan, should oil or the dispersants come, get into that Loop Current and come up around Florida into the Atlantic Coast. In North Carolina, State and local agencies, already have disaster preparedness response plans in the event of an oil spill. But, what coordination of plans are you working on, or do you have in place, should the oil move up the Atlantic Coast?

Dr. KAPLOWITZ. Well, I'll start with that. What's been very important, as I mentioned, in the Gulf Coast, is to coordinate activities with the State health officials, and the State health officials, also working with the healthcare systems. And that would be expanded to include whatever States are impacted. So, we would expand the communication with State health officials and make sure that we're really coordinating our efforts and, again, that we're working with them to monitor the impact on the population. So, we would expand our efforts, in terms of the States.

Also, I was just reminded, we have regional emergency coordinators in each of the public health regions. And I shouldn't have forgotten that, because Region IV and Region VI, the regional emergency coordinators have done a fantastic job. They've been communicating with the communities. They've been working with the command centers. And they are really our eyes and ears on the ground.

So, this would expand, if necessary, to other regions. I believe Region IV goes to the North Carolina border, so we would be expanding our efforts in the regions.

Senator HAGAN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Hagan.

Dr. Kaplowitz, and all the rest, BP says that a lightning strike this morning, and a fire, has halted the containment of oil. Just found that out—9:30 a.m. They say that the capture operation is expected to resume, later today.

Unforeseen things happen. Don't fool with Mother Nature; you never know what turn it's going to take. How confident are we—and this question was sort of asked earlier—how confident are we that you have in place something to deal with worst-case scenarios? God forbid, but what if another hurricane sweeps up through the Gulf. Doesn't even have to be a Katrina-type, but just another big hurricane comes and pushes that oil spill up into Alabama and Louisiana, Texas, the Florida Panhandle, with huge surges, water going inland for some distance. Can I be confident that we have plans for a worst-case scenario?

Dr. Kaplowitz.

Dr. KAPLOWITZ. I know there have been many discussions about the hurricane season. I'm reminded frequently by FEMA that we still have to worry about all the things we worry about with hurricanes, that that's what's going to have the biggest immediate impact on people. And, quite frankly, once again, we don't know what the impact's going to be, how big the storm surge is. Certainly, we'll intensify our surveillance efforts, our outreach to the commu-

nity, looking at the health effects. I can't answer, in terms of cleanup. But, all possibilities are being looked at. Still, we're really concerned about the direct effect of the hurricane itself, and we don't want people to lose track of that.

The CHAIRMAN. Well, I understand that, but, again, if this pushes oil inland, there's going to be massive cleanup. And it won't be just the damage from the hurricane, it'll be the oiled residues all over that will have to be cleaned up. And that has certain toxic effects that you might not get from just cleaning up wood or debris, bridges, things like that, that might go down in a hurricane. You have other toxic effects.

Are we prepared for that?

Dr. HOWARD. Well, you know, I can say that, the exposure determines the level of protection. So, if you're cleaning up the shoreline or you're cleaning up an area that has been affected by a storm surge, it's protecting the individuals who are doing the cleanup with the proper protective clothing, hand—gloves, footwear, etc. So, from a safety and health perspective, for cleanup workers, we look where they're at—for instance, if they're at the source, they're on a vessel that's doing burning, they're at the shore, if they're participating in cleaning up wildlife—whatever they're doing, we look at how best to protect them in that situation. So, we have contingencies for looking at any exposure scenario, from the health and safety perspective, of cleanup workers. If that helps you.

The CHAIRMAN. OK. Let me try it another way. As we prepare for the hurricane season, you know, we have preparedness plans in place for hurricanes. I'm not certain that incorporated into those plans are plans for cleaning up toxic oil spills. I doubt that they're in there.

Dr. HOWARD. Right. And I would just say that having been in the area of the—Army Corps of Engineers, for instance, builds berms to protect bays that are near the shore, for instance. I've seen those berms being built. The Department of Homeland Security, as the incident commander for this activity, I'm sure would probably have those—thinking about those worst-case scenarios—the Unified Command itself. I'm not sure, we in HHS—I think we know what we would do if we have to look at yet another exposure scenario.

The CHAIRMAN. OK. I understand, yes.

Dr. Miller, do we know the chemical composition of the dispersants that have been used?

Dr. MILLER. EPA has provided the formulations on their Web site, just recently, of the two dispersants that have been used.

The CHAIRMAN. Because, earlier on, I had read that the dispersants used were a patented or a——

Dr. MILLER. Yes, that was the case. And they just recently provided that to the——

The CHAIRMAN. The information——

Dr. MILLER. Yes, that's true.

The CHAIRMAN. Those dispersants don't destroy the oil, they just break it up into smaller pieces.

Dr. MILLER. That's my understanding. That's correct.

The CHAIRMAN. That's my understanding, too. It's those smaller pieces that are ingested, then, by fish. And that gets back to you, Mr. Taylor, again. I talked, earlier, about the confidence level.

You've indicated that we should have a very high confidence level about the fish that we eat. As you say, you have cordoned off certain areas in the Gulf for nonfishing. Other areas are fine. Again, I'm thinking—I'm looking ahead.

Mr. TAYLOR. Right.

The CHAIRMAN. As stated, I think, by Senator Hagan, there is the possibility—I try to keep up on this as much as I can—that this oil will get involved in the streams, and the currents could go around, could come up the East Coast of the United States, go around the coast of Florida. Some of it will come ashore, but a lot of it will be dispersed in those little tiny things that'll be eaten by other fish, maybe not just in a closed area. Fish don't just swim within certain boundaries that you draw on top of the water. They can go in and out of those boundaries.

So, again, I want to explore with you that—what kind of research and investigation are you doing as to whether or not—even if fish eat this stuff, whether or not it's harmful to humans, or not; whether it goes—as you mentioned earlier, does it go into the flesh and the meat of the fish itself?

Mr. TAYLOR. Right.

The CHAIRMAN. Again, can you explore that with me? I mean, has any testing been done? We know the chemical composition, now. Has any testing been done on fish that eat this to see whether or not it goes into the meat—the flesh of the fish, of the shrimp, or the crustacean or whatever it might be?

Mr. TAYLOR. Yes. There has been some limited testing in the past. The major root of concern is the dispersants in the water, you know, whether—and with water coming in through the gills and, to some extent through the mouth of the fish. So, there has been some testing of that. NOAA is doing some further testing. And so, that is work that we're following closely and we'll——

The CHAIRMAN. But, it seems to me that would be testing——

Mr. TAYLOR [continuing]. You know, pay attention to.

The CHAIRMAN [continuing]. That ought to be done right now.

Mr. TAYLOR. Yes.

The CHAIRMAN. I mean, we know that oil is going to be around for a long time.

Mr. TAYLOR. Right.

The CHAIRMAN. It's not just sinking to the bottom; it's going to be dispersed, it's going to float around. Some of it will come ashore, a lot of it will just sort of get out there and float around for years to come.

Mr. TAYLOR. Right.

The CHAIRMAN. It would seem to me that we ought to be doing research on this dispersant that was used, or even on the oil itself as to whether or not fish that ingest this, and going up the food chain of the fish, where there are little fish that eat it, they're eaten by bigger fish that becomes more toxic, obviously, as the bigger fish ingests more of it—whether or not the fish is going to be safe to eat.

I mean, you could get fish, put them in tanks, and put that stuff in there, and let them swim around in it a while, and you can test it out, can't you?

Mr. TAYLOR. Yes. As I understand it, NOAA is doing such work. We'll get back to you with the full details of what they're doing and how it relates to our continuing assessment of this.

But, I think we do have a solid foundation, based upon a lot of experience and a lot of knowledge——

The CHAIRMAN. Well, this would be very important to know. No. 1, are we doing some testing and research, right now?

Mr. TAYLOR. OK.

