

What Health Care Providers Should Know about Potential Health Hazards from the Deepwater Horizon Oil Spill



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- The Gulf Coast Oil Spill has the potential to affect human health. Signs and symptoms are possible depending on the substance exposed to, the exposure dose, and route of exposure. Although a variety of hydrocarbon products produced from petroleum have specific toxic effects, the toxicity of crude light petroleum itself to humans is relatively low. (Stellman 2007) This may be due, in part, to the lower concentrations of individual fractions in crude oil as compared to the higher concentrations expected in refined products.
 - » Oil Spill Dispersant Information for Health Professionals (http://www.cdc.gov/nceh/oil_spill/dispersants_hcp_info.htm)
 - » Deep Water Horizon Oil Spill Human Health Interim Clinical Guidance (http://emergency.cdc.gov/gulfoilspill2010/oilspill_clinical.asp)
- Crude oil is a mixture of more than 1000 compounds (mostly hydrocarbons). The hydrocarbons in crude oil are mostly alkanes, cycloalkanes and various aromatic hydrocarbons while the other organic compounds contain nitrogen, oxygen and sulfur, and trace amounts of metals such as iron, nickel, copper and vanadium.

The exact molecular composition varies widely. The specific type of oil spilled in the Gulf Coast is known as a light, crude oil which has low viscosity and is composed mostly of light hydrocarbon fractions which are volatile and may increase the risk for aspiration into the lungs if ingested.

- » Table of Chemical Constituents Commonly Found in Crude Oil (http://emergency.cdc.gov/gulfoilspill2010/pdf/chemical_constituents_table.pdf)
 - » Fuel Oils ToxFAQs (<http://www.atsdr.cdc.gov/toxfaqs/tf.asp>)
 - » Fuel Oils Tox Profiles (<http://www.atsdr.cdc.gov/toxprofiles/TP.asp>)
- However, these light hydrocarbon fractions, such as benzene, xylene, toluene, and ethyl benzene generally evaporate into the air in the first 24-48 hours of a spill into the open ocean water (usually before reaching the shore). The medium and heavy parts (consistency much like motor oil) are what cleanup operations on the land and near shore areas focused on. This is also called “weathered” crude oil or “mousse.” Other potential exposures related to the clean up response may include airborne particulates from “oil burns” and/or contact with chemical dispersants used to help with bioremediation (cleanup).



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- Because of the weathering process, inhalation hazards from the lighter, toxic volatile components of crude oil, such as benzene, are greatly reduced. The “weathered” crude substance, remaining after evaporation and biological degradation, is still of concern as a potential dermatitis hazard. Potential remaining higher molecular weight fractions may cause irritation by dissolving the natural protective oils on the surface of the skin. In addition, known polycyclic aromatic hydrocarbon skin carcinogens may remain in the “oil soup” or “mousse oil” after the weathering process. However, the risk of “weathered” crude as a skin cancer-causing agent is not known due to variability of compounds in the “weathered” oil mixture.

» Light Crude Oil Information for Health Professionals (http://www.cdc.gov/nceh/oil_spill/light_crude_health_professionals.htm)

- Limited studies from previous oil spill disasters showed that common reported acute symptoms were due to irritant effects on mucus membranes, upper airway, and the skin. (NIOSH 1991). This is consistent with what is being reported for this spill as described under “Health Surveillance” later in this document.
- Symptoms related to mental or behavioral health such as anxiety, stress and depression have been frequently seen in previous oil spill disasters (Aguilera 2010). Thus, these conditions should be considered during the evaluation of patients throughout this oil spill. Please see the resource section for more information.

What the Provider Should Consider When Delivering Patient Care:

- Patients with respiratory, dermal, or other signs and symptoms should be treated and managed according to standard clinical protocols guided by the presentation of the patient.
- Clinical evaluation should include taking an exposure history (http://www.atsdr.cdc.gov/csem/exp-history/ehcover_page.html) and consideration of environmental etiologies in the differential diagnosis.
- The chemical makeup of “weathered” crude oil does not require laboratory testing for specific chemicals to guide the delivery of routine clinical care, therefore it is not recommended at this time. (<http://www.cdc.gov/niosh/hhe/reports/pdfs/1989-0200-2111.pdf>)
- Counsel/Advise patients to
 - » Limit exposures to potential air contamination, especially those with chronic respiratory conditions (e.g., asthma or COPD) by
 - Staying indoors in an air-conditioned room
 - Setting the air conditioner to the “recirculation” mode, if possible
 - » Return for additional medical evaluation if symptoms such as shortness of breath, nausea or other medical issues persist
 - » Avoid contact with water or sediments that may potentially be contaminated. If exposure has occurred, immediately wash with soap and water (do not use gasoline, solvents, or industrial cleaners). Baby oil or tanning lotion may be used to remove oily, tar-like residues.

