Oil or Chemical Spill Notification

call the National Response Center at
800-424-8802

Oil Spill Response

in the Region IV Coastal Zone,
contact the U.S. Coast Guard
Marine Safety Office (MSO):

MSO Wilmington, NC 910-792-8408	MSO Charleston, SC 843-724-7616
MSO Savannah, GA 912-652-4353	MSO Jacksonville, FL 904-247-7310
MSO Miami, FL 305-732-0160	MSO Tampa, FL 813-228-2189
MSO Mobile, AL 334-441-5121	

In the Region IV Inland Zone,
contact the U.S. Environmental
Protection Agency:
404-562-8700

Inland Zone U.S. Coast Guard Offices are:

MSO Huntington, WV 800-253-7465	MSO Louisville, KY 800-253-7465
MSO Paducah, KY 502-442-1621	MSO Memphis, TN 901-544-3912

State Pollution Response Contacts are:

North Carolina 919-733-3867	South Carolina Spill: 888-481-0125 Office: 803-896-4000
Georgia 404-656-4300	Florida 850-413-9911
Alabama 334-242-4378	Mississippi 601-352-9100
Tennessee 800-258-3300	Kentucky 800-928-2380

Suggested References:

Oil in the Sea
National Academy Press 1985

Introduction to Coastal Habitats and Biological Resources for Oil Spill Response
NOAA / Hazmat

Introduction to Oil Spill Physical and Chemical Processes and Information Management
NOAA / Hazmat

EPA's Oil Program Web site
www.epa.gov/oilspill/

United States Coast Guard's Marine Safety and Environmental Protection web site.
www.uscg.mil/hq/g-m/gmhome.htm

National Response Team
www.nrt.org/

NOAA Hazardous Materials Response and Assessment Division
http://response.restoration.noaa.gov

Oil Spill Intelligence Report's Oil Spill Basics: A Primer for Students
www.cutter.com/osir/primer.htm

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Region IV
Regional Response Team

RRT IV Co-Chairs:
U.S. Coast Guard 305-536-5651
U.S. EPA 404-562-8721

What are the Effects of Oil on Coral Reefs?

What are Coral Reefs?
Coral reefs are made up of individual animals called polyps. These animals form a symbiotic relationship with a unicellar algae called zooxanthellae. This relationship allows the coral to develop into large communities called coral reefs. Coral reefs occur in subtropical and tropical oceans worldwide. Corals require hard substrate and warm clear ocean water to form reefs, and they do not tolerate turbidity or low salinities. In the eastern United States coral reefs are restricted to Florida, some areas of the Gulf Mexico and in the Caribbean including Puerto Rico and the Virgin Islands.

Coral Reef Importance:
Coral reefs are very important to the ecology and the economy where they occur. Their wave breaking ability helps limit the damage to the coastline caused by hurricane generated waves. Coral reefs also support one of the highest levels of species diversity of any habitat in the world. Many of these species such as spiny lobsters, groupers, and snappers, support a large and valuable fishery resource. The beauty and diversity of the coral reef also supports a large recreational diving and fishing industry, which in turn supports many other service related businesses.

How Oil Effects Coral Reefs:
In the event of a spill, oil will pass over sub-tidal reefs with no direct contamination. Areas of coral reefs that are exposed during low tide are at risk to smothering from oil. Except in the event of extremely heavy oil concentrations, oil will be readily removed from the reefs with the rising tide. Studies have shown sub-lethal impacts with short term recovery in these instances. Some of these effects would include reduction or expulsion of zooxanthellae (bleaching), impaired feeding, impaired sediment cleaning ability, increased mucus production, and tissue death. The greatest threat to a coral reef is the spill of a light refined product directly into the shallow water over the reef, where high concentrations of the toxic water soluble components could persist long enough to cause impacts. If a spill happens during a storm event, the oil may be driven into the water column. This subsurface oil could be a threat to corals that would not normally be at risk during an oil spill.

Coral reefs support a tremendous diversity of plants and animal. An oil spill may severely effect the health of the larger reef community. Many sponges, crustaceans, and mollusks are sessile and unable to avoid the affects of the spill. Some of the more territorial fish will even remain in the area until death.

Although not a direct result of oil contact, physical damage from a vessel grounding related to an oil spill event, and the ensuing response, should be considered. Salvage efforts should be directed to remove the vessel so as not to cause further damage to the reef. Of particular concern is the impact from the propeller wash of the grounded vessel and the tug boats that assist. Propeller wash can cause sediment to cover undamaged coral. If this sediment is not promptly removed the corals can suffocate. Steel cables can make wide swathes of destruction, as the tug boat frees the grounded vessel. Floating tow lines should be used instead.

Clean Up Options for Coral Reefs:

Every effort should be made to minimize the amount of oil that is allowed to enter a coral reef environment. These efforts should not cause additional damage or slow the natural recovery of the affected area.

Booming:
Booms should be deployed to divert the oil from the reef. Collection boom, if used, must be positioned so as not concentrate the oil in the area of the coral reef. Sorbant booms can be used to collect the oil, and will need to be changed periodically. Care must be taken in anchoring booms so as not to damage the corals. Boom should never be allowed to come in contact with the reef or the bottom.

Chemical Dispersants:
Guidelines developed by the American Society for Testing and Materials (ASTM) recommend dispersants should be considered for use in the vicinity of reefs to prevent floating oil from reaching any emergent portions of the reef. The use of dispersants should be evaluated in waters greater than 10m, to reduce the risks to sensitive habitats on shore. Experiments conducted in Panama in 1987 (TROPICS Ballou, et al 1987) using oil and dispersed oil in a mangrove, seagrass, coral reef environment indicated that use of dispersants in deeper water would reduce the exposure to shore side communities without toxic concentrations impacting the coral reef.

Natural Recovery:
If oil makes contact with the reef, it may be naturally removed on the next rising tide. Once the oil is on the reef, there is no effective way to remove this oil with out causing more damage to the reef. Natural recovery would be the best response method under these circumstances.