The CHAIRMAN. We know what the dispersants are, we know what the oil is, we know it's going to be around for a long time. Put it in tanks with the kind of fish that we eat—crustaceans or shrimps or anything else—to see whether or not it does get into the flesh.

And, second, based on that, how are we going to protect the public in the future?

But, it seems to me that, first, we have to do the scientific research to get a valid basis on whether or not this is harmful, or not.

Mr. TAYLOR. And we will follow up and report to you on that research.

Let me—in terms of anticipating worst-case scenarios and what—the real concern, I think, we would have about the safety of seafood is, again, if it spreads, being out in front of that with closures, which, again, I just have to emphasize, is such a fundamental preventive measure.

Finfish tend to swim away from oil columns in the water. The real species of concern are the ones that—the oysters, the more sedentary species—crabs, for example, which are typically in State-run waters. And so, a clear part of what we're doing now in the Gulf, and what we would do, prospectively, as this oil spreads, is to work extremely close, as we do in an established cooperative program with the States, to ensure the safety of shellfish and other fish that don't move away, and where the oil itself is much more likely to settle and contaminate.

Again, when we look at this from a scientific, public-health, food-safety perspective, those are the species of concern that we have to watch, because they don't avoid the oil the way finfish do. Again, we are very closely watching that, and we'll continue to be ahead of that. Again, with closures, what the States do in their waters—the State waters, out to 3 miles—they do that, you know, very collaboratively with us. I think that's where, in terms of the public health concern, we continue to be focused.

The CHAIRMAN. Get that information to my staff.

Mr. TAYLOR. Yes, sir.

The CHAIRMAN. I want to follow up on this, because, again, you're right, fish can swim away from that. I'm not a fish expert. But, it would seem to me—what I read about the smaller fish eating that dispersant, but those were eaten by bigger fish.

Mr. TAYLOR. We'll follow up on that and give you a full report on that.

The CHAIRMAN. OK, thank you.

Mr. TAYLOR. Yes, sir.

The CHAIRMAN. I appreciate that very much.

That's all I have for now.

Senator Enzi.

Senator ENZI. Thank you, Mr. Chairman.

Dr. Miller, have you been collaborating, then, with the CDC to ensure that we have a good scientific base for conducting the studies on the long-term impacts of the oil spill?

Dr. MILLER. Yes. Thank you for the question.

We have not only been collaborating with CDC, but the Assistant Secretary for Preparedness and Response of HHS, and OSHA, SAMHSA, as well as other groups, and looking at these issues, in terms of both what we can do for the short-term and the long-term evaluation of health effects and research and monitoring and the tools that we have available and the tools that we might be able to utilize for evaluating these populations of concern. Absolutely.

Senator ENZI. Thank you. Do we have any conclusive studies today that indicate severe long-term health impacts on workers and individuals in communities near oil spills?

Dr. MILLER. We do not. The studies are really inconclusive. They do point to—for us to keep our concern levels high and to be looking at this to make sure that we are watching and looking and making sure that we do the research that's needed.

Another issue that we haven't really talked about, but is really having the good exposure data to go with our evaluation of health effects, and to work with EPA and others that are collecting exposure information so we know where the fumes or airborne exposures may be going, and be able to put that into our consideration, as well.

Senator ENZI. Are these information-gathering things that you're doing now—will they be based on clinical information or mail surveys, or both, or how do you gather the——

Dr. MILLER. Yes. That's to be determined. We'll be looking forward to the IOM meeting, next week, for additional expertise. There has been a few groups in the world that have tried to look at this with some of their clinical research programs, and we're going to look closely at those. And it's a matter of trying to put together the best projects and research programs that fit. And we'll be reaching out to our research community network at NIH, as well as across the country and other places.

Senator ENZI. Thank you.

Mr. Taylor, I know that NOAA shut down fishing in a large segment of the Gulf, and that the FDA is working with the—as you've explained well—testing seafood and—however, there are both Federal and State waters in the Gulf, and I'd like to know how the FDA and NOAA are going to work with the States to implement a unified reopening of the protocol. Are the plans developing for a reopening?

Mr. TAYLOR. Yes, Senator Enzi. We've been in constant dialogue with NOAA and with the States to work out reopening protocol. And I think we're very close to having a protocol that we can agree on and that can be a sound basis for reopening, as I indicated, as soon as possible, consistent with public health protection. I think it is—and I think the States and we very much agree—important that we have a consistent protocol that would apply to both Federal waters and State waters. So, we're well on the way to doing that. I think we're very close.

Senator ENZI. Good. That's reassuring. Can you give me the most up-to-date figures on the number of samples that you're processing per week with the lab, and any backlog of samples that are waiting to be tested?

Mr. TAYLOR. Yes.

Senator ENZI. And if there is a backlog, how you're going to deal with the backlog?

Mr. TAYLOR. Yes. We are in a very steady and really rapid build up of capacity. The testing that we needed to do here requires special equipment, and there was an acquisition process. But, we've got one of our labs up and running now. We're working to have three more FDA labs open by the end of June. Then, we're working with four State labs, which are part of an established so-called "food-borne emergency response network" of State labs that we work with on a regular basis. We'll have a total of eight labs around the country that will have the capacity to do about 40 samples a week. And so, we're going to have a robust ability to do samples.

We do have some samples in our lab now from the States, a couple hundred samples, I think. We can get you the exact number.

Mr. TAYLOR. But, I think our capacity is coming on very quickly. And I think, when the time comes to begin doing the reopening sampling, you know, we'll be well positioned to do that in a timely way.

Senator ENZI. OK. In the supplemental, there's $2 million for this testing and monitoring of food contamination. It's under FDA. Is that going to be enough? Or for how long do you anticipate that that would last?

Mr. TAYLOR. Well, we think that that will make a really meaningful difference to our ability to work with the States and to do the testing. One, we're investing some of that money in an electronic device that can detect the volatile compounds that are also detectable by human beings through this sensory testing that people can be trained to do. But, this would really enhance the capacity to screen samples that might be particularly contaminated, and reduce the load of samples that have to go in for chemical analysis. Because if we can detect, through the organoleptic method, the sniffing, or electronically, contaminated samples, we don't have to put it into the chemical analysis; we know that that fish is no good. So, that'll be a big help. Plus, that's buying some additional equipment for the labs that—it will give us the capacity to bring these labs online. So, we think we'll have the ability to do what's needed.

Senator ENZI. There's a small company that started at the University of Wyoming, that started as a result of the little anthrax problem that we had here, where they have a speed gun that—that's what it looks like—that you point at the chemical, pull the trigger, and, in about 30 seconds, it gives a readout on what the chemical is. I don't know if they've looked at fish and contamination that way, but I will be checking with them.

Mr. TAYLOR. All right, thank you.

Senator ENZI. I thank all of you for your efforts and your great answers today.

Mr. TAYLOR. Thank you, sir.

Senator ENZI. Thank you, Mr. Chairman.

The CHAIRMAN. OK, thank you, Senator Enzi.

And I thank you, panel. It was very, very interesting.

We have some follow up. And I'm sure that there'll be some other questions from other Senators, so I request to keep the record open for 10 days for Senators to submit statements and questions for the record.

So, again, I thank the panel very much.

The committee will stand adjourned.

[Additional material follows.]

ADDITIONAL MATERIAL

PREPARED STATEMENT OF SENATOR LANDRIEU

Thank you, Chairman Harkin and Ranking Member Enzi, for convening this very important hearing. As we enter the third month of the catastrophic oil spill in the Gulf of Mexico, an examination of its public health impact is critical. The short-term health effects are beginning to surface, and the long-term effects loom. Now is the time to assess the Federal Government's response and make sure we are doing everything we can to protect the health of Gulf Coast residents.

In my home State of Louisiana, coastal residents will be most affected by the Deepwater Horizon oil spill. What deeply concerns me is the fact that many people living in southeast Louisiana are already vulnerable to health risks. One in five Louisianians do not have health insurance; and for those who do have insurance, accessible medical care is by no means guaranteed. Over one-third of Louisianians live in a Primary Care Health Professional Shortage Area and nearly half live in a Mental Health Professional Shortage Area. As Federal agencies spring to action, I urge them to keep in mind the vulnerability of the Gulf Coast population. The needs of these citizens must be at the heart of a coordinated and sustained public health response in the coastal region.

The physical health impacts of the Deepwater Horizon oil spill are already emerging. As of last week, 71 illnesses related to "prolonged exposure to the oil spill and dispersants" had been reported to the Louisiana Department of Health and Hospitals. The extraordinarily high levels of oil and dispersants in the coastal region present an array of health risks, including respiratory complications, headaches, throat and eye irritation, and rashes. Many of these risks stem from compromised water and air quality; but we must also consider the potential health impacts of tainted seafood. As tens of thousands of barrels of oil spew each passing day, the number of illnesses will almost certainly rise. It is clear from the testimonies of the witnesses here today that the Federal Government has begun coordinating efforts to address the physical health impacts of the spill. However, we know that much more work lies ahead.

Most immediately, we must ensure the protection of the men and women courageously responding to and cleaning up the spill. Fifty of the seventy-one Louisianians reporting illnesses are oil spill response workers, who are most exposed to chemical and physical hazards of the cleanup effort. These workers are particularly at risk of exposure to chemical dispersants, weathered crude oil, benzene, oil mist, polycyclic aromatic hydrocarbons, and diesel fumes. They are also at risk of physical hazards, like sun exposure, heat stress, and injuries caused by working on slippery or uneven surfaces.

In a May 26 article in the *Los Angeles Times*, a local fisherman who has been hired by BP to help clean up the spill said "They [BP officials] told us if we ran into oil, it wasn't supposed to bother us. . . . As far as gloves, no, we haven't been wearing any gloves." Lack of access to appropriate protection is simply unacceptable. Additionally, many health problems may be going unreported because

these fishermen are now dependent upon the jobs BP is providing them for their economic livelihood. The president of the United Commercial Fishermen's Association in St. Bernard Parish, George Barisich, said recently that many fishermen have told him about feeling ill. He said "It's an unwritten rule, you don't bite the hand that feeds you." It is critical that these workers have the resources and information they need to access care before problems become more severe.

It is absolutely imperative that the oil spill response and cleanup operations are as safe, effective, and efficient as possible. BP must make sure that their emergency response site training meets standards set by the Occupational Safety and Health Administration (OSHA). In the long run, I urge Congress to examine BP's adherence to OSHA requirements and to explore ways to strengthen training and safety regulations for first-responders. We must be prepared to protect our emergency responders in this disastrous spill and in any spill that may occur in the future.

In addition to the physical impacts of the Deepwater Horizon oil spill, we must also consider this tragedy's effects on mental health. Gulf Coast residents are all too familiar with the anxiety, post-traumatic stress, and depression such disasters can produce. In just the past 5 years, Louisianians have suffered through Hurricanes Katrina, Rita, Ike, and Gustav. Now, as this oil spill devastates the Gulf Coast, I fear the extreme stress caused by yet another catastrophe will endanger the mental health of coastal residents. We must, then, ensure that counseling and other mental health services are provided swiftly and for as long as they are needed.

Looking ahead, we need to invest in efforts to comprehensively study the health impacts of any oil spill of "national significance." Of the 38 major oil spills that have occurred across the globe, only seven have been studied for their effects on human health. This dearth of research has led to great uncertainty in predicting the long-term health consequences of the oil spills. To remedy this problem, I urge Congress to authorize funding for comprehensive studies of the health impacts of this spill and any future spill of "national significance."

I commend the Federal agencies that have come together to wage a coordinated public health response to the oil spill. As they work to address the physical and mental health needs of those affected by the spill, I urge them to continue working collaboratively with each other and with the local health providers in affected regions. The Federal Government's actions will only be effective if they are aligned with community efforts.

As Federal agencies and Gulf Coast communities work together to mitigate the health impacts of the spill, I will continue to press BP to take responsibility for healing the Gulf Coast. I am encouraged by the public health response that is already underway, but I will not be satisfied until BP does everything in its power to ensure that affected Gulf Coast residents are made whole.

PREPARED STATEMENT OF SENATOR VITTER

I want to thank Ranking Member Enzi and Chairman Harkin for their leadership examining health effects on Louisianians and Gulf Coast residents caused by the oil spill.

This is a tragedy for Louisiana and America. Eleven lives have been lost. The impact on the environment is historic and widespread. And the harm to the Louisiana and Gulf Coast economy will be felt for years to come. While the response and cleanup is ongoing, we must ensure that cleanup workers and citizens are not exposed to potential health risks and hazards and that they have the necessary respiratory protection they need.

We must also ensure that there is a coordinated and unified response for the cleanup workers and citizens. Sadly, there are already a number of patients with oil-spill related illnesses. I am interested to learn more from CDC and HHS about their response to protecting workers and residents from health hazards.

RESPONSE TO QUESTIONS OF SENATOR HARKIN BY MICHAEL R. TAYLOR, J.D.

Question 1. It is my understanding that some chemicals can bioacummulate in a food chain, leading to high concentrations of chemicals in large animals. Do the chemicals found in oil or the dispersants used to dissipate oil bioaccumulate in seafood? If so, what steps are you taking to ensure that seafood does not contain unsafe levels of chemicals?

Answer 1. The Federal Government is taking a four-pronged approach to ensure that seafood from Gulf waters is not contaminated by oil. This approach consists of (1) precautionary closures and surveillance; (2) testing of seafood at primary processing plants; (3) stepped-up emphasis on FDA's Hazard Analysis and Critical Control Points (HACCP) regulations, and (4), when appropriate, a strict re-opening protocol for closed waters. The National Oceanic and Atmospheric Administration (NOAA) has the authority to close Federal waters to commercial fishing and States have the authority to close waters within State jurisdiction. FDA works closely with NOAA and the States whenever commercial fishing waters are closed for public health reasons and again when they are re-opened to harvest. NOAA is monitoring fish caught just outside of closed Federal areas and testing them for both petroleum compounds and dispersants. The results of the sampling will help ensure that NOAA's closed areas are sufficiently protective to prevent the harvest of tainted fish. State fisheries enforcement agencies are performing similar enforcement activities in their jurisdictional waters.

Crude oil is a mixture of many different chemicals, a number of which are well established as being harmful to people if inhaled, absorbed through the skin, or ingested in contaminated food or water at doses of concern. Chemicals such as polycyclic aromatic hydrocarbons (PAH) are toxic components of crude oil that are of high concern if ingested. For public health and regulatory purposes, PAHs are unintended environmental contaminants, for which FDA customarily sets limits at a level that is protective of public health. FDA has set limits for PAHs in previous oil spill situations.

Finfish have the ability to absorb PAHs if exposed to oil, however, the finfish tend to metabolize (breakdown and eliminate) the petroleum compounds quickly after exposure. Oysters will likely retain petroleum components for an extended period of time after exposure to oil because they are stationary filter feeders. Shrimp and crab metabolize oil at a faster rate than oysters, but slower than finfish. Seafood species that are not sedentary, such as finfish, will deliberately move away from sources of oil contamination based on their sensitivity to concentrated levels of the chemicals present. Given their limited mobility, testing oysters is a particularly sensitive way to determine if an area is safe to harvest.

NOAA is collecting a variety of types of seafood including finfish, shrimp, crabs, and shellfish from the Gulf for analysis. Sensory experts check the scent and look of raw seafood, and the taste and scent of cooked seafood. NOAA has a voluntary seafood inspection program where seafood distributors and processors are inspected dockside. NOAA will be primarily focusing on offshore species while FDA will be concentrating with the States to review seafood safety of near shore species (oysters, crabs and shrimp).

