Statement for the Committee on Health, Education, Labor, and Pensions
United States Senate
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NIEHS Activities Related to the Gulf Oil Spill

Statement of
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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 aerosolized 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; followup 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

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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] Palinkas 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

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 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 multi-agency 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 non-governmental 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 eight-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 website 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.