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

What are the Effects of Oil on Seagrass?

Document prepared by:
Region IV
Regional Response Team

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

For more informational pamphlets concerning various subjects go to the RRT IV Web Site at www.nrt.org

What are Seagrasses?

Seagrasses are found worldwide in shallow coastal waters. Owing to the protection they provide from erosion, their role in sediment accretion, and their primary productivity, seagrasses are extremely important. Seagrasses are unique because they are land plants that have fully returned to the sea. They constitute one of the most productive ecosystems known.

High light levels are needed to sustain their high rate of productivity. As rooted plants they also require sediments for both attachment and nutrition. Therefore, seagrasses are primarily found in shallow coastal waters. Because of their sediment stabilization and high productivity functions, seagrasses tend to link the coastal and offshore ecosystems.

Seagrass Ecology

As photosynthetic organisms, they require high levels of light to sustain their high rate of productivity. However, as rooted plants they require sediments for both attachment and nutrition. Thus, they are restricted to a narrow band of coastal waters where the often conflicting demands of man are the greatest. Seagrasses provide many important functions in the aquatic environment, including:

- The leaves decrease current velocities thereby stabilizing sediments and increasing sedimentation of both organic and inorganic particles around the plants.
- They bind together to help stabilize the bottom structure and reduce erosion. Their hold to the bottom is so effective that they can persist through 150 kt winds during hurricanes.
- Nutrition for many organisms throughout the food chain.
- The leaves support large numbers of epiphytic organisms, with a total biomass which often approaches that of the plants themselves.

Seagrasses are positioned in the coastal zone between upland ecosystems and the offshore oceanic ecosystem. As a result of their sediment stabilization and high productivity functions, seagrasses tend to link these otherwise dissimilar ecosystems. Seagrass ecosystems are comparable to saltmarsh ecosystems in that they trap materials and export quantities of plant and animal products to the open sea. These products range from whole leaves and stems, to detritus, to dissolved organic matter, and to fauna that have consumed these plants.

The depth distribution of seagrass depends on a number of interrelated factors: light penetration, turbidity, substrate, currents, and waves. Any activity that increases turbidity or reduces light penetration in water over seagrasses limits the growth and survival of the plants. Among human-related factors that have such impacts are dredging, sewage release, and oil pollution.

Susceptibility Of Seagrass Ecosystems To Oil Damage

The potential for damage to seagrass ecosystems can be broken down into two broad categories: susceptibility and vulnerability. Susceptibility is taken to be the potential for damage to the plants and associated communities due to contact with oil or oil-related chemicals, either breakdown products or cleanup chemicals. In particular, certain components of both crude and refined products have high toxicity to marine organisms in small concentrations. By comparison, vulnerability is largely a positional effect, reflecting the proximity of a particular grass bed to a potential hazard. Seagrass beds are especially vulnerable to damage and degradation by human activities because of their location in the shallow coastals seas where activities of man are greatest. The potential for damage is highest in grass beds within harbors, estuaries, and lagoons, and in areas in close proximity to shipping lanes.

Petroleum products can act to damage seagrass aecosystems in a variety of ways, including:

- Direct mortality of organisms due to smothering, fouling, asphyxiation or poisoning.
- Indirect mortality due to the death of food sources or the destruction or removal of habitat.
- Destruction of juveniles using grass beds as a nursery ground.
- Incorporation of sublethal amounts of petroleum fractions into body tissues, potentially lowering tolerance to other stresses.
- Reduction or destruction of the food or market value of fisheries due to absorption of hydrocarbons.
- Incorporation of potentially carcinogenic or mutagenic substances into the food chain.