To ensure that seafood does not contain unsafe levels of chemicals, FDA has implemented a risk-based surveillance and sampling program targeting seafood products at Gulf Coast seafood processors. The Agency is targeting oysters, crabs, and shrimp, which could retain contaminants longer than finfish. This sampling has provided verification that seafood on the market is safe to eat with respect to potential contamination associated with the oil spill. FDA's sampling activities are designed to complement the dockside monitoring of finfish already planned by NOAA. If adulterated seafood is found on the market, both FDA and the States have the authority to seize the product and remove it from the food supply.

FDA has developed a new testing method that is quicker and is also effective at finding whether PAHs are present in seafood at levels approaching the established levels of concern. The new test method is being used for all reopening samples. The test uses acetonitrile, a chemical solvent, to remove the chemical compounds of concern from the seafood. These chemicals of concern are then separated from one another using high performance liquid chromatography and detected by fluorescence spectroscopy. These chemical compounds of concern to public health can be detected by fluorescence spectroscopy at extremely low concentrations (parts per billion). Based on the use of this test to search for more than a dozen types of PAHs, FDA can confirm that the level of these chemicals in Gulf seafood are below the levels that would cause public health concern.

FDA operates a mandatory safety program for all fish and fishery products under the Food, Drug, and Cosmetic Act, the Public Health Service Act, and related regulations. FDA's seafood HACCP regulation requires processors to identify and control hazards which are reasonably likely to occur. FDA has issued a letter reminding fish and fishery product processors of the Agency's regulations and policy concerning the food safety hazard of chemical contaminants in the environment, including the importance of verifying that fish they are processing have not come from closed waters. In addition, FDA is increasing inspections of Gulf Coast seafood processors to ensure compliance with HACCP regulations.

NOAA, FDA, and the Gulf Coast States have agreed on a protocol to determine when closed harvest waters can be re-opened. Under the protocol, harvest waters will not re-open until oil from the spill is no longer present and the seafood samples from the area successfully pass both sensory evaluation by trained experts and a chemical analysis to ensure there are no harmful oil residues. NOAA, FDA, and the States feel confident that when this protocol is followed, the seafood harvested from the re-opened areas will be fit for consumption.

With regard to your question on chemical dispersants, FDA conducted an assessment of the chemicals in the dispersants being used and their potential to bioconcentrate in fish. The assessment included a review of current scientific literature, Material Safety Data Sheets (MSDS) and a detailed ingredient list provided by the dispersant manufacturer which identifies and describes the physical properties and biological effects of the dispersant chemicals. These dispersant chemicals are detergent and solvent compounds and include several commonly found in consumer products such as household detergents, medicines, cosmetics and toothpaste.

The potential for a chemical to become concentrated in aquatic organisms is described by the bioconcentration factor (BCF). The scientific community generally accepts the following scale for measuring BCF: high potential = BCF >1000, moderate potential = $1000 > BCF > 250$, low potential = BCF <250. For food safety purposes, it is generally accepted that any chemical with a BCF of less than 100 does not pose a public health concern. The constituents and characteristics of COREXIT® EC9527A and COREXIT® 9500 dispersants are as follows:

- Propylene glycol, a constituent of both COREXIT® EC9527A and COREXIT® 9500, is generally recognized as safe (GRAS) by the FDA in 21 CFR 184.1666, for use as a direct food additive under the conditions prescribed. Among other uses, it is a moisturizer in medicines, cosmetics and toothpaste. Propylene glycol has a BCF of 3, which is a low order of bioconcentration.
- 2-butoxyethanol, a constituent of COREXIT® EC9527A, is also a primary ingredient of various cleaners, liquid soaps and cosmetics. 2-butoxyethanol has a BCF of 3, again a low order of bioconcentration. The half-life for 2-butoxyethanol in water is approximately 1-4 weeks, indicating that it is readily biodegradable.
- Proprietary organic sulfonic acid salt, a constituent of both COREXIT® EC9527A and COREXIT® 9500, is reported by the manufacturer to be readily biodegradable, non-bioaccumulative, and moderately toxic to fresh water fish and invertebrates. It has a BCF of 10, also a low order of bioconcentration.
- Petroleum distillates, constituents of COREXIT® 9500, are volatile organic solvents produced from crude oil (e.g., mineral spirits, kerosene, white spirits and naphtha). They are common in hundreds of consumer products, including lip-gloss,

deodorants, and furniture polish. Petroleum distillates have BCFs ranging from 60 to 80, indicative of a low potential for bioconcentration.

Available information indicates that the dispersants being used to combat the oil spill do not bioconcentrate in seafood and therefore there is no public health concern from them due to seafood consumption. However, out of an abundance of caution and to obtain more information, FDA worked with NOAA to develop, validate and deploy a chemical test to detect dispersants in fish, oysters, crab and shrimp. Specifically, the method tests for the presence of dioctyl sulfosuccinate sodium salt (DOSS), which is a significant component of the dispersants applied in the Gulf, and therefore, an effective marker for the presence of these compounds.

Beginning in late July, FDA and NOAA have been using this analytical method to test for the potential presence of dispersants in seafood harvested in the Gulf. Seafood samples were collected from June to October covering a wide area of the Gulf, both from sampling in open areas in State and Federal waters and from fishermen who brought fish to the docks at the request of Federal seafood analysts. The samples come from a range of species, including grouper, tuna, wahoo, swordfish, gray snapper, butterfish, red drum, croaker, shrimp, crabs and oysters. As of October 15, scientists have chemically tested 1,735 seafood samples for the presence of dispersant using the DOSS detection method.

The results confirm what we have been finding through our sensory testing—that none of the samples pose a threat to human health. Trace amounts of DOSS (below one part per million) were found in 13 of the 1,735 samples, well below the level of concern of 100 parts per million for finfish and 500 parts per million for shrimp, crabs and oysters.

FDA and NOAA are now using this second test for dispersants, in addition to the sensory and chemical analysis of polycyclic aromatic hydrocarbons (PAHs), before reopening additional Federal waters. FDA also intends to use this testing methodology in our post-reopening surveillance, consistent with additional funding that may be made available.

RESPONSE TO QUESTIONS OF SENATOR ENZI BY JOHN HOWARD, M.D.

Question 1. In your testimony you noted that the agency has identified seven groups of workers to focus studies and health monitoring including: source control workers, workers on clean up vessels burning oil, workers on clean up vessels not burning oil, equipment decontaminant workers, wild life cleanup workers, and waste stream cleanup workers. Has the agency included each type of the worker mentioned above included in the Center for Disease Control and Prevention's (CDC) roster of cleanup workers?

Answer 1. Yes, each of the seven groups is included in the roster of cleanup workers.

Question 2. With the understanding that not all workers have been included in the roster at this time, does the roster also include BP employees, or only public workers and volunteers?

Answer 2. The roster includes all workers, including BP employees, public workers, and volunteers.

Question 3. As the CDC continues to provide recommendations for respiratory protection and use of personal protective equipment will those recommendations apply to BP workers, or only public workers and volunteers?

Answer 3. CDC's National Institute for Occupational Safety and Health (NIOSH) and the Department of Labor's Occupational Safety and Health Administration (OSHA) have jointly issued Interim Guidance for Protecting Deepwater Horizon Response Workers and Volunteers (see *http://www.cdc.gov/niosh/topics/oilspillresponse/protecting/*). This Interim Guidance contains specific recommendations for all workers and volunteers participating in the Deepwater Horizon Response and includes guidance on the selection of protective clothing and the use of respiratory protection. Recommendations contained in the Interim Guidance will be updated as more information about exposures is collected and assessed in relationship to the incidence and prevalence of symptoms, illnesses and injuries.

RESPONSE TO QUESTIONS OF SENATOR ENZI BY AUBREY KEITH MILLER, M.D., MPH

Question 1. As you continue to collect data and assess the best approach to studying the short- and long-term health impacts of the oil spill on workers and the general population, how will you ensure that researchers have an appropriate base to compare between the health conditions of individuals before and after the spill?

