



# Spill Response: Oil Absorbent Booms

June 2012

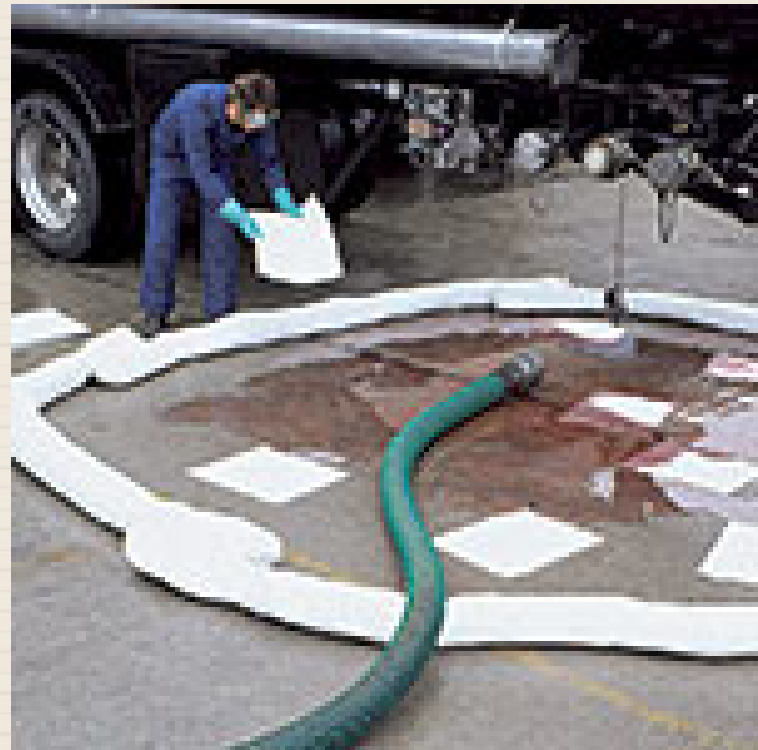




This training is intended to be educational and should not be construed as legal guidance. It is provided as a courtesy to our customers and others who may benefit from the information contained herein. New Pig Corporation assumes no responsibility for misuse or mishandling of our information or products.

## Oil Spills

- Impair drinking water
- Destroy natural resources
- Endanger public health
- Are expensive to clean up



## Oil Spills Can Happen Anywhere:

- On the ocean
- On land
- On lakes and rivers
- In wetlands





## Oil Spills on Land

- Typically have a more direct impact on human populations than marine and coastal spills.
- Are more likely to have negative impacts on drinking water sources, metropolitan areas, recreational waterways and shoreline industry and facilities.

## Oil Spills on Land:

- Damage soil and prevent new plant growth
- Migrate to underground water tables

## Oil Spills on Water:

- Harm organisms that live in and around the water's surface
- Ruin water supplies
- Damage parts of the food chain



# Oil Spills

- When an oil spill occurs, it must be contained quickly to minimize damage to the environment.
- Containment booms and equipment minimize the spill area by preventing the spilled oil from migrating further into the water system and facilitating its removal.





## Types of booms:

### **Containment Booms**

- Control the spread of oil
- Divert and channel oil slicks along desired paths
- Make spills easier to remove from the water's surface
- Are typically not designed for spills on land

### **Absorbent Booms**

- Control the spread of oil
- Absorb free-floating oils on water
- Aid in fast absorption of contained spills
- Can be used on land or water





## Booms are affected by:

- Water conditions
- Temperature
- The type of oil product being absorbed
- Other environmental factors

No single type of boom (containment or absorbent) is 100% effective in all spill scenarios.



# Using Absorbent Booms for Spill Response



# Step One: Have a Plan

Before a spill, create Contingency Plans that cover possible oil spill scenarios.

If spills could happen on both land and water, plan for both.

Contingency Plans are unique to a facility, but have three common elements:

1. Identification of hazards
2. Risk assessment
3. Response actions



## Step One: Have a Plan (continued)

Planning ahead is one of the best ways to minimize the impacts of an oil spill – on land or on water.

Consider:

- Common water currents, winds and temperature conditions that could complicate response efforts on land or on water
- Stocking wildlife deterrents such as shiny reflectors, flags, balloons, floodlights, etc.
- Methods to clean plants and grasses growing on banks or shorelines



# Step Two: Gather Resources

While it is important to be prepared for “worst-case scenario” spills, it is also a good idea to be prepared for incidental spills.

