# VESSEL DECONTAMINATION

## OBJECTIVE & STRATEGY

Dv

The objective of the Vessel Decontamination tactic is to remove oil contamination from vessels that are exposed to oil and oily waste during spill response operations. The level of decontamination will depend on whether the vessel is to be demobilized or returned to spill response service. When a vessel is demobilized, it will be cleaned to a non-oiled state throughout the vessel. Vessels returning to service should be decontaminated sufficiently to not reintroduce oil into the environment or cross-contaminate response personnel and equipment. The purpose is to expedite cleanup of oiled vessels in a safe, organized and effective manner while minimizing waste and damage to the environment.

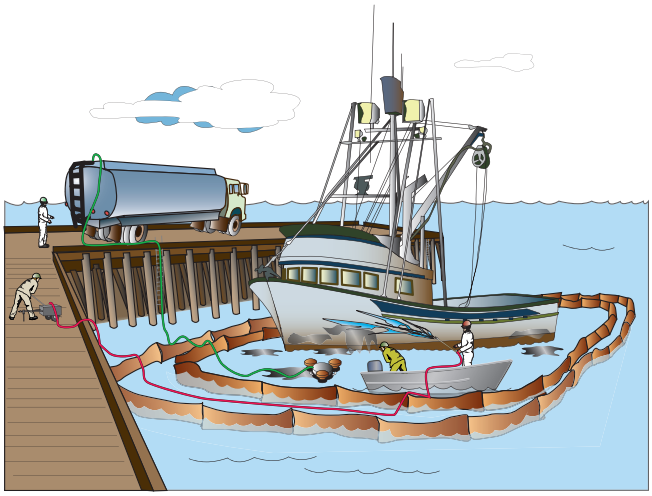

Figure Dv-1. On-water vessel decontamination deployment configuration at a dock.

The general strategy used in performing vessel decontamination is to:

1. Identify the appropriate location for decontamination operations.
2. Establish a site plan.
3. Obtain necessary permits for operations.
4. Deploy equipment and personnel to the location.
5. Set up equipment and begin operation.
6. Monitor operations to ensure that vessels are cleaned to established criteria and oil is removed from the environment.
7. Dispose oil contamination, solid wastes, PPE, and cleaning fluids according to the incident Waste Management Plan.

# Vessel Decontamination

## TACTIC DESCRIPTION

Decontamination involves the removal of oil or other contaminants from vessels when they leave the Hot Zone, while still in the Warm Zone. Vessel decontamination is conducted as part of the overall incident Decontamination Plan that is established by the Unified Command. An approved incident-specific Decontamination Plan supersedes the guidance in this manual.

Operations are conducted by designated decontamination teams and are broken down into different methods for larger vessels that cannot be removed from the water and smaller vessels that can be removed from the water. Controls must be in place to ensure that contamination is contained, removed from the environment, and properly disposed. Access should be limited and all personnel and equipment should be tracked in and out of the decontamination area to ensure that no cross contamination occurs. PPE is required in accordance with the incident Safety Plan.

While the general tactics are the same for small and large vessels, the approach will be adjusted depending on the size of the vessel and availability of equipment.

All vessels awaiting decontamination should be isolated inside oil containment boom so that oil and wastes cannot re-enter the environment. The site should be integrated into the overall decontamination site plan and situated in the Warm or Contamination Reduction Zone immediately adjacent to the Hot Zone.

### *General Procedures*

All vessels should undergo gross decontamination of oil that is easily accessed by manual removal with sorbent pads and a detergent if necessary. After gross oil is recovered, all contaminated areas of the vessel are washed with pressurized warm/hot water spray. Detergents or degreasers may be used if the pressure wash does not remove all the oil. To keep wastes to a minimum, degreasing agents should not encourage emulsification of oil. Oil recovery operations should be conducted concurrently with washing operations. Recovery can consist of skimmer operations outlined in the tactics Marine Recovery and On-land Recovery or may be accomplished with Passive Recovery depending on oil type and amount expected.

### *Vessels That Can be Removed From the Water*

Vessels that can be physically removed from the water with available equipment, i.e., travel lifts, cranes, or trailers, should be removed and cleaned in a designated area surrounded by berms or dikes that are lined to contain and recover the run-off of oil and water (Figure Dv-2). A warehouse or a large area with a concrete floor is preferred for containment of wastes. The area may also be used for other equipment decontamination. Sorbents, vacuum skimmer systems, and

storage devices should be present to recover wastes that are collected in the bermed area. All wastes are then disposed of in accordance with the incident Waste Management Plan.