Answer 1. Having health and exposure information on individual workers before and after experiencing any spill-related exposures is one possible strategy for establishing links between the exposures and changes in health. While we would have liked to have had such data, this is not possible for the vast majority of the oil clean-up workforce. Fortunately there are other strategies that we can use to establish links between potential exposures and health outcomes. As part of our long-term health follow-up efforts we plan several different approaches typically used in studies of other occupational or population cohorts. For example, we will:

- Collect self-reported data on health status before the oil spill to contrast with information on current and future health status.
- Incorporate pre-existing baseline medical records and data that are available from workers from BP, the Coast Guard, the State National Guard, or professional hazard clean-up firms.
- Include workers that never had an opportunity for exposure and those individuals who signed up for clean-up work, but were not hired by BP, to serve as a comparison group.
- Carry out internal comparison groups of workers with potentially higher versus lower exposures based on development of a semi-quantitative job-exposure matrix that links environmental and biomonitoring data to specific jobs, tasks, and locations.
- Assess health effects in relation to specific clean-up tasks, (with differing levels of exposure opportunity) distance from the spill or use of related chemicals, and by duration of work in specific job categories.

The focus of short-term and long-term research on health effects will be on comparing groups of workers we classify as having been exposed to oil, dispersants, or mixtures with those we classify as having not been exposed, or comparing those with the greatest to the least opportunity for exposure based on job tasks, location, and timeframe. As we follow groups with varying degrees of exposure or exposure opportunity over time, we should be able to determine that certain health outcomes occur more or less frequently among groups of individuals with specific presumed exposure levels. This finding will help us determine whether new cases of a condition are more common in one group than in another. We will never be able to say with complete certainty that a new illness in a specific individual is due to a specific oil spill exposure, but we hope to be able to say that a condition is or is not more likely to occur in those with such exposures.

RESPONSE TO QUESTIONS OF SENATOR ENZI BY MICHAEL R. TAYLOR, J.D.

Question 1. I understand FDA is using "e–nose" technology to assure food safety in the Gulf. Please tell me more about this technology. For example, how long does it take to process a sample? How many e–nosenose machines are in use now, and how many are anticipated in the coming weeks? How much does each machine cost? What are the advantages and disadvantages of e–nose versus other detection technologies?

Answer 1. "Electronic Nose" or "E–Nose" instruments analyze odors and volatile organic compounds (VOCs) in a way similar to the human nose. The E–Nose technology provides objective instrumental measurements. This technology will augment the current human sensory panel analyses.

A variety of E–Nose instrument and technology platforms are available. The one currently being installed at the Gulf Coast Seafood Laboratory (GCSL) in Dauphin Island, Alabama and in FDA's mobile lab is the Heracles Ultra-Fast Gas Chromatography (GC) system (Alpha MOS Company). For analysis, a seafood sample is placed in a vial, heated, and the head space gas is injected into the system. The system consists of two short columns of different polarities, coupled to two flame ionization detectors. The chromatograms generated are treated as a global fingerprint which can be used to identify and quantify VOCs. With appropriate comparisons to sensory panel analyses, this system can be calibrated to assess taint. A sample can be analyzed in approximately 15 minutes. The total amount of FDA's contract award for these two instruments was $279,478.

FDA is also considering purchasing additional E–Nose instruments with additional capabilities, such as the ability to confirm analytical results. FDA expects that instruments with additional capabilities are likely to cost more than the Ultra-Fast Gas Chromatography E–Nose system.

FDA currently has two older E–Nose sensor instruments. These instruments are located at our GCSL and College Park, MD, facilities and are each 12 years old. FDA has purchased the Ultra-Fast Gas Chromatography E–Nose system, and intends to purchase an additional instrument(s), to update our equipment to provide further support and capacity in this effort.

One advantage of E–Nose technology is that it provides objective instrumental results and records. The GCSL has demonstrated in controlled wet-lab exposures that the metal oxide E–Nose instrument is able to detect VOCs from petroleum contaminated oysters and fish. FDA also used the E–Nose to successfully detect seafood contamination after Hurricane Katrina. The updated E–Nose instruments, as described above, are much more sensitive than the model previously used by FDA.

There are also a limited number of expert human assessors. While additional State personnel may be trained as assessors to increase capacity, these trainee assessors are unlikely to be as proficient as the experts. E–Nose instruments may consequently provide an opportunity to increase FDA analytical capacity and throughput.

RESPONSE TO QUESTIONS OF SENATOR DODD BY LISA KAPLOWITZ, M.D., M.S.H.A.

Question 1. Dr. Kaplowitz, as Chairman of the Senate Children and Families Subcommittee and the author of the legislation that created the National Commission on Children and Disasters, I am very concerned with the various impacts a disaster like this one has on children. In your testimony you reference a number of efforts that the Federal Government is undertaking to evaluate and treat the potential health effects of the oil spill, not only for workers cleaning up the oil spill, but for the general population living in the Gulf region as well. Can you describe the monitoring and surveillance efforts that are being undertaken to protect the health of children? What steps can the Federal Government take to address the needs of children in the wake of this disaster?

Answer 1. The HHS Centers for Disease Control and Prevention (CDC), in coordination with State and local health departments, conducted surveillance across the Gulf States for health effects related to the oil spill. Early on, CDC worked with States to help define what to watch for in their own surveillance systems and what enhancements to make to their surveillance systems to have more effective surveillance of health effects related to the oil spill. States shared the results with us (and with each other). This State-based surveillance concluded on October 6 due to the absence of reports of new cases of self-reported exposures. CDC also used established national surveillance systems: The National Poison Data System and BioSense. These surveillance systems were being used to track symptoms potentially related to the oil spill. A summary of State findings are posted on the CDC Web site. See *http://emergency.cdc.gov/gulfoilspill2010/2010gulfoilspill/health_surveillance.asp*.

Throughout the active oil spill response, CDC's Environmental Health Team reviewed EPA environmental data with the purpose of determining whether exposure to oil, oil constituents, or dispersants might cause short-term or long-term health effects. Data include sampling results for air, water, soil/sediment, and waste oil samples (material actually reaching the beach or marsh). CDC coordinated with other Federal agencies, including the Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA) and CDC's National Institute for Occupational Safety and Health (NIOSH), as well as some States, to review the available data. The review utilized comparison values based on a child's exposure to identify potential hazards. As a follow-up, the area where the sample was collected was also evaluated to determine the likelihood of exposure.

CDC has numerous fact sheets on their Web site, including a fact sheet for parents with specific information on how to protect children from oil exposure. The fact sheet is available at *http://www.bt.cdc.gov/gulfoilspill2010/info_for_parents.asp*. CDC has also used social media to direct attention to our fact sheets. Our State partners have posted similar guidance.

The HHS Substance Abuse and Mental Health Services Administration (SAMHSA) and CDC are also enhancing ways to collect and monitor behavioral health data. The Division of Behavioral Surveillance, under the Public Health Surveillance Program Office of CDC, will conduct a telephone survey in the Gulf coast States of Florida, Alabama, Mississippi, and Louisiana. The survey will monitor mental health status, including measures of anxiety, depression, potential stress-associated physical health effects and other behavioral health indicators in the adult population in 25 coastal counties impacted by the BP Deepwater Horizon Oil Spill. The survey questionnaire has been developed by CDC in partnership with SAMHSA and State public health and mental health departments from Louisiana, Mississippi, Alabama, and Florida. The objective of the survey is to provide State health departments, SAMHSA, and others as appropriate information that can be used to determine mental health service needs among the population in the affected areas. The survey will collect data from a random sample of telephone households which include land line telephones. Approximately 2,500 interviews will be completed each

month. The survey will be limited to adults 18 years or older. Interviews are anticipated to last approximately 20–25 minutes. Data collection is expected to begin December 2010 and will continue monthly for 1 year.

SAMHSA also launched a new toll-free helpline to provide information, support and counseling for families and children affected by the BP Deepwater Horizon oil spill. Part of the Obama administration's long-term oil spill recovery plan, the Oil Spill Distress Helpline (1–800–985–5990) links callers to behavioral healthcare services and will serve as an important resource for the localized oil spill outreach efforts in the Gulf Coast States. The Helpline will route callers to the nearest Gulf Coast area crisis center, where trained staff from the region will answer calls and provide assistance. In addition, these crisis centers are working to provide support via text messages, a capability which will launch later this fall. The CDC surveillance enhancements and the helpline are funded by BP's $10 million contribution to SAMHSA in support of behavioral health prevention and service activities.

The HHS National Institutes of Health is also interested in establishing one or more university-community research consortia in the Gulf Coast region to assess health effects of the oil spill on local communities. In these consortia, multi-disciplinary teams of scientists would come together to design and implement a series of interrelated studies related to the health effects of the oil spill. The scientific priorities addressed through the program would not be dictated; consortia partners would identify specific scientific questions and topics related to the effects of the oil spill that they would pursue. Possible topics could include physical, chemical, and psychosocial effects and their interactions; maternal and child health; adolescent, child, and adult behavioral health issues; health disparities; human studies that assess exposure to contaminated air, water, and dietary sources of chemical mixtures; adverse effects on the skin and immune function; and toxicologic studies of environmental samples.

In summary, HHS takes seriously its responsibility to protect and promote the health of all citizens and is actively working with Federal, State, local, and non-governmental partners to provide a coordinated response to the Gulf Coast oil spill. In supporting the affected States, HHS will continue to pay explicit attention and leverage available resources to address the physical and mental needs of affected communities, including vulnerable children.

Question 2. You also referenced the creation of an IOM panel of experts to study the health issues related to the oil spill, which would delineate the populations most vulnerable to these health issues. Are children one of the populations the panel will study?

Answer 2. Much is unknown about the potential short- and long-term health effects of the oil spill, which is why the HHS Secretary asked the Institute of Medicine (IOM) to host public workshops and conduct periodic, independent reviews of the Federal Government's surveillance and monitoring of the physical and behavioral health effects from the Gulf of Mexico oil spill. The IOM will use what it learns to provide information and advice to HHS on research priorities, research progress, and emerging concerns.

At the IOM's first public workshop in June, HHS learned that the scientific community's understanding of the long-term health effects of exposure to oil is greatly hindered by the lack of previous studies. There is a historical lack of public health studies and monitoring after oil spills. The few lessons learned that have been collected and studies that have been conducted have rarely if at all focused on children, women, and families. In contrast to the limited information we have on long-term health effects, the behavioral and mental health impacts of oil spills, including the impacts on families and children, are conclusive. Experts at the IOM Workshop relayed that children and pregnant women have unique physiological vulnerabilities and that there may be declines in children having or maintaining relationships with other children in the community, poor performance in school, and difficulty in family relationships. In fact, the bulk of the health impacts in the Gulf region are on the behavioral health impacts on the community. As for long-term research plans, multiple topics and funding streams are being considered. While final decisions will be informed by the formal conclusions of the aforementioned IOM workshop, as well as ongoing surveillance and monitoring in the region, attention to the potential physical and mental health effects of the oil spill on children are already being considered.

Question 3. Finally, you discussed the potential behavioral health response to this disaster. Amongst the potential responses are an increase in depression, substance abuse and use, and family violence, among others. These responses clearly have a serious impact on children in affected families. What efforts is the Department of

Health and Human Services taking to address the possible behavioral health impacts on children of this oil spill?

Answer 3. HHS is directing attention and resources to address the behavioral health issues arising from the oil spill and ensuring children and other vulnerable populations are considered in the Gulf Region's response efforts. HHS is engaged primarily in support of State and local efforts to assess and meet the behavioral health needs of workers responding to the spill and Gulf Coast residents, including children. To aid State efforts, the Substance Abuse and Mental Health Services Administration (SAMHSA) convenes a weekly call for the Disaster Behavioral Health Coordinators in the Gulf Coast States. The purpose of the calls is to facilitate the provision of technical assistance, assess the impact of this event in each State, allow States to share information, and allow the Department to maintain a current understanding of the circumstances. To date, States report increases in the need for behavioral health services and express concern around behavioral health issues related primarily to job loss. Four of the five affected States have written or are working on proposals for behavioral health funding from BP, and SAMHSA has provided technical assistance to the States as needed.

States have reported a need for consistent surveillance methods for behavioral health needs and requested assistance with messaging and Public Service Announcements (PSAs). HHS and CDC Communications staff have been proactive in reaching out to the States to provide assistance with PSAs and messaging specifically related to substance use and abuse. HHS is working to streamline messages to States and partners on information about the signs of stress, standard talking points, translating fact sheets for children, parents, and teachers (in English, Southern Vietnamese, Spanish, Creole), and alternate formats to ensure accessibility. The Department is also currently finalizing fact sheets on information for parents and children, as well tips for stress management.

HHS is providing information and resources to State Disaster Mental Health and Substance Abuse Coordinators on topics such as substance abuse prevention and potential outreach and crisis counseling activities that may be implemented to address behavioral health issues for workers, families, and children. In addition, the Department is in communication with universities and national non-governmental agencies, such as the American Red Cross and Catholic Charities, who are active in the affected areas and are also engaged in addressing behavioral health concerns.

SAMHSA's National Child Traumatic Stress Network (NCTSN) hosted a webinar in July on "Assisting Children and Families Affected by the Gulf Oil Spill." The panel discussed current concerns affecting children and families living in the Gulf Region; activities and resources that are currently available; and what is being planned for long-term recovery. The panel also discussed how mental health providers and rescue workers can protect themselves from burn-out and secondary stress.

Finally, Louisiana held a Behavioral Health Summit in August, and the U.S. Surgeon General toured Alabama to highlight mental health concerns. The purpose of this ongoing communication project is to help the media translate key behavioral health messages to the public. HHS will continue to engage in efforts to mitigate the behavioral health impact of the oil spill on children in the affected region.

Response to Questions of Senator Franken by John Howard, M.D., Aubrey Keith Miller, M.D., MPH, or Lisa Kaplowitz, M.D., M.S.H.A.

Question 1. BP has spread more than a million gallons of the dispersal agents, Corexit 9500 and Corexit 9527, to combat the spill. I was very concerned that the dispersant manufacturer resisted releasing the list of ingredients in these products. So we didn't know what this stuff was until EPA released the information last week.

What do we know about the health effects of these chemicals—for workers, the food supply, and tourists?

Answer 1. The long-term health impact of exposure to dispersants has not been studied. This is one area that will be further researched. CDC recommends calling the Poison Help Hotline at 1–800–222–1222 if someone thinks exposure to dispersant has occurred. If someone feels dispersants have made them sick, they should see a doctor immediately.

The risk for adverse health effects is dependent on both the type and extent of exposure to a toxic substance and the inherent toxicity of the substance (risk-exposure X toxicity). For different population groups, the relative risk for adverse effects will be driven by differences in exposure. As in most cases, potential risks will be greatest for workers, those handling the dispersants or dispersant containing materials, because they will have the highest exposures. For seafood consumers, no risks are anticipated, as the chemical ingredients in dispersants are not expected to per-

sist in the environment and be accumulated into marine organisms to any appreciable extent. For residents and tourists in Gulf Coast communities, risks are also expected to be minimal, since there is little opportunity for these people to come into contact with dispersant containing materials. Future monitoring of dispersant ingredients in seafood and along the Gulf Coast will allow us to confirm or, if necessary, modify this assessment. Additionally, toxicology studies to further evaluate the dispersants and oil materials that people may be exposed to will help inform our understanding and public actions regarding these chemical substances.

Regarding the inherent toxicity of Corexit 9500 and 9527, the health effects that may be seen in workers under likely exposure conditions are primarily irritation, to the eyes, skin, nose and throat, and gastrointestinal tract, if sufficient material was inhaled, swallowed or came into contact with unprotected skin. Several of the ingredients are of very low toxicity and not expected to pose any risk of adverse health effects.