Stocking spill kits, drain covers and other response tools in spill-prone areas can help responders act quickly to contain spills and minimize overall impact.



## Step Two: Gather Resources (continued)

Resources may include:

- Absorbent booms
- Containment booms
- Oil absorbent mats and socks
- Wipers
- Shovels
- Detergents or cleaners
- Earthmoving equipment
- Mechanical skimmers
- Personal Protective Equipment (PPE)
- Life jackets
- Anchors, buoys, rope and stakes



# Step Two: Gather Resources (continued)

Absorbent booms come in different lengths and diameters. Consider:

- The weight of a fully saturated boom. If booms will be retrieved by hand, consider 10' lengths over 20' lengths of boom.
- 3 in. diameter booms for ponds, lakes or very slow-moving waters
- 5 in. diameter booms for creeks and slow-moving water
- 8 in diameter booms for moving water up to 1 knot
- Sufficient quantities of ropes and anchors to secure booms



## Step Three: Spill Containment

### For spills on land:

- Surround the spill, linking absorbent booms as needed to keep the spill from spreading
  - Allow at least 18 in. of overlap
- If the spill is still moving, allow space between the spill and the absorbent boom
  - Placing a boom too close to a spill can cause oil to escape under the boom







## Step Three: Spill Containment (cont.)

### For spills on water:

Absorbent booms can be:

- Fixed to piers or buoys
- Towed behind a vessel for deployment

### Absorbent Boom Deployment Techniques:

- Booms are *rarely* deployed across a watercourse from shore-to-shore, perpendicular to the flow of water.
- Booms may be deployed in a watercourse at an angle from shore to shore, to force the oil to the shoreline where personnel, sorbents and/or mechanical skimming devices can more easily access the oil.

## Step Three: Spill Containment (cont.)

### **Absorbent Boom Deployment Techniques:**

- Booms may be deployed in a “U”-shaped manner on a calm body of water (lake, pond or calm harbor) when an on-shore oil spill enters the water and the oil slick can be surrounded by booms.
- Wind speed above 5 knots and water-current speed above 2 knots (perpendicular) cause absorbent booms to submerge, allowing oil to pass over them.
- Waves higher than the freeboard (above the water) portion of a boom will push oil over the boom, requiring the use of the Skimming Sweep and/or multiple lines of booms to capture the majority of the oil.



## Step Three: Spill Containment (cont.)

### **Absorbent Boom Deployment Techniques:**

- High current speed and below-surface turbulence will pull oil under a boom. A Skimming Sweep and/or multiple lines of booms will need to be deployed.
- Anchoring points are critical. Insufficient anchoring is a common cause of boom failure.
- While it is easy to improvise an anchor point for spill response on calm water with rebar, metal or wooden stakes, shovel handles and whatever else might be available, a moving body of water requires the use of more permanent anchor points, and these should be determined well in advance of an actual spill.



## Step Four: Monitoring

- Absorbent booms need to be monitored to ensure that they are not being submerged by water conditions and that they are not fully saturated.
  - If booms are fully saturated, leave them in place until a secondary line of booms is placed.
- Booms don't function well in tidal conditions or in currents moving more than 1 knot per hour.
- The weight of recovered oil can cause a sorbent to sag and deform.

# Step Four: Monitoring (cont.)

- Rate of absorption varies with the thickness of the oil. Light oils are soaked up more quickly than heavy ones.
- When an absorbent boom bobs at the surface of the water, it is fully saturated and needs to be replaced.
- Be aware of surfactants or dispersants that are used in open-water spill response. These can cause absorbent booms to absorb water.



# Step Five: Recovery

- When absorbent booms are saturated, they must be removed from the water and properly recycled or disposed of.
- Any oil that is removed from sorbent materials must also be properly disposed of or recycled.
- Towing booms back to shore when a spill is encircled must be done slowly (less than 2 knots), or the boom's speed through the water will cause it to submerge.





# Exercising Plans



## Exercises

- Even the best plans and largest stockpiles will fail if responders are not properly trained to use them.
- Drills or response exercises help responders to be prepared for different scenarios so that everyone knows how to use equipment and tools properly, efficiently and safely.
- Consider hosting drills with local firefighters or other responders to help foster relationships and increase skill levels







**Thank You!**