### *Vessels That Cannot be Removed From the Water*

Decontamination of vessels that cannot be removed from the water will be conducted on-water using a berth (Figure Dv-1) or established anchorage in protected waters (Figure Dv-3). The location should be immediately adjacent to the spill site outside the Hot Zone. It must be boomed off with a doubled, adequately anchored, containment boom, and have a gate for access. If the site is in open water, and multiple vessels are to be cleaned, a mooring should be established prior to operations. Adjacent sensitive areas should have protection plans in place to prevent contamination in the event of boom failure.

A recovery and primary storage system that is sized and suited to the operation should be present to recover oil floating in the boomed area. This might include sorbents, skimming systems, storage systems, and one or more platforms for operations. Sorbents should be floated inside the boomed area for removal of sheens and residual oil. When light contamination is expected, pads and sheets may be used. Sausage type booms may be deployed inside the exclusion boom for long-term deployments when significant oil is to be removed. Sorbents should be tended daily to ensure effectiveness.

After the initial cleaning, the surrounding waters should be monitored for sheening. If sheening is present and continuous, then the vessel should be cleaned again to remove any trace oil. Once cleaned, the vessel should be placed in a clean holding/staging area and logged out of the decontamination area.

The entry into any confined space, such as tanks or holds, should only be accomplished with trained and certified responders with specialized equipment and the approval of the Safety Officer. **Confined space entry is not covered by this manual.** Consult individual vessel decontamination plans and the incident specific decontamination plan for details.

### *Operating Environments*

All decontamination areas should be established as close to the spill site or Hot Zone as feasible and should be scalable to the expected maximum size of the response vessels and provide safety, ease of access, and comfort for operations. For large vessels being cleaned at anchor, it is recommended that operation take place in calm waters. Decontamination of smaller vessels may occur adjacent to the spill site. Measures should be taken at the decontamination site to protect the area from contamination. Geotextile sheeting or sorbents should be placed in these areas.

# Vessel Decontamination

### *Deployment Configurations*

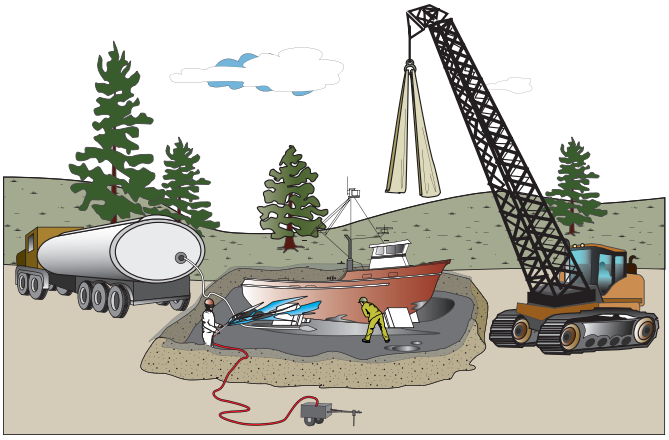

Figure Dv-2. On-land vessel decontamination deployment configuration.

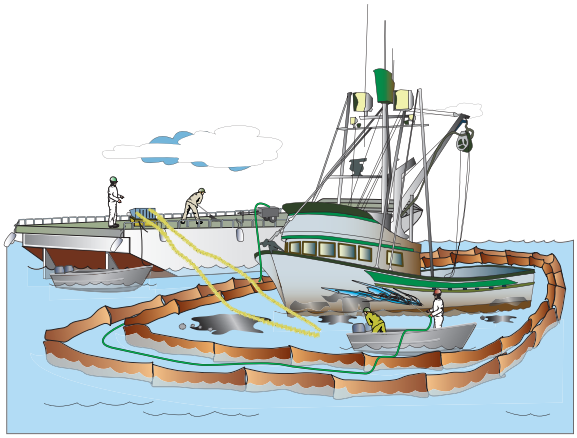

Figure Dv-3. On-water vessel decontamination deployment configuration at an anchorage.

## DEPLOYMENT CONSIDERATIONS AND LIMITATIONS

### SAFETY

- PPE is required of all personnel in the decontamination area. Consult the incident Site Safety Plan for specific requirements.
- Confined space entry is not to be allowed, unless specifically authorized by the incident Safety Officer.
- Worker exposure to contaminants should be minimized.
- Vessels, including skiffs, must have a minimum of two crew aboard.
- If possible, vessels in transit to/from an operation or staging area should transit in pairs.
- A communications schedule should be established and followed, between vessels in transit and the Operations Section or Radio Dispatcher.

### DEPLOYMENT

- Avoid historic properties and archaeology sites. See checklist on page A-20.
- The decontamination area should have a security check point for controlling access and tracking all equipment entering and leaving.
- Resources that are to be redeployed should be decontaminated first.
- Personal decontamination must be integrated into the site plan to prevent cross contamination.
- Any detergent or degreasing solutions discharged into open water must be approved by the EPA and listed in the Product Schedule in the National Contingency Plan. Approved products may include citrus-based solvents such as Citri-solve, Simple Green, PES51.
- Lightly contaminated waste-water from the cleaning operations may be re-circulated and re-used if the cleaning solution does not emulsify oil.