Workers

CDC's NIOSH recommends that worker exposure to dispersants be reduced to prevent harmful respiratory and dermal health effects. CDC developed a fact sheet on reducing occupation exposures while working with dispersants. It is available at *http://www.cdc.gov/niosh/topics/oilspillresponse/dispersants.html*.

Workers can be protected by taking the following steps:

- Mix and load dispersants in well-ventilated areas.
- Use automated spraying systems to apply dispersants when available.
- Remain upwind of the mists that are generated if spray systems are manned.
- Wear nitrile gloves during mixing, loading, or spraying of dispersants to prevent skin irritation.
- Wear protective eyewear when mixing, loading, or spraying dispersants.
- Wash hands and any other body parts exposed to dispersants thoroughly with soap and water.
- If personal air monitoring (conducted with an air sampling device placed in the breathing zone) indicates the above steps are not effective at reducing exposures below applicable occupational exposure limits, then respiratory protection would be needed. Respirators should be used as part of a comprehensive respiratory protection program that includes proper selection, training, and maintenance. The NIOSH respirator topic page at *http://www.cdc.gov/niosh/topics/respirators/* provides information for safety and health officers who are designated to establish and conduct such programs.

Food supply

The U.S. Food and Drug Administration (FDA) is the lead Federal agency for food safety. FDA and the National Oceanic and Atmospheric Administration (NOAA) are monitoring the oil spill and its potential impact on the safety of seafood harvested from the area. CDC is in constant communication with these agencies. Should a health concern arise, CDC will work quickly with other Federal and State agencies to make sure the public is informed.

For more information about seafood safety, see the FDA Web site *http://www.fda.gov/Food/ucm210970.htm*.

Coastal residents and tourists

Although it is unlikely visitors and people living in coastal areas will come in contact with dispersants and brief contact with a small amount of dispersants should not cause harm, CDC recommends that coastal residents and tourists stay away from cleanup activities and follow health and safety advice or warnings from State or local government officials.

The EPA is testing air and waters for dispersants daily along the Gulf shoreline and will put results on its Web site at: *http://www.epa.gov/bpspill/*. CDC reviews EPA data for conditions that may pose a threat to human health and will notify the public if such conditions are detected.

CDC has developed a fact sheet for coastal residents that provides information on dispersants. See *http://www.bt.cdc.gov/gulfoilspill2010/2010gulfoilspill/dispersants_coastal_residents.asp*. People who think they have been exposed to dispersants should call the Poison Help Hotline: 1–800–222–1222.

For more information about chemicals found in dispersants: *http://www.epa.gov/bpspill/dispersants.html*.

RESPONSE TO QUESTIONS OF SENATOR FRANKEN BY LISA KAPLOWITZ, M.D., M.S.H.A.

Question 1. I'm interested in what we've learned from public health emergencies where many different agencies had to work together to assess and monitor public

health implications, like Katrina, the World Trade Center attack, and the 2008 Midwest floods.

What type of infrastructure do we need in place so that we can respond effectively when public health emergencies arise?

Answer 1. The Pandemic and All-Hazards Preparedness Act (the act) designated the HHS Secretary as the lead Federal official for public health and medical response to public health emergencies and incidents covered by the National Response Plan developed pursuant to section 502(6) of the Homeland Security Act of 2002, or any successor plan, and created the Assistant Secretary for Preparedness and Response. Under the act, ASPR plays a pivotal role in coordinating emergency response efforts across the various HHS agencies and among our Federal interagency partners. Specifically with regard to the type of infrastructure needed for an effective emergency response, HHS adheres to the National Response Framework which establishes a comprehensive, national, all-hazards approach to domestic incident response. Within the NRF are 16 Emergency Support Functions.

3ESF #8 Response Activities

The Department of Health and Human Services serves as the lead for Emergency Support Function 8 (ESF 8), Public Health and Medical Services, under the National Response Framework. This provides the mechanism for coordinated Federal assistance to supplement State, tribal, and local resources in response to a public health and medical disaster, incidents requiring a coordinated Federal response, or during a developing health and medical emergency.

Under ESF 8, HHS serves as the lead Federal partner in ensuring that the Nation is maintaining appropriate levels of medical surge capacity, which is a critical element of our national, State, and local resiliency. HHS manages the Strategic National Stockpile, the Medical Reserve Corps, the National Disaster Medical System, the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR–VHP) program, and other critical medical and public health resources that can be activated during catastrophic events.

ASPR utilizes the HHS Secretary's Operations Center (SOC) as the focal point for command and control, communications, specialized technologies, and information collection, assessment, analysis, and dissemination for all HHS components under non-emergency and emergency conditions to support a common operating picture. It is continuously staffed and maintains operations 24 hours a day, 7 days a week (24/7).

Because the SOC is always operational, it can rapidly enhance its services and staffing during times of crisis. When not in an emergency response mode, the SOC performs continuing surveillance of the following:

- Public health data for special topics (e.g. influenza activity).
- Reports from Regional Emergency Coordinators (RECs), HHS OPDIVS and other ESF #8 agencies that support State, Tribal, and jurisdictional incident management.
- Media reports and other mass public information sources.
- Natural disasters (e.g., earthquake activity, hurricanes).

Watch Officers in the SOC maintain daily contact with other Federal operations centers to ensure situational awareness. Reports of incidents with potential public health or medical consequences are provided to the Duty Officer, who then alerts HHS senior staff as necessary. Critical public health and medical requirements are brought to the attention of the ASPR. During an event, the ASPR may deploy HHS liaisons to other Federal Emergency Operations Centers (EOCs).

During the 2009 H1N1 influenza outbreak, for example, ASPR coordinated the interagency public health and medical response activities through a series of twice-weekly ESF #8 calls. During these calls, HHS regional health administrators and regional emergency coordinators report updates on their regions' pandemic influenza preparedness and response activities. Federal interagency partners also report their activities for group discussion and integration. Also, HHS worked very closely with the Department of Homeland Security (DHS) to develop a National Situation Report (SitRep) which is then inserted into the Homeland Security Information Network (HSIN). Working cooperatively, DHS and HHS have modified the SitRep to accurately reflect public health and medical issues. HHS has also been working with DHS to enable State and local public health officials to gain access to the HSIN so they can maintain their situational awareness.

Other coordination activities include weekly calls between ASPR and the State health departments to discuss any challenges and issues that might necessitate Federal assistance. ASPR has also conducted calls with intensive care physicians to better understand the clinical picture of patients requiring extensive care in hospitals and to share information and experience to help identify best practices to improve

patient outcomes. One of our critical concerns is to prevent local healthcare system failures from becoming regional healthcare system failures. Proactive measures to support our local partners in preventing system failure include 1135 waivers to decompress overburdened hospitals and deploying Federal assets (where necessary) including clinical staff, temporary medical facilities and any needed logistical support.

In addition, the Department's Centers for Disease Control and Prevention's (CDC) Office of Public Health Preparedness and Response (OPHPR) is responsible for managing the approximately $1.5 billion per year in Terrorism Preparedness and Emergency Response funding appropriated by Congress to support CDC public health preparedness and response activities. Congress appropriates the majority of this funding for two CDC programs, the Public Health Emergency Preparedness cooperative agreement and the Strategic National Stockpile, to support State and local preparedness infrastructure. OPHPR also strategically coordinates CDC's preparedness activities to meet the following five objectives that emerge from CDC's core public health functions to form a foundation for public health preparedness across the Federal, State, and local levels:

- Health Monitoring and Surveillance
- Epidemiology and Other Assessment Sciences
- Public Health Laboratory Science and Service
- Response and Recovery Operations
- Public Health System Support

For more information, see Public Health Preparedness: Strengthening CDC's Emergency Response, 2009, available at *http://emergency.cdc.gov/publications/jan09phprep/pdf/jan09phprep.pdf*.