- Advise patients to avoid direct exposure to oil or sludge as much as possible, especially pediatric patients, their parents and pregnant women. Children should be restricted from playing in or around contaminated areas, and they should not be involved in cleanup efforts.
 - » Information for Pregnant Women - Fact Sheet (http://emergency.cdc.gov/gulfoilspill2010/2010gulf_oilspill/pregnancy_oilspill.asp)
 - » Information for Parents - Fact Sheet (http://emergency.cdc.gov/gulfoilspill2010/info_for_parents.asp)
- Report health effects potentially related to the oil spill to your local or regional Poison Control Center.

For more information regarding your local or regional Poison Center call 1-800-222-1222 or online at: <http://www.aapcc.org/dnn/About/FindLocalPoisonCenters/tabid/130/Default.aspx>

What Health Care Providers Should Know about Behavioral Health Risks from the Deepwater Horizon Oil Spill

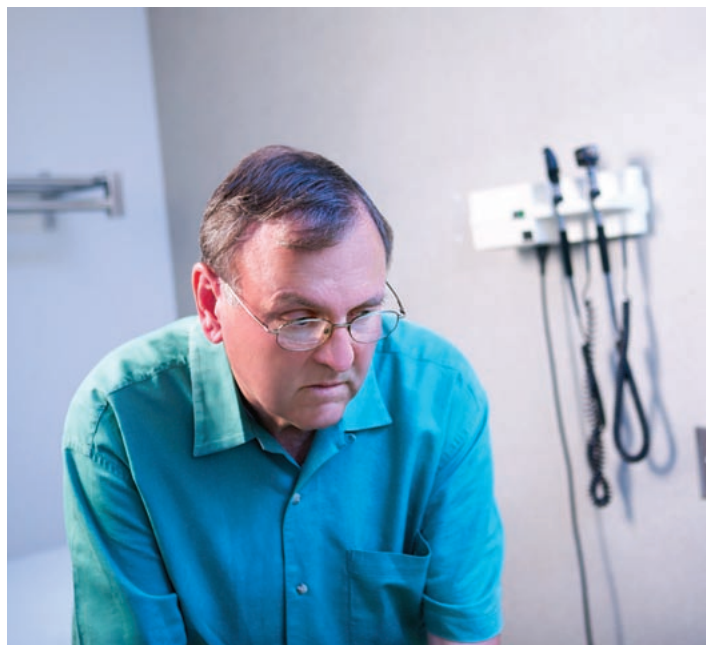
The uncertainties stemming from the Deepwater Horizon Oil spill and the subsequent economic turmoil (e.g., increased unemployment, foreclosures, uncertainties of the future and other forms of distress) can result in a whole host of negative health effects - both physical and mental. While most people will adjust to these type of changes over time, it can be particularly devastating to the emotional and mental well-being of those you care for. Although each of us is affected differently by disasters, these problems can add tremendous stress, which in turn can substantially increase the risk for developing such problems as:

- Depression
- Anxiety
- Compulsive Behaviors (over-eating, excessive gambling, spending, etc.)
- Substance Abuse

Warning Signs

It is important to be aware of signs that oil spill related problems may be adversely affecting the emotional or mental well being of your patients. These signs include:

- Persistent Sadness/Crying
- Excessive Anxiety
- Lack of Sleep/Constant Fatigue
- Excessive Irritability/Anger
- Increased drinking
- Illicit drug use, including misuse of medications



- Difficulty paying attention or staying focused
- Apathy - not caring about things that are usually important to you
- Not being able to function as well at work, school or home

Managing Stress

These are common reactions to stress, and there are coping techniques that you can use to help manage it. They include:

- Helping others to try to keep things in perspective - recognize the good aspects of life and retain hope for the future.
- Advise patients to strengthening connections with family and friends who can provide important emotional support.
- Encourage engaging in activities such as physical exercise, sports or hobbies that can relieve stress and anxiety.
- Refer patients to local outreach and crisis counseling efforts.
- If symptoms persist, screen patients for depression, anxiety and substance use disorders.

Other Sources of Information

- Substance Abuse and Mental Health Services Administration Disaster Resources
- <http://samhsa.gov/Disaster/>
- Handouts to have in your office can be found at <http://www.samhsa.gov/Disaster/traumaticicevents.aspx>
- Service locator assistance can be found at
 - » Substance abuse <http://findtreatment.samhsa.gov/>
 - » Mental Health <http://mentalhealth.samhsa.gov/databases/>

