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

Mechanical Protection Guidelines
NOAA/HAZMAT and
U.S. Coast Guard 1994

Response to Marine Oil Spills
The International Tanker Owners
Pollution Federation, Ltd 1986

EPA's Oil Program Website
www.epa.gov/oilspill/

Coast Guard's Marine Safety and
Environmental Protection Website
www.uscg.mil/hq/g-m/

NOAA HAZMAT Website
response.restoration.noaa.gov

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

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

MECHANICAL CONTAINMENT AND RECOVERY OF SPILLED OIL

A skimmer from the U.S. Coast Guard's
Vessel of Opportunity Skimming System (VOSS)
removes oil contained by the system's boom.
Photo: USCG

General Spill Response Considerations

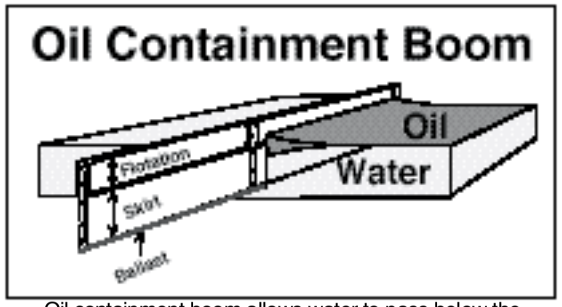
When prevention efforts fail and an oil spill occurs on the water, spill responders face a difficult battle against a dynamic opponent. They have a number of tools at their disposal, depending on the unique aspects of each situation. Among the options available are mechanical cleanup methods, such as containment booms and skimmers, non-mechanical methods, such as dispersants or *in-situ* burning, natural removal, and shoreline cleanup. The selected mix of countermeasures will depend on potential shoreline and natural resource impacts, the size, location, and type of oil spilled, weather, and other variables. Environmental impact trade-off evaluations will also be a major factor guiding the selection of countermeasure technology.

This pamphlet on mechanical spill response is one of a series that provides an overview of oil spill prevention, planning, and response topics.

What Is Mechanical Spill Response?

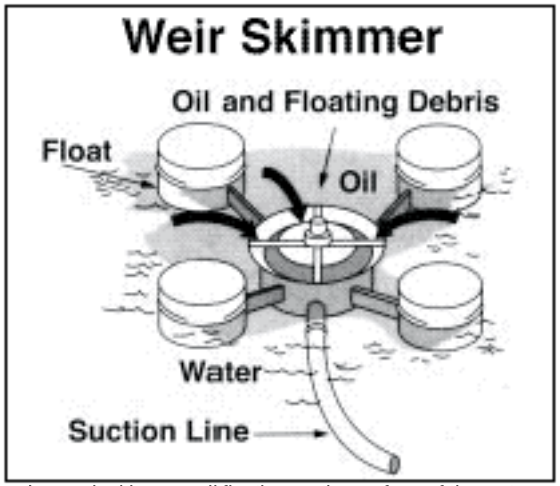
Mechanical oil spill response uses physical barriers and mechanical devices to redirect and remove oil from the surface of the water. Where feasible and effective, this technique is preferable to other methods, since spilled oil is removed from the environment to be recycled or disposed of at appropriate facilities. Mechanical recovery technology is severely limited by wind, waves, and currents. These limitations typically reduce the percentage of spilled oil recovered using mechanical recovery technology. Mechanical removal of oil utilizes two types of equipment: booms and skimmers.

Oil Containment Booms: Spilled oil floating on the water's surface is affected by wind, currents, and gravity, all of which cause it to spread. This oil may be concentrated or redirected by deploying floating barriers, called booms. Booms come in many different shapes, sizes, and styles. They are used for concentrating oil so that it is thick enough to be skimmed, for keeping oil out of sensitive areas, or for diverting oil into accessible or desirable collection areas. The success of booming as a strategy is largely dependent on currents, wind, and waves. Currents can draw the oil under the booms; waves may cause oil splash-over; wind and currents may cause the booms to sink or plane off the surface of the water; and currents or debris may damage the boom.



Oil containment boom allows water to pass below the boom skirt while stopping the oil floating on the water.

Skimmers: These devices remove oil from the water's surface and are typically used with booms that concentrate the oil to make it thick enough to be skimmed efficiently. The effectiveness of the skimmer are determined by how quickly it can collect the oil, and how much water is mixed in with it. The oil collected by the skimmer is stored in a containment tank. A wide variety of skimmers is available that use different methods for separating oil from water. Skimmer operating time is limited by the size of the containment tank, and skimmer effectiveness can be hampered by debris. Vessel-based skimming systems are utilized to remove oil from open water, while vacuum trucks are often used to remove oil that has collected near the shoreline.



In a weir skimmer, oil floating on the surface of the water is pumped into storage after flowing over the skimmer's weir, which is maintained at the oil/water interface.

What Are the Potential Benefits?

- Physically removes oil from the environment.
- Allows recycling or proper disposal of recovered oil.
- Minimizes direct environmental impacts in open water areas.

What Are the Potential Tradeoffs?

- Limitations of mechanical recovery exist. Wind, waves and currents may allow only a fraction of the spilled oil to be contained and recovered.
- Effective mechanical strategies can only be developed with a good understanding of local hydrodynamic processes including currents, waves, and tides. This requires prior study or evaluation by experienced response personnel.
- Over-reliance on mechanical strategies can be problematic. The limitations of mechanical protection and recovery methods must be fully considered. Booms may fail and skimmers may clog. Responders and response advisors must avoid one dimensional thinking and instead consider the net environmental benefits of all response actions taken.