National Disaster Medical System

The National Disaster Medical System, otherwise known as NDMS, is the primary Federal program that supports care and transfer during evacuation of patients. NDMS is a component of ASPR comprised of over 1,500 volunteer hospitals and over 6,000 intermittent Federal employees assigned to approximately 90 general disaster and specialty teams geographically dispersed across the United States. The overall purpose of NDMS is to establish a single integrated national medical response capability for assisting State and local authorities with the medical impacts of major peacetime disasters and to provide support to the military.

Although the approach of NDMS in fielding targeted personnel capabilities is to deploy activated NDMS clinicians who have broad-based training related to all age and at-risk groups, we still recognize that more specialized skill sets can be quite valuable. Since children and pregnant women can be a particularly vulnerable population, NDMS is developing pediatric modules within the Disaster Medical Assistance Team (DMAT) structure. Not only will these professionals be able to support Federal missions, but the intent is for them to enhance State and local support networks. NDMS has also conducted a review and upgrade of medical material in the NDMS response supplies to ensure that appropriate age-specific equipment and supplies are available to our response teams when they deploy.

In addition to clinical care, patient transportation is a key NDMS activity. NDMS has completed Phase 1 of the development of critical care transport team capability. Phase 1 has provided on-the-ground critical care support capability for mass patient evacuation and is capable of deploying to support the Department of Defense, including its National Guard Bureau, efforts to evacuate critical care patients. Each of these teams has clinical expertise and formal training in emergency care to special populations, including pediatric and obstetrical. Phase 2 of this program included the further development and fielding of existing air-evacuation qualified critical care transport teams that will provide direct patient care during transport of critical care patients on multiple platforms, including fixed-wing and rotary-wing air, rail, and ground transport.

HHS recognizes that there is a need for development of planning guidance for healthcare facilities as well as for local, State, regional, and Federal jurisdictions. While the National Response Framework mandates that States are responsible for determining patient evacuation requirements, Federal support can be requested when State capacity cannot support the evacuation requirements. Federal assets include ambulances from the DHS-funded FEMA National Ambulance Contract, administered by HHS. This contract provides for a neonatal specific-typed rotary wing helicopter, and a neonatal specific-typed fixed wing aircraft, both of these aircraft for neonatal transport were deployed during the 2008 hurricane season.

Hospital Preparedness

Since its inception in 2002, ASPR's Hospital Preparedness Program (HPP) has provided more than $3 billion to fund the development of medical surge capacity

and capability at the State and local level. HPP funds are awarded to State and territory departments of public health, which in turn fund projects at hospitals and other healthcare entities. As a result, hospitals can now communicate with other responders through interoperable communication systems; track bed and resource availability using electronic systems; protect their healthcare workers with proper equipment; train their healthcare workers on how to handle medical crises and surges; develop fatality management, hospital evacuation, and alternate care plans; and coordinate regional training exercises.

As a result of Congress's investment in the Hospital Preparedness Program our hospitals were better prepared to respond to the 2009 H1N1 outbreak. Since the inception of funding, pandemic influenza preparedness and development of alternative care sites have been two priorities of the HPP program. In 2007, $75 million was awarded to States and territories specifically for pandemic influenza planning, including pandemic exercises and purchases of equipment, such as ventilators, that would aid in their response to a pandemic. Of the grantees receiving these funds, 79 percent conducted pandemic influenza exercises to hone their preparedness capabilities. In 2009, $90 million was awarded from the Supplemental Appropriations Act, 2009 for purchase of personal protective equipment, such as N–95 respirators for healthcare workers, and to develop plans for alternative care sites. CDC has also been providing support to States for vaccine program implementation and to help State and local health departments.

HPP has required recipients to implement a system of bed counting, called the "Hospital Available Beds in Emergencies and Disasters" (HAvBED). This system requires reports of available beds, including a count of available adult and pediatric general beds and ICU beds, to State and HHS emergency operations centers within 4 hours of request. HAvBED enhanced our 2009 H1N1 medical surge response capability.

Furthermore, based on the lessons learned from the spring 2009 H1N1 response, HAvBED was modified to also collect information on emergency department stress and hospital stress. ASPR worked with the HPP grantees, the American Hospital Association and private vendors to develop a core set of measures (including daily census counts and equipment shortages) for the level of stress on the healthcare system. Within 48 hours of receiving information, we have senior ASPR experts discuss and analyze data to determine if any hospitals are showing signs of stress or if there are indicators of equipment shortages. On occasions where the data indicates stress, we engage our Regional Emergency Coordinators to work with State health departments in conducting an investigation.

Response to Questions of Senator Franken by John Howard, M.D. and Aubrey Keith Miller, M.D., MPH

Question 1. One thing I've heard repeatedly is that we don't know how this spill will affect the public's health because something of this magnitude has never happened.

What's the plan for studying the long-term effects of this terrible event on the health of workers and Gulf residents?

Response 1. The long-term human health effects from the oils spill are unknown. In order to learn about potential health hazards, CDC and NIEHS have been working together to begin identifying data gaps to address and evaluate potential long-term and short-term health. The NIEHS is leading the development of the Gulf Long-Term Follow-up (GuLF) study to examine the short- and long-term health consequences of the Deepwater Horizon oil spill on workers and volunteers engaged in clean-up activities. The study has been designed and the protocol reviewed by the National Institute of Occupational Safety and Health (NIOSH) leadership, 12 other Federal agencies, NIEHS-selected external peer reviewers, and an expert panel convened by the Institute of Medicine (IOM). The study will examine a wide range of potential short- and long-term human health consequences which may include, but are not limited to respiratory, cardiovascular, hematologic, dermatologic, neurologic, cancer, reproductive, mental health, substance abuse, immunologic, hepatic, and renal effects associated with clean-up and disposal activities surrounding the oil spill.

Worker safety and health can be broken into three phases: pre-deployment, deployment and post-deployment. The GuLF study will include many of the workers identified in CDC's accounting for the workers that are engaged in the clean-up response (rostering) during the pre-deployment phase.

CDC and NIEHS are currently in the deployment phase where the necessary activities include monitoring and quantifying potential exposures to oil and dispersants, collecting information on health symptoms (including behavioral

health), and monitoring illness and injury data. All this information collected during the deployment phase is critical to determine the scientific basis needed to address health concerns of the community and to develop strategies to prepare for future disasters. CDC and NIEHS activities are being carried out in collaboration with other Federal, State and local agencies, institutions and communities in the Gulf region.

The NIEHS also plans to support one or more academic consortium of investigators working in the Gulf region to address health issues related to the spill. Potential topics to be addressed include maternal and child health, health disparities, cardiovascular health, psychosocial stress, and others.

The National Toxicology Program, located administratively within NIEHS and headed by the NIEHS Director, is planning studies to identify important biological activities and tissue targets for crude oil, weathered oil, dispersants, and mixtures of oil and dispersants found in the Gulf. The proposed studies include a mixture of literature evaluations, analytical chemistry activities, and toxicity pathway screens to confirm and extend our understanding of the hazards presented by these complex materials.

CDC/NIOSH is planning to conduct acute animal toxicity studies on the dispersant (Nalco Corexit 9500A), crude oil obtained from the source, and dispersant/crude oil mixtures. While NIOSH promotes interdisciplinary toxicology research related to Deepwater Horizon, this particular study is funded entirely by NIOSH and is being conducted independently from the NTP. Studies will include inhalation studies that measure pulmonary, cardiovascular, and central nervous system outcomes. Additionally, dermal exposure studies are also being planned to assess hypersensitivity and immune-mediated responses. By conducting these animal toxicity studies, NIOSH hopes to contribute to the body of science on the potential health effects of exposures to crude oil, dispersant, and mixtures. Findings will be published in the peer-reviewed literature, disseminated at conferences, and available to the general public.

[Whereupon, at 4:00 p.m., the hearing was adjourned.]

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