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
919-733-3300

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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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 the Environment

Oil coating marsh grass.

Global Annual Sources of Oil in the Seas

Runoff Pollution: *363 million gallons.*
Unless it is recycled, used motor oil often ends up running down the drain into local watersheds. In addition, as rain washes off city streets and paved surfaces, it carries away tons of tire residue and oil stains. Every year oil road runoff from a city of 5 million people could contain as much oil as one large tanker spill.

Routine Ship Operations: *137 million gallons.*
Every year, bilge cleaning and other ship maintenance operations release oil into the water, in thousands of discharges of just a few gallons each.

Atmospheric Deposits: *92 million gallons.*
Pollution from cars and industries deposit hundreds of tons of hydrocarbons into the air annually. Rain then washes this from the air into the oceans.

Natural Seeps: *62 million gallons.*
Some ocean oil "pollution" is natural. Seepage from the ocean bottom and eroding sedimentary rocks releases oil into the water.

Big Spills: *37 million gallons.*
Although major spills account for a small percentage of the oil in the environment, such catastrophic releases occur very quickly and can generate a significant toxic "shock" that can be devastating to a local environment.

Small Spills: Oil spills occur mostly during shipping, but also can occur on land, contaminating soil and surface water. The Coast Guard reports that between 1986 and 1995 there were about 54 thousand oil spills, dumping an average of 2.06 million gallons of material per year into U.S. waters. Most of these incidents occurred in river channels, ports, and harbors (i.e. very little in the open sea).

Offshore Drilling: *15 million gallons.* Offshore oil production can cause ocean oil pollution from spills and operational discharges.

Effects of Oil in the Marine Environment

COASTAL HABITATS

Coastal areas are particularly susceptible to oil pollution. When a large spill drifts ashore, a fraction of the oil may become trapped in sediments and persist, in some cases, for years. This is in contrast to conditions in the open sea, where currents and diffusion usually rapidly reduce the concentration of oil.

The immediate effects of heavy oiling of the shore zone can be evidenced by the death of plants and animals due to smothering and toxicity. In the longer term, the effects are more variable and subtle.

Key factors influencing the fate of oil on the shore are the **porosity of sediments** and the wave-erosion activity acting on them. In high energy environments, (such as rocky shores) the stranded oil may coat the rocks and gradually harden by weathering into a tough tarry "skin." The oil is gradually removed by wave erosion, although pools of oil are likely to collect in hollows among the rocks, protected by a skin of weathered oil, and may remain for a long time.

On **cobble and sandy beaches**, the oil can sink more deeply into the sediments and can remain longer than on bare rocks. Since the oil is mobile in these porous systems, however, some of it is gradually returned to the water, where it is subject to dissipation but may also have lingering toxic effects. Tidal pumping encourages penetration into sediments and sediment grain size controls the rate of penetration. In muddy sediments, penetration is minimal. However, because these are low energy environments with little physical weathering, stranded oil can persist for a long time. Even so, since few organisms live full time in this habitat, risk to the food chain is relatively light.

Tidal flats are broad low-tide zones, usually containing rich plant, animal and bird communities. Oil may seep into the muddy bottoms, with potentially long term impacts to the environment.

Mangroves and salt marshes have a wide variety of plant and animal species and are broadly susceptible to disturbance by hydrocarbons. The effect in such systems is usually a severe reduction in population and growth rate. However, there is likely to be some degree of recovery within one generation. This can vary from one year for some marsh grasses to a decade for mangroves. Mangroves have long roots, called prop roots that stick out well above the water level and help to hold the mangrove tree in place. A coating of oil on these prop roots can be fatal.

Coral reefs have the highest level of biodiversity of any ecosystem on the planet. Coral reefs also support valuable fisheries, and a large tourist industry. Oil would pass over sub-tidal reefs with no direct contamination. Areas of coral reefs that are exposed during low tide would be at risk to smothering from oil. Except in the event of extremely heavy oil concentrations, oil would be readily removed from the reefs with the rising tide. Studies have shown sublethal impacts with short term recovery. The greatest threat to coral reefs would be 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 occurs during a storm event, the oil could 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. Invertebrates and fish associated with the coral reef may also suffer consequences of an oil spill. Many of the sponges, crustaceans, and mollusks are sessile and unable to avoid the affects of a spill. Some of the more territorial fish will remain in the area until death.