# Vessel Decontamination

- Vessels must be fully decontaminated prior to demobilization.
- Permits must be obtained prior to on-water operations.

## REFERENCES TO OTHER TACTICS

Other tactics that may be involved in Vessel Decontamination include:

- PPE SCL SEC Safety Tactics
- C Containment Boom
- OR On-land Recovery
- PR Passive Recovery
- MST Marine-based Storage and Transfer
- Dp Personnel Decontamination
- FO On-water Free Oil Recovery
- MR Marine Recovery
- LST Land-based Storage and Transfer

## EQUIPMENT AND PERSONNEL RESOURCES

Resources for establishing a Vessel Decontamination Area will be determined by the size and the needs of the response. Refine resource sets as site-specific requirements dictate.

### *On-water Vessel Decontamination*

| Equipment | Function | Quantity | Notes |
|---|---|---|---|
| Warm/hot water pressure wash system | Oil removal | 1 or more | Include adequate hoses and connections |
| Oil boom, 6” to 24” height | Contain oil around vessel | Site-specific | Depending on configuration, currents, sea states and oil concentration |
| Small anchor systems | Secure boom | 1 per 200 ft. of boom | Depending on configuration, currents, and sea states |
| Sorbents | Oil removal and recovery | Response specific | Pads, rolls and boom may be used |
| Detergents | Oil removal | Response specific | For manual removal deliver from spray bottles. May be incorporated in high pressure wash. |
| Storage tanks | Storage of recovered wastes | Response specific | Deployed during operation at a berth or dock |
| Marine oil recovery system | Oil recovery | 1 | Select based on oil type and amounts encountered |
| Mooring system or berth | Hold vessels in place during cleaning | 1 | Use if multiple vessels are to be cleaned to avoid contamination of vessel anchors |
| Lighting system | Illuminate operations | 1 | May be used to augment existing lighting |
| **Vessel** | **Function** | **Quantity** | **Notes** |
| Class 6 skiffs | Access to vessel being decontaminated and platform for pressure washing operations | 1 to 2 | Delivery of personnel and equipment |
| Decontamination platform (vessel or barge) | Storage of recovered wastes and platform for operations | Optional | Deployed when decon activities are conducted at anchor/mooring |
| **Personnel** | **Function** | **Quantity** | **Notes** |
| Field Team Leader or Group Supervisor | Supervises operations under the direction of the Operations Section Chief | 1 or more | Should be familiar with the Site Safety Plan, Waste Management Plan, and Decontamination Plan. |
| Skilled Technicians | Work under the direction of Field Team Leader or Group Supervisor | 1 to 6 | Depending on decontamination activities |
| General Technicians | Work under the direction of Skilled Technician | 2 to 8 | Depending on decontamination activities |
| Vessel/Skiff Operators | Maneuver skiffs during cleaning operations | 1 to 2 | May not be necessary during decon at a berth/dock |

# Vessel Decontamination

## *On-land Vessel Decontamination*

| Equipment | Function | Quantity | Notes |
|---|---|---|---|
| Warm/hot water pressure wash system | Oil removal | 1 or more | Include adequate hoses and connections |
| Berm or dike materials | Contain oil and contaminated water | Site-specific | Depending on size of vessels |
| Polyethylene sheeting | Provide barrier to contain oil | Site-specific | Use to line decon areas |
| Sorbents | Oil removal and recovery | Response specific | Pads, rolls and boom may be used |
| Detergents | Oil removal | Response specific | For manual removal deliver from spray bottles. May be incorporated in high pressure wash. |
| Storage tanks | Storage of recovered wastes | Response specific | A vacuum truck would be optimal |
| Vacuum system | Oil recovery | 1 | Select based on oil type and amounts encountered |
| Crane, travel lift, trailer | Remove vessel from water | 1 | Take steps to protect from contamination |
| Lighting system | Illuminate operations | 1 | May be used to augment existing lighting |
| **Personnel** | **Function** | **Quantity** | **Notes** |
| Field Team Leader or Group Supervisor | Supervises operations under the direction of the Operations Section Chief | 1 or more | Should be familiar with the Site Safety Plan, Waste Management Plan, and Decontamination Plan |
| Skilled Technicians | Work under the direction of Field Team Leader or Group Supervisor | 1 to 6 | Depending on decontamination activities |
| General Technicians | Work under the direction of Skilled Technician | 2 to 8 | Depending on decontamination activities |