

# Oil Spill Cleanup Fact Sheet

(July 2006)

## Introduction

Oil spill cleanup begins with mechanical containment of spilled oil to prevent pollution from reaching other areas, oil is then recovered. The contaminated area is cleaned and polluted water, pebbles and sand are transported from the site for proper treatment. For every ton of fuel oil cleaned by chemicals, an additional 10 tons of hazardous waste is generated.

When containment and recovery are attempted it is important to select equipment that is suitable for the type of oil and the weather/sea conditions. Efforts should target the heaviest oil concentrations and areas where collection will reduce the likelihood of oil impacting sensitive resources and shorelines.

Coastal areas that are contaminated from an oil spill are never completely cleaned; the ecosystem takes several years to rehabilitate and may never return to its pre-spill state.

The difficulty of the cleanup depends on the type of fuel spilled, and the areas impacted. Heavy fuel oil is one of the hardest types of fuel to clean. If the spill is close or on-shore the cleanup becomes also much more difficult. Finally, the longer the oil remains in nature, the harder the cleanup will be. It is rare, even in ideal conditions, for more than a relatively small proportion (10-15%) of the spilled oil to be recovered.

## **Mechanical Containment and Recovery:**

**Booms:** Are floating barriers placed around the oil to surround and isolate a slick, or to block the passage of a slick to vulnerable areas. Booms contain the oil so skimmers (see below) can collect it. Booms will not properly surround a spill in bad weather conditions, wind and high waves as may wash oil beneath or over the top of the boom or cause the release the contained oil.

**Skimmers:** can be boats, vacuum machines, and oil-absorbent plastic ropes that float across the top of the slick and skim spilled oil from the water's surface. The skimmer sucks or scoops the oil into a storage tank on the shore or nearby vessels so it can be removed. Skimmers may recover more water than oil.

**Synthetic sorbent materials:** Sorbents are insoluble materials or mixtures of materials used to recover liquids through the mechanism of absorption, or adsorption, or both. Sorbents are most often used to remove final traces of oil, or in areas that cannot be reached by skimmers. The characteristics of both sorbents and oil types must be considered when choosing sorbents for cleaning up oil spills. Sorbent can tolerate a limited amount of oil and when lifted can release oil that is trapped in its pores. Some natural organic sorbents (clay) cannot be used in windy conditions others (vermiculite) are dusty and maybe hazardous if inhaled.

## **Chemical treatment:**

Dispersants: Dispersants are chemicals sprayed to break up oil slick into its chemical constituents and speed natural biodegradation. Dispersants reduce oil slicks into small droplets of oil and increases their surface area. This stops oil and water from mixing and increases the exposure to natural evaporation and bacterial action.

Whether a dispersant is effective depends on the type of oil and the time between the spill and clean up. The viscous nature of oil increases with evaporation and emulsification; this increases their resistance to dispersants. Dispersants generally have little effect on viscous oils and may stop being effective within an hour or two of the initial spill, they also are not effective on all locations. The time available before dispersant stops being effective depends upon factors such as sea state and temperature but is unlikely to be longer than a day or two. **Most of the known clean-up chemical products are more toxic than the mineral oil itself.**

Gelling agents: These are solidifiers, chemicals that react with oil to form rubber-like solids. These chemicals are applied to the oil then mixed in by the force of high-pressure water streams. The gelled oil is removed from the water using nets, suction equipment, or skimmers. The limitation in using gelling agents is the need for large quantities of the material almost as much as three times the volume of the spill. For large oil spills it is impractical to store, move, and apply such large quantities of material.

**Biological treatment:**

These are introduced to the spill to hasten biodegradation. Bacteria and other microorganisms can break down most of the components of oil washed up along a shoreline into harmless substances such as fatty acids and carbon dioxide. This technique is limited to cleaning the shoreline. This type of treatment can be conduct at the end of the cleanup process on small spots of oil.

**Final Disposal:**

Extracted fuel and polluted sand are considered to be hazardous waste, and should be disposed of accordingly. This waste should be properly contained and should not be released into the environment. Recovery of part of the oil from this waste is possible, and some of the sands and pebbles can be cleaned and returned into the environment.

While some recommend the incineration of oil wastes and polluted sand, this process will produce dioxins especially that a lot of chlorine from the sea salt is contained in the collected waste. Dioxin is a known carcinogen and can disrupt the hormonal system.

Green Line

<http://greenline.org.lb/new/index.html>

[greenline@greenline.org.lb](mailto:greenline@greenline.org.lb)

(+961) 1 746 215