



Description

Over-water activities occur at boat and ship repair yards, marinas, and yacht clubs. The discharge of pollutants to receiving waters during these activities can be prevented or reduced by minimizing over-water maintenance, keeping wastes out of the water, cleaning up spills and wastes immediately, and educating tenants and employees.

Approach

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Minimize use of solvents. Clean parts without using solvents whenever possible.
- Recycle used motor oil, diesel oil, and other vehicle fluids and parts whenever possible

Suggested Protocols

General

- Perform paint and solvent mixing, fuel mixing, and similar handling of liquids on-shore, to avoid spillage directly in surface water bodies.
- Post signs to indicate proper use and disposal of residual paints, rags, used oil, and other engine fluids.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	<input checked="" type="checkbox"/>
Bacteria	<input checked="" type="checkbox"/>
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>
Oxygen Demanding	<input checked="" type="checkbox"/>



- Sweep dry docks before flooding.

On Board Maintenance

- Move maintenance and repair activities on-shore if possible. This action reduces some of the potential for direct pollution on water bodies.
- Used antifreeze should be stored in a separate, labeled drum and recycled.
- Fuel tank vents should have valves to prevent fuel overflows or spills.
- Boats with inboard engines should have oil absorption pads in bilge areas that should be changed when no longer useful or at least once a year.
- Careful consideration must be given to fueling boat engines, recycling used oil, and discarding worn motor parts into proper receptacles to prevent spills.
- Keeping boat motors well-tuned prevents fuel and lubricant leaks and improves fuel efficiency.

Cleaning, Chipping, and Painting

- Shelter any blasting and spray painting activities by hanging wind blocking tarps to prevent sand blasting dust and overspray from escaping.
- Use secondary containment on paint cans.
- Limit over-water hull surface maintenance to sanding and minor painting.
- Major hull resurfacing should occur on land.
- Use ground cloths when painting boats on land.
- Paint mixing should not occur on the dock
- Vacuuming up loose paint chips and paint dust can help to prevent paint and other chemical substances from entering waters.
- Properly dispose of surface chips, used blasting sand, residual paints, and other materials. Use temporary storage containment that is not exposed to rain.
- Use phosphate-free and biodegradable detergents for hull washing.
- Select nontoxic cleaning products that do not harm humans or aquatic life

Disposal of Bilge Water, Ballast Water, and Wastewater

- Collect bilge and ballast water that has an oily sheen on the surface for proper disposal rather than dumping in water or on land.
- Collect and properly dispose of wash water from washing painted boat hulls. Consider taking the boat to a local boat yard that is equipped to collect and treat wash water.

- Pump bilge water discharged at sea through an oil/water separator first and store the oil for discharge into storage tanks on shore for treatment.
- Pump bilge water into storage tanks on shore for analysis, treatment and proper disposal.
- Properly dispose of domestic wastewater and ballast water. DO NOT ALLOW discharge of treated or untreated sewage from vessels to harbors.
- Fecal matter and other solid waste should be contained in a U.S. Coast Guard-approved marine sanitation device (MSD).
- Portable toilets should be emptied into approved shore side waste handling facilities, and MSDs should be discharged into approved pump out stations.
- Avoid the intake of ballast water in shallow water or areas where bottom sediments are suspended.
- Avoid the intake of ballast water where there is an algal bloom in progress.
- Use as fine a filter as is practical on the ballast water intake ports to eliminate as many organisms and as much particulate matter as possible. Tests have been conducted using 300 micron followed by a 25 micron filter on intakes to see how well they work and hold up in practice.
- Dump estuarine or harbour ballast water at sea and take in fresh high salinity water to eliminate both pollutants and estuarine organisms.
- Ballast water may be discharged into large tanks on shore where it is treated, although the large volumes involved make this a very expensive and logistically difficult option.
- Ballast water may also be discharged into specially outfitted tanker ships which meet incoming ships and take in their ballast water for treatment and discharge of the clean water. The sludge produced would still have to be taken ashore for treatment or disposal. This is also an expensive and logistically difficult process.
- Carry out physical or chemical sterilization or neutralization of ballast water in situ, and subsequent neutralization of the sterilant, if required, before discharge.

Training

- Provide regular training to employees and/or contractors regarding stormwater BMPs for over water activities.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date, and implement accordingly.
- Place an adequate stockpile of spill cleanup materials where it will be readily accessible. Clean leaks, drips, and other spills with as little water as possible. Use rags for small spills, a damp mop for general cleanup, and dry absorbent material for larger spills.
- Store and maintain appropriate spill cleanup materials in a location known to all; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Clean up spills on docks or boats immediately.

Other Considerations

- Private tenants at marinas may resist restrictions on shipboard painting and maintenance. Existing contracts with tenants may not allow the owner to require that tenants abide by new rules that benefit water quality. Even biodegradable cleaning agents have been found to be toxic to fish.

Requirements***Costs***

- Most of the BMPs are of low and modest cost. Exceptions are stations for temporary storage of residual paints and engine fluids, and wastewater pumpout facilities.

Maintenance

- Sweep maintenance yard areas, docks and boat ramps weekly to collect sandblasting material, paint chips, oils, and other loose debris, do not hose down the area to the water or a storm drain.

Supplemental Information***Further Detail of the BMP***

- Best management practices for ballast water generally fall into three main categories:
 - Preventing Uptake at the Source - Generally harbors are a poor place to take in ballast water since they are often polluted and when shallow are high in suspended sediments. Open ocean water is a better source of ballast water.
 - Killing or Neutralization During the Voyage - The current fleet of cargo vessels are not built to carry out these processes. New ships should be designed for these kinds of activities but retrofitting may be impossible, difficult or expensive. Any residues or sludges arising from these procedures would have to be separated from the water and discharged on shore for treatment. Many of these processes would render the ballast tanks lethal to the crew and require them to be absolutely airtight and provisions would be necessary for purging and re-introducing a safe breathable atmosphere into the tanks.

- Treatment at the Destination - A further way to reduce the movement of alien organisms in ballast water is to avoid discharge of the ballast water into the destination environment.

References and Resources

British Columbia Lake Stewardship Society. Best Management Practices to Protect Water Quality from Non-Point Source Pollution. March 2000.

<http://www.nalms.org/bclss/bmphome.html#bmp>

King County Stormwater Pollution Control Manual

<http://www.dnr.metrokc.gov/wlr/dss/spcm.htm>

Orange County Stormwater Program

http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) -

<http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf>